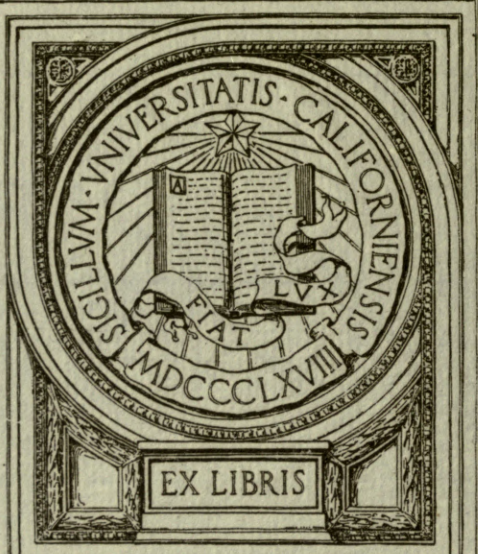
GENERAL ELECTRIC COMPANY

MINE AND INDUSTRIAL HAULAGE SUPPLIES



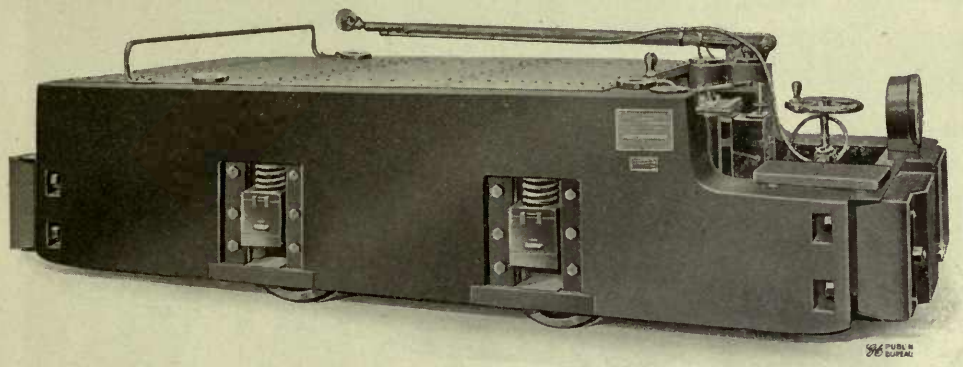
Mine and Industrial Haulage Supplies

GENERAL ELECTRIC COMPANY
SUPPLY DEPARTMENT
SCHENECTADY, N. Y.

Bulletin No. 4916

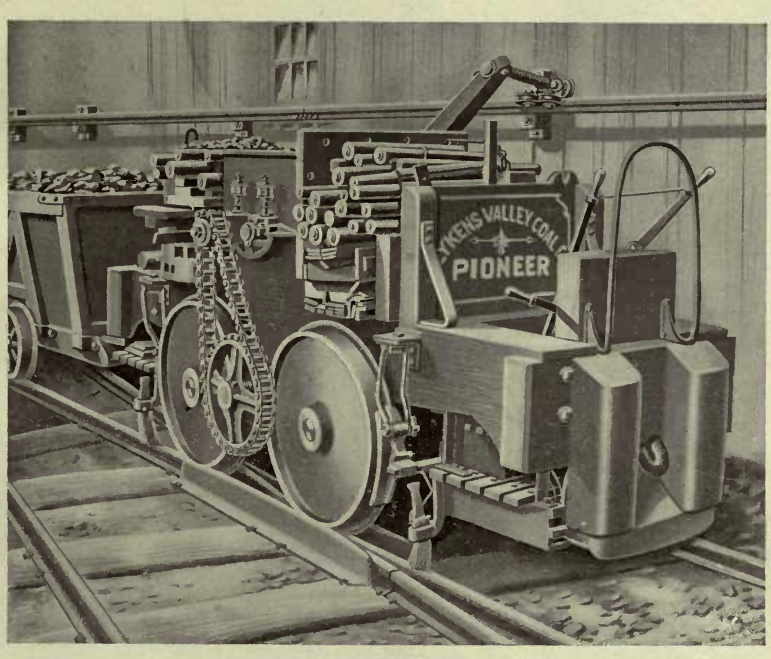
LOCOMOTIVES

Appreciating that purchasing agents, superintendents and other officials having in charge the ordering of materials, must frequently have difficulty in drawing up or checking specifications for repair parts, the portion of this catalogue devoted to locomotive repairs has been so arranged that



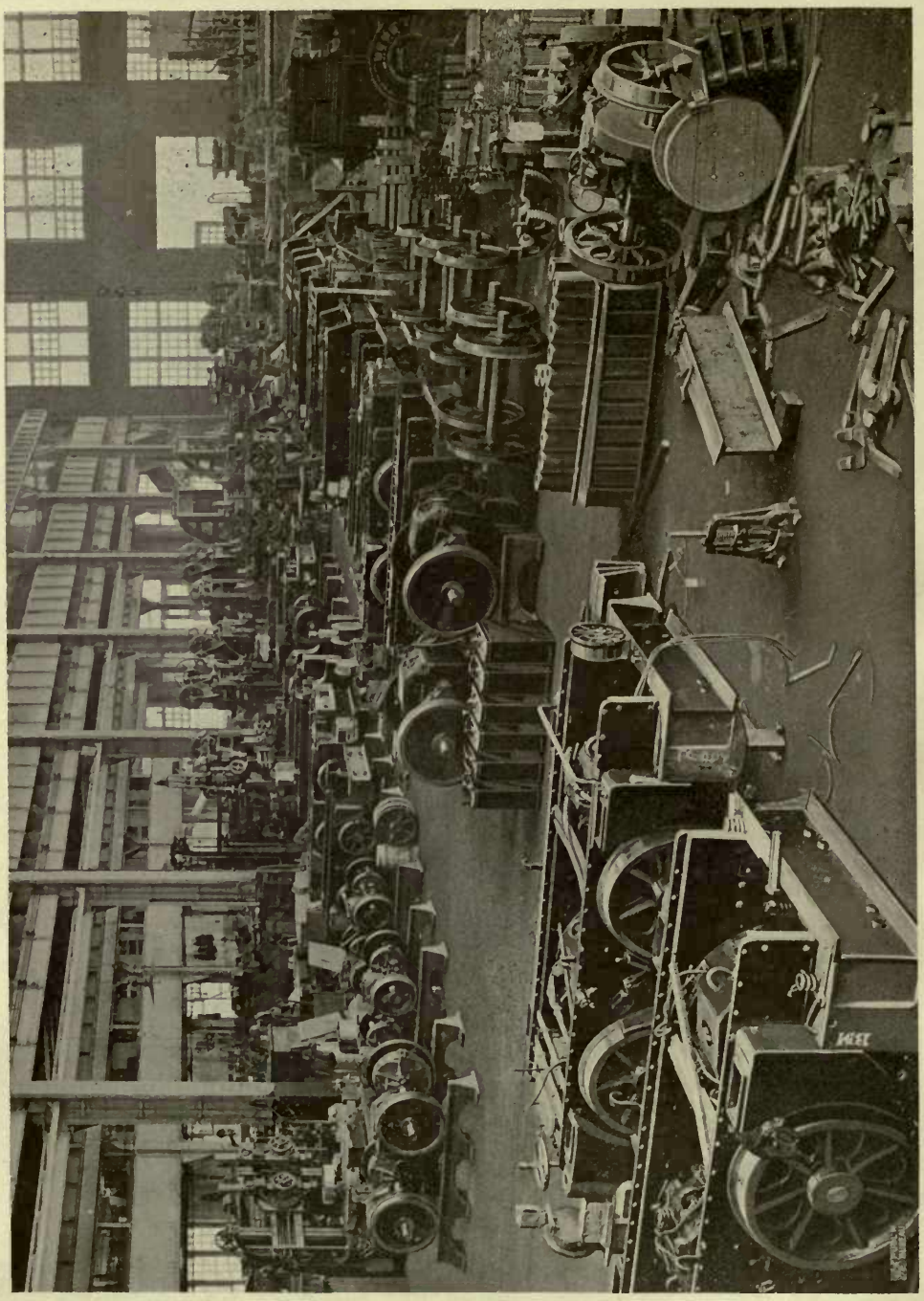
A Modern 8-ton Mine Locomotive

knowledge only of the serial number of a locomotive is adequate for determination of an accurate description of all parts of it: First is given a Pilot Table in which appear in order of their serial numbers all mining and industrial locomotives shipped from the beginning of the year 1900 and opposite each



The First Electric Mine Locomotive Built in the United States

number appear catalogue numbers of many of the mechanical repair parts and also complete type and form letters and figures for the various electrical devices with which the locomotives were equipped when shipped. After the Pilot Table, detailed descriptions with complete identification data are given in the usual manner, the various parts being segregated and arranged to facilitate the selection of parts most often required. The Pilot Table by means of catalogue numbers, types and forms, provides a ready guide for selection of parts from the detailed lists and descriptions following it.



View of Assembly Floor in Locomotive Department
Schenectady Works of the General Electric Company

PILOT TABLE FOR LOCOMOTIVES

LOCOMOTIVE		CAT. NO.			BRAKE SHOES Cat. No.		BRAKE SHOE HEADS Cat. No.		JOURNAL SPRINGS Cat. No.		MOTORS			Teeth in Pinion	Teeth in Gear	Dia. of Axle	Gear Case Cat. No.	RHEOSTAT		Con-troller Type	Trolley Type	Cable Reel Type
Serial Number	Rating	Wheels and Axle	Journal Box	Journal Lining	Right Hand	Left Hand	Right Hand	Left Hand	Outside	Inside	Type	Arma-ture Turns	Vol-tage					Type	Con-nection Diagram			
1535	LM-108-B-1	120039	65185	65204	120332	120332	None	None	119733	None	GE-60	3	250	14	67	4	52376	Pr	D.S. 2434	R-22	D	None
1536	LM-103-A-2	119959	65190	65212	120312	120313	None	None	65129	None	CB-14	17	500	14	66	3	51985	Pr	D.S. 1945	R-14	D	None
1537	LM-103-A-2	119959	65190	65212	120312	120313	None	None	65129	None	CB-14	17	500	14	66	3	51985	Pr	D.S. 1945	R-14	D	None
1541	LM-101-B-1	120039	65185	65204	120332	120332	None	None	119733	None	GE-60	3	250	14	67	4	52376	Pr	D.S. 1537	R-22	D	None
1542	LM-102-B-2	120076	65185	65204	120356	120356	None	None	119738	None	GE-53	2	250	15	69	4¼	52585	Pr	D.S. 2431	R-22	US-2	None
1543–44	LS -206-B-1				on	applicati on					GE-52	3	250	14	67	4	17986	Pr	D.S. 2422	R-19	US-6	None
1545	LS -103-B-2				on	applicati on					CB-14	17	500	14	66	3	51985	Pr	D.S. 2434	R-19	US-2	None
1546	LM-104-B-1	120227	65185	65204	120356	120356	None	None	119734	None	GE-53	2	250	15	69	4¼	52585	Pr	D,S. 2422	R-22	D	None
1547	LM-103-A-1	119939	65190	65212	120312	120313	None	None	65129	None	CB-14	10	250	14	66	3	51985	Pr	D.S. 2434	R-14	D	None
1548	LM-102-B-2	120117	65185	65204	120356	120356	None	None	119734	None	GE-53	4	500	15	69	4¼	52585	Pr	D.S. 1530	R-22	D	None
1549–50	LM-202-B-1	120079	65184	65202	120355	120355	120387	120387	65127	65128	GE-53	2	250	15	69	4¼	52585	Pr	D.S. 4798	R-22	D	None
1551	LM-103-A-2	119977	65190	65212	120318	120319	None	None	119721	None	CB-14	17	500	14	66	3	51985	Pr	D.S. 1945	R-38	D	None
1552	LM-101-B-1	120039	65185	65204	120332	120332	None	None	119733	None	GE-60	3	250	14	67	4	52376	Pr	D.S. 1537	R-22	D	None
1553	LM-101-B-1	120153	65185	65204	65226	65227	120371	120372	119733	None	GE-60	6	500	14	67	4	52376	Pr	D.S. 2504	R-86B	D	None
1554–56	LM-103-A-2	119975	65190	65212	120312	120313	None	None	65129	None	CB-14	17	500	14	66	3	51985	Pr	D.S. 4875	R-14	US-2	None
1557	LM-108-B-2	120107	65185	65204	120332	120332	None	None	119733	None	GE-60	6	500	14	67	4	52376	Pr	D.S. 2504	R-22	D	None
1558	LM-304-B-1	120076	65185	65204	120356	120356	None	None	119738	None	GE-53	2	250	15	69	4	52585	Pr	*	R-16 R-22	US-2	None
1559	LM-102-B-2	120168	65184	65202	120347	120348	None	None	65127	65128	GE-53	4	500	15	69	4¼	52585	Pr	D.S. 1530	R-16	D	None
1560–61	LM-104-A-2	119992	65184	65202	120359	120360	None	None	65127	65128	GE-61	4	500	14	81	4¼	39381	Pr	D.S. 1552	R-22	D	None
1562	LM-105-A-2	119955	119158	119274	120305	120306	None	None	119726	None	NWP2½	26	500	14	58	2¾	100090	Pr	D.S. 2956	R-14	D	None
1563–64	LM-104-B-1	120079	65184	65202	120347	120348	None	None	65127	65128	GE-53	2	250	15	69	4¼	52585	Pr	D.S. 1545	**R-22	D	None
1565–66	LM-202-B-2	120079	65184	65202	120355	120355	120387	120387	65127	65128	GE-53	5	500	15	69	4¼	52585	Pr	D.S. 1432	R-22	D	None
1567	LS -203-A-2	119979			on	applicati on					CB-14	17	500	14	66	3	51985	Pr	D.S. 2434	R-14	3rd rail shoe	None
1568	LM-104-A-2	119992	65184	65202	120359	120360	None	None	65127	65128	GE-61	4	500	14	81	4¼	39381	Pr	D.S. 1552	°R-22	D	None
1569	LM-202-B-1	120118	65184	65202	120355	120355	120387	120387	65127	65128	GE-53	2	250	15	69	4¼	52585	Pr	D.S. 4798	R-37B	D	None
1570	LM-202-B-1	120118	65184	65202	120355	120355	120387	120387	65127	65128	GE-53	2	250	15	69	4¼	52585	Pr	D.S. 4798	°R-22	D	None
1571	LM-102-B-1	120228	65184	65202	120347	120348	None	None	65127	65128	GE-53	2	250	15	69	4¼	52585	Pr	D.S. 4499	R-22	D	None
1572	LM-104-C-1	120212	65184	65202	120326	120327	None	None	65127	65128	GE-58	3	250	15	69	4	50440	Pr	D.S. 1544	R-22	D	None
1573	LM-104-C-1	120212	65184	65202	120326	120327	None	None	65127	65128	GE-58	3	250	15	69	4	50440	Pr	D.S. 1544	R-22	D	None
1574	LM-104-C-1	120212	65184	65202	120326	120327	None	None	65127	65128	GE-58	3	250	15	69	4	50440	Pr	D.S. 1544	R-22	D	None
1575	LM-108-B-1	120047	65184	65202	120326	120327	None	None	65101	65124	GE-60	3	250	14	67	4	52376	Pr	†	R-22	D	None
1576	LS -210-A-2	120292	119171	119279	120361	120362	120392	120393	119748	119749	GE-55	2	500	17	56	5¼	50566	CG	D.S. 2513	R-15	US-2	None
1577	LM-104-E-2	119991	119163	119275	120359	120360	None	None	119732	None	GE-61	4	500	14	81	4¼	39381	Pr	D.S. 1543	R-22	None	None
1578	LM-104-E-2	119991	119163	119275	120359	120360	None	None	119732	None	GE-61	4	500	14	81	4¼	39381	Pr	D.S. 1543	R-22	None	None
1579	LM-101-B-2	120047	65184	65202	120326	120327	None	None	65101	65124	GE-60	6	500	14	67	4	52376	Pr	D.S. 1471	°R-22	D	None
1580	LM-101-B-2	120047	65184	65202	120326	120327	None	None	65101	65124	GE-60	6	500	14	67	4	52376	Pr	D.S. 1471	°R-22	D	None
1581–82	LM-202-B-1	120079	65184	65202	120355	120355	120387	120387	65127	65128	GE-53	2	250	15	69	4	52585	Pr	D.S. 4798	R-22	D	None
1583	LS -209-D-2	120284	65184	65202	120361	120362	120392	120393	65127	65128	GE-51	4	500	16	69	4½	38621	Pr	‡	R-37B	US-6	None
1584	LS -209-B-1	120284	65184	65202	120361	120362	120392	120393	65127	65128	GE-51	4	500	16	69	4½	38621	Pr	§	R-15	US Dbl. Bow	None

* Later equipped with IG (D.S. 11392.)

† Later equipped with IG (D.S. 9842.)

‡ 1 box No. 103, R1-R2; 1 box No. 104, R2-R3; 2 boxes No. 104-A, R3-R4; 2 boxes No. 104-B, R4-R5; 2 boxes No. 103-C, R5-R6.

§ 1 box No. 104, R1-R2; 2 boxes No. 104-A, R2-R3; 2 boxes No. 104-B, R3-R4; 2 boxes No. 103-C, R4-R5; 2 boxes No. 104-C, R5-R6.

° Later equipped with R-37B.

** Later equipped with R-37.

PILOT TABLE FOR LOCOMOTIVES

LOCOMOTIVE		CAT. NO.			BRAKE SHOES Cat. No.		BRAKE SHOE HEADS Cat. No.		JOURNAL SPRINGS Cat. No.		MOTORS			Teeth in Pinion	Teeth in Gear	Dia. of Axle	Gear Case Cat. No.	RHEOSTAT		Controller Type	Trolley Type	Cable Reel Type
Serial Number	Rating	Wheels and Axle	Journal Box	Journal Lining	Right Hand	Left Hand	Right Hand	Left Hand	Outside	Inside	Type	Armature Turns	Voltage					Type	Connection Diagram			
1585	LM-103-A-1	119939	65190	65212	120314	120315	None	None	119721	None	CB-14	10	250	14	66	3	51985	Pr	D.S. 1802	R-14	D	None
1586	LM-104-E-2	119991	119163	119275	120359	120360	None	None	119732	None	GE-61	4	500	14	81	4¼	39381	Pr	D.S. 1543	R-22	None	None
1587–88	LM-106-B-2	120157	65184	65202	120326	120327	None	None	65101	65124	GE-58	6	500	15	69	4	50440	Pr	D.S. 1537	R-22	D	None
1589	LM-105-A-2	119927	65190	65212	120303	120304	None	None	119718	119907	NWP2½	26	500	14	58	2¾	100090	Pr	D.S. 2956	R-14	E	None
1590	LM-105-A-2	119916	65190	65212	120303	120304	None	None	119726	None	NWP2½	26	500	14	58	2¾	100090	Pr	D.S. 2956	R-14	E	None
1591	LM-108-D-2	120248	65185	65204	120332	120332	None	None	119733	None	GE-60	6	500	14	67	3¾	52376	Pr	D.S. 2422	R-14	E	None
1592	LM-101-C-2	120211	65184	65202	120326	120327	None	None	65101	65124	GE-800	4	500	14	67	4	17140	Pr	D.S. 1968	R-14	D	None
1593	LM-103-A-2	119975	65190	65212	120314	120315	None	None	65129	None	CB-14	17	500	14	66	3	51985	Pr	D.S. 1945	R-14	D	None
1594	LM-104-D-1	120076	65185	65204	120356	120356	None	None	119738	None	GE-53	2	250	15	69	4	52585	Pr	D.S. 2427	R-22	D	None
1595	LS -209-C-2	120287	119171	119279	120361	120362	120392	120393	65127	65128	GE-57	3	500	16	69	4½	50249	Pr	D.S. 2000	K-10	US Std.	None
1596	LS -203-B-1	120075	65185	65204	120344	120344	None	None	119730	None	LWP-5	10	250	14	60	3	50696	Pr	D.S. 2435	K-10	D	None
1597	LM-104-A-1	119957	65184	65202	120359	120360	None	None	65127	65128	GE-61	4	250	14	81	4¼	39381	Pr	D.S. 1543	R-22	D	None
1598	LM-106-B-2	120157	65184	65202	120326	120327	None	None	65101	65124	GE-58	6	500	15	69	4	50440	Pr	D.S. 1544	R-22-E	D	None
1599–1600	LM-202-C-2	120079	65184	65202	120355	120355	120387	120387	65127	65128	GE-53	5	500	15	69	4¼	52585	Pr	D.S. 1432	R-37-B	D	None
1601–04	LM-202-B-1	120079	65184	65202	120355	120355	120387	120387	65127	65128	GE-53	2	250	15	69	4¼	52585	Pr	ΔD.S. 1456	R-37 ‖	D	None
1605	LM-107-B-2	120077	65185	65204	120356	120356	None	None	119738	None	GE-53	4	500	15	69	4¼	52585	1G	D.S. 8480	R-22	D	None
1606	LM-202-B-2	120168	65184	65202	120355	120355	120387	120387	65127	65128	GE-53	4	500	15	69	4¼	52585	1G	D.S. 15690	R-37-B	D	None
1607	LS -209-E-2				on	applicati	on				GE-51	4	500	16	69	5	38621	Pr	‡	R-19	US-6	None
1608	LM-202-B-1	120079	65184	65202	120355	120355	120387	120387	65127	65128	GE-53	2	250	15	69	4¼	52585	Pr	D.S. 1456	R-22	D	None
1609	LM-106-B-2	120257	65184	65202	120326	120327	None	None	65101	65124	GE-58	6	500	15	69	4	50440	Pr	D.S. 1471	R-22-E	US-2	None
1610	LM-101-B-1	120047	65184	65202	120326	120327	None	None	65101	65124	GE-60	3	250	14	67	4	52376	Pr	D.S. 1537	R-37-B	D	None
1611–12	LM-102-B-2	120168	65184	65202	120347	120348	None	None	65127	65128	GE-53	4	500	15	69	4¼	52585	Pr	D.S. 1530	R-37-B	D	None
1613	LM-102-B-1	120168	65184	65202	120347	120348	None	None	65127	65128	GE-53	2	250	15	69	4¼	52585	Pr	D.S. 1519	R-37-B	D	None
1614	LM-106-B-2	120157	65184	65202	120326	120327	None	None	65101	65124	GE-58	6	500	14	69	4	50440	Pr	D.S. 1471	R-37-B	D	None
1615	LM-104-A-2	119992	65184	65202	65239	65240	120390	120391	65127	65128	GE-61	4	500	14	81	4¼	39381	Pr	D.S. 1552	R-37-B	D	None
1616	LM-106-B-2	120157	65184	65202	120326	120327	None	None	65101	65124	GE-58	6	500	15	69	4	50440	IG	D-S. 8479	R-37 B	D	None
1617	LM-101-B-2	120047	65184	65202	120326	120327	None	None	65101	65124	GE-60	6	500	14	67	4	52376	Pr	D.S. 1471	R-37 B	US-1	None
1618	LM-202-B-2	120168	65184	65202	120355	120355	120387	120387	65127	65128	GE-53	4	500	15	69	4¼	52585	Pr	D.S. 1432	R-37 B	D	None
1619	LS -311-B-2				on	applicati	on				GE-58	6	500	15	69	4	50440	Pr	°	R-16	US-6	None
1620–23	LM-103-A-2	119975	65190	65212	120314	120315	None	None	65129	None	CB-14	17	500	14	66	3	51985	Pr	D.S. 1945	R-38-A	US-2	None
1624	LM-1C3-A-2	119939	65190	65212	120314	120315	None	None	119721	None	CB-14	17	500	14	66	3	51985	Pr	D.S. 1945	R-38-A	D	None
1625	LM-202-B-1	120079	65184	65202	120355	120355	120387	120387	65127	65128	GE-53	2	250	15	69	4¼	52585	Pr	D.S. 1456	R-37-B	D	None
1626	LM-202-B-2	120168	65184	65202	120355	120355	120387	120387	65127	65128	GE-53	4	500	15	69	4¼	52585	Pr	D.S. 1432	R-37-B †	D	None
1627	LM-202-B-2	120228	65184	65202	120355	120355	120387	120387	65127	65128	GE-53	4	500	15	69	4¼	52585	Pr	D.S. 1188	R-16	D	None
1628	LM-202-B-2	120228	65184	65202	120355	120355	120387	120387	65127	65128	GE-53	4	500	15	69	4¼	52585	Pr	*	R-37-B	D	None
1629	LM-104-F-2	119991	119163	119275	120359	120360	None	None	119732	None	GE-61	4	500	14	81	4¼	39381	Pr	D.S. 1552	R-37-B §	D	None
1630	LM-103-A-2	120004	65190	65212	120314	120315	None	None	65129	None	CB-14	17	500	14	66	3	51985	Pr	D.S. 1945	R-38-A	E	None
1631	LM-103-A-2	120004	65190	65212	120314	120315	None	None	65129	None	CB-14	17	500	14	66	3	51985	Pr	D.S. 1945	R-38-A	E	None
1632	LM-103-A-2	120004	65190	65212	120314	120315	None	None	65129	None	CB-14	17	500	14	66	3	51985	Pr	D.S. 1945	R-38-A	E	None
1633	LM-101-C-2	120211	65184	65202	120326	120327	None	None	65101	65124	GE-800	4	500	14	67	4	17140	Pr	D.S. 1968	R-14	D	None
1634	LM-103-A-2	119975	65190	65212	120314	120315	None	None	65129	None	CB-14	17	500	14	66	3	51985	Pr	D.S. 1945	R-38-A	D	None

* Later equipped with IG (D.S. 15690.) † Later equipped with R-77. § Later equipped with R-86-E. ‖ No. 1602 later equipped with R-60-C.

‡ 1 box No. 103, R1-R2; 1 box No. 104, R2-R3; 2 boxes No. 104-A, R3-R4; 2 boxes No. 104-B, R4-R5; 2 boxes No. 104-C, R5-R6.

° 2 boxes No. 104. R1-R2; 3 boxes No. 104-A. R2-R3; 1 box No. 104-B, R3-R4; 1 box No. 104-C. R4-R5. Δ Loco. No. 1602 later equipped with Pr D.S. 5693.

PILOT TABLE FOR LOCOMOTIVES

LOCOMOTIVE		CAT. NO.			BRAKE SHOES Cat. No.		BRAKE SHOE HEADS Cat. No.		JOURNAL SPRINGS Cat. No.		MOTORS			Teeth in Pinion	Teeth in Gear	Dia. of Axle	Gear Case Cat. No.	RHEOSTAT		Controller Type	Trolley Type	Cable Reel Type
Serial Number	Rating	Wheels and Axle	Journal Box	Journal Lining	Right Hand	Left Hand	Right Hand	Left Hand	Outside	Inside	Type	Armature Turns	Voltage					Type	Connection Diagram			
1635	LM-102-A-2	119992	65184	65202	65239	65240	120390	120391	65127	65128	GE-61	4	500	14	81	4¼	39381	Pr	D.S. 1530	R-37-B	D	None
1636–39	LM-202-B-1	120016	65184	65202	121540	121541	120385	120386	65127	65128	GE-53	2	250	15	69	4¼	52585	Pr	D.S. 1456	R-37-B	D	None
1640–41	LM-202-B-2	120168	65184	65202	120355	120355	120387	120387	65127	65128	GE-53	4	500	15	69	4¼	52585	Pr	D.S. 1432	R-37-B	D	None
1645–46	LM-103-A-1	119975	65190	65212	120314	120315	None	None	65129	None	CB-14	10	250	14	66	3	51985	Pr	D.S. 1802	R-38-B	D	None
1647	LM-101-B-1	120047	65184	65202	120326	120327	None	None	65101	65124	GE-60	3	250	14	67	4	52376	Pr	D.S. 1537	R-37-B	D	None
1648	LM-105-A-2	119916	65190	65212	120303	120304	None	None	119726	None	NWP2½	26	500	14	58	2¾	100090	Pr	D.S. 1936	R-38-A	D	None
1649	LM-202-B-2	120228	65184	65202	120355	120355	120387	120387	65127	65128	GE-53	4	500	15	69	4¼	52585	Pr	D.S. 1432	R-37-B	D	None
1650	LM-105-A-2	119916	65190	65212	120303	120304	None	None	119726	None	NWP2½	26	500	14	58	2¾	100090	Pr	D.S. 1936	R-38-A	US-2	None
1651	LM-103-A-1	119974	65190	65212	120309	120310	None	None	65129	None	CB-14	6	250	14	66	3	51985	Pr	D.S. 1802	R-38-A	US-2	None
1652	LM-103-A-2	119975	65190	65212	120314	120315	None	None	65129	None	CB-14	17	500	14	66	3	51985	Pr	D.S. 1801	R-38-A	D	None
1653	LM-105-A-2	119916	65190	65212	120303	120304	None	None	119726	None	NWP2½	14	250	14	58	2¾	100090	Pr	D.S. 1940	R-38-A	D	None
1654–55	LM-202-B-2	120228	65184	65202	120355	120355	120387	120387	65127	65128	GE-53	4	500	15	69	4¼	52585	Pr	D.S. 1432	R-37-B	D	None
1656	LM-202-B-2	120168	65184	65202	120355	120355	120387	120387	65127	65128	GE-53	4	500	15	69	4¼	52585	Pr	D.S. 1432	R-37-B	D	None
1657	LM-106-B-2	120157	65184	65202	120326	120327	None	None	65101	65124	GE-58	6	500	15	69	4	50440	Pr	D.S. 1471	R-37-B	D	None
1658	LM-101-C-1	120159	65184	65202	65226	65227	120371	120372	65101	65124	GE-800	2	250	14	67	4	17140	Pr	D.S. 1956	R-37-B	US-2	None
1659	LM-101-E-3	120254	119169	119277	120330	120331	120375	120376	119728	None	GE-800	1	110	14	67	4	17140	Pr	D.S. 2119	R-37-B ‡	G	None
1660	LM-202-B-2	120079	65184	65202	121540	121541	120385	120386	65127	65128	GE-53	4	500	15	69	4¼	52585	Pr	D.S. 1432	R-37-B	D	None
1661	LS -103-A-2	119941	119156	119273	120316	120317	None	None	119709	None	CB-14	17	500	14	66	3	51985	Pr	D.S. 1969	R-38-B	None	None
1662–63	LM-105-A-1	119960	65190	65212	120303	120304	None	None	119726	None	NWP2½	14	250	14	58	2¾	100090	Pr	D.S. 1940	R-38-A	D	None
1664–65	LM-202-B-2	120168	65184	65202	120355	120355	120387	120387	65127	65128	GE-53	4	500	15	69	4¼	52585	Pr	D.S. 1432	R-37-B	D	None
1666–70	LS -201-E-3	120273	65184	65202	120334	120335	120377	120378	65101	65124	GE-800	2	250	14	67	4	17140	Pr	D.S. 1537	R-37-B	US-2	None
1671	LR -554-A-3	126374	126435	126436	126458	126458	*126459	†126460	126542	126543	CB-14	10	250	14	66	3	51985	Pr	D.S. 1802	R-38-B	D	None
1672	LM-202-B-2	120118	65184	65202	120355	120355	120387	120387	65127	65128	GE-53	4	500	15	69	4¼	52585	Pr	D.S. 1432	R-37-B	D-4	None
1673	LM-104-C-2	120111	65184	65202	120326	120327	None	None	65127	65128	GE-58	6	500	15	69	4	50440	Pr	D.S. 1553	R-37-B	D	None
1674	LM-101-B-1	126375	65184	65202	120326	120327	None	None	65101	65124	GE-60	3	250	14	67	4	38619	Pr	D.S. 1537	R-37-B	D	None
1675	LM-102-A-1	119992	65184	65202	65239	65240	120390	120391	65127	65128	GE-61	4	250	14	81	4¼	39381	Pr	D.S. 1930	R-37-E	D	None
1676	LM-106-B-1	120157	65184	65202	120326	120327	None	None	65101	65124	GE-58	3	250	15	69	4	50440	Pr	D.S. 1537	R-37-B	D	None
1677	LM-106-B-2	120157	65184	65202	120326	120327	None	None	65101	65124	GE-58	6	500	15	69	4	49551	Pr	D.S. 1471	R-37-B	D	None
1678	LM-101-B-1	120109	65184	65202	65226	65227	120371	120372	65101	65124	GE-60	3	250	14	67	4	38619	Pr	D.S. 1537	R-37-B	D	None
1679–80	LM-103-A-1	119939	65190	65212	120314	120315	None	None	119721	None	CB-14	10	250	14	66	3	51985	Pr	D.S. 1802	R-38-A	US-2	None
1681	LM-103-A-2	120021	65190	65212	120314	120315	None	None	65129	None	CB-14	17	500	14	66	3	51985	Pr	D.S. 1945	R-38-A	D	None
1682	LS -209-F-1	120284	65184	65202	120361	120362	120392	120393	65127	65128	GE-57	4	500	15	69	4½	49539	Pr	D.S. 1986	R-37-B	D	None
1683–4	LM-102-B-1	120079	65184	65202	65236	65238	120381	120382	65127	65128	GE-53	2	250	15	69	4¼	52585	Pr	D.S. 1519	R-37-B	D	None
1685	LM-105-A-1	119934	65190	65212	65954	65955	None	None	119726	None	NWP2½	14	250	14	58	2¾	100090	Pr	D.S. 1940	R-38-A	D	None
1686	LM-102-B-2	120116	65184	65202	65236	65238	120381	120382	65127	65128	GE-53	4	500	15	69	4¼	52585	Pr	D.S. 1530	R-37-B	D	None
1687–89	LM-101-B-2	120047	65184	65202	65226	65227	120371	120372	65101	65124	GE-60	6	500	14	67	4	52376	Pr	D.S. 1471	R-38-A	N	None
1690	LM-104-C-2	120157	65184	65202	65226	65227	120371	120372	65127	65128	GE-58	6	500	15	69	4	49551	Pr	D.S. 1553	R-37-A	D	None
1691	LM-103-A-1	120130	65190	65212	120314	120315	None	None	65129	None	CB-14	10	250	14	66	3	51985	Pr	D.S. 1802	R-38-A	D-4	None
1692	LM-106-B-1	120157	65184	65202	65226	65227	120371	120372	65101	65124	GE-58	3	250	15	69	4	50440	Pr	D.S. 1537	R-37-B	D	None
1693	LM-104-B-1	120079	65184	65202	65236	65238	120381	120382	65127	65128	GE-53	2	250	15	69	4¼	52585	Pr	D.S. 1545	R-37-B	D	None
1694	LS -201-D-1	120276	119170	119278	120334	120335	120377	120378	65101	65124	GE-52	3	250	14	67	4	17986	Pr	D.S. 1966	R-37-B	US-2	None
1695	LS -204-C-1	121449	119170	119278	120334	120335	120377	120378	65127	65128	GE-58	3	250	15	69	4	49551	Pr	D.S. 2111	R-37-B	US-2	None
1696	LM-105-A-1	119916	65190	65212	120373	120373	None	None	119726	None	NWP2½	14	250	14	58	2¾	100090	Pr	D.S. 1940	R-38-A	H	None

* For front brake shoes.

† For rear brake shoes.

‡ Later equipped with R-60-C.

PILOT TABLE FOR LOCOMOTIVES

LOCOMOTIVE		CAT. NO.			BRAKE SHOES Cat. No.		BRAKE SHOE HEADS Cat. No.		JOURNAL SPRINGS Cat. No.		MOTORS			Teeth in Pinion	Teeth in Gear	Dia. of Axle	Gear Case Cat. No.	RHEOSTAT		Controller Type	Trolley Type	Cable Reel Type
Serial Number	Rating	Wheels and Axle	Journal Box	Journal Lining	Right Hand	Left Hand	Right Hand	Left Hand	Outside	Inside	Type	Armature Turns	Voltage					Type	Connection Diagram			
1697–99	LM-101-B-2	123487	65184	65202	65226	65227	120371	120372	65101	65124	GE-60	6	500	14	67	4	52376	Pr	D.S. 1471	R-38-A	E	None
1700	LM-103-A-1	120021	65190	65212	120314	120315	None	None	65129	None	CB-14	10	250	14	66	3	51985	Pr	D.S. 1802	R-38-A	D	None
1701–02	LM-202-B-2	120168	65184	65202	120355	120355	120387	120387	65127	65128	GE-53	4	500	15	69	4¼	52585	Pr	D.S. 1432	R-37-B	D	None
1703–04	LM-106-B-2	120157	65184	65202	120326	120327	None	None	65101	65124	GE-58	6	500	15	69	4	50440	Pr	D.S. 1432*	R-37-B	D	None
1705	LM-106-B-2	120157	65184	65202	65226	65227	120371	120372	65101	65124	GE-58	6	500	15	69	4	50440	Pr	D.S. 1471	R-37-B	D	None
1706–07	LM-202-B-2	120168	65184	65202	121540	121541	120385	120386	65127	65128	GE-53	4	500	15	69	4¼	52585	Pr	D.S. 1432	R-37-B	D	None
1708	LM-104-B-2	120079	65184	65202	65236	65238	120381	120382	65127	65128	GE-53	4	500	15	69	4¼	52585	Pr	D.S. 1554	R-37-B	D	None
1709	LM-103-A-2	119975	65190	65212	120314	120315	None	None	65129	None	CB-14	17	500	14	66	3	51985	Pr	D.S. 1945	R-38-A	D	None
1710	LM-103-A-2	120021	65190	65212	120314	120315	None	None	65129	None	CB-14	17	500	14	66	3	51985	Pr	D.S. 1945	R-38-A	D	None
1711	LM-103-A-2	120021	65190	65212	120314	120315	None	None	65129	None	CB-14	17	500	14	66	3	51985	Pr	D.S. 2106	R-38-A	D	None
1712–13	LM-106-B-2	120157	65184	65202	65226	65227	120371	120372	65101	65124	GE-58	6	500	15	69	4	50440	Pr	D.S. 1471†	R-37-B	D	None
1714	LM-105-A-2	119955	119158	119274	120305	120306	None	None	119726	None	NWP2½	26	500	14	58	2¾	100090	Pr	D.S. 2956	R-14	D	None
1715–16	LM-202-B-2	120168	65184	65202	121540	121541	120385	120386	65127	65128	GE-53	4	500	15	69	4¼	52585	Pr	D.S. 1432‡	R-37-B	D	None
1717–18	LM-106-B-2	120157	65184	65202	65226	65227	120371	120372	65101	65124	GE-58	6	500	15	69	4	50440	Pr	D.S. 1471§	R-38-A	D	None
1719	LM-101-F-2	120047	65184	65202	65226	65227	120371	120372	65101	65124	GE-60	6	500	14	67	4	52376	IG	D.S. 9842	R-38-A	D	None
1720	LS -203-C-2				on	applicati	on				CB-14	17	500	14	66	3	51985	Pr	D.S. 1945	R-38-B	H	None
1721	LM-104-A-2	119953	65184	65202	65239	65240	120390	120391	65127	65128	GE-61	4	500	14	81	4¼	39381	Pr	D.S. 1552	R-37-F	D	None
1722	LM-202-B-1	120228	65184	65202	121540	121541	120385	120386	65127	65128	GE-53	2	250	15	69	4¼	52585	Pr	D.S. 1456	R-37-B	D	None
1723	LM-101-B-2	120047	65184	65202	65226	65227	120371	120372	65101	65124	GE-60	6	500	14	67	4	52376	Pr	D.S. 1471	R-38-A	D	None
1724	LM-103-A-1	119975	65190	65212	120314	120315	None	None	65129	None	CB-14	10	250	14	66	3	51985	Pr	D.S. 1802	R-38-A	D	None
1725	LM-106-B-2	120157	65184	65202	65226	65227	120371	120372	65101	65124	GE-58	6	500	15	69	4	50440	Pr	D.S. 1471	R-38-A	D	None
1726–27	LM-106-B-2	120157	65184	65202	65226	65227	120371	120372	65101	65124	GE-58	6	500	15	69	4	50440	Pr	D.S. 1471	R-38-A	D	None
1728	LM-101-F-1	120008	65184	65202	65226	65227	120371	120372	65101	65124	GE-60	3	250	14	67	4	52376	Pr	D.S. 1537	R-37-B	D	VR-A1
1729	LM-105-A-2	119934	65190	65212	65954	65955	None	None	119726	None	NWP2½	26	500	14	58	2¾	100090	Pr	D.S. 2956	R-38-A	D	None
1731–33	LS -103-A-1	119941	119156	119273	120316	120317	None	None	119709	None	CB-14	10	250	14	66	3	51985	Pr	D.S. 2499	R-38-A	H	None
1734	LM-202-B-2	120168	65184	65202	121540	121541	120385	120386	65127	65128	GE-53	4	500	15	69	4¼	52585	Pr	D.S. 1432	R-37-B	D	None
1735	LM-202-B-2	120168	65184	65202	121540	121541	120385	120386	65127	65128	GE-53	4	500	15	69	4¼	52585	Pr	D.S. 1432	R-37-B	D-4	None
1736	LM-101-B-1	120047	65184	65202	65226	65227	120371	120372	65101	65124	GE-60	3	250	14	67	4	52376	Pr	D.S. 1537	R-37-B	D	None
1737	LM-101-G-1	120047	65184	65202	65226	65227	120371	120372	65101	65124	GE-60	3	250	14	67	4	52376	Pr	D.S. 1537	R-37-B	D	None
1738–39	LS -203-A-2	119979	119156	119273	120311	120311	None	None	119908	None	CB-14	17	500	14	66	3	51985	Pr	D.S. 1945	R-38-A	D	None
1740	LM-103-A-1	120004	65190	65212	120314	120315	None	None	65129	None	CB-14	10	250	14	66	3	51985	Pr	D.S. 1802	R-38-A	D	None
1741	LM-202-B-1	120079	65184	65202	121540	121541	120385	120386	65127	65128	GE-53	2	250	15	69	4¼	52585	Pr	D.S. 1456	R-37-B	D	None
1742	LM-101-B-2	120047	65184	65202	65226	65227	120371	120372	65101	65124	GE-60	6	500	14	67	4	52376	Pr	D.S. 1537	R-37-B	US-2	None
1743–44	LM-106-B-2	120157	65184	65202	65226	65227	120371	120372	65101	65124	GE-58	6	500	15	69	4	50440	Pr	D.S. 1471‖	R-38-A	D	None
1745	LM-101-B-1	120047	65184	65202	65226	65227	120371	120372	65101	65124	GE-60	3	250	14	67	4	52376	Pr	D.S. 1537	R-37-B	D	None
1746–49	LM-104-B-2	120093	65184	65202	65236	65238	120381	120382	65127	65128	GE-53	4	500	15	69	4¼	52585	Pr	D.S. 1554	R-37-B	D	None
1750	LM-106-B-2	120157	65184	65202	65226	65227	120371	120372	65101	65124	GE-58	6	500	15	69	4	50440	Pr	D.S. 1471	R-38-A	D	None
1751–52	LM-106-B-2	120157	65184	65202	65226	65227	120371	120372	65101	65124	GE-58	6	500	15	69	4	50440	Pr	D.S. 1471	R-38-A	D	None
1753	LS -203-A-2	119941	119156	119273	120316	120317	None	None	119709	None	CB-14	17	500	14	66	3	51985	Pr	D.S. 3123	R-38-A	US-2	None
1754–55	LS -401-A-2	120074	119170	119278	120330	120331	120375	120376	65101	65124	GE-60	6	500	14	67	4	52376	Pr	D.S. 1471	R-38-A	US-2	None
1756–57	LM-105-A-1	126376	65190	65212	126449	126450	None	None	119726	None	NWP2½	14	250	14	58	2¾	100090	Pr	D.S. 1940	R-38-A	D	None

* 1704 later equipped with IG (D.S. 12607.)
† 1712 later equipped with IG (D.S. 12607.)
‡ 1715 later equipped with IG (D.S. 8268.)
§ 1717 later equipped with IG (D.S. 12607.)
‖ 1744 later equipped with IG (D.S. 8479.)

PILOT TABLE FOR LOCOMOTIVES

LOCOMOTIVE		CAT. NO.			BRAKE SHOES Cat. No.		BRAKE SHOE HEADS Cat. No.		JOURNAL SPRINGS Cat. No.		MOTORS			Teeth in Pinion	Teeth in Gear	Dia. of Axle	Gear Case Cat. No.	RHEOSTAT		Controller Type	Trolley Type	Cable Reel Type
Serial Number	Rating	Wheels and Axle	Journal Box	Journal Lining	Right Hand	Left Hand	Right Hand	Left Hand	Outside	Inside	Type	Armature Turns	Voltage					Type	Connection Diagram			
1758	LS -210-B-2	120292	119171	119279	120363	120364	120394	120395	119748	119749	GE-55	3	500	17	56	4¼	50566	CG	D.S. 2998	R-15	US-1	None
1759	LM-102-B-1	120079	65184	65202	65236	65238	120381	120382	65127	65128	GE-53	2	250	15	69	4¼	52585	Pr	D.S. 4799	R-37-B	D	None
1760	LM-103-A-1	119974	65190	65212	120309	120310	None	None	65129	None	CB-14	10	250	14	69	3	51985	Pr	D.S. 1802	R-38-A	None	None
1761	LM-104-C-1	120157	65184	65202	65226	65227	120371	120372	65127	65128	GE-58	3	250	15	69	4	50440	Pr	D.S. 1544	R-37-B	D	None
1762	LM-101-B-1	120047	65184	65202	65226	65227	120371	120372	65101	65124	GE-60	3	250	14	67	4	52376	Pr	D.S. 1537	R-37-B	D	None
1763	LM-101-B-1	120047	65184	65202	65226	65227	120371	120372	65101	65124	GE-60	3	250	14	67	4	52376	Pr	D.S. 1537	R-37-B	D	None
1764	LM-202-B-2	120228	65184	65202	120355	120355	120387	120387	65127	65128	GE-53	4	500	15	69	4¼	52585	Pr	D.S. 1432	R-37-B	D	None
1765	LM-202-B-1	120079	65184	65202	121540	121541	120385	120386	65127	65128	GE-53	2	250	15	69	4¼	52585	Pr	D.S. 1456	R-37-B	D	None
1766	LM-101-B-2	120047	65184	65202	65226	65227	120371	120372	65101	65124	GE-60	6	500	14	67	4	52376	Pr	D.S. 1471	R-38-A	D	None
1767–71	LM-103-A-2	119975	65190	65212	120314	120315	None	None	65129	None	CB-14	17	500	14	66	3	51985	Pr	D.S. 1945	R-38-A	D	None
1772–74	LM-103-A-1	119970	65190	65212	120314	120315	None	None	65129	None	CB-14	10	250	14	66	3	51985	Pr	D.S. 1802	R-38-A	D	None
1775–76	LM-104-B-2	120093	65184	65202	65236	65238	120381	120382	65127	65128	GE-53	4	500	15	69	4¼	52585	Pr	D.S. 1554	R-37-B	D	None
1777	LM-202-B-2	120168	65184	65202	121540	121541	120385	120386	65127	65128	GE-53	4	500	15	69	4¼	52585	Pr	D.S. 1432	R-37-B	D	None
1778	LS -203-D-1	119941	119156	119273	120316	120317	None	None	119709	None	CB-14	10	250	14	66	3	51985	Pr	D.S. 1802	R-38-A	US-2	None
1779	LM-104-C-2	120126	65184	65202	65226	65227	120371	120372	65127	65128	GE-58	6	500	15	69	4	50440	Pr	D.S. 1553	R-38-A	D	None
1780	LM-101-D-2	120274	65184	65202	120334	120335	120377	120378	65101	65124	GE-52	6	500	14	67	4	17986	Pr	D.S. 1967	R-38-A	None	None
1781–82	LM-103-A-1	119975	65190	65212	120314	120315	None	None	65129	None	CB-14	10	250	14	66	3	51985	Pr	D.S. 1802	R-38-A	D	None
1783	LS -103-C-2	119941	119156	119273	120316	120317	None	None	119709	None	CB-14	17	500	14	66	3	51985	Pr	D.S. 1969	R-38-A	D	None
1784	LM-101-B-1	120047	65184	65202	65226	65227	120371	120372	65101	65124	GE-60	3	250	14	67	4	52376	Pr	D.S. 1537	R-37-B	US-1	None
1785	LM-104-B-2	120093	65184	65202	65236	65238	120381	120382	65127	65128	GE-53	4	500	15	69	4¼	52585	Pr	D.S. 1554	R-37-B	D	None
1786	LM-104-A-2	119992	65184	65202	65239	65240	120390	120391	65127	65128	GE-61	4	500	14	81	4¼	39381	Pr	D.S. 1552	R-37-F	D	None
1787–88	LM-103-A-2	119975	65190	65212	120314	120315	None	None	65129	None	CB-14	17	500	14	66	3	51985	Pr	D.S. 1945	R-38-A	D	None
1789	LM-103-A-2	120021	65190	65212	120314	120315	None	None	65129	None	CB-14	17	500	14	66	3	51985	Pr	D.S. 1945	R-38-A	D	None
1790	LM-103-A-2	120021	65190	65212	120314	120315	None	None	65129	None	CB-14	17	500	14	66	3	51985	Pr	D.S. 1945	R-38-A	D	None
1791	LS -401-B-1	120074	119170	119278	120330	120331	120375	120376	65101	65124	GE-60	3	250	14	67	4	52376	Pr	D.S. 1966	R-37-B	D	None
1792	LM-106-B-2	120157	65184	65202	65226	65227	120371	120372	65101	65124	GE-58	6	500	15	69	4	50440	Pr	D.S. 1471	R-38-A	D	None
1793	LM-202-B-2	120168	65184	65202	121540	121541	120385	120386	65127	65128	GE-53	4	500	15	69	4¼	52585	1G	D.S. 15690	R-37-B	D	None
1794–99	LM-104-B-2	120096	65184	65202	65236	65238	120381	120382	65127	65128	GE-53	4	500	15	69	4¼	52585	Pr	D.S. 1554	R-37-B	D	None
1800	LM-104-B-2	120096	65184	65202	65236	65238	120381	120382	65127	65128	GE-53	4	500	15	69	4¼	52585	Pr	D.S. 1554	R-37-B	D-4	None
1801	LM-106-B-1	120157	65184	65202	65226	65227	120371	120372	65101	65124	GE-58	3	250	15	69	4	50440	Pr	D.S. 1537	R-37-B	D	None
1802	LM-202-B-1	120168	65184	65202	121540	121541	120385	120386	65127	65128	GE-53	2	250	15	69	4¼	52585	Pr	D.S. 1456	R-37-B	D-4	None
1803	LM-202-B-1	120079	65184	65202	121540	121541	120385	120386	65127	65128	GE-53	2	250	15	69	4¼	52585	Pr	D.S. 1456	R-37-B	D-4	None
1808–09	LM-103-A-2	119975	65190	65212	120314	120315	None	None	65129	None	CB-14	17	500	14	66	3	51985	Pr	D.S. 1945	R-38-A	D	None
1810	LM-104-B-1	120079	65184	65202	65236	65238	120381	120382	65127	65128	GE-53	2	250	15	69	4¼	52585	Pr	D.S. 1545	R-37-B	D	None
1811	LM-106-B-2	120157	65184	65202	65226	65227	120371	120372	65101	65124	GE-58	6	500	15	69	4	50440	Pr	D.S. 1471	R-38-A	D	None
1812	LM-202-B-2	120168	65184	65202	121540	121541	120385	120386	65127	65128	GE-53	4	500	15	69	4¼	52585	Pr	D.S. 1432	R-37-B	D-4	None
1813	LM-202-B-2	120079	65184	65202	121540	121541	120385	120386	65127	65128	GE-53	4	500	15	69	4¼	52585	Pr	D.S. 1432	R-37-B	D-4	None
1814	LS -205-A-1	119928	119156	119273	120307	120308	None	None	119711	None	NWP2½	14	220	14	58	2¾	100090	Pr	D.S. 2957	R-38-A	US-2	None
1816	LM-104-B-1	120079	65184	65202	65236	65238	120381	120382	65127	65128	GE-53	2	250	15	69	4¼	52585	Pr	D.S. 1545	R-37-B	D-4	None
1817–18	LM-104-B-1	120079	65184	65202	65236	65238	120381	120382	65127	65128	GE-53	2	250	15	69	4¼	52585	Pr	D.S. 1545	R-37-B	D-4	None
1819	LM-104-B-1	120079	65184	65202	65236	65238	120381	120382	65127	65128	GE-53	2	250	15	69	4¼	52585	Pr	D.S. 1545	R-37-B	D-4	None
1820	LM-202-B-1	120079	65184	65202	121540	121541	120385	120386	65127	65128	GE-53	2	250	15	69	4¼	52585	Pr	D.S. 1456	R-37-B	D-4	None
1821	LM-101-B-1	120092	65184	65202	65226	65227	120371	120372	65101	65124	GE-60	3	250	14	67	4	52376	Pr	D.S. 1537	R-37-B	D	None

PILOT TABLE FOR LOCOMOTIVES

LOCOMOTIVE		CAT. NO.			BRAKE SHOES Cat. No.		BRAKE SHOE HEADS Cat. No.		JOURNAL SPRINGS Cat. No.		MOTORS			Teeth in Pinion	Teeth in Gear	Dia. of Axle	Gear Case Cat. No.	RHEOSTAT		Controller Type	Trolley Type	Cable Reel Type
Serial Number	Rating	Wheels and Axle	Journal Box	Journal Lining	Right Hand	Left Hand	Right Hand	Left Hand	Outside	Inside	Type	Armature Turns	Voltage					Type	Connection Diagram			
1822	LM-105-C-1	119937	65190	65212	120318	120319	None	None	65130	None	CB-15	16	250	14	66	2¾	51985	Pr	D.S. 2957	R-38-A	D	None
1823	LM-105-A-1	119916	65190	65212	120373	120373	None	None	119726	None	NWP2½	14	250	14	58	2¾	100090	Pr	D.S. 2957	R-38-A	D	None
1824	LM-102-B-1	120230	65184	65202	65236	65238	120381	120382	65127	65128	GE-53	2	250	15	69	4¼	52585	Pr	D.S. 1519	R-37-B	D-4	None
1825	LM-101-H-1	120007	65184	65202	65226	65227	120371	120372	65101	65124	GE-60	3	250	14	67	4	52376	Pr	D.S. 1537	R-37-B	D-4	VR-A1
1826–29	LM-101-H-1	120007	65184	65202	65226	65227	120371	120372	65101	65124	GE-60	3	250	14	67	4	52376	Pr	D.S. 1537	R-37-B	D-4	VR-A1
1830–32	LM-101-H-1	120008	65184	65202	65226	65227	120371	120372	65101	65124	GE-60	3	250	14	67	4	52376	Pr	D.S. 1537	R-37-B	D	None
1834	LS -209-G-2	120286	119171	119279	120363	120364	120394	120395	119727	None	GE-57	4	500	16	69	4½	50249	CG	D.S. 4288	R-37-B	US-2	None
1835	LM-106-B-2	120157	65184	65202	65226	65227	120371	120372	65101	65124	GE-58	6	500	15	69	4	50440	Pr	D.S. 1537	R-38-A	D	None
1836	LM-202-B-2	120094	65184	65202	121540	121541	120385	120386	65127	65128	GE-53	4	500	15	69	4¼	52585	Pr	D.S. 1432	R-37-B	D-4	None
1838	LM-103-A-2	119940	65190	65212	120318	120319	None	None	119721	None	CB-14	17	500	14	66	3	51985	Pr	D.S. 1945	R-38-A	D	None
1839	LM-202-B-2	120168	65184	65202	121540	121541	120385	120386	65127	65128	GE-54†	4	500	14	67	4¼	†17986	Pr	*	†R-37-B	D-4	None
1840	LM-103-A-2	119940	65190	65212	120318	120319	None	None	119721	None	CB-14	17	500	14	66	3	51985	Pr	D.S. 1945	R-38-A	D	None
1841	LM-106-B-2	120157	65184	65202	65226	65227	120371	120372	65101	65124	GE-58	6	500	15	69	4	50440	Pr	D.S. 1471	R-38-A	D-4	None
1842	LM-202-B-2	120168	65184	65202	121540	121541	120385	120386	65127	65128	GE-53	4	500	15	69	4¼	52585	Pr	D.S. 1432	R-37-B	D-4	None
1843	LM-101-C-2	120159	65184	65202	65226	65227	120371	120372	65101	65124	GE-800	4	500	14	67	4	17140	Pr	D.S. 1968	R-38-A	D-4	None
1844	LM-101-C-1	120159	65184	65202	65226	65227	120371	120372	65101	65124	GE-800	2	250	14	67	4	17140	Pr	D.S. 1956	R-37-B	D-4	None
1845–49	LS -202-A-1	120283	119171	119279	120363	120364	120394	120395	119742	119743	GE-57	2	250	16	69	4½	50249	Pr	D.S. 1545	R-55	D	None
1850–51	LM-104-A-1	120159	65184	65202	65239	65240	120390	120391	65127	65128	GE-61	4	250	14	81	4¼	39381	Pr	D.S. 1543	R-37-E	D-4	None
1852–61	LM-105-C-1	119961	65190	65212	120318	120319	None	None	65130	None	CB-15	16	250	14	66	2¾	51985	Pr	D.S. 2952	R-38-A	D-4	None
1862	LM-202-B-2	120123	65184	65202	121540	121541	120385	120386	65127	65128	GE-53	4	500	15	69	4¼	52585	Pr	D.S. 1432	R-37-B	D-4	None
1863	LM-104-C-2	120224	65184	65202	65226	65227	120371	120372	65127	65128	GE-58	6	500	15	69	4	50440	Pr	D.S. 1553	R-38-A	D-4	None
1864	LM-101-B-2	120047	65184	65202	65226	65227	120371	120372	65101	65124	GE-60	6	500	14	67	4	52376	Pr	D.S. 1471	R-38-A	D	None
1865	LM-105-C-1	119961	65190	65212	120318	120319	None	None	65130	None	CB-15	16	250	14	66	2¾	51985	Pr	D.S. 2957	R-38-A	D	None
1866	LM-101-B-1	120047	65184	65202	65226	65227	120371	120372	65101	65124	GE-60	3	250	14	67	4	52376	Pr	D.S. 1537	R-37-B	D	None
1867–68	LS -401-B-1	120074	119170	119278	120330	120331	120375	120376	65101	65124	GE-60	3	250	14	67	4	52376	Pr	D.S. 1966	R-37-B	US-6	None
1869	LM-105-A-2	119955	119158	119274	120305	120306	None	None	119726	None	NWP2½	26	500	14	58	2¾	100090	Pr	D.S. 2956	R-14	D	None
1870	LM-103-A-2	120022	65190	65212	120318	120319	None	None	65129	None	CB-14	17	500	14	66	3	51985	Pr	D.S. 1945	R-38-A	D	None
1871	LM-104-C-2	120157	65184	65202	65226	65227	120371	120372	65127	65128	GE-58	6	500	15	69	4	50440	Pr	D.S. 1553	R-38-A	D-4	None
1872	LM-102-A-1	119966	65184	65202	65239	65240	120390	120391	65127	65128	GE-61	4	250	14	81	4¼	39381	Pr	D.S. 1930	R-37-E	D-4	None
1873–76	LM-103-A-1	119977	65190	65212	120318	120319	None	None	119721	None	CB-14	10	250	14	66	3	51985	Pr	D.S. 1802	R-38-A	D	None
1877	LM-103-A-2	119940	65190	65212	120318	120319	None	None	119721	None	CB-14	17	500	14	66	3	51985	Pr	D.S. 1945	R-38-A	D	None
1878	LM-105-B-1	119917	65190	65212	65956	65957	None	None	65135	None	NWP2½	14	250	14	58	2¾	100090	Pr	D.S. 2957	R-38-A	D	None
1879	LM-106-B-2	120215	65184	65202	65226	65227	120371	120372	65131	65132	GE-58	6	500	15	69	4	50440	Pr	D.S. 1471	R-38-A	D	None
1880	LM-202-B-1	120168	65184	65202	121540	121541	120385	120386	65127	65128	GE-53	2	250	15	69	4¼	52585	Pr	D.S. 1456	R-37-B	D-4	None
1881	LM-104-C-1	120272	65184	65202	65226	65227	120371	120372	65127	65128	GE-58	3	250	15	69	4	50440	Pr	D.S. 1544	R-37-B	D-4	None
1882	LM-202-B-2	120169	65184	65202	121540	121541	120385	120386	65127	65128	GE-53	4	500	15	69	4¼	52585	Pr	D.S. 1432	R-37-B	D-4	None
1883	LM-202-B-2	120241	65184	65202	121540	121541	120385	120386	65127	65128	GE-53	4	500	15	69	4¼	52585	Pr	D.S. 1432	R-37-B	D-4	None
1884	LM-101-C-2	120240	65184	65202	65226	65227	120371	120372	65101	65124	GE-800	4	500	14	67	4	17140	Pr	D.S. 1968	R-38-A	D-4	None
1885–87	LM-103-A-1	119940	65190	65212	120318	120319	None	None	119721	None	CB-14	10	250	14	66	3	51985	Pr	D.S. 1802	R-38-A	D-4	None
1888	LM-102-B-1	120079	65184	65202	65236	65238	120381	120382	65127	65128	GE-53	2	250	15	69	4¼	52585	IG	D.S. 4799	R-37-C	D-4	None
1889–90	LM-101-H-1	120007	65184	65202	65226	65227	120371	120372	65101	65124	GE-60	3	250	14	67	4	52376	Pr	D.S. 1537	R-37-B	D-4	VR-A1
1891–94	LM-101-H-1	120007	65184	65202	65226	65227	120371	120372	65101	65124	GE-60	3	250	14	67	4	52376	Pr	D.S. 1537	R-37-B	D-4	VR-A1
1895–96	LM-101-H-1	120007	65184	65202	65226	65227	120371	120372	65101	65124	GE-60	3	250	14	67	4	52376	Pr	D.S. 1537	R-37-B	D-4	VR-A1

* Later equipped with IG (D.S. 15609.)

† Later equipped with R-109-B. Also HM-709–2T–250 volt Motors, 15 Tooth Pinion and 72 Tooth Gear, Gear Case Cat. No. 65136.

PILOT TABLE FOR LOCOMOTIVES

LOCOMOTIVE		CAT. NO.			BRAKE SHOES Cat. No.		BRAKE SHOE HEADS Cat. No.		JOURNAL SPRINGS Cat. No.		MOTORS			Teeth in Pinion	Teeth in Gear	Dia. of Axle	Gear Case Cat. No.	RHEOSTAT		Controller Type	Trolley Type	Cable Reel Type
Serial Number	Rating	Wheels and Axle	Journal Box	Journal Lining	Right Hand	Left Hand	Right Hand	Left Hand	Outside	Inside	Type	Armature Turns	Voltage					Type	Connection Diagram			
1897	LM-202-B-1	120017	65184	65202	121540	121541	120385	120386	65127	65128	GE-53	2	250	15	69	4¼	52585	Pr	D.S. 1456	R-37-B	D-4	None
1898	LM-202-B-1	120017	65184	65202	121540	121541	120385	120386	65127	65128	GE-53	2	250	15	69	4¼	52585	Pr	D.S. 1456	R-37-B	D-4	None
1899	LM-202-B-1	120017	65184	65202	121540	121541	120385	120386	65127	65128	GE-53	2	250	15	69	4¼	52585	IG	D.S. 10479	R-37-B	D-4	None
1900	LM-202-B-1	120017	65184	65202	121540	121541	120385	120386	65127	65128	GE-53	2	250	15	69	4¼	52585	Pr	D.S. 1456	R-37-B	D-4	None
1901	LS -402-A-2	120081	119170	126437	126444	126445	120390	120391	119754	119755	GE-53	4	500	15	69	4¼	52585	Pr	D.S. 3337	R-37-B	US-2	None
1902–03	L.S.-100				on	applicati	on				CB-14	10	250	14	66	3	51985	Pr	D.S. 1197	R-14	US-2	None
1904	LM-104-C-2	120111	65184	65202	65226	65227	120371	120372	65127	65128	GE-58	6	500	15	69	4	50440	Pr	D.S. 1553	R-38-A	D-4	None
1905–07	LM-104-C-2	120157	65184	65202	65226	65227	120371	120372	65127	65128	GE-58	6	500	15	69	4	50440	Pr	D.S. 1553	R-38-A	D-4	None
1908–09	LM-202-B-1	120079	65184	65202	65236	65238	120381	120382	65127	65128	GE-53	2	250	15	69	4¼	52585	Pr	D.S. 1456	R-37-B	D-4	None
1910	LM-104-C-1	120157	65184	65202	65226	65227	120371	120372	65127	65128	GE-58	3	250	15	69	4	50440	Pr	D.S. 1544	R-37-B	D-4	None
1911–13	LM-104-C-2	120239	65184	65202	65226	65227	120371	120372	65127	65128	GE-58	6	500	15	69	4	50440	Pr	D.S. 1553	R-38-A	D-4	None
1914	LM-102-B-2	120119	65184	65202	65236	65238	120381	120382	65127	65128	GE-53	4	500	15	69	4¼	52585	Pr	D.S. 1530	R-37-B	D-4	None
1915	LM-202-B-1	120079	65184	65202	65236	65238	120381	120382	65127	65128	GE-53	2	250	15	69	4¼	52585	Pr	D.S. 1456	R-37-B	D-4	None
1916–17	LM-202-B-1	120079	65184	65202	65236	65238	120381	120382	65127	65128	GE-53	2	250	15	69	4¼	52585	Pr	D.S. 1456	R-37-B	D-4	None
1918	LM-202-B-1	120079	65184	65202	65236	65238	120381	120382	65127	65128	GE-53	2	250	15	69	4¼	52585	Pr	D.S. 1456	R-37-B	D-4	None
1919	LM-202-B-1	120230	65184	65202	65236	65238	120381	120382	65127	65128	GE-53	2	250	15	69	4¼	52585	Pr	D.S. 1456	R-16-C	D-4	None
1920–22	LM-202-B-1	120263	65184	65202	65236	65238	120381	120382	65127	65128	GE-53	2	250	15	69	4¼	52585	Pr	D.S. 1456*	R-37-B	D-4	None
1923	LM-103-A-1	120192	65190	65212	120318	120319	None	None	65129	None	CB-14	10	250	14	66	3	51985	Pr	D.S. 1802	R-38-A	D-4	VR-A2
1924	LM-105-B-1	119917	65190	65212	65956	65957	None	None	65135	None	NWP2½	14	250	14	58	2¾	100090	Pr	D.S. 2957	R-38-A	H	None
1925–26	LM-106-B-1	120157	65184	65202	65226	65227	120371	120372	65131	65132	GE-58	3	250	15	69	4	50440	Pr	D.S. 1537	R-37-B	D-4	None
1927	LM-101-H-1	120007	65184	65202	65226	65227	120371	120372	65101	65124	GE-60	3	250	14	67	4	52376	Pr	D.S. 1537	R-37-B	D-4	VR-A1
1928	LM-101-H-1	120007	65184	65202	65226	65227	120371	120372	65101	65124	GE-60	3	250	14	67	4	52376	Pr	D.S. 1537	R-37-B	D-4	VR-A1
1929–30	LM-101-H-1	120007	65184	65202	65226	65227	120371	120372	65101	65124	GE-60	3	250	14	67	4	52376	Pr	D.S. 1537†	R-37-B	D-4	VR-A1
1931–32	LM-103-A-1	119971	65190	65212	65186	65200	120367	120368	65129	None	CB-14	10	250	14	66	3	51985	Pr	D.S. 1802	R-38-A	D-4	None
1933–34	LM-202-B-2	120079	65184	65202	65236	65238	120381	120382	65127	65128	GE-53	4	500	15	69	4¼	52585	Pr	D.S. 1432	R-37-B	D-4	None
1935	LM-103-A-1	119968	65190	65212	120318	120319	None	None	65129	None	CB-14	10	250	14	66	3	51985	Pr	D.S. 1802	R-38-A	D-4	None
1936	LM-101-B-1	120047	65184	65202	65226	65227	120371	120372	65101	65124	GE-60	3	250	14	67	4	52376	Pr	D.S. 1537	R-37-B	D-4	None
1937	LM-101-B-1	120055	65184	65202	65226	65227	120371	120372	65101	65124	GE-60	3	250	14	67	4	52376	Pr	D.S. 1537	R-37-B	N	VR-A1
1938	LM-103-A-2	119940	65190	65212	65186	65200	120367	120368	65129	None	CB-14	17	500	14	66	3	51985	Pr	D.S. 1945	R-38-A	D-4	None
1939	LM-101-C-2	120159	65184	65202	65226	65227	120371	120372	65101	65124	GE-800	4	500	14	67	4	17140	Pr	D.S. 1968	R-38-A	D-4	None
1940	LM-103-A-1	123488	65190	65212	120320	120321	None	None	65129	None	CB-14	10	250	14	66	3	51985	Pr	D.S. 1802	R-38-A	D-4	None
1941–42	LM-103-A-1	120023	65190	65212	65186	65200	120367	120368	65129	None	CB-14	10	250	14	66	3	51985	Pr	D.S. 1802	R-38-A	D-4	None
1943	LM-101-H-1	120007	65184	65202	65226	65227	120371	120372	65101	65124	GE-60	3	250	14	67	4	52376	Pr	D.S. 1537	R-37-B	D-4	None
1944	LM-101-B-1	120047	65184	65202	65226	65227	120371	120372	65101	65124	GE-60	3	250	14	67	4	52376	Pr	D.S. 1537	R-37-B	D-4	None
1945	LM-202-B-1	120263	65184	65202	65236	65238	120381	120382	65127	65128	GE-53	2	250	15	69	4¼	52585	Pr	D.S. 4798	R-37-B	D-4	None
1946	LS -204-D-1	120278	119170	119278	65236	65238	120381	120382	119739	‡ 119740 / § 119741	GE-58	3	250	15	69	4	50440	Pr	D.S. 2111	R-37-B	US-2	None
1947	LM-101-D-1	120255	65184	65202	65226	65227	120371	120372	65101	65124	GE-52	3	250	14	67	4	17986	Pr	D.S. 1966	R-37-B	D-4	None
1948	LM-202-B-1	120230	65184	65202	65236	65238	120381	120382	65127	65128	GE-53	2	250	15	69	4¼	52585	Pr	D.S. 1456	R-37-B	D-4	None
1949	LM-101-B-1	120047	65184	65202	65226	65227	120371	120372	65101	65124	GE-60	3	250	14	67	4	52376	Pr	D.S. 1537	R-37-B	N	VR-A1

* 1922 later equipped with IG (D.S. 10479.)
† 1930 later equipped with IG (D.S. 9842.)
‡ Opposite cab side.
§ Cab side.

PILOT TABLE FOR LOCOMOTIVES

LOCOMOTIVE		CAT. NO.			BRAKE SHOES Cat. No.		BRAKE SHOE HEADS Cat. No.		JOURNAL SPRINGS Cat. No.		MOTORS			Teeth in Pinion	Teeth in Gear	Dia. of Axle	Gear Case Cat. No.	RHEOSTAT		Controller Type	Trolley Type	Cable Reel Type
Serial Number	Rating	Wheels and Axle	Journal Box	Journal Lining	Right Hand	Left Hand	Right Hand	Left Hand	Outside	Inside	Type	Armature Turns	Voltage					Type	Connection Diagram			
1950-53	LM-104-B-2	120167	65184	65202	65236	65238	120381	120382	65127	65128	GE-53	4	500	15	69	4¼	52585	Pr	D.S. 1554	R-37-B	D-4	None
1954-55	LM-104-B-2	120167	65184	65202	65236	65238	120381	120382	65127	65128	GE-53	4	500	15	69	4¼	52585	Pr	D.S. 1554	R-16-C	D-4	None
1956-57	LM-103-A-1	119977	65190	65212	65186	65200	120367	120368	65129	None	CB-14	10	250	14	66	3	51985	Pr	D.S. 1802	R-38-A	D-4	None
1958	LM-101-B-1	120110	65184	65202	65226	65227	120371	120372	65101	65124	GE-60	3	250	14	67	4	52376	Pr	D.S. 1537	R-37-B	D-4	None
1959	LM-104-B-1	120229	65184	65202	65236	65238	120381	120382	65127	65128	GE-53	2	250	15	69	4¼	52585	Pr	D.S. 1545	R-37-B	D-4	None
1960-61	LM-103-A-1	119940	65190	65212	120318	120319	None	None	119721	None	CB-14	10	250	14	66	3	51985	Pr	D.S. 1802	R-38-A	D-4	None
1962	LS -202-A-1	120283	119171	119279	120363	120364	120394	120395	119744	119745	GE-57	2	250	16	69	4½	50249	CG	D.S. 3343	K-6	US-2	None
1963	LM-101-B-2	120047	65184	65202	65226	65227	120371	120372	65101	65124	GE-60	6	500	14	67	4	52376	Pr	D.S. 1471	R-38-A	US-6	None
1964	LM-103-A-2	119940	65190	65212	120318	120319	None	None	119721	None	CB-14	17	500	14	66	3	51985	Pr	D.S. 1945	R-38-A	D-4	None
1965	LM-103-A-1	120023	65190	65212	65186	65200	120367	120368	65129	None	CB-14	10	250	14	66	3	51985	Pr	D.S. 1802	R-38-A	D-4	None
1966	LM-101-B-1	120055	65184	65202	65226	65227	120371	120372	65101	65124	GE-60	3	250	14	67	4	52376	Pr	D.S. 1537	R-37-B	N	VR-A1
1967-68	LM-101-B-1	120047	65184	65202	65226	65227	120371	120372	65101	65124	GE-60	3	250	14	67	4	52376	Pr	D.S. 1537	R-37-B	D-4	None
1969	LM-101-H-1	120007	65184	65202	65226	65227	120371	120372	65101	65124	GE-60	3	250	14	67	4	52376	Pr	D.S. 1537	R-37-B	D-4	VR-A1
1970	LM-104-B-2	120167	65184	65202	65236	65238	120381	120382	65127	65128	GE-53	4	500	14	69	4¼	52585	Pr	D.S. 1554	R-37-B	D-4	None
1971	LM-106-B-2	120157	65184	65202	65226	65227	120371	120372	65131	65132	GE-58	6	500	15	69	4	50440	Pr	D.S. 1471	R-38-A	D-4	None
1972-73	LM-103-A-1	119977	65190	65212	65186	65200	120367	120368	65129	None	CB-14	10	250	14	66	3	51985	Pr	D.S. 1802	R-38-A	D-4	None
1974-75	LM-103-A-1	120023	65190	65212	65186	65200	120367	120368	65129	None	CB-14	10	250	14	66	3	51985	Pr	D.S. 1802	R-38-A	D-4	None
1976-77	LM-101-B-1	120055	65184	65202	65226	65227	120371	120372	65101	65124	GE-60	3	250	14	67	4	52376	Pr	D.S. 1537*	R-37-B	D-4	VR-A3
1978	LM-207-B-2	120185	119164	119276	65239	65240	126446	126447	119746	119747	GE-71	2	500	16	81	5	49590	Pr	D.S. 1530	R-60-C	D-4	None
1979	LM-103-A-1	119962	65190	65212	65186	65200	120367	120368	65129	None	CB-14	10	250	14	66	3	51985	Pr	D.S. 1802	R-38-A	D-4	VR-B1
1980	LM-103-A-2	119940	65190	65212	120318	120319	None	None	119721	None	CB-14	17	500	14	66	3	51985	Pr	D.S. 1802	R-38-A	D-4	None
1981-82	LM-103-A-1	120023	65190	65212	65186	65200	120367	120368	65129	None	CB-14	10	250	14	66	3	51985	Pr	D.S. 1802	R-38-A	D-4	None
1983	LM-103-A-1	120131	65190	65212	65186	65200	120367	120368	65129	None	CB-14	10	250	14	66	3	51985	Pr	D.S. 1802	R-38-A	D-4	None
1984	LM-204-B-2	120079	65184	65202	65236	65238	120381	120382	65101	65130	GE-53	4	500	15	69	4¼	52585	Pr	D.S. 1554	R-37-B	D-4	None
1985	LS- 209-B-2	120285	119171	119279	65239	65240	120390	120391	65127	65128	GE-57	4	500	16	69	4½	50249	CG	D.S. 4288	R-37-B	US-1	None
1986	LM-101-B-2	120154	65184	65202	65226	65227	120371	120372	65101	65124	GE-60	6	500	14	67	4	52376	Pr	D.S. 1471	R-38-A	D-4	VR-A3
1987	LM-103-A-2	120131	65190	65212	65186	65200	120367	120368	65129	None	CB-14	17	500	14	66	3	51985	Pr	D.S. 1945	R-38-A	D-4	None
1988-89	LM-101-B-1	120055	65184	65202	65226	65227	120371	120372	65101	65124	GE-60	3	250	14	67	4	52376	Pr	D.S. 1537	R-37-B	N D-2	VR-A4
1990	LM-104-C-1	120157	65184	65202	65226	65227	120371	120372	65127	65128	GE-58	3	250	15	69	4	50440	Pr	D.S. 1554	R-37-B	D-4	None
1991	LM-103-A-2	119977	65190	65212	65186	65200	120367	120368	65129	None	CB-14	17	500	14	66	3	51985	Pr	D.S. 1945	R-38†	US-2	None
1994	LM-101-B-1	120055	65184	65202	65226	65227	120371	120372	65101	65124	GE-60	3	250	14	67	4	52376	Pr	D.S. 1537	R-37-B	D-4	VR-A3
1995-96	LM-104-A-2	119996	65184	65202	65239	65240	120390	120391	65127	65128	GE-61	4	500	14	81	4¼	39381	Pr	D.S. 1552	R-37-B	D-4	None
1997	LM-103-A-2	119940	65190	65212	120318	120319	None	None	119721	None	CB-14	17	500	14	66	3	51985	Pr	D.S. 1945	R-38-A	D-4	None
1998	LS -301-A-2	119941				on application					CB-14	17	500	14	66	3	51985	CG	D.S. 4848	K-12‡	US-6	None
1999	LM-101-B-1	120047	65184	65202	65226	65227	120371	120372	65101	65124	GE-60	3	250	14	67	4	52376	Pr	D.S. 1537	R-37-B	D-4	None
2000	LM-104-C-1	120157	65184	65202	65226	65227	120371	120372	65127	65128	GE-58	3	250	15	69	4	50440	Pr	D.S. 1544	R-37-B	D-4	None
2001	LM-104-B-2	120167	65184	65202	65236	65238	120381	120382	65127	65128	GE-53	4	500	15	69	4¼	52585	Pr	D.S. 1554	R-37-B	D-4	None
2002	LM-106-B-2	120157	65184	65202	65226	65227	120371	120372	65131	65132	GE-58	6	500	15	69	4	50440	Pr	D.S. 1471	R-38-A	D-4	None
2003	LM-105-B-1	119917	65190	65212	65956	65957	None	None	65135	None	NWP2‖	14	250	14	58	2¾	100090	Pr	D.S. 2957	R-38-A	H	None
2004	LM-104-C-1	120212	65184	65202	65226	65227	120371	120372	65127	65128	GE-58	3	250	15	69	4	50440	Pr	D.S. 1544	R-37-B	D-4	None
2005	LM-104-C-1	120212	65184	65202	65226	65227	120371	120372	65127	65128	GE-58	3	250	15	69	4	50440	Pr	D.S. 1544	R-37-B	D-4	None
2006	LM-101-E-3	120254	119169	119277	120330	120331	120375	120376	119728	None	GE-800	1	110	14	67	4	17140	Pr	D.S. 2119	R-37-B	§ G	None

* 1976 later equipped with IG (D.S. 11653.)

† Later equipped with R-77-A.

‡ Later equipped with R-77-A.

§ Later equipped with R-60-C.

PILOT TABLE FOR LOCOMOTIVES

LOCOMOTIVE		CAT. NO.			BRAKE SHOES Cat. No.		BRAKE SHOE HEADS Cat. No.		JOURNAL SPRINGS Cat. No.		MOTORS			Teeth in Pinion	Teeth in Gear	Dia. of Axle	Gear Case Cat. No.	RHEOSTAT		Controller Type	Trolley Type	Cable Reel Type
Serial Number	Rating	Wheels and Axle	Journal Box	Journal Lining	Right Hand	Left Hand	Right Hand	Left Hand	Outside	Inside	Type	Armature Turns	Voltage					Type	Connection Diagram			
2007–08	LM-101-B-1	120007	65184	65202	65226	65227	120371	120372	65101	65124	GE-60	3	250	14	67	4	52376	Pr	D.S. 1537	R-37-B	D-4	VR-A4
2009–10	LM-101-B-1	120008	65184	65202	65226	65227	120371	120372	65101	65124	GE-60	3	250	14	67	4	52376	Pr	D.S. 1537	R-37-B	D-4	None
2011	LM-105-A-2	119955	119158	119274	120305	120306	None	None	119726	None	NWP2½	26	500	14	58	2¾	100090	Pr	D.S. 2956	R-14	D-4	None
2012	LM-104-B-2	120167	65184	65202	65236	65238	120381	120382	65127	65128	GE-53	4	500	15	69	4¼	52585	Pr	D.S. 1554	R-37-B ‡	D-4	None
2013	LM-101-B-1	120210	65185	65204	120332	120332	None	None	119733	None	GE-60	3	250	14	67	4	52376	Pr	D.S. 1537	R-37-B	D-4	None
2014	LM-106-B-1	120215	65184	65202	65226	65227	120371	120372	65131	65132	GE-58	3	250	15	69	4	50440	Pr	D.S. 1537	R-37-B	D-4	None
2015	LM-101-B-2	120256	65184	65202	65226	65227	120371	120372	65101	65124	GE-60	6	500	14	67	4	52376	Pr	D.S. 1471	R-38-A	D-4	None
2016–17	LM-101-K-1	120038	119169	119277	65226	65227	120371	120372	119717	None	GE-60	3	250	14	67	4	52376	Pr	D.S. 1537	R-37-B	D-4 *	VR-A4
2018–20	LM-101-B-1	120055	65184	65202	65226	65227	120371	120272	65101	65124	GE-60	3	250	14	67	4	52376	Pr	D.S. 1537	R-37-B	N	VR-A4
2021	LM-202-B-2	120079	65184	65202	65236	65238	120381	120382	65127	65128	GE-53	4	500	14	69	4¼	52585	Pr	D.S. 1432	R-37-B §	US-6	None
2022–23	LM-104-A-2	119953	65184	65202	65239	65240	120390	120391	65127	65128	GE-61	4	500	14	81	4¼	39381	Pr	D.S. 1552†	R-37-F	D-4	None
2024–25	LM-104-A-2	119958	65184	65202	65239	65240	120390	120391	65127	65128	GE-61	4	500	14	81	4¼	39381	Pr	D.S. 1552†	R-37-F	D-4	None
2026	LM-104-B-2	120167	65184	65202	65236	65238	120381	120382	65127	65128	GE-53	4	500	14	69	4¼	52585	Pr	D.S. 1554	R-37-B	D-4	None
2027–28	LM-103-A-2	119977	65190	65212	65186	65200	120367	120368	65129	None	CB-14	17	500	14	66	3	51985	Pr	D.S. 1945	R-38-A	D-4	None
2029	LM-101-B-2	120047	65184	65202	65226	65227	120371	120372	65101	65124	GE-60	6	500	14	67	4	52376	Pr	D.S. 1471	R-38-A	D-4	None
2030–33	LM-104-B-2	120167	65184	65202	65236	65238	120381	120382	65127	65128	GE-53	4	500	14	69	4¼	52585	Pr	D.S. 1554	R-37-B	D-4	None
2035	LM-103-A-1	119962	65190	65212	65186	65200	120367	120368	65129	None	CB-14	10	250	14	66	3	51985	Pr	D.S. 1802	R-38-A	D-4	VR-B1
2036	LM-104-B-2	120167	65184	65202	65236	65238	120381	120382	65127	65128	GE-53	4	500	14	69	4¼	52585	Pr	D.S. 1554	R-37-B	D-4	None
2037–38	LM-103-A-1	120023	65190	65212	65186	65200	120367	120368	65129	None	CB-14	10	250	14	66	3	51985	Pr	D.S. 1802	R-38-A	US-6	None
2039–40	LM-103-A-1	119940	65190	65212	65186	65200	120367	120368	65129	None	CB-14	10	250	14	66	3	51985	Pr	D.S. 1802	R-38-A R-77-A	D-4	None
2041	LM-101-B-1	120047	65184	65202	65226	65227	120371	120372	65101	65124	GE-60	3	250	14	67	4	52376	Pr	D.S. 1537	R-37-B	US-8	None
2042–43	LM-104-B-2	120167	65184	65202	65236	65238	120381	120382	65127	65128	GE-53	4	500	14	69	4¼	52585	Pr	D.S. 1554	R-37-B ‖	D-4	None
2044	LM-105-A-2	119955	119158	119274	120305	120306	None	None	119726	None	NWP2½	26	500	14	58	2¾	100090	Pr	D.S. 2956	R-14	D-4	None
2045	LM-102-A-2	119993	65184	65202	65239	65240	120390	120391	65127	65128	GE-61	4	500	14	81	4¼	39381	Pr	D.S. 1929	R-37-F	D-4	None
2046	LM-104-D-1	120040	65184	65202	65226	65227	120371	120372	65127	65128	GE-59	3	250	15	69	4	49558	Pr	D.S. 1544	K-11Δ	None	None
2047–48	LM-101-B-1	120047	65184	65202	65226	65227	120371	120372	65101	65124	GE-60	3	250	14	67	4	52376	Pr	D.S. 1537	R-37-B	D-4	None
2049	LM-101-B-1	120047	65184	65202	65226	65227	120371	120372	65101	65124	GE-60	3	250	14	67	4	52376	Pr	D.S. 1537	R-37-B	D-4	None
2050–51	LM-101-B-1	120047	65184	65202	65226	65227	120371	120372	65101	65124	GE-60	3	250	14	67	4	52376	Pr	D.S. 1537	R-37-B	D-4	None
2052	LM-101-B-2	120047	65184	65202	65226	65227	120371	120372	65101	65124	GE-60	6	500	14	67	4	52376	Pr	D.S. 1471	R-38	None	None
2053	LM-101-B-1	120047	65184	65202	65226	65227	120371	120372	65101	65124	GE-60	3	250	14	67	4	52376	Pr	D.S. 1537	R-37-B	D-4	None
2054	LM-103-A-2	120245	65190	65212	65186	65200	120367	120368	65129	None	CB-14	17	500	14	66	3	51985	Pr	D.S. 1945	R-38	D-4	VR-A5
2055	LM-101-C-1	120159	65184	65202	65226	65227	120371	120372	65101	65124	GE-800	2	250	14	67	4	17140	Pr	D.S. 1956	R-37-D	G	None
2056	LM-101-B-2	120155	65184	65202	65226	65227	120371	120372	65101	65124	GE-60	6	500	14	67	4	52376	Pr	D.S. 1471	R-38	D-4	VR-A4
2057–59	LM-101-L-1	120013	65184	65202	65226	65227	120371	120372	65101	65124	GE-77	3	250	14	67	4	39528	Pr	D.S. 1537	R-37-B	D-4	None
2060	LM-101-L-1	120013	65184	65202	65226	65227	120371	120372	65101	65124	GE-60	3	250	14	67	4	52376	Pr	D.S. 1537	R-37-B	D-4	None
2061–62	LM-101-L-1	120013	65184	65202	65226	65227	120371	120372	65101	65124	GE-77	3	250	14	67	4	39528	Pr	D.S. 1537	R-37-B	D-4	VR-A4
2064	LM-105-B-1	119918	65190	65212	65956	65957	None	None	65135	None	NWP2½		220	14	58	2¾	100090	Pr	D.S. 2957	R-38	D-4	None

* No. 2017 has cable reel MVR-40-A-2.
† No. 2025 later equipped with IG (D.S. 12677.)
‡ Later equipped with R-109-B.
§ Later equipped with R-86-E.
‖ Loco. No. 2042 later equipped with R-77-A.
Δ Later equipped with R-82-B.

PILOT TABLE FOR LOCOMOTIVES

LOCOMOTIVE		CAT. NO.			BRAKE SHOES Cat. No.		BRAKE SHOE HEADS Cat. No.		JOURNAL SPRINGS Cat. No.		MOTORS			Teeth in Pinion	Teeth in Gear	Dia. of Axle	Gear Case Cat. No.	RHEOSTAT		Con-troller Type	Trolley Type	Cable Reel Type
Serial Number	Rating	Wheels and Axle	Journal Box	Journal Lining	Right Hand	Left Hand	Right Hand	Left Hand	Outside	Inside	Type	Armature Turns	Voltage					Type	Connection Diagram			
2065	LM-101-L-1	120009	65184	65202	65226	65227	120371	120372	65101	65124	GE-77	3	250	14	67	4	39528	Pr	*	R-37-B	N	VR-A4
2066	LM-106-B-2	120215	65184	65202	65226	65227	120371	120372	65131	65132	GE-58	6	500	15	69	4	50440	Pr	D.S. 1471	R-38-A	D-4	None
2067–68	LM-103-A-2	119940	65190	65212	65186	65200	120367	120368	65129	None	CB-14	17	500	14	66	3	51985	Pr	D.S. 1945	R-38-A	G	None
2069	LM-106-B-1	120157	65184	65202	65226	65227	120371	120372	65131	65132	GE-58	3	250	15	69	4	50440	Pr	D.S. 4807	R-37-B	D-4	None
2070	LM-106-B-1	120157	65184	65202	65226	65227	120371	120372	65131	65132	GE-58	3	250	15	69	4	50440	Pr	D.S. 4807	R-77-A	D-4	None
2071–73	LM-103-A-2	119977	65190	65212	65186	65200	120367	120368	65129	None	CB-14	17	500	14	66	3	51985	Pr	D.S. 4807	R-77-A R-38-A	US-2	None
2074	LM-105-D-1	119932	65190	65212	120333	120333	None	None	119715	None	CB-15	16	250	14	66	2¾	51985	Pr	D.S. 5746	R-38-A	U	None
2075	LM-106-B-1	120157	65184	65202	65226	65227	120371	120372	65131	65132	GE-58	3	250	15	69	4	50440	Pr	D.S. 1537	R-37-B	D-4	None
2076	LM-105-C-1	119961	65190	65212	120318	120319	None	None	65130	None	CB-15	16	250	14	66	2¾	51985	Pr	D.S. 2957	R-38-A	D-4	None
2077	LM-103-A-2	120023	65190	65212	65186	65200	120367	120368	65129	None	CB-14	17	500	14	66	3	51985	Pr	D.S. 1945	R-38-A	D-4	None
2078–79	LM-106-C-1	120041	65184	65202	65226	65227	120371	120372	65131	65132	GE-59	3	250	15	69	4	49558	Pr	D.S. 1429	R-37-B	D-4	None
2080–83	LM-103-C-1	119940	65190	65212	65186	65200	120367	120368	119729	None	CB-14	10	250	14	66	3	51985	Pr	D.S. 1802	R-38-A	U	None
2084–85	LM-102-A-2	119993	65184	65202	65239	65240	120390	120391	65127	65128	GE-61	4	500	14	81	4¼	39381	Pr	D.S. 1929	R-37-F	D-4	None
2086	LM-102-A-2	119993	65184	65202	65239	65240	120390	120391	65127	65128	GE-61	4	500	14	81	4¼	39381	Pr	D.S. 1929	R-37-F	D-4	None
2087	LM-101-L-1	120013	65184	65202	65226	65227	120371	120372	65101	65124	GE-77	3	250	14	67	4	39528	Pr	D.S. 1537	R-86-B	D-4	VR-A4
2088–89	LM-101-L-1	120013	65184	65202	65226	65227	120371	120372	65101	65124	GE-77	3	250	14	67	4	39528	Pr	D.S. 1537	R-86-B	D-4	VR-A4
2090	LM-103-A-1	120002	65190	65212	65186	65200	120367	120368	65129	None	CB-14	10	250	14	66	3	51985	Pr	D.S. 1802	R-38-A	D-4	None
2091	LM-103-A-2	120132	65190	65212	65186	65200	120367	120368	65129	None	CB-14	17	500	14	66	3	51985	Pr	D.S. 1945	R-38-A	D-4	VR-A5
2092	LM-103-A-2	120132	65190	65212	65186	65200	120367	120368	65129	None	CB-14	17	500	14	66	3	51985	Pr	D.S. 1945	R-38-A	D-4	VR-A5
2093–95	LM-105-C-3	119929	65190	65212	120303	120304	None	None	119726	None	NWP2½	14	250	14	58	2¾	100090	Pr	D.S. 4895	R-38-A	D-4	None
2096	LS -205-A-1	119928	119156	119273	120307	120308	None	None	119711	None	NWP2½	14	220	14	58	2¾	100090	Pr	D.S. 2957	R-38-A	US-1	None
2097	LM-106-C-1	120041	65184	65202	65226	65227	120371	120372	65131	65132	GE-59	3	250	15	69	4	49558	Pr	D.S. 1537	R-37-B	D-4	None
2098	LM-101-C-2	120214	65184	65202	65226	65227	120371	120372	65101	65124	GE-800	4	500	14	67	4	17140	Pr	D.S. 1968	R-38-A	D-4	None
2099	LM-104-C-2	120157	65184	65202	65226	65227	120371	120372	65127	65128	GE-58	6	500	15	69	4	50440	Pr	D.S. 1553	R-38-A	D-4	None
2130	LM-104-C-1	120111	65184	65202	65226	65227	120371	120372	65127	65128	GE-58	3	250	15	69	4	50440	Pr	D.S. 1544	R-37-B	D-4	None
2131	LM-104-C-1	120157	65184	65202	65226	65227	120371	120372	65127	65128	GE-58	3	250	15	69	4	50440	Pr	D.S. 1544	R-37-B	D-4	None
2132	LM-103-E-1	120128	65194	65216	65206	65222	120367	120368	65129	None	CB-14	10	250	14	66	3	51985	Pr	D.S. 1802	R-38-A	D-5	VR-B4
2133	LM-103-A-1	119940	65190	65212	65186	65200	120367	120368	65129	None	CB-14	10	250	14	66	3	51985	Pr	D.S. 1802	R-38-A	D-4	None
2134	LM-101-R-2	120142	65188	65210	65231	65232	120371	120372	65126	None	GE-77	6	500	14	67	4	39528	Pr	D.S. 1471	R-38-A	D-5	VR-C
2135–36	LM-104-A-1	119996	65184	65202	65239	65240	120390	120391	65127	65128	GE-61	4	250	14	81	4¼	39381	Pr	D.S. 1543	R-37-E	D-4	None
2137–40	LM-101-N-2	120249	65187	65208	65231	65232	120371	120372	65126	None	GE-77	6	500	14	67	4	39528	Pr	D.S. 1471	R-38-A	D-4	VR-A4
2141	LM-101-L-1	120009	65184	65202	65226	65227	120371	120372	65101	65124	GE-77	3	250	14	67	4	39528	Pr	D.S. 1537	R-37-B	D-4	VR-A4
2142	LM-101-P-2	120156	65184	65202	65226	65227	120371	120372	65101	65124	GE-58	6	500	15	69	4	50440	Pr	D.S. 1471	R-38-A	D-4	VR-A4
2143	LM-104-B-2	120167	65184	65202	65236	65238	120381	120382	65127	65128	GE-53	4	500	15	69	4¼	52585	Pr	D.S. 4852	R-37-B	D-4	None
2144	LM-103-A-2	119940	65190	65212	65186	65200	120367	120368	65129	None	CB-14	17	500	14	66	3	51985	Pr	D.S. 1945	R-38-A	D-4	None
2145	LM-104-C-1	120160	65184	65202	65228	65230	120371	120372	65127	65128	GE-58	3	250	15	69	4	50440	Pr	D.S. 5618	R-28-A	D-4	None
2146	LM-104-C-1	120160	65184	65202	65228	65230	120371	120372	65127	65128	GE-58	3	250	15	69	4	50440	Pr	D.S. 1544	R-37-B	D-4	None
2147–50	LM-103-D-1	119940	65190	65212	65186	65200	120367	120368	65129	None	CB-14	10	250	14	66	3	51985	Pr	D.S. 5665	R-38-A	N	None
2151–53	LM-101-R-2	120142	65188	65210	65231	65232	120371	120372	65126	None	GE-77	6	500	14	67	4	39528	Pr	D.S. 1471	R-38-A	D-5	VR-C
2154	LM-101-N-2	120142	65188	65210	65231	65232	120371	120372	65126	None	GE-77	6	500	14	67	4	39528	Pr	D.S. 1471	R-38-A	D-4	VR-B2
2155	LM-101-N-3	120142	65188	65210	65231	65232	120371	120372	65126	None	GE-77	6	500	14	67	4	39528	Pr	D.S. 1471*	R-38-A	D-4	VR-C

* Later equipped with IG (D.S. 11653.)

PILOT TABLE FOR LOCOMOTIVES

LOCOMOTIVE		CAT. NO.			BRAKE SHOES Cat. No.		BRAKE SHOE HEADS Cat. No.		JOURNAL SPRINGS Cat. No.		MOTORS			Teeth in Pinion	Teeth in Gear	Dia. of Axle	Gear Case Cat. No.	RHEOSTAT		Con-troller Type	Trolley Type	Cable Reel Type
Serial Number	Rating	Wheels and Axle	Journal Box	Journal Lining	Right Hand	Left Hand	Right Hand	Left Hand	Outside	Inside	Type	Arma-ture Turns	Vol-tage					Type	Con-nection Diagram			
2156	LM-101-R-2	120142	65188	65210	65231	65232	120371	120372	65126	None	GE-77	6	500	14	67	4	39528	Pr	D.S. 1471	R-38-A	D-4	VR-C
2157–58	LM-101-N-3	120142	65188	65210	65231	65232	120371	120372	65126	None	GE-77	6	500	14	67	4	39528	Pr	D.S. 1471	R-38-A	D-4	VR-C
2159	LM-101-N-3	120142	65188	65210	65231	65232	120371	120372	65126	None	GE-77	6	500	14	67	4	39528	Pr	D.S. 1471	R-38-A	D-4	VR-C
2160	LM-101-N-2	120142	65188	65210	65231	65232	120371	120372	65126	None	GE-77	6	500	14	67	4	39528	Pr	D.S. 1471	R-38-A	D-4	VR-B2
2161	LM-101-R-2	120142	65188	65210	65231	65232	120371	120372	65126	None	GE-77	6	500	14	67	4	39528	Pr	D.S. 1471	R-38-A	D-4	VR-C
2162	LM-101-N-2	120142	65188	65210	65231	65232	120371	120372	65126	None	GE-77	6	500	14	67	4	39528	Pr	D.S. 1471	R-38-A	D-4	VR-B1
2163	LM-101-N-2	120142	65188	65210	65231	65232	120371	120372	65126	None	GE-77	6	500	14	67	4	39528	Pr	D.S. 1471	R-38-A	D-4	VR-B1
2164–72	LM-103-A-1	119940	65190	65212	65186	65200	120367	120368	65129	None	CB-14	10	250	14	66	3	51985	Pr	D.S. 1802	R-38-A	D-4	None
2173	LM-103-A-2	119940	65190	65212	65186	65200	120367	120368	65129	None	CB-14	17	500	14	66	3	51985	Pr	D.S. 1945	R-38-A	D-4	None
2174	LM-104-C-1	120157	65184	65202	65226	65227	120371	120372	65127	65128	GE-58	3	250	15	69	4	50440	Pr	D.S. 1544	R-37-B	D-4	MVR-49-A3
2175	LM-101-N-1	120142	65188	65210	65231	65232	120371	120372	65126	None	GE-77	3	250	14	67	4	39528	Pr	D.S. 1537	R-37-B	D-4	VR-B1
2176	LM-102-A-1	119993	65184	65202	65239	65240	120390	120391	65127	65128	GE-61	4	250	14	81	4¼	39381	Pr	D.S. 1930	R-37-E	D-4	None
2177	LM-202-B-1	120079	65184	65202	65236	65238	120381	120382	65127	65128	GE-53	2	250	15	69	4¼	52585	Pr	D.S. 1456	R-37-B	D-4	None
2178	LM-202-B-2	120231	65184	65202	65234	65235	120385	120386	65127	65128	GE-53	4	500	15	69	4¼	52585	Pr	D.S. 1432	R-37-B	D-4	None
2179	LM-103-A-2	119940	65190	65212	65186	65200	120367	120368	65129	None	CB-14	17	500	14	66	3	51985	Pr	D.S. 1945	R-38-A	D-4	None
2180–85	LM-103-D-1	119940	65190	65212	65186	65200	120367	120368	65129	None	CB-14	10	250	14	66	3	51985	Pr	D.S. 5665	R-38-A	U	None
2186	LM-101-L-1	120009	65184	65202	65226	65227	120371	120372	65101	65124	GE-77	3	250	14	67	4	39528	Pr	D.S. 1537	R-37-B	D-4	VR-A4
2187	LM-104-D-1	120043	65184	65202	65226	65227	120371	120372	65127	65128	GE-59	3	250	15	69	4	49558	Pr	D.S. 1544	R-37-B	D-4	MVR-49-A1
2188–89	LM-104-B-2	120170	65184	65202	65234	65235	120434	120435	65127	65128	GE-53	4	500	15	69	4¼	52585	Pr	D.S. 1554	R-37-B	D-4	None
2190–91	LM-104-A-2	119996	65184	65202	65239	65240	120390	120391	65127	65128	GE-61	4	500	14	81	4¼	39381	Pr	D.S. 1552	R-37-F	D-4	None
2192	LM-105-B-1	119917	65190	65212	65956	65957	None	None	65135	None	NWP2½	14	250	14	58	2¾	100090	Pr	D.S. 2957	R-86-B	D-4	None
2193	LM-106-B-1	120213	65184	65202	65226	65227	120371	120372	65131	65132	GE-58	3	250	15	69	4	50440	Pr	D.S. 1537	R-37-B	D-4	VR-A4
2194–97	LM-103-D-1	119940	65190	65212	65186	65200	120367	120368	65129	None	CB-14	10	250	14	66	3	51985	Pr	D.S. 5665	R-38-A	U	None
2198–99	LM-101-M-1	119989	65184	65202	65228	65230	120371	120372	65101	65124	GE-79	3	250	14	69	4	43391	Pr	D.S. 5793	R-37-B	D-4	None
2200–02	LM-101-M-1	119989	65184	65202	65228	65230	120371	120372	65101	65124	GE-79	3	250	14	69	4	43391	Pr	D.S. 5793	R-37-B	D-4	None
2203–05	LM-101-M-1	119987	65184	65202	65228	65230	120371	120372	65101	65124	GE-79	3	250	14	69	4	43391	Pr	D.S. 5793	R-37-B	D-4	VR-B2
2206	LM-106-C-1	120041	65184	65202	65226	65227	120371	120372	65131	65132	GE-59	3	250	15	69	4	49558	Pr	D.S. 1537	R-37-B	D-4	None
2207	LM-104-B-2	120264	65184	65202	65234	65235	120434	120435	65127	65128	GE-53	4	500	15	69	4¼	52585	Pr	D.S. 4852	R-37-B	D-4	None
2208–10	LM-101-N-2	120249	65187	65208	65231	65232	120371	120372	65126	None	GE-77	6	500	14	67	4	39528	Pr	D.S. 1471	R-38-A	D-4	VR-A4
2211	LM-101-L-1	120009	65184	65202	65226	65227	120371	120372	65101	65124	GE-77	3	250	14	67	4	39528	Pr	D.S. 1537	R-37-B	D-4	VR-A4
2212–13	LM-103-A-1	119940	65190	65212	65186	65200	120367	120368	65129	None	CB-14	10	250	14	66	3	51985	Pr	D.S. 1802	R-38-A	D-4	None
2214	LM-103-A-1	119962	65190	65212	65186	65200	120367	120368	65129	None	CB-14	10	250	14	66	3	51985	Pr	D.S. 1802	R-38-A	D-4	None
2215–17	LM-104-D-1	120043	65184	65202	65226	65227	120371	120372	65127	65128	GE-59	3	250	15	69	4	49558	Pr	D.S. 1544†	R-37-B	D-4	VR-A8
2218–19	LM-105-A-2	119955	119158	119274	120305	120306	None	None	119726	None	NWP2½	26	500	14	58	2¾	100090	Pr	D.S. 1936	R-14	D-4	None
2220	LM-105-B-2	119917	65190	65212	65956	65957	None	None	65135	None	NWP2½	26	500	14	58	2¾	100090	Pr	D.S. 2956	R-38-A	D-4	None
2221	LM-103-A-1	119940	65190	65212	65186	65200	120367	120368	65129	None	CB-14	10	250	14	66	3	51985	Pr	D.S. 1802	R-38-A	D-4	None
2222	LM-106-B-2	120257	65184	65202	120326	120327	None	None	65131	65132	GE-58	6	500	15	69	4	50440	Pr	D.S. 1471	R-38-A	US-2	None
2223–24	LM-104-D-1	120043	65184	65202	65226	65227	120371	120372	65127	65128	GE-59	3	250	15	69	4	49558	Pr	D.S. 1544	R-37-B	D-4	None

* No. 2155 later equipped with IG (D.S. 15903.)
† Loco. No. 2215 later equipped with IG (D.S. 12974.)

PILOT TABLE FOR LOCOMOTIVES

LOCOMOTIVE		CAT. NO.			BRAKE SHOES Cat. No.		BRAKE SHOE HEADS Cat. No.		JOURNAL SPRINGS Cat. No.		MOTORS			Teeth in Pinion	Teeth in Gear	Dia. of Axle	Gear Case Cat. No.	RHEOSTAT		Controller Type	Trolley Type	Cable Reel Type
Serial Number	Rating	Wheels and Axle	Journal Box	Journal Lining	Right Hand	Left Hand	Right Hand	Left Hand	Outside	Inside	Type	Armature Turns	Voltage					Type	Connection Diagram			
2225–28	LM-106-B-1	120259	65184	65202	65228	65230	120371	120372	65131	65132	GE-58	3	250	15	69	4	50440	Pr	D.S. 1537	R-37-B	D-4 N	None
2229–30	LM-105-B-1	119917	65190	65212	65956	65957	None	None	65135	None	NWP2½	14	250	14	58	2¾	100090	Pr	D.S. 2957	R-38-A	H	None
2231	LM-104-C-1	120157	65184	65202	65226	65227	120371	120372	65127	65128	GE-58	3	250	15	69	4	50440	Pr	D.S. 1544	R-37-B	D-4	MVR–49-A3
2232	LM-103-E-1	120128	65194	65216	65206	65222	120367	120368	65129	None	CB-14	10	250	14	66	3	51985	Pr	D.S. 1802	R-38-A	D-5	VR-B1
2233	LM-104-C-1	120160	65184	65202	65228	65230	120371	120372	65127	65128	GE-58	3	250	15	69	4	50440	Pr	D.S. 1544	R-37-A	D-4	None
2234	LS -211-A-1	120282	119171	119279	126452	126453	120394	120395	119746	119747	GE-57	2	250	16	69	4½	50249	CG	D.S. 4236	K-6	US-6	None
2235–39	LM-101-R-2	120142	65188	65210	65231	65232	120371	120372	65126	None	GE-77	6	500	14	67	4	39528	Pr	D.S. 1471	R-38-A	D-5	VR-C2
2240	LM-101-R-2	120142	65188	65210	65231	65232	120371	120372	65126	None	GE-77	6	500	14	67	4	39528	Pr	D.S. 1471	R-38-A	D-5	VR-C2
2242	LM-103-A-1	120023	65190	65212	65186	65200	120367	120368	65129	None	CB-14	10	250	14	66	3	51985	Pr	D.S. 1802	R-38-A	D-4	None
2243	LM-104-B-1	120079	65184	65202	65236	65238	120381	120382	65127	65128	GE-53	2	250	15	69	4¼	52585	Pr	D.S. 1545	R-37-B	D-4	None
2244	LM-104-B-2	120170	65184	65202	65234	65235	120434	120435	65127	65128	GE-53	4	500	15	69	4¼	52585	Pr	D.S. 1554	R-37-B	D-4	None
2245	LS -209-G-1	120288	119171	119279	120363	120364	120394	120395	119752	119753	GE-57	2	250	16	69	4½	50249	CG	D.S. 4236	R-60-C	US-6	None
2246	LM-101-M-1	119964	65184	65202	65228	65230	120371	120372	65101	65124	GE-79	3	250	14	69	4	43391	Pr	D.S. 5793	R-37-B	D-4	VR-B5
2247	LM-104-B-2	120170	65184	65202	65234	65235	120434	120435	65127	65128	GE-53	4	500	15	69	4¼	52585	Pr	D.S. 1554	R-37-B	D-4	None
2248	LM-101-R-2	120142	65188	65210	65231	65232	120371	120372	65126	None	GE-77	6	500	14	67	4	39528	Pr	D.S. 1471	R-38-A	D-5	VR-C2
2249	LM-101-R-2	120142	65188	65210	65231	65232	120371	120372	65126	None	GE-77	6	500	14	67	4	39528	Pr	D.S. 1471	R-38-A	D-5	VR-C2
2250	LM-101-R-2	120142	65188	65210	65231	65232	120371	120372	65126	None	GE-77	6	500	14	67	4	39528	Pr	D.S. 1471	R-38-A	D-5	VR-C2
2251	LM-101-R-2	120142	65188	65210	65231	65232	120371	120372	65126	None	GE-77	6	500	14	67	4	39528	Pr	D.S. 1471	R-38-A	D-5	VR-C2
2252	LM-101-R-2	120142	65188	65210	65231	65232	120371	120372	65126	None	GE-77	6	500	14	67	4	39528	Pr	D.S. 1471*	R-38-A	D-5	VR-C2
2253	LS -209-A-2	120286	119171	119279	120363	120364	120394	120395	119727	None	GE-51	4	500	16	69	4½	38622	CG	D.S. 4285	R-60-C	US-2	None
2254–55	LS -210-C-1	120291	119171	119913	126454	126455	120394	120395	119748	119749	GE-51	1	250	17	56	5¼	38624	CG	D.S. 5854	K-13	US-6	None
2256	LM-103-A-2	119940	65190	65212	65186	65200	120367	120368	65129	None	CB-14	17	500	14	66	3	51985	Pr	D.S. 1945	R-38-A	D-4	None
2257	LM-103-A-1	120023	65190	65212	65186	65200	120367	120368	65129	None	CB-14	10	250	14	66	3	51985	Pr	D.S. 1802	R-38-A	D-4	None
2258–61	LM-103-A-1	‡120023	65190	65212	65186	65200	120367	120368	65129	None	CB-14	10	250	14	66	3	51985	Pr	D.S. 1802	R-38-A	D-4	None
2262	LM-101-B-1	120047	65184	65202	65226	65227	120371	120372	65101	65124	GE-60	3	250	14	67	4	52376	Pr	D.S. 1537	R-37-B	D-4	None
2263	LS -005-A-3	119919	119156	119273	65186	65200	120367	120368	119711	None	NWP2½	7	125	14	58	2¾	100090	Pr	D.S. 3335	R-53-A	US-2	None
2264	LS -401-B-1	120074	119170	119278	120330	120331	120375	120376	65101	65124	GE-60	3	250	14	67	4	52376	Pr	D.S. 1966	R-37-B	US-6	None
2265	LM-101-L-1	120009	65184	65202	65226	65227	120371	120372	65101	65124	GE-77	3	250	14	67	4	39528	Pr	D.S. 1537	R-37-B	D-4	VR-C2
2266	LM-103-E-1	120190	65194	65216	65206	65222	120367	120368	65129	None	CB-14	10	250	14	66	3	51985	Pr	D.S. 1802	R-38-A	D-5	None
2267	LM-101-B-1	120055	65184	65202	65226	65227	120371	120372	65101	65124	GE-60	3	250	14	67	4	52376	Pr	D.S. 1537	R-37-B	D-4	VR-A4
2268	LM-101-B-1	120047	65184	65202	65226	65227	120371	120372	65101	65124	GE-60	3	250	14	67	4	52376	Pr§	§	R-37-B	D-4	None
2269	LM-101-M-1	119987	65184	65202	65228	65230	120371	120372	65101	65124	GE-79	3	250	14	69	4	43391	Pr	D.S. 5793	R-37-B	D-4	VR-B5
2270–71	LM-101-F-2	120047	65184	65202	65226	65227	120371	120372	65101	65124	GE-60	6	500	14	67	4	52376	Pr	D.S. 1471	R-38-A	D-4	VR-A4
2272–85	LM-101-L-1	120013	65184	65202	65226	65227	120371	120372	65101	65124	GE-77	3	250	14	67	4	39528	Pr	D.S. 1537	R-37-B	D-4	VR-A4
2286	LM-104-C-1	120157	65184	65202	65226	65227	120371	120372	65127	65128	GE-58	3	250	15	69	4	50440	Pr	D.S. 1544	R-37-B	D-4	None
2287	LM-105-C-2	119936	65190	65212	65958	65959	None	None	65130	None	CB-15	30	500	14	66	2¾	51985	Pr	D.S. 2956	R-38-A	D-4	None
2288–89	LM-105-C-1	120019	65190	65212	65958	65959	None	None	65130	None	CB-15	16	250	14	66	2¾	51985	Pr	D.S. 2957	R-38-A	D-4	None
2290–91	LM-202-B-1	120281	65184	65202	65234	65235	120385	120386	65127	65128	GE-53	2	250	15	69	4¼	52585	Pr	†	R-60-C	US-2	None
2292–93	LM-103-A-1	119977	65190	65212	65186	65200	120367	120368	65129	None	CB-14	10	250	14	66	3	51985	Pr	D.S. 1802	R-38-A	D-4	None

* Later equipped with IG (D.S. 15903.)
† Later equipped with IG (D.S. 15869.)
‡ No. 2258 later equipped with special wheels and axles.
§ Later equipped with IG D.S. 9842.

PILOT TABLE FOR LOCOMOTIVES

LOCOMOTIVE		CAT. NO.			BRAKE SHOES Cat. No.		BRAKE SHOE HEADS Cat. No.		JOURNAL SPRINGS Cat. No.		MOTORS			Teeth in Pinion	Teeth in Gear	Dia. of Axle	Gear Case Cat. No.	RHEOSTAT		Controller Type	Trolley Type	Cable Reel Type
Serial Number	Rating	Wheels and Axle	Journal Box	Journal Lining	Right Hand	Left Hand	Right Hand	Left Hand	Outside	Inside	Type	Armature Turns	Voltage					Type	Connection Diagram			
2294	LM-103-F-1	120189	65194	65216	65206	65222	120367	120368	65129	None	CB-14	10	250	14	66	3	51985	Pr	D.S. 5665	R-38-A	D-5	VR-C2
2295–96	LM-103-A-1	120023	65190	65212	65186	65200	120367	120368	65129	None	CB-14	* 10	250	* 14	* 66	3	* 51985	PrΔ	D.S. 1802Δ	R-38-A	D-4	None
2297	LM-106-B-1	120259	65184	65202	65228	65230	120371	120372	65131	65132	GE-58	3	250	15	69	4	50440	Prπ	π	R-37π	D-4	None
2298	LM-106-B-1	120157	65184	65202	65226	65227	120371	120372	65131	65132	GE-58	3	250	15	69	4	50440	Pr	D.S. 1537	R-37-B	D-4	None
2299	LS -202-A-1	120283	119171	119279	126456	126457	120394	120395	119744	119745	GE-57	2	250	16	69	4½	50249	CG	D.S. 3343	K-6	US-2	None
2300	LM-101-C-2	120214	65184	65202	65226	65227	120371	120372	65101	65124	GE-800	4	500	14	67	4	17140	Pr	D.S. 1968	R-38-A	D-4	None
2301	LM-106-C-1	120041	65184	65202	65226	65227	120371	120372	65131	65132	GE-59	3	250	15	69	4	49558	Pr	D.S. 2957	R-37-B	D-4	None
2302	LM-101-L-1	120009	65184	65202	65226	65227	120371	120372	65101	65124	GE-77	3	250	14	67	4	39528	Pr	D.S. 1537	R-37-B	D-4	§ Spec.
2303–04	LM-202-B-1	120281	65184	65202	65234	65235	120385	120386	65127	65128	GE-53	2	220	15	69	4¼	52585	Pr	D.S. 4798	R-60-C	US-2	None
2305	LM-104-D-1	120044	65184	65202	65228	65230	120371	120372	65127	65128	GE-59	3	250	15	69	4	49558	Pr	D.S. 1544	R-37-C	D-4	§ Spec.
2306	LM-104-D-1	120044	65184	65202	65228	65230	120371	120372	65127	65128	GE-59	3	250	15	69	4	49558	Pr	D.S. 1544	R-37-C	US-7	§ Spec.
2307	LM-104-D-1	120044	65184	65202	65228	65230	120371	120372	65127	65128	GE-59	3	250	15	69	4	49558	IG	D.S. 11392	R-37-C	US-7	§ Spec.
2308	LM-104-D-1	120044	65184	65202	65228	65230	120371	120372	65127	65128	GE-59	3	250	15	69	4	49558	Pr	D.S. 1544	R-37-C	US-7	§ Spec.
2309	LM-104-D-1	120044	65184	65202	65228	65230	120371	120372	65127	65128	GE-59	3	250	15	69	4	49558	Pr	D.S. 1544	R-37-C	US-7	§ Spec.
2310	LM-104-D-1	120044	65184	65202	65228	65230	120371	120372	65127	65128	GE-59	3	250	15	69	4	49558	Pr	D.S. 1544	R-37-C	D-4	§ Spec.
2311–12	LM-101-R-2	120142	65188	65210	65231	65232	120371	120372	65126	None	GE-77	6	500	14	67	4	39528	Pr	D.S. 1471	R-86-B	D-5	VR-C2
2313	LM-106-B-2	120161	65184	65202	65228	65230	120371	120372	65131	65132	GE-58	3	250	15	69	4	50440	Pr	D.S. 1537	R-86-A	D-4	None
2314	LM-202-B-2	120169	65184	65202	65234	65235	120385	120386	65127	65128	GE-53	4	500	15	69	4¼	52585	IG	λ	R-82-B	D-4	None
2315	LM-101-L-1	120013	65184	65202	65226	65227	120371	120372	65101	65124	GE-77	3	250	14	67	4	39528	Pr	D.S. 1537	R-37-B	D-4	VR-A4
2316	LM-103-A-1	120023	65190	65212	65186	65200	120367	120368	65129	None	CB-14	* 10	250	* 14	* 66	3	51985	Pr	†	R-38-A	D-4	None
2317	LM-103-A-1	120023	65190	65212	65186	65200	120367	120368	65129	None	CB-14	* 10	250	* 14	* 66	3	51985	Pr	†	R-38-A	D-4	None*
2318	LM-103-A-2	119940	65190	65212	65186	65200	120367	120368	65129	None	CB-14	17	500	14	66	3	51985	Pr	D.S. 1945	R-38-A	D-4	None
2319	LM-101-R-2	120142	65188	65210	65231	65232	120371	120372	65126	None	GE-77	6	500	14	67	4	39528	Pr	D.S. 1471	R-86-B	D-5	VR-C2
2320	LM-101-R-2	120142	65188	65210	65231	65232	120371	120372	65126	None	GE-77	6	500	14	67	4	39528	Pr	D.S. 1471	R-86-B	D-5	VR-C2
2321	LM-101-R-2	120142	65188	65210	65231	65232	120371	120372	65126	None	GE-77	6	500	14	67	4	39528	Pr	D.S. 1471	R-86-B	D-5	VR-C2
2322–23	LM-101-M-1	119989	65184	65202	65228	65230	120371	120372	65101	65124	GE-79	3	250	14	69	4	43391	Pr	D.S. 5793	R-86-B	D	None
2324–25	LM-101-R-2	120142	65188	65210	65231	65232	120371	120372	65126	None	GE-77	6	500	14	67	4	39528	Pr	D.S. 1471	R-86-B	D-5	VR-C2
2326	LM-103-G-2	120191	65194	65216	65206	65222	120367	120368	65129	None	CB-14	17	500	14	66	3	51985	Pr	D.S. 1945	R-86-B	D-5	VR-C2
2327–36	LM-101-L-1	120009	65184	65202	65226	65227	120371	120372	65101	65124	GE-77	3	250	14	67	4	39528	Pr	D.S. 1537	R-86-B	D-4	VR-A4
2337	LM-202-B-1	120079	65184	65202	65236	65238	120381	120382	65127	65128	GE-53	2	250	15	69	4¼	52585	Pr	D.S. 4798	R-60-C	D-4	None
2338–41	LM-101-M-1	119964	65184	65202	65228	65230	120371	120372	65101	65124	GE-79	3	250	14	69	4	43391	Pr	D.S. 5793	R-86-B	D-4	VR-B5
2342	LM-101-B-2	120055	65184	65202	65226	65227	120371	120372	65101	65124	GE-60	6	500	14	67	4	52376	Pr	D.S. 1471	R-37-B	N	VR-A4
2344–51	LM-104-C-1	120160	65184	65202	65228	65230	120371	120372	65127	65128	GE-58	3	250	15	69	4	50440	Pr	D.S. 5618‖	R-82-B	D-4	None
2352	LM-509-A-2	119953 ‡119954	65184	65202	126461 126463	126462 126464	126446 126465	126447 126466	65127	65128	GE-61	4	500	14	81	4¼	39381	Pr	D.S. 1929	R-91	D-4	None
2353–55	LM-101-R-2	120142	65188	65210	65231	65232	120371	120372	65126	None	GE-77	6	500	14	67	4	39528	Pr	D.S. 1471	R-86-B	D-5	VR-C2
2356	LM-101-R-2	120142	65188	65210	65231	65232	120371	120372	65126	None	GE-77	6	500	14	67	4	39528	Pr	D.S. 1471	R-86-B	D-5	VR-C2
2357	LM-101-R-2	120142	65188	65210	65231	65232	120381	120382	65126	None	GE-77	6	500	14	67	4	39528	Pr	D.S. 1471	R-86-B	D-5	VR-C2
2358	LM-101-B-1	120055	65184	65202	65226	65227	120371	120372	65101	65124	GE-60	6	500	14	67	4	52376	Pr	D.S. 1471	R-37-B	N	VR-A4

* Later equipped with HM 703, 2 turn, 250 volt motors, 16 tooth pinion, 73 tooth gear and gear case 65270.
† Later equipped with IG (D.S. 19381.)
‡ Center wheels without flange.
§ Special reel—same as VR-A4 in all but contact parts which are the same as in VR-B11.
‖ Loco. No. 2349 later equipped with IG (D.S. 11654.)
Δ Later equipped with IG (DS 15855.)
π Later equipped with IG rheostats DS 10708 and R-86-E controller.
λ Later connected as per DS 9697.

PILOT TABLE FOR LOCOMOTIVES

LOCOMOTIVE		CAT. NO.			BRAKE SHOES Cat. No.		BRAKE SHOE HEADS Cat. No.		JOURNAL SPRINGS Cat. No.		MOTORS			Teeth in Pinion	Teeth in Gear	Dia. of Axle	Gear Case Cat. No.	RHEOSTAT		Controller Type	Trolley Type	Cable Reel Type
Serial Number	Rating	Wheels and Axle	Journal Box	Journal Lining	Right Hand	Left Hand	Right Hand	Left Hand	Outside	Inside	Type	Armature Turns	Voltage					Type	Connection Diagram			
2359	LM-104-B-2	120087	65184	65202	120342	120343	120381	120382	65127	65128	GE-53	4	500	15	69	4¼	52585	Pr	D.S. 1554	R-86-B	US-6	None
2360–62	LM-101-M-1	119987	65184	65202	65228	65230	120371	120372	65127	65128	GE-79	3	250	14	69	4	43391	Pr	D.S. 5793	R-86-B	D-4	VR-B5
2363	LM-101-M-1	119965	65184	65202	65228	65230	120371	120372	65101	65124	GE-79	3	250	14	69	4	43391	Pr	D.S. 5793	R-86-B	D-4	VR-B5
2364	LS -404-A-2	120081	119170	126437	126444	126445	120390	120391	119754	119755	GE-53	4	500	15	69	4¼	52585	Pr	D.S. 1432	R-86-B	US-2	None
2365–66	LM-101-B-2	120059	65184	65202	65226	65227	120371	120372	65101	65124	GE-60	6	500	14	67	4	52376	Pr	D.S. 1471	R-86-B	US-2	None
2367–68	LM-101-M-1	119946	65184	65202	65226	65227	120371	120372	65101	65124	GE-79	3	250	14	69	4	43391	Pr	D.S. 5793	R-86-B	D-4	None
2369–71	LM-106-C-1	120041	65184	65202	65226	65227	120371	120372	65131	65132	GE-59	3	250	15	69	4	49558	Pr	D.S. 1537	K-11	D-4	None
2372–74	LM-103-D-1	120024	119156	119273	65186	65200	120367	120368	119709	None	CB-14	10	250	14	66	3	51985	Pr	D.S. 2956	R-86-A	S	None
2375	LM-101-L-1	120009	65184	65202	65226	65227	120371	120372	65101	65124	GE-77	3	250	14	67	4	39528	Pr	D.S. 1537	R-86-B	D-4	VR-A4
2376	LM-105-C-1	119930	65190	65212	65958	65959	None	None	65130	None	CB-15	16	250	14	66	2¾	51985	Pr	D.S. 2957	R-86-B	D-4	None
2377	LM-101-M-2	119946	65184	65202	65226	65227	120371	120372	65101	65124	GE-79	6	500	14	69	4	43391	Pr	D.S. 6799	R-86-B	D-4	None
2378	LM-101-M-1	119949	65184	65202	65226	65227	120371	120372	65101	65124	GE-79	3	250	14	69	4	43391	IG	D.S. 8147	R-86-B	S	None
2379	LM-101-B-1	120055	65184	65202	65226	65227	120371	120372	65101	65124	GE-60	3	250	14	67	4	52376	Pr	D.S. 1537	R-86-B	N	VR-A4
2380	LM-104-B-1	120079	65184	65202	65236	65238	120381	120382	65127	65128	GE-53	2	250	15	69	4¼	52585	Pr	D.S. 1545	R-86-A	D-4	None
2381	LM-103-A-1	119940	65190	65212	65186	65200	120367	120368	65129	None	CB-14	10	250	14	66	3	51985	Pr	D.S. 1802	R-86-B	US-6	None
2382–83	LM-104-A-2	119996	65184	65202	65239	65240	120390	120391	65127	65128	GE-61	4	500	14	81	4¼	39381	Pr	D.S. 1552	R-86-D	D-4	None
2384	LM-101-B-1	120055	65184	65202	65226	65227	120371	120372	65101	65124	GE-60	3	250	14	67	4	52376	Pr	D.S. 1537	R-86-B	D-4	VR-A4
2385–87	LM-101-M-1	119964	65184	65202	65228	65230	120371	120372	65101	65124	GE-79	3	250	14	69	4	43391	Pr	D.S. 5793	R-86-B	D-4	VR-B5
2388	LM-101-L-1	120009	65184	65202	65226	65227	120371	120372	65101	65124	GE-77	3	250	14	67	4	39528	Pr	D.S. 1537	R-86-B	D-4	VR-C2
2389	LM-101-L-1	120009	65184	65202	65226	65227	120371	120372	65101	65124	GE-77	3	250	14	67	4	39528	Pr	D.S. 1537	R-86-B	D-4	VR-A4
2390	LM-103-E-1	120129	65194	65216	65206	65222	120367	120368	65129	None	CB-14	10	250	14	66	3	51985	Pr	D.S. 1802	R-86-B	D-5	None
2391–92	LM-202-B-1	120079	65184	65202	65236	65238	120381	120382	65127	65128	GE-53	2	250	15	69	4¼	52585	Pr	D.S. 4798	R-60-C	D-4	None
2393–95	LM-210-C-1	120291	119171	119913	126454	126455	120394	120395	119748	119749	GE-51	1	250	16	69	5	38624	CG	D.S. 5854	K-13	US-8	None
2396–98	LM-101-M-1	119964	65184	65202	65228	65230	120371	120372	65101	65124	GE-79	3	250	14	69	4	43391	IG	D.S. 10655	R-86-B	D-4	None
2399	LM-101-B-1	120158	65184	65202	65226	65227	120371	120372	65101	65124	GE-60	3	250	14	67	4	52376	Pr	D.S. 1537	R-86-B	D-4	None
2412	LM-101-N-1	120142	65188	65210	65231	65232	120371	120372	65126	None	GE-77	3	250	14	67	4	39528	Pr	D.S. 1537	R-86-B	D-4	VR-B1
2413	LM-106-C-1	120041	65184	65202	65226	65227	120371	120372	65131	65132	GE-59	3	250	15	69	4	49558	Pr	D.S. 1537	R-86-A	D-4	None
2414–15	LM-202-B-1	120169	65184	65202	65234	65235	120385	120386	65127	65128	GE-53	2	250	15	69	4¼	52585	Pr	D.S. 1432	R-60-C	D-4	None
2416–19	LM-106-B-2	120259	65184	65202	65228	65230	120371	120372	65131	65132	GE-58	6	500	15	69	4	50440	Pr	D.S. 1471	R-86-B	D-4	None
2420	LM-106-B-1	120259	65184	65202	65228	65230	120371	120372	65131	65132	GE-58	3	250	15	69	4	50440	IG	D.S. 10708	R-86-A	D-4	None
2421–22	LM-103-A-1	120023	65190	65212	65186	65200	120367	120368	65129	None	CB-14	*2	250	*14	*66	3	*51985	*Pr	*D.S. 1802	R-38-A	D-4	None
2423–24	LM-103-A-2	119976	65190	65212	65186	65200	120367	120368	65129	None	CB-14	17	500	14	66	3	51985	Pr	D.S. 1945	R-38-A	D-4	VR-B7
2425	LM-101-L-1	120009	65184	65202	65226	65227	120371	120372	65101	65124	GE-77	3	250	14	67	4	39528	Pr	D.S. 1537	R-86-B	D-4	VR-A4
2426	LM-101-B-1	120059	65184	65202	65226	65227	120371	120372	65101	65124	GE-60	3	250	14	67	4	52376	Pr	D.S. 1537	R-86-B	US-1	None
2427–28	LM-104-C-2	120160	65184	65202	65228	65230	120371	120372	65127	65128	GE-58	6	500	14	69	4	50440	Pr	D.S. 5618	R-77-A	D-4	None
2429–30	LM-104-C-2	120112	65184	65202	65228	65230	120371	120372	65127	65128	GE-58	6	500	14	69	4	50440	Pr	D.S. 5618	R-77-A	D-4	None
2431–32	LM-104-C-2	120112	65184	65202	65228	65230	120371	120372	65127	65128	GE-58	6	500	14	69	4	50440	Pr	D.S. 1553	2431 R-86-B 2432 R-77-A	D-4	None
2433	LS -210-C-1	120291	119171	119913	126454	126455	120394	120395	119748	119749	GE-51	1	250	16	69	5	38622	CG	D.S. 8205	K-13-A	None	None
2434–35	LM-103-A-1	119940	65190	65212	65186	65200	120367	120368	65129	None	CB-14	10	250	14	66	3	51985	Pr	D.S. 1802	R-86-B	D-4	None

* Later equipped with HM 703, 2 turn, 250 volt motors, 16 tooth pinion, 73 tooth gear, gear case Cat. No. 65270 and IG resist. D.S. 15855.

PILOT TABLE FOR LOCOMOTIVES

LOCOMOTIVE		CAT. NO.			BRAKE SHOES		BRAKE SHOE HEADS		JOURNAL SPRINGS		MOTORS			Teeth in Pinion	Teeth in Gear	Dia. of Axle	Gear Case Cat. No.	RHEOSTAT		Controller Type	Trolley Type	Cable Reel Type
					Cat. No.		Cat. No.		Cat. No.													
Serial Number	Rating	Wheels and Axle	Journal Box	Journal Lining	Right Hand	Left Hand	Right Hand	Left Hand	Outside	Inside	Type	Armature Turns	Voltage					Type	Connection Diagram			
2436–37	LM-104-C-2	120160	65184	65202	65228	65230	120371	120372	65127	65128	GE-58	6	500	15	69	4	50440	Pr	D.S. 1563	R-77-A	D-4	None
2438	LM-103-A-2	119977	65190	65212	65186	65200	120367	120368	65129	None	CB-14	17	500	14	66	3	51985	Pr	D.S. 1945	R-86-B	US-2	None
2439	LM-103-A-1	119940	65190	65212	65186	65200	120367	120368	65129	None	CB-14	10	250	14	66	3	51985	Pr	D.S. 1802	R-86-B	D-4	None
2440	LM-104-A-2	119995	65184	65202	65239	65240	120390	120391	65127	65128	GE-61	4	500	14	81	4¼	39381	Pr	D.S. 1552	R-86-D	D-4	VR-B7
2441–42	LM-106-C-1	120010	65184	65202	65186	65200	120367	120368	65131	65132	GE-59	3	250	15	69	4	49558	Pr	D.S. 1537	R-86-A	D-4	None
2444	LM-103-A-2	119940	65190	65212	120318	120319	None	None	119721	None	CB-14	17	500	14	66	3	51985	Pr	D.S. 1945	R-86-B	D-4	None
2445	LM-104-C-1	120160	65184	65202	65228	65230	120371	120372	65127	65128	GE-58	2	250	15	69	4	50440	Pr	D.S. 5618	R-60-C	D-4	None
2446–47	LM-103-A-1	119977	65190	65212	65186	65200	120367	120368	65129	None	CB-14	10	250	14	66	3	51985	Pr	*	R-86-B	D-4	None
2448–49	LM-202-B-1	120242	65184	65202	65236	65238	120381	120382	65127	65128	GE-53	2	250	15	69	4¼	52585	Pr	D.S. 4798	R-60-C	D-4	None
2450	LM-105-B-3	119917	65190	65212	65956	65957	None	None	65135	None	NWP2½	7	125	14	58	2¾	100090	Pr	D.S. 4895	R-86-A	D-4	None
2451	LM-202-B-1	120230	65184	65202	65236	65238	120381	120382	65127	65128	GE-53	2	250	14	66	3	52585	Pr	D.S. 1456	R-37-A	D-4	None
2452	LM-104-C-1	120160	65184	65202	65228	65230	120371	120372	65127	65128	GE-58	2	250	15	69	4	50440	Pr	D.S. 5618	R-82-A	D-4	None
2453	LM-104-C-1	120160	65184	65202	65228	65230	120371	120372	65127	65128	GE-58	2	250	15	69	4	50440	Pr	D.S. 1544	R-86-A	D-4	None
2454	LM-101-R-1	120202	65187	65208	65231	65232	120371	120372	65126	None	GE-77	3	250	14	67	4	39528	Pr	D.S. 1537	R-86-B	D-4	None
2460–61	LM-104-A-1	119996	65184	65202	65239	65240	120390	120391	65127	65128	GE-61	4	250	14	81	4¼	39381	Pr	D.S. 1543	R-86-C	D-4	None
2462	LM-106-B-2	120215	65184	65202	65226	65227	120371	120372	65131	65132	GE-58	6	500	15	69	4	50440	Pr	D.S. 1471	R-86-B	D-4	None
2463	LM-103-A-1	126377	65190	65212	65186	65200	120367	120368	65129	None	CB-14	10	250	14	66	3	51985	Pr	D.S. 1802	R-86-B	D-4	VR-B7
2465	LM-106-B-2	120259	65184	65202	65228	65230	120371	120372	65131	65132	GE-58	6	500	15	69	4	50440	Pr	D.S. 1471	R-86-B	D-4	None
2466	LM-202-B-2	120231	65184	65202	65234	65235	120385	120386	65127	65128	GE-53	4	500	15	69	4¼	52585	Pr	D.S. 1432	R-86-B	D-4	None
2467	LM-101-B-2	120059	65184	65202	65226	65227	120371	120372	65101	65124	GE-60	6	500	14	67	4	52376	Pr	D.S. 1471	R-14-A	None	None
2468	LM-101-M-1	119949	65184	65202	65226	65227	120371	120372	65101	65124	GE-79	3	250	14	69	4	43391	IG	D.S. 8147	R-86-B	S	VR-B8
2469	LM-106-C-1	120095	65184	65202	65226	65227	120371	120372	65131	65132	GE-59	3	250	15	69	4	49558	Pr	D.S. 1537	R-86-A	D-4	None
2470	LM-105-A-2	119955	119158	119274	120305	120306	None	None	119726	None	NWP2½	26	500	14	58	2¾	100090	Pr	D.S. 2956	R-14	D-4	None
2471	LM-102-B-2	120120	65184	65202	65234	65235	120434	120435	65127	65128	GE-53	4	500	15	69	4¼	52585	Pr	D.S. 1530	R-37-B	D-4	None
2472	LM-104-B-1	120018	65184	65202	65236	65238	120381	120382	65127	65128	GE-53	2	250	15	69	4¼	52585	IG	D.S. 8093	R-86-A	D-4	None
2473–74	LM-101-L-1	120011	65184	65202	65228	65230	120371	120372	65101	65124	GE-77	3	250	14	67	4	39528	IG	D.S. 8096	R-86-B	D-4	VR-C4
2475–76	LM-101-L-1	120011	65184	65202	65228	65230	120371	120372	65101	65124	GE-77	3	250	14	67	4	39528	IG	D.S. 8096	R-86-B	D-4	VR-C4
2477–79	LM-101-L-1	120011	65184	65202	65228	65230	120371	120372	65101	65124	GE-77	3	250	14	67	4	39528	IG	D.S. 8096	R-86-B	D-4	VR-C4
2480–81	LM-101-L-1	120011	65184	65202	65228	65230	120371	120372	65101	65124	GE-77	3	250	14	67	4	39528	IG	D.S. 8096	R-86-B	D-4	VR-C4
2482–83	LM-101-L-1	120011	65184	65202	65228	65230	120371	120372	65101	65124	GE-77	3	250	14	67	4	39528	IG	D.S. 8096	R-86-B	D-4	VR-C4
2484	LM-101-L-1	120011	65184	65202	65228	65230	120371	120372	65101	65124	GE-77	3	250	14	67	4	39528	IG	D.S. 8096	R-86-B	D-4	VR-C4
2485–88	LM-101-L-1	120011	65184	65202	65228	65230	120371	120372	65101	65124	GE-77	3	250	14	67	4	39528	IG	D.S. 8096†	R-86-B	D-4	None
2489–90	LM-101-L-1	120011	65184	65202	65228	65230	120371	120372	65101	65124	GE-77	3	250	14	67	4	39528	IG	D.S. 8096	R-86-B	D-4	VR-C4
2491–92	LM-101-L-1	120011	65184	65202	65228	65230	120371	120372	65101	65124	GE-77	3	250	14	67	4	39528	IG	D.S. 8096	R-86-B	None	VR-C4
2493–94	LM-101-L-1	120011	65184	65202	65228	65230	120371	120372	65101	65124	GE-77	3	250	14	67	4	39528	IG	D.S. 8096	R-86-B	D-4	VR-C4
2495	LM-101-L-1	120011	65184	65202	65228	65230	120371	120372	65101	65124	GE-77	3	250	14	67	4	39528	IG	D.S. 8096	R-86-B	D-4	VR-C4
2496	LM-101-L-1	120011	65184	65202	65228	65230	120371	120372	65101	65124	GE-77	3	250	14	67	4	39528	IG	D.S. 8096	R-86-B	D-4	VR-C4
2497	LM-104-B-1	120018	65184	65202	65236	65238	120381	120382	65127	65128	GE-53	2	250	15	69	4¼	52585	IG	D.S. 8093	R-86-B	D-4	None
2498	LS -209-A-2	120289	119171	119279	120363	120364	120394	120395	119727	None	GE-51	4	500	16	69	4½	38622	CG	D.S. 4801	R-60-C	US-6	None
2499	LM-101-E-3	120254	119169	119277	120330	120331	120375	120376	119728	None	GE-800	1	110	14	67	4	17140	Pr	D.S. 3318	R-60-C	G	None
2500	LM-102-B-1	120163	65184	65202	65234	65235	120434	120435	65127	65128	GE-53	2	250	15	69	4	52585	Pr	D.S. 4799	R-60-C	D-4	None
2501	LM-104-E-1	120090	65198	65220	65244	65246	120383	120384	65127	65128	GE-61	4	250	14	81	4¼	39381	Pr	D.S. 1543	R-86-A	D-4	None

* Later equipped with IG (D.S. 10659.)
† Loco. 2485 rheostats later connected per D.S. 9842.

PILOT TABLE FOR LOCOMOTIVES

LOCOMOTIVE		CAT. NO.			BRAKE SHOES Cat. No.		BRAKE SHOE HEADS Cat. No.		JOURNAL SPRINGS Cat. No.		MOTORS			Teeth in Pinion	Teeth in Gear	Dia. of Axle	Gear Case Cat. No.	RHEOSTAT		Controller Type	Trolley Type	Cable Reel Type
Serial Number	Rating	Wheels and Axle	Journal Box	Journal Lining	Right Hand	Left Hand	Right Hand	Left Hand	Outside	Inside	Type	Armature Turns	Voltage					Type	Connection Diagram			
2502	LM-104-E-1	120090	65198	65220	65244	65246	120383	120384	65127	65128	GE-61	4	250	14	81	4¼	39381	Pr	D.S. 1543	R-86-A	D-4	None
2503	LS -204-C-2	121449	119170	119278	120334	120335	120377	120378	65127	65128	GE-58	6	500	15	69	4	50440	Pr	D.S. 5915	R-86-B	US-2	None
2504	LM-104-C-2	120112	65184	65202	65228	65230	120371	120372	65127	65128	GE-58	6	500	15	69	4	50440	Pr	D.S. 1553	R-77-A	D-4	None
2505	LM-104-C-2	120112	65184	65202	65228	65230	120371	120372	65127	65128	GE-58	6	500	15	69	4	50440	Pr	D.S. 1553	R-86-B	D-4	None
2506	LM-101-T-2	120296	65187	65208	65231	65232	120371	120372	65126	None	GE-60	6	500	14	67	4	52376	Pr	D.S. 1471	R-86-B	US-2	VR-A8
2507	LM-202-B-1	120281	65184	65202	65234	65235	120385	120386	65127	65128	GE-53	2	250	15	69	4¼	52585	Pr	D.S. 4798	R-60-C	US-2	None
2508–09	LS -204-B-1	119940	65190	65212	65186	65200	120367	120368	65127	65128	GE-53	2	250	15	69	4¼	52585	Pr	D.S. 2111	R-86-A	US-6	None
2510	LM-101-B-1	120059	65184	65202	65226	65227	120371	120372	65101	65124	GE-60	3	250	14	67	4	52376	Pr	D.S. 1537	R-86-B	US-8	None
2511	LM-104-B-2	120087	65184	65202	120342	120343	120381	120382	65127	65128	GE-53	4	500	15	69	4¼	52585	Pr	D.S. 1554	R-86-B	US-8	None
2512	LM-103-A-1	119972	65190	65212	120320	120321	None	None	65129	None	CB-14	10	250	14	66	3	51985	Pr	D.S. 1802	R-86-B	D-4	None
2513	LM-106-C-1	120010	65184	65202	65226	65227	120371	120372	65131	65132	GE-59	3	250	15	69	4	49558	Pr	D.S. 1537	R-86-A	D-4	None
2514	LM-103-A-2	119940	65190	65212	65186	65200	120367	120368	65129	None	CB-14	17	500	14	66	3	51985	Pr	D.S. 1945	R-86-B	D-4	None
2515	LM-101-M-1	119946	65184	65202	65226	65227	120371	120372	65101	65124	GE-79	3	250	14	69	4	43391	Pr	D.S. 5793	R-86-B ‡	D-4	None
2516	LM-103-A-1	119942	65190	65212	65186	65200	120367	120368	65129	None	CB-14	10	250	14	66	3	51985	Pr	D.S. 1802	R-86-B	D-4	None
2517–19	LM-103-A-1	119940	65190	65212	65186	65200	120367	120368	65129	None	CB-14	10	250	14	66	3	51985	Pr	D.S. 1802	R-86-B	D-4	None
2520	LM-101-T-2	120269	65187	65208	65231	65232	120371	120372	65126	None	GE-60	6	500	14	67	4	52376	Pr	D.S. 1471	R-86-B	D-4	None
2521	LS -202-A-1	120283	119171	119279	126456	126457	120394	120395	119744	119745	GE-57	2	250	16	69	4½	50249	CG	D.S. 3343	K-6	US-2	None
2523	LM-101-B-2	120059	65184	65202	65226	65227	120371	120372	65101	65124	GE-60	6	500	14	67	4	52376	Pr	D.S. 1471	R-14	None	None
2524–26	LM-103-A-2	119977	65190	65212	65186	65200	120367	120368	65129	None	CB-14	17	500	14	66	3	51985	Pr	D.S. 1945	R-86-B	US-2	None
2527	LM-101-M-1	119946	65184	65202	65226	65227	120371	120372	65101	65124	GE-79	3	250	14	69	4	43391	Pr	D.S. 5793	R-86-B	G	None
2528–29	LM-106-C-2	120063	65184	65202	65228	65230	120371	120372	65131	65132	GE-59	6	500	15	69	4	49558	Pr	D.S. 7981	R-86-B	US-2	None
2530	LM-103-A-2	119940	65190	65212	65186	65200	120367	120368	65129	None	CB-14	17	500	14	66	3	51985	Pr	D.S. 1945	R-86-B	D-4	None
2531	LM-101-R-1	120142	65188	65210	65231	65232	120371	120372	65126	None	GE-77	3	250	14	67	4	39528	Pr	D.S. 1537	R-86-B	D-4	†
2532	LM-101-B-2	120059	65184	65202	65226	65227	120371	120372	65101	65124	GE-60	6	500	14	67	4	52376	Pr	D.S. 1471	R-86-B	D-4	None
2533	LM-104-B-1	120121	65184	65202	65234	65235	120434	120435	65127	65128	GE-53	2	250	15	69	4¼	52585	Pr	D.S. 8496	R-60-C	D-4	None
2534	LM-202-D-2	120236	65184	65202	65242	65243	120390	120391	65127	65128	GE-97	2	500	15	72	5	49607	IG	D.S. 8897	R-60-C	D-4	None
2535–36	LM-103-A-1	119977	65190	65212	65186	65200	120367	120368	65129	None	CB-14	10	250	14	66	3	51985	Pr	D.S. 1802	R-86-B	U	None
2537–38	LS -401-B-1	120074	119170	119278	120330	120331	120375	120376	65101	65124	GE-60	3	250	14	67	4	52376	Pr	D.S. 3072	R-86-B	US-6	None
2539–40	LM-101-R-2	120142	65188	65210	65231	65232	120371	120372	65126	None	GE-77	6	500	14	67	4	39528	Pr	D.S. 1471	R-86-B	D-4	VR-C4
2541–42	LM-105-A-2	119955	119158	119274	120305	120306	None	None	119726	None	NWP2½	26	500	14	58	2¾	100090	Pr	D.S. 1936	R-14	D-4	None
2543–44	LM-106-C-1	120042	65184	65202	65228	65230	120371	120372	65131	65132	GE-59	3	250	15	69	4	49558	IG	D.S. 8441	R-86-A	D-4	None
2545	LM-104-A-2	119953	65184	65202	65239	65240	120390	120391	65127	65128	GE-61	4	500	14	81	4¼	39381	Pr	D.S. 1552	R-86-D	D-4	None
2546	LM-104-D-1	120044	65184	65202	65228	65230	120371	120372	65127	65128	GE-59	3	250	15	69	4	49558	C	D.S. 8495	R-86-A	D-4	VR-A8
2550	LM-101-B-1	120047	65184	65202	65226	65227	120371	120372	65101	65124	GE-60	3	250	14	67	4	52376	Pr	D.S. 1537	R-37-B	D-4	None
2551	LM-101-L-2	120060	65184	65202	65228	65230	120371	120372	65101	65124	GE-77	6	500	14	67	4	39528	IG	D.S. 12953	R-37-B	D-4	VR-C4
2552–53	LM-101-N-2	120142	65188	65210	65231	65232	120371	120372	65126	None	GE-77	6	500	14	67	4	39528	Pr	D.S. 1471	R-86-B	D-4	VR-B9
2554	LM-101-N-1	120142	65188	65210	65231	65232	120371	120372	65126	None	GE-77	3	250	14	67	4	39528	Pr	D.S. 1537	R-86-B	D-4	VR-B9
2555	LM-101-M-1	119989	65184	65202	65228	65230	120371	120372	65101	65124	GE-79	3	250	14	69	4	43391	Pr	D.S. 5793	R-86-B	D-4	None
2556–63	LM-101-W-1	120202	65187	65208	65231	65232	120371	120372	65126	None	GE-77	3	250	14	67	4	39528	C	D.S. 8495	R-86-B	D-4 *	VR-C4
2564–66	LS -401-B-1	120074	119170	119278	120330	120331	120375	120376	65101	65124	GE-60	3	250	14	67	4	52376	Pr	D.S. 3072	R-86-B	US-6	None

* No. 2556 has MVR-49-A1.

† Special reel—same as VR-C4 in all but contact parts which are the same as in VR-B11.

‡ Later equipped with R-77-A.

PILOT TABLE FOR LOCOMOTIVES

LOCOMOTIVE		CAT. NO.			BRAKE SHOES Cat. No.		BRAKE SHOE HEADS Cat. No.		JOURNAL SPRINGS Cat. No.		MOTORS			Teeth in Pinion	Teeth in Gear	Dia. of Axle	Gear Case Cat. No.	RHEOSTAT		Controller Type	Trolley Type	Cable Reel Type
Serial Number	Rating	Wheels and Axle	Journal Box	Journal Lining	Right Hand	Left Hand	Right Hand	Left Hand	Outside	Inside	Type	Armature Turns	Voltage					Type	Connection Diagram			
2567	LM-101-L-1	120009	65184	65202	65226	65227	120371	120372	65101	65124	GE-77	3	250	14	67	4	39528	Pr	D.S. 1537	R-37-B	N	VR-A8
2568–69	LM-101-M-1	119964	65184	65202	65228	65230	120371	120372	65101	65124	GE-79	3	250	14	69	4	43391	Pr	D.S. 5793	R-86-B	D-4	VR-B7
2570–71	LM-101-L-1	120009	65184	65202	65226	65227	120371	120372	65101	65124	GE-77	3	250	14	67	4	39528	Pr	D.S. 1537*	R-86-B	D-4	MVR-49-A2
2572	LM-202-B-1	120079	65184	65202	65236	65238	120381	120382	65127	65128	GE-53	2	250	15	69	4¼	52585	IG	D.S. 9751	R-60-C	D-4	None
2573	LM-202-B-1	120079	65184	65202	65236	65238	120381	120382	65127	65128	GE-53	2	250	15	69	4¼	52585	Pr	D.S. 4798	R-60-C	D-4	None
2574	LM-101-L-1	120011	65184	65202	65228	65230	120371	120372	65101	65124	GE-77	3	250	14	67	4	39528	C	D.S. 8495	R-86-B	D-4	VR-C4
2575	LM-101-L-1	120011	65184	65202	65228	65230	120371	120372	65101	65124	GE-77	3	250	14	67	4	39528	C	D.S. 8495	R-86-B	D-4	VR-C4
2576	LM-101-L-1	120011	65184	65202	65228	65230	120371	120372	65101	65124	GE-77	3	250	14	67	4	39528	C	D.S. 8495	R-86-B	D-4	VR-C4
2577–85	LM-101-L-1	120011	65184	65202	65228	65230	120371	120372	65101	65124	GE-77	3	250	14	67	4	39528	C	D.S. 8495	R-86-B	D-4	VR-C4
2586–89	LM-101-L-1	120011	65184	65202	65228	65230	120371	120372	65101	65124	GE-77	3	250	14	67	4	39528	C	D.S. 8495	R-86-B	D-4	VR-C4
2590	LM-101-L-1	120011	65184	65202	65228	65230	120371	120372	65101	65124	GE-77	3	250	14	67	4	39528	C	D.S. 8495	R-86-B	D-4	VR-C4
2591	LM-101-L-1	120011	65184	65202	65228	65230	120371	120372	65101	65124	GE-77	3	250	14	67	4	39528	C	D.S. 8495	R-86-B	D-4	VR-C4
2592	LM-101-L-1	120011	65184	65202	65228	65230	120371	120372	65101	65124	GE-77	3	250	14	67	4	39528	C	D.S. 8495	R-86-B	D-4	VR-C4
2593–94	LM-101-L-1	120011	65184	65202	65228	65230	120371	120372	65101	65124	GE-77	3	250	14	67	4	39528	C	D.S. 8495	R-86-B	D-4	VR-C4
2595	LM-104-B-1	120018	65184	65202	65236	65238	120381	120382	65127	65128	GE-53	2	250	15	69	4¼	52585	C	D.S. 8693	R-86-A	D-4	None
2596	LM-101-L-1	120060	65184	65202	65228	65230	120371	120372	65101	65124	GE-77	3	250	14	67	4	39528	Pr	D.S. 1537	R-86-B	D-4	VR-C4
2597	LM-104-D-1	120041	65184	65202	65226	65227	120371	120372	65127	65128	GE-59	3	250	15	69	4	49560	Pr	D.S. 1544	R-86-A	D-4	None
2598	LM-101-L-1	120009	65184	65202	65226	65227	120371	120372	65101	65124	GE-77	3	250	14	67	4	39528	Pr	D.S. 1537	R-86-B	D-4	VR-A8
2599–2600	LM-104-D-2	120044	65184	65202	65228	65230	120371	120372	65127	65128	GE-59	6	500	15	69	4	49558	Pr	D.S. 1553	R-86-A	D-4	VR-A8
2601	LM-106-C-1	120063	65184	65202	65228	65230	120371	120372	65131	65132	GE-59	3	250	15	69	4	49558	Pr	D.S. 1537	R-86-A	D-4	None
2602	LM-101-M-1	119965	65184	65202	65228	65230	120371	120372	65101	65124	GE-79	3	250	14	69	4	43391	Pr	D.S. 5793	R-86-B	D-4	VR-B7
2603	LM-104-C-2	120160	65184	65202	65228	65230	120371	120372	65127	65128	GE-58	6	500	15	69	4	50440	Pr	D.S. 1553	R-86-B	D-4	None
2604–05	LM-106-C-1	120113	65184	65202	65228	65230	120371	120372	65131	65132	GE-59	3	250	15	69	4	49558	Pr	D.S. 1537	R-86-A	D-4	None
2606	LM-104-A-2	119996	65184	65202	65239	65240	120390	120391	65127	65128	GE-61	4	500	14	81	4¼	39381	Pr	D.S. 1552	R-86-D	D-4	None
2607–08	LM-202-B-2	120080	65184	65202	65236	65238	120381	120382	65127	65128	GE-53	4	500	15	69	4¼	52585	Pr	D.S. 1432	R-86-B	D-4	None
2615	LM-101-M-1	119990	65184	65202	65228	65230	120371	120372	65101	65124	GE-79	3	250	14	69	4	43391	Pr	D.S. 5793	R-86-B	D-4	None
2616–18	LM-106-C-1	120063	65184	65202	65228	65230	120371	120372	65131	65132	GE-59	3	250	15	69	4	49558	Pr	D.S. 1537	R-86-A	D-4	None
2619	LM-101-C-1	120159	65184	65202	65226	65227	120371	120372	65101	65124	GE-800	2	250	14	67	4	17140	Pr	D.S. 1956	R-86-B	D-4	None
2620	LM-103-A-1	120023	65190	65212	65186	65200	120367	120368	65129	None	CB-14	10	250	14	66	3	51985	Pr	D.S. 1802	R-86-B	D-4	None
2621	LM-101-L-1	120009	65184	65202	65226	65227	120371	120372	65101	65124	GE-77	3	250	14	67	4	39528	Pr	D.S. 1537	R-86-B	D-4	VR-C4
2622–27	LM-106-B-1	120161	65184	65202	65228	65230	120371	120372	65131	65132	GE-58	3	250	15	69	4	50440	Pr	D.S. 1537	R-86-A	D-4	None
2628–29	LM-106-B-2	120161	65184	65202	65228	65230	120371	120372	65131	65132	GE-58	6	500	15	69	4	50440	Pr	D.S. 1471	R-86-B	D-4	None
2631–33	LS -103-D-2	119978	119156	119273	65186	65200	I20367	120368	119709	None	CB-14	17	500	14	66	3	51985	Pr	D.S. 1945	R-86-B	C	None
2634–35	LM-106-C-2	120063	65184	65202	65228	65230	120371	120372	65131	65132	GE-59	6	500	15	69	4	49558	IG	D.S. 12607	R-86-B	D-4	None
2636	LM-104-C-2	120216	65184	65202	65228	65230	120371	120372	65127	65128	GE-58	6	500	15	69	4	50440	Pr	D.S. 1553	R-86-B	D-4	None
2637	LM-101-L-1	120052	65184	65202	65226	65227	120371	120372	65101	65124	GE-77	3	250	14	67	4	39528	Pr	D.S. 1537	R-86-B	D-4	VR-A8
2638	LM-202-D-2	120182	65184	65202	65242	65243	120390	120391	65127	65128	GE-97	2	500	15	72	5	49607	IG	D.S. 12734	R-60-C	D-4	None
2639–40	LM-103-A-2	119977	65190	65212	65186	65200	120367	120368	65129	None	CB-14	17	500	14	66	3	51985	Pr	D.S. 1945	R-86-B	H D-4	None
2641	LM-103-A-2	119977	65190	65212	65186	65200	120367	120368	65129	None	CB-14	17	500	14	66	3	51985	Pr	D.S. 1945	R-86-B	D-4	None

* No. 2570 later equipped with IG (D.S. 11653.)

PILOT TABLE FOR LOCOMOTIVES

LOCOMOTIVE		CAT. NO.			BRAKE SHOES Cat. No.		BRAKE SHOE HRADS Cat. No.		JOURNAL SPRINGS Cat. No.		MOTORS			Teeth in Pinion	Teeth in Gear	Dia. of Axle	Gear Case Cat. No.	RHEOSTAT		Con-troller Type	Trolley Type	Cable Reel Type
Serial Number	Rating	Wheels and Axle	Journal Box	Journal Lining	Right Hand	Left Hand	Right Hand	Left Hand	Outside	Inside	Type	Arma-ture Turns	Vol-tage					Type	Con-nection Diagram			
2642	LM-105-C-1	120019	65190	65212	65958	65959	None	None	65130	None	CB-15	16	250	14	66	2¾	51985	Pr	D.S. 2957	R-86-B	D-4	None
2643	LM-202-B-1	120281	65184	65202	65234	65235	120385	120386	65127	65128	GE-53	2	250	15	69	4¼	52585	Pr	*	R-60-C	US-2	None
2644–45	LM-104-A-1	119996	65184	65202	65239	65240	120390	120391	65127	65128	GE-61	4	250	14	81	4¼	39381	Pr	D.S. 1543	R-86-C	D-4	None
2646	LM-101-B-1	120059	65184	65202	65226	65227	120371	120372	65101	65124	GE-60	3	250	14	67	4	52376	Pr	D.S. 1537	R-86-B	D-4	None
2647–48	LM-103-A-1	119940	65190	65212	65186	65200	120367	120368	65129	None	CB-14	10	250	14	66	3	51985	Pr	D.S. 1802	†R-86-B	D-4	None
2654	LM-104-A-2	119995	65184	65202	65239	65240	120390	120391	65127	65128	GE-61	4	500	14	81	4¼	39381	Pr	D.S. 1552	R-86-D	D-4	None
2655	LM-202-B-1	120079	65184	65202	65236	65238	120381	120382	65127	65128	GE-53	2	250	15	69	4¼	52585	Pr	D.S. 4798	R-60-C	D-4	None
2656–57	LM-101-L-1	120009	65184	65202	65226	65227	120371	120372	65101	65124	GE-77	3	250	14	67	4	39528	Pr	D.S. 1537	R-86-B	D-4	VR-A8
2658–59	LM-101-M-1	119964	65184	65202	65228	65230	120371	120372	65101	65124	GE-79	3	250	14	69	4	43391	Pr	D.S. 5793	R-86-B	D-4	VR-B7
2660	LM-101-R-1	120202	65187	65208	65231	65232	120371	120372	65126	None	GE-77	3	250	14	67	4	39528	Pr	D.S. 1537	R-86-B	D-4	VR-C4
2661–62	LM-202-B-1	120169	65184	65202	65234	65235	120385	120386	65127	65128	GE-53	2	250	15	69	4¼	52585	Pr	D.S. 4798	R-60-C	D-4	None
2663–65	LM-101-M-1	119989	65184	65202	65228	65230	120371	120372	65101	65124	GE-79	3	250	14	69	4	43391	Pr	D.S. 5793	R-86-B	D-4	None
2666	LM-101-B-1	120059	65184	65202	65226	65227	120371	120371	65101	65124	GE-60	3	250	14	67	4	52376	Pr	D.S. 1537	R-86-B	D-4	None
2667	LM-101-L-1	120009	65184	65202	65226	65227	120371	120371	65101	65124	GE-77	3	250	14	67	4	39528	Pr	D.S. 1537	R-86-B	D-4	VR-A8
2668	LM-101-L-1	120060	65184	65202	65228	65230	120371	120372	65101	65124	GE-77	3	250	14	67	4	39528	Pr	D.S. 1537	R-86-B	D-4	VR-C4
2669	LM-106-B-2	120259	65184	65202	65228	65230	120371	120372	65131	65132	GE-58	6	500	15	69	4	50440	Pr	D.S. 1471	R-86-B	D-4	None
2670	LM-101-B-1	120108	65184	65202	65228	65230	120371	120372	65101	65124	GE-60	3	250	14	67	4	52376	Pr	D.S. 1537	R-86-B	D-4	None
2671	LM-103-A-1	119977	65190	65212	65186	65200	120367	120368	65129	None	CB-14	10	250	14	66	3	51985	Pr	D.S. 1802	R-86-B	D-4	None
2672	LM-103-A-1	119977	65190	65212	65186	65200	120367	120368	65129	None	CB-14	10	250	14	66	3	51985	Pr	D.S. 1802	R-86-B	D-4	None
2673	LM-101-L-1	120060	65184	65202	65228	65230	120371	120372	65101	65124	GE-77	3	250	14	67	4	39528	IG	D.S. 9842	R-86-B	D-4	VR-C4
2674	LM-105-C-2	119937	65190	65212	65958	65959	None	None	65130	None	CB-15	30	500	14	66	2¾	51985	Pr	D.S. 2956	R-86-B	D-4	None
2675–80	LM-202-C-2	120169	65184	65202	65234	65235	120385	120386	65127	65128	GE-53	5	500	15	69	4¼	52585	Pr	D.S. 1432	R-86-B	US-2	None
2681	LM-105-B-2	119922	65190	65212	65956	65957	None	None	65135	None	NWP2½	26	500	14	58	2¾	100090	Pr	D.S. 2956	R-86-B	D-4	VR-B9
2682–83	LM-104-K-1	120277	65198	65220	120340	120341	120379	120380	65223	65224	GE-58	3	250	15	69	4	50440	Pr	D.S. 1544	R-86-A	D-4	None
2684	LM-104-C-2	120160	65184	65202	65228	65230	120371	120372	65127	65128	GE-58	6	500	15	69	4	50440	Pr	D.S. 1553	R-77-A	D-4	None
2685	LM-104-C-2	120160	65184	65202	65228	65230	120371	120372	65127	65128	GE-58	6	500	15	69	4	50440	Pr	D.S. 1553	R-86-B	D-4	None
2686	LM-101-L-1	120009	65184	65202	65226	65227	120371	120372	65101	65124	GE-77	3	250	14	67	4	39528	Pr	D.S. 1537	R-86-B	D-4	VR-C4
2687–89	LM-104-A-2	119996	65184	65202	65239	65240	120390	120391	65127	65128	GE-61	4	500	14	81	4¼	39381	Pr	D.S. 1552	R-86-D	D-4	None
2690–91	LM-101-L-1	120009	65184	65202	65226	65227	120371	120372	65101	65124	GE-77	3	250	14	67	4	39528	Pr	D.S. 1537	R-86-B	N	VR-A8
2694	LM-103-A-2	119940	65190	65212	65186	65200	120367	120368	65129	None	CB-14	17	500	14	66	3	51985	Pr	D.S. 1945	R-38-A	D-4	None
2700	LM-106-C-1	120063	65184	65202	65228	65230	120371	120372	65131	65132	GE-59	3	250	15	69	4	49558	Pr	D.S. 1537	R-86-A	D-4	None
2701–02	LM-104-D-1	120045	65184	65202	65228	65230	120371	120372	65127	65128	GE-59	3	250	15	69	4	49558	Pr‡	D.S. 1544‡	R-82-B	None	None
2703	LM-101-L-1	120009	65184	65202	65226	65227	120371	120372	65101	65124	GE-77	3	250	14	67	4	39528	Pr	D.S. 1537	R-86-B	D-4	VR-A8
2704–05	LM-103-A-1	119940	65190	65212	65186	65200	120367	120368	65129	None	CB-14	10	250	14	66	3	51985	Pr	D.S. 1802	R-86-B	D-4	None
2706	LM-101-L-1	120009	65184	65202	65226	65227	120371	120372	65101	65124	GE-77	3	250	14	67	4	39528	Pr	D.S. 1537	R-86-B	D-4	VR-A8
2707	LM-101-L-1	120011	65184	65202	65228	65230	120371	120372	65101	65124	GE-77	3	250	14	67	4	39528	IG	D.S. 8495	R-86-B	D-4	VR-C4
2708	LM-202-D-1	120182	65184	65202	65242	65243	126446	126447	65127	65128	GE-97	2	250	15	72	5	49608	IG	D.S. 15388	R-60-C §	D-4	None
2709–10	LM-106-B-1	120161	65184	65202	65228	65230	120371	120372	65131	65132	GE-58	3	250	15	69	4	50440	Pr	D.S. 1537	R-86-A	D-4	None
2711	LM-103-H-2	120246	65194	65216	65206	65222	120367	120368	65129	None	GE-96	6	500	14	66	3½	49606	Pr	D.S. 9898	R-86-B	D-4	VR-C4
2712–17	LM-202-D-2	120182	65184	65202	65242	65243	126446	126447	65127	65128	GE-97	2	500	15	72	5	49608	IG	D.S. 8897	R-60-C	D	None
2718–22	LM-401-A-1	119945	65196	65218	120328	120329	120432	120433	65101	65124	GE-79	3	250	14	69	4	43391	IG	D.S. 9842	R-86-B	N	None
2723	LM-103-A-1	120023	65190	65212	65186	65200	120367	120368	65129	None	CB-14	10	250	14	66	3	51985	Pr	D.S. 1802	R-38-A	D-4	None

* Later equipped with IG (D.S. 15869.)
† No. 2647 has R-86-F.
‡ Loco. 2702 has IG resist. per D.S. 10666.
§ Later equipped with R-109-A.

PILOT TABLE FOR LOCOMOTIVES

LOCOMOTIVE		CAT. NO.			BRAKE SHOES Cat. No.		BRAKE SHOE HEADS Cat. No.		JOURNAL SPRINGS Cat. No.		MOTORS			Teeth in Pinion	Teeth in Gear	Dia. of Axle	Gear Case Cat. No.	RHEOSTAT		Controller Type	Trolley Type	Cable Reel Type
Serial Number	Rating	Wheels and Axle	Journal Box	Journal Lining	Right Hand	Left Hand	Right Hand	Left Hand	Outside	Inside	Type	Armature Turns	Voltage					Type	Connection Diagram			
2724	LM-103-A-1	120023	65190	65212	65186	65200	120367	120368	65129	None	CB-14	10	250	14	66	3	51985	Pr	D.S. 1802	R-38-A	D-4	None
2725	LM-103-A-1	120023	65190	65212	65186	65200	120367	120368	65129	None	CB-14	10	250	14	66	3	51985	Pr	D.S. 1802	R-38-A	D-4	None
2726	LM-103-I-1	119915	65190	65212	65186	65200	120367	120368	65129	None	CB-14	10	250	14	66	3	51985	IG	D.S. 9936	R-86-B	D-4	None
2727	LM-105-C-2	120020	65190	65212	65958	65959	None	None	65130	None	CB-15	30	500	14	66	2¾	51985	Pr	D.S. 2956	R-86-B	D-4	None
2728	LM-101-R-2	120202	65187	65208	65231	65232	120371	120372	65126	None	GE-77	6	500	14	67	4	39528	Pr	D.S. 1471	R-86-B	D-4	None
2729	LM-106-C-1	120063	65184	65202	65228	65230	120371	120372	65131	65132	GE-59	3	250	15	69	4	49558	Pr	D.S. 4807	R-77-A	D-4	None
2730	LM-101-B-1	120059	65184	65202	65226	65227	120371	120372	65101	65124	GE-60	3	250	14	67	4	52376	Pr	D.S. 1537	R-86-B	D-4	None
2731	LM-104-B-2	120170	65184	65202	65234	65235	120434	120435	65127	65128	GE-53	4	500	15	69	4¼	52585	Pr	D.S. 1554	R-86-B	D-4	None
2732–33	LM-101-L-1	120046	65184	65202	65228	65230	120371	120372	65101	65124	GE-77	3	250	14	67	4	39528	Pr	D.S. 1537	R-86-B	D-4	VR-A8
2734	LM-207-B-1	120091	119164	119276	120357	120358	120388	120389	119746	119747	GE-71	1	250	16	81	5	49590	IG	D.S. 10553	C205-A	D-4	None
2735	LM-207-B-1	120091	119164	119276	120357	120358	120388	120389	119746	119747	GE-71	1	250	16	81	5	49590	IG	D.S. 10553	C205-A	D-4	None
2736	LM-207-B-1	120091	119164	119276	120357	120358	120388	120389	119746	119747	GE-71	1	250	16	81	5	49590	IG	D.S. 10553	C205-A	D-4	None
2737–46	LM-105-B-1	119917	65190	65212	65956	65957	None	None	65135	None	NWP2½	14	250	14	58	2¾	100090	Pr	D.S. 2957	R-86-B	D-4	None
2747	LM-109-A-1	120103	65188	65210	65231	65232	120371	120372	119719	None	GE-77	3	250	14	67	4	39528	IG	D.S. 9842	R-86-B	D-4	None
2748	LM-109-A-1	120103	65188	65210	65231	65232	120371	120372	119719	None	GE-77	3	250	14	67	4	39528	IG	D.S. 9842	R-86-B	D-4	None
2749–50	LM-101-B-1	120047	65184	65202	65226	65227	120371	120372	65101	65124	GE-60	3	250	14	67	4	52376	Pr	D.S. 1537	R-86-B ‡	D-4	None
2751–52	LM-104-E-2	119951	119163	119275	65239	65240	120390	120391	119732	None	GE-61	4	500	14	81	4¼	39381	IG	D.S. 9987	R-86-D	D-4	None
2753	LM-101-L-1	120060	65184	65202	65228	65230	120371	120372	65101	65124	GE-77	3	250	14	67	4	39528	IG	D.S. 9842	R-86-B	D-4	VR-C4
2754	LM-105-C-1	119938	65190	65212	65958	65959	None	None	65130	None	CB-15	16	250	14	66	2¾	51985	Pr	D.S. 2957	R-86-B	D-4	VR-B8
2755	LM-101-M-2	119946	65184	65202	65226	65227	120371	120372	65101	65124	GE-79	6	500	14	69	4	43391	Pr	D.S. 6799	R-86-B	G	None
2756–58	LM-104-A-2	120001	65184	65202	65239	65240	120390	120391	65127	65128	GE-61	4	500	14	81	4¼	39381	Pr	D.S. 1552*	R-86-D	None	VR-B7
2759	LM-104-D-1	120049	65184	65202	65228	65230	120371	120372	65127	65128	GE-59	3	250	15	69	4	49558	Pr	D.S. 1544	R-86-A	D-4	None
2760	LM-101-L-2	120053	65184	65202	65228	65230	120371	120372	65101	65124	GE-77	6	500	14	67	4	39528	Pr	D.S. 1471	R-86-B	D-4	VR-A8
2761	LM-103-H-2	120268	65192	65214	65206	65222	120367	120368	65129	None	GE-96	6	500	14	66	3½	49606	Pr	D.S. 9898	R-86-B	D-4	VR-C4
2762	LM-106-C-1	120258	65184	65202	65228	65230	120371	120372	65131	65132	GE-59	3	250	15	69	4	49558	Pr	D.S. 1537	R-86-A	D-4	None
2763–65	LM-101-M-1	119964	65184	65202	65228	65230	120371	120372	65101	65124	GE-79	3	250	14	69	4	43391	IG	D.S. 10655	R-86-B	D-4	VR-B7
2766–72	LM-101-L-1	120009	65184	65202	65226	65227	120371	120372	65101	65124	GE-77	3	250	14	67	4	39528	IG	D.S. 9842	R-86-B	D-4	VR-A8
2773–75	LM-101-L-1	120009	65184	65202	65226	65227	120371	120372	65101	65124	GE-77	3	250	14	67	4	39528	IG	D.S. 9842	R-86-B	D-4	VR-A8
2776–78	LM-101-B-1	120055	65184	65202	65226	65227	120371	120372	65101	65124	GE-60	3	250	14	67	4	52376	IG	D.S. 9842	R-86-B	N	VR-A8
2779	LM-202-D-2	120182	65184	65202	65242	65243	126446	126447	65127	65128	GE-97	2	500	15	72	5	49608	IG	D.S. 12734	R-60-C §	D-4	None
2780	LM-106-B-1	120217	65184	65202	65228	65230	120371	120372	65131	65132	GE-58	3	250	15	69	4	50440	Pr	D.S. 1537	R-86-A	D-4	None
2782	LM-101-B-1	120048	65184	65202	65226	65227	120371	120372	65101	65124	GE-60	3	250	14	67	4	52376	IG	D.S. 9842	R-86-B	D-4	None
2783	LM-202-D-1	120290	65184	65202	65242	65243	126446	126447	65127	65128	GE-97	2	250	15	72	5	49608	IG	D.S. 9751	R-60-C	G	None
2784	LM-101-R-1	120250	65187	65208	65231	65232	120371	120372	65126	None	GE-77	3	250	14	67	4	39528	IG	D.S. 9842	R-86-B	D-4	VR-C4
2785	LM-101-S-1	120098	65187	65208	65231	65232	120379	120380	65126	None	GE-79	3	250	14	69	4	43391	IG	D.S. 15860	R-86-B	D-4	None
2786	LM-103-A-1	119977	65190	65212	65186	65200	120367	120368	65129	None	CB-14	10	250	14	66	3	51985	Pr	D.S. 1802	R-86-B	D-4	None
2787	LM-202-D-2	120236	65184	65202	65242	65243	126446	126447	65127	65128	GE-97	2	500	15	72	5	49608	IG	D.S. 8897	R-60-C	D-4	None
2788–89	LM-101-S-1	120104	65187	65208	65231	65232	120379	120380	65126	None	GE-79	3	250	14	69	4	43391	IG	D.S. 10588	R-86-B	D-4	None
2790	LM-103-H-1	120100	65192	65214	65206	65222	120367	120368	65129	None	GE-96	3	250	14	66	3½	49606	IG	D.S. 10659	R 86-B	D-4	None
2791–93	LM-101-L-1	120009	65184	65202	65226	65227	120371	120372	65101	65124	GE-77	3	250	14	67	4	39528	IG	D.S. 9842	R-37-B	D-4	VRA8
2794–95	LM-101-L-1	120009	65184	65202	65226	65227	120371	120372	65101	65124	GE-77	3	250	14	67	4	39528	IG	D.S. 9842	R-86-B	D-4	None †

* No. 2757 later equipped with IG (D.S. 12677.)

† No. 2794 has MVR-49-A1.

‡ Loco. No. 2749 has R-37-B controller.

§ Later equipped with R-109-B.

PILOT TABLE FOR LOCOMOTIVES

LOCOMOTIVE		CAT. NO.			BRAKE SHOES Cat. No.		BRAKE SHOE HEADS Cat. No.		JOURNAL SPRINGS Cat. No.		MOTORS			Teeth in Pinion	Teeth in Gear	Dia. of Axle	Gear Case Cat. No.	RHEOSTAT		Controller Type	Trolley Type	Cable Reel Type
Serial Number	Rating	Wheels and Axle	Journal Box	Journal Lining	Right Hand	Left Hand	Right Hand	Left Hand	Outside	Inside	Type	Armature Turns	Voltage					Type	Connection Diagram			
2796	LM-104-A-2	119953	65184	65202	65239	65240	120390	120391	65127	65128	GE-61	4	500	14	81	4¼	39381	Pr	D.S. 1552	R-86-D	D-4	None
2797	LM-101-B-1	120222	65184	65202	65228	65230	120371	120372	65101	65124	GE-60	3	250	14	67	4	38619	Pr	D.S. 1537	R-37-B	D-4	VR-A8
2798	LM-101-M-2	119990	65184	65202	65228	65230	120371	120372	65101	65124	GE-79	6	500	14	69	4	43391	Pr	D.S. 6799	R-86-B	US-2	None
2799	LM-101-L-1	120012	65184	65202	65228	65230	120371	120372	65101	65124	GE-77	3	250	14	67	4	39528	IG	D.S. 9842	R-86-B	D-4	None
2800	LM-202-B-1	120242	65184	65202	65236	65238	120381	120382	65127	65128	GE-53	2	250	15	69	4¼	52585	IG	D.S. 9751	R-60-C	D-4	None
2801	LM-103-A-1	120023	65190	65212	65186	65200	120367	120368	65129	None	CB-14	10	250	14	66	3	51985	IG	D.S. 9936	R-86-B	D-4	VR-B7
2802–03	LM-105-B-2	119925	65190	65212	65956	65957	None	None	65135	None	NWP2½	26	500	14	58	2¾	100090	Pr	D.S. 2956	R-86-B	D-4	None
2804–05	LM-105-C-2	119973	65190	65212	65958	65959	None	None	65130	None	CB-15	30	500	14	66	2¾	51985	Pr	D.S. 2956	R-86-B	US-2	None
2806–07	LM-101-M-2	119990	65184	65202	65228	65230	120371	120372	65101	65124	GE-79	6	500	14	69	4	43391	IG	D.S. 11269	R-86-B	US-2	None
2808	LM-104-C-1	120160	65184	65202	65228	65230	120371	120372	65127	65128	GE-58	3	250	15	69	4	50440	Pr	D.S. 5618	R-82-A	D-4	None
2809	LM-103-K-2	120026	65190	65212	65186	65200	120367	120368	65129	None	GE-96	6	500	14	66	3½	49606	IG	D.S. 11331	R-86-B	D-4	None
2810–11	LM-102-A-1	119967	65184	65202	65242	65243	120390	120391	65127	65128	GE-61	4	250	14	81	4¼	39381	IG	D.S. 11509	R-86-D	D-4	None
2812	LM-101-M-2	119946	65184	65202	65226	65227	120371	120372	65101	65124	GE-79	6	500	14	69	4	43391	Pr	D.S. 6799	R-86-B	D-4	None
2813–14	LM-109-A-1	120203	65188	65210	65231	65232	120371	120372	65126	None	GE-77	3	250	14	67	4	39528	IG	D.S. 9842	R-86-B	D-4 †	VR-C4
2815–16	LM-101-L-1	120009	65184	65202	65226	65227	120371	120372	65101	65124	GE-77	3	250	14	67	4	39528	Pr	D.S. 1537	R-86-B	D-4	VR-C4
2817	LS -103-D-2	119978	119156	119273	65186	65200	120367	120368	119709	None	CB-14	10	250	14	66	3	51985	Pr	D.S. 1802	R-86-B	G	None
2818	LM-101-R-1	120142	65188	65210	65231	65232	120371	120372	65126	None	GE-77	3	250	14	67	4	39528	IG	D.S. 9842	R-86-B	D-4	VR-C4
2819–20	LM-105-B-1	119935	65190	65212	65956	65957	None	None	65135	None	NWP2½	14	250	14	58	2¾	100090	IG	D.S. 11448	R-86-B	D-4	None
2821–26	LM-106-D-1	120165	65184	65202	65234	65235	120434	120435	65131	65132	GE-58	3	250	15	69	4	50440	IG	D.S. 10708	R-86-A	D-4	None
2827–29	LM-104-B-1	120170	65184	65202	65234	65235	120434	120435	65127	65128	GE-53	2	250	15	69	4¼	52585	IG	D.S. 11392	R-86-A	D-4	None
2830–31	LM-104-A-1	119994	65184	65202	65239	65240	120390	120391	119746	119747	GE-61	4	250	14	81	4¼	39381	IG	D.S. 11388	R-60-C	D-4	None
2832–33	LM-103-H-1	120025	65192	65214	65206	65222	120367	120368	65129	None	GE-96	3	250	14	66	3½	49606	IG	D.S. 10659	R-38-B	L	§
2835	LM-104-A-1	119996	65184	65202	65239	65240	120390	120391	65127	65128	GE-61	4	250	14	81	4¼	39381	Pr	D.S. 1543	R-86-C	D-4	None
2836	LM-103-A-2	119977	65190	65212	65186	65200	120367	120368	65129	None	CB-14	17	500	14	66	3	51985	Pr	D.S. 1945	R-86-B	D-4	None
2837	LM-105-C-1	119938	65190	65212	65958	65959	None	None	65130	None	CB-15	16	250	14	66	2¾	51985	Pr	D.S. 2957	R-86-B	D-4	VR-B6
2838	LM-106-B-1	120161	65184	65202	65228	65230	120371	120372	65131	65132	GE-58	3	250	15	69	4	50440	IG	D.S. 10708	R-86-A	D-4	None
2839	LM-104-B-2	120087	65184	65202	120342	120343	120381	120382	65127	65128	GE-53	4	500	15	69	4¼	52585	IG	D.S. 11543	R-86-B	US-8	None
2840–41	LM-109-A-1	120203	65188	65210	65231	65232	120379	120380	65126	None	GE-77	3	250	14	67	4	39528	IG	D.S. 9842	R-86-B	D-4	VR-C4
2842–43	LM-104-D-1	120049	65184	65202	65228	65230	120371	120372	65127	65128	GE-59	3	250	15	69	4	49558	IG	D.S. 11392	R-86-A	D-4	None
2844	LM-106-E-1	120078	65184	65202	65234	65235	120434	120435	65131	65132	GE-59	3	250	15	69	4	49558	IG	D.S. 11564	R-86-A	D-4	None
2845	LM-101-L-1	120060	65184	65202	65228	65230	120371	120372	65101	65124	GE-77	3	250	14	67	4	39528	Pr	D.S. 1537	R-86-B	D-4	VR-C4
2846	LM-103-A-1	120023	65190	65212	65186	65200	120367	120368	65129	None	CB-14	10	250	14	66	3	51985	Pr	D.S. 1802	R-86-B	D-4	VR-B7
2847	LM-104-A-2	119995	65184	65202	65239	65240	120390	120391	65127	65128	GE-61	4	500	14	81	4¼	39381	Pr	D.S. 1552	R-86-D	D-4	None
2848	LM-103-L-2	120133	65192	65214	65206	65222	120367	120368	65129	None	GE-96	6	500	14	66	3½	49606	IG	D.S. 11561	R-86-B	D-4	‖
2849	LM-105-B-1	119917	65190	65212	65956	65957	None	None	65135	None	NWP2½	14	250	14	58	2¾	100090	IG	D.S. 11448	R-86-B	D-4	None
2850	LM-109-A-1	120143	65188	65210	65231	65232	120379	120380	65126	None	GE-77	3	250	14	67	4	39528	IG	D.S. 9842	R-86-B	D-4	None
2851	LM-103-L-2	120194	65192	65214	65206	65222	120367	120368	65129	None	GE-96	6	500	14	66	3½	49606	IG	D.S. 11561	R-86-B	D-4	VR-C4
2852–54	LM-101-L-1	120009	65184	65202	65226	65227	120371	120372	65101	65124	GE-77	3	250	14	67	4	39528	IG	D.S. 9842	R-86-B	D-4	VR-A8
2855	LM-101-L-1	120009	65184	65202	65226	65227	120371	120372	65101	65124	GE-77	3	250	14	67	4	39528	IG	D.S. 9842	R-86-B	D-4	VR-A8

† No. 2813 has MVR-49-A1.

§ Special reel—same as VR-B10 in all but contact parts which are the same as in VR-B11.

‖ Special reel—same as VR-C5 in all but contact parts which are the same as in VR-B11.

PILOT TABLE FOR LOCOMOTIVES

LOCOMOTIVE		CAT. NO.			BRAKE SHOES Cat. No.		BRAKE SHOE HEADS Cat. No.		JOURNAL SPRINGS Cat. No.		MOTORS			Teeth in Pinion	Teeth in Gear	Dia. of Axle	Gear Case Cat. No.	RHEOSTAT		Con-troller Type	Trolley Type	Cable Reel Type
Serial Number	Rating	Wheels and Axle	Journal Box	Journal Lining	Right Hand	Left Hand	Right Hand	Left Hand	Outside	Inside	Type	Arma-ture Turns	Vol-tage					Type	Con-nection Diagram			
2856–57	LM-101-M-1	119964	65184	65202	65228	65230	120371	120372	65101	65124	GE-79	3	250	14	69	4	43391	IG	D.S. 10655	R-86-B	D-4	VR-B7
2858	LM-103-A-3	120023	65190	65212	65186	65200	120367	120368	65129	None	CB-14	10	125	14	66	3	51985	IG	D.S. 11605	R-86-B	D-4	None
2859–68	LM-101-M-1	119990	65184	65202	65228	65230	120371	120372	65101	65124	GE-79	3	250	14	69	4	43391	IG	D.S. 10655	R-86-B	D-4	MVR 49-A1
2869	LM-101-L-1	120013	65184	65202	65226	65227	120371	120372	65101	65124	GE-77	3	250	14	67	4	39528	IG	D.S. 11653	R-86-B	D-4	MVR 49-A1
2870	LM-101-L-1	120013	65184	65202	65226	65227	120371	120372	65101	65124	GE-77	3	250	14	67	4	39528	IG	D.S. 11653	R-86-B	D-4	MVR 49-A1
2871	LM-101-L-1	120013	65184	65202	65226	65227	120371	120372	65101	65124	GE-77	3	250	14	67	4	39528	IG	D.S. 11653	R-86-B	D-4	MVR 49-A1
2872	LM-101-L-1	120013	65184	65202	65226	65227	120371	120372	65101	65124	GE-77	3	250	14	67	4	39528	IG	D.S. 11653	R-86-F	D-4	MVR 49-A1
2873	LM-103-K-2	119943	65190	65212	65186	65200	120367	120368	65129	None	GE-96	6	500	14	66	3½	49606	Pr	D.S. 9898	R-86-B	D-4	None
2886	LS -202-A-1	120283	119171	119279	126456	126457	120394	120395	119744	119745	GE-57	2	250	16	69	4½	50249	CG	D.S. 8610	K-6	US-2	None
2887–90	LM-101-L-1	120009	65184	65202	65226	65227	120371	120372	65101	65124	GE-77	3	250	14	67	4	39528	IG	D.S. 9842	R-86-F	D-4	VR-A8
2891	LM-101-B-1	120059	65184	65202	65226	65227	120371	120372	65101	65124	GE-60	3	250	14	67	4	52376	IG	D.S. 9842	R-86-B	US-8	None
2896	LM-103-L-1	120193	65192	65214	65206	65222	120367	120368	65129	None	GE-96	3	250	14	66	3½	49606	IG	D.S. 10659	R-86-F	D-4	MVR 49-A1
2897	LM-101-L-1	120009	65184	65202	65226	65227	120371	120372	65101	65124	GE-77	3	250	14	67	4	39528	IG	D.S. 11653	R-86-B	D-4	MVR 49-A1
2898	LM-105-E-1	119924	65190	65212	65956	65957	None	None	65135	None	GE-95	7	250	14	58	2¾	65961	IG	D.S. 11448	R-86-B	D-4	None
2899	LM-104-A-1	119996	65184	65202	65239	65240	120390	120391	65127	65128	GE-61	4	250	14	81	4¼	39381	IG	D.S. 12665	R114-A	D-4	None
2900	LM-103-H-2	120268	65192	65214	65206	65222	120367	120368	65129	None	GE-96	6	500	14	66	3½	49606	Pr	D.S. 9898	R-86-B	D-4	VR-C4
2901	LM-103-A-1	119977	65190	65212	65186	65200	120367	120368	65129	None	CB-14	10	250	14	66	3	51985	IG	D.S. 10659	R-86-B	D-4	None
2902–03	LM-103-A-1	120023	65190	65212	65186	65200	120367	120368	65129	None	CB-14	10	250	14	66	3	51985	IG	D.S. 9936	R-86-B	D-4	None
2904	LM-105-C-1	119937	65190	65212	65958	65959	None	None	65130	None	CB-15	10	250	14	66	2¾	51985	IG	D.S. 11448	R-38-B	None	None
2905	LM-106-B-1	120259	65184	65202	65228	65230	120371	120372	65131	65132	GE-58	3	250	15	69	4	50440	IG	D.S. 10708	R-86-B	D-4	None
2906	LM-109-A-1	120144	65188	65210	65231	65232	120379	120380	65126	None	GE-77	3	250	14	67	4	39528	IG	D.S. 9842	R-86-B	D-4	MVR 49-A1
2907–12	LM-105-E-1	119920	65190	65212	65956	65957	None	None	65135	None	GE-95	7	250	14	58	2¾	65961	IG	D.S. 11448	R-86-F	D-4	None
2913	LM-104-G-1	120089	65198	65220	65244	65246	120383	120384	65127	65128	GE-61	4	250	14	81	4¼	39381	IG	D.S. 12673	R-86-E	D-4	MVR 40-A1
2914–15	LM-109-B-1	120060	119159	65202	65228	65230	120371	120372	65126	None	GE-77	3	250	14	67	4	39528	IG	D.S. 9842	R-86-F	D-4	None
2916–17	LM-106-C-2	120063	65184	65202	65228	65230	120371	120372	65131	65132	GE-59	6	500	15	69	4	49558	IG	D.S. 12736	*R-77-A †R-86-B	US-2	None
2918	LM-103-A-2	119977	65190	65212	65186	65200	120367	120368	65129	None	CB-14	17	500	14	66	3	51985	Pr	D.S. 1945	R-86-B	D-4	None
2919–20	LM-202-D-2	120237	65184	65202	65242	65243	126446	126447	65127	65128	GE-97	2	500	15	72	5	49608	IG	D.S. 12734	R109-A	D-4	None
2921–24	LM-101-M-1	119946	65184	65202	65226	65227	120371	120372	65101	65124	GE-79	3	250	14	69	4	43391	IG	D.S. 9842	R-86-F	D-4	MVR 49-A-1
2925	LM-106-B-2	120220	65184	65202	65228	65230	120371	120372	65131	65132	GE-58	6	500	15	69	4	50440	IG	D.S. 12607	R-86-F	D-4	None

* For Locomotive No. 2916.
† For Locomotive No. 2917.

PILOT TABLE FOR LOCOMOTIVES

LOCOMOTIVE		CAT. NO.			BRAKE SHOES Cat. No.		BRAKE SHOE HEADS Cat. No.		JOURNAL SPRINGS Cat. No.		MOTORS			Teeth in Pinion	Teeth in Gear	Dia. of Axle	Gear Case Cat. No.	RHEOSTAT		Controller Type	Trolley Type	Cable Reel Type
Serial Number	Rating	Wheels and Axle	Journal Box	Journal Lining	Right Hand	Left Hand	Right Hand	Left Hand	Outside	Inside	Type	Armature Turns	Voltage					Type	Connection Diagram			
2926	LM-202-D-1	120183	65184	65202	65242	65243	126446	126447	65127	65128	GE-97	2	250	15	72	5	49608	IG	D.S. 12959	R-60-C ‖	D-4	None
2927	LM-106-G-1	*120050 †120051	65184	65202	65228	65230	120371	120372	65131	65132	GE-59	3	250	15	69	4	49558§	IG	D.S. 12955	R-86-E	D-2	None
2928	LM-104-G-1	120179	65198	65220	65244	65246	120383	120384	65127	65128	GE-61	4	250	14	81	4¼	39381	IG	D.S. 12790	R-86-A	D-4	None
2929	LM-106-B-1	120161	65184	65202	65228	65230	120371	120372	65131	65132	GE-58	3	250	15	69	4	50440	IG	D.S. 10708	R-86-A	D-4	None
2930	LM-106-B-1	120259	65184	65202	65228	65230	120371	120372	65131	65132	GE-58	3	250	15	69	4	50440	IG	D.S. 10708	R-86-A	D-4	None
2931	LM-101-L-1	120060	65184	65202	65228	65230	120371	120372	65101	65124	GE-77	3	250	14	67	4	39528	IG	D.S. 9842	R-86-F	D-4	None
2932–33	LM-106-C-1	120258	65184	65202	65228	65230	120371	120372	65131	65132	GE-59	3	250	15	69	4	49558	IG	D.S. 10708	R-86-E	D-4	None
2934	LM-106-F-1	120063	65184	65202	65228	65230	120371	120372	65131	65132	GE-59	2	250	15	69	4	49558	IG	D.S. 11564	R-86-E	D-4	None
2935–46	LS -201-A-2	120059	65184	65202	65226	65227	120371	120372	65101	65124	GE-60	6	500	14	67	4	52376	IG	D.S. 12973	R-86-B	‡	None
2947	LS -203-E-2	119983	119156	119273	120311	120311	None	None	119709	None	GE-96	6	500	14	66	3½	49606	IG	D.S. 11331	R-86-F	D-4	None
2948	LM-101-R-1	120152	65188	65210	120338	120339	120379	120380	65126	None	GE-77	3	250	14	67	4	39528	IG	D.S. 9842	R-86-F	D-4	MVR 45-A1
2949–50	LM-101-L-1	120009	65184	65202	65226	65227	120371	120372	65101	65124	GE-77	3	250	14	67	4	39528	IG	D.S. 11653	R-86-F	D-4	MVR 49-A1
2951	LM-101-W-2	120032	65187	65208	65231	65232	120379	120380	65126	None	HM 701	6	500	14	69	4	65137	IG	D.S. 12953	R-86-F	D-4	MVR 40-A2
2952	LM-101-L-2	120009	65184	65202	65226	65227	120371	120372	65101	65124	GE-77	6	500	14	67	4	39528	IG	D.S. 12953	R-86-F	D-4	VR-A8
2953–54	LM-101-L-1	120009	65184	65202	65226	65227	120371	120372	65101	65124	GE-77	3	250	14	67	4	39528	IG	D.S. 11653	R-86-F	D-4	MVR 49-A1
2955	LM-101-M-2	119990	65184	65202	65228	65230	120371	120372	65101	65124	GE-79	6	500	14	69	4	43391	IG	D.S. 13000	R-77-A	US-2	None
2956	LM-101-M-2	119990	65184	65202	65228	65230	120371	120372	65101	65124	GE-79	6	500	14	69	4	43391	IG	D.S. 12999	R-86-F	US-2	None
2957	LM-104-K-1	120270	65198	126438	65231	65232	120379	120380	65223	65224	GE-58	3	250	15	69	4	50440	IG	D.S. 12974	R-86-E	D-4	None
2958–67	LM-106-D-1	120164	65184	65202	65234	65235	120434	120435	65131	65132	GE-58	3	250	15	69	4	50440	IG	D.S. 10708	R-86-E	D-4	None
2968	LM-109-B-1	120064	119159	65202	65228	65230	120371	120372	65126	None	GE-77	3	250	14	67	4	39528	IG	D.S. 9842	R-86-F	D-4	None
2969	LM-104-C-2	120188	65184	65202	65228	65230	120371	120372	65127	65128	GE-58	6	500	15	69	4	50440	IG	D.S. 15100	R-86-F	D-4	None
2970	LM-101-R-2	120204	65187	65208	65231	65232	120379	120380	65126	None	GE-77	6	500	14	67	4	39528	Pr	D.S. 1471	R-86-F	D-4	None
2971	LM-103-L-2	120194	65192	65214	65206	65222	120367	120368	65129	None	GE-96	6	500	14	66	3½	49606	IG	D.S. 11331	R-86-F	D-4	MVR 49-A2
2972	LM-105-F-1	119943	65190	65212	65958	65959	None	None	65130	None	GE-96	3	250	14	66	3½	49606	IG	D.S. 10659	R-86-F	D-4	None
2973	LM-106-C-1	120063	65184	65202	65228	65230	120371	120372	65131	65132	GE-59	3	250	15	69	4	49558	IG	D.S. 11564	R-86-E	D-4	None
2974	LM-103-K-1	120026	65190	65212	65186	65200	120367	120368	65129	None	GE-96	3	250	14	66	3½	49606	IG	D.S. 10659	R-86-F	D-4	None
2975	LM-202-E-1	120171	65184	65202	65234	65235	120385	120386	65223	65224	HM 709	2	250	15	72	4¼	65136	IG	D.S. 12959	R109-B	D-4	None
2976	LMA-105-A-1	119923	65190	65212	65958	65959	None	None	65130	None	ITC 5009	60 Cycles F'm K	220	on application		3	None	IG	D.S. 15246	T-1-H	D-4-S	None
2977	LM-106-H-1	*120218 †120219	65184	65202	65228	65230	120371	120372	65131	65132	GE-58	3	250	15	69	4	50440	IG	D.S. 12955	R-86-E	D-4	None
2978–81	LM-103-L-1	120134	65192	65214	65206	65222	120367	120368	65129	None	GE-96	3	250	14	66	3½	49606	IG	D.S. 9936	R-86-F	D-4	None
2982–83	LM-103-K-1	119980	65190	65212	65186	65200	120367	120368	65129	None	GE-96	3	250	14	66	3½	49606	IG	D.S. 15135	R-86-F	D-4	MVR 40-A1

* Front.
† Rear.
‡ DN-46-A, third rail shoe.
§ Rear motor only front gear and case are special.
‖ Later equipped with R-109-B.

PILOT TABLE FOR LOCOMOTIVES

LOCOMOTIVE		CAT. NO.			BRAKE SHOES Cat. No.		BRAKE SHOE HEADS Cat. No.		JOURNAL SPRINGS Cat. No.		MOTORS			Teeth in Pinion	Teeth in Gear	Dia. of Axle	Gear Case Cat. No.	RHEOSTAT		Controller Type	Trolley Type	Cable Reel Type
Serial Number	Rating	Wheels and Axle	Journal Box	Journal Lining	Right Hand	Left Hand	Right Hand	Left Hand	Outside	Inside	Type	Armature Turns	Voltage					Type	Connection Diagram			
2984	LM-103-K-1	120026	65190	65212	65186	65200	120367	120368	65129	None	GE-96	3	250	14	66	3½	49606	IG	D.S. 10659	R-86-F	D-4	None
2985–86	LM-101-Y-1	119946	65184	65202	65226	65227	120371	120372	65101	65124	HM 701	3	250	14	69	4	65137	IG	D.S. 9842	R-86-F	D-4	None
2987	LM-104-A-2	119997	65184	65202	65242	65243	120390	120391	65127	65128	GE-61	4	500	14	81	4¼	39381	IG	D.S. 15229	R-82-B	US-2	None
2988	LM-104-A-2	119997	65184	65202	65242	65243	120390	120391	65127	65128	GE-61	4	500	14	81	4¼	39381	IG	D.S. 15229	R-86-B	US-2	None
2989–90	LM-101-L-1	on application	65184	65202	120336	120337	120371	120372	65101	65124	GE-77	3	250	14	67	4	39528	IG	D.S. 9842	R-37-B	None	None
2991	LM-103-L-2	120194	65192	65214	65206	65222	120367	120368	65129	None	GE-96	6	500	14	66	3½	49606	IG	D.S. 11331	R-86-F	D-4	MVR 49-A2
2992	LM-104-G-1	120127	65198	65220	65244	65246	120383	120384	65127	65128	GE-61	4	250	14	81	4¼	39381	IG	D.S. 12790	R-86-E	D-4	None
2993	LM-101-L-1	120053	65184	65202	65228	65230	120371	120372	65101	65124	GE-77	3	250	14	67	4	39528	IG	D.S. 11653	R-86-F	D-4	MVR 49-A1
2994–95	LM-102-A-1	119967	65184	65202	65242	65243	120390	120391	65127	65128	GE-61	4	250	14	81	4¼	39381	IG	D.S. 15213	R109-B	D-4	None
2996	LM-101-M-1	119965	65184	65202	65228	65230	120371	120372	65101	65124	GE-79	3	250	14	69	4	43391	IG	D.S. 10655	R-86-F	D-4	None
2997–98	LM-101-M-1	119965	65184	65202	65228	65230	120371	120372	65101	65124	GE-79	3	250	14	69	4	43391	IG	D.S. 10655	R-86-F	D-4	MVR 49-A1
2999	LM-104-A-2	120001	65184	65202	65239	65240	120390	120391	65127	65128	GE-61	4	500	14	81	4¼	39381	IG	D.S. 12677	R-86-F	None	VR-B 11
3000	LM-104-A-1	119967	65184	65202	65242	65243	120390	120391	119746	119747	GE-61	4	250	14	81	4¼	39381	IG	D.S. 15213	R109-B	D-4	None
3001–02	LM-105-A-2	119955	119158	119274	120305	120306	None	None	119726	None	NWP2½	26	500	14	58	2¾	100090	Pr	D.S. 1936	R-14	D-4	None
3003	LM-101-Y-1	127090	65184	65202	65228	65230	120371	120372	65101	65124	HM 701	3	250	14	69	4	65137	IG	D.S. 11653	R-86-F	D-4	VR-C4
3004–06	LM-101-Y-1	120054	65184	65202	65226	65227	120371	120372	65101	65124	HM 701	3	250	14	69	4	65137	IG	D.S. 11653	R-86-F	D-4	MVR 49-A1
3007	LM-101-M-1	119990	65184	65202	65228	65230	120371	120372	65101	65124	GE-79	3	250	14	69	4	43391	IG	D.S. 10655	R-86-F	D-4	MVR 49-A1
3008–09	LM-109-B-1	120060	119159	65202	65228	65230	120371	120372	65126	None	GE-77	3	250	14	67	4	39528	IG	D.S. 9842	R-86-F	D-4	None
3010–12	LM-105-C-3	119929	65190	65212	120303	120304	None	None	119726	None	NWP2½	7	125	14	58	2¾	100090	Pr	D.S. 4895	R-86-B	D-4	None
3013	LM-103-H-2	120268	65192	65214	65206	65222	120367	120368	65129	None	GE-96	6	500	14	66	3½	49606	IG	D.S. 11561	R-86-B	D-4	MVR 49-A2
3014	LM-106-B-1	120259	65184	65202	65228	65230	120371	120372	65131	65132	GE-58	3	250	15	69	4	50440	IG	D.S. 15521	R109-B	D-4	None
3015	LSA-001-B-1	*120036 †120035	119165	65208	65231	65232	120379	120380	65126	None	AZ-113	25 Cycles	220 V	Double reduction gearing on front axle and wheels coupled with connection rods				IG	D.S. 15631	R-28-A	US 102-A	None
3016	LM-202-F-2	120232	65184	65202	65234	65235	120385	120386	65127	65128	HM 709	2	500	15	72	4¼	65136	IG	D.S. 15678	R109-B	D-4	None
3017	LM-109-C-1	120205	65188	65210	65231	65232	120379	120380	65126	None	HM 701	3	250	14	69	4	65137	IG	D.S. 9842	R-86-F	D-4	MVR 49-A1
3018	LS -206-B-2	120180	119170	119278	120334	120335	120377	120378	65127	65128	GE-58	6	500	15	69	4	50440	IG	D.S. 12607	R-86-E	US 106-D	None
3019	LM-104-B-2	120170	65184	65202	65234	65235	120434	120435	65127	65128	GE-53	4	500	15	69	4¼	52585	IG	D.S. 11543	R-86-E	D-4	None
3020–21	LM-101-Y-1	119946	65184	65202	65226	65227	120371	120372	65101	65124	HM 701	3	250	14	69	4	65137	IG	D.S. 9842	R-86-F	D-4	None
3022	LS -210-G-2	120293	119171	119913	120363	120364	120394	120395	119909	119910	GE-55	2	500	17	56	5¼	50566	CG	D.S. 15399	R109-B		None

* Front.
† Rear.

PILOT TABLE FOR LOCOMOTIVES

LOCOMOTIVE		CAT. NO.			BRAKE SHOES Cat. No.		BRAKE SHOE HEADS Cat. No.		JOURNAL SPRINGS Cat. No.		MOTORS			Teeth in Pinion	Teeth in Gear	Dia. of Axle	Gear Case Cat. No.	RHEOSTAT		Controller Type	Trolley Type	Cable Reel Type
Serial Number	Rating	Wheels and Axle	Journal Box	Journal Lining	Right Hand	Left Hand	Right Hand	Left Hand	Outside	Inside	Type	Armature Turns	Voltage					Type	Connection Diagram			
3023	LM-101-A-2	120271	65187	65208	65231	65232	120371	120372	65126	None	GE-59	6	500	15	69	4	49558	IG	D.S. 12607	R-86-F	D-4	None
3024–39	LM-109-C-2	120208	119166	65210	65231	65232	120434	120435	65126	None	HM 701	6	500	14	69	4	65137	IG	D.S. 15522	R-86-F	D-4	MVR 40-A2
3040–47	LM-109-C-2	120033	119166	65210	65231	65232	120434	120435	65126	None	HM 701	6	500	14	69	4	65137	IG	D.S. 15522	R-86-F	D-4	MVR 40-A2
3048	LM-202-E-2	120086	119160	65202	120345	120346	None	None	65223	65224	HM 709	2	500	15	72	4¼	65136	IG	D.S. 15678	R-109	D-4	None
3049	LM-104-A-2	120001	65184	65202	65239	65240	120390	120391	65127	65128	GE-61	4	500	14	81	4¼	39381	IG	D.S. 12677	R-86-F	None	VR-B11
3050	LM-104-L-2	120233	65184	65202	65234	65235	120434	120435	65127	65128	HM 709	2	500	15	72	4¼	65136	IG	D.S. 15609	R109-D	D-4	None
3051	LM-104-C-2	120115	119160	65202	120334	120335	120377	120378	65127	65128	GE-58	6	500	15	69	4	50440	Pr	D.S. 5618	R-82-B	D-4	None
3052–55	LM-109-D-1	120251	119166	65210	65231	65232	120379	120380	65126	None	GE-59	3	250	15	69	4	49558	IG	D.S. 15628	R-86-A	D-4	MVR 40-A2
3056	LM-109-E-1	*120261 †120262	119166	65210	65231	65232	120379	120380	65126	None	GE-59	3	250	15	69	4	49558	IG	D.S. 15628	R-86-E	D-4	MVR 40-A2
3057	LM-103-K-1	119943	65190	65212	65186	65200	120367	120368	65129	None	GE-96	3	250	14	66	3½	49606	IG	D.S. 9936	R-86-F	US-6	MVR 40-A2
3058	LM-104-M-1	120280	65198	65220	120351	120352	120379	120380	65223	65224	HM 709	2	250	15	72	4¼	65136	IG	D.S. 15614	R-109	D-4	None
3059	LM-104-M-1	120279	65198	65220	120351	120352	120379	120380	65223	65224	HM 709	2	250	15	72	4¼	65136	IG	D.S. 15614	R-109	D-4	None
3060–61	LM-101-Y-1	119946	65184	65202	65226	65227	120371	120372	65101	65124	HM 701	3	250	14	69	4	65137	IG	D.S. 9842	R-86-F	D-4	None
3062	LM-104-B-2	120087	65184	65202	120342	120343	120381	120282	65127	65128	GE-53	4	500	15	69	4¼	52585	IG	D.S. 11543	R-86-B	US-8	None
3063	LM-106-C-2	120063	65184	65202	65228	65230	120371	120372	65131	65132	GE-59	6	500	15	69	4	49558	IG	D.S. 12607	R-86-B	D-4	None
3064	LM-104-H-2	120000	65184	65202	65239	65240	120390	120391	119746	119747	GE-61	4	500	14	81	4¼	39381	IG	D.S. 15609	R109-D	D-19	Non
3065–78	LM-127-C-1	120015	65184	65202	65226	65227	120371	120372	65101	65124	HM 708	3	250	16	68	4	103579	IG	D.S. 17013	R109-C	D	MVR 49-A1
3079	LM-104-B-1	120265	65184	65202	65234	65235	120434	120435	65127	65128	GE-53	2	250	15	69	4¼	52585	IG	D.S. 15683	R109-B	D-4	None
3080	LM-101-B-1	120055	65184	65202	65226	65227	120371	120372	65101	65124	GE-60	3	250	14	67	4	52376	IG	D.S. 11653	R-86-F	N	MVR 49-A1
3081–82	LM-106-K-2	120063	65184	65202	65228	65230	120432	120433	65131	65132	GE-59	6	500	15	69	4	49558	IG	D.S. 15964	R-86-F	D-4	MVR 49-A2
3083	LM-102-D-1	119998	65184	65202	65242	65243	120390	120391	65127	65128	HM 702	2	250	14	81	4¼	65140	IG	D.S. 15907	R109-B	US 124-A	None
3084	LM-101-Y-1	120014	65184	65202	65226	65227	120371	120372	65101	65124	HM 701	3	250	14	69	4	65137	IG	D.S. 11653	R-86-F	D-4	MVR 49-A1
3085–87	LM-2T7-E-1	*120056 †120057	65184	65202	65228	65230	120371	120372	65131	65132	HM 701	3	250	14	66	4	65137	IG	D.S. 15953	R-86-F	D-4	MVR 49-A1
3088	LM-109-A-2	120206	119166	65210	65231	65232	120379	120380	65126	None	GE-77	6	500	14	67	4	39528	IG	D.S. 15673	R-86-F	D-4	MVR 40-A2
3089–91	LM-101-M-1	119987	65184	65202	65228	65230	120371	120372	65101	65124	GE-79	3	250	14	69	4	43391	IG	D.S. 10697	R-86-B	D-4	None
3092	LM-101-M-1	119987	65184	65202	65228	65230	120371	120372	65101	65124	GE-79	3	250	14	69	4	43391	IG	D.S. 10697	R-86-B	D-4	None
3093–94	LM-109-A-1	120252	119166	65210	65231	65232	120379	120380	65126	None	GE-77	3	250	14	67	4	39528	IG	D.S. 9842	R-86-F	D-4	MVR 40-A2

* Front.
† Rear.

PILOT TABLE FOR LOCOMOTIVES

LOCOMOTIVE		CAT. NO.			BRAKE SHOES Cat. No.		BRAKE SHOE HEADS Cat. No.		JOURNAL SPRINGS Cat. No.		MOTORS			Teeth in Pinion	Teeth in Gear	Dia. of Axle	Gear Case Cat. No.	RHEOSTAT		Controller Type	Trolley Type	Cable Reel Type
Serial Number	Rating	Wheels and Axle	Journal Box	Journal Lining	Right Hand	Left Hand	Right Hand	Left Hand	Outside	Inside	Type	Armature Turns	Voltage					Type	Connection Diagram			
3095	LM-103-L-1	120135	65192	65214	65206	65222	120367	120368	65129	None	GE-96	3	250	14	66	3½	49606	IG	D.S. 9936	R-86-F	D-4	MVR 49-A1
3096	LM-109-A-1	120145	119166	65210	65231	65232	120379	120380	65126	None	GE-77	3	250	14	67	4	39528	IG	D.S. 9842	R-86-F	D-4	None
3097–98	LM-005-A-1	*120005 †120006	65190	65212	65206	65222	120367	120368	65130	None	HM 703	4	500	16	73	3½	65270	IG	D.S. 15864	R-86-F	US-102	None
3099 3100–01	LM-2T7-A-1	120058	65184	65202	65228	65230	120371	120372	65101	65124	HM 701	3	250	14	69	4	65137	IG	D.S. 9842	R-86-F	D-4	None
3102	LM-104-L-2	120172	65184	65202	65236	65238	120381	120382	65127	65128	HM 709	2	500	15	72	4¼	65136	IG	D.S. 15609	R109-B	D-4	None
3103–05	LM-2T7-A-1	120058	65184	65202	65228	65230	120371	120372	65101	65124	HM 701	3	250	14	69	4	65137	IG	D.S. 9842	R-86-F	D-4	MVR 49-A1
3107–08	LM-2C14-A1	120238	119175	119914	65244	65246	120383	120384	119731	None	HM 709	2	250	15	72	5	None	IG	D.S. 12959	R109-B	D-4	None
3109	LS -404-B-2	120088	119170	119278	126444	126445	120390	120391	119754	119755	HM 709	2	500	15	72	4¼	65136	IG	D.S. 15609	R109-B	G	None
3110–12	LM-101-R-2	120253	65187	65208	120338	120339	120379	120380	65126	None	GE-77	6	500	14	67	4	39528	IG	D.S. 15903	R-86-F	D-4	MVR 45-A1
3113	LS -401-E-1	119950	119170	126437	120330	120331	120375	120376	65101	65124	HM 701	3	250	14	69	4	65137	IG	D.S. 9842	R-86-E	US-2	None
3114	LM-101-W-1	120146	65188	65210	65231	65232	120379	120380	65126	None	HM 701	3	250	14	69	4	65137	IG	D.S. 11653	R-86-E	D-4	None
3115	LM-2T4-B-1	120136	119174	65214	65206	65222	120367	120368	65129	None	GE-96	3	250	14	66	3½	49606	IG	D.S. 9936	R-86-F	D-4	MVR 40-A1
3116	LM-101-R-1	120147	65188	65210	65231	65232	120379	120380	65126	None	GE-77	3	250	14	67	4	39528	IG	D.S. 9842	R-86-F	D-4	None
3117	LM-2T8-F-1	§120223	104286	65202	65228	65230	120432	120433	65101	65124	HM 708	3	250	16	68	4	103579	IG	D.S. 15898	R109-B	D-4	None
3118–19	LM-2T8-F-1	120223	104286	65202	65228	65230	120371	120372	65101	65124	HM 708	3	250	16	68	4	103579	IG	D.S. 15898	R109-B	D-4	None
3120	LM-2T8-A-1	120260	104286	65202	65228	65230	120371	120372	65101	65124	GE-58	3	250	15	69	4	50440	IG	D.S. 17290	R-86-E	D-4	None
3121	LM-2T8-A-1	120260	104286	65202	65228	65230	120371	120372	65101	65124	GE-58	3	250	15	69	4	50440	IG	D.S. 17290	R-86-E	D-4	None
3122	LM-2T8-F-1	120223	104286	65202	65228	65230	120371	120372	65101	65124	HM 708	3	250	16	68	4	103579	IG	D.S. 15898	R109-B	D-4	None
3123–24	LS -201-A-2	120059	65184	65202	65226	65227	120371	120372	65101	65124	GE-60	6	500	14	67	4	52376	IG	D.S. 12793	R-86-B	‡	None
3125	LM-106-B-2	120220	65184	65202	65228	65230	120371	120372	65131	65132	GE-58	6	500	15	69	4	50440	IG	D.S. 12607	R-86-F	D-4	None
3126–27	LM-109-C-1	120207	119166	65210	65231	65232	120379	120380	65126	None	HM 701	3	250	14	69	4	65137	IG	D.S. 9842	R-86-E	D-4	MVR 40-A1
3128	LM-109-C-1	120207	119166	65210	65231	65232	120379	120380	65126	None	HM 701	3	250	14	69	4	65137	IG	D.S. 9842	R-86-E	D-4	MVR 40-A1
3129–30	LM-109-C-1	120207	119166	65210	65231	65232	120379	120380	65126	None	HM 701	3	250	14	69	4	65137	IG	D.S. 9842	R-86-E	D-4	MVR 40-A1
3132	LM-109-C-2	‖120105	119166	65210	65231	65232	120379	120380	65126	None	HM 701	6	500	14	69	4	65137	IG	D.S. 15522	R-86-F	D-4	MVR 40-A1
3134–35	LM-106-D-1	120165	65184	65202	65234	65235	120434	120435	65131	65132	GE-58	3	250	15	69	4	50440	IG	D.S. 10708	R-86-F	D-4	None
3139	LS -210-C-1	120291	119171	119913	126454	126455	120394	120395	119748	119749	GE-51	1	250	16	69	5	38624	CG	D.S. 8205	K-13	US-8	None
3140–41	LM-2T6-B-2	120149	119166	65210	65231	65232	120379	120380	65126	None	HM 701	6	500	14	69	4	65137	IG	D.S. 15522	R-86-F	D-4	MVR 40-A1
3142	LM-103-M-1	120031	65190	65212	65186	65200	120367	120368	65129	None	HM 703	2	250	16	73	3½	65270	IG	D.S. 15955	R-86-E	D-4	None

* Front.
† Rear.
‡ DN-46-A, third rail shoes.
§ Later equipped with steel tired wheels Cat. No. 123746.
‖ Later equipped with chilled iron wheels Cat. No. 119433.

PILOT TABLE FOR LOCOMOTIVES

LOCOMOTIVE		CAT. NO.			BRAKE SHOES Cat. No.		BRAKE SHOE HEADS Cat. No.		JOURNAL SPRINGS Cat. No.		MOTORS			Teeth in Pinion	Teeth in Gear	Dia. of Axle	Gear Case Cat. No.	RHEOSTAT		Controller Type	Trolley Type	Cable Reel Type
Serial Number	Rating	Wheels and Axle	Journal Box	Journal Lining	Right Hand	Left Hand	Right Hand	Left Hand	Outside	Inside	Type	Armature Turns	Voltage					Type	Connection Diagram			
3143	LM-104-P-2	120181	65184	65202	65239	65240	120390	120391	65127	65128	HM 702	4	500	14	81	4¼	65140	IG	S.D. 15976	R109-B	D-4	None
3144–45	LM-109-B-1	120060	119159	65202	65228	65230	120371	120372	65126	None	GE-77	3	250	14	67	4	39528	IG	D.S. 9842	R-86-F	D-4	None
3146	LM-202-F-1	120266	65184	65202	65234	65235	120385	120386	65127	65128	HM 709	2	250	15	72	4¼	65136	IG	D.S. 12959	R109-B	US-2	None
3147	LM-2T5-B-1	120140	119174	65214	65206	65222	120367	120368	119712	None	HM 703	2	250	16	73	3½	65270	IG	D.S. 15962	R-86-E	D-4	None
3148	LM-2T6-B-1	126451	119166	65210	65231	65232	120379	120380	65126	None	HM 701	3	250	14	69	4	65137	IG	D.S. 17002	R-77-A	D-4	None
3149	LM-2T6-B-1	126451	119166	65210	65231	65232	120379	120380	65126	None	HM 701	3	250	14	69	4	65137	IG	D.S. 17002	R-86-E	D-4	None
3150	LM-106-D-1	120165	65184	65202	65234	65235	120434	120435	65131	65132	GE-58	3	250	15	69	4	50440	IG	D.S. 10708	R-86-F	D-4	None
3151–52	LM-106-D-1	120165	65184	65202	65234	65235	120434	120435	65131	65132	GE-58	3	250	15	69	4	50440	IG	D.S. 10708	R-86-F	D-4	None
3153–54	LM-2T5-B-2	120199	119174	65214	65206	65222	120367	120368	119712	None	HM 703	4	500	16	73	3½	65270	IG	D.S. 17048	R-86-F	D-4	MVR 40-A1
3155–56	LM-101-Y-1	119988	65184	65202	65228	65230	120371	120372	65101	65124	HM 701	3	250	14	69	4	65137	IG	D.S. 11653	R-86-B	D-4	None
3157	LM-104-B-2	120170	65184	65202	65234	65235	120434	120435	65127	65128	GE-53	4	500	15	69	4¼	52585	IG	D.S. 11543	F-86-F	D-4	None
3158	LM-2T4-A-1	119944	119176	119281	65186	65200	120367	120368	119714	None	GE-96	3	250	14	66	3½	49606	IG	D.S. 9936	R-86-F	D-4	None
3159	LM-2T5-A-1	119984	119176	119281	65186	65200	120367	120368	119712	None	HM 703	2	250	16	73	3½	65270	IG	D.S. 15955	R-86-F	D-4	None
3160	LM-2T5-G-1	120197	119174	65214	65206	65222	120367	120368	119712	None	HM 703	2	250	16	73	3½	65270	IG	D.S. 15955	R-86-F	D-4	MVR 40-A1
3161–62	LM-2T6-A-1	120070	119161	65202	65228	65230	120371	120372	65126	None	HM 701	3	250	14	69	4	65137	IG	D.S. 9842	R-86-E	D-4	MVR 49-A2
3163	LM-2T6-B-1	120149	119166	65210	65231	65232	120379	120380	65126	None	HM 701	3	250	14	69	4	65137	IG	D.S. 9842	R-86-E	D-4	MVR 40-A1
3164	LM-2T6-B-2	120149	119166	65210	65231	65232	120379	120380	65126	None	HM 701	6	500	14	69	4	65137	IG	D.S. 15522	R-86-F	D-4	MVR 40-A1
3165–66	LM-2T7-G-1	120068	104286	65202	65228	65230	120371	120372	65101	65124	HM 701	3	250	14	66	4	65137	IG	D.S. 17171	R-86-E	D-4	MVR 49-A2
3167	LM-207-B-1	120091	119164	119276	120357	120358	120388	120389	119746	119747	GE-71	1	250	16	81	5	49590	IG	D.S. 10553	C205-A	D-4	None
3168–69	LS -401-B-1	120074	119170	119278	120330	120331	120375	120376	65101	65124	GE-60	3	250	14	67	4	52376	CG	D.S. 17189	R-86-B	US-6	None
3170–71	LM-106-G-1	*120061 †120062	65184	65202	65228	65230	120371	120372	65131	65132	GE-59	3	250	15	69	4	49558	IG	D.S. 12955	R-86-E	D-4	MVR 49-A2
3172	LM-2C13-C-2	120226	119175	119280	120349	120350	120383	120384	119731	None	HM 709	2	250	15	72	4¼	65136	IG	D.S. 12959	R109-B	D-4	None
3173	LM-2T4-F-1	120125	119174	65214	65206	65222	120367	120368	119714	None	HM 703	2	250	16	73	3½	65270	IG	D.S. 15955	R-86-F	D-4	None
3174	LM-2T4-C-1	120136	119174	65214	65206	65222	120367	120368	119714	None	GE-96	3	250	14	66	3½	49606	IG	D.S. 9936	R-86-F	D-4	None
3175	LM-2T5-K-1	120196	119174	65214	65206	65222	120367	120368	119712	None	HM 703	2	250	16	73	3½	65270	IG	D.S. 15955	R-86-F	D-4	VR-C4
3176	LM-2T7-A-1	120072	104286	65202	65228	65230	120371	120372	65101	65124	HM 701	3	250	14	66	4	65137	IG	D.S. 15602	R-86-E	D-4	MVR 49-A1
3177–90	LM-106-D-1	120165	65184	65202	65234	65235	120434	120435	65131	65132	GE-58	3	250	15	69	4	50440	IG	D.S. 10708	R-86-F	D-4	None
3191–93	LM-105-E-1	119920	65190	65212	65956	65957	None	None	65130	None	GE-95	7	250	14	58	2¾	65961	IG	D.S. 11448	R-86-F	D-4	None
3194–96	LM-104-R-1	120082	104286	65202	65236	65238	120381	120382	65223	65224	HM 709	2	250	15	72	4¼	65136	IG	D.S. 17166	R109-B	D-4	None
3197–98	LM-2C10-A-1	120180	119173	65220	65244	65246	120383	120384	65127	65128	HM 702	2	250	14	81	4¼	65140	IG	D.S. 17288	R109-B	D-4	None
3199	LM-202-F-1	120233	65184	65202	65234	65235	120385	120386	65127	65128	HM 709	2	250	15	72	4¼	65136	IG	D.S. 12959	R109-B	D-4	None
3200	LM-2T6-B-1	120033	119166	65210	65231	65232	120379	120380	65126	None	HM 701	3	250	14	69	4	65137	IG	D.S. 17002	R-86-F	D-4	MVR 40-A1
3201	LM-105-F-1	119943	65190	65212	65958	65959	None	None	65130	None	GE-96	3	250	14	66	3½	49606	IG	D.S. 10659	R-86-F	D-4	None

* Front.
† Rear.

PILOT TABLE FOR LOCOMOTIVES

LOCOMOTIVE		CAT. NO.			BRAKE SHOES Cat. No.		BRAKE SHOE HEADS Cat. No.		JOURNAL SPRINGS Cat. No.		MOTORS			Teeth in Pinion	Teeth in Gear	Dia. of Axle	Gear Case Cat. No.	RHEOSTAT		Controller Type	Trolley Type	Cable Reel Type
Serial Number	Rating	Wheels and Axle	Journal Box	Journal Lining	Right Hand	Left Hand	Right Hand	Left Hand	Outside	Inside	Type	Armature Turns	Voltage					Type	Connection Diagram			
3202–03	LM-202-G-1	120122	65184	65202	65236	65238	120381	120382	65223	65224	HM 709	2	250	15	72	4¼	65136	IG	D.S. 12959	R109-B	D-4	None
3204–07	LSA-2E15 -A-1	120294	119172	119279	120365	120366	120396	120397	119752	119753	MI-106		220	18	90	5	None	IG	D.S. 17295	T-52-A	None	None
3208	LM-2T8-A-1	120162	104286	65202	65226	65227	120371	120372	65101	65124	GE-58	3	250	15	69	4	50440	IG	D.S. 10708	R-86-E	D-4	None
3209–10	LM-103-A-1	119940	65190	65212	65186	65200	120367	120368	65129	None	CB-14	10	250	14	66	3	51985	Pr	D.S. 1802	R-86-B	D-4	None
3211	LM-2C13-A-1	120084	119911	119912	65236	65238	120381	120382	65127	65128	HM 709	2	250	15	72	4¼	65136	IG	D.S. 15609	R109-B	D-4	None
3212	LM-101-R-1	120152	65188	65210	120338	120339	120379	120380	65126	None	GE-77	3	250	14	67	4	39528	IG	D.S. 9842	R-86-F	D-4	MVR 45-A1
3213	LM-106-C-1	120063	65184	65202	65228	65230	120371	120372	65131	65132	GE-59	3	250	15	69	4	49558	IG	D.S. 11564	R-86-E	D-4	None
3214	LM-2T6-B-2	120099	119166	65210	65231	65232	120379	120380	65126	None	HM 701	6	500	14	69	4	65137	IG	D.S. 15522	R-86-F	D-4	None
3215	LM-2C13-A-2	120235	119911	119912	65236	65238	120381	120382	65127	65128	HM 709	2	500	15	72	4¼	65136	IG	D.S. 15609	R109-B	D-4	None
3216	LM-2T7-B-1	120148	119168	65210	65231	65232	120379	120380	65126	None	HM 701	3	250	14	66	4	65137	IG	D.S. 17171	R-86-E	D-4	MVR 40-A1
3217	LM-2T7-B-1	120149	119166	65210	65231	65232	120379	120380	65126	None	HM 701	6	500	14	69	4	65137	IG	D.S. 15522	R-86-F	D-4	MVR 40-A1
3218	LM-2T10-F-1	126378	104286	65202	65236	65238	120381	120382	65223	65224	HM 711	2	250	15	72	4¼	65136	IG	D.S. 15614	R109-B	D-4	None
3220	LM-202-D-1	120184	65184	65202	65242	65243	126446	126447	65127	65128	GE-97	2	250	15	72	5	49608	IG	D.S. 12959	R109-B	D-4	None
3223–24	LM-104-S-2	120173	65184	65202	65234	65235	120434	120435	65223	65224	HM 711	2	500	15	72	4¼	65136	IG	D.S. 15609	R109-B	D-4	None
3225–26	LM-2T3-D-1	120137	119174	65214	65206	65222	120367	120368	119716	None	GE-96	3	250	14	66	3½	49606	IG	D.S. 9936	R-86-F	D-4	None
3227–29	LM-2T6-A-1	119948	119161	65202	65226	65227	120371	120372	65126	None	HM 701	3	250	14	69	4	65137	IG	D.S. 9842	R-86-E	D-4	None
3230	LM-2T4-B-2	120195	119174	65214	65206	65222	120367	120368	65129	None	GE-96	6	500	14	66	3½	49606	IG	D.S. 17177	R-86-F	D-4	MVR 40-A1
3231	LM-2T4-B-2	120101	119174	65214	65206	65222	120367	120368	65129	None	GE-96	6	500	14	66	3½	49606	IG	D.S. 17177	R-86-F	D-4	None
3232	LM-2C10-B-1	120083	119911	119912	65234	65235	120385	120386	65223	104285	HM 711	2	250	15	72	4¼	65136	IG	D.S. 15614	R109-B	D-4	None
3233–46	LM-2C10-B-1	120176	119911	119912	65234	65235	120385	120386	65223	104285	HM 711	2	250	15	72	4¼	65136	IG	D.S. 15614	R109-B	D-4	None
3247	LM-101-E-3	120254	119169	119277	120330	120331	120375	120376	119728	None	GE-800	1	110	14	67	4	17140	IG	D.S. 17190	R-60-C	US-8	None
3248	LM-2T6-E-2	120034	119166	65210	65231	65232	120379	120380	65126	None	HM 701	6	500	14	69	4	65137	IG	D.S. 15522	R-86-F	D-4	None
3249	LM-2T6-E-2	120208	119166	65210	65231	65232	120379	120380	65126	None	HM 701	6	500	14	69	4	65137	IG	D.S. 15522	R-86-F	D-4	None
3250	LM-2T6-E-2	120034	119166	65210	65231	65232	120379	120380	65126	None	HM 701	6	500	14	69	4	65137	IG	D.S. 15522	R-86-F	D-4	MVR 40-A1
3251–54	LM-202-C-2	120177	65184	65202	120353	120354	120385	120386	65127	65128	GE-53	5	500	15	69	4¼	52585	Pr	D.S. 1432	R-86-E	US-2	None
3255–64	LM-2T7-C-1	120015	65184	65202	65226	65227	120371	120372	65101	65124	HM 708	3	250	16	68	4	103579	IG	D.S. 17013	R109-C	D-19	MVR 49-A1
3265	LM-104-H-2	120000	65184	65202	65239	65240	120390	120391	119746	119747	GE-61	4	500	14	81	4¼	39381	IG	D.S. 15609	R109-D	D-19	None
3267	LM-2T8-G-1	120089	65198	65220	65244	65246	120383	120384	65127	65128	GE-61	4	250	14	81	4¼	39381	IG	D.S. 12974	R-86-E	D-4	MVR 40-A1
3268–69	LM-104-R-1	120280	65198	65220	120351	120352	120379	120380	65223	65224	HM 711	2	250	15	72	4¼	65136	IG	D.S. 15614	R109-B	D-4	None
3270	LM-104-E-2	119951	119163	119275	65239	65240	120390	120391	119732	None	GE-61	4	500	14	81	4¼	39381	IG	D.S. 9987	R-86-D	D-4	None
3271	LM-2T5-D-2	120071	119161	65202	65228	65230	120371	120372	65126	None	GE-77	6	500	14	67	4	39528	IG	D.S. 17237	R-86-F	D-4	None MVR
3272	LM-2T5-H-1	120029	119176	119281	65186	65200	120367	120368	119712	None	HM 703	2	250	16	73	3½	65270	IG	D.S. 15955	R-86-F	D-4	40-A2
3273	LM-2T8-B-1	120069	104286	65202	65228	65230	120371	120372	65101	65124	GE-59	3	250	15	69	4	49558	IG	D.S. 15628	R-86-E	D-4	None
3274	LM-2T5-B-1	120027	65192	65214	65206	65222	120367	120368	119714	None	HM 703	2	250	16	73	3½	65270	IG	D.S. 15955	R-86-F	D-4	MVR 40-A1
3275	LM-202-B-1	120243	65184	65202	65236	65238	120381	120382	65127	65128	GE-53	2	250	15	69	4¼	55285	IG	D.S. 12959	R109-B	D-4	None

PILOT TABLE FOR LOCOMOTIVES

LOCOMOTIVE		CAT. NO.			BRAKE SHOES Cat. No.		BRAKE SHOE HEADS Cat. No.		JOURNAL SPRINGS Cat. No.		MOTORS			Teeth in Pinion	Teeth in Gear	Dia. of Axle	Gear Case Cat. No.	RHEOSTAT		Controller Type	Trolley Type	Cable Reel Type
Serial Number	Rating	Wheels and Axle	Journal Box	Journal Lining	Right Hand	Left Hand	Right Hand	Left Hand	Outside	Inside	Type	Armature Turns	Voltage					Type	Connection Diagram			
3276	LM-106-E-1	120244	65184	65202	65236	65238	120381	120382	65131	65132	GE-59	3	250	15	69	4¼	49558	IG	D.S. 10708	R-86-E	D-4	None
3277–78	LM-101-M-2	119946	65184	65202	65226	65227	120371	120372	65101	65124	GE-79	6	500	14	69	4	43391	IG	D.S. 12999	R-86-B	US-2	None
3279	LM-202-D-1	120184	65184	65202	65242	65243	126446	126447	65127	65128	GE-97	2	250	15	72	5	49608	IG	D.S. 12959	R109-B	D-4	None
3280	LM-202-D-1	120184	65184	65202	65242	65243	126446	126447	65127	65128	GE-97	2	250	15	72	5	49608	IG	D.S. 12959	R109-B	D-4	None
3281	LM-2T8-B-1	120225	104286	65202	65226	65227	120371	120372	65101	65124	GE-59	3	250	15	69	4	49558	IG	D.S. 10708	R-86-E	D-4	None
3282	LM-103-A-1	119977	65190	65212	65186	65200	120367	120368	65129	None	CB-14	10	250	14	66	3	51985	IG	D.S. 10659	R-86-B	D-4	None
3283–85	LM-2T6-B-2	120149	119166	65210	65231	65232	120379	120380	65126	None	HM 701	6	500	14	69	4	65137	IG	D.S. 15522	R-86-F	D-4	MVR 40-A1
3286	LM-2T4-B-2	120101	119174	65214	65206	65222	120367	120368	65129	None	GE-96	6	500	14	66	3½	49606	IG	D.S. 17177	R-86-F	D-4	MVR 40-A1
3287	LM-2T5-B-2	120141	119174	65214	65206	65222	120367	120368	119712	None	HM 703	4	500	16	73	3½	65270	IG	D.S. 17048	R-86-F	D-4	MVR 40-A1
3288	LM-104-T-1	120097	65198	65220	65244	65246	120383	120384	65127	65128	HM 702	2	250	14	81	4¼	65140	IG	D.S. 17423	R109-B	D-4	None
3289–91	LM-2T6-B-2	120149	119166	65210	65231	65232	120379	120380	65126	None	HM 701	6	500	14	69	4	65137	IG	D.S. 15522	R-86-F	D-4	MVR 40-A1
3292	LM-104-S-2	120173	65184	65202	65234	65235	120434	120435	65223	65224	HM 711	2	500	15	72	4¼	65136	IG	D.S. 15609	R109-B	D-4	None
3293	LM-2T6-F-2	119956	119161	65202	65228	65230	120371	120372	65126	None	GE-79	6	500	14	69	4	43391	IG	D.S. 17281	R-86-F	D-4	None
3294	LM-2T10-F-2	120267	104286	65202	65236	65238	120381	120382	65223	65224	HM 711	2	500	15	72	4¼	65136	IG	D.S. 15609	R109-B	D-4	None
3296	LM-2T4-B-2	120101	119174	65214	65206	65222	120367	120368	65129	None	GE-96	6	500	14	66	3½	49606	IG	D.S. 17177	R-86-F	D-4	None
3297	LM-2T7-A-1	119990	65184	65202	65228	65230	120371	120372	65101	65124	HM 701	3	250	14	69	4	65137	IG	D.S. 17438	R-86-E	D-4	None
3298–99	LM-2T7-A-1	119990	65184	65202	65228	65230	120371	120372	65101	65124	HM 701	3	250	14	69	4	65137	IG	D.S. 17348	R-86-E	D-4	None
3300	LM-2T4-C-1	120195	119174	65214	65206	65222	120367	120368	119714	None	GE-96	3	250	14	66	3½	49606	IG	D.S. 9936	R-86-F	D-4	MVR 40-A2
3301–03	LM-2T8-H-1	120067	65184	65202	65228	65230	120371	120372	65131	65132	GE-59	3	250	15	69	4	49558	IG	D.S. 10708	R-86-E	D-4	MVR 49-A2
3304–05	LM-2T8-H-1	120067	65184	65202	65228	65230	120371	120372	65131	65132	GE-59	3	250	15	69	4	49558	IG	D.S. 10708	R-86-E	D-4	MVR 49-A2
3306	LM-109-B-1	120064	119159	65202	65228	65230	120371	120372	65126	None	GE-77	3	250	14	67	4	39528	IG	D.S. 9842	R-86-F	D-4	None
3307–08	LMA-2T6-A1	120073	119162	65202	65226	65227	120371	120372	65126	None	ITC 5010		220	23 17	69 70	4	None	IG	D.S. 17640	T-52-A		VR-A10
3309–13	LM-2T3-C-1	119981	119176	119281	65186	65200	120367	120368	119716	None	GE-96	3	250	14	66	3½	49606	IG	D.S. 15135	R-86-F	D-4	None
3314	LM-2T6-E-1	120106	119166	65210	65231	65232	120379	120380	65126	None	HM 701	3	250	14	69	4	65137	IG	D.S. 9842	R-86-E	D-4	None
3315	LM-2E4-A-2	120102	119174	65214	65206	65222	120367	120368	119714	None	HM 710	4	500	16	73	3½	65270	IG	D.S. 17048	R-86-F	D-4	MVR 40-A1
3316	LM-2C13-A1	120124	119911	119912	65236	65238	120381	120382	65127	65128	HM 709	2	250	15	72	4¼	65136	IG	D.S. 12959	R109-B	D-4	None
3317	LM-2T5-G-1	120141	119174	65214	65206	65222	120367	120368	119712	None	HM 703	2	250	16	73	3½	65270	IG	D.S. 15962	R-86-F	D-4	MVR 40-A1
3318–19	LM-2T4-C-1	120138	119174	65214	65206	65222	120367	120368	119714	None	GE-96	3	250	14	66	3½	49606	IG	D.S. 9936	R-86-F	D-4	None
3320	LM-2T6-E-1	120208	119166	65210	65231	65232	120379	120380	65126	None	HM 701	3	250	14	69	4	65137	IG	D.S. 9842	R-86-E	D-4	MVR 40-A2
3321	LM-2T6-B-2	120186	119166	65210	65231	65232	120379	120380	65126	None	HM 701	6	500	14	69	4	65137	IG	D.S. 15522	R-86-F	D-4	MVR 40-A2
3322–27	LM-2C10-B 2	120166	119911	119912	65236	65238	120381	120382	65223	104285	HM 711	2	500	15	72	4¼	65136	IG	D.S. 15609	R109-B	D-4	None
3328	LM-104-C-1	120221	65184	65202	65226	65227	120371	120372	65127	65128	GE-58	3	250	15	69	4	50440	IG	D.S. 12974	R-86-E	D-4	None
3329	LM-2T4-A-1	120003	119176	119281	65186	65200	120367	120368	119714	None	GE-96	3	250	14	66	3½	49606	IG	D.S. 9936	R-86-F	D-4	None

PILOT TABLE FOR LOCOMOTIVES

LOCOMOTIVE		CAT. NO.			BRAKE SHOES Cat. No.		BRAKE SHOE HEADS Cat. No.		JOURNAL SPRINGS Cat. No.		MOTORS			Teeth in Pinion	Teeth in Gear	Dia. of Axle	Gear Case Cat. No.	RHEOSTAT		Con-troller Type	Trolley Type	Cable Reel Type
Serial Number	Rating	Wheels and Axle	Journal Box	Journal Lining	Right Hand	Left Hand	Right Hand	Left Hand	Outside	Inside	Type	Arma-ture Turns	Vol-tage					Type	Con-nection Diagram			
3330-31	LM-102-D-1	119999	65184	65202	65239	65240	120390	120391	65127	65128	HM 704	4	500	14	81	4¼	65140	IG	D.S. 15907	R109-B	US124A	None
3332-35	LM-2T6-B-2	120149	119166	65210	65231	65232	120379	120380	65126	None	HM 701	6	500	14	69	4	65137	IG	D.S. 15522	R-86-F	D-4	MVR 40-A1
3336-37	LM-104-S-2	120173	65184	65202	65234	65235	120434	120435	65223	65224	HM 711	2	500	15	72	4¼	65136	IG	D.S. 15609	R109-B	D-4	None
3338	LM-2T6-A-2	119948	119161	65202	65226	65227	120371	120372	65126	None	HM 701	6	500	14	69	4	65137	IG	D.S. 17281	R-86-F	None	None
3339	LM-2C13-A1	120085	119911	119912	65234	65235	120385	120386	65127	65128	HM 709	2	250	15	72	4¼	65136	IG	D.S. 12959	R109-B	D-4	None
3340-41	LS-206-C-1	120065	65184	65202	65226	65227	120371	120372	65101	65124	GE-59	3	250	15	69	4	49558	IG	D.S. 10708	R-37-C	D-7	None
3342	LM-2T5-G-1	120028	65192	65214	65206	65222	120369	120370	119712	None	HM 703	2	250	16	73	3½	65270	IG	D.S. 15955	R-86-F	D-4	None
3343	LM-2T5-G-1	120028	65192	65214	65206	65222	120369	120370	119712	None	HM 703	2	250	16	73	3½	65270	IG	D.S. 15955	R-86-F	D-4	None
3344	LM-2T8-A-2	120114	104286	65202	65226	65227	120371	120372	65101	65124	GE-58	6	500	15	69	4	50440	IG	D.S. 12607	R-86-E	D-4	None
3345	LM-2T7-F-1	120066	65184	65202	65228	65230	120371	120372	65131	65132	HM 713	3	250	14	69	4	65137	IG	D.S. 9842	R-86-F	D-4	MVR 49-A1
3346-48	LM-2T3-A-1	119921	119176	126442	65186	65200	120367	120368	119716	None	GE-95	7	250	14	58	2¾	65961	IG	D.S. 19302	R-86-F	D-4	None
3349-50	LM-2C6-A-1	120178	119174	65214	65244	65246	120383	120384	119714	None	HM 703	2	250	16	73	3½	65270	IG	D.S. 15955	R-86-F	D-4	None
3351	LS-201-B-1	120275	119170	119278	65231	65232	120371	120372	65127	65128	GE-58	3	250	15	69	4	50440	IG	D.S. 10708	R-86-E	US-6	None
3352	LM-2T7-D-1	120149	119166	65210	65231	65232	120379	120380	65126	None	HM 701	3	250	14	69	4	65137	IG	D.S. 17438	R-86-E	D-4	MVR 40-A3
3353	LM-2T6-C-1	120030	119176	119281	65186	65200	120367	120368	119713	None	HM 703	2	250	16	73	3½	65270	IG	D.S. 15953	R-86-E	D-4	None
3354	LMA-005-B-2	120073	119162	65202	65226	65227	120371	120372	65126	None	ITC 5010		440	23 21	70 65	4	None	IG	D.S. 19321	T-1-H	D-4	None
3355	LM-2T5-B-2	120199	119174	65214	65206	65222	120369	120370	119712	None	HM 703	4	500	16	73	3½	65270	IG	D.S. 17048	R-86-F	D-4	MVR 40-A1
3356	LM-2T6-B-1	120209	119166	65210	65231	65232	120379	120380	65126	None	HM 701	3	250	14	69	4	65137	IG	D.S. 9842	R-86-E	D-4	None
3357	LM-105-D-1	*119933	119157	65212	120333	120333	None	None	119715	None	CB-15	16	250	14	66	2¾	51985	IG	D.S. 19371	R-86-F	D-4	None
3358	LM-2T7-A-1	120072	104286	65202	65228	65230	120371	120372	65101	65124	HM 701	3	250	14	69	4	65137	IG	D.S. 15602	R-86-E	D-4	MVR 49-A2
3359	LM-2E4-B1	120198	119174	65214	65206	65222	120369	120370	119714	None	HM 710	2	250	16	73	3½	65270	IG	D.S. 15955	R-86-F	D-4	MVR 40-A1
3360	LM-103-I-1	119915	65190	65212	65186	65200	120367	120368	65129	None	CB-14	10	250	14	66	3	None	IG	D.S. 9936	R-86-F	D-4	None
3361-63	LM-2T6-B-1	120209	119166	65210	65231	65232	120379	120380	65126	None	HM 701	3	250	14	69	4	65137	IG	D.S. 9842	R-86-E	D-4	MVR 40-A1
3364-67	LM-2T4-A-2	119982	119176	119281	65186	65200	120367	120368	119714	None	GE-96	6	500	14	66	3½	49606	IG	D.S. 17177	R-86-F	D-4	None
3368	LM-2T10-F-1	120234	104286	65202	65234	65235	120434	120435	65223	65224	HM 711	2	250	15	72	4¼	65136	IG	D.S. 15614	R109-B	D-4	None
3369	LM-2T5-B-1	120197	119174	65214	65206	65222	120369	120370	119712	None	HM 703	2	250	16	73	3½	65270	IG	D.S. 15955	R-86-F	D-4	MVR 40-A1
3370-72	LM-2T8-D-2	119952	104286	65202	65239	65240	120390	120391	65101	65124	HM 702	4	500	14	81	4¼	65140	IG	D.S. 15100	R-86-E	US-6	None
3377	LM-2T4-G-1	120197	119174	65214	65206	65222	120369	120370	119714	None	HM 710	2	250	16	73	3½	65270	IG	D.S. 15955	R-86-F	D-4	MVR 40-A1
3378	LM-2T10-F-2	120175	104286	65202	65234	65235	120434	120435	65223	65224	HM 711	2	500	15	72	4¼	65136	IG	D.S. 15609	R109-B	D-4	None
3379	LM-2T10-F-2	120187	104286	65202	65234	65235	120434	120435	65223	65224	HM 711	2	500	15	72	4¼	65136	IG	D.S. 15609	R109-B	D-4	None
3380	LS-005-B-1	120139	119156	119273	120311	120311	None	None	119709	None	GE-96	3	250	14	66	3½	49606	IG	D.S. 9936	R-37-C	US-7	None
3381	LS-203-E-2	119983	119156	119273	120311	120311	None	None	119709	None	GE-96	6	500	14	66	3½	49606	IG	D.S. 11331	R-86-F	D-4	None
3382	LM-101-M-1	119989	65184	65202	65228	65230	120371	120372	65101	65124	GE-79	3	250	14	69	4	43391	IG	D.S. 10697	R-86-E	D-4	None

* Later equipped with 36 in. gauge wheels Cat. No. 123745.

PILOT TABLE FOR LOCOMOTIVES

LOCOMOTIVE		CAT. NO.			BRAKE SHOES Cat. No.		BRAKE SHOE HEADS Cat. No.		JOURNAL SPRINGS Cat. No.		MOTORS			Teeth in Pinion	Teeth in Gear	Dia. of Axle	Gear Case Cat. No.	RHEOSTAT		Controller Type	Trolley Type	Cable Reel Type
Serial Number	Rating	Wheels and Axle	Journal Box	Journal Lining	Right Hand	Left Hand	Right Hand	Left Hand	Outside	Inside	Type	Armature Turns	Voltage					Type	Connection Diagram			
3383–85	LM-2T7-A-1	119990	65184	65202	65228	65230	120371	120372	65101	65124	HM 701	3	250	14	69	4	65137	IG	D.S. 19626	R109-B	D-4	MVR 40-A1
3386	LM-2C10-C-1	120226	119175	119280	120349	120350	120383	120384	119731	None	HM 711	2	250	15	72	4¼	65136	IG	D.S. 15609	R109-B	D-4	None
3387–88	LM-2T6-H-1	120149	119166	65210	65231	65232	120379	120380	65126	None	HM 701	3	250	14	69	4	65137	IG	D.S. 19682	R-86-E	D-4	MVR 36-B1
3389	LM-2T7-A-2	119947	104286	65202	65226	65227	120371	120272	65101	65124	HM 701	6	500	14	69	4	65137	IG	D.S. 17281	R-86-F	D-4	None
3390	LM-2T8-H-2	120067	65184	65202	65228	65230	120371	120372	65131	65132	GE-59	6	500	15	69	4	49558	IG	D.S. 15964	R-86-E	D-4	MVR 49-A1
3391	LM-2T5-G 1	120201	119174	65214	120322	120323	120369	120370	119712	None	HM 703	2	250	16	73	3½	65270	IG	D.S. 15955	R-86-F	D-4	MVR 40-A1
3392–93	LM-2T7-A 1	119931	104286	65202	120324	120325	120371	120372	65101	65124	HM 701	3	250	14	66	4	65137	IG	D.S. 17171	R-86-E	D-4	None
3394	LM-2T4-E 1	120028	65192	65214	65206	65222	120369	120370	119714	None	HM 703	2	250	16	73	3½	65270	IG	D.S. 19661	R-86-F	D-4	None
3395	LM-2T10 F-2	120187	104286	65202	65234	65235	120434	120435	65223	65224	HM 711	2	500	15	72	4¼	65136	IG	D.S. 15609	R109-B	D-4	None
3396	LM-2C10-B 2	120166	119911	119912	65236	65238	120385	120386	65223	104285	HM 711	2	500	15	72	4¼	65136	IG	D.S. 15609	R109-B	D-4	None
3397	LM-2T6-G-1	120141	119174	65214	65206	65222	120369	120370	119710	None	HM 703	2	250	16	73	3½	65270	IG	D.S. 9842	R-86-E	D-4	MVR 40-A2
3398–99	LS-103-E-1	119969	119156	119273	65186	65200	120367	120368	119709	None	HM 703	2	250	16	73	3½	65270	IG	D.S. 15955	R-86-F	US-2	None
3400	LM-2T3 A-1	119921	119176	119281	65186	65200	120367	120368	119716	None	GE-95	7	250	14	58	2¾	65961	IG	D.S. 19302	R-86-F	D-4	None
3401–04	LM-2T5-G-1	120027	65192	65214	65206	65222	120369	120370	119712	None	HM 703	4	500	16	73	3½	65270	IG	D.S. 17048	R-86-F	D-4	None
3405	LM-2T5-G-1	120140	104286	65202	65206	65222	120369	120370	119712	None	HM 703	2	250	16	73	3½	65270	IG	D.S. 15962	R-86-F	D-4	MVR 40-A1
3406–07	LM-101-Y-1	119946	65184	65202	65226	65227	120371	120372	65101	65124	HM 701	3	250	14	69	4	65137	IG	D.S. 9842	R-86-F	D-4	None
3408	LM-2T6-B 2	120149	119166	65210	65231	65232	120379	120380	65126	None	HM 701	6	500	14	69	4	65137	IG	D.S. 15522	R-86-F	D-4	MVR 40-A1
3409	LM-2T8 K-1	120150	119167	65208	65231	65232	120379	120380	65126	None	HM 713	3	250	14	69	4	65137	IG	D.S. 9842	R-86-E	D-4	None
3410–11	LM-104-S-2	120173	65184	65202	65234	65235	120434	120435	65223	65224	HM 711	2	500	15	72	4¼	65136	IG	D.S. 15609	R109-B	D-4	None
3412	LM-2T6-B-1	120151	119166	65210	65231	65232	120379	120380	65126	None	HM 701	3	250	14	69	4	65137	IG	D.S. 17002	R-86-E	D-4	None
3413	LM-2T4-H-1	119986	119176	119281	65186	65200	120367	120368	119712	None	HM 710	2	250	16	73	3½	65270	IG	D.S. 15955	R-86-F	D-4	None
3414	LM-2E4 B-1	120198	119174	65214	65206	65222	120369	120370	119714	None	HM 710	2	250	16	73	3½	65270	IG	D.S. 15955	R-86-F	D-4	MVR 40-A1
3415	LM-2T5-G-2	120199	119174	65214	65206	65222	120369	120370	119712	None	HM 703	4	500	16	73	3½	65270	IG	D.S. 17048	R-86-F	D-4	MVR 40-A1
3416–17	LM-2T3 C-1	119963	119176	119281	65186	65200	120367	120368	119716	None	GE-96	3	250	14	66	3½	49606	IG	D.S. 15135	R-86-F	D-4	None
3418	LM-2T6-E-1	120106	119166	65210	65231	65232	120379	120380	65126	None	HM 701	3	250	14	69	4	65137	IG	D.S. 9842	R-86-E	D-4	None
3419	LM-2T5-L-2	120200	119174	65214	65206	65222	120369	120370	119712	None	HM 703	4	500	16	73	3½	65270	IG	D.S. 17048	R-86-F	D-4	MVR 40-A1
3420	LM-2C10-A1	120180	119173	65220	65244	65246	120383	120384	65127	65128	HM 702	2	250	14	81	4¼	65140	IG	D.S. 17288	R109-B	D-4	None
3421	LM-2T5-G-1	120247	119174	65214	65206	65222	120369	120370	119712	None	HM 703	2	250	16	73	3½	65270	IG	D.S. 15955	R-86-F	D-4	MVR 40-A1
3422	LM-2T6-C-1	119985	119176	119281	65186	65200	120367	120368	119713	None	HM 703	2	250	16	73	3½	65270	IG	D.S. 15953	R-86-E	D-4	None
3423	LM-2T6-G-1	120141	119174	65214	65206	65222	120369	120370	119710	None	HM 703	2	250	16	73	3½	65270	IG	D.S. 15962	R-86-E	D-4	MVR 40-A2
3424	LM-2T8-K-1	120037	119167	65208	65231	65232	120379	120380	65126	None	HM 713	3	250	14	69	4	65137	IG	D.S. 19922	R-86-E	D-4	None
3425	LM-2T5-G-1	120247	119174	65214	65206	65222	120369	120370	119712	None	HM 703	2	250	16	73	3½	65270	IG	D.S. 15955	R-86-F	D-4	MVR 40-A

PILOT TABLE FOR LOCOMOTIVES

LOCOMOTIVE		CAT. NO.			BRAKE SHOES Cat. No.		BRAKE SHOE HEADS Cat. No.		JOURNAL SPRINGS Cat. No.		MOTORS			Teeth in Pinion	Teeth in Gear	Dia. of Axle	Gear Case Cat. No.	RHEOSTAT		Controller Type	Trolley Type	Cable Reel Type
Serial Number	Rating	Wheels and Axle	Journal Box	Journal Lining	Right Hand	Left Hand	Right Hand	Left Hand	Outside	Inside	Type	Armature Turns	Voltage					Type	Connection Diagram			
3426	LM-2T6-B-2	120209	119166	65210	65231	65232	120379	120380	65126	None	HM 701	6	500	14	69	4	65137	IG	D.S. 15522	R-86-F	D-4	None
3427	LM-2T6-A-2	119948	119161	65202	65226	65227	120371	120372	65126	None	HM 701	6	500	14	69	4	65137	IG	D.S. 17281	R-86-F	None	None
3428	LM-104-A-1	122822	65184	65202	65242	65243	120390	120391	119746	119747	GE-61	4	250	14	81	4¼	39381	IG	D.S. 19963	R109-B	D-4	None
3429	LM-2T7-A-1	119990	65184	65202	65228	65230	120371	102372	65101	65124	HM 701	3	250	14	69	4	65137	IG	D.S. 19626	R109-B	D-4	None
3430	LM-104-A-1	119967	65184	65202	65242	65243	120390	120391	119746	119747	GE-61	4	250	14	81	4¼	39381	IG	D.S. 19963	R109-B	D-4	None
3431	LM-2T7-A-1	119965	65184	65202	65228	65230	120371	120372	65101	65124	HM 701	3	250	14	69	4	65137	IG	D.S. 19626	R109-B	D-4	None
3432	LM-2T5-K-1	120199	119174	65214	65206	65222	120369	120370	119712	None	HM 703	2	250	16	73	3½	65270	IG	D.S. 15955	R-86-F	D-4	MVR 40-A
3433	LM-2T5-A-1	120030	119176	119281	65186	65200	120367	120368	119712	None	HM 703	2	250	16	73	3½	65270	IG	D.S. 15955	R-86-E	D-4	None
3434	LM-2C10-B-1	120176	119911	119912	65234	65235	120385	120386	65223	104285	HM 711	2	250	15	72	4¼	65136	IG	D.S. 15614	R109-B	D-4	None
3435	LM-2C10-B-1	120166	119911	119912	65236	65238	120385	120386	65223	104285	HM 711	2	250	15	72	4¼	65136	IG	D.S. 15614	R109-B	D-4	None
3436	LM-2T6-K-1	122823	119166	65210	65231	65232	120379	120380	65126	None	HM 701	3	250	14	69	4	65137	IG	D.S. 9842	R-86-E	D-4	MVR 40-A
3437	LM-2T6-B-2	120151	119166	65210	65231	65232	120379	120380	65126	None	HM 701	6	500	14	69	4	65137	IG	D.S. 15522	R-86-F	D-4	MVR 40-A
3438	LM-2C10-B-1	120176	119911	119912	65234	65235	120385	120386	65223	104285	HM 711	2	250	15	72	4½	65136	IG	D.S. 15614	R109-B	D-4	None
3439–42	LM-2T6-H-1	120149	119166	65210	65231	65232	120379	120380	65126	None	HM 701	3	250	14	69	4	65137	IG	D.S. 19682	R-86-E	D-4	MVR 36-B1
3446	LM-2C10-B-1	122824	119911	119912	65236	65238	120385	120386	126502	126503	HM 711	2	250	15	72	4¼	65136	IG	D.S. 15614	R109-B	D-4	None
3447	LM-2T4-A-2	122825	119176	119281	65186	65200	120367	120368	119714	None	GE-96	6	500	14	66	3½	49606	IG	D.S. 17177	R-86-F	D-4	None
3448–49	LM-101-A-1	120271	65187	65208	65231	65232	120371	120372	65126	None	GE-59	3	250	15	69	4	49558	IG	D.S. 10708	R-86-E	D-4	MVR 49-A
3450–51	LM-2T10-F-1	122826	104286	65202	65236	65238	120385	120386	65223	65224	HM 711	2	250	15	72	4¼	65136	IG	D.S. 15614	R109-B	D-4	None
3452–53	LM-109-B-1	120060	119159	65202	65228	65230	120371	120372	65126	None	GE-77	3	250	14	67	4	39528	IG	D.S. 9842	R-86-F	D-4	None
3454	LM-101-A-1	120271	65187	65208	65231	65232	120371	120372	65226	None	GE-59	3	250	15	69	4	49558	IG	D.S. 10708	R-86-E	D-4	MVR 49-A
3455	LM-2T5-G-1	120197	119174	65214	65206	65222	120369	120370	119712	None	HM 703	2	250	16	73	3½	65270	IG	D.S. 15955	R-86-F	D-4	MVR 40-A
3456	LM-104-R-1	120082	104286	65202	65236	65238	120381	120382	65223	65224	HM 709	2	250	15	72	4¼	65136	IG	D.S. 17166	R109-B	D-4	None
3457	LM-103-A-1	119940	65190	65212	65186	65200	120367	120368	65129	None	CB-14T	10	250	14	66	3	51985	PR	D.S. 1802	R-86-B	D-4	None
3458–59	LM-2T6-H-1	120151	119166	65210	65231	65232	120379	120380	65126	None	HM 701-B	3	250	14	69	4	65137	IG	D.S. 22572	R-77-A	D-4	None
3460–62	LM-2T6-H-1	120151	119166	65210	65231	65232	120379	120380	65126	None	HM 701-B	3	250	14	69	4	65137	IG	D.S. 22572	R-86-E	D-4	None
3463	LM-2T4-A-2	119944	119176	119281	65186	65200	120367	120368	119714	None	GE-96-B	6	500	14	66	3½	49606	IG	D.S. 17177	R-86-F	D-4	None
3465–66	LM-102-A-2	122827	104286	65202	65239	65240	120390	120391	65127	65128	ITC-5013		550	20 29△	77 88△	4¼	None	IG	D.S. 17640	T-52	None	None
3467	LM-2T7-A-1	119965	65184	65202	65228	65230	120371	120372	65101	65124	HM 701-B	3	250	14	69	4	65137	IG	D.S. 19626	R109-B	D-4	None
3468	LM-2T8-A-1	120162	104286	65202	65226	65227	120371	120372	65101	65124	GE-58-A	3	250	15	69	4	50440	IG	D.S. 10708	R-86-E	D-4	None

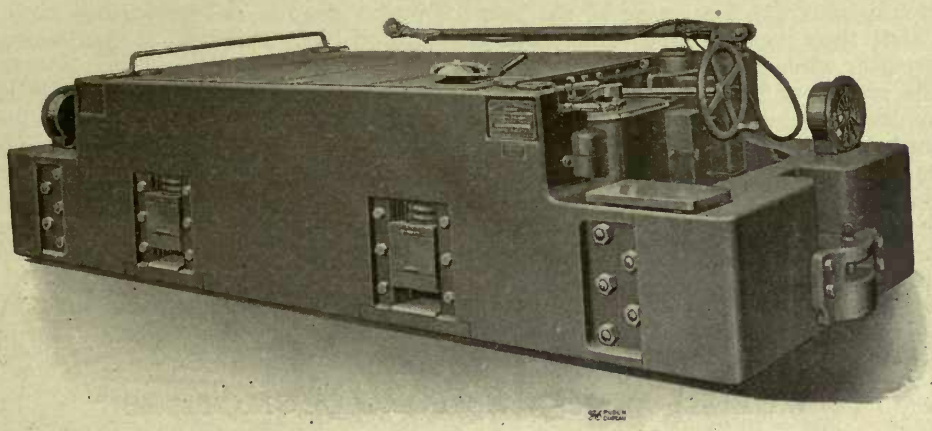
△ Used on intermediate shaft, double gear reduction.

PILOT TABLE FOR LOCOMOTIVES

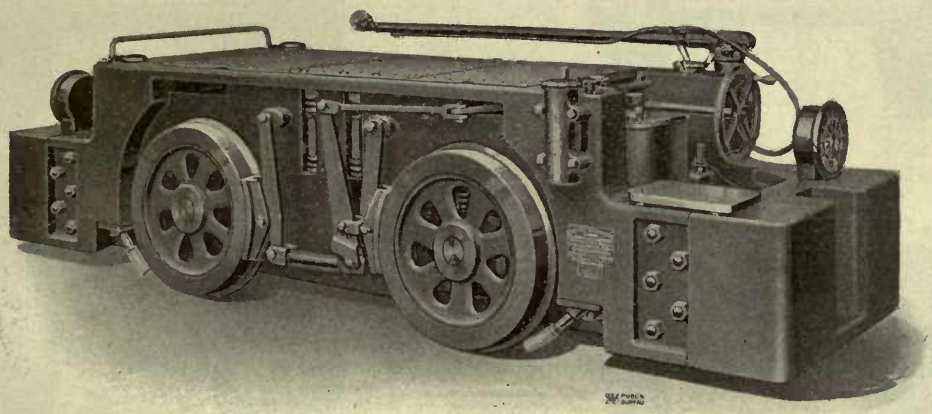
LOCOMOTIVE		CAT. NO.			BRAKE SHOES Cat. No.		BRAKE SHOE HEADS Cat. No.		JOURNAL SPRINGS Cat. No.		MOTORS			Teeth in Pinion	Teeth in Gear	Dia. of Axle	Gear Case Cat. No.	RHEOSTAT		Controller Type	Trolley Type	Cable Reel Type
Serial Number	Rating	Wheels and Axle	Journal Box	Journal Lining	Right Hand	Left Hand	Right Hand	Left Hand	Outside	Inside	Type	Armature Turns	Voltage					Type	Connection Diagram			
3469	LM-2T7-A-2	122828	104286	65202	65226	65227	120432	120433	65101	65124	ITC5011		220	23△	70△	4	None	IG	D.S. 23010	T-52-A	D-4	None
3470-71	LM-2T6-B-1	120209	119166	65210	65231	65232	120379	120380	65126	None	HM 713 -B	3	250	14	69	4	65137	IG	D.S. 9842	R-86-E	D-4	MVR 40-A
3473	LM-2T5-G-1	120199	119174	65214	65206	65222	120369	120370	119712	None	HM 703 -B	2	250	16	73	3½	65270	IG	D.S. 15955	R-86-F	D-4	None
3474	LM-2T10-C-2	122829	65184	65202	65239	65240	74772	74773	119746	119747	GE-61	4	500	14	81	4¼	39381	IG	D.S. 15609	R109-D	D-19	None
3475	LM-105-A-2	119955	119158	119274	*120305	*120306	None	None	119726	None	NWP 2½-A	26	500	12	58	2¾	100090	PR	D.S. 1936	R-14	D-4	None
3476	LM-2T7-A-1	120072	104286	65202	65228	65230	120371	120372	65101	65124	HM 701 -B	3	250	14	69	4	65137	IG	D.S. 15602	R-86-E	D-4	MVR 49
3477	LM-2E4-C-1	120029	119176	119281	65186	65200	120367	120368	119714	None	HM 703 -B	2	250	16	73	3½	65270	IG	D.S. 23113	R-86-F	D-4	None
3478	LM-2C10-B-1	122824	119911	119912	65236	65238	120385	120386	65223	104285	HM 711 -C	2	250	15	72	4¼	65136	IG	D.S. 23109	R109-B	D-4	None
3479-80	LM-2C10-D-1	120176	119911	119912	65234	65235	120385	120386	65223	104285	HM 711 -C	2	250	15	72	4¼	65136	IG	D.S. 23189	R109-B	D-4	None
†3481-84	LM-2T4-F-1	122830	119174	65214	65206	65222	120369	120370	119712	None	HM 703 -B	2	250	16	73	3½	65270	IG	D.S. 23122	R-86-F	D-4	MVR 36-B1
3485	LM-2T10-F2	120267	104286	65202	65236	65238	120385	120386	65223	65224	HM 711 -C	2	500	15	72	4¼	65136	IG	D.S. 15609	R109-B	D-4	None
3486	LM-2C10-B-1	120166	119911	119912	65236	65238	120385	120386	65223	104285	HM 711 -C	2	500	15	72	4¼	65136	IG	D.S. 15614	R109-B	D-4	None
3487-89	LM-2T10-F-1	120267	104286	65202	65236	65238	120385	120386	65223	65224	HM 711 -C	2	250	15	72	4¼	65136	IG	D.S. 23109	R109-B	D-4	None
3490-92	LSA-2E18-A-1	120294	119172	119279	120365	120366	120396	120397	119752	119753	MI -106		220	18	90	5	None	IG	D.S. 23139	T-62-A	None	None
3493	LM-2T5-G-1	120199	104286	65202	65206	65222	120369	120370	65223	65224	HM 703 -B	2	250	16	73	3½	65270	IG	D.S. 15955	R-86-F	D-4	MVR 40-A
3494	LM-101-B-2	122831	65184	65202	125355	125356	120371	120372	65101	65124	GE-60 -A	6	500	14	67	4	52376	IG	D.S. 23118	R-86-F	US-2	None
3495	LM-2T5-G-1	120140	104286	65202	65206	65222	120369	120370	65223	65224	HM 703 -B	2	250	16	73	3½	65270	IG	D.S. 15962	R-86-F	D-4	MVR 40
3496	LM-2T6-K-1	122823	119166	65210	65231	65232	120379	120380	65126	None	HM 701 -B	3	250	14	69	4	65137	IG	D.S. 23110	R-86-E	D-4	MVR 40
3497 to 3501 inc.	LM-2T6-K-2	122823	119166	65210	65231	65232	120379	120380	65126	None	HM 701 -B	6	500	14	69	4	65137	IG	D.S. 23111	R-86-F	D-4	MVR 40-A

* Combined shoe and head. † Equipped with winding device. △ Used on intermediate shaft, double gear reduction.

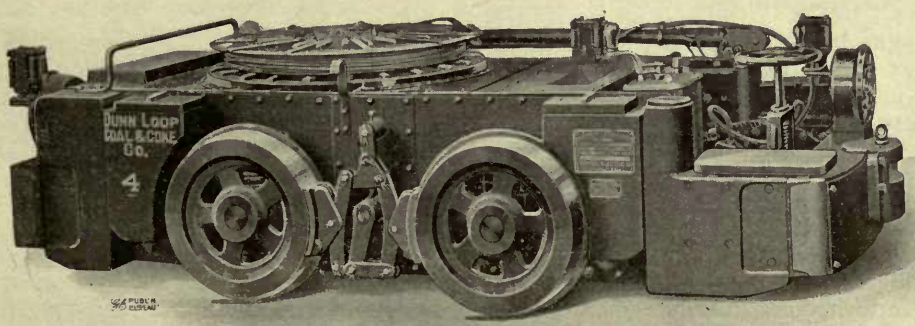
LOCOMOTIVES



Outside Frame Locomotive



Inside Frame Locomotive



Four-Ton Gathering Locomotive (Inside Frame)

LOCOMOTIVES

Listed on the following pages will be found repair parts for all of the mining locomotives shipped by this Company since the beginning of the year 1900 and in addition the various tables have been so prepared that they include parts which will be required for a majority of the locomotives to be furnished hereafter while present standards prevail.

From the nature of the service conditions met it is apparent that wide varients have entered the design of locomotives; differences in gauge and weight and operating voltage have demanded many standards, while almost innumerable less important conditions have brought minor variations of the standards. However, to the ultimate benefit of both the user and the manufacturer it has been possible to so equip the majority of locomotives that the chief wearing parts adhere to standards and it is, therefore, practicable to give them catalogue numbers in addition to the usual names.

Parts other than those to which catalogue numbers are assigned are carefully described by lettered cuts and names.

When ordering parts to which Cat. Nos. are assigned give the Cat. No. and name of each part wanted: if parts wanted have no Cat. Nos. give the names and in addition the serial number of the locomotive for which they are ordered.

WHEELS AND AXLES FOR LOCOMOTIVES

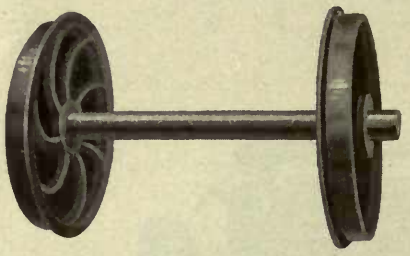


Fig. I
Wheels and Axle of Outside Frame Locomotive
(Plate Type—Chilled Iron)

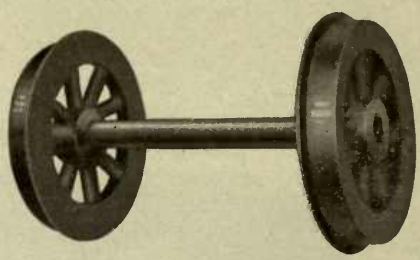


Fig. II
Wheels and Axle of Inside Frame Locomotive
(Spoke Type—Chilled Iron)

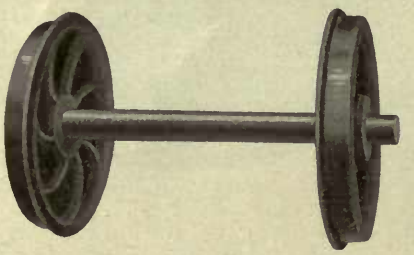


Fig. III
Wheels and Axle of Outside Frame Locomotive
(Plate Type—Steel Tired)

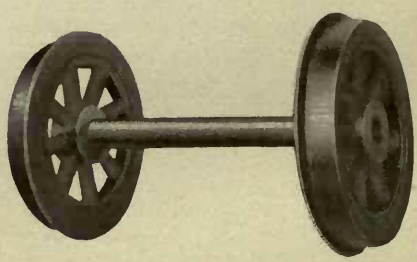


Fig. IV
Wheels and Axle of Inside Frame Locomotive
(Spoke Type—Steel Tired)

The catalogue numbers of wheels and axles appearing in the Pilot Table preceding, designate material just as was furnished on the Locomotives when shipped, with the exception that in a comparatively few instances we have been called on to furnish renewal wheels different from the original and in such cases the catalogue numbers designate material as furnished on the renewal order. The following table shows the material used for every catalogue number and in the absence of instructions to the contrary repair orders will be filled as here indicated. It should be noted, however, that when desired steel tired wheels can be supplied to replace chilled iron and vice versa.

Wheels of outside frame locomotives are of the plate type, Fig. I, and of inside frame locomotives are of the spoke type Fig. II.

Each catalogue number in the table includes one axle and two wheels mounted on it. Separate wheels can be furnished rough bored when desired and orders for them should read "separate wheels for Cat. No....." specifying the Cat. No. of the corresponding axle complete with wheels. We do not recommend the purchase of separate wheels otherwise than rough bored as it is impossible to guarantee proper fit on the axle unless the axle is in our possession.

An order for a "set" of wheels and axles is interpreted to mean sufficient to equip a locomotive. Careful use of the catalogue numbers will obviate difficulty in this respect.

WHEELS AND AXLES FOR LOCOMOTIVES

Cat. No.	DIMENSIONS IN INCHES				Fig. No.
	Gauge	Diam. of Wheels	Diam. of Axle at Gear Fit	Overall Length	
119915	17	22	3	37 7/8	I
119916	18	20	2 3/4	31 1/2	I
119917	18	20	2 3/4	34 7/8	I
119918	18	20	2 3/4	34 7/8	I
119919	18	20	2 3/4	34 7/8	I
119920	18	20	2 3/4	34 7/8	I
119921	18	20	2 3/4	35 3/8	I
119922	18	20	2 3/4	37 7/8	I
119923	18	22	3	31 7/8	I
119924	20	20	2 3/4	33 7/8	I
119925	20	20	2 3/4	34 7/8	I
119927	22	20	2 3/4	35 1/2	I
119928	22 1/2	20	2 3/4	39	I
119929	*23	20	2 3/4	36 1/2	I
119930	23 1/2	22	2 3/4	37 7/8	I
119931	23 5/8	28	4	44 1/4	III
119932	24	14	2 3/4	37 3/4	I
119933	24	14	2 13/16	37 3/4	III
119934	24	20	2 3/4	37 1/2	I
119935	24	20	2 3/4	37 7/8	I
119936	24	22	2 3/4	37 7/8	I
119937	24	22	2 3/4	37 7/8	I
119938	24	22	2 3/4	41 7/8	I
119939	24	22	3	37 1/2	I
119940	24	22	3	37 7/8	I
119941	24	22	3	39	I
119942	24	22	3	43 7/8	I
119943	24	22	3 1/2	37 7/8	I
119944	24	22	3 1/2	39 3/8	I
119945	24	28	4	41 1/2	III
119946	24	28	4	43 1/2	I
119947	24	28	4	44 1/4	III
119948	24	28	4	44 3/8	I
119949	24	28	4	46 1/2	I
119950	24	28	4	48 5/8	I
119951	24	33	4 1/4	40 1/2	I
119952	24	33	4 1/4	50 1/4	I
119953	24	33	4 1/4	50 1/2	I
ϕ119954	24	33	4 1/4	50 1/2	I
119955	26	20	2 3/4	30 9/16	II
119956	26	28	4	46 3/8	III
119957	26	33	4 1/4	50 1/2	I
119958	26	33	4 1/4	50 1/2	I
119959	27 1/2	22	3	40 3/4	I
126376	28	20	2 3/4	41 1/2	I
119960	28	20	2 3/4	41 1/2	I
119961	28	22	2 3/4	41 7/8	I
119962	28	22	3	43 7/8	I
119963	28	22	3 1/2	43 3/8	I
119964	28	28	4	47 1/2	I
119965	28	28	4	49 1/2	I
119966	28	33	4 1/4	50 1/2	I
119967	28	33	4 1/4	50 1/2	I
119968	28 1/2	22	3	43 7/8	I
119969	29	24	3 1/2	45	III
119970	29 1/2	22	3	43 1/2	I
119971	29 1/2	22	3	43 1/2	I
119972	29 1/2	22	3	43 1/2	I
119973	30	22	2 3/4	43 7/8	I
119974	30	22	3	43 1/2	I
119975	30	22	3	43 1/2	I
119976	30	22	3	43 7/8	III
119977	30	22	3	43 7/8	I
119978	30	22	3	45 1/2	I
119979	30	22	3	51 3/8	I
119980	30	22	3 1/2	43 7/8	III
122825	30	22	3 1/2	45 3/8	I
119981	30	22	3 1/2	45 3/8	III
119982	30	22	3 1/2	45 3/8	I
119983	30	22	3 1/2	51 3/8	I
119984	30	24	3 1/2	45 3/8	I
119985	30	24	3 1/2	45 3/8	III
119986	30	24	3 1/2	46 7/8	I
119987	30	28	4	49 1/2	I
119988	30	28	4	49 1/2	I
119989	30	28	4	49 1/2	I
119990	30	28	4	49 1/2	I
122822	30	33	4 1/4	50 1/2	I
119991	30	33	4 1/4	46 1/2	I
119992	30	33	4 1/4	50 1/2	I
119993	30	33	4 1/4	50 1/2	I
119994	30	33	4 1/4	50 1/2	III
119995	30	33	4 1/4	50 1/2	I
119996	30	33	4 1/4	50 1/2	I
119997	30	33	4 1/4	50 1/2	III
119998	30	33	4 1/4	50 1/2	III
119999	30	33	4 1/4	50 1/2	III
120000	30	33	4 9/32	50 1/2	I
120001	30	33	4 9/32	50 1/2	III
120002	33	22	3	46 7/8	I
120003	34	22	3 1/2	49 3/8	III
120004	35	22	3	48 1/2	I
123487	35	28	4	55 1/2	I
120005	35 1/2	22	3 1/2	51	I
120006	35 1/2	22	3 1/2	51	I
120007	35 1/2	28	4	55 1/2	I
120008	35 1/2	28	4	55 1/2	I
120010	35 1/2	28	4	55 1/2	I
120011	35 1/2	28	4	55 1/2	I
120012	35 1/2	28	4	55 1/2	I
120013	35 1/2	28	4	55 1/2	I
120014	35 1/2	28	4	55 1/2	I
120015	35 1/2	28	4	55 1/2	I
120016	35 1/2	30	4 1/4	55 1/2	I
120017	35 1/2	30	4 1/4	55 1/2	I
120018	35 1/2	30	4 1/4	55 1/2	I
123745	36	14	2 3/4	49 3/4	III
120019	36	22	2 3/4	49 7/8	III
120020	36	22	2 3/4	49 7/8	I
120021	36	22	3	49 1/2	I
120022	36	22	3	49 1/2	I
120023	36	22	3	49 7/8	I
126377	36	22	3	49 7/8	I
120024	36	22	3	52 3/8	I
120025	36	22	3 1/2	43	II
120026	36	22	3 1/2	49 7/8	I
120027	36	24	3 1/2	43	II
120028	36	24	3 1/2	43	IV
120029	36	24	3 1/2	51 3/4	I
120030	36	24	3 1/2	51 3/8	III
120031	36	28	3 1/2	49 7/8	I
120032	36	28	4	43	II
120033	36	28	4	43	IV
120034	36	28	4	43	II
120035	36	28	4	43	Special
120036	36	28	4	43	Special
120037	36	28	4	43	III
126451	36	28	4	43	IV
120038	36	28	4	50 1/4	I
120039	36	28	4	53 3/4	I

*In one instance used on 23 1/2 in. gauge.

ϕWheels have no Flange.

WHEELS AND AXLES FOR LOCOMOTIVES

Cat. No.	DIMENSIONS IN INCHES				Fig. No.	Cat. No.	DIMENSIONS IN INCHES				Fig. No.
	Gauge	Diam. of Wheels	Diam. of Axle at Gear Fit	Overall Length			Gauge	Diam. of Wheels	Diam. of Axle at Gear Fit	Overall Length	
120040	36	28	4	55 1/2	I	120104	40	28	4	47	IV
120041	36	28	4	55 1/2	I	120105	40	28	4	47	IV
120042	36	28	4	55 1/2	III	119433	40	28	4	47	II
120043	36	28	4	55 1/2	I	120106	40	28	4	47	IV
120044	36	28	4	55 1/2	I	120107	40	28	4	57 3/4	I
120045	36	28	4	55 1/2	Special	120108	40	28	4	59 1/2	I
120046	36	28	4	55 1/2	III	120109	40	28	4	59 1/2	I
120047	36	28	4	55 1/2	I	120110	40	28	4	59 1/2	I
120048	36	28	4	55 1/2	I	120111	40	28	4	59 1/2	I
120049	36	28	4	55 1/2	I	120112	40	28	4	59 1/2	I
120050	36	28	4	55 1/2	III	120113	40	28	4	59 1/2	I
120051	36	28	4	55 1/2	III	120114	40	28	4	60 1/4	III
120009	36	28	4	55 1/2	I	120115	40	28	4	62	Special
120053	36	28	4	55 1/2	I	120116	40	30	4	59 1/2	I
120054	36	28	4	55 1/2	I	120117	40	30	4 1/4	57 3/4	I
120055	36	28	4	55 1/2	I	120118	40	30	4 1/4	59 1/2	I
120056	36	28	4	55 1/2	I	120119	40	30	4 1/4	59 1/2	I
120057	36	28	4	55 1/2	I	120120	40	30	4 1/4	59 1/2	III
120058	36	28	4	55 1/2	I	120121	40	30	4 1/4	59 1/2	I
120059	36	28	4	55 1/2	I	120122	40	30	4 1/4	59 1/2	III
120060	36	28	4	55 1/2	I	120123	40	30	4 1/4	61 1/2	I
120061	36	28	4	55 1/2	I	120124	40	30	4 1/4	61 5/8	III
120062	36	28	4	55 1/2	I	120125	41	24	3 1/2	48	IV
120063	36	28	4	55 1/2	I	120126	41	28	4	61 1/2	I
120064	36	28	4	55 1/2	III	120127	41	33	4 1/4	48	IV
120065	36	28	4	55 1/2	III	120128	42	22	3	49	II
120066	36	28	4	55 1/2	I	120129	42	22	3	49	II
120067	36	28	4	55 1/2	II	120130	42	22	3	55 1/2	I
120068	36	28	4	56 1/4	I	120131	42	22	3	55 7/8	I
120069	36	28	4	56 1/4	I	120132	42	22	3	55 7/8	I
120070	36	28	4	56 3/8	I	120133	42	22	3 1/2	49	II
120071	36	28	4	56 3/8	I	120134	42	22	3 1/2	49	IV
120072	36	28	4	56 1/4	I	120135	42	22	3 1/2	49	II
120073	36	28	4	58 3/8	I	120136	42	22	3 1/2	49	II
120074	36	28	4	65 5/8	I	120137	42	22	3 1/2	49	IV
120075	36	30	4	53 3/4	I	120138	42	22	3 1/2	49	IV
120076	36	30	3	53 3/4	I	120139	42	22	3 1/2	58 1/2	I
120077	36	30	4	53 3/4	III	120140	42	24	3 1/2	49	IV
120078	36	30	4	55 1/2	I	120141	42	24	3 1/2	49	II
120079	36	30	4 1/4	55 1/2	I	120142	42	28	4	49	II
122826	36	30	4 1/4	56	I	120143	42	28	4	49	II
120080	36	30	4 1/4	59 1/2	I	120144	42	28	4	49	IV
120081	36	30	4 1/4	60 5/8	I	120145	42	28	4	49	II
120082	36	30	4 1/4	56 1/2	I	120146	42	28	4	49	IV
120083	36	30	4 1/4	56 5/8	I	120147	42	28	4	49	II
120084	36	30	4 1/4	57 5/8	I	120148	42	28	4	49	II
120085	36	30	4 1/4	57 5/8	I	120149	42	28	4	49	II
120086	36	30	4 1/4	58 1/2	III	120150	42	28	4	49	IV
120087	36	30	4 1/4	59 1/2	I	120151	42	28	4	49	IV
120088	36	30	4 1/4	60 1/2	III	120152	42	28	4	49 7/8	Special
120089	36	33	4 1/4	43	IV	120153	42	28	4	59 3/4	I
120090	36	33	4 1/4	43	II	120154	42	28	4	61 1/2	I
120091	36	33	5	56 1/2	III	120155	42	28	4	61 1/2	I
120092	36 1/2	28	4	55 1/2	I	120156	42	28	4	61 1/2	I
120093	37 1/2	30	4 1/4	57	I	120157	42	28	4	61 1/2	I
120094	37 1/2	30	4 1/4	61 1/2	I	120158	42	28	4	61 1/2	I
120095	38	28	4	57 1/2	I	120159	42	28	4	61 1/2	I
120096	38	30	4 1/4	57 1/2	I	120160	42	28	4	61 1/2	I
120097	38	33	4 1/4	45	IV	120161	42	28	4	61 1/2	I
120098	39	28	4	46	IV	120162	42	28	4	62 1/4	III
120099	39	28	4	46	IV	120163	42	30	4 1/4	61 1/2	I
123488	40	22	3	53 7/8	I	120164	42	30	4	61 1/2	Special
120100	40	22	3 1/2	47	IV	126378	42	30	4 1/4	62	III
120101	40	22	3 1/2	47	IV	120165	42	30	4	61 1/2	I
120102	40	24	3 1/2	47	II	120166	42	30	4 1/4	62 5/8	IV
120103	40	28	4	47	IV						

WHEELS AND AXLES FOR LOCOMOTIVES

Cat. No.	DIMENSIONS IN INCHES				Fig. No.
	Gauge	Diam. of Wheels	Diam. of Axle at Gear Fit	Overall Length	
120167	42	30	4 1/4	60 1/2	I
120168	42	30	4 1/4	61 1/2	I
120169	42	30	4 1/4	61 1/2	I
120170	42	30	4 1/4	61 1/2	I
120171	42	30	4 1/4	61 1/2	Special
120172	42	30	4 1/4	61 1/2	III
120173	42	30	4 1/4	61 1/2	I
120175	42	30	4 1/4	62	I
120176	42	30	4 1/4	62 5/8	I
120177	42	30	4 1/4	64	I
120178	42	33	3 1/2	49	IV
120179	42	33	4 1/4	49	IV
120180	42	33	4 1/4	49	II
120181	42	33	4 1/4	62 1/2	I
120182	42	33	5	61 1/2	I
120183	42	33	5	61 1/2	III
120184	42	33	5	61 1/2	I
120185	42	33	5	62 1/2	I
120186	43	28	4	50	II
120187	43	30	4 1/4	63	I
120188	43 1/2	28	4	63 1/2	I
120189	44	22	3	51	II
120190	44	22	3	51	II
120191	44	22	3	51	II
120192	44	22	3	59 1/2	I
120193	44	22	3 1/2	51	II
120194	44	22	3 1/2	51	II
120195	44	22	3 1/2	51	IV
120196	44	24	3 1/2	51	IV
120197	44	24	3 1/2	51	II
120198	44	24	3 1/2	51	II
120199	44	24	3 1/2	51	IV
120200	44	24	3 1/2	51	II
120201	44	24	3 1/2	51 1/2	IV
120202	44	28	4	51	II
120203	44	28	4	51	II
120204	44	28	4	51	II
120205	44	28	4	51	IV
120206	44	28	4	51	II
120207	44	28	4	51	IV
120208	44	28	4	51	IV
120209	44	28	4	51	IV
120210	44	28	4	61 3/4	I
120211	44	28	4	63 1/2	I
120212	44	28	4	63 1/2	I
120213	44	28	4	63 1/2	I
120214	44	28	4	63 1/2	I
120215	44	28	4	63 1/2	I
120216	44	28	4	63 1/2	I
120217	44	28	4	63 1/2	Special
120218	44	28	4	63 1/2	I
120219	44	28	4	63 1/2	I
120220	44	28	4	63 1/2	I
120221	44	28	4	63 1/2	I
126375	44	28	4	63 1/2	I
120222	44	28	4	64 1/2	I
120223	44	28	4	64 1/2	I
123746	44	28	4	64 1/4	III
120224	44	28	4	67 1/2	I
120225	44	28	4	69	III
120226	44	30	4 1/4	51	IV
120227	44	30	4 1/4	61 3/4	I
120228	44	30	4 1/4	63 1/2	I
120229	44	30	4 1/4	63 1/2	I
120230	44	30	4 1/4	63 1/2	I
120231	44	30	4 1/4	63 1/2	I
122824	44	30	4 1/4	64 5/8	III
120232	44	30	4 1/4	63 1/2	I
120233	44	30	4 1/4	63 1/2	III
120234	44	30	4 1/4	64	I
120235	44	30	4 1/4	65 5/8	III
120236	44	33	5	63 1/2	I
120237	44	33	5	63 1/2	III
120238	44	33	5 1/32	51	IV
120239	44 1/2	28	4	63 1/2	I
120240	45	28	4	64 1/2	I
120241	45	30	4 1/4	64 1/2	I
120242	47 1/4	30	4 1/4	67 1/2	I
120243	47 1/4	30	4 1/4	67 1/2	III
120244	47 1/4	30	4 1/4	67 1/2	III
120245	48	22	3	61 7/8	I
120246	48	22	3 1/2	55	II
120247	48	24	3 1/2	55	IV
120248	48	28	3 3/4	65 3/4	I
120249	48	28	4	55	II
120250	48	28	4	55	IV
120251	48	28	4	55	IV
120252	48	28	4	55	IV
120253	48	28	4	55 7/8	Special
120254	48	28	4	65 1/4	I
120255	48	28	4	67 1/2	I
120256	48	28	4	67 1/2	I
120257	48	28	4	67 1/2	I
120258	48	28	4	67 1/2	I
120259	48	28	4	67 1/2	I
120260	48	28	4	68 1/4	I
120261	48	28	4 1/32	55	IV
120262	48	28	4	55	IV
122823	48	28	4	55	IV
120263	48	30	4 1/4	67 1/2	I
120264	48	30	4 1/4	67 1/2	I
120265	48	30	4 1/4	67 1/2	III
120266	48	30	4 1/4	67 1/2	I
120267	48	30	4 1/4	68	III
120268	56 1/2	22	3 1/2	63 1/2	II
120269	56 1/2	28	4	63 1/2	II
120270	56 1/2	28	4	63 1/2	II
120271	56 1/2	28	4	63 1/2	II
120272	56 1/2	28	4	76	I
120273	56 1/2	28	4	77 3/4	I
120274	56 1/2	28	4	77 3/4	I
120275	56 1/2	28	4	80 1/2	I
120276	56 1/2	28	4	80 3/4	I
121449	56 1/2	28	4	80 3/4	I
120277	56 1/2	29	4	63 3/8	IV
120278	56 1/2	30	4	80 3/4	I
120279	56 1/2	30	4 1/4	63 1/2	IV
120280	56 1/2	30	4 1/4	63 1/2	II
120281	56 1/2	30	4 1/4	76	III
120282	56 1/2	30	4 1/2	79 1/4	Special
120283	56 1/2	30	4 1/2	79 1/4	I
120284	56 1/2	33	4 1/2	77 1/2	I
120285	56 1/2	33	4 1/2	79 1/4	I
120286	56 1/2	33	4 1/2	79 1/4	I
120287	56 1/2	33	4 1/2	79 1/4	I
120288	56 1/2	33	4 1/2	82 3/4	I
120289	56 1/2	33	4 3/4	79 1/4	I
120290	56 1/2	33	5	76	I
120291	56 1/2	33	5	79 1/4	Special
120292	56 1/2	33	5 1/4	79 1/4	I
120293	56 1/2	33	5 1/4	82 3/4	I
120294	56 1/2	36	5	82 3/4	Special
120295	56 1/2	28	4	81 3/8	III
126374	56 1/2	33	5 1/4	85 5/8	III
120296	62 1/4	28	4	69 1/4	II

JOURNAL BOXES AND LININGS FOR LOCOMOTIVES

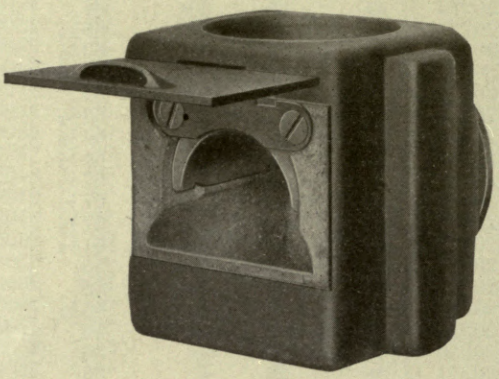


Fig. I
Outside Frame Journal Box (New Type)

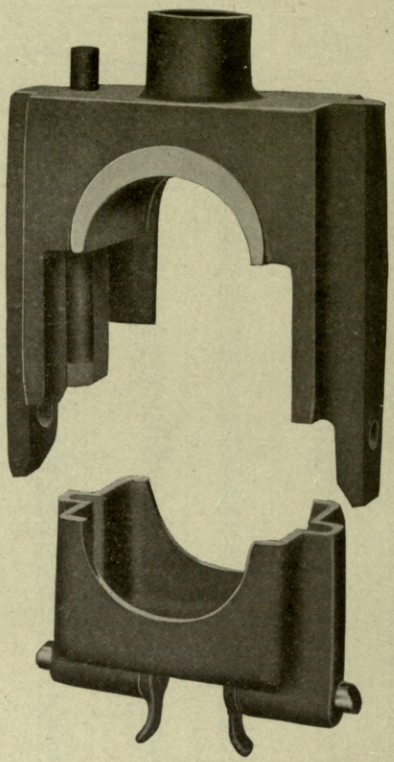


Fig. II
Inside Frame Journal Box

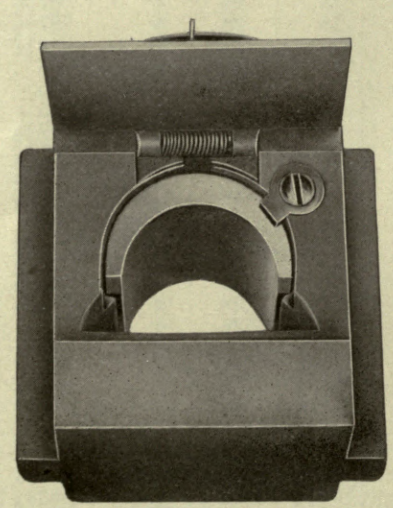


Fig. III
Outside Frame Journal Box (Old Type)

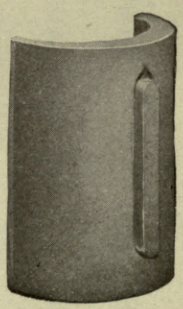


Fig. IV
Journal Box Lining

The journal boxes are similar to regular railway boxes and have removable brass linings. Two types are used, one illustrated in Fig. I for outside frame and the other, Fig. II, for inside frame locomotives. Fig. III shows the outside frame box with the stayplate, which holds the lining in place, as it used to be furnished. The improved stayplate shown in Fig. I is now standard and supplied in all cases. Fig. IV shows the standard type of journal box lining. The pattern number, cast on every journal box, may in some cases be useful as a means of identification. Catalogue numbers for journal boxes are for boxes only; if linings are wanted they should be specified separately and by their own catalogue numbers. In the table the linings are placed directly opposite the boxes with which they are used.

JOURNAL BOXES AND LININGS FOR LOCOMOTIVES

JOURNAL BOXES				LININGS			
					Dimensions in Inches		
Cat. No.	Pattern No.	Fig. No.	Remarks	Cat. No.	Length	Bore	Diam. Shell
65185	18800	I		65204	5 1/4	3 17/64	4 1/8
119156	21800	I		119273	4	2 5/8	3 1/16
65190	55252	I	Recess for journal spring 3/4 in. deep	65212	4	2 41/64	3 1/2
119157	55252	I	Recess for journal spring 3/8 in. deep				
119158	85220-A	I		119274	4	2 49/64	4 1/2
65194	85220-K	II		65216	4	3 1/64	4 1/8
65184	95023-P	I	Without wearing plate				
119159	95023-P	I	Plug in spring recess for use with single journal spring				
119160	95023-P	I	Like Cat. No. 65184 except has 1/2 in. wearing plate				
119161	95023-P	I	Like Cat. No. 119159 except has 3/8 in. wearing plate	65202	6	3 49/64	4 1/2
104286	95023-P	I	Like Cat. No. 65184 except has 3/8 in. wearing plate				
119162	95023-P	I	Like Cat. No. 119159 except has 5/8 in. wearing plate				
119163	99457-A	I		119275	4 13/16	3 49/64	4 1/2
126435	122000-A	Special		126436	8	4 1/4	
119164	122829-F	I		119276	6	4 33/64	5 1/2
119911	122829-F	II	With wearing plate	119912	6 7/8	4 1/64	5 1/2
119165	122927-XE	I	Has finished guides	65208	5	4 1/64	4 3/4
119166	122927-XF	II	With wearing plate	65210	4 1/2	4 1/64	4 3/4
65187	122927-XE	II	Without wearing plate	65208	5	4 1/64	4 3/4
119167	122927-XE	II	With wearing plate				
65188	122927-XF	II	Without wearing plate	65210	4 1/2	4 1/64	4 3/4
119168	122927-XF	II	With wearing plate for LM-2T7-B1 only				
119169	123030-A	II		119277	4 9/16	3 49/64	4 1/2
119170	123182-E	I		119278	7	1.883	5 1/16
				126437	7	2.258	5 1/16
119171	123334-G	I		119279	7 1/2	4 33/64	5 1/2
				119913	7 1/2	5 1/64	5 1/2
119172	123334-G	I	With dust guard	119279	7 1/2	4 33/64	5 1/2
65198	225211-D	I	Without wearing plate	65220	5 1/2	4 17/64	5
119173	225211-D	II	With wearing plate	126438	5 1/2	4 1/64	5
65192	242153-E	II	Without wearing plate	65214	4	3 33/64	4 1/4
119174	242153-E	II	With wearing plate				
65196	242495-A	I		65218	5	3 49/64	4 3/4
119175	854152-A	II		119280	4	4 17/64	6
				119914	4	5	6
119176	867108-A	I		119281	4	3 17/64	4
				126442	4	2 41/64	4

JOURNAL AND MOTOR SUSPENSION SPRINGS FOR LOCOMOTIVES

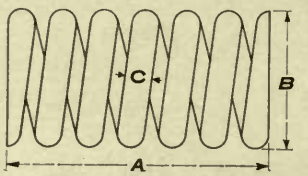


Fig. I
Single Journal and Motor Suspension Spring

The journal and motor suspension springs are made of the highest grade of rolled steel. Double coil journal springs consisting of one inside spring and one outside spring are used for the larger locomotives, while in the smaller sizes single coil springs are used. The spring suspension of the motors, which is an important feature of the General Electric mine locomotives, very materially reduces the pounding on the rails and diminishes the expense of maintenance of both track and locomotive. It is consequently of importance that only high-grade springs be used for this purpose.

Fig. II
Double Journal Spring

SINGLE JOURNAL SPRINGS

Cat. No.	DIMENSIONS IN INCHES		Cat. No.	DIMENSIONS IN INCHES	
	Length	Outside Diam.		Length	Outside Diam.
119908	4 3/16	3 3/4	D 119721	6 1/4	3 5/8
119709	4 1/4	3 3/4	119726	6 1/2	3 3/8
119710	4.9	3 3/4	119727	6 1/2	5 1/2
A 119711	5	3 3/4	119728	7	4
B 119712	5	3 3/4	65135	7 1/8	3 1/2
119713	5.07	3 1/2	119729	7 1/4	3 5/8
119714	5 5/16	3 1/2	119730	7 3/8	4 1/8
119715	5 3/8	3 9/16	119731	7 7/16	3 1/2
119716	5 1/2	3 1/2	119732	8	4 1/2
65130	5 3/4	3 1/2	E 119733	8 1/4	4 3/8
119717	6	4	F 119734	8 1/4	4 3/8
65126	6	4 9/16	119738	9 1/2	4 3/8
119719	6 1/4	2 3/4			
C 65129	6 1/4	3 5/8			

A-has 5 1/2 turns.
B-has 4 1/2 turns.
C-Plain finish.
D-Japan finish.
E-wire 1 in. diameter.
F-wire 1 1/8 in. diameter.

DOUBLE JOURNAL SPRINGS

OUTSIDE SPRING			INSIDE SPRING		
Cat. No.	Dimensions in Inches		Cat. No.	Dimensions in Inches	
	Length	Outside Diam.		Length	Outside Diam.
119739	5	5 1/2	G 119740	4 1/2	3 3/4
			H 119741	4.92	3 3/4
119742	5 1/4	5 1/2	119743	5	3 1/4
119744	5 3/4	5 1/2	119745	5 1/2	3 1/4
J 119746	6	5 1/2	119747	6	2 3/4
K 65127	6	5 1/2	65128	6	3 1/4
L 65101	6	5 1/2	65124	6	3 1/2
M 119748	6	5 1/2	119749	6	2 1/2
N 119718	6	5 1/2	119907	6	3
119909	6.02	5 1/2	119910	6.15	2 3/4
O 65131	6 3/8	5 1/2	65132	7	3 1/2
P 119752	6 3/8	5 1/2	119753	6 3/8	3 1/4
126502	6 1/2	5 1/2	126503	7	3 1/4
119754	6 15/16	5 1/2	119755	7 3/16	3 1/4
65223	7 1/2	5 1/2	65224	7 1/2	3 1/4
			104285	8	3 1/4
126542	8 3/8	8	126543	8 3/8	5

G-For side opposite cab
H-For cab side
J-wire 1 1/4 in. diameter
K-wire 1 in. diameter 4 turns
L-wire 15/16 in. diameter
M-wire 1 3/8 in. diameter
N-wire 1 in. diameter 4 1/2 turns
O-wire 7/8 in. diameter
P-wire 1 1/16 in. diameter

MOTOR SUSPENSION SPRINGS

UPPER SPRING			LOWER SPRING		
Cat. No.	Dimensions in Inches		Cat. No.	Dimensions in Inches	
	Length	Outside Diam.		Length	Outside Diam.
119756	2 5/8	2 1/2	119757	3 1/16	2 1/2
65133	3 1/2	3 1/2	65134	3 1/2	3 1/2

BRAKE RIGGING FOR LOCOMOTIVES

On the following pages, Figs. I, II and III describe graphically the distinctive types of brake rigging and indicate the proper name of each of the parts. While different parts may vary in size in locomotives of different weights or types, the cuts show a fair average and repairs may be ordered with accuracy by using the names and in addition mentioning the serial number of the locomotive on which they are to be used.

Brake shoes and brake shoe heads have been assigned catalogue numbers and should be ordered by them but all other parts of the brake rigging should be ordered by names of parts and serial number of the locomotive for which ordered. The serial number appears on the name plate on the locomotive frame.

BRAKE STANDS

Two forms of brake stands have been furnished for the vertical screw type brake rigging; they are illustrated in Figs. IV and V. The one most used (Fig. IV) is arranged for location on the center line of the foot plate and the other (Fig. V) is arranged for location at one side and is used on narrow gauge and other locomotives to save room for the motorman.

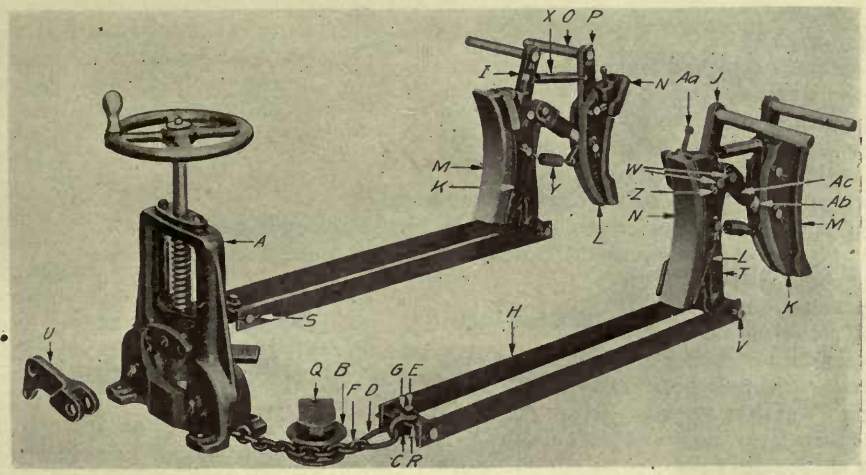


Fig. I
Vertical Screw Type Brake Rigging for Outside Frame Locomotive
(See also Figs. V and VI showing Brake Stands)

* A	Brake stand complete	P	Spring cotter ($\frac{3}{16}$ in. by $1\frac{3}{4}$ in.)
B	Pulley for brake chain	Q	Brace with pin, for chain pulley
C	Clevis for brake chain	R	Equalizer for brake rods and brake chain
D	Link for clevis and brake chain	S	Spring cotter ($\frac{1}{4}$ in. by 2 in.)
E	Pin for clevis and equalizer	T	Brake lever
F	Brake chain	△ U	Non-adjustable link for brake lever and brake shoe head
G	Spring cotter, Cat. No. 16064	V	Pin for brake lever and brake rods
H	Brake rod	W	Pin for brake shoe head, brake hanger and link
I	Brake hanger, left hand	X	Brake release spring, upper
J	Brake hanger, right hand	Y	Brake release spring, lower
K	Brake shoe head, left hand (see tables)	Z	Spring cotter ($\frac{3}{16}$ in. by 2 in.)
L	Brake shoe head, right hand (see tables)	Aa	Set screw for brake shoe and brake shoe head
M	Brake shoe, left hand (see tables)	△ Ab	Screw eye for nut and brake shoe
N	Brake shoe, right hand (see tables)	△ Ac	Nut for screw eye and brake lever
O	Pin for brake hanger and locomotive side frame		

*For details see Fig. IV
△State whether adjustable or non-adjustable link is wanted.

BRAKE RIGGING FOR LOCOMOTIVES

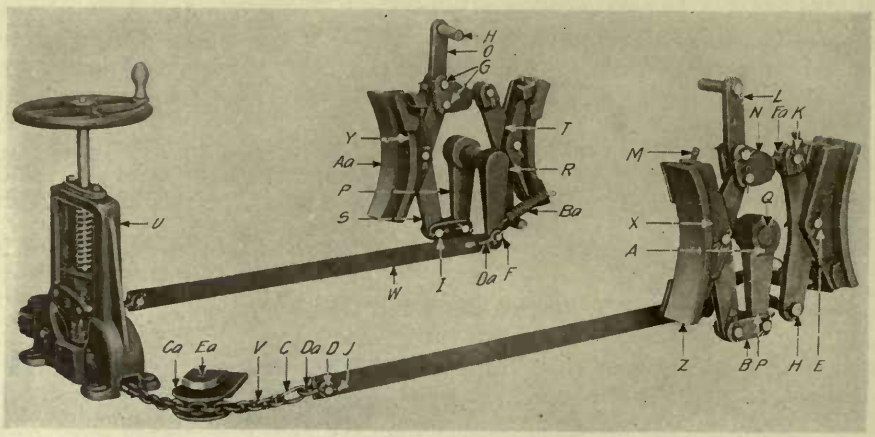


Fig. II
Vertical Screw Type Brake Rigging for Inside Frame Locomotive
(See also Figs. V and VI showing Brake Stands)

	A	Key for crank shaft
	B	Link for crank shaft and brake lever
	C	Link for clevis and brake chain
	D	Pin for clevis and brake rod
	E	Pin for brake lever and brake shoe head
	F	Pin for crank shaft and clevis
	G	Pins for push rod clevis, rear brake lever and hanger
	H	Pin for push rod clevis hanger, front brake lever and locomotive side frame
	I	Pin for rear brake lever, crank shaft and link, and front brake lever and eye bolt
	J	Spring cotter, Cat. No. 16064
	K	Spring cotter, Cat. No. 16323
	L	Spring cotter (¼ in. by 1¾ in.)
	M	Set screw for brake shoe and brake shoe head (⅝ in.–11, 2½ in. sq. H.)
	N	Push rod clevis for rear brake lever
	O	Hanger for push rod clevis
	P	Crank shaft lever, right and left hand
	Q	Crank shaft, right hand
	R	Crank shaft, left hand
	S	Brake lever, rear
	T	Brake lever, front
*	U	Brake stand, complete
	V	Brake chain
	W	Brake rod
	X	Brake shoe head, right hand (see tables)
	Y	Brake shoe head, left hand (see tables)
	Z	Brake shoe, right hand (see tables)
	Aa	Brake shoe, left hand (see tables)
	Ba	Brake release spring
	Ca	Pulley for brake chain
	Da	Clevis for brake chain and rod, and crank shaft and rod
	Ea	Brace, with pin, for chain pulley
	Fa	Eye bolt for front brake lever and push rod clevis

* For details see Fig. IV.

BRAKE RIGGING FOR LOCOMOTIVES

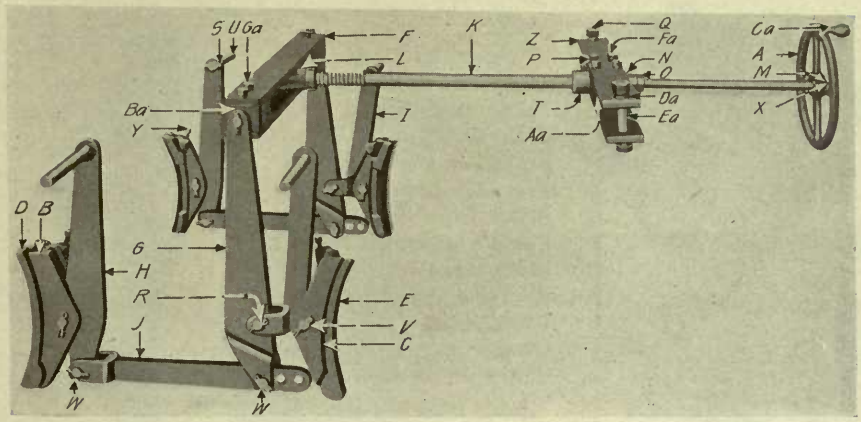


Fig. III
Horizontal Screw Type Brake Rigging for Outside Frame Locomotive

A Brake handwheel, complete, with handle
B Brake shoe head, right hand (see tables)
C Brake shoe head, left hand (see tables)
D Brake shoe, right hand (see tables)
E Brake shoe, left hand (see tables)
F Brake beam
G Brake lever
H Brake hanger, front
I Brake hanger, rear
J Brake rod
K Brake tension screw
L Brake screw nut
M Washer for brake tension screw ($\frac{13}{32}$ in. by 2 $\frac{1}{2}$ in. by $\frac{5}{16}$ in. special)
N Washer for brake tension screw ($1\frac{17}{32}$ in. by 3 in. by $\frac{1}{4}$ in. special)
O Nut for brake tension screw (1 $\frac{1}{2}$ in.–10 $\frac{3}{4}$ in. hexagon)
P Nut, Cat. No. 16074
Q Nut, Cat. No. 15443
R Spring cotter, Cat. No. 16323
S Spring cotter ($\frac{1}{4}$ in. by 1 $\frac{3}{4}$ in.)
T Bearing nut for brake tension screw
U Pin for brake hanger and locomotive side frame
V Pin for brake shoe heads and brake hangers
W Pin for brake levers, brake hangers and brake rods
X Cap screw, Cat. No. 382
Y Set screw for brake shoe and brake shoe head ($\frac{5}{8}$ in.–11, 2 $\frac{1}{2}$ in. sq. H.)
Z Support for brake tension screw
Aa Spacing block for brake tension screw support
Ba Spacing block for brake beam
Ca Handle for brake hand wheel
Da Lock washer, Cat. No. 16130
Ea Bolt (1 in.–8, 5 $\frac{5}{8}$ in. hex. H.)
Fa Bolt ($\frac{5}{8}$ in.–11, 5 $\frac{1}{4}$ in. hex. H.)
Ga Bolt ($\frac{5}{8}$ in.–11, 5 in. hex. H.)

BRAKE RIGGING FOR LOCOMOTIVES

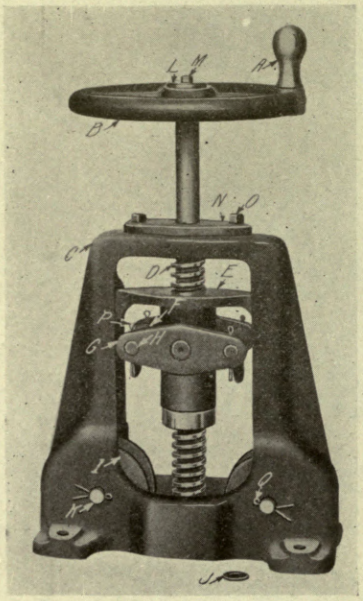


Fig. IV
Vertical Screw Brake Stand for Center Location

A	Brake wheel handle
B	Brake handwheel
C	Brake stand
D	Brake tension screw
E	Brake screw nut
F	Chain eye link for brake stand
G	Brake stand equalizer
H	Pin for brake stand equalizer
I	Chain pulley
J	Washer for bearing of brake tension screw
K	Pulley pin for brake stand
L	Washer for brake tension screw ($\frac{13}{32}$ in. by 2 in. by $\frac{3}{16}$ in. special)
M	Cap screw, Cat. No. 382
N	Stay plate for brake stand and brake tension screw
O	Bolt ($\frac{1}{2}$ in.–11, $1\frac{5}{8}$ in. hex. H.)
P	Spring cotter, Cat. No. 16064
Q	Spring cotter, Cat. No. 52517

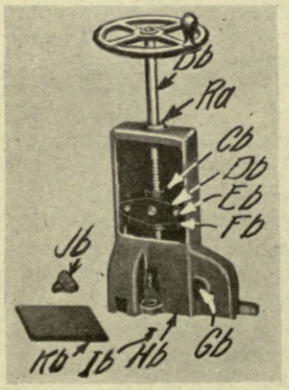
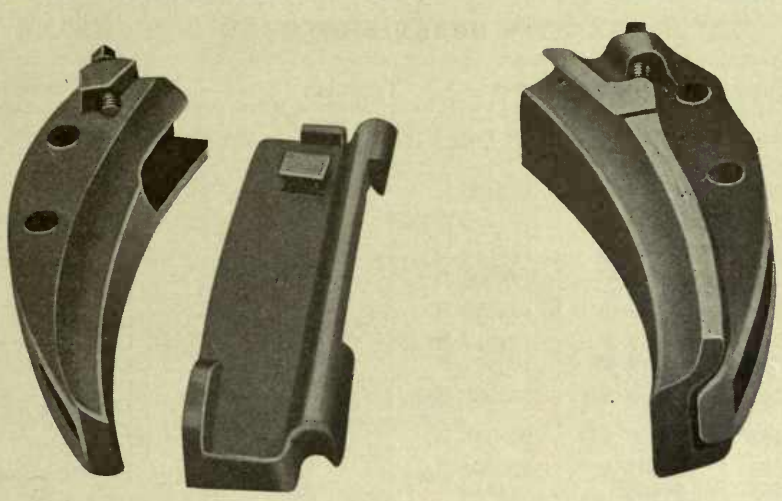


Fig. V
Vertical Screw Brake Stand for
Side Location

Ra	Brake stand
Bb	Brake tension screw
Cb	Nut for brake tension screw
Db	Equalizer for brake stand
Eb	Pin for brake stand equalizer
Fb	Spring cotter ($\frac{3}{16}$ in. by $1\frac{1}{4}$ in.)
Gb	Pin for chain roller
Hb	Lower bearing for brake stand
Ib	Washer for lower bearing

BRAKE SHOES AND HEADS FOR LOCOMOTIVES

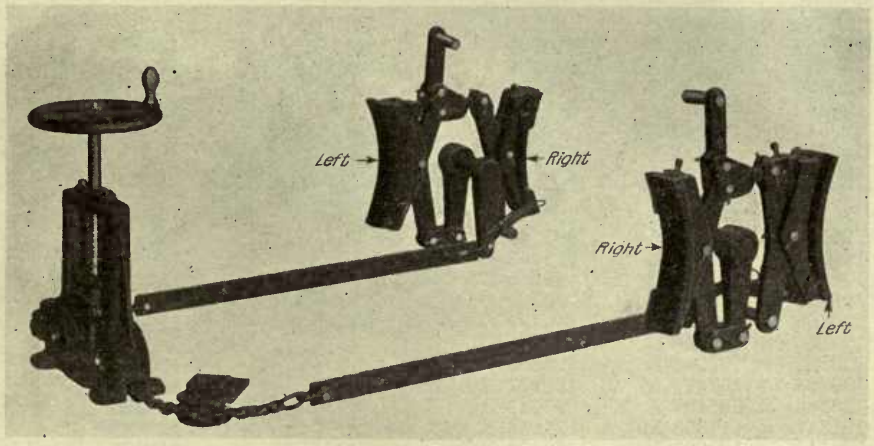


Right Hand Left Hand

Removable Brake Shoe and Head

All G.E. brake shoes are made from a good grade of cast steel and the brake shoe heads are cast iron. The shoes are of the removable type and are held to the heads by a set screw. Replacement of a worn shoe therefore is a very simple operation.

It will be noted that individual catalogue numbers are given to right- and left-hand shoes and heads, and the accompanying cut is shown to assist in distinguishing between them.



Pattern numbers are cast on all brake shoes and heads and may in some cases be useful as a means of identification.

BRAKE SHOES AND HEADS FOR LOCOMOTIVES

BRAKE SHOES

CAT. NO. OF SHOE		PATTERN NUMBERS		Diam. of Wheel Used With	CAT. NO. OF SHOE-HEADS USED WITH	
Right	Left	Right	Left		Right	Left
65186	65200	122460 E	122460 F	22	120367	120368
65206	65222	122973 A	122973 B	22	120367 120369	120368 120370
65226	65227	111144 M	111144 N	28	120371	120372
65228	65230	120009 C	120009 D	28	120371	120372
65231	65232	122928 G	122928 H	28	120371 120379	120372 120380
65234	65235	122917 A	122917 B	30	120385	120386
65236	65238	103972 M	103972 N	30	120381	120382
65239	65240	102689 XB	102689 XC	33	120390 126446	120391 126447
65242	65243	228338 A	228338 B	33	120390 126446	120391 126447
65244	65246	227095 A	227095 B	33	120383	120384
* 65954	* 65955	34455	34454	20	*	*
* 65956	* 65957	122378 A	122378 B	20	*	*
* 65958	* 65959	120969 A	120969 B	22	*	*
*120303	*120304	34454 C	34455 D	20	*	*
*120305	*120306	34454	34455	20	*	*
*120307	*120308	122337 A	122337 B	20	*	*
*120309	*120310	123322 A	123322 B	22	*	*
*120311	*120311	39448 OC	39448 OC	22	*	*
*120312	*120313	96675 A	96675 B	22	*	*
*120314	*120315	98061 E	98061 F	22	*	*
*120316	*120317	112520 G	112520 H	22	*	*
*120318	*120319	122268 A	122268 B	22	*	*
*120320	*120321	159245 A	159245 B	22	*	*
120322	120323	881112 C	881112 D	24	120369	120370
120324	120325	111144 M	111144 N	28	120371	120372
*120326	*120327	98791 C	98791 D	28	*	*
120328	120329	111144 P	111144 R	28	120432	120433
120330	120331	123029 M	123029 N	28	120375	120376
*120332	*120332	166550 B	166550 B	28	*	*
*120333	*120333	30515 D	30515 D	28	*	*
120334	120335	123022 G	123022 H	28	120377	120378
120336	120337	839186 A	839186 B	28	120371	120372
120338	120339	835168 C	835168 D	28	120379	120380
120340	120341	246810 A	246810 B	29	120379	120380
120342	120343	160386 A	160386 B	30	120381	120382
*120344	*120344	27814	27814	30	*	*
*120345	*120346	839792 A	839792 B	30	*	*
*120347	*120348	97610 G	97610 H	30	*	*
120349	120350	236112 C	236112 D	30	120383	120384
120351	120352	862163 A	862163 B	30	120379	120380
120353	120354	871142 C	871142 D	30	120385	120386
120355	120355	95258 C	95258 C	30	120387	120387
*120356	*120356	39269 D	39269 D	30	*	*
120357	120358	819199 C	819199 D	33	120388	120389
*120359	*120360	80346 C	80346 D	33	*	*
120361	120362	92969 I	92969 J	33	120392	120393
120363	120364	122277 M	122277 N	33	120394	120395
120365	120366	855137 A	855137 B	36	120396	120397
121540	121541	111358 M	111358 N	30	120385	120386
126444	126445	102689 XD	102689 XE	30	120390	120391
*126449	*126450	39471	39472	20	*	*
126452	126453	122277 P	122277 R	30	120394	120395
126454	126455	122277 M	122277 N	33	120394	120395
126456	126457	122277 P	122277 R	30	120394	120395
126458	126458	122002 K	122002 K	33	126459	126460
126461	126462	102689 XG	102689 XF	33	126446	126447
126463	126464	160581 F	160581 E	33	126465	126466

* Shoe and head combined in one casting.

BRAKE SHOES AND HEADS FOR LOCOMOTIVES

BRAKE SHOE HEADS COMPLETE WITH SET SCREW

CAT. NO.		PATTERN NUMBERS		CAT. NO. OF SHOES USED WITH	
Right Hand	Left Hand	Right Hand	Left Hand	Right	Left
120367	120368	122460-C	122460-D	65186 65206	65200 65222
120369	120370	811132-A	811132-B	120322 65206	120323 65222
120371	120372	111144-K	111144-L	65226 65228 65231 120324 120336	65227 65230 65232 120325 120337
120375	120376	123029-K	123029-L	120330	120331
120377	120378	123022-J	123022-K	120334	120335
120379	120380	233159-A	233159-B	65231 120338 120340 120351	65232 120339 120341 120352
120381	120382	103972-L	103972-K	65236 120342	65238 120343
120383	120384	227094-A	227094-B	65244 120349	65246 120350
120385	120386	111358-L	111358-K	65234 120353 121540	65235 120354 121541
120387	120387	95258-B	95258-B	120355	120355
120388	120389	102689-W	102689-XA	120357	120358
120390	120391	102689-S	102689-T	65239 65242 126444	65240 65243 126445
120392	120393	92969-E	92969-F	120361	120362
120394	120395	122277-E	122277-F	120363 126452 126454 126456	120364 126453 126455 126457
120396	120397	855137-C	855137-D	120365	120366
120432	120433	248187-A	248187-B	120328 65226 65228	120329 65227 65230
120434	120435	122991-A	122991-B	65234	65235
126446	126447	102689-XJ	102689-XK	65239 65242 126461	65240 65243 126462
*126459	§126460	122002-J	122002-H	126458	126458
126465	126466	102689-XH	102689-XL	126463	126464

* For front brake shoes.
§ For rear brake shoes.

SANDING DEVICES FOR LOCOMOTIVES

The sanding devices consist of the parts shown in the accompanying cuts. There have been many minor modifications to suit special conditions, but they all conform to the same general arrangement shown here. *When ordering repair parts give name of part wanted and the locomotive serial number.*

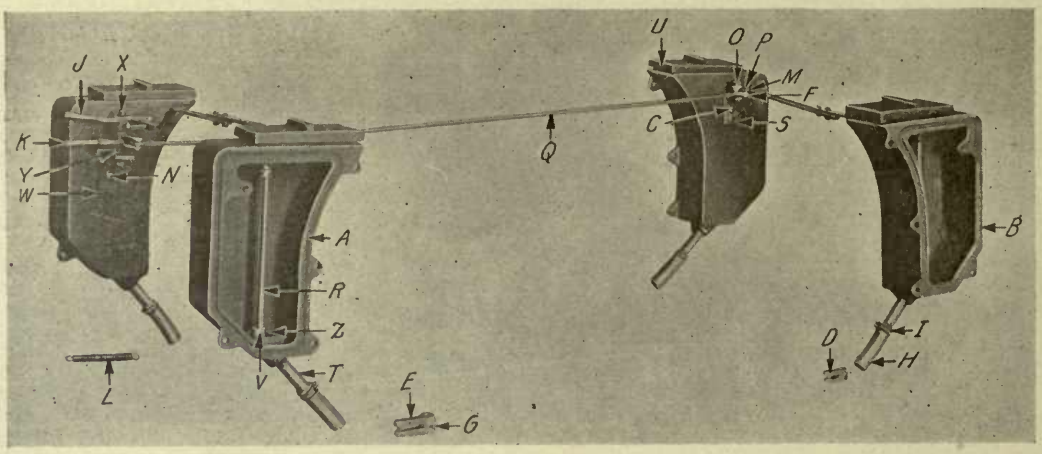


Fig. I
Sanding Device for Outside Frame Locomotives having Structural Steel Sides

A Sand box, rear right hand and front left hand
B Sand box, rear left hand and front right hand
C Bolt for front and side connecting rod bracket and sand box
D Lever for front connecting rod and valve rod
E Lever for rear connecting rod and valve rod
F Lever for front and side connecting rods
G Set screw for levers and handles
H Hose for sand pipe
I Clamp for sand pipe and hose
J Operating handle for rear sand valves
K Operating handle for front sand valves
L Sand valve release spring
M Spring cotter for levers, handles and valve rods
N Bolt for operating handle bracket
O Bolt for front and side connecting rod lever and bracket
P Pin for connecting rods, levers and handle
Q Sanding device rod, side
R Rod for sand valve
S Bracket for front and side connecting rod lever
T Sand pipe.
U Cover for sand box
V Sand valve
W Bracket for operating handles
X Shaft for operating handles
Y Nut for operating handle shaft
Z Spring cotter for valve rod and valve

SANDING DEVICES FOR LOCOMOTIVES

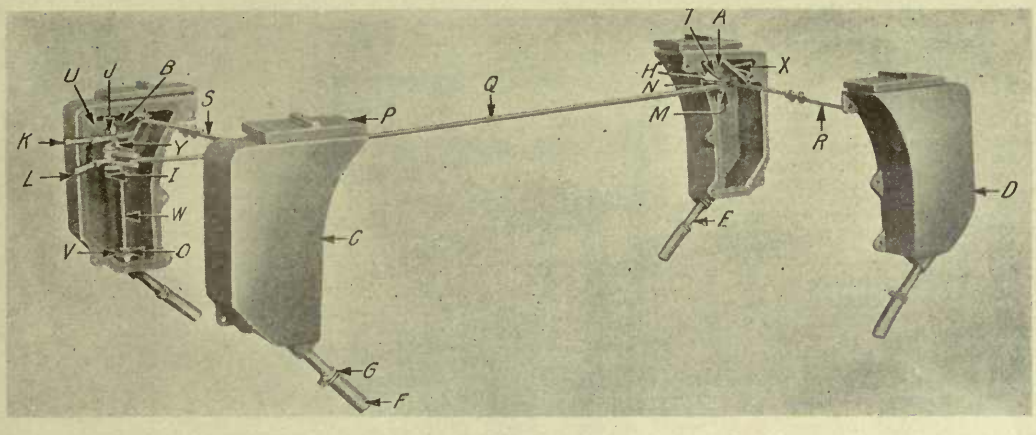


Fig. II

Sanding Device for Inside Frame Locomotives having Structural Steel Sides

A Lever for front connecting rod and valve rod
B Lever for rear connecting rod and valve rod
C Sand box, rear right hand and front left hand
D Sand box, rear left hand and front right hand
E Sand pipe
F Hose for sand pipe
G Clamp for sand pipe and hose
H Pin for connecting rods, levers and handles
I Operating shaft for handles
J Nut for operating handle shaft
K Operating handle for rear sand valves
L Operating handle for front sand valves
M Lever for front and side connecting rods
N Spring cotter for levers, handles and valve rods
O Spring cotter for valve rod and valve
P Cover for sand box
Q Sanding device rod, side
R Sanding device rod, front
S Sanding device rod, rear
T Bolt for front and side connecting rod lever
U Bracket for handle
V Sand valve
W Rod for sand valve
X Sand valve release spring
Y Set screw for levers and handles

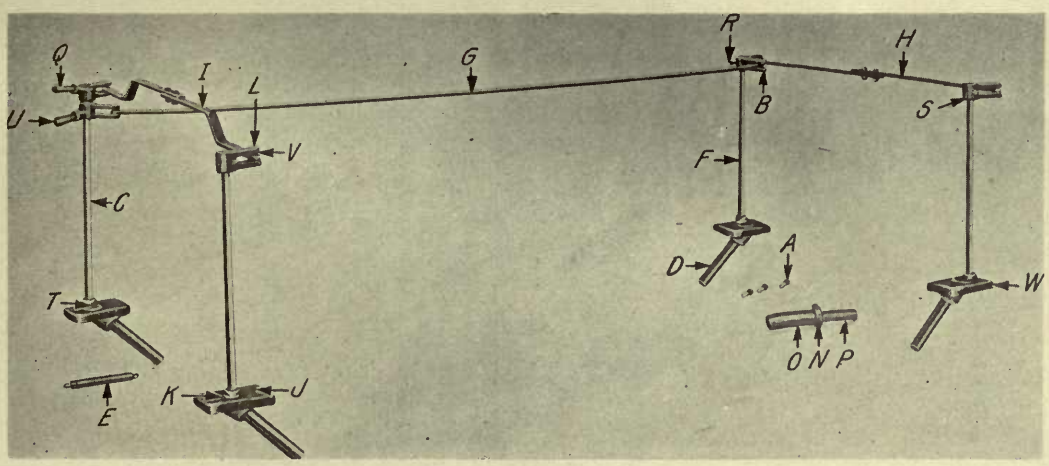


Fig. III

Sanding Device for Locomotives having Cast Iron Sides

A Bolt for locomotive frame and sand box bottom
B Lever for connecting rods and valve rod, front left hand
C Valve rod, rear left hand
D * Sand pipe
E Sand valve release spring
F Valve rod, except rear left hand
G Side connecting rod for valve rods
H Front connecting rod for valve rods
I Rear connecting rod for valve rods
J Sand box bottom, rear right hand and front left hand
K Spring cotter for valve rods and valves
L Pin for connecting rods and levers
N * Clamp for sand pipe and hose
O * Hose for sand pipe
P * Sand pipe
Q Operating handle for rear sand valves
R Set screw for handles and levers
S Lever for connecting rod and valve rod, except front left hand
T Sand valve
U Operating handle for front sand valves
V Spring cotter for levers, handles and valve rods
W Sand box bottom, rear left hand and front right hand

* In the above illustration two styles of Sand Pipes are shown: the Iron Sand Pipe and the Iron Sand Pipe with Rubber Hose. The Iron Pipe with Rubber Hose is recommended.

CABLE REELS FOR LOCOMOTIVES

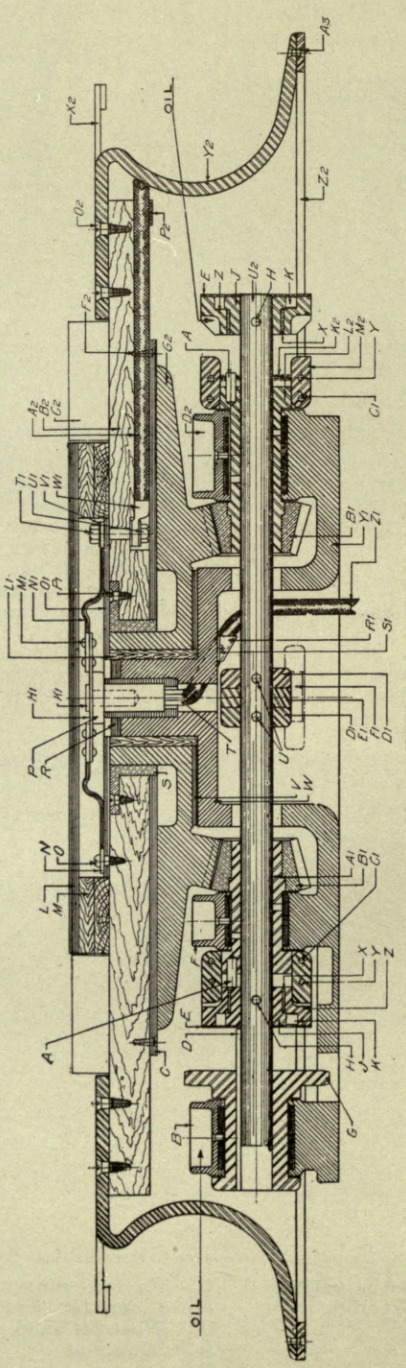


Fig. 1. VR Form A Cable Reel

REPAIR PARTS OF CABLE REELS FOR LOCOMOTIVES

There are but two types of cable reels used on G.E. gathering locomotives, the Type VR which operates from the locomotive axle and the Type MVR which is motor-operated. Minor modifications of these types are indicated by the various form letters and numerals.

TYPE VR, FORM A3 CABLE REEL

Cat. No.	Illustration Letter (Fig. 1)	Description
31839	Y-1	Base
31840	W	Cap for base
31841	F	Short sleeve bearing cap
31842	D-2	Long sleeve bearing cap
31843	B	Sprocket bearing cap
405	..	Cap screw fastening No. 31840 to base (½ in.–13, 1¼ in. hex. h.)
15887	..	Cap screw fastening bearing caps to base (⅝ in.–11, 2¼ in. hex. h.)
31848	R-1	Cable clip
56740	S-1	Screw for cable clip (14–24, ½ in. r.h.)
31849	B-1	Bevel pinion (20 teeth, 5 pitch)
31850	L-2	Long sleeve for pinion
31851	A-1	Short sleeve for pinion
31852	G-2	Bevel gear (74 teeth, 5 pitch)
31872	D	Key for sprocket (⅜ in. by ⅜ in. by 4 7/16 in. round ends)
31873	L-1	Bushing for No. 31852
31874	G	Reel sprocket (15 teeth, 1⅛ in. pitch)
31853	..	Clutch, complete, includes parts indented below
31854	M-2	Clutch pawl
31855	C-1	Pin for pawl (¼ in. by 2⅛ in.)
4030	..	Spring cotter for pin (3/32 in. by ⅝ in.)
31856	J	Ratchet with pin
31857	H	Pin for ratchet (¼ in. by 2⅜ in.)
31858	K	Roll for ratchet (⅜ in. diam., 15/32 in. long)
31859	Z	Roll race
31865	X	Bushing for No. 31859
31860	E	Roll retainer
9624	..	Screw fastening No. 31860 to roll race (6–32, 5/16 in. f.h.)
31861	K-2	Tension spring for clutch
31862	Y	Pin for spring (¼ in. by 1 15/16 in. sp'l)
4030	..	Spring cotter for pin (3/32 in. by ⅝ in.)
31866	A	Stop for clutch (5/16 in. by 1 5/32 in.)
31863	U-2	Shaft
31864	U	Taper pin for shaft
31867	F-1	Shifting lever
31845	..	Cap screw for No. 31867 (⅝ in.–11, 1 5/32 in. hex. h. sp'l)
31877	..	Stop with rivets for shifting lever
31868	E-1	Shipper
31869	D-1	Collar with pin for shipper
31870	C	Friction disc, large
31871	V	Friction disc, small
104302	F-2	Screw fastening No. 31870 in position (No. 14, 1 in. f.h.)
56743	..	Screw fastening No. 31871 in position (14–24, ½ in. f.h.)
31875	..	No. 00 tiger grease cup
31876	T	Terminal for motor cable
31891	P-2	Cable strap
31881	S	Reel bushing
31923	P-1	Screw for No. 31881 (No. 14, ¾ in. f.h.)
66047	P	Insulated contact and connector
31883	O-1	Gear insulation
31884	Z-2	Reel ring
31885	Y-2	Lower reel bar
104304	X-2	Upper reel bar
31886	A-3	Rivet for Nos. 31885, 104304
104305	O-2	Screw for No. 31885 (No. 16, 1½ in. f.h.)
31897	..	Screw for No. 104304 (No. 16, 1 in. f.h.)
31888	W-1	Terminal for reel cable
31890	T-1	Bolt for cable terminal (⅜ in.–16, 1⅞ in. hex. h.)
31889	V-1	Washer for No. 31890 (13/32 in. by 1 in. by 1/16 in. thick copper)
6529	U-1	Nut for No. 31890 (⅜ in.–16, hex. brass fin. st'd)
31892	M	Supporting ring for cover (2 thicknesses)

REPAIR PARTS OF CABLE REELS FOR LOCOMOTIVES

TYPE VR, FORM A3 CABLE REEL—(Continued)

Cat. No.	Illustration Letter (Fig. 1)	Description
31900	L	Cover
31894	H-1	Contact plate
31898	K-1	Spring for contact plate, with rivets
31895	N-1	Flexible connection
31896	N	Equalizer
31897	O	Screw for No. 31896 (No. 16, 1 in. f.h.)
31899	M-1	Rivet for Nos. 31895, 31896 ($\frac{3}{8}$ in. by $\frac{1}{4}$ in.)
31901	R	Cap insulation
31902	..	Guard ring
31903	C-2	Ballast with pins
31904	..	Dowel pin for No. 31903 ($\frac{1}{2}$ in. by $2\frac{1}{2}$ in.)
31905	B-2	Reel disc
121536	..	Cable hook, complete
121537	..	Clamping block for cable hook
31980	..	Screw for No. 121537 ($\frac{5}{16}$ in.–18, $\frac{3}{4}$ in. r.h.)

TYPE VR, FORM A1 CABLE REEL

Following are the parts of the Type VR, Form A1 cable reel which differ from those o the Type VR, Form A3:

121570	Y-1	Base
121571	W	Cap for base
121572	F	Short sleeve bearing cap
121573	D-2	Long sleeve bearing cap
121574	B	Sprocket bearing cap
121575	..	Cable hook, complete

TYPE VR, FORM A2 CABLE REEL

Following are the parts of the Type VR, Form A2 cable reel which differ from those o the Type VR, Form A3:

121576	Y-1	Base
121571	W	Cap for base
121572	F	Short sleeve bearing cap
121573	D-2	Long sleeve bearing cap
121574	B	Sprocket bearing cap
121575	..	Cable hook, complete

TYPE VR, FORM A4 CABLE REEL

Following are the parts of the Type VR, Form A4 cable reel which differ from those o the Type VR, Form A3:

64458	..	Cable hook, complete

TYPE VR, FORM A5 CABLE REEL

Following are the parts of the Type VR, Form A5 cable reel which differ from those o the Type VR, Form A3:

121577	Y-1	Base
121578	..	Cable hook, complete
31912	..	Insulation for cable hook
31913	..	Screw for No. 31912 (No. 14, 2 in. f.h.)

REPAIR PARTS OF CABLE REELS FOR LOCOMOTIVES

TYPE VR, FORM A10 CABLE REEL

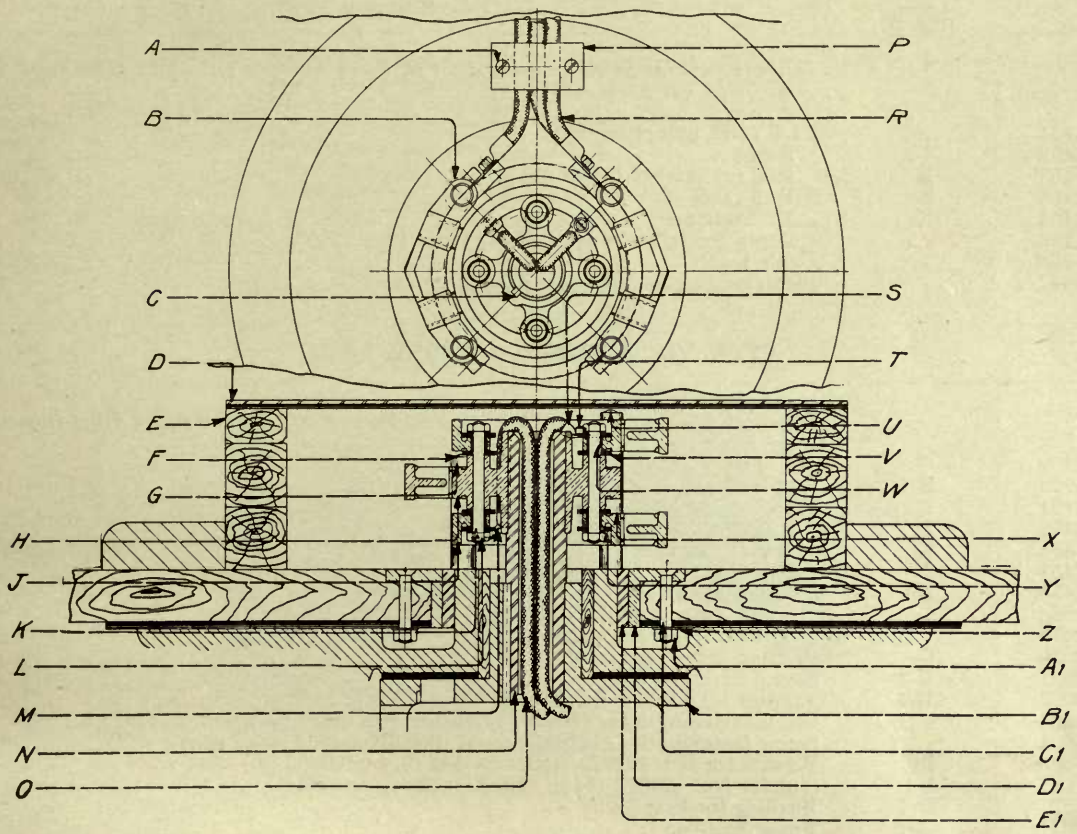


Fig. 2. Type VR Form A10 Cable Reel

REPAIR PARTS OF CABLE REELS FOR LOCOMOTIVES

TYPE VR, FORM A8 CABLE REEL

Cat. No.	Illustration Letter (Fig. 2)	Description
		Following are the parts of the Type VR, Form A8 cable reel which differ from those of the Type VR Form A3:
† 64451	..	CLUTCH, complete
† 64452	J	Ratchet
† 64453	K	Roll for ratchet (½ in. diam. $\frac{17}{32}$ in. long)
† 64454	Z	Roll race
† 64455	E	Roll retainer
1288	..	Screw for roll retainer (10–24, ⅜ in. f.h.)
64458	..	Cable hook
66047	..	Insulated contact and connector, complete

TYPE VR, FORM A10 CABLE REEL

		Following are the parts of the Type VR, Form A10 cable reel which differ from those of the Type VR, Form A3:
105952	B-1	Cap for base
† 64451	..	Clutch, complete
† 64452	J	Ratchet
† 64453	K	Roll for ratchet (½ in. diam., $\frac{17}{32}$ in. long)
† 64454	Z	Roll race
† 64455	E	Roll retainer
1288	..	Screw for roll retainer (10–24, ⅜ in. f.h.)
122019	..	Stop with rivets for shifting lever
† 122020	C	Friction disk, large
† 122021	B-2	Reel disk
122022	D-1	Support for brush-holder studs
122023	C-1	Screw fastening Nos. 122020, 122022 to reel disk (⅜ in.–16, 2½ in. f.h.)
122024	..	Screw fastening No. 122020 to reel disk (No. 16, 1½ in. r.h.)
122025	Z	Washer for No. 122023 ($\frac{13}{32}$ in. by 1¼ in. by 0.0625 in.)
4031	A-1	Nut for No. 122023 (⅜ in.–16, hex. cham. one side)
122026	E-1	Bushing for bevel gear
† 122027	X-2	Upper reel bar
122028	..	Guard ring
122029	E	Supporting ring for cover
122030	D	Cover, complete, with insulation
122031	..	Cap screw fastening No. 122029 to reel disk (⅜ in.–16, 6¾ in. hex. h.)
122025	..	Washer for No. 122031 ($\frac{13}{32}$ in. by 1¼ in. by 0.0625 in.)
4031	..	Nut for No. 122031 (⅜ in.–16, hex. cham. one side)
122032	..	Lag screw fastening No. 122030 to supporting ring (½ in., 3 in. long sp'l)
16076	..	Spring cotter for No. 122032 (⅛ in. by 1 in.)
122033	J	Collector ring
122034	H	Collector ring shell
122035	K	Stud for collector rings (⅜ in.–16, $3\frac{13}{16}$ in. long)
21392	Y	Washer for No. 122035 ($\frac{13}{32}$ in. by ¾ in. by 0.0625 in.)
9616	L	Nut for No. 122035 (⅜ in.–16, ¼ in. thick, $\frac{11}{16}$ in. across flats hex. cham. one side)
122036	W	Mica bushing for stud (⅜ in. by ½ in. by $\frac{43}{64}$ in. long)
122037	V	Mica washer for No. 122036 (½ in. by $1\frac{1}{16}$ in. by ⅛ in. thick)
122038	..	Set screw for No. 122034 (14–24, ⅜ in. headless sp'l)
122039	S	Punched copper tube terminal for collector ring cable
10063	T	Screw fastening No. 122039 to collector ring (14–24, ⅝ in. fill. h.)
110624	..	Positive lock washer for No. 10063 ($\frac{9}{32}$ in. by $\frac{5}{16}$ in. by $\frac{5}{64}$ in. thick)
122040	N	Contact shaft for collector rings
122041	..	Key for contact shaft and cap for base (¼ in. by ¼ in. by $3\frac{13}{16}$ in. round end)

† See illustration on page 56.

REPAIR PARTS OF CABLE REELS FOR LOCOMOTIVES

TYPE VR, FORM A10 CABLE REEL—(Continued)

Cat. No.	Illustration Letter (Fig. 2)	Description
122042	C	Key for contact shaft and collector ring shell (¼ in. by ¼ in. by 3¼ in. round end)
122053	U	Long stud for brush-holder (⅝ in.–11, 6¼ in. long)
122054	F	Short stud for brush-holder (⅝ in.–11, 5¼ in. long)
122055	X	Insulation sleeve for No. 122053
122056	G	Insulation sleeve for No. 122054
122057	P	Strap for cables
31897	A	Screw fastening No. 122057 in position (No. 16, 1 in. f.h.)

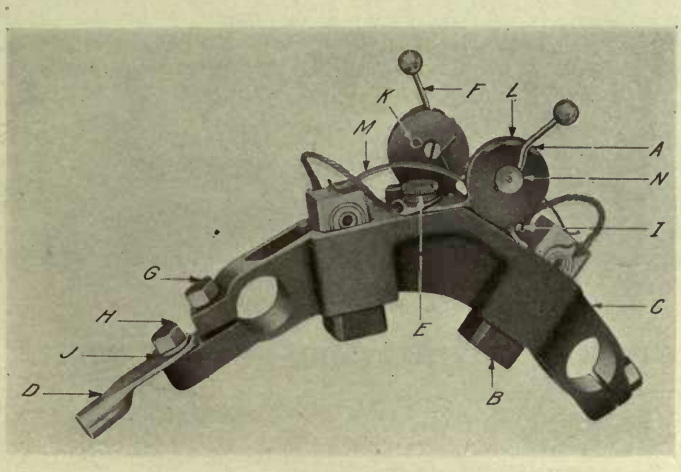


Fig. 3

Cat. No.	Illustration Letter (Fig. 3)	Description
122043	..	BRUSH-HOLDER, complete, with terminal, without studs
122044	C	Brush-holder body
119774	G	Clamping screw for No. 122044 (14–24, ¾ in. hex. h. blued cap screw)
32537	D	Punched copper tube cable terminal
122045	H	Cap screw fastening No. 32537 to brush-holder body (14–24, ½ in. hex. h. blued)
14426	J	Washer for No. 122045 ($\frac{17}{64}$ in. by ½ in. by 0.060 in. brass)
122046	M	Pressure spring for carbon brush
122047	L	Spring holder
122048	N	Hinge pin for spring
122049	K	Spring cotter for No. 122048 ($\frac{3}{32}$ in. by ¾ in. blued)
122050	F	Lever for spring
62060	I	Screw fastening No. 122047 to brush-holder body (10–32, ⅜ in. fill. h. blued)
122051	E	Thumbscrew for carbon brush pigtail terminal (10–32, ⅜ in. brass sp'l)
122052	B	Carbon brush with pigtail and terminal (2¼ in. long, ¾ in. wide, ¾ in. thick) Two required for each holder, six for each cable reel

REPAIR PARTS OF CABLE REELS FOR LOCOMOTIVES

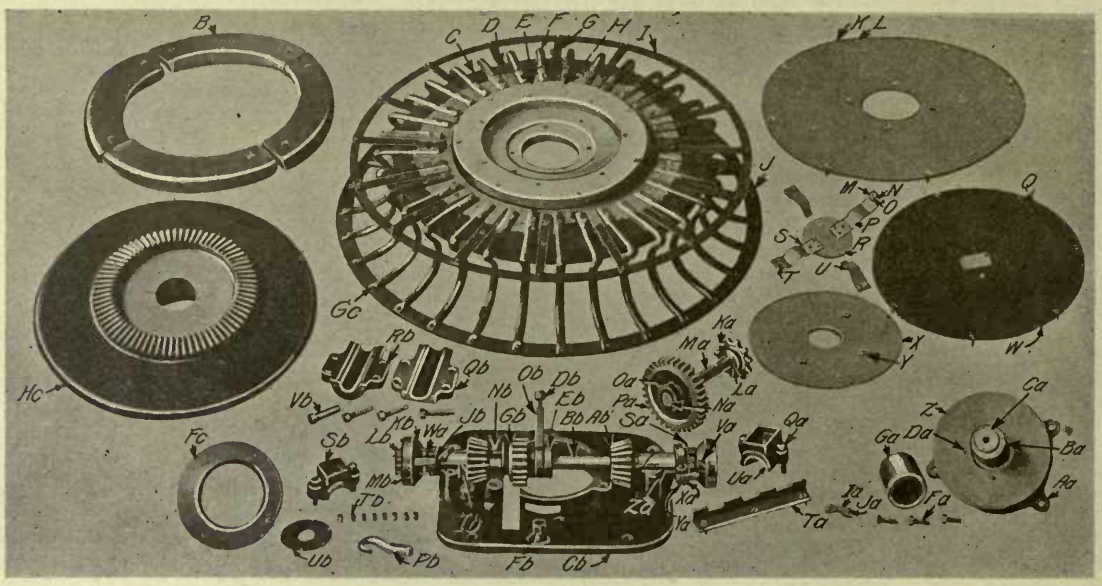


Fig. 4. VR Form B Cable Reel

TYPE VR, FORMS B1 AND B5 CABLE REELS

Cat. No.	Illustration Letter (Fig. 4)	Description
104287	Cb	MECHANISM BASE
31840	Aa	Cap for mechanism base
405	Fa	Cap screw fastening No. 31840 to base (½ in.–13, 1¼ in. hex. h.)
104288	Pa	Gear (34 teeth, 5 pitch)
104289	Ka	Sprocket (11 teeth, 1⅛ in. pitch) with pin
104290	Ma	Shaft for gear and sprocket
1871	Oa	Set screw for gear (⅜ in.–16, 1 in. sq. h.)
104291	Na	Key for gear (⅜ in. by ⅜ in. by 2⅜ in. long, round ends)
104292	La	Key for sprocket (⅜ in. by ⅜ in. by 1⅝ in. long, round ends)
104293	Qb	Bearing for gear and sprocket shaft
104294	Rb	Bearing cap
9825	Vb	Cap screw fastening Nos. 104293, 104294 to base (⅝ in.–11, 2¾ in. hex. h.)
104295	..	Oil pipe for Nos. 104293, 104294 (¼ in. pipe, 1¾ in. long)
122617	..	Pipe coupling for oil pipe (¼ in. pipe)
31841	Sb	Short sleeve bearing cap
31842	Ua	Long sleeve bearing cap
15887	Qa	Cap screw fastening Nos. 31841, 31842 to base (⅝ in.–11, 2¼ in. hex. h.)
31848	..	Cable clip holding cable to cap for mechanism base
33828	..	Screw fastening No. 31848 in position (14–24, ½ in. r.h.)
31849	Ab	Bevel pinion (20 teeth, 5 pitch)
31850	Za	Long sleeve for pinion
31851	Ib	Short sleeve for pinion
31852	Hc	Bevel gear (74 teeth, 5 pitch)
31873	Ga	Bushing for No. 31852
31853	..	CLUTCH, complete, includes parts indented below
31854	Jb	Clutch pawl
31855	Ya	Pin for pawl (¼ in. by 2⅛ in.)
4030	Wa	Spring cotter for pin (3/32 in. by ⅝ in.)
31856	Lb	Ratchet
31857	..	Pin for ratchet (¼ in. by 2⅜ in.)
31858	Tb	Roll for ratchet (⅜ in. diam., 15/16 in. long)
31859	Kb	Roll race
31865	Va	Bushing for No. 31859

REPAIR PARTS OF CABLE REELS FOR LOCOMOTIVES

TYPE VR, FORMS B1 AND B5 CABLE REELS—(Continued)

Cat. No.	Illustration Letter (Fig. 4)	Description
31860	Ub	Roll retainer
9624	Mb	Screw fastening No. 31860 to roll race (6-32, $\frac{5}{16}$ in. f.h.)
31861	Sa	Tension spring for clutch
31862	Xa	Pin for spring ($\frac{1}{4}$ in. by $1\frac{15}{16}$ in. sp'l)
4030	Wa	Spring cotter for pin ($\frac{3}{32}$ in. by $\frac{5}{8}$ in.)
31866	..	Stop for clutch ($\frac{5}{16}$ in. by $1\frac{5}{32}$ in.)
104299	Gb	Pinion (20 teeth, 5 pitch)
104300	Nb	Key for pinion ($\frac{3}{8}$ in. by $\frac{3}{8}$ in. by $2\frac{3}{4}$ in. long, round ends)
104301	Bb	Shaft for bevel pinion and clutches
31868	Ob	Shipper for clutches
31869	Eb	Collar with pin for shipper
31870	K	Friction disc, large
31871	Z	Friction disc, small
104302	L	Screw fastening No. 31870 in position (No. 14, 1 in. f.h.)
56743	Da	Screw fastening No. 31871 in position (14–24, $\frac{1}{2}$ in. f.h.)
31875	Db	No. 00 tiger grease cup
31876	..	Terminal for motor cable
31881	Fc	Bushing for reel
104303	J	Reel ring
31885	F	Lower reel bar
104304	G	Upper reel bar
31886	Gc	Rivet for Nos. 31885, 104304 ($\frac{1}{4}$ in. by 1 in. f.h.)
104305	..	Screw for No. 31885 (No. 16, $1\frac{1}{2}$ in. f.h.)
31897	D	Screw for No. 104304 (No. 16, 1 in. f.h.)
103942	I	Guide ring for upper reel bar
31888	..	Terminal for reel cable
31890	O	Bolt for cable terminal ($\frac{3}{8}$ in.–16, $1\frac{7}{8}$ in. hex. h.)
31889	N	Washer for No. 31890 ($\frac{13}{32}$ in. by 1 in. by 0.0625 in. copper)
6529	M	Nut for No. 31890 ($\frac{3}{8}$ in.–16, hex. brass)
31900	W	Cover for contacts
31892	E	Supporting ring for cover (2 thicknesses)
103943	Q	Screw fastening cover and supporting ring in position (No. 16, $2\frac{1}{2}$ in. r.h.)
31913	H	Screw fastening No. 31892 to reel disk (No. 14, 2 in. f.h.)
103944	B	Ballast with pins
66047	Ca	Insulated contact and connector
31883	X	Gear insulation
104305	Y	Screw fastening No. 31883 in position (No. 16, $1\frac{1}{2}$ in. f.h.)
31891	Ia	Cable strap
31923	Ja	Screw fastening No. 31891 in position (No. 14, $\frac{3}{4}$ in. f.h.)
31894	R	Contact plate
31898	U	Spring for contact plate
31895	P	Flexible connection
31896	S	Equalizer
31897	T	Screw for Nos. 31896, 31898 (No. 16, 1 in. f.h.)
31899	..	Rivet for Nos. 31895, 31896 ($\frac{3}{8}$ in. by $\frac{1}{4}$ in.)
31901	Ba	Cap insulation
103945	C	Reel disc
64458	Pb	Cable hook, complete
31877	Ta	Stop with rivets for shifting lever
31845	Fb	Cap screw for fastening shifting lever ($\frac{5}{8}$ in.–11, $1\frac{5}{32}$ in. hex. h. sp'l)

TYPE VR, FORM B2 CABLE REEL

Following are the parts of the Type VR, Form B2 cable reel which differ from those of the Type VR, Form B1:

122624	Ma	Shaft for gear and sprocket
122625	Qb	Bearing for gear and sprocket shaft
122626	Rb	Bearing cap for No. 122625

REPAIR PARTS OF CABLE REELS FOR LOCOMOTIVES

TYPE VR, FORM B4 CABLE REEL

Cat. No.	Illustration Letter (Fig. 4)	Description
		Following are the parts of the Type VR, Form B4 cable reel which differ from those of the Type VR, Form B1:
122627	Cb	MECHANISM BASE
† 104308	C-1	Collector
† 104309	E-1	Collector ring
† 104310	D-1	Support for Nos. 104308, 104309
† 104311	U	Base for No. 104310
† 104312	T	Screw fastening base to support (6–32, ¾ in. f.h. brass)
104313	..	Screw fastening collector ring to support (12–24, ½ in. f.h. brass)
1382	..	Screw fastening collector to support (10–24, ⅜ in. f.h. brass)
† 104314	A-1	Insulating bushing for contact
† 29449	B-1	Screw fastening No. 104314 to support (10-24, ⅝ in. f.h. brass)
† 104315	H-1	Terminal for motor cable
† 104316	F-1	CONTACT FINGER with spring and shunt, for collector
† 104317	M	Contact finger with spring and shunt, for collector ring
† 104318	G-1	Guard for No. 104316
† 104319	N	Guard for No. 104317
† 1209	G	Screw fastening contact finger in position (No. 10, 1 in. r.h.)
† 104320	L	Insulating washer for contact finger
104321	C	Reel disc
† 104322	J-1	Long bolt fastening reel cable terminal and contact finger in position (⅝ in.–18, 1⅞ in. hex. h. brass)
† 104323	E	Short bolt fastening reel cable terminal and contact finger in position (⅝ in.–18, 1½ in. hex. h. brass)
† 13919	V-1	Nut for Nos. 104322, 104323 (⅝ in.–18, ⅝ in. thick, 19/32 in. across flats, hex. brass cham. one side)
† 24262	F	Small washer for Nos. 104322, 104323 (21/64 in. by ⅝ in. by 0.0625 in.)
† 104324	W-1	Medium washer for Nos. 104322, 104323 (21/64 in. by ⅞ in. by 0.0625 in.)
† 104325	X-1	Large washer for Nos. 104322, 104323 (21/64 in. by 1⅛ in. by 0.0625 in.)
122628	B	Ballast

TYPE VR, FORM B6 CABLE REEL

		Following are the parts of the Type VR, Form B6 cable reel which differ from those of the Type VR, Form B1:
122629	CB	MECHANISM BASE
122630	Ma	Shaft for gear and sprocket
122631	Qb	Bearing for gear and sprocket shaft
122632	..	Small bearing cap for No. 122631
10805	..	Pipe plug for No. 122631 (¼ in. pipe)
21937	Vb	Cap screw fastening No. 122632 in position (⅝ in.–11, 1¾ in. hex. h.)

TYPE VR, FORM B7 CABLE REEL

		Following are the parts of the Type VR, Form B7 cable reel which differ from those of the Type VR, Form B1:
64451	..	CLUTCH, complete
64452	Lb	Ratchet with pin
64453	Tb	Roll for ratchet
64454	Kb	Roll race
64455	Ub	Roll retainer
1288	..	Screw for No. 64455 (10–24, ⅜ in. f.h.)
121536	Pb	Cable hook, complete
121537	..	Clamping block for cable hook
31980	..	Screw for No. 121537 (⅝ in.–18, ¾ in. r.h.)

† See illustration on page 66.

REPAIR PARTS OF CABLE REELS FOR LOCOMOTIVES

TYPE VR, FORM B8 CABLE REEL

Cat. No.	Illustration Letter (Fig. 4)	Description
		Following are the parts of the Type VR, Form B8 cable reel which differ from those of the Type VR, Form B1:
122629	Cb	MECHANISM BASE
122630	Ma	Shaft for gear and sprocket
122631	Qb	Bearing for gear and sprocket shaft
122632	..	Small bearing cap for No. 122631
10805	..	Pipe plug for No. 122631 (¼ in. pipe)
21937	Vb	Cap screw fastening No. 122632 in position (⅝ in.–11, 1¾ in. hex. h.)
64451	..	CLUTCH, complete
64452	Lb	Ratchet with pin
64453	Tb	Roll for ratchet
64454	Kb	Roll race
64455	Ub	Roll retainer
1288	..	Screw for No. 64455 (10–24, ⅜ in. f.h.)

TYPE VR, FORM B9 CABLE REEL

		Following are the parts of the Type VR, Form B9 cable reel which differ from those of the Type VR, Form B1:
122624	Ma	Shaft for gear and sprocket
122625	Qb	Bearing for gear and sprocket shaft
122626	Rb	Bearing cap for No. 122625
64451	..	CLUTCH, complete
64452	Lb	Ratchet with pin
64453	Tb	Roll for ratchet
64454	Kb	Roll race
64455	Ub	Roll retainer
1288	..	Screw for No. 64455 (10–24, ⅜ in. f.h.)

TYPE VR, FORM B10 CABLE REEL

		Following are the parts of the Type VR, Form B10 cable reel which differ from those of the Type VR, Form B1:
64451	..	CLUTCH, complete
64452	Lb	Ratchet with pin
64453	Tb	Roll for ratchet
64454	Kb	Roll race
64455	Ub	Roll retainer
1288	..	Screw for No. 64455 (10–24, ⅜ in. f.h.)
122633	Ga	Bushing for bevel gear
122634	K	Friction disc, large
122635	Fc	Bushing for reel
31897	..	Screw fastening No. 122635 to reel disc (No. 16, 1 in. f.h.)
122636	E	Supporting ring for cover (two thicknesses)
122628	B	Ballast
† 122637	C-1	Collector
† 122638	E-1	Collector ring
† 122639	D-1	Support for Nos. 122637, 122638
† 122640	U	Base for No. 122639
122641	..	Screw fastening base to support (14–24, 1½ in. f.h.)
104313	..	Screw fastening collector ring to support (12-24, ½ in. f.h. brass)
9681	..	Screw fastening collector to support (10–24, $\frac{7}{16}$ in. f.h. brass)
† 122642	H-1	Terminal for motor cable
† 122643	M	CONTACT FINGER with contact tip
122644	..	Contact tip
9508	..	Screw fastening No. 122644 to spring and shunt (6-32, $\frac{5}{16}$ in. r.h. brass)
† 122645	N	Guard for contact finger
122646	..	Spacing block for contact finger
122647	..	Leatheroid insulation for contact finger
122648	..	Bolt fastening Nos. 122643, 122645, 122646 in position ($\frac{5}{16}$ in.–18, 1¾ in. hex. h. brass)

† See illustration on page 66.

REPAIR PARTS OF CABLE REELS FOR LOCOMOTIVES

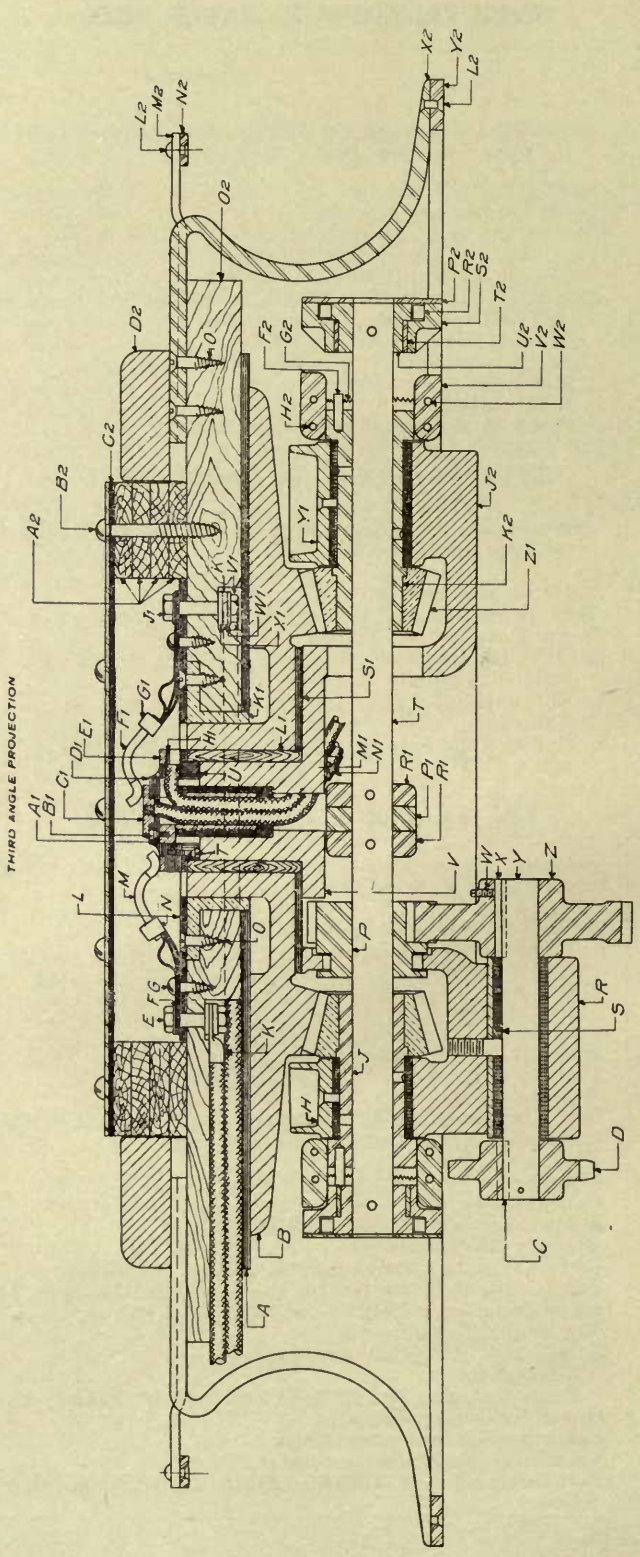


Fig. 5. VR Form B11 Cable Reel with Double Conductor Contact Device

REPAIR PARTS OF CABLE REELS FOR LOCOMOTIVES

TYPE VR, FORM B10 CABLE REEL—(Continued)

Cat. No.	Illustration Letter (Fig. 5)	Description
		Following are the parts of the Type VR, Form B10 cable reel which differ from those of the Type VR, Form B1:
104325	..	Washer for No. 122648 ($\frac{21}{64}$ in. by $1\frac{1}{8}$ in. by 0.0625 in.)
13919	..	Nut for No. 122648 ($\frac{5}{16}$ in.–18, hex. brass cham. one side)
† 122649	G	Screw fastening contact finger in position (No. 14, $1\frac{1}{4}$ in. r.h.)
122650	C	Reel disk
121536	Pb	Cable hook, complete
121537	..	Clamping block for cable hook
31980	..	Screw for No. 121537 ($\frac{5}{16}$ in.–18, $\frac{3}{4}$ in. r.h.)

TYPE VR, FORM B11 CABLE REEL WITH DOUBLE CONDUCTOR CONTACT DEVICE

104287	J-2	MECHANISM BASE
31840	V	Cap for mechanism base
405	..	Cap screw fastening No. 31840 to base ($\frac{1}{2}$ in.–13, $1\frac{1}{4}$ in. hex. h.)
104288	Z	Gear (34 teeth, 5 pitch)
104289	D	Sprocket (11 teeth, $1\frac{1}{8}$ pitch) with pin
104290	Y	Shaft for gear and sprocket
1871	W	Set screw for gear ($\frac{3}{8}$ in.–16, 1 in. sq. h.)
104291	X	Key for gear ($\frac{3}{8}$ in. by $\frac{3}{8}$ in. by $2\frac{3}{8}$ in. long round ends)
104292	C	Key for sprocket ($\frac{3}{8}$ in. by $\frac{3}{8}$ in. by $1\frac{5}{8}$ in. long round ends)
104293	S	Bearing for gear and sprocket shaft
104294	R	Bearing cap
9825	..	Cap screw fastening Nos. 104293, 104294 to base ($\frac{5}{8}$ in.–11, $2\frac{3}{4}$ in. hex. h.)
104295	..	Oil pipe for Nos. 104293, 104294 ($\frac{1}{4}$ in. pipe, $1\frac{3}{4}$ in. long)
122617	..	Pipe coupling for oil pipe ($\frac{1}{4}$ in. pipe)
31841	H	Short sleeve bearing cap
31842	Y-1	Long sleeve bearing cap
15887	..	Cap screw fastening Nos. 31841, 31842 to base ($\frac{5}{8}$ in.–11, $2\frac{1}{4}$ in. hex. h.)
104296	N-1	Cable clip holding cable to cap for mechanism base
33828	M-1	Screw fastening No. 104296 in position (14–24, $\frac{1}{2}$ in. r.h.)
31849	Z-1	Bevel pinion (20 teeth, 5 pitch)
31850	K-2	Long sleeve for pinion
31851	J	Short sleeve for pinion
31852	B	Bevel gear (74 teeth, 5 pitch)
31873	L-1	Bushing for No. 31852
64451	..	Clutch, complete, includes parts indented below
31854	V-2	Clutch finger
31855	H-2	Pin for No. 31854 ($\frac{1}{4}$ in. by $2\frac{1}{8}$ in.)
4030	..	Spring cotter for pin ($\frac{3}{32}$ in. by $\frac{5}{8}$ in.)
64452	U-2	Ratchet with pin
64453	R-2	Roll for ratchet
64454	S-2	Roll race
64455	P-2	Roll retainer
1288	..	Screw for No. 64455 (10–24, $\frac{3}{8}$ in. f.h.)
31865	T-2	Bushing for No. 64454
104297	G-2	Tension spring for clutch
31862	W-2	Pin for spring
4030	..	Spring cotter for pin ($\frac{3}{32}$ in. by $\frac{5}{8}$ in.)
31866	F-2	Stop pin for clutch ($\frac{5}{16}$ in. by $1\frac{5}{32}$ in.)
104299	P	Pinion (20 teeth, 5 pitch)
104300	..	Key for pinion ($\frac{3}{8}$ in. by $\frac{3}{8}$ in. by $2\frac{3}{4}$ in. long round ends)
104301	T	Shaft for bevel pinions and clutches
31868	P-1	Shipper for clutches
31869	R-1	Collar with pin for shipper
31870	A	Friction disk, large
31871	S-1	Friction disk, small
104302	..	Screw fastening No. 31870 in position (No. 14, 1 in. f.h.)
56743	..	Screw fastening No. 31871 in position (14–24, $\frac{1}{2}$ in. f.h.)

† See illustration on page 66.

REPAIR PARTS OF CABLE REELS FOR LOCOMOTIVES

TYPE VR, FORM B11 CABLE REEL WITH DOUBLE CONDUCTOR CONTACT DEVICE—(Continued)

Cat. No.	Illustration Letter (Fig. 5)	Description
31875	..	No. 00 tiger grease cup
31881	K-1	Bushing for reel
104303	Y-2	Reel ring
31885	X-2	Lower reel bar
104304	M-2	Upper reel bar
31886	L-2	Rivet for Nos. 31885, 104304 (¼ in. by 1 in. f.h.)
104305	O	Screw for No. 31885 (No. 16, 1½ in. f.h.)
31897	..	Screw for No. 104304 (No. 16, 1 in. f.h.)
103942	N-2	Guide ring for upper reel bar
31888	K	Terminal for reel cable
31900	C-2	Cover for contacts
104306	A-2	Supporting ring for cover (4 thicknesses)
104307	B-2	Screw fastening cover and supporting ring in position (No. 16, 3½ in. r.h.)
103944	D-2	Ballast with pins
31891	..	Cable strap
104308	C-1	Collector
104309	E-1	Collector ring
104310	D-1	Support for Nos. 104308, 104309
104311	U	Base for No. 104310
104312	T	Screw fastening base to support (6–32, ¾ in. f.h. brass)
104313	..	Screw fastening collector ring to support (12–24, ½ in. f.h. brass)
1382	..	Screw fastening collector to support (10–24, ⅜ in. f.h. brass)
104314	A-1	Insulating bushing for contact
29449	B-1	Screw fastening No. 104314 to support (10-24, ⅝ in. f.h. brass)
104315	H-1	Terminal for motor cable
104316	F-1	CONTACT FINGER with spring and shunt, for collector
104317	M	Contact finger with spring and shunt, for collector ring
104318	G-1	Guard for No. 104316
104319	N	Guard for No. 104317
1209	G	Screw fastening contact fingers in position (No. 10, 1 in. r.h.)
104320	L	Insulating washer for contact fingers
104321	O-2	Reel disc
104305	O	Screw fastening insulating washer and bushing to reel disc (No. 16, 1½ in. f.h.)
104322	J-1	Long bolt fastening reel cable terminal and contact finger in position ($\frac{5}{16}$ in.–18, 1⅞ in. hex. h. brass)
104323	E	Short bolt fastening reel cable terminal and contact finger in position ($\frac{5}{16}$ in.–18, 1½ in. hex. h. brass)
13919	V-1	Nut for Nos. 104322, 104323 ($\frac{5}{16}$ in.–18, $\frac{5}{16}$ in. thick, $\frac{13}{32}$ in. across flats hex. brass cham. one side)
24262	F	Small washer for Nos. 104322, 104323 ($\frac{21}{64}$ in. by ⅝ in. by 0.0625 in.)
104324	W-1	Medium washer for Nos. 104322, 104323 ($\frac{21}{64}$ in. by ⅞ in. by 0.0625 in.)
104325	X-1	Large washer for Nos. 104322, 104323 ($\frac{21}{64}$ in. by 1⅛ in. by 0.0625 in.)
64458	..	Cable hook
31877	..	Stop with rivets for shifting lever
31845	..	Cap screw for fastening shifting lever (⅝ in.–11, $1\frac{5}{32}$ in. hex. h. sp'l)

REPAIR PARTS OF CABLE REELS FOR LOCOMOTIVES

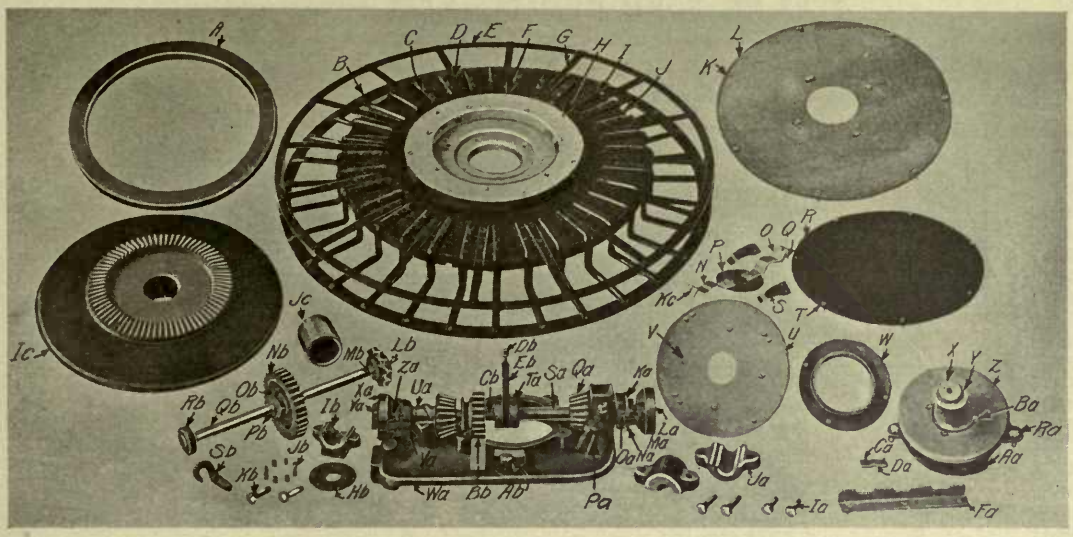


Fig. 6. VR Form C Cable Reel

TYPE VR, FORM C1 CABLE REEL

Cat. No.	Illustration Letter (Fig. 6)	Description
122651	Wa	MECHANISM BASE
122652	Aa	Cap for mechanism base
405	Ra	Cap screw fastening No. 122652 to base (½ in.–13, 1¼ in. hex. h.)
104288	Nb	Gear (34 teeth, 5 pitch)
104289	Lb	Sprocket (11 teeth, 1⅛ pitch) with pin
122653	Qb	Shaft for gear and sprocket
1871	Ob	Set screw for gear (⅜ in.–16, 1 in. sq. h.)
104291	Pb	Key for gear (⅜ in. by ⅜ in. by 2⅜ in. long, round ends)
104292	Mb	Key for sprocket (⅜ in. by ⅜ in. by 1⅝ in. long, round ends)
122654	..	Large bearing for gear and sprocket shaft
122655	Ja	Small bearing for gear and sprocket shaft
122656	..	Bearing cap for No. 122654
122657	..	Bearing cap for No. 122655
122658	Rb	Collar with pin for No. 122653
9825	Ia	Cap screw fastening bearings and bearing caps to base (⅝ in.–11, 2¾ in. hex. h.)
104295	..	Oil pipe for bearings (¼ in. pipe, 1¾ in. long)
122617	..	Pipe coupling for oil pipe (¼ in. pipe)
31848	..	Cable clip
33828	..	Screw fastening No. 31848 in position (14–24, ½ in. r.h.)
31849	Qa	Bevel pinion (20 teeth, 5 pitch)
31851	Ua	Sleeve for pinion
31852	Ic	Bevel gear (74 teeth, 5 pitch)
31873	Jc	Bushing for No. 31852
31853	..	CLUTCH, complete, includes parts indented below
31854	Va	Clutch pawl
31855	Oa	Pin for pawl (¼ in. by 2⅛ in.)
4030	Za	Spring cotter for pin ($\frac{3}{32}$ in. by ⅝ in.)
31856	Ya	Ratchet with pin
31857	..	Pin for ratchet (¼ in. by 2⅜ in.)
31858	Jb	Roll for ratchet (⅜ in. diam., $\frac{15}{32}$ in. long)
31859	La	Roll race
31865	Ma	Bushing for No. 31859
31860	Hb	Roll retainer
9624	Xa	Screw fastening No. 31860 to roll race (6–32, $\frac{5}{16}$ in. f.h.)

REPAIR PARTS OF CABLE REELS FOR LOCOMOTIVES

TYPE VR, FORM C1 CABLE REEL—(Continued)

Cat. No.	Illustration Letter (Fig. 6)	Description
31861	Ka	Tension spring for clutch
31862	Na	Pin for spring (¼ in. by $1\frac{15}{16}$ in. sp'l)
4030	Za	Spring cotter for pin ($\frac{3}{32}$ in. by ⅝ in.)
31866	..	Stop for clutch ($\frac{5}{16}$ in. by $1\frac{5}{32}$ in.)
104299	Bb	Pinion (20 teeth, 5 pitch)
104300	Cb	Key for pinion (⅜ in. by ⅜ in. by $2\frac{3}{4}$ in. long, round ends)
122659	Sa	Shaft for bevel pinions and clutches
31841	Ib	Bearing cap for No. 122659
15887	Kb	Cap screw fastening No. 31841 to base (⅝ in.–11, $2\frac{1}{4}$ in. hex. h.)
31868	Eb	Shipper for clutches
31869	Ta	Collar with pin, for shipper
31870	L	Friction disk, large
31871	Z	Friction disk, small
104302	K	Screw fastening No. 31870 in position (No. 14, 1 in. f.h.)
56743	Ba	Screw fastening No. 31871 in position (14–24, ½ in. f.h.)
31875	Db	No. 00 tiger grease cup
31876	..	Terminal for motor cable
31881	W	Bushing for reel
122660	B	Reel ring
122661	I	Lower reel bar
122662	G	Upper reel bar
122663	E	Guide ring for upper reel bar
31886	..	Rivet for Nos. 122660, 122661 (¼ in. by 1 in. f.h.)
122664	..	Rivet for Nos. 122662, 122663 (¼ in. by ¾ in. f.h.)
122665	J	Reel disk
15107	C	Screw fastening No. 122661 to reel disk (No. 16, $1\frac{3}{4}$ in. f.h.)
104305	D	Screw fastening No. 122662 to reel disk (No. 16, $1\frac{1}{2}$ in. f.h.)
31888	..	Terminal for reel cable
31890	Q	Bolt for No. 31888 (⅜ in.–16, $1\frac{7}{8}$ in. hex. h.)
31889	..	Washer for No. 31890 ($\frac{13}{32}$ in. by 1 in. by 0.065 in. copper)
6529	..	Nut for No. 31890 (⅜ in.–16, hex. brass)
31900	R	Cover for contacts
31892	F	Supporting ring for cover (2 thicknesses)
103943	T	Screw fastening supporting ring and cover in position (No. 16, $2\frac{1}{2}$ in. r.h.)
31913	H	Screw fastening No. 31892 to reel disk (No. 14, 2 in. f.h.)
122628	A	Ballast
31891	Da	Cable strap
31923	Ca	Screw fastening No. 31891 in position (No. 14, ¾ in. f.h.)
66047	X	Insulated contact and connector
31883	U	Gear insulation
104305	V	Screw fastening No. 31883 in position (No. 16, $1\frac{1}{2}$ in. f.h.)
31894	P	Contact plate
31898	S	Spring for contact plate
31895	O	Flexible connection
31896	N	Equalizer
31897	Kc	Screw for Nos. 31896, 31898 (No. 16, 1 in. f.h.)
31899	..	Rivet for Nos. 31895, 31896 (⅜ in. by ¼ in.)
31901	Y	Cap insulation
64458	Sb	Cable hook, complete
31877	Fa	Stop with rivets for shifting lever
31845	Ab	Cap screw for fastening shifting lever (⅝ in.–11, $1\frac{5}{32}$ in. hex. h. sp'l)

TYPE VR, FORM C2 CABLE REEL

		Following are the parts of the Type VR, Form C2 cable reel which differ from those of the Type VR, Form C1
122666	Wa	MECHANISM BASE
122667	..	Bearing cap for gear and sprocket shaft
13394	..	Cap screw fastening No. 122667 to base (¾ in.–10, $2\frac{1}{2}$ in. hex. h.)
122668	Pa	No. 0 tiger grease cup

REPAIR PARTS OF CABLE REELS FOR LOCOMOTIVES

TYPE VR, FORM C4 CABLE REEL

Cat. No.	Illustration Letter (Fig. 6)	Description
		Following are the parts of the Type VR, Form C4 cable reel which differ from those of the Type VR, Form C1:
122666	Wa	MECHANISM BASE
122667	..	Bearing cap for gear and sprocket shaft
13394	..	Cap screw fastening No. 122667 to base (¾ in.–10, 2½ in. hex. h.)
64451	..	Clutch, complete
64452	Ya	Ratchet with pin
64453	Jb	Roll for ratchet
64454	La	Roll race
64455	HB	Roll retainer
1288	XA	Screw for No. 64455 (10–24, ⅜ in. f.h.)
122668	Pa	No. 0 tiger grease cup

TYPE VR, FORM C5 CABLE REEL

		Following are the parts of the Type VR, Form C5 cable reel which differ from those of the Type VR, Form C1:
122666	Wa	MECHANISM BASE
122669	Aa	Cap for mechanism base
122667	..	Bearing cap for gear and sprocket shaft
13394	..	Cap screw fastening No. 122667 to base (¾ in.–10, 2½ in. hex. h.)
64451	..	Clutch, complete
64452	Ya	Ratchet with pin
64453	Jb	Roll for ratchet
64454	La	Roll race
64455	HB	Roll retainer
1288	Xa	Screw for No. 64455 (10–24, ⅜ in. f.h.)
122633	Jc	Bushing for bevel gear
122634	L	Friction disk, large
122668	Pa	No. 0 tiger grease cup
122635	W	Bushing for reel
31897	..	Screw fastening No. 122635 to reel disk (No. 16, 1 in. f.h.)
122670	J	Reel disk
122636	F	Supporting ring for cover (two thicknesses)
122637	..	Collector
122638	..	Collector ring
122639	..	Support for Nos. 122637, 122638
122640	..	Base for No. 122639
122641	..	Screw fastening base to support (14–24, 1½ in. f.h.)
9681	..	Screw fastening collector to support (10–24, $\frac{7}{16}$ in. f.h. brass)
104313	..	Screw fastening collector ring to support (12–24, ½ in. f.h. brass)
122642	..	Terminal for motor cable
122643	..	CONTACT FINGER with contact tip
122644	..	Contact tip
9508	..	Screw fastening No. 122644 to spring and shunt (6–32, $\frac{5}{16}$ in. r.h. brass)
122645	..	Guard for contact finger
122646	..	Spacing block for contact finger
122647	..	Leatheroid insulation for contact finger
122648	..	Bolt fastening Nos. 122643, 122645, 122646 in position ($\frac{5}{16}$ in.–18, 1¾ in. hex. h. brass)
104325	..	Washer for No. 122648 ($\frac{21}{64}$ in. by 1⅛ in. by 0.0625 in.)
13919	..	Nut for No. 122648 ($\frac{5}{16}$ in.–18 hex. brass cham. one side)
122649	..	Screw fastening contact finger in position (No. 14, 1¼ in. r.h.)

REPAIR PARTS OF CABLE REELS FOR LOCOMOTIVES

TYPE MVR CABLE REELS

The Type MVR cable reels are all of the same general construction and Fig. 7 illustrates the principal repair parts. Fig. 8 shows the current collector brush-holder.

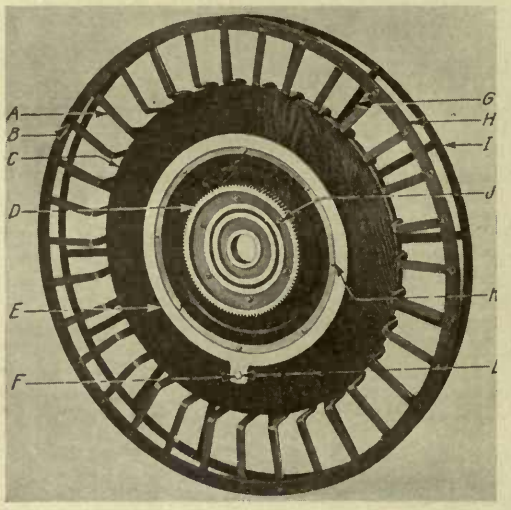


Fig. 7
Types *MVR-36, MVR-40, MVR-45 and MVR-49 Cable Reels

TYPE MVR-36, FORM B1 CABLE REEL

Cat. No.	Illustration Letter (Fig. 7)	Description
122671	C	REEL DISK
122672	I	Upper reel ring
122673	H	Lower reel ring
122674	G	Upper reel bar
122675	A	Lower reel bar
122664	B	Rivet for Nos. 122672, 122674 (¼ in. by ¾ in. f.h.)
31886		Rivet for Nos. 122673, 122675 (¼ in. by 1 in. f.h.)
122676		Screw fastening No. 122674 to reel disk (No. 16, 1¼ in. f.h.)
104305		Screw fastening No. 122675 to reel disk (No. 16, 1½ in. f.h.)
122677	E	Collector ring
104305	K	Screw fastening No. 122677 to reel disk (No. 16, 1½ in. f.h.)
122678		Washer for No. 104305 between collector ring and reel disk ($\frac{17}{64}$ in. by 1½ in. by $\frac{3}{16}$ in. thick. fiber)
122679		Cable terminal for collector ring
40158		Screw fastening No. 122679 to collector ring ($\frac{5}{16}$ in.–18, ⅞ in. f.h.)
122680	D	Gear (67 teeth, 8 pitch)
122681		Cover for gear
33828		Screw fastening cover to gear (14–24, ½ in. r.h.)
122682	J	Screw fastening gear to reel disk (⅜ in.–16, 1⅜ in. f.h.)
4031		Nut for No. 122682 (⅜ in.–16, hex. cham. one side)
122025		Washer for No. 4031 ($\frac{13}{32}$ in. by 1¼ in. by 0.0625 in.)
122683		Ball race

TYPE MVR-40, FORM A1 CABLE REEL

122685	C	REEL DISK
122686	I	Upper reel ring
122687	H	Lower reel ring
122674	G	Upper reel bar
122675	A	Lower reel bar

*The MVR-36 Cable Reel has an internal gear instead of the one shown in Fig. 7.

REPAIR PARTS OF CABLE REELS FOR LOCOMOTIVES

TYPE MVR-40, FORM A1 CABLE REEL—(Continued)

Cat. No.	Illustration Letter (Fig. 7)	Description
122664	B	Rivet for Nos. 122686 and 122674 (¼ in. by ¾ in. f.h.)
31886		Rivet for Nos. 122687, 122675 (¼ in. by 1 in. f.h.)
122676		Screw fastening No. 122674 to reel disk (No. 16, 1¼ in. f.h.)
104305		Screw fastening No. 122675 to reel disk (No. 16, 1½ in. f.h.)
122688	E	Collector ring
122024		Screw fastening No. 122688 to reel disk (No. 16, 1½ in. r.h.)
122678		Washer for No. 122024 between collector ring and reel disk ($\frac{17}{64}$ in. by 1½ in. by $\frac{3}{16}$ in. thick, fiber)
122689		Brass cable terminal for collector ring
322		Screw fastening No. 122689 to collector ring (⅜ in.–16, 1 in. f.h.)
122690	D	Gear (108 teeth, 8 pitch)
22735	J	Screw fastening No. 122690 to reel disk (⅜ in.–16, 2 in. r.h.)
120487		Washer for No. 22735 ($\frac{13}{32}$ in. by 1¼ in. by 0.094 in.)
4031		Nut for No. 22735 (⅜ in.–16, hex. cham. one side)
122691		Ball race

TYPE MVR-40, FORM A2 CABLE REEL

Following are the parts of the Type MVR-40, Form A2 cable reel which differ from those of the Type MVR-40, Form A1:

122692	C	REEL DISK
122693	I	Upper reel bar
122694		Punched copper tube cable terminal for screw fastening gear to reel disk
122695		Screw for cable terminal and gear (⅜ in.–16, 2 in. r.h. threaded 1½ in. sp'l)
9616		Nut for No. 122695 (⅜ in.–16, ¼ in. thick hex. cham. one side)

TYPE MVR-40, FORM A3 CABLE REEL

Following is the only part of the Type MVR-40, Form A3 cable reel which differs from those of the Type MVR-40, Form A1:

122696	E	Collector ring

TYPE MVR-45, FORM A1 CABLE REEL

122704	C	REEL DISK
103942	I	Upper reel ring
104303	H	Lower reel ring
104304	G	Upper reel bar
31885	A	Lower reel bar
31886	B	Rivet for reel rings and bars (¼ in. by 1 in. f.h.)
31897		Screw fastening No. 104304 to reel disk (No. 16, 1 in. f.h.)
15107		Screw fastening No. 31885 to reel disk (No. 16, 1¾ in. f.h.)
122701	E	Collector ring
122702	K	Screw fastening No. 122701 to reel disk (No. 12, 1¼ in. r.h.)
15190	F	Bolt fastening cable terminal to collector ring (⅜ in.–16, 1¼ in. sq. h.)
4031	L	Nut for No. 15190 (⅜ in.–16, hex. cham. one side)
122690	D	Gear (108 teeth, 8 pitch)
22735	J	Screw fastening No. 122690 to reel disk (⅜ in.–16, 2 in. r.h.)
120487		Washer for No. 22735 ($\frac{13}{32}$ in. by 1¼ in. by 0.094 in.)
4031		Nut for No. 22735 (⅜ in.–16, hex. cham. one side)
122691		Ball race

REPAIR PARTS OF CABLE REELS FOR LOCOMOTIVES

TYPE MVR-49, FORM A2 CABLE REEL

Cat. No.	Illustration Letter (Fig. 7)	Description
122699	C	REEL DISK
122663	I	Upper reel ring
122660	H	Lower reel ring
122700	G	Upper reel bar
122661	A	Lower reel bar
122664	B	Rivet for Nos. 122663, 122700 (¼ in. by ¾ in. f.h.)
31886		Rivet for Nos. 122660, 122661 (¼ in. by 1 in. f.h.)
104305		Screw fastening No. 122700 to reel disk (No. 16, 1½ in. f.h.)
15107		Screw fastening No. 122661 to reel disk (No. 16, 1¾ in. f.h.)
122701	E	Collector ring
122702	K	Screw fastening No. 122701 to reel disk (No. 12, 1¼ in. r.h.)
122694		Punched copper tube cable terminal for collector ring (13/32 in. bolt hole)
15190	F	Bolt fastening No. 122694 to collector ring (⅜ in.–16, 1¼ in. sq. h.)
4031	L	Nut for No. 15190 (⅜ in.–16, hex. cham. one side)
122695		Screw for cable terminal and gear (⅜ in.–16, 2 in. r.h., threaded, 1½ in. sp'l)
9616		Nut for No. 122695 (⅜ in.–16, ¼ in. thick hex. cham. one side)
122690	D	Gear (108 teeth, 8 pitch)
22735	J	Screw fastening No. 122690 to reel disk (⅜ in.–16, 2 in. r.h.)
120487		Washer for No. 22735 (13/32 in. by 1¼ in. by 0.094 in.)
4031		Nut for No. 22735 (⅜ in.–16, hex. cham. one side)
122691		Ball race

TYPE MVR-49, FORM A3 CABLE REEL

		Following is the only part of the Type MVR-49, Form A3 cable reel which differs from those of the Type MVR-49, Form A2:
122703	E	Collector ring

REPAIR PARTS OF CABLE REELS FOR LOCOMOTIVES

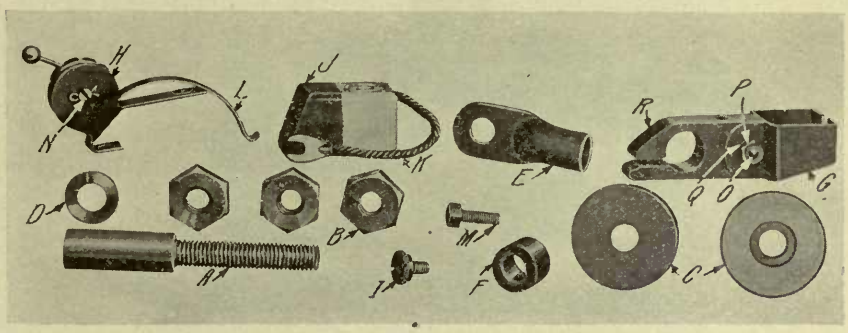


Fig. 8
Brush-holder Parts for Types MVR-40, MVR-45 and MVR-49 Cable Reels

BRUSH-HOLDER FOR TYPES MVR-40, MVR-45 AND MVR-49, FORM A, 250 AND 500 VOLT CABLE REEL COLLECTOR RINGS

Cat. No.	Illustration Letter (Fig. 8)	Description
119772	..	BRUSH-HOLDER, complete, with stud, nuts and terminal
119859	..	Brush-holder, complete, without stud, nuts and terminal
119773	R	Brush-holder body
119774	M	Clamping screw for No. 119773 (14–24, ¾ in. hex. h. blued cap screw)
119775	A	Connection stud
58681	B	Nut for No. 119775 (½ in.–13, ½ in. thick, hex. brass cham. one side)
32540	E	Punched copper tube cable terminal (17/32 in. stud hole)
32710	D	Brass washer for No. 119775 (17/32 in. by 1 in. by 0.075 in.)
119776	C	Fiber washer for No. 119775 (½ in. by 2 in. by 3/16 in. thick sp'l)
119777	F	Fiber collar for No. 119775
119778	G	Guide for carbon brush
119779	O	Cap screw fastening No. 119778 in position (14–24, 15/16 in. hex. h. blued sp'l)
119780	Q	Washer for No. 119779 (17/64 in. by ½ in. by 0.034 in.)
119781	P	Nut for No. 119779 (14–24, 3/16 in. thick, 7/16 in. across flats hex. blued cham. one side)
119782	L	Pressure spring for carbon brush
119783	H	Spring holder
119784	N	Hinge pin for spring
42856	..	Spring cotter for No. 119784 (5/64 in. by ½ in. blued)
119785	..	Lever for spring
119786	I	Thumbscrew for carbon brush pigtail terminal (14–24, blued sp'l)
112557	J	Carbon brush with pigtail and terminal (2½ in. long, 1¼ in. wide, 1¼ in. thick)

CABLE REEL MOTORS

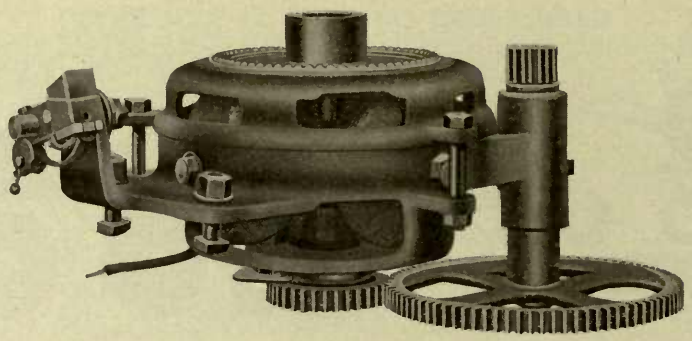


Fig. 9. CY-21 Cable Reel Motor

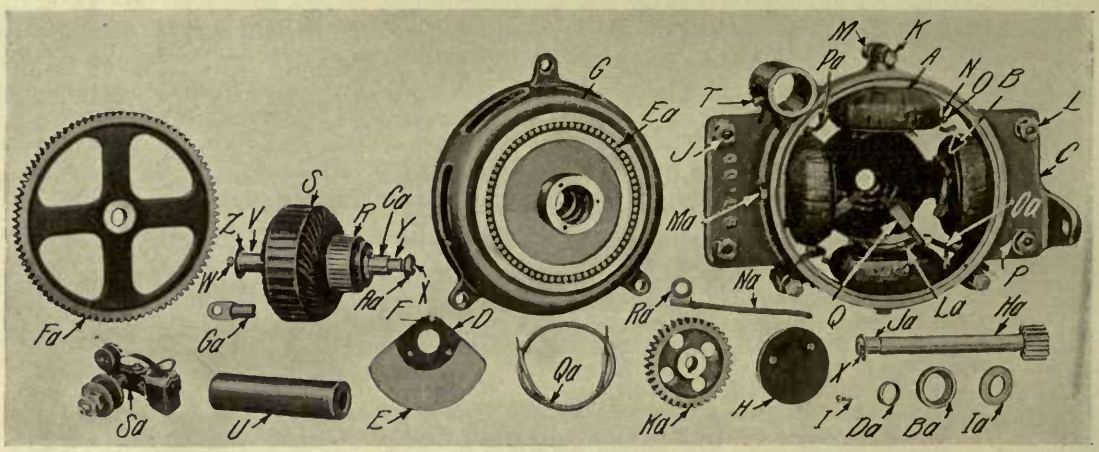


Fig. 10. Parts of CY-21 Cable Reel Motor

PRINCIPAL REPAIR PARTS OF TYPE CY-21, FORM A 250 AND 500 VOLTS AND FORM B 250 VOLT CABLE REEL MOTORS

Cat. No.	Illustration Letter (Fig. 10)	Description
119500	S	ARMATURE, 40 turns, complete, with shaft (No. 18 B.&S. D.C.C. wire), for Form A, 250 volt motor
119501	S	Armature, 40 turns, complete, with shaft (No. 18 B.&S. D.C.C. wire), for Form B, 250 volt motor
119502	S	Armature, 80 turns, complete, with shaft (No. 21 B.&S. D.C.C. wire), for Form A, 500 volt motor
119503	R	Commutator, complete, for 250 volt motor
119504	R	Commutator, complete, for 500 volt motor
119505	A	Field coil, complete, for use with 40 turn armature
119506	A	Field coil, complete, for use with 80 turn armature
119507	Fa	GEAR (86 teeth, 8 pitch, 0.875 in. bore, ¾ in. face), for Form A motor
119508	Fa	Gear (41 teeth, 8 pitch, 1.250 in. bore, ¾ in. face), for Form B motor
119509	Ka	Pinion (35 teeth, 8 pitch, 0.750 in. bore, ¾ in. face), for Form A motor
119510	Ka	Pinion (13 teeth, 8 pitch, 0.625 in. bore, ¾ in. face), for Form B motor
119511	Q	BRUSH-HOLDER, complete
119512	..	Carbon brush (1⅛ in. long, ⅞ in. wide, ⅜ in. thick)

CABLE REEL RHEOSTATS

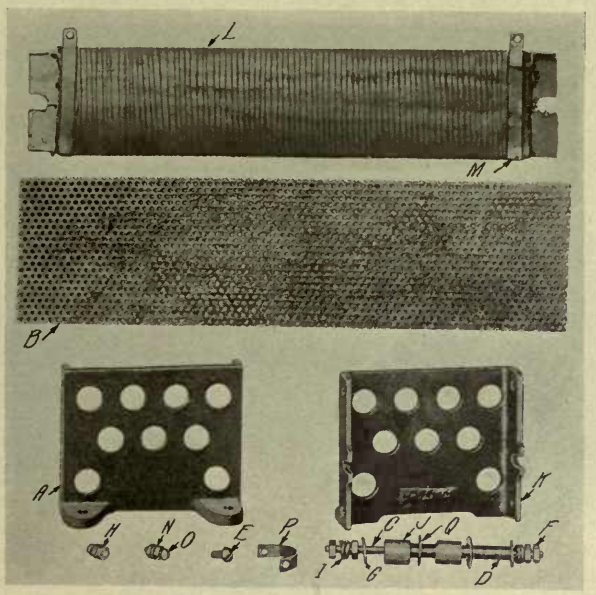


Fig. 11

*TYPE PA, FORM PT, 250 AND 500 VOLT RHEOSTATS

Cat. No.	Illustration Letter (Fig. 11)	Description
		Following are the parts:
120481	A	End casting, drilled for connection screws
120482	K	End casting, not drilled for connection screws
120492	B	Perforated cover
19682	..	Screw fastening cover to end castings (14–24, $\frac{3}{8}$ in. r.h. blued)
38937	..	Washer for No. 19682 ($\frac{17}{64}$ in. by $\frac{1}{2}$ in. by 0.0625 in.)
120493	L	RESISTANCE UNIT, complete, for 250 volt rheostat
120494	L	Resistance unit, complete, for 500 volt rheostat
13034		Connection screw for resistance unit (10–32, $\frac{3}{8}$ in. r.h. brass)
9962		Nut for No. 13034 (10–32, $\frac{5}{32}$ in. thick, $\frac{3}{8}$ in. across flats, hex. brass cham. both sides)
120495	M	Connection strip for resistance units
120496	C	Tie rod for resistance units (14–24, 6$\frac{1}{4}$ in. long)
49234	F	Nut for No. 120496 (14–24, $\frac{3}{16}$ in. thick, $\frac{1}{2}$ in. across flats, hex. cham. one side)
110624	I	Positive lock washer for No. 49234 ($\frac{9}{32}$ in. by $\frac{9}{16}$ in. by $\frac{5}{64}$ in. thick)
46787	G	Washer for No. 120496 ($\frac{17}{64}$ in. by $\frac{3}{4}$ in. by 0.0625 in.)
120491	Q	Washer for No. 120496 ($\frac{13}{32}$ in. by 1 in. by 0.060 in. mica)
120497	J	Spacing pipe for resistance units ($\frac{3}{8}$ in. pipe, $\frac{23}{32}$ in. long)
120498	D	Insulation sleeve for No. 120496 ($\frac{9}{32}$ in. by $\frac{13}{32}$ in. by 3$\frac{7}{8}$ in. long, mica)
120499		Spacer for resistance units
120866		Reinforcing strip for No. 120499
120867		Tie rod for No. 120499 (10–32, 4$\frac{3}{4}$ in. long)
44072		Nut for No. 120867 (10–32, $\frac{5}{32}$ in. thick, $\frac{3}{8}$ in. across flats, hex. cham. one side)
120868		Porcelain bushing for No. 120867
22245	O	Connection screw for resistance units (14–24, 1$\frac{3}{4}$ in. r.h. brass)
14426		Washer for No. 22245 ($\frac{17}{64}$ in. by $\frac{1}{2}$ in. by 0.060 in. brass)
30492		Washer for No. 22245 ($\frac{17}{64}$ in. by $\frac{3}{4}$ in. by 0.060 in. brass)
120489		Washer for No. 22245 ($\frac{17}{64}$ in. by 1 in. by 0.060 in. mica)
120490		Mica sleeve for No. 22245 ($\frac{1}{4}$ in. by $\frac{3}{8}$ in. by $\frac{3}{8}$ in. long)
120491		Washer for No. 120490 ($\frac{13}{32}$ in. by 1 in. by 0.060 in. mica)
48385	H	Nut for No. 22245 (14–24, $\frac{3}{16}$ in. thick, $\frac{1}{2}$ in. across flats, hex. brass cham. one side)
110624		Positive lock washer for No. 48385 ($\frac{9}{32}$ in. by $\frac{9}{16}$ in. by $\frac{5}{64}$ in. thick)
32537		Punched copper tube cable terminal

* On orders for complete rheostats the Type PA, Form R will be supplied.

CABLE REEL RHEOSTATS

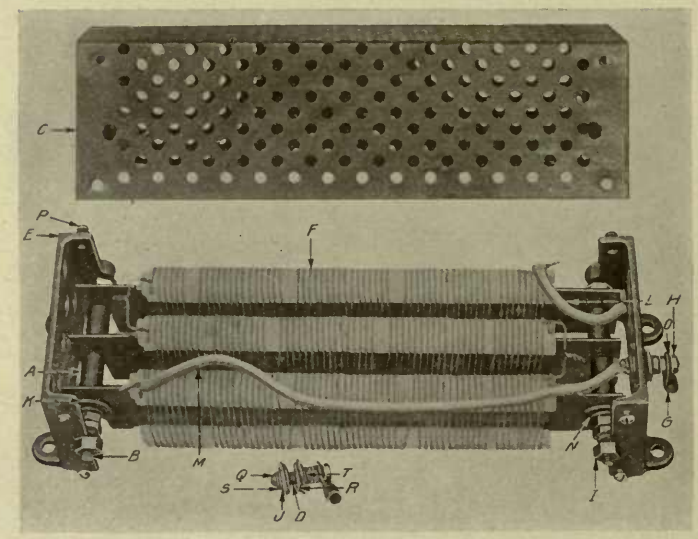


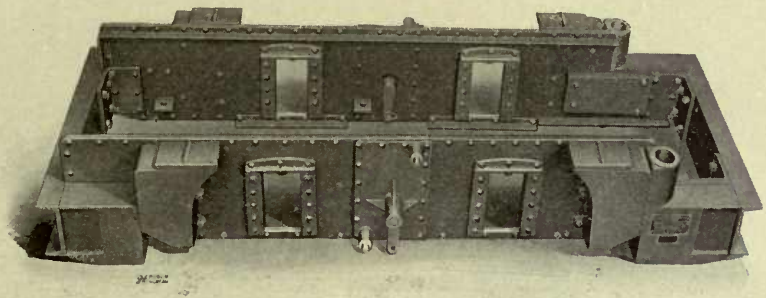
Fig. 12

TYPE PA, FORM R, 250 AND 500 VOLT RHEOSTATS

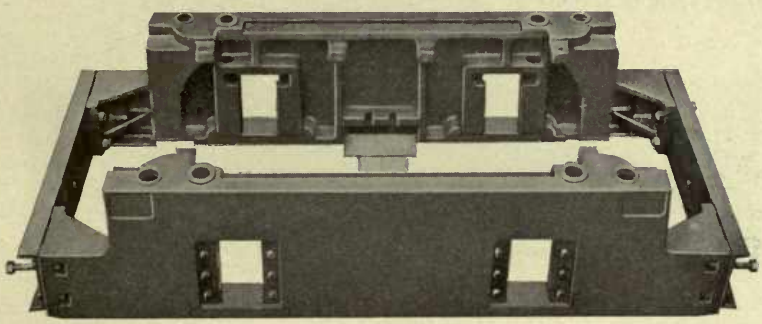
Cat. No.	Illustration Letter (Fig. 12)	Description
121444	..	TYPE PA, FORM R, 250 VOLT RHEOSTAT, complete
121446	..	Type PA, Form R, 500 volt rheostat, complete
		Following are the parts:
120481	E	End casting, drilled for connection screws
120482	..	End casting, not drilled for connection screws
120483	C	Perforated cover
19682	..	Screw fastening cover to end castings (14–24, $\frac{3}{8}$ in. r.h. blued)
38937	..	Washer for No. 19682 ($\frac{17}{64}$ in. by $\frac{1}{2}$ in. by 0.0625 in.)
120484	F	RESISTANCE UNIT, complete, for No. 121444
120485	F	Resistance unit, complete, for No. 121446
120486	B	Tie rod for resistance units ($\frac{3}{8}$ in.–16, $6\frac{7}{16}$ in. long)
9616	I	Nut for No. 120486 ($\frac{3}{8}$ in.–16, $\frac{1}{4}$ in. thick, $\frac{11}{16}$ in. across flats, hex. cham. one side)
26182	N	Lock washer for No. 9616
120487	..	Washer for No. 120486 ($\frac{13}{32}$ in. by $1\frac{1}{4}$ in. by 0.094 in.)
120488	A	Spacing pipe for resistance unit ($\frac{3}{8}$ in. pipe, $1\frac{5}{8}$ in. long)
22245	Q	Connection screw for resistance unit (14–24, $1\frac{3}{4}$ in. r.h. brass)
14426	S	Washer for No. 22245 ($\frac{17}{64}$ in. by $\frac{1}{2}$ in. by 0.060 in. brass)
30492	J	Washer for No. 22245 ($\frac{17}{64}$ in. by $\frac{3}{4}$ in. by 0.060 in. brass)
120489	R	Washer for No. 22245 ($\frac{17}{64}$ in. by 1 in. by 0.060 in. mica)
120490	D	Mica sleeve for No. 22245 ($\frac{1}{4}$ in. by $\frac{3}{8}$ in. by $\frac{3}{8}$ in. long)
120491	T	Washer for No. 120490 ($\frac{13}{32}$ in. by 1 in. by 0.060 in. mica)
48385	H	Nut for No. 22245 (14–24, $\frac{3}{16}$ in. thick, $\frac{1}{2}$ in. across flats, hex. brass cham. one side)
110624	O	Positive lock washer for No. 48385 ($\frac{9}{32}$ in. by $\frac{9}{16}$ in. by $\frac{5}{64}$ in. thick)
32537	G	Punched copper tube cable terminal

FRAMES, BUMPERS, CLIMBING STRAPS, COUPLING DEVICES, COVERS AND SUSPENSIONS FOR LOCOMOTIVES

The frames of G.E. mining locomotives are made from both structural steel and cast iron. On all sizes up to and including six tons the frames are structural steel and the sand boxes, trolley sockets, etc., are bolted on. Above six tons weight the side frames are of cast iron and the end frames generally channel steel, though the heaviest locomotives have cast iron end as well as side frames. With cast iron side frames the sand boxes, trolley sockets, etc., are cast integral with the frames.



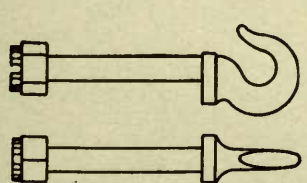
Structural Steel Frame



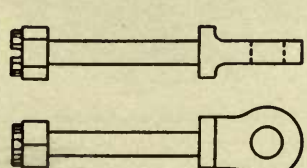
Cast Frame with Channel Ends

Two types of bumpers are used, cast iron and wood. The wood bumpers are protected by steel protection plates. Climbing straps are bolted on top of the bumpers to prevent cars climbing on the locomotive.

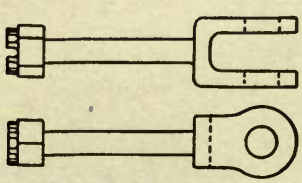
The various coupling devices used are the draw hook, single and double draw eye and the draw pocket; the different forms are shown in the accompanying illustrations.



Draw Hook

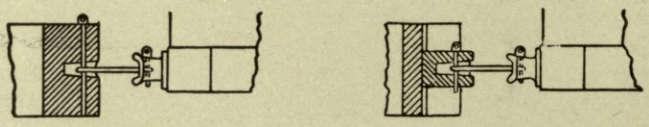


Single Draw Eye



Double Draw Eye

FRAMES, BUMPERS, CLIMBING STRAPS, COUPLING DEVICES, COVERS AND SUSPENSIONS FOR LOCOMOTIVES

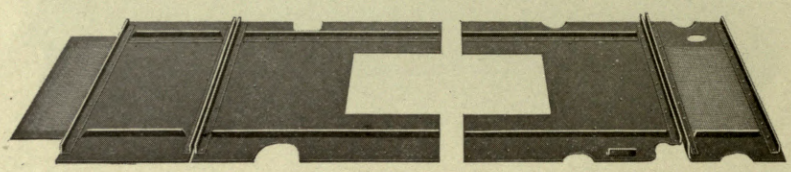


Special End Frame for Single Bumper Car with Link Coupling

Standard End Frame with Cast Iron Pocket in Recess

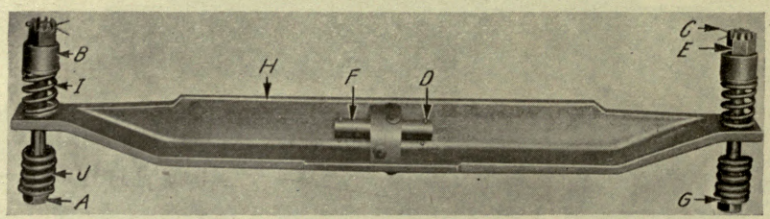
Draw Pockets

The top covers are made of sheet steel and are bolted to the frame.



Top Cover

The motor suspension bars are of various designs depending upon style and type of locomotive; one of the most general types is shown in the accompanying illustration.



Motor Suspension Bar

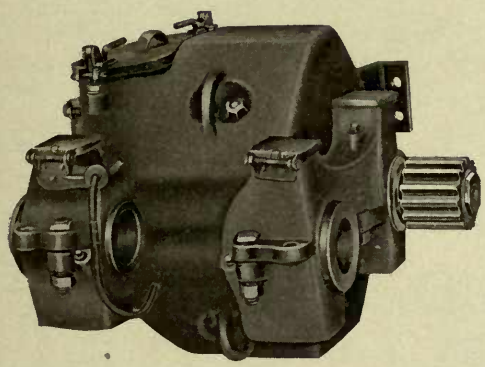
When ordering any of the above parts be sure to give the locomotive serial number.

A	Supporting bolt for motor suspension bar	F	Pin for motor suspension bar and locomotive frame
B	Spacer for motor suspension bar bolt	G	Washer for motor suspension bar bolt and spring
C	Spring cotter for motor suspension bar bolt	H	Motor suspension bar, complete
D	Spring cotter for motor suspension bar pin	I	Spring for motor suspension bar, upper
E	Crown nut for motor suspension bar bolt	J	Spring for motor suspension bar, lower

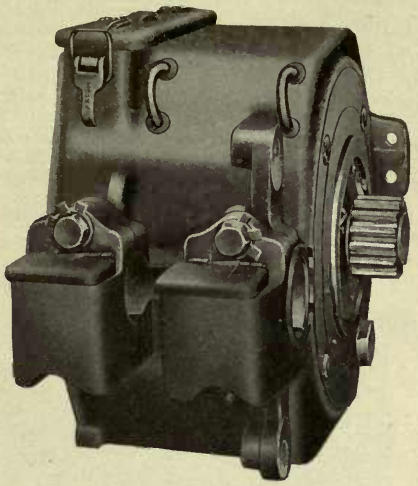
MOTOR PARTS

FOR

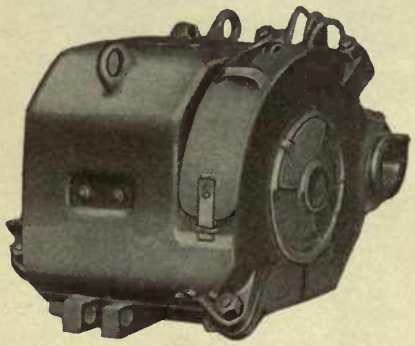
Locomotives, Cranes, Hoists, etc.



GE-60 Motor

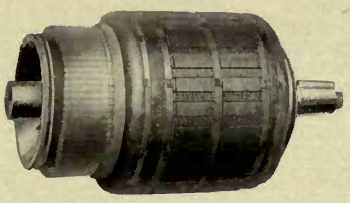


GE-79 Motor



HM-709 Motor

All motor repair parts are made of the same materials and in exactly the same manner as the parts entering into the motors originally. Supply part orders may, therefore, be placed with the assurance that the parts supplied will be of the highest grade of material and workmanship and will be perfectly interchangeable with the parts to be replaced.



Locomotive Motor Armature

Complete armatures for locomotive motors are listed in the following table. Prices for armatures for crane and hoist motors will be quoted promptly on application, and inquiries or orders for them should invariably give the serial numbers of the motors for which the armatures are wanted.

ARMATURES FOR LOCOMOTIVE MOTORS

Motor	Cat. No.	Turns	Volts
NWP-2½	100352	14	220/250
NWP-2½	100353	26	500
LWP-5	51920	10	250
CB-14	122833	10	125
CB-14	51987	6	250
CB-14	51991	10	250
CB-14	51990	17	500
CB-15	30780	16	250
CB-15	30781	30	500
GE-800	108538	1	110
GE-800	108539	2	250
GE-800	* 18224	4	500
GE-800	† 19345	4	500
GE-51	108531	1	250
GE-51	122834	4	500
GE-52	47903	3	250
GE-52	14584	6	500
GE-53	52593	2	220/250
GE-53	52590	4	500
GE-53	52591	5	500
GE-55	119199	2	500
GE-55	108533	3	500
GE-57	108535	2	250
GE-57	50257	3	500
GE-57	108536	4	500
GE-58	66338	2	250
GE-58	66340	3	250
GE-58	50454	6	500
GE-59	122835	2	250
GE-59	61046	3	250
GE-59	100354	6	500
GE-60	52380	3	250
GE-60	52378	6	500
GE-61	39387	4	250
GE-61	39388	4	500
GE-71	122836	1	250
GE-71	122837	2	500
GE-77	61051	3	250
GE-77	61052	6	500
GE-79	61053	3	250
GE-79	61054	6	500
GE-95	66343	7	250
GE-96	61055	3	250
GE-96	61056	6	500
GE-97	61057	2	250
GE-97	61058	2	500
HM-701	100572	3	250
HM-701	100573	6	500
HM-702	104599	2	250
HM-702	104601	4	500
HM-703	100574	2	250
HM-703	100575	4	500
HM-704	104607	4	500
HM-708	104610	3	250
HM-709	100576	2	250
HM-709	100577	2	500
HM-710	100574	2	250
HM-710	100575	4	500
HM-711	100576	2	250
HM-711	100577	2	500
HM-713	100572	3	250

* Coils wound with No. 10 wire.
† Coils wound with No. 9 wire.

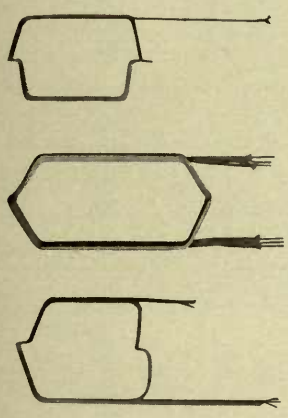
ARMATURE COILS FOR LOCOMOTIVE, CRANE AND HOIST MOTORS

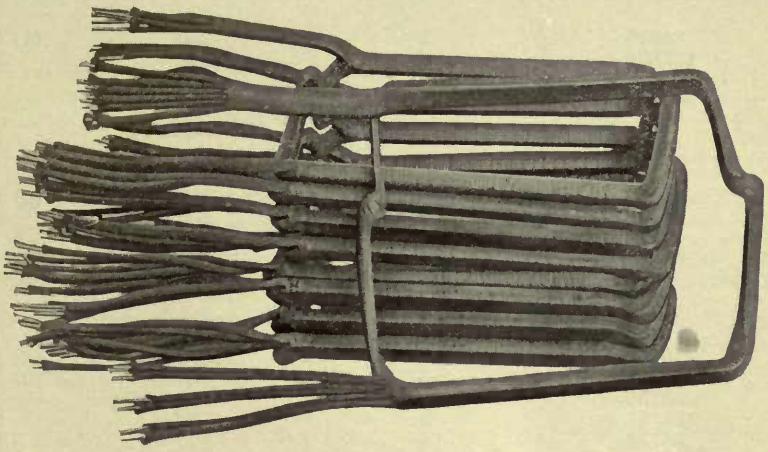
Armature coils furnished by the General Electric Company, being taken from the same stock as coils for use in original equipments, are perfectly interchangeable, and fit accurately in the slot, which is necessary to avoid either abrasion in winding or destructive vibration in service.

The individual conductors are insulated with a double cotton covering 33 per cent. heavier than the covering of standard magnet wire, which provides a very elastic insulating cushion and greatly reduces liability to abrasion between adjacent turns.

The slot portion of all armature coils is moulded in steam heated presses to exact dimensions and in no other way is it possible to provide against vibration in the slot and consequent deterioration of the insulation in service.

Except in bar wound coils for certain of the larger motors in which mica is employed, the insulation of the complete coil is accomplished by the use of varnished cambric manufactured expressly for the purpose.





GE-800

¶ Cat. No.	Turns	Voltage	Conductor	¶ Coils per Set
27385	1	110	(4) No. 10 B.&S.	105
27387	2	250	(2) No. 10 B.&S.	105
△17472	4	500	† No. 10 B.&S.	105
§ 15173	4	500	† No. 10 B.&S.	105
* 59479	4	500	† No. 10 B.&S.	105
§ 18222	4	500	No. 10 B.&S.	105
‡ 60309	4	500	No. 10 B.&S.	105
§ 19347	4	500	† No. 9 B.&S.	105

GE-1000

14778	3	500	No. 9 B.&S.	93
14779	4	500	No. 9 B.&S.	93

* Like Cat. No. 15173 except leads are not flattened.
† Light insulation.
‡ Like Cat. No. 18222 except leads are not flattened.
△Flexible leads.
§ Stiff leads.
¶ The Cat. No. in each case is for a single coil.

MOTOR ARMATURE COILS

GE-1200

¶ Cat. No.	Turns	Voltage	Conductor	¶ Coils per Set
24971	1	250	(3) (0.105 in. x 0.15 in.)	105
△18098	2	500	(2) No. 10 B.&S.	105
§ 18068	2	500	(2) No. 9 B.&S.	105
△18099	3	500	No. 10 B.&S.	105
§ 18069	3	500	0.105 in. x 0.15 in.	105
△18189	4	500	No. 10 B.&S.	105
§ 18070	4	500	No. 9 B.&S.	105

GE-51

24915	1	250	(4) No. 7 B.&S.	37
122838	4	500	No. 7 B.&S.	37

GE-52

24921	3	250	(2) No. 11 B.&S.	29
14586	6	500	No. 11 B.&S.	29

GE-53

55759	2	220/250	(2) No. 8 B.&S.	33
55755	3	500	(2) No. 10 B.&S.	37
55756	4	500	No. 8 B.&S.	33
55757	5	500	No. 8 B.&S.	33
55758	6	500	No. 10 B.&S.	37

GE-54

11352	3	500	No. 10 B.&S.	29

GE-55

24940	2	500	(3) No. 10 B.&S.	47
24944	3	500	(2) No. 10 B.&S.	47

GE-57

24950	2	250	(3) No. 9 B.&S.	33
50258	3	500	(2) No. 9 B.&S.	33
24953	4	500	No. 8 B.&S.	33

GE-58

24956	2	250	(3) No. 9 B.&S.	33
24958	3	250	(2) No. 9 B.&S.	33
50456	6	500	No. 9 B.&S.	33

△Flexible leads.
§ Stiff leads.
¶ The Cat. No. in each case is for a single coil.

MOTOR ARMATURE COILS

GE-59

¶ Cat. No.	Turns	Voltage	Conductor	¶ Coils per Set
24956	2	250	(3) No. 9 B.&S.	33
24958	3	250	(2) No. 9 B.&S.	33
50455	4	500	No. 8 B.&S.	33
50456	6	500	No. 9 B.&S.	33

GE-60

52399	2	250	(3) No. 11 B.&S.	37
52490	3	250	(2) No. 11 B.&S.	37
52397	4	500	No. 10 B.&S.	37
52398	6	500	No. 11 B.&S.	37

GE-61

24960	4	250	No. 8 B.&S.	41
24962	4	500	No. 8 B.&S.	41

GE-66

* 24870 † 24871	1	500	0.065 in. x 0.65 in.	39

GE-67

36848	3	500	No. 9 B.&S.	37
24964	4	500	No. 9 B.&S.	25

GE-69

* 33731 † 33732	1	500	0.55 in. x 0.115 in.	31

GE-70

36848	3	500	No. 9 B.&S.	37

GE-71

122839	1	250	(4) No. 8 B.&S.	39
122840	2	500	(2) No. 8 B.&S.	39

GE-77

52490	3	250	No. 11 B.&S.	37
52398	6	500	No. 11 B.&S.	37

* Upper coil.
† Lower coil.
¶ The Cat. No. in each case is for a single coil.

MOTOR ARMATURE COILS

GE-79

¶ Cat. No.	Turns	Voltage	Conductor	¶ Coils per Set
60611	3	250	(2) No. 11 B.&S.	41
60612	6	500	No. 11 B.&S.	41

GE-80

36848	3	500	No. 9 B.&S.	37

GE-81

11352	3	500	No. 10 B.&S.	29

GE-87

43097	2	500	(2) No. 10 B.&S.	43

GE-88

100789	3	500	No. 9 B.&S.	37

GE-90

43095	2	500	(2) No. 10 B.&S.	29

GE-95

61876	7	250	No. 13 B.W.G.	33

GE-96

60634	3	250	(2) 0.076 in. T.C.C.	37
60635	6	500	0.076 in. T.C.C.	37

GE-97

60636	2	250	(4) No. 10 B.&S.	25
60637	2	500	(2) No. 10 B.&S.	29

GE-202

59150	3	600	No. 9 B.&S.	25

GE-204

61074	2	600	(2) No. 10 B.&S. (Twinned)	29

¶ The Cat. No. in each case is for a single coil.

MOTOR ARMATURE COILS

GE-205

¶ Cat. No.	Turns	Voltage	Conductor	¶ Coils per Set
64299	2	600	(2) No. 8 B.&S.	25
100668	2	600	(3) No. 10 B.&S.	41

GE-210

59893	3	600	No. 7 B.&S.	25

GE-216

61159	3	600	No. 9 B.&S.	25

GE-218

100795	3	600	(2) No. 10 B.&S.	41

GE-219

61159	3	600	No. 9 B.&S.	25

HM-701

100584	3	250	No. 9 B.&S.	39
100585	6	500	No. 9 B.&S.	39

HM-702

104611	2	250	(2) No. 8 B.&S.	41
104612	4	500	No. 8 B.&S.	41

HM-703

100586	2	250	(2) No. 11 B.&S.	37
100587	4	500	No. 11 B.&S.	37

HM-704

104613	4	500	No. 7 B.&S.	37

HM-708

24958	3	250	(2) No. 9 B.&S.	33

HM-709

60636	2	250	(4) No. 10 B.&S.	25
60637	2	500	(2) No. 10 B.&S.	29

¶ The Cat. No. in each case is for a single coil.

MOTOR ARMATURE COILS

HM-710

¶ Cat. No.	Turns	Voltage	Conductor	¶ Coils per Set
100586	2	250	(2) No. 11 B.&S.	37
100587	4	500	No. 11 B.&S.	37

HM-711

60636	2	250	(4) No. 10 B.&S.	25
60637	2	500	(2) No. 10 B.&S.	29

HM-713

100584	3	250	(2) No. 9 B.&S.	39

CO-2001

24915	1	220/250	(4) No. 7 B.&S.	37
24917	2	500	(2) No. 7 B.&S.	37

CO-2002

24919	2	220/250	(3) No. 11 B.&S.	29
24921	3	220/250	(2) No. 11 B.&S.	29
14585	4	500	No. 10 B.&S.	29
24908	5	500	No. 10 B.&S.	29
14586	6	500	No. 11 B.&S.	29

CO-2003

* 24935 † 24936	1	220/250	0.187 in. x 0.50 in.	31
24940	2	500	(3) No. 10 B.&S.	47
24944	3	500	(2) No. 10 B.&S.	47

CO-2004

24956	2	220/250	(3) No. 9 B.&S.	33
24958	3	220/250	(2) No. 9 B.&S.	33
50455	4	500	No. 8 B.&S.	33
50456	6	500	No. 9 B.&S.	33

* Upper coil.
† Lower coil.
¶ The Cat. No. in each case is for a single coil.

MOTOR ARMATURE COILS

CO-2005

¶ Cat. No.	Turns	Voltage	Conductor	¶ Coils per Set
27385	1	110/125	(4) No. 10 B.&S.	105
27387	2	220/250	(2) No. 10 B.&S.	105
△17275	3	500	† No. 10 B.&S.	105
△15170	3	500	No. 10 B.&S.	105
§ 15161	3	500	† No. 10 B.&S.	105
§ 18221	3	500	No. 10 B.&S.	105
§ 19346	3	500	† No. 9 B.&S.	105
§ 15173	4	500	† No. 10 B.&S.	105
* 59479	4	500	† No. 10 B.&S.	105
§ 18222	4	500	No. 10 B.&S.	105
‡ 60309	4	500	No. 10 B.&S.	105
§ 19347	4	500	† No. 9 B.&S.	105
△17472	4	500	† No. 10 B.&S.	105
15204	6	500	† 0.10 in. x 0.063 in.	105

CO-2006

122841	1	220/250	(2) No. 7 B.&S.	37
122842	2	500	No. 7 B.&S.	37

CO-2007

24948	1	220/250	(4) No. 9 B.&S.	37
24950	2	220/250	(3) No. 9 B.&S.	33
19221	2	500	(2) No. 9 B.&S.	37
50258	3	500	(2) No. 9 B.&S.	33
24953	4	500	No. 8 B.&S.	33
21490	6	500	No. 9 B.&S.	33

* Like Cat. No. 15173 except leads are not flattened.
† Light insulation.
‡ Like Cat. No. 18222 except leads are not flattened.
△Flexible leads.
§ Stiff leads.
¶ The Cat. No. in each case is for a single coil.

FIELD COILS FOR LOCOMOTIVE, CRANE AND HOIST MOTORS

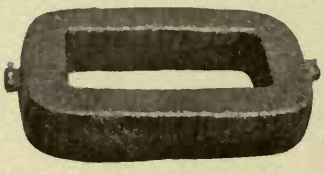
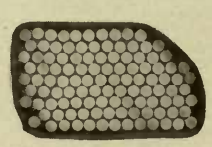


Fig. 1



Section of Impregnated Coil

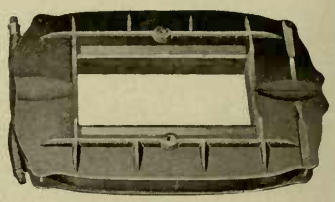


Fig. 2

In the manufacture of wire wound field coils for General Electric motors each turn is properly seated so as to avoid a burnout as a result of abrasion of the insulation by vibration.

The insulation of all wire wound coils consists of a special asbestos and cotton covering; the insulation between turns of ribbon wound coils is asbestos paper, so laminated as to prevent any danger of short circuit between turns by reason of impurities in the asbestos.

All coils, unless otherwise noted in the tables, are further protected by being impregnated while in a vacuum, with an asphaltum compound which penetrates all the interstices of the winding, hermetically sealing the coil against the entrance of moisture and so improving its thermal conductivity that the heat generated is rapidly dissipated, thus considerably increasing the capacity of the coil.

NWP-2 1/2

Cat. No.	Arm. Turns	Voltage	Conductor	Turns	Illustration Fig. No.
64851	14	220/250	No. 9 B.&S.	200	1
64852	26	500	No. 11 B.&S.	335	1
LWP-5					
50633	10	250	No. 5 B.&S.	156	1
CB-14					
122843	10	125	No. 4 B.&S.	73	1
51972	6 & 10	250	No. 5 B.&S.	190	1
51974	17	500	No. 8 B.&S.	350	1
CB-15					
30769	16	250	No. 7 B.&S.	200	1
30770	30	500	No. 10 B.&S.	400	1
WP-30					
15448	Standard	500	No. 7 B.&S.	374	1
WP-50					
15952	Standard	500	No. 4 B.&S.	202	1
GE-800					
27388	1	110	(2) No. 4 B.&S.	62	1
27388	2	250	(2) No. 4 B.&S.	62	1
* 17142 † 17749	4	500	No. 6 B.&S.	203	1

* Upper coil.
† Lower coil.

MOTOR FIELD COILS

GE-1000

Cat. No.	Arm. Turns	Voltage	Conductor	Turns	Illustration Fig. No.
14768	3 & 4	500	No. 4 B.&S.	143½	1
GE-1200					
24972	1	250	0.050 in. x $\frac{13}{16}$ in.	68	1
18020	2 & 3	500	0.045 in. x $\frac{13}{16}$ in.	138	1
18021	4	500	No. 5 B.&S.	198	1
GE-51					
24916	1	250	1¼ in. x 0.060 in.	36	2
122844	4	500	1¼ in. x 0.040 in.	100	
GE-52					
‡ 24922	3	250	No. 5 B.&S.	77½	1
‡ 21489	6	500	No. 6 B.&S.	185½	1
GE-53					
52567	2	220/250	1 in. x 0.0625 in.	58	2
52564	3 & 4	500	1 in. x 0.035 in.	120	2
52565	5	500	1 in. x 0.035 in.	140	1
52566	6	500	No. 4 B.&S.	250½	1
GE-54					
11348	3	500	No. 6 S.W.G.	128½	1
GE-55					
* 24941	2	500	1⅜ in. x 0.070 in.	86	2
† 24942			1⅜ in. x 0.070 in.	43	2
* 24945	3	500	1⅜ in. x 0.045 in.	126	2
† 24946			1⅜ in. x 0.045 in.	63	2
GE-57					
24951	2	250	$1\frac{5}{16}$ in. x 0.080 in.	50½	2
50240	3	500	$1\frac{5}{16}$ in. x 0.035 in.	110½	2
24954	4	500	$1\frac{5}{16}$ in. x 0.030 in.	124	2
GE-58					
‡ 24957	2	250	(2) No. 3 B.&S.	58½	1
‡ 24959	3	250	(2) No. 4 B.&S.	75½	1
‡ 19212	6	500	No. 6 S.W.G.	175½	1

* Top and bottom coil.
† Side coil.
‡ Not impregnated on account of restricted space.

MOTOR FIELD COILS

GE-59

Cat. No.	Arm. Turns	Voltage	Conductor	Turns	Illustration Fig. No.
‡ 24957	2	250	(2) No. 3 B.&S.	58½	1
‡ 24959	3	250	(2) No. 4 B.&S.	75½	1
‡ 40578	4	500	No. 5 B.W.G.	137½	1
‡ 62463	6	500	.218 in. Asb. & S.C.C.	166½	1

GE-60

‡ 52284	2	250	(2) No. 5 B.&S.	75½	1
‡ 52285	3	250	(2) No. 6 B.&S.	84½	1
‡ 52282	4	500	No. 5 B.&S.	149½	1
‡ 52283	6	500	No. 6 B.&S.	171½	1

GE-61

‡ 24961	4	250	(2) No. 5 B.W.G.	58½	1
‡ 24963	4	500	No. 3 B.&S.	118½	1

GE-66

* 24844	1	500	1⅛ in. x 0.120 in.	56	2
† 24845			1 in. x 0.120 in.	29	2

GE-67

55857	3	500	No. 5 B.W.G.	110½	1
24965	4	500	No. 5 B.W.G.	125½	1

GE-69

* 33735	1	500	2 in. x 0.110 in.	35	2
† 33736			2 7/32 in. x 0.110 in.	35	2

GE-70

55857	3	500	No. 5 B.W.G.	110½	1

GE-71

π 122845 △ 122846 § 122847 ‖ 122848	1	250	0.080 in. x 1 in.	29½	1
122849	2	500	0.080 in. x 1 in.	60½	1

GE-77

‡ 52285	3	250	No. 6 B.&S.	84½	1
‡ 52283	6	500	No. 6 B.&S.	171½	1

GE-79

* 60639	3	250	No. 3 B.&S.	104	1
† 60638			No. 3 B.&S.	51	1
* 60641	6	500	No. 6 B.&S.	210	1
† 60640			No. 6 B.&S.	104	1

* Top and bottom coil.
† Side coil.
‡ Not impregnated on account of restricted space.
π Top coil.
△ Bottom coil.
§ Suspension side coil.
‖ Axle side coil.

MOTOR FIELD COILS

GE-80

Cat. No.	Arm. Turns	Voltage	Conductor	Turns	Illustration Fig. No.
55857	3	500	No. 5 B.W.G.	110½	1

GE-81

11348	3	500	No. 6 S.W.G.	128½	1

GE-87

43100	2	500	No. 4 B.&S.	87½	1

GE-88

100796	3	500	No. 5 B.W.G.	110½	1

GE-90

43098	2	500	No. 2 B.&S.	90½	1

GE-95

61878	7	250	No. 8 B.&S.	250	1

GE-96

60642	3	250	No. 5 B.&S.	185	1
60643	6	500	No. 8 B.&S.	355	1

GE-97

60644	2	250	No. 2 B.&S.	38½	1
60645	2	500	No. 5 B.&S.	80	1

GE-202

△61071	3	600	No. 5 B.W.G.	70	1
§ 59142			No. 5 B.W.G.	58	1

GE-204

△61075	2	600	No. 4 B.&S.	46	1
§ 61076			1.3 in. x 0.05 in.	40	1

GE-205

† 64265	2	600	1 in. x 0.075 in.	40	1
* 64264			1 in. x 0.075 in.	40	1
‡ 64266			2 in. x 0.040 in.	40	1
π 64267			2 in. x 0.040 in.	40	1
† 100665 s	2	600	1 in. x 0.075 in.	56	1
* 100664 s			1 in. x 0.075 in.	56	1
‡ 100666 s			⅞ in. x 0.095 in.	37.5	1
π 100667 s			⅞ in. x 0.095 in.	37.5	1

* Exciting coil, side.
† Exciting coil, top and bottom.
‡ Commutating coil (top axle and bottom suspension sides).
π Commutating coil (top suspension and bottom axle sides).
§ Commutating coil.
△Exciting coil.
s For use with spring flange.

MOTOR FIELD COILS

GE-210

Cat. No.	Arm. Turns	Voltage	Conductor	Turns	Illustration Fig. No.
△59890	3	600	No. 2 B.&S.	63	1
§ 59891			1.75 in. x 0.030 in.	58	1
‡§ 88958			1.75 in. x 0.030 in.	58	1

GE-216

△61162	3	600	No. 5 B.W.G.	70	1
§ 61164			No. 5 B.W.G.	62½	1

GE-218

△100807	3	600	1 in. x 0.055 in.	66½	1
§ 100808			0.07 in. x 0.8 in.	52½	1

GE-219

△61162	3	600	No. 5 B.W.G.	70	1
§ 61164			No. 5 B.W.G.	62½	1

HM-701

100588	3	250	(2) No. 4 B.&S.	71	1
100589	6	500	No. 4 B.&S.	142	1

HM-702

104616	2	250	0.035 in. x $1\frac{5}{16}$ in.	61	1
104617	4	500	0.035 in. x $1\frac{5}{16}$ in.	122	1

HM-703

† 100590	2	250	No. 6 B.&S.	67	1
* 100591			No. 6 B.&S.	92	1
† 100592	4	500	0.172 in.	135	1
* 100593			0.172 in.	185	1

HM-704

104617	4	500	0.035 in. x $1\frac{5}{16}$ in.	122	1

HM-708

104622	3	250	(2) No. 4 B.&S.	73½	1

HM-709

100594	2	250	0.054 in. x $1\frac{1}{16}$ in.	38.5	1
100595	2	500	(2) No. 5 B.&S.	80	1

△Exciting coil.
§ Commutating coil.
* Top and bottom coil.
† Side coil.
‡ For use with spring flange.

MOTOR FIELD COILS

HM-710

Cat. No.	Arm. Turns	Voltage	Conductor	Turns	Illustration Fig. No.
§ 104625	2	250	(2) No. 7 B.&S.	81	1
‡ 104626			(2) No. 7 B.&S.	111	1
§ 104627	4	500	No. 7 B.&S.	169	1
‡ 104628			No. 7 B.&S.	231	1

HM-711

103777	2	250	(3) No. 4 B.&S.	38.5	1
103778	2	500	(3) No. 7 B.&S.	80	1

HM-713

104631	3	250	(2) No. 4 B.&S.	71	1

CO-2001

24916	1	220/250	1¼ in. x 0.060 in.	36	2
24918	2	500	1¼ in. x 0.080 in.	56	2

CO-2002

¶ 24920	2	220/250	No. 4 B.&S.	62½	1
¶ 24922	3	220/250	No. 5 B.&S.	77½	1
¶ 15761	4 & 5	500	No. 5 B.&S.	155½	1
68244	4 & 5	500	No. 5 B.&S.	155½	1
¶ 21489	6	500	No. 6 B.&S.	185½	1

CO-2003

‡ 24937	1	220/250	1⅜ in. x 0.1875 in.	36	2
§ 24938			1⅜ in. x 0.1875 in.	17	2
‡ 24941	2	500	1⅜ in. x 0.070 in.	86	2
§ 24942			1⅜ in. x 0.070 in.	43	2
‡ 24945	3	500	1⅜ in. x 0.045 in.	126	2
§ 24946			1⅜ in. x 0.045 in.	63	2

CO-2004

¶ 24957	2	220/250	(2) No. 3 B.&S.	58½	1
¶ 24959	3	220/250	(2) No. 4 B.&S.	75½	1
¶ 50420	4	500	No. 5 B.W.G.	144½	1
60329	4	500	No. 5 B.W.G.	137½	1
¶ 19212	6	500	No. 6 S.W.G.	175½	1

CO-2005

27388	1	110/125	(2) No. 4 B.&S.	62	1
27388	2	220/250	(2) No. 4 B.&S.	62	1
* 17142	3 & 4	500	No. 6 B.&S.	203	1
† 17749					
* 24913	6	500	No. 7 B.&S.	259	1
† 24970					

* Upper coil.
† Lower coil.
‡ Top and bottom coil.
§ Side coil.
¶ Not impregnated on account of restricted space.

MOTOR FIELD COILS

CO-2006

Cat. No.	Arm. Turns	Voltage	Conductor	Turns	Illustration Fig. No.
122850	1	220/250	0.325 in. x 0.325 in.	44	1
122851	2	500	0.229 in. x 0.229 in.	88	1

CO-2007

24949	1	220/250	$1\frac{5}{16}$ in. x 0.090 in.	44	2
24951	2	250	$1\frac{5}{16}$ in. x 0.080 in.	50½	2
19222	2	500	$1\frac{5}{16}$ in. x 0.045 in.	90	2
50240	3	500	$1\frac{5}{16}$ in. x 0.035 in.	110½	2
24954	4	500	$1\frac{5}{16}$ in. x 0.030 in.	124	2
21492	6	500	No. 4 B.&S.	150	2

COMMUTATOR SEGMENTS FOR LOCOMOTIVE, CRANE AND HOIST MOTORS

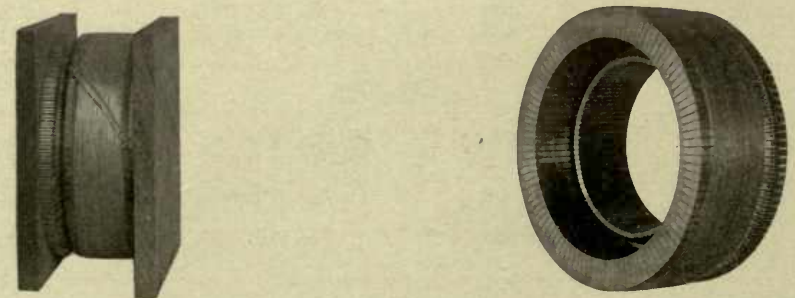
The General Electric Company's Commutator Segments are made of hard drawn copper bars and the finest homogeneous amber mica, from which all flint and other hard substances found in the natural mica have been removed.

Amber mica contains, in its natural state, large quantities of impurities which, if not carefully removed, cause high spots in the segment insulation and a consequent sparking and deterioration in service. In the General Electric Company's product such impurities are thoroughly removed. This "cleaning" is accomplished by splitting to a maximum thickness of one and one-half mils, and then excluding all but perfectly clean, homogeneous mica.

The splittings thus obtained are pasted together to the required thickness and subjected, at high temperatures, to hydraulic pressure to exclude the surplus binder.

Experience has perfectly borne out our belief, reached some years ago, that the expense involved in splitting and pasting segment insulations is much more than justified by the longer life obtained, and, apart from the question of foreign substances, pasted insulations, being softer and more yielding than dry unsplit mica, wear down more evenly with the copper.

It is, however, essential to the maintenance of a tight commutator that softening from heat in operation should not result in any portion of the binder flowing out. *The special varnish used by the General Electric Company and the machinery and methods of pasting which have been developed, which, as far as we know, are not employed by any other manufacturer, are necessary to the production of segment insulations which will withstand the high temperatures and pressures to which all commutator parts are subjected in service.*



Commutator Segments

MOTOR COMMUTATOR SEGMENTS

NWP-2 1/2

Cat. No.	Arm. Turns	Voltage	Remarks
64850	14	220/250	
64850	26	500	

LWP-5

51907	10	250	

CB-14

122853	10	125	
51997	6 & 10	250	
51997	17	500	

CB-15

51997	16	250	
51997	30	500	

GE-800

27366	1	110	
27367	2	250	
16388	4	500	Form 4
16389	4	500	Form 6
52985	4	500	Form 7

GE-1000

Cat. No.	Arm. Turns	Voltage	Remarks
16390	3 & 4	500	Form 2
16391	3 & 4	500	Form 3

GE-1200

55778	1	250	Form 7
55790	2	500	Form 8
55775	3 & 4	500	Form 1
55776	3 & 4	500	Form 2
14501	3 & 4	500	Form 4
55777	3 & 4	500	Form 5

GE-51

14529	1	250	
122854	4	500	

GE-52

55779	3	250	
14531	6	500	

GE-53

Cat. No.	Arm. Turns	Voltage
52990	2	220/250
52987	3	500
52988	4 & 5	500
52989	6	500

GE-54

55780	3	500

GE-55

24943	2	500
24947	3	500

GE-57

24952	2	250
50287	3	500
24955	4	500

GE-58

55785	2	250
55784	3	250
50449	6	500

GE-59

Cat. No.	Arm. Turns	Voltage
122855	2	250
61069	3	250
40579	4	500
62464	6	500

GE-60

52390	2	250
52391	3	250
52388	4	500
52389	6	500

GE-61

55786	4	250 & 500

GE-66

24876	1	500

GE-67

55788	3	500
24966	4	500

MOTOR COMMUTATOR SEGMENTS

GE-69

Cat. No.	Arm. Turns	Voltage
33738	1	500

GE-70

33739	3	500

GE-71

122856	1	250
122857	2	500

GE-77

36864	3	250
36865	6	500

GE-79

60583	3	250
60584	6	500

GE-80

33739	3	500

GE-81

55780	3	500

GE-87

43104	2	500

GE-88

100784	3	500

GE-90

43101	2	500

GE-95

64849	7	250

GE-96

60585	3	250
60586	6	500

GE-97

Cat. No.	Arm. Turns	Voltage
60587	2	250
60610	2	500

GE-202

59152	3	600

GE-204

61073	2	600

GE-205

* 100669	2	600
† 64315	2	600

GE-210

59895	3	600

GE-216

61165	3	600

GE-218

100788	3	600

GE-219

61165	3	600

HM-701

100578	3	250
100579	6	500

HM-702

104593	2	250
104594	4	500

HM-703

100580	2	250
100581	4	500

* For use with 41 coil armature.
† For use with 25 coil armature.

MOTOR COMMUTATOR SEGMENTS

HM-704

Cat. No.	Arm. Turns	Voltage
104595	4	500

HM-708

61069	3	250

HM-709

100582	2	250
100583	2	500

HM-710

100580	2	250
100581	4	500

HM-711

100582	2	250
100583	2	500

HM-713

100578	3	250

CO-2001

14529	1	220/250
14528	2	500

CO-2002

24923	2	220/250
55779	3	220/250
14530	4 & 5	500
14531	6	500

CO-2003

Cat. No.	Arm. Turns	Voltage
24939	1	220/250
24943	2	500
24947	3	500

CO-2004

55785	2	220/250
55784	3	220/250
50448	4	500
50449	6	500

CO-2005

Cat. No.	Arm. Turns	Volts	Remarks
27366	1	110/125	
27367	2	220/250	
16388	3, 4 & 6	500	Form 4
16389	3, 4 & 6	500	Form 6
52985	3, 4 & 6	500	Form 7

CO-2006

Cat. No.	Arm. Turns	Voltage
113990	1	220/250
113991	2	500

CO-2007

55782	1	220/250
24952	2	220/250
55783	2	500
50287	3	500
24955	4	500
24989	6	500

BRUSH-HOLDERS FOR LOCOMOTIVE, CRANE AND HOIST MOTORS

Fig. 1

Fig. 2

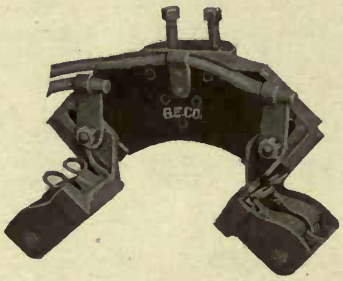


Fig. 3

Fig. 11

Fig. 4

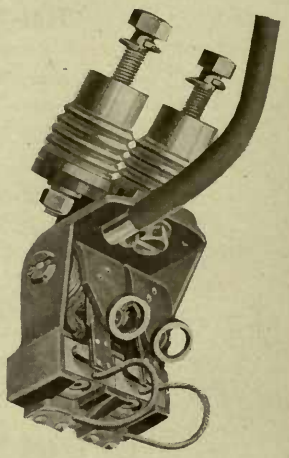


Fig. 6

Fig. 5

Fig. 7

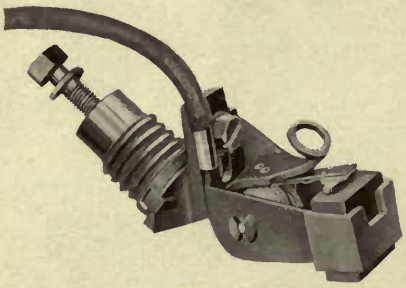


Fig. 10

Fig. 9

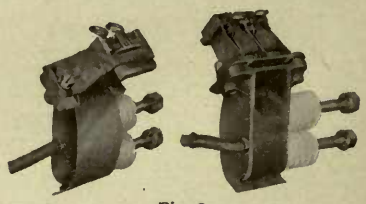


Fig. 8

Motor	Volts	Illustration Fig. No.	CAT. NO. STUD OR SUPPORT COMPLETE WITH BRUSH-HOLDER		Cat. No. Yoke Complete with Brush-Holders	CAT. NO. BRUSH-HOLDER COMPLETE		Cat. No. Tension Spring
			Right-Hand	Left-Hand		Right-Hand	Left-Hand	
NWP-2½	220/250/500	5	100450	100450		100451	100451	100452
LWP-5	250		50663	50665		50670	50672	50677
CB-14	125	3			123425	123426	123427	45407
CB-14	250/500	5	51950	51951		51958	51958	51961
CB-14	250/500	3			45399	45401	45402	45407
CB-15	250/500	5	30762	30763		51958	51958	51961
CB-15	250/500	3			123428	45401	45402	45407
WP-30	500					16590	16591	9606
WP-50	500					16564	16565	10409
GE-800 Form B	110	4			113128	113133	113133	13731
GE-800 Form B	250	3			111881	111882	111883	13731
GE-800 Form B	500	3			17488	17238	17239	13731
GE-1000	500	3			14752	14755	14756	14763

MOTOR BRUSH-HOLDERS

Motor	Volts	Illustration Fig. No.	CAT. NO. STUD OR SUPPORT COMPLETE WITH BRUSH-HOLDER		Cat. No. Yoke Complete with Brush-Holders	CAT. NO. BRUSH-HOLDER COMPLETE		Cat. No. Tension Spring
			Right-Hand	Left-Hand		Right-Hand	Left-Hand	
GE-1200	500	3			18045	18048	18048	19348
GE-51	250	3			100453	100455	100457	100459
GE-51	500	3			100454	100456	100458	100460
GE-52	250	3			47886	47887	47888	45174
GE-52	500	3			15604	15627	15628	14763
GE-53	220/250	4			52547	52552	52552	b 52553
GE-53	500	3			k 52531	52534	52535	14763
GE-53	500	3			e 52532	52534	52535	14763
GE-54	500	3			11338	11339	11340	45182
GE-55	500	7	50512	50513		50516	119184	50520
GE-57	250	3			100461	100462	100463	100464
GE-57	500	3			‖ 38580	19213	19214	55853
GE-57	500	3			† 50226	50228	50229	14763
GE-58	250	3			△66679	66681	66683	14763
GE-58	250	3			§ 66680	66682	66684	14763
GE-58	500	3			50418	14755	14756	14763
GE-59	250	3			△123429	123430	123431	45160
GE-59	250	3			§ 45152	45154	45155	45160
GE-59	500	3			100465	100466	100467	45160
GE-60	250	3			52272	52274	52275	14763
GE-60	500	3			52271	15627	15628	14763
GE-61	250	4			39344	39348	39348	b 39355
GE-61	500	4			39345	39349	39349	b 39355
GE-66	500	1	24577	24578		24581	24582	{ h24588 a24589
GE-67	500	3			* 47795	47797	47798	55853
GE-67	500	3			§ 47794	55847	55848	55853
GE-69	500	7	38641	38642		38643	38644	{ h38645 a38646
GE-70	500	3			34059	34060	34061	55853
GE-71	250	4			123432	123435	123435	b 123436
GE-71	500	4			123433	123435	123435	b 123436
GE-77	250	3			45169	52274	45171	45174
GE-77	500	3			45168	15627	45170	14763
GE-79	250	4			c 100471	100475	100475	100477
GE-79	250	4			d 100472	100476	100476	100478
GE-79	500	4			c 100473	100475	100475	100477
GE-79	500	4			d 100474	100476	100476	100478
GE-80	500	3			40400	34060	34061	55853
GE-81	500	3			45180	11339	11340	45182
GE-87	500	3			45188	45190	45191	55853
GE-88	500	2	‡ 108032	‡ 108032		108033	108033	108034
GE-88	500	2	¶ 119100	¶ 119100		108033	108033	108034
GE-90-A	500	3			45200	45202	45203	55853
GE-90-B	500	3			45335	45202	45203	55853
GE-95	250	12	100479	100481		100483	100485	100487
GE-96	250	11	x 100488	x 100489		100496	100497	100504
GE-96	250	11	100490	100491		100498	100499	100487
GE-96	500	11	x 100492	x 100493		100500	100501	100504
GE-96	500	11	100494	100495		100502	100503	100487
GE-97	250	3			100506	100508	100510	100512
GE-97	500	3			100507	100509	100511	55853
GE-202	600	3			60338	59130	59131	59138
GE-204	600	3			100513	100514	100515	55853
GE-205	600	8	64127	64129		64138	64141	55853
GE-210-A	600	3			59886	59887	59888	45182

* Four turn armature.
† With old type spring.
‡ New style with straight terminal.
§ Three turn armature.
¶ Old style with bent terminal.
‖ With barrel type spring.
△Two turn armature.
a Left-hand spring.
b Pressure spring complete.
c Single stud brush-holder.
d Double stud brush-holder.
e Six turn armature.
h Right-hand spring.
k Three, four and five turn armatures.
x Metal body only.

MOTOR BRUSH-HOLDERS

Motor	Volts	Illustration Fig. No.	CAT. NO. STUD OR SUPPORT COMPLETE WITH BRUSH-HOLDER		Cat. No. Yoke Complete with Brush-Holders	CAT. NO. BRUSH-HOLDER COMPLETE		Cat. No. Tension Spring
			Right-Hand	Left-Hand		Right-Hand	Left-Hand	
GE-210- C, D & E	600	2	‡ 112124	‡ 112124		112125	112125	108034
GE-210-B & C	600	2	¶ 100516	¶ 100516		100517	100517	59138
GE-216	600	2	‡ 108041	‡ 108041		108042	108042	108034
GE-216	600	2	¶ 61175	¶ 61175		61182	61182	59138
GE-218	600	2	108045	108045		108046	108046	108034
GE-219	600	2	‡ 108041	‡ 108041		108042	108042	108034
GE-219	600	2	¶ 61175	¶ 61175		61182	61182	59138
HM-701	250	10	100610	100610		100612	100612	55853
HM-701	500	10	100611	100611		100613	100613	55853
HM-702	250	6	104740	104740		104742	104742	111856
HM-702	500	6	104741	104741		104743	104743	111856
HM-703	250	10	100610	100610		100612	100612	55853
HM-703	500	10	100611	100611		100613	100613	55853
HM-704	500	6	104744	104744		104745	104745	111856
HM-708	250	9	104751	104751		104752	104752	108034
HM-709	250	6	100614	100614		100616	100616	55853
HM-709	500	6	100615	100615		100617	100617	55853
HM-710	250	10	100610	100610		100612	100612	55853
HM-710	500	10	100611	100611		100613	100613	55853
HM-711	250	6	100614	100614		100616	100616	55853
HM-711	500	6	100615	100615		100617	100617	55853
HM-713	250	10	100610	100610		100612	100612	55853
CO-2001	220/250	3			100453	100455	100457	100459
CO-2001	500	3			100454	100456	100458	100460
CO-2002	220/250	3			47886	47887	47888	45174
CO-2002	500	3			15604	15627	15628	14763
CO-2003	220/250	7	127039	127040		127041	127042	127043
CO-2003	500	7	50512	50513		50516	50516	50520
CO-2004	220/250	3			△66679	66681	66683	14763
CO-2004	220/250	3			§ 66680	66682	66684	14763
CO-2004	500	3			50418	14755	14756	14763
CO-2005	110/125	4			113128	113133	113133	13731
CO-2005	220/250	3			111881	111882	111883	13731
CO-2005	500	3			17488	17238	17239	13731
CO-2006	220/250	3			123437	123439	123441	b 123443
CO-2006	500	3			123438	123440	123442	b 123443
CO-2007	220/250	3			100461	100462	100463	100464
CO-2007	500	3			* 38580	19213	19214	55853
CO-2007	500	3			† 50226	50228	50229	14763

* With barrel type spring.
† With old type spring.
‡ New style with straight terminal.
§ Three turn armature.
¶ Old style with bent terminal.
△Two turn armature.
b Pressure spring complete.

CARBON BRUSHES FOR LOCOMOTIVE, CRANE AND HOIST MOTORS

MOTOR BRUSHES

Motor	Voltage	Cat. No.	DIMENSIONS IN INCHES		
			Length	Width	Thickness
NWP-2½	220/250/500	100370	2	1⅛	⅝
LWP-5	250	50681	2	1⅛	⅞
CB-14	125	122858	1¾	1¾	⅞
* CB-14	250/500	51971	1¾	⅞	⅝
CB-14	250/500	61834	1¾	1¾	⅝
* CB-15	250/500	51971	1¾	⅞	⅝
WP-30	500	16086	2¼	1¾	½
WP-50	500	16212	2¼	2⅞	½
‡ GE-800	110/250	15389	2½	2¼	¾
‡ GE-800	500	17086	2 7/16	2¼	½
GE-1000	500	14764	2¼	1⅜	½
GE-1000	500	50396	2¼	2¾	½
‡ GE-1200	250	36071	2½	2¼	⅞
‡ GE-1200	500	17086	2 7/16	2¼	½
GE-51	250	36062	2¼	2	1
* GE-51	250	58964	2¼	2	1
GE-51	500	36063	2¼	2	⅝
GE-52	250	36064	2¼	1¼	1
* GE-52	250	58965	2¼	1¼	1
GE-52	500	15698	2¼	1¼	½
GE-52	500	50395	2¼	2½	½
GE-53	220/250	52563	2¼	1½	¾
* GE-53	220/250	58966	2¼	1½	¾
GE-53	500	52546	2¼	1½	⅝
GE-54	500	11347	2¼	3	⅜
GE-55	500	50534	2	1¾	9/16
GE-57	250	36066	2¼	1¾	1⅛
* GE-57	250	58967	2¼	1¾	1⅛
GE-57	500	18167	2¼	1¾	⅝
° GE-58	250	36067	2¼	1⅜	1¼
△* GE-58	250	58968	2¼	1⅜	⅞
°* GE-58	250	58969	2¼	1⅜	1¼
GE-58	500	50396	2¼	2¾	½
GE-58	500	14764	2¼	1⅜	½
* GE-59	250	122859	2¼	1¼	1¼
GE-60	250	52281	2¼	1¼	⅞
GE-60	500	50395	2¼	2½	½
GE-60	500	15698	2¼	1¼	½
GE-61	250	36069	2¼	2	⅞
GE-61	500	36070	2¼	2	⅝
GE-66	500	24843	2¼	3¼	9/16
GE-67	500	55856	2¼	3⅜	½
GE-69	500	36321	2	2¼	⅝
GE-70	500	34070	2¼	1⅞	½
GE-71	250/500	122860	2¼	1⅞	⅝
GE-77	250	52281	2¼	1¼	⅞
GE-77	500	50395	2¼	2½	½
GE-79	250/500	100372	2⅛	1¼	9/16
GE-80	500	34070	2¼	1⅞	½
GE-81	500	11347	2¼	3	⅜
GE-87	500	42911	2¼	2	½
GE-88	500	34070	2¼	1⅞	½
GE-90	500	42912	2¼	1⅞	7/16
GE-95	250	100233	1½	1¼	7/16
GE-96	250	100373	1½	1½	11/16
GE-96	500	100374	1½	1½	7/16
* GE-97	250	100375	2¼	1¾	1
GE-97	500	100376	2¼	1¾	9/16

* Clip and pigtail.
‡ Beveled.
° Two turn motor.
△Three turn motor.

CARBON BRUSHES FOR LOCOMOTIVE, CRANE AND HOIST MOTORS

MOTOR BRUSHES—(Continued)

Motor	Voltage	Cat. No.	DIMENSIONS IN INCHES		
			Length	Width	Thickness
GE-202	600	50395	2 1/4	2 1/2	1/2
GE-204	600	59987	2 1/4	2	7/16
GE-205	600	100663	2 1/4	2 1/4	5/8
GE-210	600	59889	2 1/4	1 5/8	1/2
GE-216	600	61176	2 1/4	3	1/2
GE-218	600	107579	2 1/4	3	5/8
GE-219	600	61176	2 1/4	3	1/2
HM-701	250	100608	1 3/4	2	1
HM-701	500	100609	1 3/4	2	9/16
* HM-702	250	104591	2	1 1/4	1 1/8
HM-702	500	104592	2	2 1/2	11/16
HM-703	250	100608	1 3/4	2	1
HM-703	500	100609	1 3/4	2	9/16
HM-704	500	104592	2	2 1/2	11/16
* HM-708	250	100371	2 1/4	1 1/4	5/8
* HM-709	250	100375	2 1/4	1 3/4	1
HM-709	500	100376	2 1/4	1 3/4	9/16
HM-710	250	100608	1 3/4	2	1
HM-710	500	100609	1 3/4	2	9/16
* HM-711	250	100375	2 1/4	1 3/4	1
HM-711	500	100376	2 1/4	1 3/4	9/16
HM-713	250	100608	1 3/4	2	1
CO-2001	220/250	36062	2 1/4	2	1
* CO-2001	220/250	58964	2 1/4	2	1
CO-2001	500	36063	2 1/4	2	5/8
CO-2002	220/250	36064	2 1/4	1 1/4	1
* CO-2002	220/250	58965	2 1/4	1 1/4	1
CO-2002	500	15698	2 1/4	1 1/4	1/2
CO-2002	500	50395	2 1/4	2 1/2	1/2
CO-2003	220/250	36065	2	1 3/4	1 1/4
CO-2003	500	50534	2	1 3/4	9/16
° CO-2004	220/250	36067	2 1/4	1 3/8	1 1/4
△* CO-2004	220/250	58968	2 1/4	1 3/8	7/8
°* CO-2004	220/250	58969	2 1/4	1 3/8	1 1/4
CO-2004	500	50396	2 1/4	2 3/4	1/2
CO-2004	500	14764	2 1/4	1 3/8	1/2
‡ CO-2005	110/125/250	15389	2 1/2	2 1/4	3/4
‡ CO-2005	500	17086	2 7/16	2 1/4	1/2
CO-2006	220/250	114002	2 1/2	1 7/8	1
CO-2006	500	114003	2 1/2	1 7/8	7/16
CO-2007	220/250	36066	2 1/4	1 3/4	1 1/8
* CO-2007	220/250	58967	2 1/4	1 3/4	1 1/8
CO-2007	500	18167	2 1/4	1 3/4	5/8

* Clip and pigtail.
‡ Beveled.
° Two turn motor.
△Three turn motor.

BEARING LININGS FOR LOCOMOTIVE, CRANE AND HOIST MOTORS

In the design of motors for mining and industrial service, different types of bearing linings have been employed. In some cases the choice of type has been determined by the necessity for economy of space or other features of machine design; in others, operating conditions require a given type, but wherever possible the choice of one type or another is left to the customer as his operating conditions may indicate.

Thus where size of axle permits, axle linings for most motors are made both in babbitt and bronze and every effort is made to meet the requirements of service under all conditions.

BRASS LININGS

Brass or bronze linings are made of compositions which have been thoroughly tested during many years of service. Much cheaper linings can be made by the employment of cheaper mixtures. In fact brass linings can be made for almost any price, but the standard product which is identical with that used in original equipments, will give a MINIMUM MAINTENANCE COST PER MILE OF SERVICE.

LUMEN LININGS

Lumen linings are made from a special patented alloy. It is a very excellent material for use under certain conditions, having in a certain degree the anti-friction qualities of babbitt metal combined with sufficient strength to allow its use without a supporting shell where the housing allows room for sufficient thickness.

It is not furnished in any case for armature linings.

BABBITTED LININGS

Babbitted linings are iron shells filled with babbitt metal.

BRASS AND BABBITT LININGS

Brass and babbitt linings are brass shells with a facing of babbitt metal $\frac{1}{16}$ in. thick sweated to the brass. The shells are provided with dovetail grooves with which the babbitt engages, and which serve to anchor it securely. These linings are employed for armature bearings only, and since the thickness of the babbitt is less than the air gap between the armature core and pole face, the bearing may run hot enough to melt out the babbitt without dropping the armature on the poles.

BABBITT METAL

The General Electric Standard Babbitt Metal for locomotive, crane and hoist motors is a tin base babbitt having a specific gravity of 7.27, which should be taken into account in comparing its price with that of lead base or other heavier babbitts which, although costing less per pound, are, by reason of their higher specific gravity, actually no cheaper. Its virtue lies not only in the proportions of its ingredients but in the method of mixing, handling, etc., employed, and it cannot be duplicated by other manufacturers by merely using the proportions shown by its analysis.

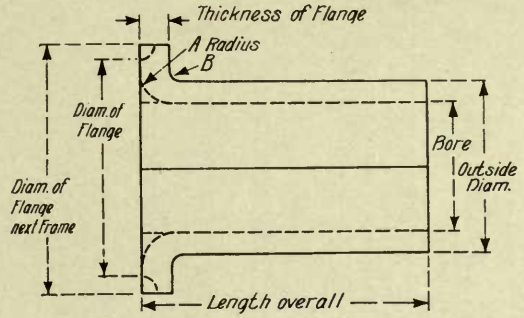
For the best results the shells and mandrels should be heated to about 100 deg. centigrade before the metal is poured, and the metal should be well peened into the shell before being bored out. In the case of solid linings a tapered arbor slightly larger than the unfinished bore should be forced through in order to thoroughly seat the babbitt metal in the shell.

Price for Babbitt Metal quoted on application.

ARMATURE LININGS

Motor	COMMUTATOR END		PINION END		Material
	Cat. No.	Type	Cat. No.	Type	
NWP-2½	33617	Split	33618	Split	Gun metal
LWP-5	50657	Split	50658	Split	Brass
CB-14	51946	Split	51947	Split	Brass
CB-15	30760	Split	30761	Split	Brass
WP-30 & 50	15453	Split	15996	Split	Brass
GE-800	17096	Solid	17095	Split	C. I. & Bab.
GE-800	17559	Solid	17558	Split	Brass
GE-1000	14729	Solid	14728	Split	C. I. & Bab.
GE-1000			48772	Solid	C. I. & Bab.
GE-1000	14730	Solid	14727	Split	Brass
GE-1200	18010	Solid	18009	Split	C. I. & Bab.
GE-51	33410	Solid	33411	Solid	C. I. & Bab.
GE-52	14581	Solid	14582	Split	C. I. & Bab.
GE-52	109967	Solid	109968	Split	Brass
GE-53	52529	Solid	52530	Solid	Brass & Bab.
GE-54	14581	Solid	14582	Split	C. I. & Bab.
GE-54	109967	Solid	109968	Split	Brass
GE-55	50510	Solid	50511	Solid	Brass & Bab.
GE-57	50223	Solid	50224	Solid	C. I. & Bab.
GE-58	50414	Solid	50415	Solid	C. I. & Bab.
GE-58	50416	Solid	50417	Solid	Brass
GE-59	60524	Solid	60525	Solid	C. I. & Bab.
GE-60-A	52268	Solid	52269	Solid	C. I. & Bab.
GE-61	33412	Solid	33413	Solid	Brass & Bab.
GE-66	24575	Solid	24576	Solid	Brass & Bab.
GE-67	55843	Solid	55844	Solid	C. I. & Bab.
GE-69	33418	Solid	33419	Solid	Brass & Bab.
GE-70	33420	Solid	33421	Solid	Brass & Bab.
GE-71	122865	Solid	122866	Solid	Brass & Bab.
GE-77	38692	Solid	38693	Solid	C. I. & Bab.
GE-79	41064	Solid	41065	Solid	Brass
GE-80	38694	Solid	38695	Split	Brass & Bab.
GE-81	41066	Solid	41067	Split	Brass & Bab.
GE-87	43093	Solid	43094	Split	Brass & Bab.
GE-88-A & C	100068	Solid	100069	Solid	Mall. I. & Bab.
GE-88-B & D	100070	Solid	100069	Split	Mall. I. & Bab.
GE-90	38694	Solid	38695	Split	Brass & Bab.
GE-95	64854	Solid	64856	Solid	Brass
GE-96-A	60526	Solid	60527	Solid	Mall. I. & Bab.
GE-96-B	66083	Solid	66084	Solid	Mall. I. & Bab.
GE-97	60528	Solid	60529	Solid	Mall. I. & Bab.
GE-202	61901	Solid	61902	Split	Brass & Bab.
GE-204	59820	Solid	59821	Split	Brass & Bab.
GE-205	49739	Solid	49740	Solid	Brass & Bab.
GE-210	59823	Solid	59824	Solid	Brass & Bab.
GE-216	61325	Solid	59127	Solid	Brass & Bab.
GE-218	100071	Solid	100072	Solid	Brass & Bab.
GE-219	100070	Solid	100069	Solid	Mall. I. & Bab.
HM-701	100602	Solid	100603	Solid	Brass & Bab.
HM-702	104580	Solid	104581	Solid	Brass & Bab.
HM-703	100604	Solid	100605	Solid	Brass & Bab.
HM-704	104580	Solid	104581	Solid	Brass & Bab.
HM-708	104586	Solid	104587	Solid	Mall. I. & Bab.
HM-709	100606	Solid	100607	Solid	Brass & Bab.
HM-710	100604	Solid	100605	Solid	Brass & Bab.
HM-711	100606	Solid	100607	Solid	Brass & Bab.
HM-713	100602	Solid	100603	Solid	Brass & Bab.
CO-2001	33410	Solid	33411	Solid	C. I. & Bab.
CO-2002	14581	Solid	14582	Split	C. I. & Bab.
CO-2002	109967	Solid	109968	Split	Brass
CO-2003	50510	Solid	50511	Solid	Brass & Bab.
CO-2004	50414	Solid	50415	Solid	C. I. & Bab.
CO-2004	50416	Solid	50417	Solid	Brass
CO-2005	17096	Solid	17095	Split	C. I. & Bab.
CO-2005	17559	Solid	17558	Split	Brass
CO-2006	122862	Solid	122863	Solid	C. I. & Bab.
CO-2007	50223	Solid	50224	Solid	C. I. & Bab.

AXLE LININGS



Axle linings with radius "A" are used with axles having larger diameter in gear fit than in motor axle bearings.

Axle linings with radius "B" are used with motors having ends of axle brackets counterbored to fit lining as shown.

Cat. No.	Motor	Bore	Diameter of Flange	Thickness of Flange	Outside Diameter of Shell	RADIUS		Length Overall	Material
						A	B		
33604	NWP-2½	2¾	3¾	¼	3⅛			4¼	Gun metal
* 50655	LWP-5	2¾	3¾	7/32	3⅛			4 15/32	Brass
† 50656	LWP-5	2¾	3¾	7/32	3⅛			4 15/32	Brass
* 51942	CB-14-A & H	2¾	3¾	7/32	3⅛	3/32		4 15/32	Brass
† 51943	CB-14-A & H	2¾	3¾	7/32	3⅛	3/32		4 15/32	Brass
* 51944	CB-14-A & H	3	4	7/32	3⅜			4 15/32	Brass
† 51945	CB-14-A & H	3	4	7/32	3⅜			4 15/32	Brass
* 59437	CB-14-T	3	4½	11/32	3⅝			6	Brass
† 59438	CB-14-T	3	4½	11/32	3⅝			6	Brass
* 51942	CB-15-G	2¾	3¾	7/32	3⅛	3/32		4 15/32	Brass
† 51943	CB-15-G	2¾	3¾	7/32	3⅛	3/32		4 15/32	Brass
15451	WP-30 & 50	3⅜	6⅝	⅝	4⅜			7⅝	Brass
16666	WP-30 & 50	3¾	6⅝	⅝	4⅜			7⅝	Brass
17240	GE-800-B	3⅜	5	⅝	4⅜			6¾	C. I. & Bab.
17556	GE-800-B	3⅜	5	⅝	4⅜			6¾	Brass
104459	GE-800-B	3½	5⅝	⅝	4⅞			6¾	Mall. I. & Bab.
17229	GE-800-B	3¾	5	⅝	4⅜			6¾	Brass
33751	GE-800-B	4	5⅝	⅝	4⅞			6¾	Brass
14722	GE-1000-A	3⅜	6	¾	5¼			8	Mall. I. & Bab.
14725	GE-1000-A	3⅜	6	¾	5¼			8	Brass
14748	GE-1000-A	3⅝	6	¾	5¼			8	Mall. I. & Bab.
14721	GE-1000-A	3¾	6	¾	5¼			8	Mall. I. & Bab.
14724	GE-1000-A	3¾	6	¾	5¼			8	Brass
14723	GE-1000-A	4	6	¾	5¼			8	Mall. I. & Bab.
14726	GE-1000-A	4	6	¾	5¼			8	Brass
33605	GE-1000-A	4¼	6	¾	5¼			8	Brass
33425	GE-1000-A	4½	6	¾	5¼			8	Brass
18012	GE-1200-B	4	6	⅝	5			8	Brass
33424	GE-51-B	5	8	19/32	5¾			11	Brass
14722	GE-52-A	3⅜	6	¾	5¼			8	Mall. I. & Bab.
14725	GE-52-A	3⅜	6	¾	5¼			8	Brass
14748	GE-52-A	3⅝	6	¾	5¼			8	Mall. I. & Bab.
14721	GE-52-A	3¾	6	¾	5¼			8	Mall. I. & Bab.
14724	GE-52-A	3¾	6	¾	5¼			8	Brass
14723	GE-52-A	4	6	¾	5¼			8	Mall. I. & Bab.
14726	GE-52-A	4	6	¾	5¼			8	Brass
33605	GE-52-A	4¼	6	¾	5¼			8	Brass
33425	GE-52-A	4½	6	¾	5¼			8	Brass
52526	GE-53-A	3⅜	6	½	4⅞			7	Brass
52527	GE-53-A	3¾	6	½	4⅞			7	Brass
52528	GE-53-A	4	6	½	4⅞			7	Brass
33606	GE-53-A	4¼	6	½	4⅞			7	Brass
14722	GE-54-A	3⅜	6	¾	5¼			8	Mall. I. & Bab.

* Commutator end.
† Pinion end.

AXLE LININGS

Cat. No.	Motor	Bore	Diameter of Flange	Thickness of Flange	Outside Diameter of Shell	RADIUS A	RADIUS B	Length Overall	Material
14725	GE-54-A	3 3/8	6	3/4	5 1/4			8	Brass
14748	GE-54-A	3 5/8	6	3/4	5 1/4			8	Mall. I. & Bab.
14721	GE-54-A	3 3/4	6	3/4	5 1/4			8	Mall. I. & Bab.
14724	GE-54-A	3 3/4	6	3/4	5 1/4			8	Brass
14723	GE-54-A	4	6	3/4	5 1/4			8	Mall. I. & Bab.
14726	GE-54-A	4	6	3/4	5 1/4			8	Brass
33605	GE-54-A	4 1/4	6	3/4	5 1/4			8	Brass
33425	GE-54-A	4 1/2	6	3/4	5 1/4			8	Brass
50507	GE-55-A	4 1/2	8	7/8	6	1/8		10 3/4	Brass
50508	GE-55-A	5	8	7/8	6	1/8		10 3/4	Brass
50509	GE-55-A	5 1/4	8	7/8	6	3/8		10 3/4	Brass
33426	GE-55-H	6	10 5/16	7/8	7 9/16	1/4		10 3/4	Brass
49036	GE-55-H	6 1/2	10 5/16	7/8	7 9/16	1/4		10 3/4	Brass
49037	GE-55-H	6.693	10 5/16	7/8	7 9/16	1/4		10 3/4	Brass
50222	GE-57-A	3 3/4	6 3/4	5/8	5 1/4			9	Brass
50221	GE-57-A	4	6 3/4	5/8	5 1/4			9	Brass
50220	GE-57-A	4 1/4	6 3/4	5/8	5 1/4			9	Brass
50219	GE-57-A	4 1/2	6 3/4	5/8	5 1/4	1/4		9	Brass
33427	GE-57-H	5	7 1/2	5/8	6			9	Brass
60502	GE-57-H	5 1/4	7 1/2	5/8	6			9	Brass
33428	GE-57-H	5 1/4	8	5/8	6	1/2		9	Brass
14722	GE-58-A	3 3/8	6	3/4	5 1/4			8	Mall. I. & Bab.
14725	GE-58-A	3 3/8	6	3/4	5 1/4			8	Brass
14721	GE-58-A	3 3/4	6	3/4	5 1/4			8	Mall. I. & Bab.
14724	GE-58-A	3 3/4	6	3/4	5 1/4			8	Brass
14723	GE-58-A	4	6	3/4	5 1/4			8	Mall. I. & Bab.
14726	GE-58-A	4	6	3/4	5 1/4			8	Brass
33605	GE-58-A	4 1/4	6	3/4	5 1/4			8	Brass
61867	GE-58-A	110-MM	6	3/4	5 1/4			8	Brass
33429	GE-59-A	4	6	7/8	5 1/4			7 1/4	C. I. & Bab.
100052	GE-59-A	4 1/4	7	7/8	5 1/4	7/16		7 1/4	Brass
14722	GE-60-A	3 3/8	6	3/4	5 1/4			8	Mall. I. & Bab.
14725	GE-60-A	3 3/8	6	3/4	5 1/4			8	Brass
14748	GE-60-A	3 5/8	6	3/4	5 1/4			8	Mall. I. & Bab.
14721	GE-60-A	3 3/4	6	3/4	5 1/4			8	Mall. I. & Bab.
14724	GE-60-A	3 3/4	6	3/4	5 1/4			8	Brass
52267	GE-60-A	100-MM	6	3/4	5 1/4			8	Mall. I. & Bab.
14723	GE-60-A	4	6	3/4	5 1/4			8	Mall. I. & Bab.
14726	GE-60-A	4	6	3/4	5 1/4			8	Brass
52266	GE-60-A	105-MM	6	3/4	5 1/4			8	Mall. I. & Bab.
52528	GE-61-A	4	6	1/2	4 7/8			7	Brass
33606	GE-61-A	4 1/4	6	1/2	4 7/8			7	Brass
33430	GE-61-A	4 1/2	6 3/4	1/2	5			7	Brass
33606	GE-61-B	4 1/4	6	1/2	4 7/8			7	Brass
24567	GE-66-A	5	8 3/4	27/32	6	3/16		10 3/4	Lumen
24568	GE-66-A	5	8 3/4	27/32	6	3/16		10 3/4	Brass
24569	GE-66-A	5 1/4	8 3/4	27/32	6	3/16		10 3/4	Lumen
24570	GE-66-A	5 1/4	8 3/4	27/32	6	3/16		10 3/4	Brass
33609	GE-66-A	5 1/4	8 3/4	27/32	6	1/2	1/4	10 3/4	Brass
43335	GE-66-A	6	9 3/4	27/32	7 1/4	5/16	1/4	10 3/4	Brass
33464	GE-66-B	5 1/4	9 3/4	27/32	7 1/4	3/16		10 3/4	Brass
24571	GE-66-B	6	9 3/4	27/32	7 1/4	3/16		10 3/4	Lumen
24572	GE-66-B	6	9 3/4	27/32	7 1/4	3/16		10 3/4	Brass
33610	GE-66-B	6	9 3/4	27/32	7 1/4	3/4		10 3/4	Brass
33465	GE-66-B	6 1/4	9 3/4	27/32	7 1/4	3/16		10 3/4	Brass
24573	GE-66-B	6 1/2	9 3/4	27/32	7 1/4	3/16		10 3/4	Lumen
24574	GE-66-B	6 1/2	9 3/4	27/32	7 1/4	3/16		10 3/4	Brass
104460	GE-66-B	6 17/32	9 3/4	27/32	7 1/4		1/4	10 7/8	Brass
100062	GE-66-C	5 1/2	9 3/4	27/32	7 1/4	5/16	1/4	10 3/4	Mall. I. & Bab.
100062	GE-66-E	5 1/2	9 3/4	27/32	7 1/4	5/16	1/4	10 3/4	Mall. I. & Bab.
46220	GE-66-H	6 1/2	9 3/4	27/32	7 1/4	5/16	1/4	10 3/4	Lumen
55841	GE-67-A	3 3/8	* 6	3/4	5 1/2			8	Mall. I. & Bab.
55840	GE-67-A	3 3/4	* 6	3/4	5 1/2			8	Mall. I. & Bab.
55839	GE-67-A	4	* 6	3/4	5 1/2			8	Mall. I. & Bab.
55838	GE-67-A	4 1/4	* 6	3/4	5 1/2			8	Mall. I. & Bab.
55842	GE-67-A	4 1/2	* 6	3/4	5 1/2			8	Brass

* Diameter of flange next frame 6 1/2 in.

AXLE LININGS

Cat. No.	Motor	Bore	Diameter of Flange	Thickness of Flange	Outside Diameter of Shell	RADIUS A	RADIUS B	Length Overall	Material
60345	GE-67-A	4 3/4	6 3/4	3/4	5 1/2			8	Brass
27927	GE-69-B	6 1/2	10 1/2	25/32	7 1/2	3/8	1/4	11 1/2	Brass
33434	GE-69-B	6 1/2	10 1/2	27/32	7 1/2	7/8	1/4	11 9/16	Brass
43336	GE-69-C	7	11	27/32	8 1/2	9/16	3/8	11 9/16	Brass & Bab.
33435	GE-70-A	4	8	23/32	5 3/4	5/16	1/4	9	Lumen
46632	GE-70-A	4 1/4	8	23/32	5 3/4	5/16	1/4	9	Lumen
33436	GE-70-A	4 1/2	8	23/32	5 3/4	5/16	1/4	9	Lumen
33437	GE-70-A	5	8	23/32	5 3/4	5/16	1/4	9	Lumen
47853	GE-70-A	5	8	23/32	5 3/4	5/16	1/4	9	Brass
122864	GE-71-A	5	8 3/4	27/32	6			10 3/4	Brass
38648	GE-77-A	3 3/4	6	3/4	5 1/4			7	C. I. & Bab.
38650	GE-77-A	4	6	3/4	5 1/4			7	C. I. & Bab.
41057	GE-79-A	4	6	15/32	4 3/4	3/16	1/8	7	Brass
42994	GE-80-A	3 7/16	8	23/32	5 3/4	5/16	1/4	9	Mall. I. & Bab.
38649	GE-80-A	3 3/4	8	23/32	5 3/4	5/16	1/4	9	Mall. I. & Bab.
43316	GE-80-A	3 3/4	8	23/32	5 3/4	5/16	1/4	9	Brass
38696	GE-80-A	4	8	23/32	5 3/4	5/16	1/4	9	Mall. I. & Bab.
43317	GE-80-A	4	8	23/32	5 3/4	5/16	1/4	9	Brass
38697	GE-80-A	4 1/4	8	23/32	5 3/4	5/16	1/4	9	Mall. I. & Bab.
43318	GE-80-A	4 1/4	8	23/32	5 3/4	5/16	1/4	9	Brass
38698	GE-80-A	4 1/2	8	23/32	5 3/4	5/16	1/4	9	Mall. I. & Bab.
43319	GE-80-A	4 1/2	8	23/32	5 3/4	5/16	1/4	9	Brass
42995	GE-80-A	4 1/2	8	23/32	5 3/4	7/16	1/4	9	Mall. I. & Bab.
59813	GE-80-A	4 11/16	8	23/32	5 3/4	5/16	1/4	9	Brass
43320	GE-80-A	4 3/4	8	23/32	5 3/4	5/16	1/4	9	Brass
38699	GE-80-A	5	8	23/32	5 3/4	5/16	1/4	9	Brass
41058	GE-80-B	4	8	23/32	6 1/8	5/16	3/8	9	Mall. I. & Bab.
45270	GE-80-B	4 1/2	8	23/32	6 1/8	5/16	3/8	9	Mall. I. & Bab.
45271	GE-80-B	5	8	23/32	6 1/8	5/16	3/8	9	Mall. I. & Bab.
45495	GE-80-C	4	8	23/32	6 1/8		3/8	9	Mall. I. & Bab.
46144	GE-80-C	4 1/2	8	23/32	6 1/8		3/8	9	Mall. I. & Bab.
38554	GE-80-C	5	8	23/32	6 1/8		3/8	9	Mall. I. & Bab.
46587	GE-81-A	3 3/4	6 3/4	23/32	5 1/4	5/16	5/16	7 31/32	Mall. I. & Bab.
41059	GE-81-A	4	6 3/4	23/32	5 1/4	5/16	5/16	7 31/32	Mall. I. & Bab.
102706	GE-81-A	4 1/4	* 6	23/32	5 1/4	5/16	5/16	7 31/32	Brass
102707	GE-81-A	4 1/2	6 3/4	23/32	5 1/4	11/16	5/16	7 31/32	Brass
46588	GE-81-A	4 1/2	* 6	23/32	5 1/4	5/16	5/16	7 31/32	Brass
100051	GE-81-B	3 3/4	6 3/4	23/32	5 1/4	1/4	5/16	7 31/32	Mall. I. & Bab.
42996	GE-87-A	4	8	3/4	6 1/4	5/16	3/8	10 3/4	Mall. I. & Bab.
42997	GE-87-A	4 1/4	8	3/4	6 1/4	5/16	3/8	10 3/4	Mall. I. & Bab.
42998	GE-87-A	4 1/2	8	3/4	6 1/4	5/16	3/8	10 3/4	Mall. I. & Bab.
42999	GE-87-A	5	8	3/4	6 1/4	5/16	3/8	10 3/4	Mall. I. & Bab.
45421	GE-87-A	5	8	3/4	6 1/4	5/16	3/8	10 3/4	Brass
45420	GE-87-A	5 1/4	8	3/4	6 1/4	5/16	3/8	10 3/4	Brass
45412	GE-87-A	5 1/2	8	3/4	6 1/4	5/16	3/8	10 3/4	Brass
114736	GE-87-B	4 1/2	8	3/4	6 1/4	5/16	3/8	10 3/4	Brass
47855	GE-87-B	5	8	3/4	6 1/4	5/16	3/8	10 3/4	Brass
43090	GE-87-B	5 1/2	8	3/4	6 1/4	5/16	3/8	10 3/4	Brass
100916	GE-88-A	4	9	27/32	6 1/8	5/8	3/8	9	Mall. I. & Bab.
100053	GE-88-A	4 1/2	9	27/32	6 1/8	5/8	3/8	9	Mall. I. & Bab.
100057	GE-88-A	5	9	27/32	6 1/8	5/8	3/8	9	Mall. I. & Bab.
104461	GE-88-A	5	9	27/32	6 1/8	5/8	3/8	9	Brass
100916	GE-88-B	4	9	27/32	6 1/8	5/8	3/8	9	Mall. I. & Bab.
100053	GE-88-B	4 1/2	9	27/32	6 1/8	5/8	3/8	9	Mall. I. & Bab.
100057	GE-88-B	5	9	27/32	6 1/8	5/8	3/8	9	Mall. I. & Bab.
104461	GE-88-B	5	9	27/32	6 1/8	5/8	3/8	9	Brass
100916	GE-88-C	4	9	27/32	6 1/8	5/8	3/8	9	Mall. I. & Bab.
100053	GE-88-C	4 1/2	9	27/32	6 1/8	5/8	3/8	9	Mall. I. & Bab.
100057	GE-88-C	5	9	27/32	6 1/8	5/8	3/8	9	Mall. I. & Bab.
104461	GE-88-C	5	9	27/32	6 1/8	5/8	3/8	9	Brass
100916	GE-88-D	4	9	27/32	6 1/8	5/8	3/8	9	Mall. I. & Bab.
100053	GE-88-D	4 1/2	9	27/32	6 1/8	5/8	3/8	9	Mall. I. & Bab.
100057	GE-88-D	5	9	27/32	6 1/8	5/8	3/8	9	Mall. I. & Bab.
104461	GE-88-D	5	9	27/32	6 1/8	5/8	3/8	9	Brass
42994	GE-90-A	3 7/16	8	23/32	5 3/4	5/16	1/4	9	Mall. I. & Bab.
38649	GE-90-A	3 3/4	8	23/32	5 3/4	5/16	1/4	9	Mall. I. & Bab.

* Diameter of flange next frame 6 3/4 in.

AXLE LININGS

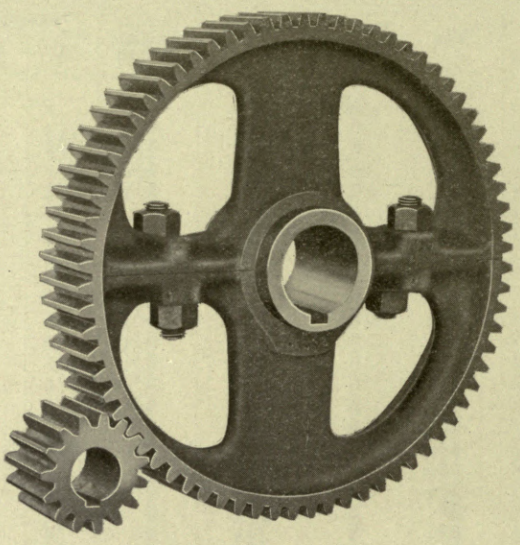
Cat. No.	Motor	Bore	Diameter of Flange	Thickness of Flange	Outside Diameter of Shell	RADIUS A	RADIUS B	Length Overall	Material
38696	GE-90-A	4	8	23/32	5 3/4	5/16	1/4	9	Mall. I. & Bab.
38697	GE-90-A	4 1/4	8	23/32	5 3/4	5/16	1/4	9	Mall. I. & Bab.
38698	GE-90-A	4 1/2	8	23/32	5 3/4	5/16	1/4	9	Mall. I. & Bab.
42995	GE-90-A	4 1/2	8	23/32	5 3/4	7/16	1/4	9	Mall. I. & Bab.
38699	GE-90-A	5	8	23/32	5 3/4	5/16	1/4	9	Brass
45270	GE-90-B	4 1/2	8	23/32	6 1/8	5/16	3/8	9	Mall. I. & Bab.
45271	GE-90-B	5	8	23/32	6 1/8	5/16	3/8	9	Mall. I. & Bab.
64853	GE-95-A	2 3/4	4 1/4	3/8	3 1/2			4 1/2	Brass
60522	GE-96-A	3 1/2	5 1/4	11/32	4			6 1/4	Brass
60522	GE-96-B	3 1/2	5 1/4	11/32	4			6 1/4	Brass
60523	GE-97-A	5	8	15/32	5 3/4	3/8	3/8	9 1/8	Brass
60523	GE-97-B	5	8	15/32	5 3/4	3/8	3/8	9 1/8	Brass
41058	GE-202-A	4	8	23/32	6 1/8	5/16	3/8	9	Mall. I. & Bab.
59425	GE-202-A	4 1/4	8	23/32	6 1/8	5/16	3/8	9	Mall. I. & Bab.
45270	GE-202-A	4 1/2	8	23/32	6 1/8	5/16	3/8	9	Mall. I. & Bab.
47856	GE-202-A	5	8	23/32	6 1/8	9/16	3/8	9	Mall. I. & Bab.
114737	GE-204-A	4 1/2	9	7/8	7	1/2	3/8	10 3/4	Mall. I. & Bab.
62562	GE-204-A	5	9	7/8	7	1/2	3/8	10 3/4	Mall. I. & Bab.
62352	GE-204-A	5 1/2	9	7/8	7	1/2	3/8	10 3/4	Mall. I. & Bab.
59814	GE-204-A	6	9	7/8	7	1/2	3/8	10 3/4	Brass
47857	GE-205-A	5	* 8 3/4	27/32	7	1/2	3/8	10 3/4	Mall. I. & Bab.
60582	GE-205-A	5 1/4	* 8 3/4	27/32	7	1/2	3/8	10 3/4	Brass
100063	GE-205-A	5 1/2	* 8 3/4	27/32	7	1/2	3/8	10 3/4	Mall. I. & Bab.
100662	GE-205-A	5 1/2	* 8 3/4	27/32	7	1/2	3/8	10 3/4	Brass
47858	GE-205-A	6	* 8 3/4	27/32	7	1/2	3/8	10 3/4	Brass
† 102708	GE-205-B	6	9 1/2	27/32	7	1/2	3/8	10 3/4	Brass
π 112140	GE-205-B	6	9 1/2	2	7	1/4	3/8	11 29/32	Brass
114738	GE-205-B	4 1/2	9 1/2	27/32	7	1/2	3/8	10 3/4	Mall. I. & Bab.
47857	GE-205-B	5	* 8 3/4	27/32	7	1/2	3/8	10 3/4	Mall. I. & Bab.
60582	GE-205-B	5 1/4	* 8 3/4	27/32	7	1/2	3/8	10 3/4	Brass
100063	GE-205-B	5 1/2	* 8 3/4	27/32	7	1/2	3/8	10 3/4	Mall. I. & Bab.
100662	GE-205-B	5 1/2	* 8 3/4	27/32	7	1/2	3/8	10 3/4	Brass
47858	GE-205-B	6	* 8 3/4	27/32	7	1/2	3/8	10 3/4	Brass
104462	GE-205-B	6	9 1/2	27/32	7	1/2	3/8	10 3/4	Brass & Bab.
† 107614	GE-205-B	6	9 1/2	21/32	7	1/2	3/8	10 9/16	Brass
π 107615	GE-205-B	6	9 1/2	2 19/32	7	1/4	3/8	12 1/2	Brass
114742	GE-205-D	6 1/2	9 1/2	27/32	7 1/2	1/2	3/8	10 3/4	Brass
59816	GE-210-A	4 1/2	8	3/4	5 1/2	7/16	5/16	9	Brass
59816	GE-210-B	4 1/2	8	3/4	5 1/2	7/16	5/16	9	Brass
114739	GE-210-B	4 1/2	8	3/4	5 1/2	5/8	5/16	9	Brass
100054	GE-210-C	4 1/2	10	3/4	6 1/2	5/8	5/16	9 1/2	Mall. I. & Bab.
100056	GE-210-C	4 3/4	10	3/4	6 1/2	5/8	5/16	9 1/2	Mall. I. & Bab.
100058	GE-210-C	5	10	3/4	6 1/2	5/8	5/16	9 1/2	Mall. I. & Bab.
100064	GE-210-C	5 1/2	10	3/4	6 1/2	5/8	5/16	9 1/2	Brass
114740	GE-214-A	5 1/2	10	27/32	6 3/4	5/8	3/8	10 3/4	Brass
114741	GE-214-A	5 1/2	10	27/32	6 3/4	5/8	3/8	10 3/4	Mall. I. & Bab.
104463	GE-214-A	5 1/2	10	27/32	6 3/4	5/8	3/8	10 3/4	Damascus / Nick. brz.
107616	GE-216-A	4	9	27/32	6 1/8	5/8	3/8	9	Mall. I. & Bab.
114304	GE-216-A	4 1/2	9	27/32	6 1/8	5/8	3/8	9	Mall. I. & Bab.
60947	GE-216-A	5	9	27/32	6 1/8	5/8	3/8	9	Mall. I. & Bab.
100059	GE-216-A	5	9	27/32	6 1/8	5/8	3/8	9	Brass
100060	GE-216-C	5	8	27/32	6 1/8	5/8	3/8	9	Brass
100055	GE-218-B	4 1/2	9	27/32	6	5/8	3/8	9	Mall. I. & Bab.
100061	GE-218-B	5	9	27/32	6	5/8	3/8	9	Brass
100916	GE-219-A	4	9	27/32	6 1/8	5/8	3/8	9	Mall. I. & Bab.
100053	GE-219-A	4 1/2	9	27/32	6 1/8	5/8	3/8	9	Mall. I. & Bab.
100057	GE-219-A	5	9	27/32	6 1/8	5/8	3/8	9	Mall. I. & Bab.
100916	GE-219-B	4	9	27/32	6 1/8	5/8	3/8	9	Mall. I. & Bab.
100053	GE-219-B	4 1/2	9	27/32	6 1/8	5/8	3/8	9	Mall. I. & Bab.
100057	GE-219-B	5	9	27/32	6 1/8	5/8	3/8	9	Mall. I. & Bab.
41057	HM-701-A & B	4	6	15/32	4 3/4	3/16	1/8	7	Brass
33606	HM-702-A & B	4 1/4	6	1/2	4 7/8			7	Brass

* Diameter of flange next frame 9 1/2 in.
† Commutator end.
π Pinion end.

AXLE LININGS

Cat. No.	Motor	Bore	Diameter of Flange	Thickness of Flange	Outside Diameter of Shell	RADIUS		Length Overall	Material
						A	B		
60522	HM-703-A & B	3 1/2	5 1/4	11/32	4			6 1/4	Brass
33606	HM-704-A & B	4 1/4	6	1/2	4 7/8			7	Brass
104579	HM-708-A & B	4	6	7/8	5 1/4	3/8		7 1/4	Mall. I. & Bab.
52528	HM-709-A	4	6	1/2	4 7/8			7	Brass
33606	HM-709-C	4 1/4	6	1/2	4 7/8			7	Brass
60522	HM-710-B	3 1/2	5 1/4	11/32	4			6 1/4	Brass
33606	HM-711-C	4 1/4	6	1/2	4 7/8			7	Brass
41057	HM-713-B	4	6	15/32	4 3/4	3/16	1/8	7	Brass
33424	CO-2001	5	8	19/32	5 3/4			11	Brass
14722	CO-2002	3 3/8	6	3/4	5 1/4			8	Mall. I. & Bab.
14725	CO-2002	3 3/8	6	3/4	5 1/4			8	Brass
14748	CO-2002	3 5/8	6	3/4	5 1/4			8	Mall. I. & Bab.
14721	CO-2002	3 3/4	6	3/4	5 1/4			8	Mall. I. & Bab.
14722	CO-2002	3 3/4	6	3/4	5 1/4			8	Brass
14723	CO-2002	4	6	3/4	5 1/4			8	Mall. I. & Bab.
14726	CO-2002	4	6	3/4	5 1/4			8	Brass
33605	CO-2002	4 1/4	6	3/4	5 1/4			8	Brass
33425	CO-2002	4 1/2	6	3/4	5 1/4			8	Brass
50507	CO-2003	4 1/2	8	7/8	6	1/8		10 3/4	Brass
50508	CO-2003	5	8	7/8	6	1/8		10 3/4	Brass
50509	CO-2003	5 1/4	8	7/8	6	3/8		10 3/4	Brass
33426	CO-2003	6	10 5/16	7/8	7 9/16	1/4		10 3/4	Brass
49036	CO-2003	6 1/2	10 5/16	7/8	7 9/16	1/4		10 3/4	Brass
14722	CO-2004	3 3/8	6	3/4	5 1/4			8	Mall. I. & Bab.
14725	CO-2004	3 3/8	6	3/4	5 1/4			8	Brass
14721	CO-2004	3 3/4	6	3/4	5 1/4			8	Mall. I. & Bab.
14724	CO-2004	3 3/4	6	3/4	5 1/4			8	Brass
14723	CO-2004	4	6	3/4	5 1/4			8	Mall. I. & Bab.
14726	CO-2004	4	6	3/4	5 1/4			8	Brass
33605	CO-2004	4 1/4	6	3/4	5 1/4			8	Brass
17240	CO-2005	3 3/8	5	5/8	4 3/8			6 3/4	C. I. & Bab.
17556	CO-2005	3 3/8	5	5/8	4 3/8			6 3/4	Brass
104459	CO-2005	3 1/2	5 5/8	5/8	4 7/8			6 3/4	Mall. I. & Bab.
17229	CO-2005	3 3/4	5	5/8	4 3/8			6 3/4	Brass
33751	CO-2005	4	5 5/8	5/8	4 7/8			6 3/4	Brass
122861	CO-2006	3.442	7	5/8	6 1/2			9	C. I. & Bab.
50222	CO-2007	3 3/4	6 3/4	5/8	5 1/4			9	Brass
50221	CO-2007	4	6 3/4	5/8	5 1/4			9	Brass
50220	CO-2007	4 1/4	6 3/4	5/8	5 1/4			9	Brass
50219	CO-2007	4 1/2	6 3/4	5/8	5 1/4	1/4		9	Brass
33427	CO-2007	5	7 1/2	5/8	6			9	Brass
60502	CO-2007	5 1/4	7 1/2	5/8	6			9	Brass
33428	CO-2007	5 1/4	8	5/8	6	1/2		9	Brass

GEARS FOR LOCOMOTIVE, CRANE AND HOIST MOTORS



Motor Pinion and Split Gear

When ordering gears give the S.G. number and also the axle diameter.
Pinions should be ordered by catalogue number and also the grade letter.

NWP-2 1/2—4 PITCH—2 1/4 IN. FACE

		SPLIT		SOLID	
No. of Teeth	Hub Diameter in In.	Axle Diameter in In.	No.	Axle Diameter in In.	No.
58	4¼	2¾	S.G.-2085		

LWP-5—4 PITCH—3 IN. FACE

60		2¾–3	S.G.-2097		

CB-14 AND -15—4 PITCH—3 IN. FACE

66	4½	2¾–3	S.G.-2086		

WP-30 AND -50—3 PITCH—4 1/2 IN. FACE

67	5	3⅜–3¾	S.G.-2001		

GE-800—3 PITCH—4 1/2 IN. FACE

64	5	3⅜–3¾	S.G.-1001		
67	5	3⅜–4	S.G.-2001		
67	6	4 –4½	S.G.-2005	4 –4½	S.G.-3004

GE-1000—3 PITCH—4 1/2 IN. FACE

67	6	3⅜–4½	S.G.-2005	3¼–4½	S.G.-3004
67	6¾	4¼–5	S.G.-2011	4 –5	S.G.-3010
69	6	3¾–4¼	S.G.-2006	3¾–4¼	S.G.-3005
69	6¾	4 –4½	S.G.-2012	4	S.G.-3011
69	6¾	4¾–5	S.G.-2013	4¼–5	S.G.-3012

GEARS FOR LOCOMOTIVE, CRANE AND HOIST MOTORS

GE-1200—3 PITCH—5 IN. FACE

		SPLIT		SOLID	
No. of Teeth	Hub Diameter in In.	Axle Diameter in In.	No.	Axle Diameter in In.	No.
60	6	3¾–4½	S.G.-1058		

GE-51—3 PITCH—5 IN. FACE

Use same gears as for GE-57

GE-52—3 PITCH—4 1/2 IN. FACE

67	6	3⅜–4½	S.G.-2005	3¼–4½	S.G.-3004
67	6¾	4¼–5	S.G.-2011	4 –5	S.G.-3010

GE-53—3 PITCH—4 1/2 IN. FACE

69	6	4 –4½	S.G.-2046	4 –4½	S.G.-3048
69	6¾	4 –4½	S.G.-1038	4 –4½	S.G.-3050

GE-54—3 PITCH—4 1/2 IN. FACE

64	6	3½–4½	S.G.-2003	3½–4½	S.G.-3002
64	6¾	3½–4½	S.G.-2009	3½–4½	S.G.-3008
67	6	3⅜–4½	S.G.-2005	3¼–4½	S.G.-3004
67	6¾	4¼–5	S.G.-2011	4 –5	S.G.-3010

GE-55—2 1/2 PITCH (On Application)

GE-57—3 PITCH—5 IN. FACE

57	6¾	3¾–5	S.G.-2014	4 –5	S.G.-3013
59	6¾	3½–5	S.G.-2015	4 –5	S.G.-3014
63	8	5 –6	S.G.-2024	5 –6	S.G.-3023
65	8	4¼–5	S.G.-2027	4¼–5	S.G.-3026
65	8	5¼–6	S.G.-2028	5¼–6	S.G.-3027
66	6¾	4 –5	S.G.-2018	4 –5	S.G.-3017
66	7½	5	S.G.-2019	5	S.G.-3018
69	6¾	3⅜–4¾	S.G.-2020	3½–4¾	S.G.-3019
69	8	4 –5½	S.G.-2031	4 –4¾	S.G.-3031
69	8			5 –6	S.G.-3032
70	6¾	4 –5	S.G.-1059		
71	8	4 –4¾	S.G.-2033	4 –4¾	S.G.-3034
71	8	5 –6	S.G.-2034	5 –6	S.G.-3035

GE-58—3 PITCH—4 1/2 IN. FACE

69	6	4 –4½	S.G.-2046	4 –4½	S.G.-3048

GE-59—3 PITCH—4 IN. FACE

69	6	3½–4½	S.G.-2048	3½–4½	S.G.-3051

GE-60—3 PITCH—4 1/2 IN. FACE

65	6	3¾–4½	S.G.-2044	3¾–4½	S.G.-3046
67	6	3¾–4¼	S.G.-2045	3¾–4¼	S.G.-3047

GEARS FOR LOCOMOTIVE, CRANE AND HOIST MOTORS

GE-61—3 PITCH—3 1/2 IN. FACE

		SPLIT		SOLID	
No. of Teeth	Hub Diameter in In.	Axle Diameter in In.	No.	Axle Diameter in In.	No.
81	6	4 –4½	S.G.-2049	4 –4½	S.G.-3052

GE-66—2 1/2 AND 3 PITCH (On Application)

GE-67—3 PITCH—4 1/2 IN. FACE

Use same gears as for GE-1000

GE-69—2 1/2 PITCH (On Application)

GE-70—3 PITCH—5 IN. FACE

67	8	4 –4¾	S.G.-2037	4 –5	S.G.-3039
67	8	5 –5¾	S.G.-2038	5¼–5¾	S.G.-3040
69	8	3¾–4¾	S.G.-2039	4 –5	S.G.-3041
69	8	5 –5¾	S.G.-2040	5¼–5¾	S.G.-3042
70	8	4½–5½	S.G.-2032	4½–5½	S.G.-3033
71	8	4 –5	S.G.-2041	4 –5	S.G.-3043
71	8	5¼–6	S.G.-2042	5¼–6	S.G.-3044

GE-71—3 PITCH—4 1/4 IN. FACE

81	8¾	5	S.G.-1060		

GE-77—3 PITCH—3 1/2 IN. FACE

67	6	3½–4	S.G.-2069	3½–4½	S.G.-3073

GE-79—3 PITCH—3 IN. FACE

69	6	3½–4½	S.G.-2070		

GE-80—3 PITCH—5 IN. FACE

Use same gears as for GE-70

GE-81—3 PITCH—4 1/2 IN. FACE

64	6	3½–4½	S.G.-2003	3½–4½	S.G.-3002
64	6¾	3½–4½	S.G.-2009	3½–4½	S.G.-3008
67	6	3⅜–4½	S.G.-2005	3¼–4½	S.G.-3004
67	6¾	4¼–5	S.G.-2011	4 –5	S.G.-3010

GE-87—3 PITCH—5 IN. FACE

69	8	4 –5½	S.G.-2031	4 –4¾	S.G.-3031
69	8	5¼–5½	S.G.-2031	5 –5½	S.G.-3032
71	8	4 –4¾	S.G.-2033	4 –4¾	S.G.-3034
71	8	5 –6	S.G.-2034	5 –6	S.G.-3035

GE-88—3 PITCH—5 IN. FACE

Use same gears as for GE-216

GEARS FOR LOCOMOTIVE, CRANE AND HOIST MOTORS

GE-90—3 PITCH—5 IN. FACE

		SPLIT		SOLID	
No. of Teeth	Hub Diameter in In.	Axle Diameter in In.	No.	Axle Diameter in In.	No.
70	8	4½–5½	S.G.-2032	4½–5½	S.G.-3033
71	8	4 –4¾	S.G.-2033	4 –4¾	S.G.-3034
71	8	5 –6	S.G.-2034	5 –6	S.G.-3035

GE-95—4 PITCH—2 IN. FACE

58	4¼	2¾–3	S.G.-2071		

GE-96—4 PITCH—5 IN. FACE

66	5¼	3½–4	S.G.-2072		

GE-97—3 PITCH—3 IN. FACE

72	8	4½–5½	S.G.-2073	4½–5½	S.G.-3074

GE-202—3 PITCH—5 IN. FACE

Use same gears as for GE-90

GE-204—2 1/2 PITCH—5 IN. FACE

58	9	5½–6½	S.G.-2076	6½–7	S.G.-3077
60	9	5 –5½	S.G.-2077	6 –7	S.G.-3078

GE-205—2 1/2 PITCH—5 IN. FACE

55	8¾	5½–6	S.G.-2054	5½–6½	S.G.-3058
57	8¾	5¼–5¾	S.G.-2093	5¼–6¼	S.G.-3095
57	8¾	6 –7	S.G.-2056	6½–7	S.G.-3060
57	9½	6½–7½	S.G.-2094	6½–7½	S.G.-3096
58	8¾	6 –6½	S.G.-2057	6 –6½	S.G.-3061

GE-210—3 PITCH—5 IN. FACE

67	10			5 –6	S.G.-3088
69	8	4½–5½	S.G.-2031	4½–4¾	S.G.-3031
69	10	4½–5½	S.G.-2083	4½–5½	S.G.-3086
69	10	5¾–6	S.G.-2091	5¾–6	S.G.-3089
71	10	4 –5	S.G.-2084	4½–5½	S.G.-3090
71	10	5¼–6	S.G.-2092		

GE-216—3 PITCH—5 IN. FACE

67	9	5 –6	S.G.-2078	5 –6	S.G.-3079
69	9	4 –5	S.G.-2079	4 –5	S.G.-3080
69	9	5¼–6	S.G.-2080	5¼–6	S.G.-3081
71	9	4 –5	S.G.-2081	4 –5	S.G.-3082
71	9	5¼–6	S.G.-2082	5¼–6	S.G.-3083

GE-218—3 PITCH—4 1/2 IN. FACE

71	9	4½–5½	S.G.-2087		
71	9	5¾–6	S.G.-2088		

GE-219—3 PITCH—5 IN. FACE

Use same gears as for GE-216

GEARS FOR LOCOMOTIVE, CRANE AND HOIST MOTORS

HM-701—3 PITCH—3 IN. FACE

		SPLIT		SOLID	
No. of Teeth	Hub Diameter in In.	Axle Diameter in In.	No.	Axle Diameter in In.	No.
69	6	3½–4½	S.G.-2070		

HM-702—3 PITCH—3 1/2 IN. FACE

81	6	4 –4½	S.G.-2049	4 –4½	S.G.-3052

HM-703—4 PITCH—3 IN. FACE

73	5¼	3 –3½	S.G.-2098		

HM-704—3 PITCH—3 1/2 IN. FACE

81	6	4 –4½	S.G.-2049	4 –4½	S.G.-3052

HM-708—3 PITCH—3 1/2 IN. FACE

69	6	3½–4½	S.G.-2048	3½–4½	S.G.-3051

HM-709—3 PITCH—4 1/2 IN. FACE

72	6	4¼–4½	S.G.-2099		

HM-710—4 PITCH—3 IN. FACE

73	5¼	3 –3½	S.G.-2098		

HM-711—3 PITCH—4 1/2 IN. FACE

72	6	4¼–4½	S.G.-2099		

HM-713—3 PITCH—3 IN. FACE

69	6	3½–4½	S.G.-2070		

CO-2001—3 PITCH—5 IN. FACE

Use same gears as for GE-57

CO-2002—3 PITCH—4 1/2 IN. FACE

61	6	2¾–3½	S.G.-1061		
61	6	3¾–4¼	S.G.-1062		
62	6	3¾–4	S.G.-2002	3¾–4	S.G.-3001
62	6¾	4¼–4½	S.G.-2007	4¼–4½	S.G.-3006
63	6	3⅜–4	S.G.-1063		
63	6¾	4¼–4½	S.G.-2008	4¼–4½	S.G.-3007
65	6	3¾–4¼	S.G.-2004	3¼–4¼	S.G.-3003
65	6¾	3½–4½	S.G.-2010	3½–4½	S.G.-3009
67	6	3⅜–4½	S.G.-2005	3¼–4½	S.G.-3004
67	6¾	4¼–5	S.G.-2011	4 –5	S.G.-3010

GEARS FOR LOCOMOTIVE, CRANE AND HOIST MOTORS

CO-2003—2 1/2 PITCH (On Application)

CO-2004—3 PITCH—4 1/2 IN. FACE

		SPLIT		SOLID	
No. of Teeth	Hub Diameter in In.	Axle Diameter in In.	No.	Axle Diameter in In.	No.
61	6	3⅜–4	S.G.-1064		
63	6	3⅜–4	S.G.-1065		
67	6	3¾–4¼	S.G.-2045	3¾–4¼	S.G.-3047
67	6¾	4 –4½	S.G.-2047	4 –4½	S.G.-3049
69	6	4 –4½	S.G.-2046	4 –4½	S.G.-3048
69	6¾			4 –4½	S.G.-3050

CO-2005—3 PITCH—4 1/2 IN. FACE

61	5	3¼–3¾	S.G.-1066		
61	6	2¾–3½	S.G.-1061		
61	6	3¾–4¼	S.G.-1062		
64	5	3⅜–3¾	S.G.-1001		
65	6	3¾–4¼	S.G.-2004	3¾–4¼	S.G.-3003
67	5	3⅜–4	S.G.-2001		
67	6	4 –4½	S.G.-2005	4 –4½	S.G.-3004

CO-2006—3 PITCH

Use same gears as for GE-57

CO-2007—3 PITCH

Use same gears as for GE-57

PINIONS FOR LOCOMOTIVE, CRANE AND HOIST MOTORS

Unless otherwise specified in the following tables all pinions are taper bored.

NWP 2 1/2—4 PITCH

No. of Teeth	Cat. No.	Face	Bore in In.
14	18488	2¼	1½ straight

LWP-5—4 PITCH

No. of Teeth	Cat. No.	Face	Bore in In.
14	18490	3	1½ straight

CB-14 AND -15—4 PITCH

14	18572	3	1.8093

WP-30 AND -50—3 PITCH

14	18537	4½	2 3/16 straight
14	15677	4½	2¼ straight

GE-800—3 PITCH

14	18537	4½	2 3/16 straight
14	15677	4½	2¼ straight
14	19351	4½	2 5/16 counterbored

GE-1000—3 PITCH

15	28485	4½	2⅝
15	18494	4½	2¾
17	18502	4½	2¾

GE-1200—3 PITCH

17	18043	5	2¾

GE-51—3 PITCH

Same as GE-57

GE-52—3 PITCH

14	19351	4½	2 5/16 counterbored

GE-53—3 PITCH

15	18469	4½	2¾ counterbored

GE-54—3 PITCH

14	19351	4½	2 5/16 counterbored
17	18501	4½	2 5/16 counterbored

GE-55—2 1/2 PITCH

17	18548	5¼	3½
18	18554	5¼	3½

GE-57—3 PITCH

16	18541	5	3
17	18938	5	3
22	18544	5	3

GE-58—3 PITCH

15	18494	4½	2¾
15	18555	4½	2¾ counterbored

GE-59—3 PITCH

15	18990	4	2¾ counterbored

GE-60—3 PITCH

14	19351	4½	2 5/16 counterbored
16	18580	4½	2 5/16 counterbored

GE-61—3 PITCH

14	18561	3½	2¾ counterbored

GE-66—2 1/2 PITCH

17	28431	5	3½
22	49895	5	3½

GE-66—3 PITCH

19	18995	5	3¼
19	28434	5	3⅞

GE-67—3 PITCH

Same as GE-1000

GE-69—2 1/2 PITCH

18	28345	5¼	3½
18	49945	5¼	3¾
19	28378	5¼	3½

GE-70—3 PITCH

15	28387	5	2¾
16	28456	5	2¾
17	28350	5	2¾
19	28395	5	2¾

PINIONS FOR LOCOMOTIVE, CRANE AND HOIST MOTORS

GE-71—3 PITCH

No. of Teeth	Cat. No.	Face	Bore in In.
16	18996	4¼	3

GE-77—3 PITCH

No. of Teeth	Cat. No.	Face	Bore in In.
14	18561	3½	2¾ counterbored

GE-79—3 PITCH

14	28416	3	2¾ counterbored

GE-80—3 PITCH

Same as GE-70

GE-81—3 PITCH

14	19351	4½	$2\frac{5}{16}$ counterbored
17	18501	4½	$2\frac{5}{16}$ counterbored

GE-87—3 PITCH

16	28441	5	3⅛
18	28457	5	3⅛

GE-88—3 PITCH

Same as GE-216

GE-90—3 PITCH

Same as GE-70

GE-95—4 PITCH

14	28471	2	1¾ counterbored

GE-96—4 PITCH

14	28472	3	2⅛ counterbored

GE-97—3 PITCH

15	28464	4½	3

GE-202—3 PITCH

Same as GE-70

GE-204—2 1/2 PITCH

17	28487	5	3½ counterbored
19	49802	5	3½ counterbored

GE-205—2 1/2 PITCH

16	28483	5	3½ counterbored
17	28487	5	3½ counterbored
19	49802	5	3½ counterbored

GE-210—3 PITCH

16	28491	5	3¼
18	49897	5	3¼
20	49913	5	3¼

GE-216—3 PITCH

15	49813	5	3
17	49812	5	3
19	49854	5	3

GE-218—3 PITCH

16	49873	4½	3¼

GE-219—3 PITCH

Same as GE-216

HM-701—3 PITCH

14	28416	3	2¾

HM-702—3 PITCH

14	18561	3½	2¾ counterbored

HM-703—4 PITCH

16	49881	3	2⅛

HM-704—3 PITCH

14	18561	3½	2¾ counterbored

HM-708—3 PITCH

16	49929	3½	2¾

HM-709—3 PITCH

15	28464	4½	3

PINIONS FOR LOCOMOTIVE, CRANE AND HOIST MOTORS

HM-710—4 PITCH

No. of Teeth	Cat. No.	Face	Bore in In.
16	49881	3	$2\frac{1}{8}$

HM-711—3 PITCH

No. of Teeth	Cat. No.	Face	Bore in In.
15	28464	$4\frac{1}{2}$	3

HM-713—3 PITCH

14	28416	3	$2\frac{3}{4}$ in.

CO-2001—3 PITCH

16	18541	5	3
19	18556	5	3
21	18546	5	3
28	18542	5	3
35	18584	5	3

CO-2002—3 PITCH

14	19351	$4\frac{1}{2}$	$2\frac{5}{16}$ counterbored
16	18580	$4\frac{1}{2}$	$2\frac{5}{16}$ counterbored
18	18932	$4\frac{1}{2}$	$2\frac{5}{16}$
19	18571	$4\frac{1}{2}$	$2\frac{5}{16}$
20	18560	$4\frac{1}{2}$	$2\frac{5}{16}$ counterbored

CO-2003—2 1/2 PITCH

17	18548	$5\frac{1}{4}$	$3\frac{1}{2}$
19	18981	$5\frac{1}{4}$	$3\frac{1}{2}$
21	18558	$5\frac{1}{4}$	$3\frac{1}{2}$

CO-2004—3 PITCH

15	18494	$4\frac{1}{2}$	$2\frac{3}{4}$
17	18502	$4\frac{1}{2}$	$2\frac{3}{4}$
21	18508	$4\frac{1}{2}$	$2\frac{3}{4}$
23	18512	$4\frac{1}{2}$	$2\frac{3}{4}$

CO-2005—3 PITCH

14	19351	$4\frac{1}{2}$	$2\frac{5}{16}$ counterbored
16	18580	$4\frac{1}{2}$	$2\frac{5}{16}$ counterbored
17	18501	$4\frac{1}{2}$	$2\frac{5}{16}$ counterbored
20	18560	$4\frac{1}{2}$	$2\frac{5}{16}$ counterbored

CO-2006—3 PITCH

16	18541	5	3
17	18938	5	3
22	18544	5	3
28	18542	5	3

CO-2007—3 PITCH

Same as CO-2001

GEAR CASES FOR LOCOMOTIVE, CRANE AND HOIST MOTORS

The gear cases are malleable iron castings with supporting brackets cast together with one or both halves. Owing to the thin section of the cases and the relatively heavy section of the supporting brackets the production of castings for these cases is a difficult matter and requires a high degree of perfection of foundry practice. The greatest care is exercised in the inspection of all castings in order to insure freedom from shrinkage cracks in the supporting brackets, and distortion of shells.

In the following table the various cases are designated by catalogue numbers and also by symbol or drawing list numbers. All gear cases have stamped upon them either a symbol number as (DE-6) or a drawing list number as (DL-37902), and any gear case may be readily identified by reference to the catalogue number corresponding to the symbol or drawing list number stamped on it.

The table also gives the maximum gear teeth and maximum pinion teeth which the case will accommodate and the finished hub diameter of the gear with which it may be used.

Motor	Form	Cat. No.	DE or DL No.	Max. Gear Teeth	Max. Pinion Teeth	Pitch	Fin. Hub Diam. of Gear
NWP-2½	A	100090	DE-104	58	20	4	4¼
LWP-5		50696	DE-72	60	14	4	
CB-14	A, H & T	51985	DE-73	66	14	4	4½
CB-15	G	51985	DE-73	66	14	4	4½
WP-30	}	16514		67	17	3	5
WP-50	}						
* GE-800	B	17459	DE-41	67	18	3	5
GE-800	B	17140	DE-44	67	18	3	6
GE-1000	A	55869	DE-13	62	24	3	6
GE-1000	A	21693	DE-120	62	24	3	6¾
GE-1000	A	14795	DE-6	67	20	3	6
GE-1000	A	21687	DE-119	67	20	3	6¾
GE-1000	A	21690	DE-121	70	18	3	6¾
* GE-1200	B	18017	DE-57	62	22	3	6
GE-51	A	38621	DE-33	69	22	3	7
GE-51	B	38622	DE-39	69	22	3	6¾
GE-51	B	38624	DE-63	69	22	3	8
GE-52	A	17986	DE-19	67	20	3	6
GE-52	A	24997	DE-149	67	20	3	6¾
GE-53	A	52586	DE-36	67	22	3	6
GE-53	A	52585	DE-35	69	17	3	6
GE-54	A	17986	DE-19	67	20	3	6
GE-54	A	24997	DE-149	67	20	3	6¾
GE-55	A	50566	DE-148	56	20	2½	8
GE-55	H	39532	DE-194	60	22	2½	10¼
GE-57	A	38614	DE-3	61	33	3	6¾
GE-57	A	50249	DE-1	69	23	3	6¾
GE-57	H	38623	DE-52	65	28	3	8
GE-57	H	39529	DE-180	69	21	3	8
GE-57	H	38631	DE-176	71	21	3	8

* With dust guard.

GEAR CASES FOR LOCOMOTIVE, CRANE AND HOIST MOTORS

Motor	Form	Cat. No.	DE or DL No.	Max. Gear Teeth	Max. Pinion Teeth	Pitch	Fin. Hub Diam. of Gear
GE-58	A	50440	DE-2	69	19	3	6
GE-59	A	49558	DE-62	69	22	3	6
GE-60	A	52376	DE-8	67	21	3	6
GE-60	B	38619	DE-21	67	18	3	6
* GE-61	A & B	39381	DE-23	81	23	3	6
GE-66	A	24856	DE-114	72	23	3	8¾
GE-66	A	49568	DE-179	61	38	3	13
* GE-66	A	24854	DE-107	71	23	3	13
GE-66	B	24860	DE-125	76	29	3	9¾
GE-66	B	24858	DE-116	66	38	3	9¾
GE-67	A	55869	DE-13	62	24	3	6
GE-67	A	21693	DE-120	62	24	3	6¾
GE-67	A	14795	DE-6	67	20	3	6
GE-67	A	21687	DE-119	67	20	3	6¾
GE-67	A	55868	DE-14	70	18	3	6
GE-67	A	21690	DE-121	70	18	3	6¾
GE-69	B	39535	DL-37902	64	22	2½	10½
GE-69	B	49580	DE-161	63	22	2½	13
GE-69	C	43414	DL-37931	60	33	2½	14
GE-70	A	35773	DL-37908	71	23	3	8
GE-71	A	49590	DE-214	81	19	3	8⅝
GE-77	A	39528	DE-177	67	25	3	6
GE-79	A	43391	DL-37912	69	22	3	6
GE-80	A	39536	DL-37909	71	23	3	8
GE-80	B	45480	DL-37945	71	27	3	8
GE-80	C	45482	DL-37938	71	23	3	8
GE-81	A	42972	DL-37939	67	21	3	6
GE-81	A	46594	DL-37968	67	21	3	6¾
GE-87	A	42973	DL-37927	71	28	3	8
GE-87	B	42975	DL-37946	67	28	3	8
GE-88	A & C	65139	DL-37997	71	23	3	9
GE-88	B & D	65141	DL-37999	71	23	3	9
GE-90	A	39536	DL-37909	71	23	3	8
GE-90	B	45480	DL-37945	71	27	3	8
GE-95	A	65961	DL-37962	58	19	4	4¼
GE-96	A & B	49606	DL-37959	66	20	4	5¼
GE-97	A	49607	DL-37958	72	22	3	8
GE-97	B	49608	DL-37969	72	22	3	8
GE-202	A	49609	DL-37956	71	23	3	8
GE-204	A	49610	DL-37960	60	26	2½	9
GE-205	A & B	48722	DL-37954	58	24	2½	8¾
GE-205	B	69098	DL-96147	50	30	2½	8¾
GE-210	A & B	58138	DL-37972	69	24	3	8
GE-210	C	66617	DL-95184	71	24	3	10
GE-216	A	60503	DL-37993	71	23	3	9
GE-216	C	58136	DL-37979	71	23	3	8
GE-218	A	65142	DL-89181	71	23	3	9
GE-219	A & B	65141	DL-37999	71	23	3	9

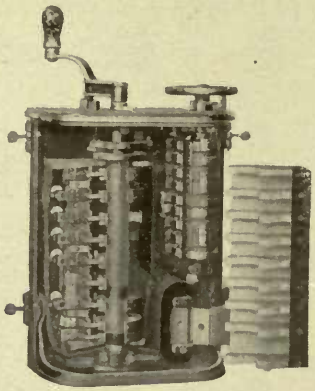
* With dust guard.

GEAR CASES FOR LOCOMOTIVE, CRANE AND HOIST MOTORS

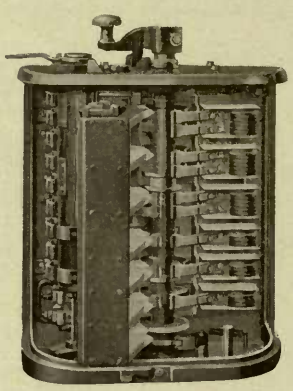
Motor	Form	Cat. No.	DE or DL No.	Max. Gear Teeth	Max. Pinion Teeth	Pitch	Fin. Hub Diam. of Gear
HM-701	A & B	65137	DL-37995	69	22	3	6
HM-702	A & B	65140	DL-37998	81	23	3	6¼
HM-703	A & B	65270	DL-95114	73	30	4	5¼
HM-704	A & B	65140	DL-37998	81	23	3	6¼
HM-708	A & B	103579	DL-104116	69	20	3	6
HM-709	A & C	65136	DL-37994	72	19	3	6
HM-710	B	65270	DL-95114	73	30	4	5¼
HM-711	C	65136	DL-37994	72	19	3	6
HM-713	B	65137	DL-37995	69	22	3	6
CO-2001		38622	DE-39	69	22	3	6¾
CO-2001		38624	DE-63	69	22	3	8
CO-2002		17986	DE-19	67	20	3	6
CO-2002		29178	DE-140	67	20	3	6
CO-2002		24997	DE-149	67	20	3	6¾
* CO-2003		38632	DE-191	56	20	2½	8
CO-2004		50440	DE-2	69	19	3	6
* CO-2005		17459	DE-41	67	18	3	5
CO-2005		17140	DE-44	67	18	3	6
CO-2007		38614	DE-3	61	33	3	6¾
CO-2007		50249	DE-1	69	23	3	6¾
CO-2007		38623	DE-52	65	28	3	8
CO-2007		39529	DE-180	69	21	3	8
CO-2007		38631	DE-176	71	21	3	8

* With dust guard.

CONTROLLER PARTS FOR LOCOMOTIVES, CRANES, HOISTS, ETC.



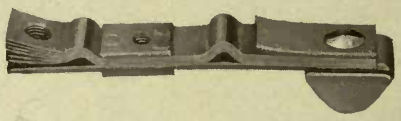
R-86 Controller—Cover Removed



R-109 Controller—Cover Removed

CONTACT FINGERS FOR LOCOMOTIVE, CRANE AND HOIST CONTROLLERS

Many of these controller fingers have their catalogue numbers stamped upon them. Where this is impossible, fingers having the same catalogue number are assembled in a package and a tag giving catalogue and requisition numbers is attached.



TYPE C CONTROLLERS

Controller	SINGLE FINGERS				SETS OF FINGERS Cat. No.	
	Operating		Reversing			
	Cat. No.	Number in Set	Cat. No.	Number in Set	Operating	Reversing
C-205 & C-205-A	103172	10	103172	6	103218	103221

TYPE K CONTROLLERS

K-2 & K-2-A	37946	12	37947	8	38091	38088
K-6 & K-6-A	37911	15	37900	16	38095	38039
K-6-B	37911	15	37900	16	38095	38039
K-6-G	37911	15	37900	16	38095	38039
K-8 & K-8-A	110046	11	37930	8	38096	38097
K-9 & K-9-A	110046	11	37947	8	38096	38088
K-10 & K-10-A	110046	11	37947	8	38096	38088
K-11 & K-11-A	110046	11	37930	8	38096	38097
K-11-D	110046	10	37930	8	38037	38097
K-12 & K-12-A	110046	11	37930 37929	8	38096	38094
K-13 & K-13-A	110046	21	37749	24	38083	38084
K-13-C	110046	21	37749	24	38083	38084
K-13-E	110046	21	37749	24	38083	38084
K-15 & K-15-A	110046	42	37749	48	38085	38086
K-27 & K-27-A	110046 37922	6 7	37930	8	38407	38097
K-27-C	110046 37922	6 7	37930	8	38407	38097
K-28 & K-28-A	110046	14	33602	16	38031	38409
K-28-B	110046	14	33602	16	38031	38409
K-28-C	110046	14	33602	16	38031	38409
K-28-L	110046	14	33602	16	38031	38409
K-34-E	△111077 ‡ 111078	9 18	67459	16	111081	67470
K-35-C	△111077	15	67460	16	111082	67471
K-35-E	△111077	15	67460	16	111082	67471

△Includes removable finger tip Cat. No. 111079. ‡ Includes removable finger tip Cat. No. 111080.

CONTACT FINGERS FOR LOCOMOTIVE, CRANE AND HOIST CONTROLLERS

TYPE R CONTROLLERS

Controller	SINGLE FINGERS				SETS OF FINGERS	
	Operating		Reversing		Cat. No.	
	Cat. No.	Number in Set	Cat. No.	Number in Set	Operating	Reversing
R-6 & R-6-A	110046	22	37749	24	38426	38084
R-6-B	110046	22			38426	
R-6-C	110046	22			38426	
R-9 & R-9-A	110046	23			38429	
R-11 & R-11-A	37949	9	37930	4	38430	38431
R-11-B	37949	9	37930	4	38430	38431
R-12 & R-12-A	37949	9	37930	8	38430	38097
R-13 & R-13-A	110046	14			38031	
R-14 & R-14-A	37946	8	37969	8	38432	38433
R-14-C	37946	8	37969	8	38432	38433
R-14-E	37946	8	37969	8	38432	38433
R-15 & R-15-A	37949	18	37971	8	38434	38435
R-16 & R-16-A	37949	16	37930 37929	8	38437	38094
R-16-C	37949	16	37930 37929	8	38437	38094
R-16-D	37949	16	37930 37929	8 4	38437	38438
R-17 & R-17-A	37949	9	37930	4	38430	38431
R-17-F	37949	9	37930	4	38430	38431
R-19 & R-19-A	37949	9	37930	8	38430	38097
R-19-B	37949	9	37930	8	38430	38097
R-19-C	37949	9	37930	8	38430	38097
R-19-D	37949	9	37930	8	38430	38097
R-19-E	37949	9	37930	8	38430	38097
R-21 & R-21-A	110046	14			38031	
R-22 & R-22-A	37949	8	37973	8	38439	38442
R-22-C	37949	8	37973	8	38439	38442
R-22-E	37949	8	37973	8	38439	38442
R-22-F	37949	8	37973	8	38439	38442
R-27 & R-27-A	110046	14			38031	
R-27-B	110046	14			38031	
R-27-D	110046	14			38031	
R-27-J	110046	14			38031	
R-27-M	110046	14			38031	
R-28 & R-28-A	37902	11			38053	
R-28-F	37902	11			38053	
R-28-G	37902	11			38053	
R-28-N	37902	11			38053	
R-28-P	37902	11			38053	
R-28-V	37902	11			38053	
R-29 & R-29-A	37949	9	37947 37950	8	38430	108466
R-32 & R-32-A	110046	14			38031	
R-32-B	110046	14			38031	
R-32-G	110046	14			38031	
R-37 & R-37-A	37949 ‡ 56766	8 2	37973	9	38446	38447
R-37-B	37949 ‡ 56766	8 2	37973	9	38446	38447
R-37-C	37949 ‡ 56766	8 2	37973 37929	9 1	38446	38448
R-37-D	37949 ‡ 56766	8 2	37973 37929	9 1	38446	38449
R-37-E	37949 ‡ 56766	8 2	37973	9	38446	38447
R-37-F	37949 ‡ 56766	8 2	37973	9	38446	38447
R-38 & R-38-A	37946 ‡ 56766	8 2	37969	9	38449	43228
R-38-B	37946 ‡ 56766	8 2	37950 37969	1 9	38449	43197
R-52 & R-52-A	110046	21			38083	
R-53 & R-53-A	37976	8			38454	

‡ Auxiliary finger.

CONTACT FINGERS FOR LOCOMOTIVE, CRANE AND HOIST CONTROLLERS

TYPE R CONTROLLERS—(Concluded)

Controller	SINGLE FINGERS				SETS OF FINGERS	
	Operating		Reversing		Cat. No.	
	Cat. No.	Number in Set	Cat. No.	Number in Set	Operating	Reversing
R-53-B	37976	8			38454	
R-53-C	37976	8			38454	
R-53-D	37976	8			38454	
R-53-G	37976	8			38454	
R-55 & R-55-A	29362	18	37980	20	38456	38457
	29363	6				
R-56 & R-56-A	34411	6			38458	
R-60 & R-60-A	29362	6	37749	10	38459	37940
R-60-B	29363	8				
R-60-C	29362	6	37749	10	38459	37940
	29363	8				
R-65 & R-65-A	29362	6			38462	
	37968	3				
R-69 & R-69-A	37902	17			38464	
R-69-B	37902	17			38464	
R-70 & R-70-A	37954	28			38465	
R-70-B	37954	28			38465	
R-75 & R-75-A	37989	7			38471	
R-75-A-2	37989	7			38471	
R-75-A-5	37989	7			38471	
R-75-B	37989	7			38471	
R-75-C-5	37989	7			38471	
R-75-E-2	37989	7			38471	
R-75-H	37989	7			38471	
R-76 & R-76-A	37989	7			38471	
R-76-A-2	37989	7			38471	
R-76-A-5	37989	7			38471	
R-76-B-2	37989	7			38471	
R-77 & R-77-A	29362	6	37749	20	38459	38472
	29363	8				
R-82 & R-82-A	29362	18	37980	20	38456	38457
R-82-B	29363	6				
R-84 & R-84-A	37954	32			38478	
R-84-C	37954	32			38478	
R-84-D	37954	32			38478	
R-86 & R-86-A	110046	7	37973	9	126916	38447
	37906	2				
R-86-B	110046	7	37973	9	126916	38447
	37906	2				
R-86-C	110046	7	37973	9	126916	38447
	37906	2				
R-86-D	110046	7	37973	9	126916	38447
	37906	2				
R-86-E	110046	7	126932	9	126916	126933
	37906	2				
R-86-F	110046	7	126932	9	126916	126933
	37906	2				
R-91 & R-91-A	29362	6	37749	16	38482	38029
	29363	9				
R-98 & R-98-A	61879	7			61881	
	61880	24				
R-99 & R-99-A	61879	7			61881	
	61880	24				
R-109 & R-109-A	△111548	14	61844	9	111549	68987
R-109-B	△111548	14	61844	9	111549	68987
R-109-C	△111548	14	61844	9	111549	68987
R-109-D	△111548	14	61844	9	111549	68987
R-112 & R-112-A	△111548	24	61845	18	111550	68988
R-113 & R-113-A	△111548	26	61845	17	111551	68989
R-114 & R-114-A	△111548	26	61845	18	111551	68988
R-115 & R-115-A	61841	32			68984	
R-121 & R-121-A	37902	16			38422	
R-121-B	37902	16			38422	
R-121-C	37902	17			38464	
R-122 & R-122-A	121442	9			126191	
R-128 & R-128-A	37902	11			38053	

△Includes removable finger tip Cat. No. 111079.

CONTACT FINGERS FOR LOCOMOTIVE, CRANE AND HOIST CONTROLLERS

TYPE T CONTROLLERS

Controller	SINGLE FINGERS				SETS OF FINGERS	
	Operating		Reversing		Cat. No.	
	Cat. No.	Number in Set	Cat. No.	Number in Set	Operating	Reversing
T-1 & T-1-A	37902	12	None		38082	
T-1-G	37906	12	None		69033	
T-1-H	37906	12	None		69033	
T-1-K	37902	12	None		38032	
T-1-L	37906	12	None		69033	
T-1-N	37906	12	None		69033	
T-1-P	37906	12	None		69033	
T-1-Q	37906	12	None		69033	
T-1-R	37906	12	None		69033	
T-7 & T-7-A	37913 34401	6 11	34402	16	38501	38506
T-10 & T-10-A	36773	15	None		38507	
T-10-J	110046	15	None		38500	
T-10-N	110046	15	None		38500	
T-10-P	110046	15	None		38500	
T-11 & T-11-A	110046	17	None		38508	
T-20 & T-20-A	110046 37906	6 8	None		38056	
T-20-B	110046 37906	6 8	None		38056	
T-20-C	110046 37906	6 8	None		38056	
T-21 & T-21-A	36773	14	None		38040	
T-26 & T-26-A	37902	17	None		38464	
T-27 & T-27-A	36773	16	None		38518	
T-28 & T-28-A	110046	56	38009	18	38519	38520
T-29 & T-29-A	110046	56	None		38519	
T-33 & T-33-A	38013	22	38015	8	38523	38524
T-34 & T-34-A	37902	14	None		38525	
T-34-E	37906	14	None		69037	
T-34-F	37906	14	None		69037	
T-34-G	37906	14	None		69037	
T-34-L	37906	14	None		69037	
T-36 & T-36-A	37922	28	None		69038	
T-40 & T-40-A	61918	16	None		61919	
T-40-C	61918	16	None		61919	
T-42 & T-42-A	37922	58	None		69043	
T-42-C	37922	54	None		69044	
T-42-D	37922	54	None		69044	
T-42-E	37922	54	None		69044	
T-52 & T-52-A	69029	28	None		69051	

CYLINDER SEGMENTS FOR LOCOMOTIVE, CRANE AND HOIST CONTROLLERS

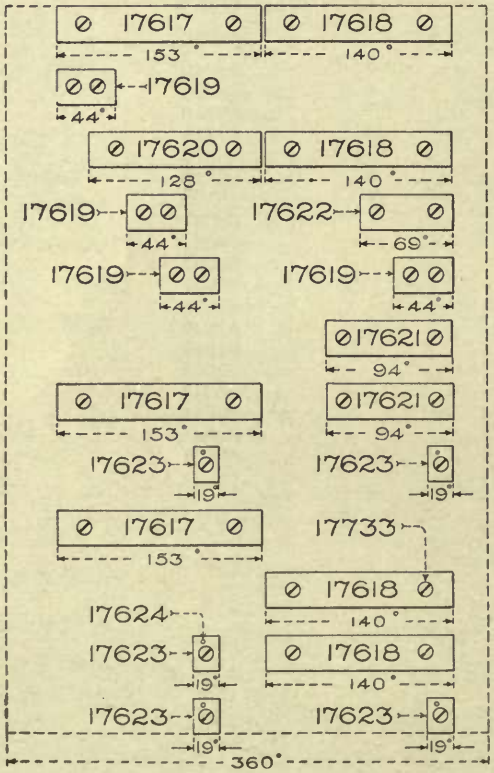
Controller cylinder segments are made from pure rolled copper rod, cold dropped to proper radius and cut to exact span dimensions to insure simultaneous break of all contacts in series.

In order to facilitate the identification and assortment of segments by the customer, all segments having the same catalogue number are assembled in a substantial package and a tag is attached giving quantity and catalogue number.

TYPE K CONTROLLERS

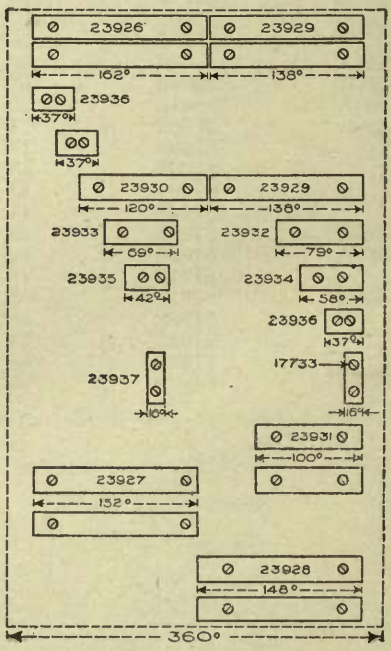
OPERATING CYLINDERS

K-2 and K-2-A Controllers



Cat. No.	Description
39444	Complete set of segments, with screws and pins
17733	Screw for segments
17624	Pin for segments

K-6, K-6-A, K-6-B and K-6-G Controllers



Cat. No.	Description
39445	Complete set of segments, with screws
17733	Screw for segments

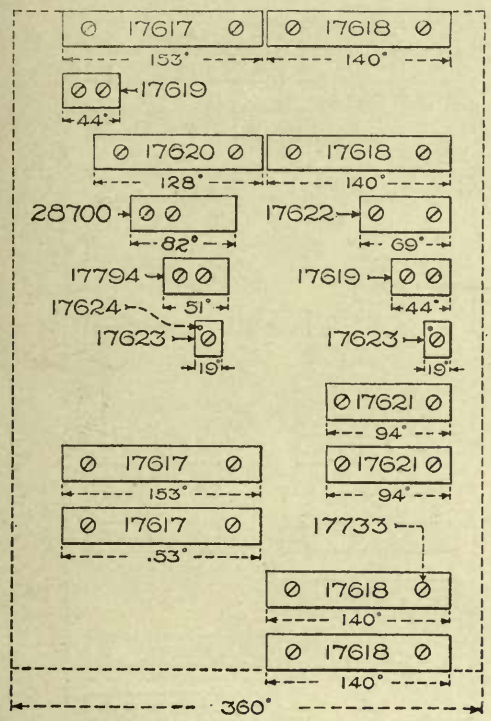
CYLINDER SEGMENTS FOR LOCOMOTIVE, CRANE AND HOIST CONTROLLERS

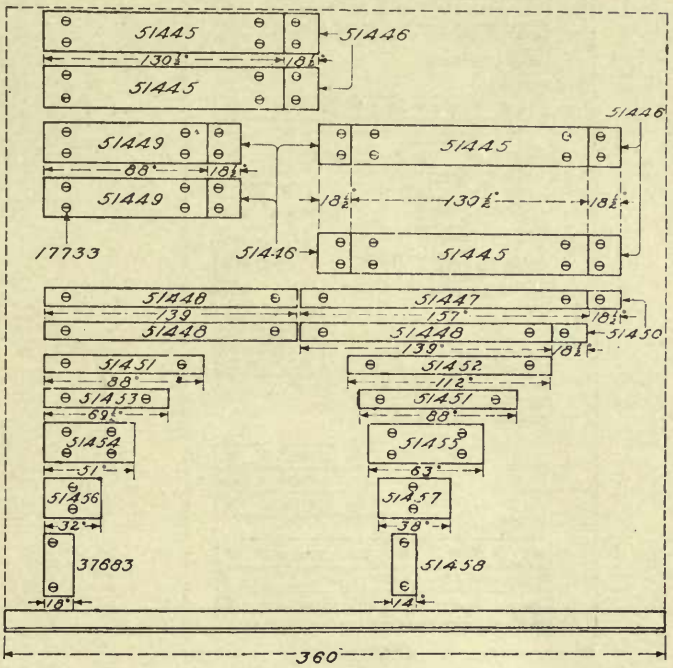
TYPE K CONTROLLERS

OPERATING CYLINDERS

• K-8, K-8-A, K-9, K-9-A, K-10, K-10-A, K-11, K-11-A, K-11-D, K-12 and K-12-A Controllers

K-13, K-13-A, K-13-C, K-13-E, *K-15 and *K-15-A Controllers





Cat. No.	Description
39446	Complete set of segments, with screws and pins
17733	Screw for segments
17624	Pin for segments

Cat. No.	Description
37684	Complete set of segments, with screws
17733	Screw for segments

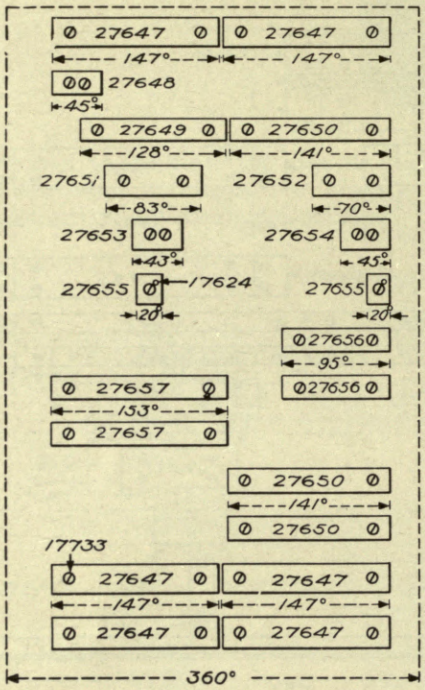
* Development is for the right-hand cylinder; the segments on the left-hand cylinder are identical.

CYLINDER SEGMENTS FOR LOCOMOTIVE, CRANE AND HOIST CONTROLLERS

TYPE K CONTROLLERS

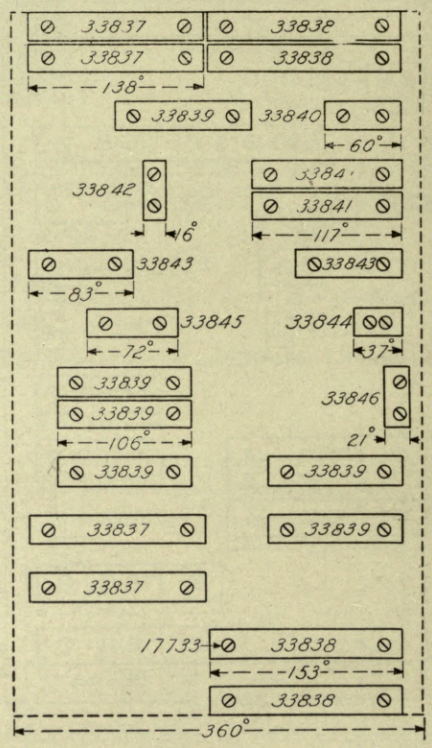
OPERATING CYLINDERS

K-27, K-27-A and K-27-C Controllers



Cat. No.	Description
39447	Complete set of segments, with screws and pins
17733	Screw for segments
17624	Pin for segments

K-28, K-28-A, K-28-B, K-28-C and K-28-L Controllers



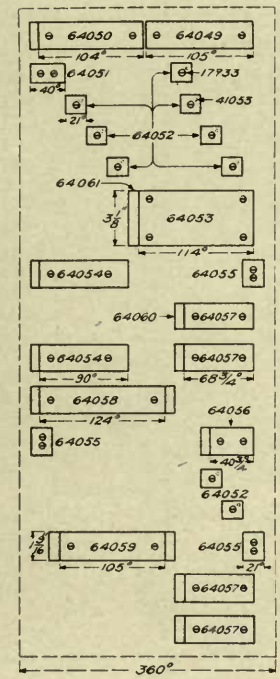
Cat. No.	Description
33463	Complete set of segments, with screws
17733	Screw for segments

CYLINDER SEGMENTS FOR LOCOMOTIVE, CRANE AND HOIST CONTROLLERS

TYPE K CONTROLLERS

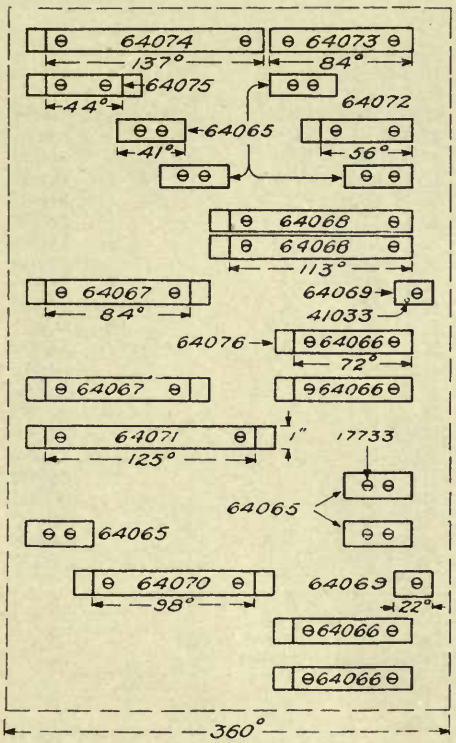
OPERATING CYLINDERS

K-34-E Controller



Cat. No.	Description
64062	Complete set of segments, with burning tips, screws and pins . . . . .
17733	Screw for segments . . . . .
41033	Pin for segments . . . . .

K-35-C and K-35-E Controllers



Cat. No.	Description
64077	Complete set of segments, with burning tips, screws and pins . . . . .
17733	Screw for segments . . . . .
41033	Pin for segments . . . . .

CYLINDER SEGMENTS FOR LOCOMOTIVE, CRANE AND HOIST CONTROLLERS

REVERSE SEGMENTS FOR K CONTROLLERS

Controller	CAT. NO.		
	Large Segment	Small Segment	Screw for Segment
K-2 & K-2-A	14693	14692	10194
K-6 & K-6-A	14693	14692	19625
K-6-B	14693	14692	19625
K-6-G	14693	14692	19625
K-8 & K-8-A	14693	14692	10194
K-9 & K-9-A	14693	14692	10194
K-10 & K-10-A	14693	14692	10194
K-11 & K-11-A	14693	14692	10194
K-11-D	14693	14692	10194
K-12 & K-12-A	14693	14692	10194
K-13 & K-13-A	19960	19961	9650
K-13-C	19960	19961	9650
K-13-E	19960	19961	9650
K-15 & K-15-A	△30951	30952	9650
K-27 & K-27-A	14693	14692	10194
K-27-C	14693	14692	10194
K-28 & K-28-A	33789		17733
K-28-B	33789		17733
K-28-C	33789		17733
K-28-L	33789		17733
K-34-E	66900	66899	9650
K-35-C	†66903 ‡66902	66901	1424
K-35-E	†66903 ‡66902	66901	1424

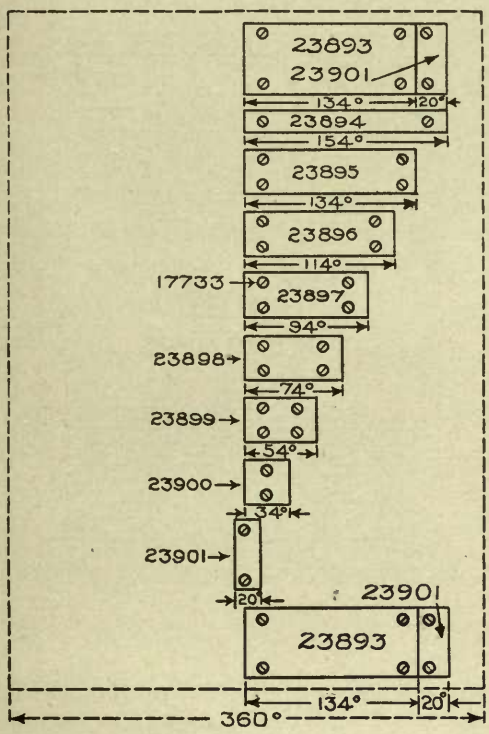
△U-shaped segment.
†Large size segment.
‡Medium size segment.

CYLINDER SEGMENTS FOR LOCOMOTIVE, CRANE AND HOIST CONTROLLERS

TYPE R CONTROLLERS

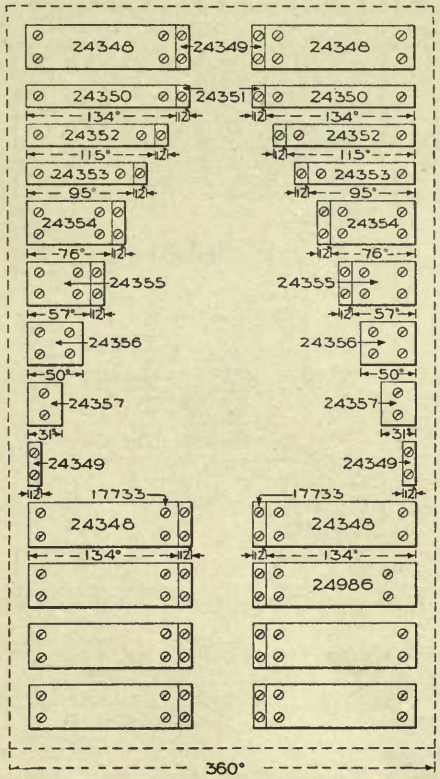
OPERATING CYLINDERS

R-6, R-6-A, R-6-B and R-6-C Controllers



Cat. No.	Description
39478	Complete set of segments, with screws
17733	Screw for segments . . . . .

R-9 and R-9-A Controllers



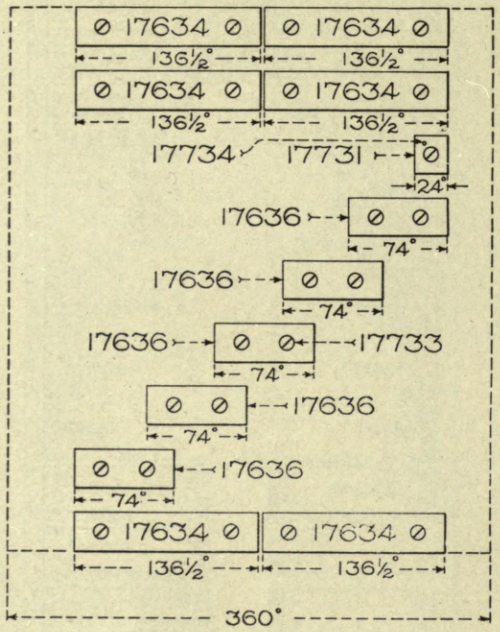
Cat. No.	Description
39479	Complete set of segments, with screws
17733	Screw for segments . . . . .

CYLINDER SEGMENTS FOR LOCOMOTIVE, CRANE AND HOIST CONTROLLERS

TYPE R CONTROLLERS

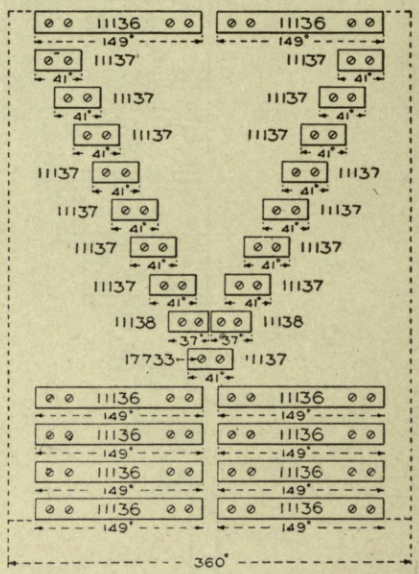
OPERATING CYLINDERS

R-11, R-11-A, R-11-B, R-12, R-12-A, R-17, R-17-A, R-17-F, R-19, R-19-A, R-19-B, R-19-C, R-19-D, R-19-E, R-29 and R-29-A Controllers



Cat. No.	Description
39480	Complete set of segments, with screws and pins
17733	Screw for segments
17734	Pin for segments

R-13, R-13-A, R-21 and R-21-A Controllers



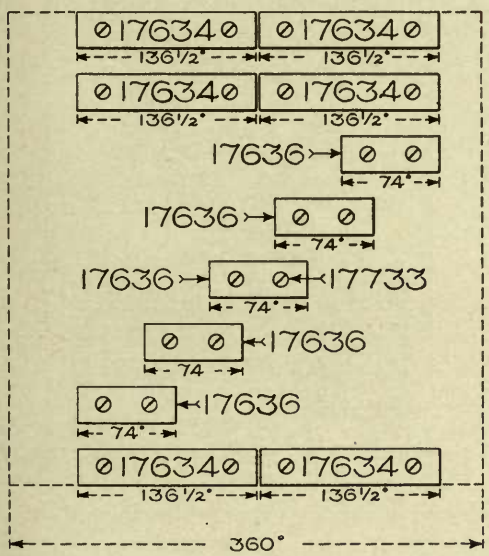
Cat. No.	Description
39481	Complete set of segments, with screws
17733	Screw for segments

CYLINDER SEGMENTS FOR LOCOMOTIVE, CRANE AND HOIST CONTROLLERS

TYPE R CONTROLLERS

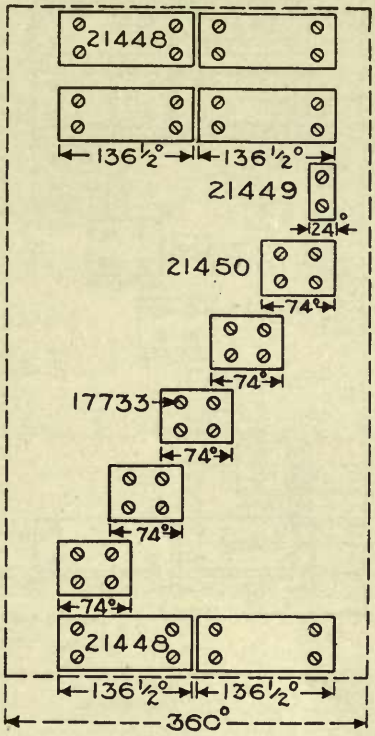
OPERATING CYLINDERS

R-14, R-14-A, R-14-C, R-14-E, R-22, R-22-A, R-22-C, R-22-E, R-22-F, R-37, R-37-A, R-37-B, R-37-C, R-37-D, R-37-E, R-37-F, R-38, R-38-A and R-38-B Controllers



Cat. No.	Description
39482	Complete set of segments, with screws
17733	Screw for segments . . . . .

R-15 and R-15-A Controllers



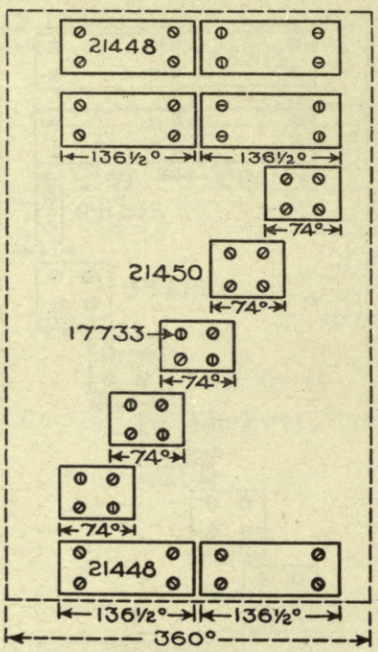
Cat. No.	Description
39483	Complete set of segments, with screws
17733	Screw for segments . . . . .

CYLINDER SEGMENTS FOR LOCOMOTIVE, CRANE AND HOIST CONTROLLERS

TYPE R CONTROLLERS

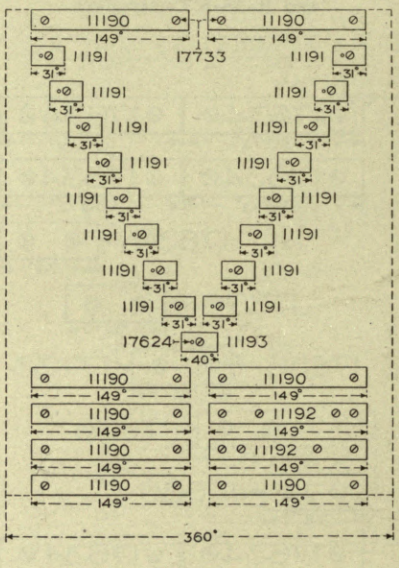
OPERATING CYLINDERS

R-16, R-16-A, R-16-C and R-16-D Controllers



Cat. No.	Description
39484	Complete set of segments, with screws
17733	Screw for segments

R-27, R-27-A, R-27-B, R-27-D, R-27-M, R-32, R-32-A, R-32-B and R-32-G Controllers



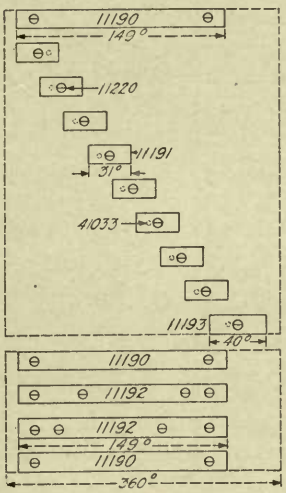
Cat. No.	Description
39485	Complete set of segments, with screws and pins
17733	Screw for segments
17624	Pin for segments

CYLINDER SEGMENTS FOR LOCOMOTIVE, CRANE AND HOIST CONTROLLERS

TYPE R CONTROLLERS

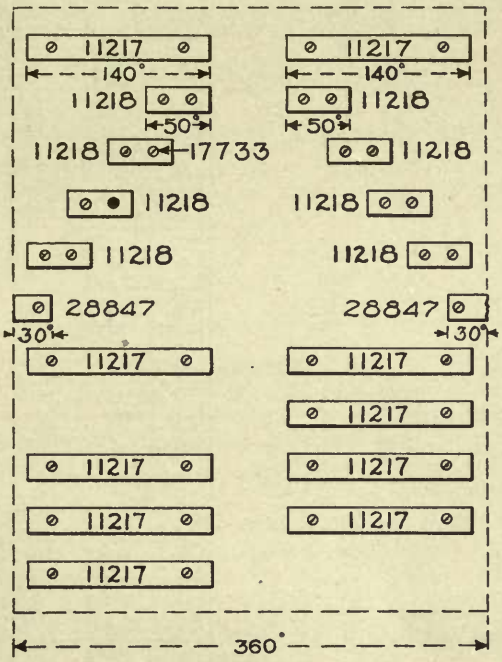
OPERATING CYLINDERS

R-27-J Controller



Cat. No.	Description
120374	Complete set of segments, with screws and pins
11220	Screw for segments
41033	Pin for segments

R-28, R-28-A, R-28-G, R-28-P, R-28-V and R-128-A Controllers



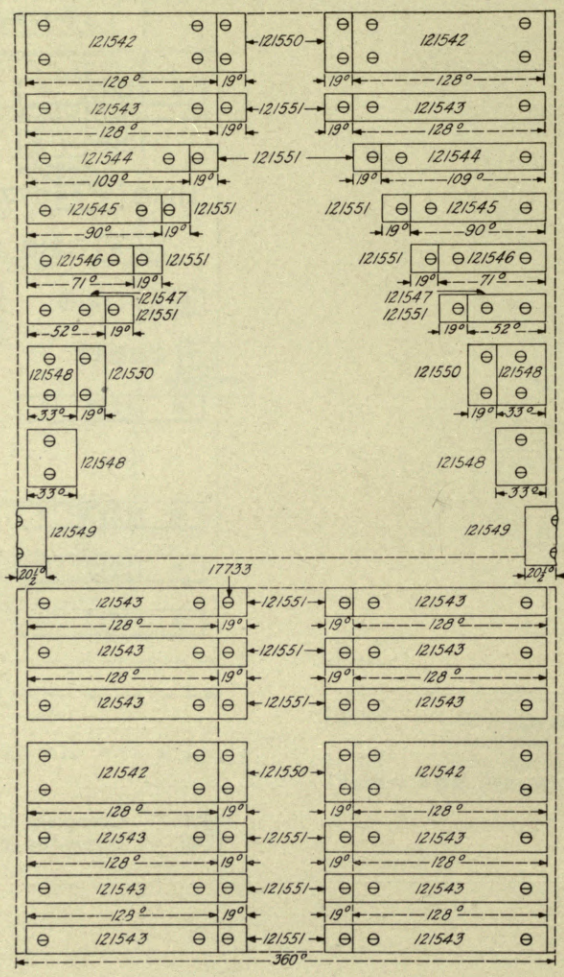
Cat. No.	Description
39486	Complete set of segments, with screws
17733	Screw for segments

CYLINDER SEGMENTS FOR LOCOMOTIVE, CRANE AND HOIST CONTROLLERS

TYPE R CONTROLLERS

OPERATING CYLINDERS

R-52 and R-52-A Controllers



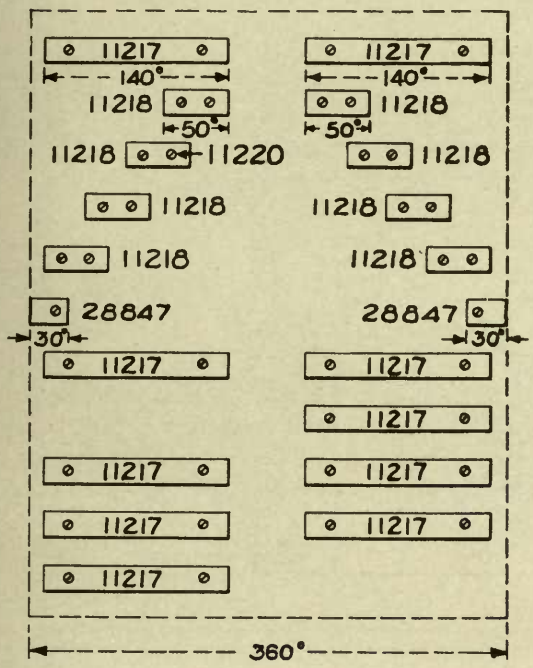
Cat. No.	Description
121552	Complete set of segments, with burning tips and screws . . . . .
17733	Screw for segments . . . . .

CYLINDER SEGMENTS FOR LOCOMOTIVE, CRANE AND HOIST CONTROLLERS

TYPE R CONTROLLERS

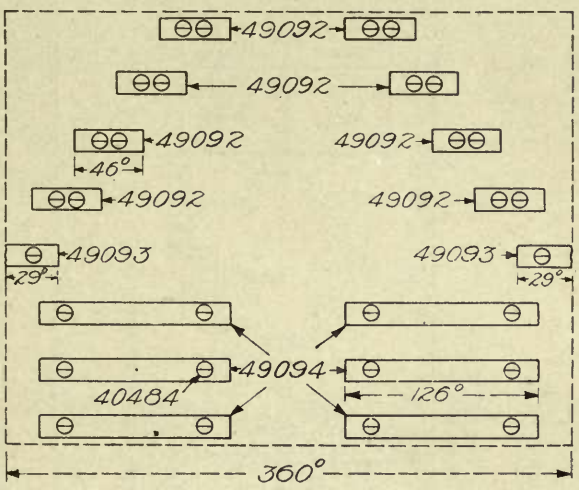
OPERATING CYLINDERS

R-28-F and R-28-N Controllers



Cat. No.	Description
39488	Complete set of segments, with screws
11220	Screw for segments . . . . .

R-53, R-53-A, R-53-B, R-53-C, R-53-D and R-53-G Controllers



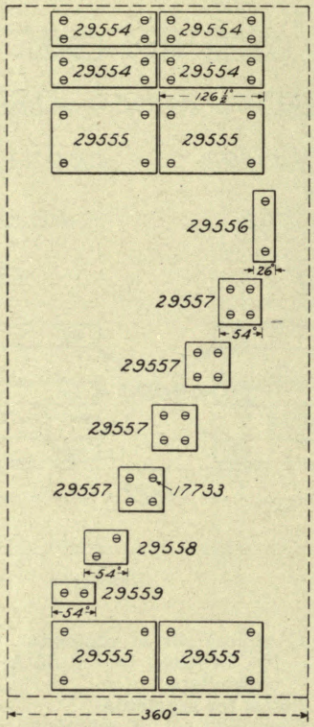
Cat. No.	Description
49077	Complete set of segments, with screws No. 40484, for R-53-A, D and G controllers . . . . .
40484	Screw for segments . . . . .
111553	Complete set of segments, with screws No. 59373, for R-53-B and C controllers . . . . .
59373	Screw for segments (brass) . . . .

CYLINDER SEGMENTS FOR LOCOMOTIVE, CRANE AND HOIST CONTROLLERS

TYPE R CONTROLLERS

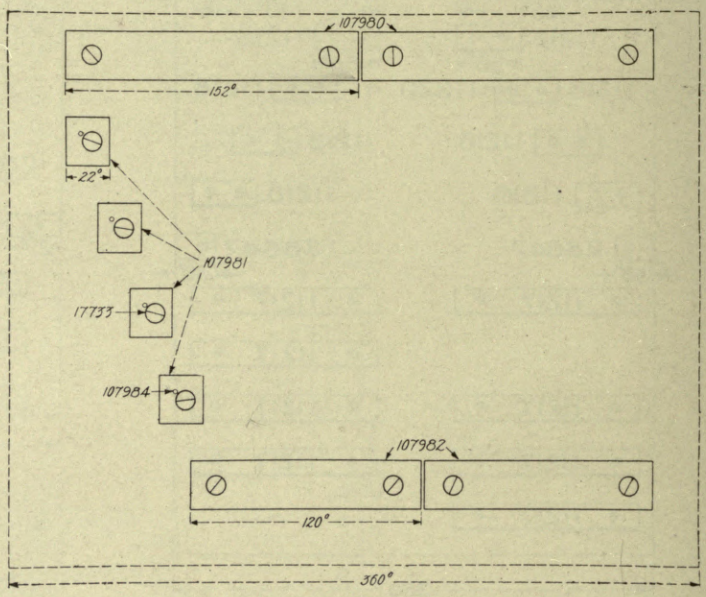
OPERATING CYLINDERS

R-55, R-55-A, R-82, R-82-A and R-82-B Controllers



Cat. No.	Description
37690	Complete set of segments, with screws
17733	Screw for segments . . . . .

R-56 and R-56-A Controllers



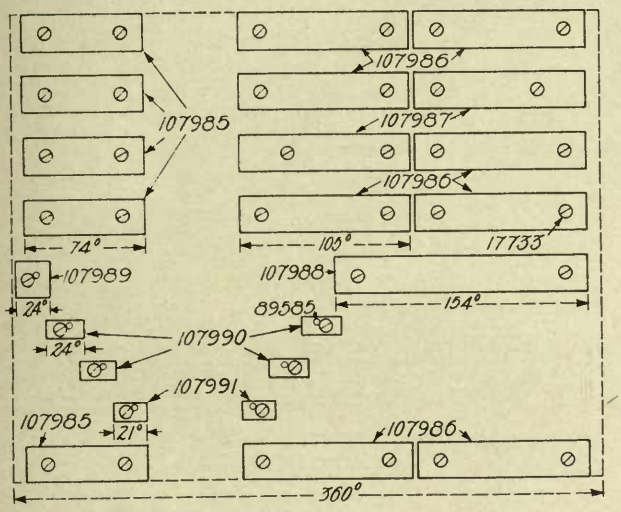
Cat. No.	Description
107983	Complete set of segments, with screws and pins . . . . .
17733	Screw for segments . . . . .
107984	Pin for segments . . . . .

CYLINDER SEGMENTS FOR LOCOMOTIVE, CRANE AND HOIST CONTROLLERS

TYPE R CONTROLLERS

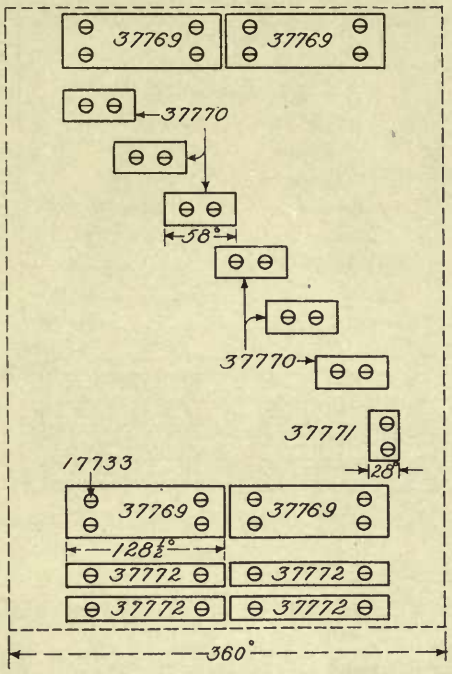
OPERATING CYLINDERS

R-65 and R-65-A Controllers



Cat. No.	Description
107992	Complete set of segments, with screws and pins
17733	Screw for segments
89585	Pin for segments

R-60, R-60-A, R-60-B, R-60-C, R-77 and R-77-A Controllers



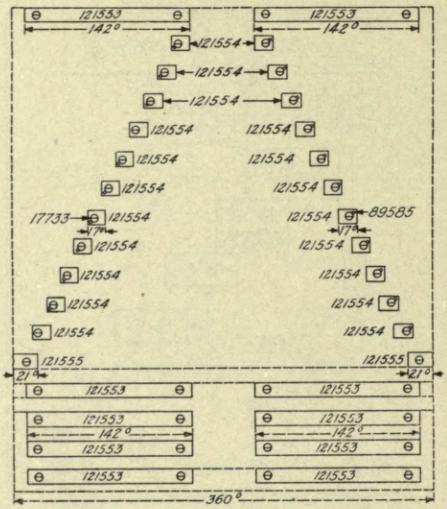
Cat. No.	Description
37719	Complete set of segments, with screws
17733	Screw for segments

CYLINDER SEGMENTS FOR LOCOMOTIVE, CRANE AND HOIST CONTROLLERS

TYPE R CONTROLLERS

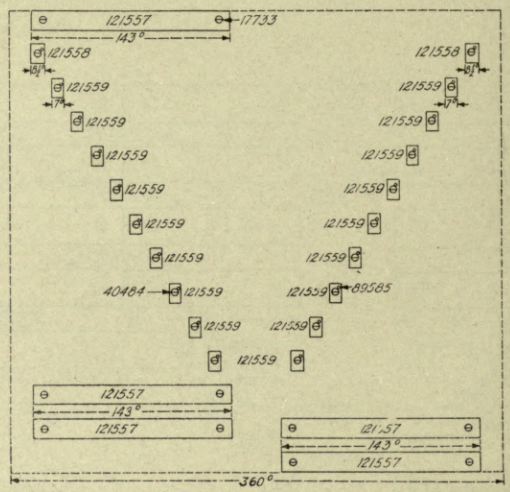
OPERATING CYLINDERS

R-69, R-69-A and R-69-B Controllers



Cat. No.	Description
121556	Complete set of segments, with screws and pins
17733	Screw for segments
89585	Pin for segments

R-70, R-70-A and R-70-B Controllers



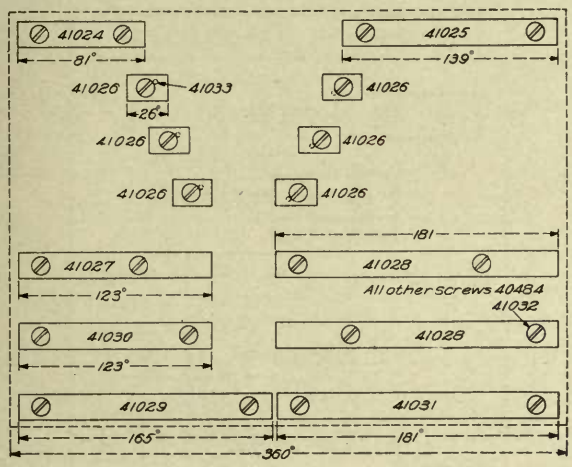
Cat. No.	Description
121560	Complete set of segments, with screws and pins
17733	Screw for segments
40484	Screw for segments
89585	Pin for segments

CYLINDER SEGMENTS FOR LOCOMOTIVE, CRANE AND HOIST CONTROLLERS

TYPE R CONTROLLERS

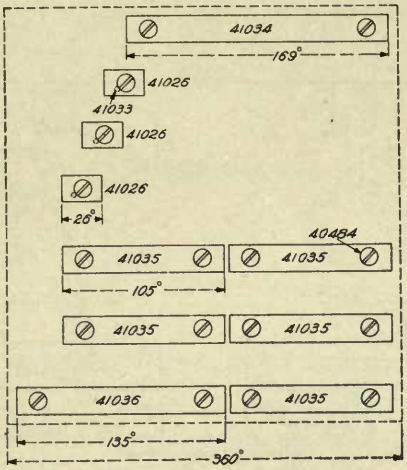
OPERATING CYLINDERS

R-75, R-75-A, R-75-A-2, R-75-A-5, R-75-B, R-75-C-5, R-75-E-2 and R-75-H Controllers



Cat. No.	Description
40982	Complete set of segments, with screws and pins
40484	Screw for segments
41032	Screw for segments
41033	Pin for segments

R-76, R-76-A, R-76-A-2, R-76-A-5 and R-76-B-2 Controllers



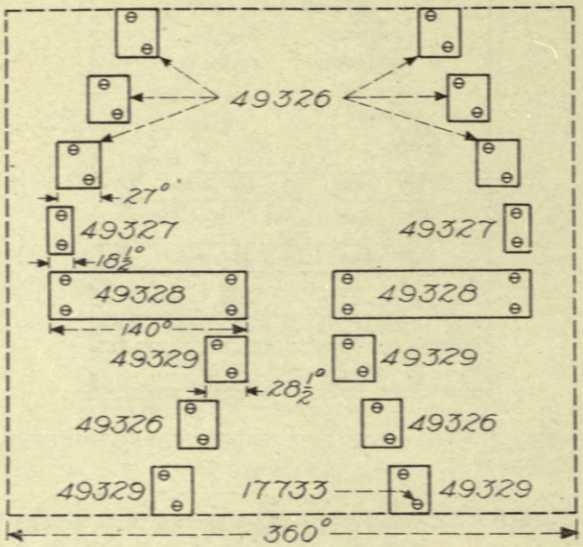
Cat. No.	Description
41018	Complete set of segments, with screws and pins
41033	Pin for segments
40484	Screw for segments

CYLINDER SEGMENTS FOR LOCOMOTIVE, CRANE AND HOIST CONTROLLERS

TYPE R CONTROLLERS

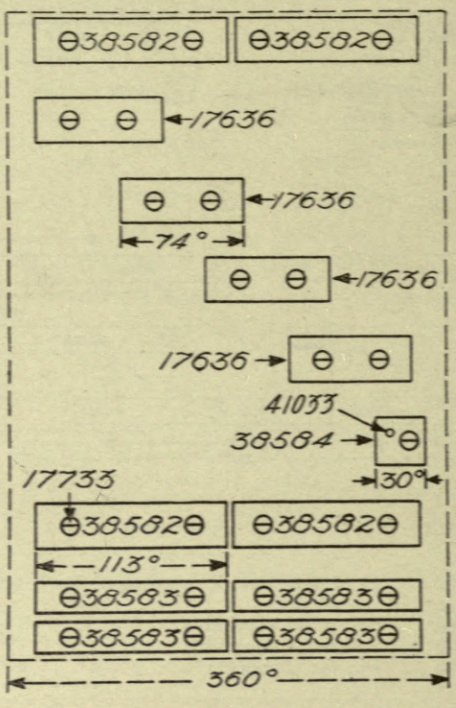
OPERATING CYLINDERS

R-84, R-84-A, R-84-C and R-84-D Controllers



Cat. No.	Description
49356	Complete set of segments, with screws
17733	Screw for segments

R-86-A, R-86-B, R-86-C, R-86-D, R-86-E and R-86-F Controllers



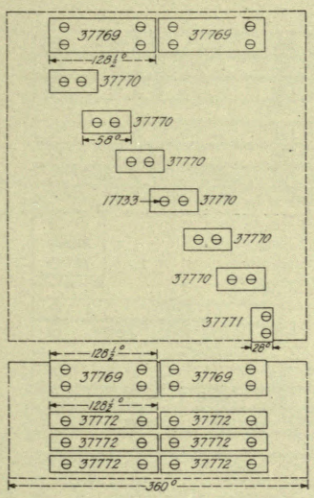
Cat. No.	Description
38532	Complete set of segments, with screws and pins
17733	Screw for segments
41033	Pin for segments

CYLINDER SEGMENTS FOR LOCOMOTIVE, CRANE AND HOIST CONTROLLERS

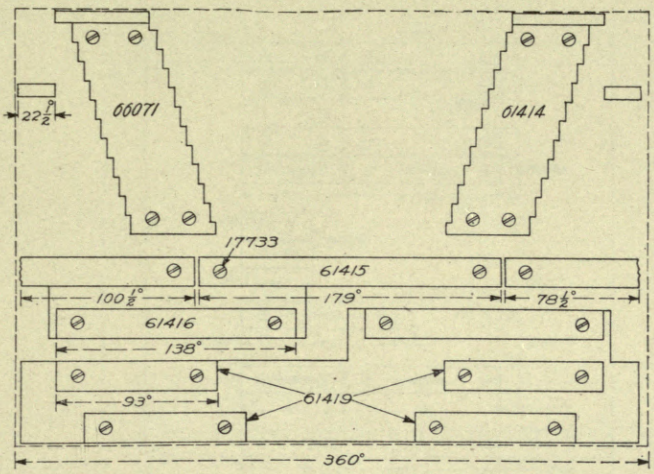
TYPE R CONTROLLERS

OPERATING CYLINDERS

R-91 and R-91-A Controllers



R-98, R-98-A, R-99 and R-99-A Controllers



Cat. No.	Description
121561	Complete set of segments, with screws
17733	Screw for segments . . . . .

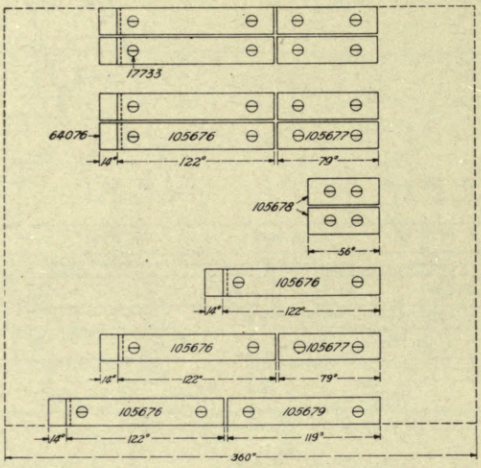
Cat. No.	Description
61869	Complete set of segments, with screws
17733	Screw for segments . . . . .

CYLINDER SEGMENTS FOR LOCOMOTIVE, CRANE AND HOIST CONTROLLERS

TYPE R CONTROLLERS

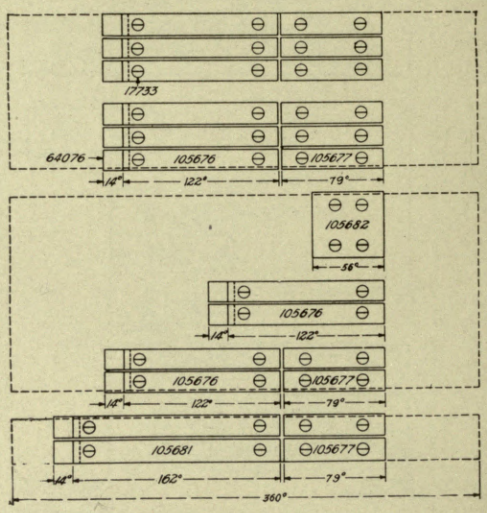
OPERATING CYLINDERS

R-109, R-109-A, R-109-B, R-109-C and R-109-D Controllers



Cat. No.	Description
105680	Complete set of segments, with burning tips and screws . . . . .
17733	Screw for segments . . . . .

R-112 and R-112-A Controllers



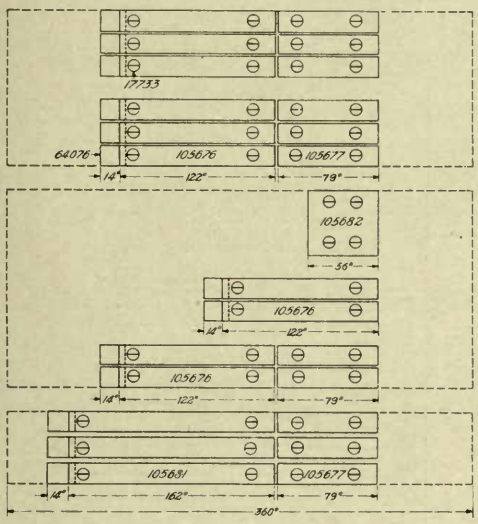
Cat. No.	Description
105683	Complete set of segments, with burning tips and screws . . . . .
17733	Screw for segments . . . . .

CYLINDER SEGMENTS FOR LOCOMOTIVE, CRANE AND HOIST CONTROLLERS

TYPE R CONTROLLERS

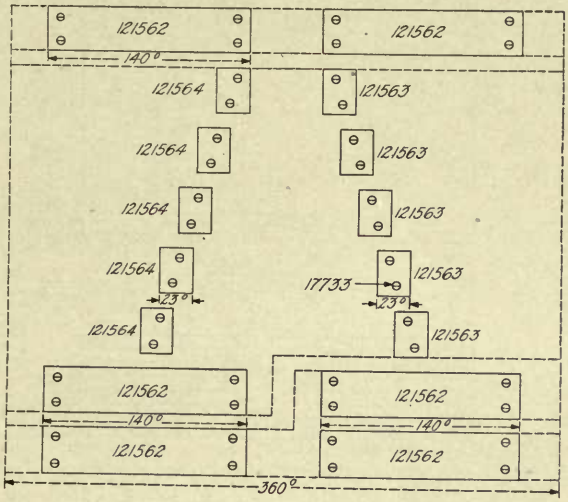
OPERATING CYLINDERS

R-113, R-113-A, R-114 and R-114-A Controllers



Cat. No.	Description
105684	Complete set of segments, with burning tips and screws . . . . .
17733	Screw for segments . . . . .

R-115 and R-115-A Controllers



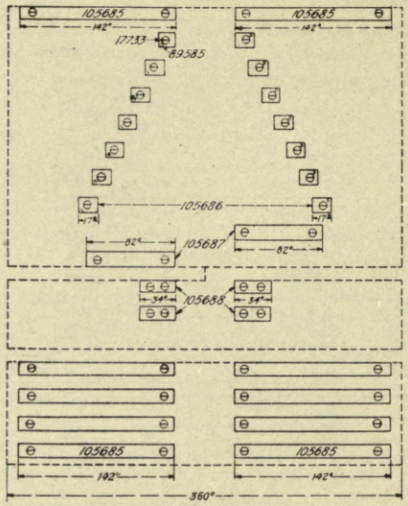
Cat. No.	Description
121565	Complete set of segments, with screws
17733	Screw for segments . . . . .

CYLINDER SEGMENTS FOR LOCOMOTIVE, CRANE AND HOIST CONTROLLERS

TYPE R CONTROLLERS

OPERATING CYLINDERS

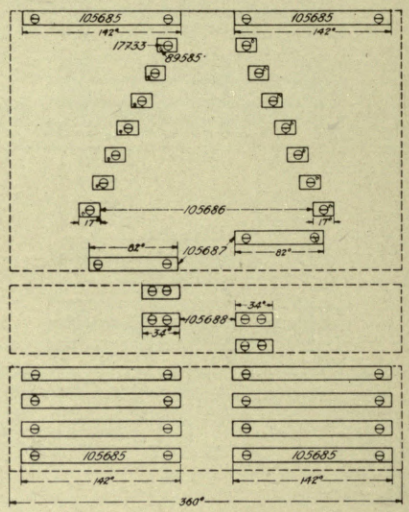
R-121, R-121-A and R-121-B Controllers



Cat. No.	Description
105689	Complete set of segments, with screws and pins for R-121-A
105690	Complete set of segments, with screws and pins for R-121-B
17733	Screw for segments
89585	Pin for segments

The cylinder development shown is for R-121-B. The development for R-121-A is identical with the R-121-B except that the two left-hand segments, Cat. No. 105688, are omitted.

R-121-C Controller



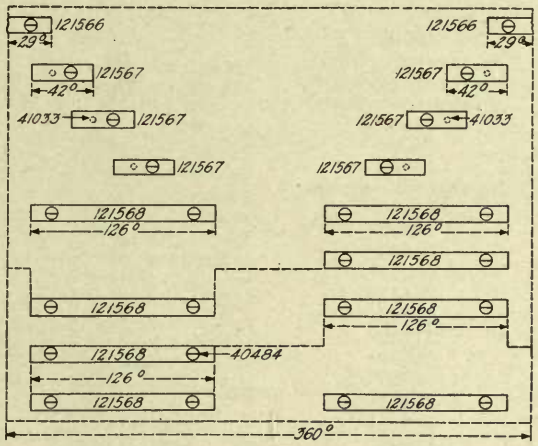
Cat. No.	Description
107677	Complete set of segments, with screws and pins
17733	Screw for segments
89585	Pin for segments

CYLINDER SEGMENTS FOR LOCOMOTIVE, CRANE AND HOIST CONTROLLERS

TYPE R CONTROLLERS

OPERATING CYLINDERS

R-122 and R-122-A Controllers



Cat. No.	Description
121569	Complete set of segments, with screws and pins
40484	Screw for segments
41033	Pin for segments

CYLINDER SEGMENTS FOR LOCOMOTIVE, CRANE AND HOIST CONTROLLERS

TYPE R CONTROLLERS—REVERSE SEGMENTS

Controller	CAT. NO.		
	Large Segment	Small Segment	Screw for Segment
R-6 & R-6-A	19960	19961	9650
R-6-B	No reverse cylinder		
R-6-C	No reverse cylinder		
R-9 & R-9-A	No reverse cylinder		
R-11 & R-11-A	14693	14692	10194
R-11-B	14693	14692	10194
R-12 & R-12-A	14693	14692	10194
R-13 & R-13-A	No reverse cylinder		
R-14 & R-14-A	14693	14692	10194
R-14-C	14693	14692	10194
R-14-E	14693	14692	10194
R-15 & R-15-A	19247	19246	10143
R-16 & R-16-A	21442	21441	10194
R-16-C	21442	21441	10194
R-16-D	21442	21441	10194
R-17 & R-17-A	14693	14692	10194
R-17-F	14693	14692	10194
R-19 & R-19-A	14693	14692	10194
R-19-B	14693	14692	10194
R-19-C	14693	14692	10194
R-19-D	14693	14692	10194
R-19-E	14693	14692	10194
R-21 & R-21-A	No reverse cylinder		
R-22 & R-22-A	14693	14692	10194
R-22-C	14693	14692	10194
R-22-E	14693	14692	10194
R-22-F	14693	14692	10194
R-27 & R-27-A	No reverse cylinder		
R-27-B	No reverse cylinder		
R-27-D	No reverse cylinder		
R-27-J	No reverse cylinder		
R-27-M	No reverse cylinder		
R-28 & R-28-A	No reverse cylinder		
R-28-F	No reverse cylinder		
R-28-G	No reverse cylinder		
R-28-N	No reverse cylinder		
R-28-P	No reverse cylinder		
R-28-V	No reverse cylinder		
R-29 & R-29-A	14693	14692	10194
R-32 & R-32-A	No reverse cylinder		
R-32-B	No reverse cylinder		
R-32-G	No reverse cylinder		
R-37 & R-37-A	See page 155		
R-37-B	See page 155		
R-37-C	See page 155		
R-37-D	See page 155		
R-37-E	See page 155		
R-37-F	See page 155		
R-38 & R-38-A	See page 155		
R-38-B	See page 155		
R-52 & R-52-A	No reverse cylinder		
R-53 & R-53-A	No reverse cylinder		
R-53-B	No reverse cylinder		
R-53-C	No reverse cylinder		
R-53-D	No reverse cylinder		
R-53-G	No reverse cylinder		
R-55 & R-55-A	See page 156		
R-56 & R-56-A	No reverse cylinder		
R-60 & R-60-A	△37726 †37727	37728	13848

△ Four-screw segment.
† Large segment, two-screw.

CYLINDER SEGMENTS FOR LOCOMOTIVE, CRANE AND HOIST CONTROLLERS

TYPE R CONTROLLERS—REVERSE SEGMENTS

Controller	CAT. NO.		
	Large Segment	Small Segment	Screw for Segment
R-60-B R-60-C	△37726 †37727	37728	13848
R-65 & R-65-A	No reverse cylinder		
R-69 & R-69-A	No reverse cylinder		
R-69-B	No reverse cylinder		
R-70 & R-70-A	No reverse cylinder		
R-70-B	No reverse cylinder		
R-75 & R-75-A	No reverse cylinder		
R-75-B	No reverse cylinder		
R-75-H	No reverse cylinder		
R-75-A-2	No reverse cylinder		
R-75-A-5	No reverse cylinder		
R-75-C-5	No reverse cylinder		
R-75-E-2	No reverse cylinder		
R-76 & R-76-A	No reverse cylinder		
R-76-A-2	No reverse cylinder		
R-76-A-5	No reverse cylinder		
R-76-B-2	No reverse cylinder		
R-77 & R-77-A	See page 156		
R-82 & R-82-A	See page 157		
R-82-B	See page 157		
R-84 & R-84-A	No reverse cylinder		
R-84-C	No reverse cylinder		
R-84-D	No reverse cylinder		
R-86 & R-86-A	See page 157		
R-86-B	See page 157		
R-86-C	See page 157		
R-86-D	See page 157		
R-86-E	See page 158		
R-86-F	See page 158		
R-91 & R-91-A	See page 158		
R-98 & R-98-A	No reverse cylinder		
R-99 & R-99-A	No reverse cylinder		
R-109 & R-109-A	See page 158		
R-109-B	See page 158		
R-109-C	See page 158		
R-109-D	See page 158		
R-112 & R-112-A	See page 159		
R-113 & R-113-A	See page 159		
R-114 & R-114-A	See page 159		
R-115 & R-115-A	No reverse cylinder		
R-121 & R-121-A	No reverse cylinder		
R-121-B	No reverse cylinder		
R-121-C	No reverse cylinder		
R-122 & R-122-A	No reverse cylinder		
R-128 & R-128-A	No reverse cylinder		

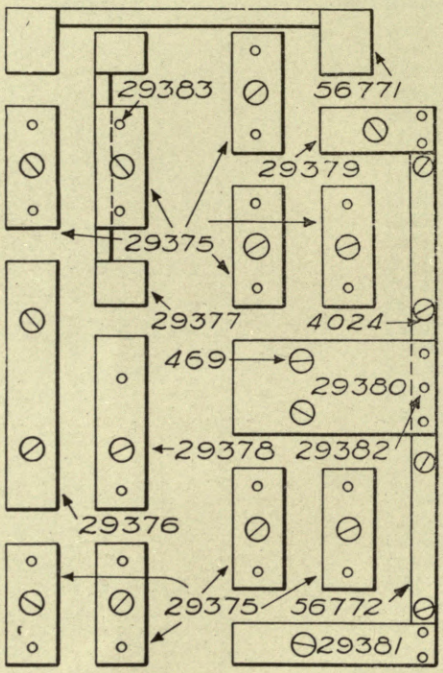
△Four-screw segment.
†Large segment, two-screw.

CYLINDER SEGMENTS FOR LOCOMOTIVE, CRANE AND HOIST CONTROLLERS

TYPE R CONTROLLERS

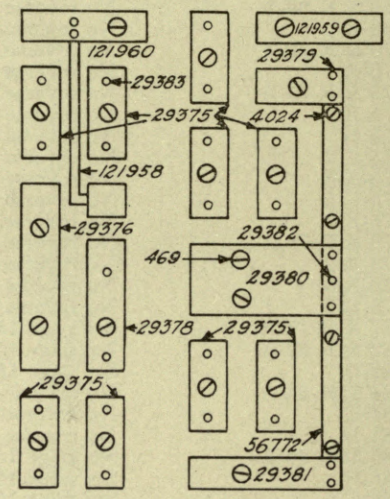
REVERSING CYLINDERS

R-37, R-37-A, R-37-B, R-37-E, R-37-F, R-38 and R-38-A Controllers



Cat. No.	Description
39489	Complete set of segments, with screws
469	Screw for segments
4024	Screw for segments (brass)
29382	Copper rivet for segments
29383	Pin for segments

R-37-C, R-37-D and R-38-B Controllers



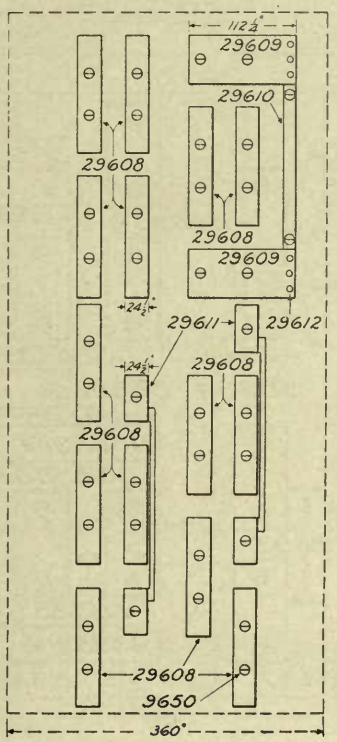
Cat. No.	Description
121961	Complete set of segments, with screws and pins
469	Screw for segments
121962	Screw for segments
4024	Screw for segments
29383	Pin for segments
29382	Rivet for segments

CYLINDER SEGMENTS FOR LOCOMOTIVE, CRANE AND HOIST CONTROLLERS

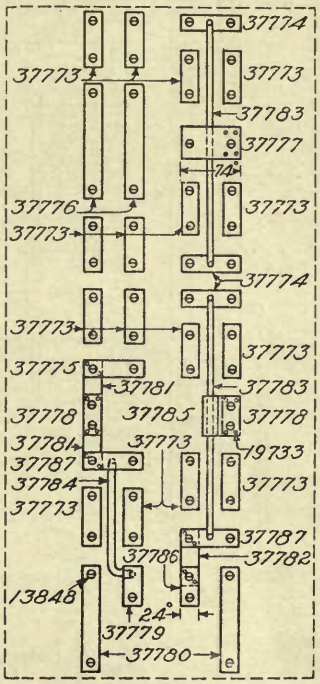
TYPE R CONTROLLERS

REVERSING CYLINDERS

R-55 and R-55-A Controllers



R-77 and R-77-A Controllers



Cat. No.	Description
37691	Complete set of segments, with screws and rivets
9650	Screw for segments
29612	Copper rivet

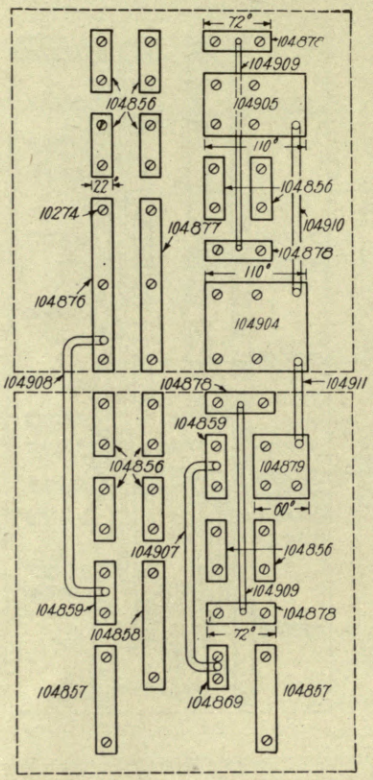
Cat. No.	Description
37759	Complete set of segments, with connectors, pins and screws
13848	Screw for segments
19733	Pin for segments

CYLINDER SEGMENTS FOR LOCOMOTIVE, CRANE AND HOIST CONTROLLERS

TYPE R CONTROLLERS

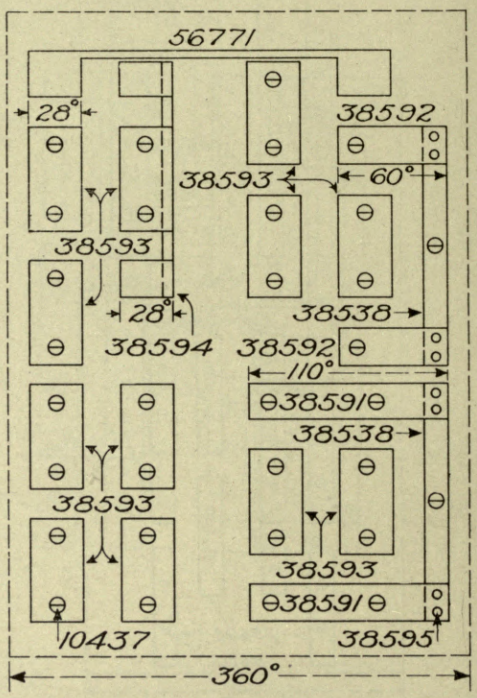
REVERSING CYLINDERS

R-82, R-82-A and R-82-B Controllers



Cat. No.	Description
104906	Complete set of segments, with connectors and screws
10274	Screw for segments

R-86, R-86-A, R-86-B, R-86-C and R-86-D Controllers



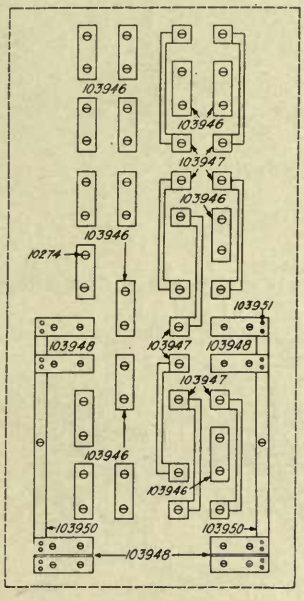
Cat. No.	Description
38536	Complete set of segments, with screws and rivets
10437	Screw for segments
38595	Copper rivet

CYLINDER SEGMENTS FOR LOCOMOTIVE, CRANE AND HOIST CONTROLLERS

TYPE R CONTROLLERS

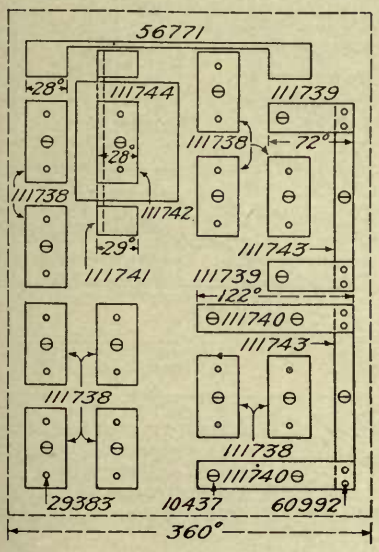
REVERSING CYLINDERS

R-91-A Controller



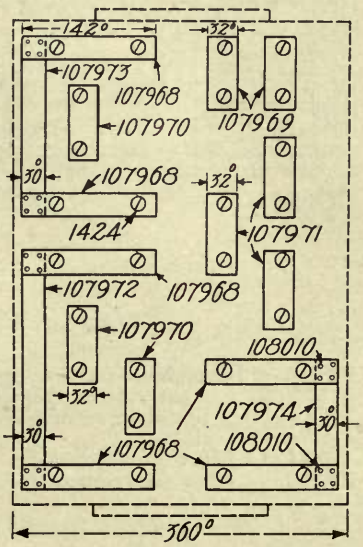
Cat. No.	Description
103949	Complete set of segments, with connection strips, screws and rivets .
10274	Screw for segments . .
103951	Rivet for segments . .

R-86-E and R-86-F Controllers



Cat. No.	Description
111745	Complete set of segments, with connection strips, insulation plate, screws, rivets and pins . . .
10437	Screw for segments .
60992	Rivet for segments .
29383	Pin for segments .

R-109, R-109-A, R-109-B, R-109-C and R-109-D Controllers



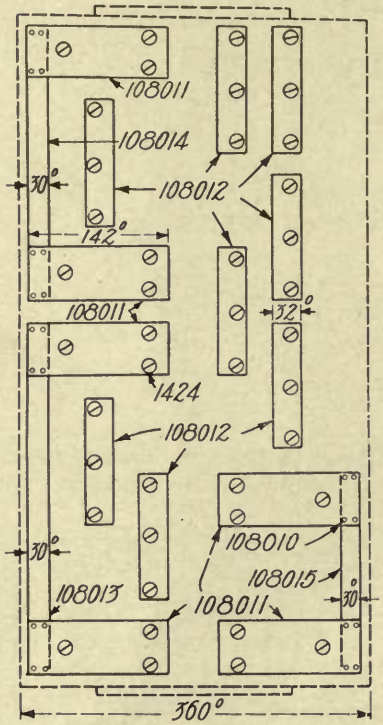
Cat. No.	Description
108009	Complete set of segments, with connection strips, screws and rivets . .
1424	Screw for segments .
108010	Rivet for segments .

CYLINDER SEGMENTS FOR LOCOMOTIVE, CRANE AND HOIST CONTROLLERS

TYPE R CONTROLLERS

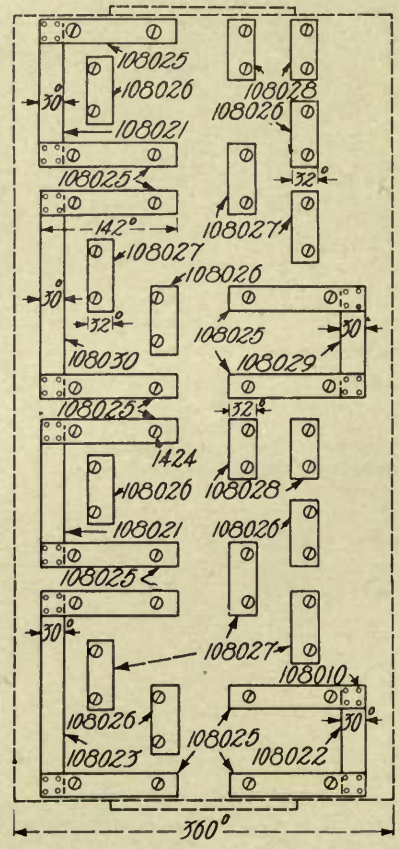
REVERSING CYLINDERS

R-112 and R-112-A Controllers



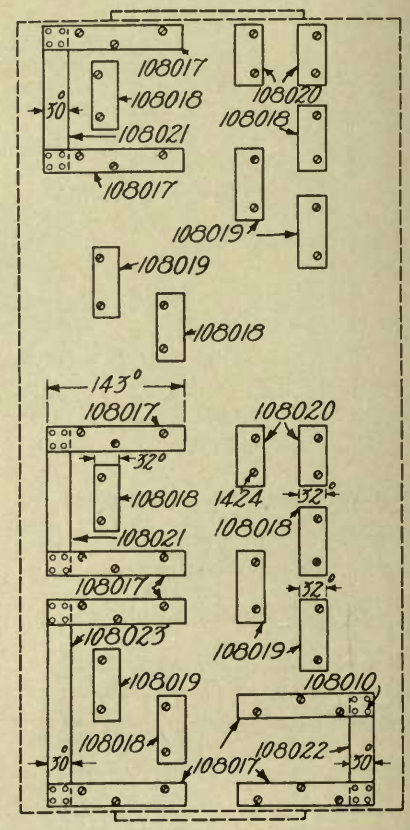
Cat. No.	Description
108016	Complete set of segments, with connection strips, screws and rivets . . . .
1424	Screw for segments .
108010	Rivet for segments .

R-114 and R-114-A Controllers



Cat. No.	Description
108031	Complete set of segments, with connection strips, screws and rivets . . . .
1424	Screw for segments .
108010	Rivet for segments .

R-113 and R-113-A Controllers



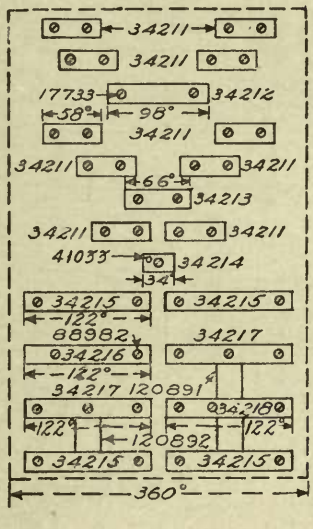
Cat. No.	Description
108024	Complete set of segments, with connection strips, screws and rivets . .
1424	Screw for segments . .
108010	Rivet for segments . .

CYLINDER SEGMENTS FOR LOCOMOTIVE, CRANE AND HOIST CONTROLLERS

TYPE T CONTROLLERS

OPERATING CYLINDERS

T-1, T-1-A, T-1-G, T-1-H, T-1-K, T-1-L, T-1-N, T-1-P, T-1-Q and T-1-R Controllers

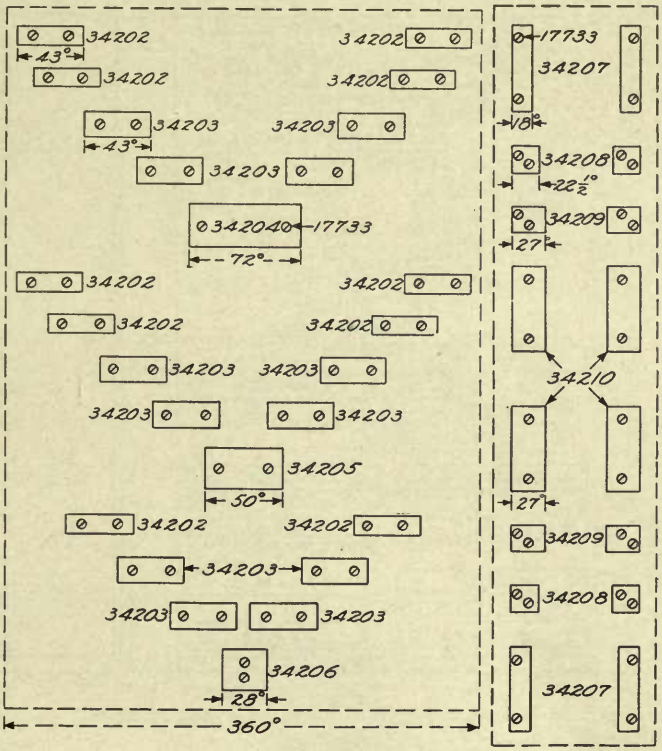


NOTE.—The development of the cylinder for controllers having round shafts is identical with the above except that the grounding screw Cat. No. 88982 is used and the connection strips Cat. Nos. 120891 and 120892 are omitted.

OPERATING AND REVERSE CYLINDERS

T-7 and T-7-A Controllers

OPERATING REVERSE



Cat. No.	Description
* 34404	Complete set of segments, with screws and pins
†121079	Complete set of segments, with connection strips, screws and pins
17733	Screw for segments
* 88982	Grounding screw for segments
41033	Pin for segments
†120891	Connection strip
†120892	Connection strip

Cat. No.	Description
34405	Complete set of operating cylinder segments, with screws
34406	Complete set of reversing cylinder segments, with screws
17733	Screw for segments

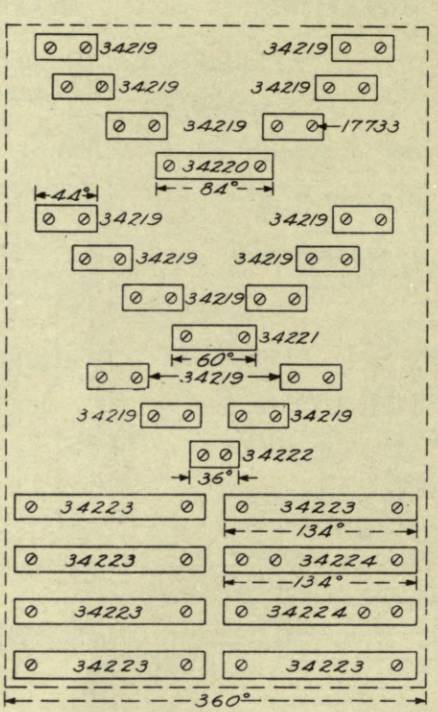
* For use with controllers having round shaft.
† For use with controllers having hexagonal shaft.

CYLINDER SEGMENTS FOR LOCOMOTIVE, CRANE AND HOIST CONTROLLERS

TYPE T CONTROLLERS

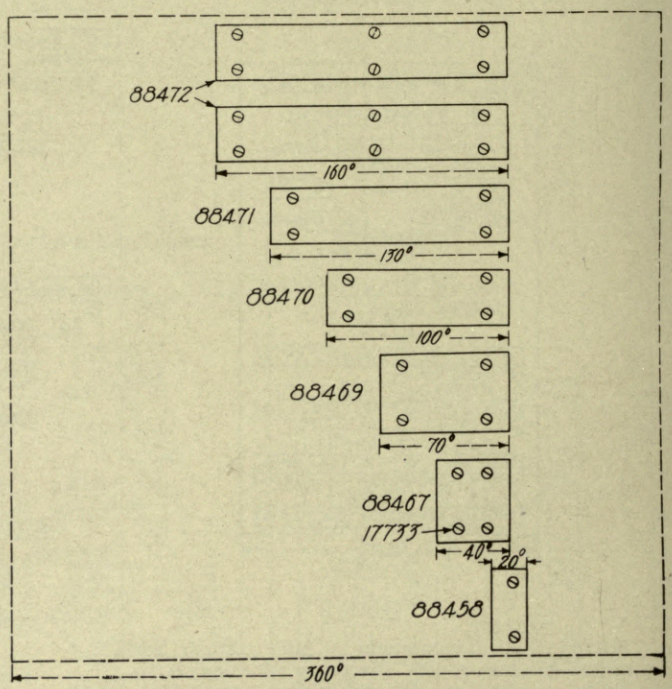
OPERATING CYLINDERS

T-10, T-10-A, T-10-J, T-10-N and T-10-P Controllers



Cat. No.	Description
34403	Complete set of segments, with screws
17733	Screw for segments . . . . .

T-11 and T-11-A Controllers



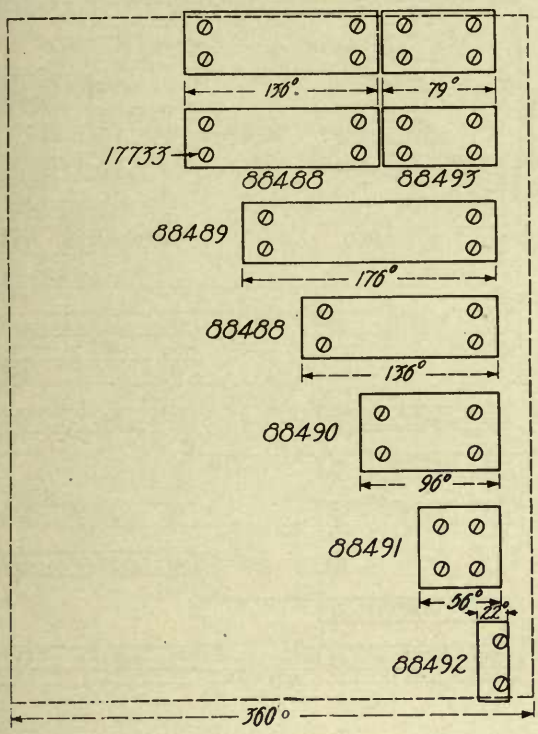
Cat. No.	Description
88473	Complete set of segments, with screws
17733	Screw for segments . . . . .

CYLINDER SEGMENTS FOR LOCOMOTIVE, CRANE AND HOIST CONTROLLERS

TYPE T CONTROLLERS

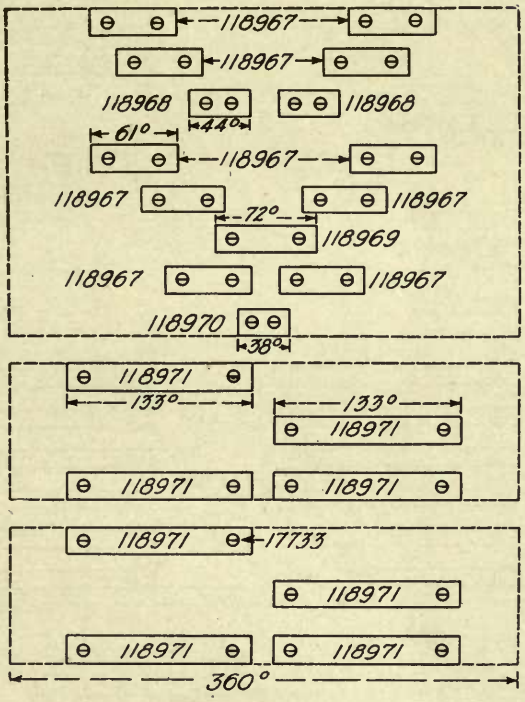
OPERATING CYLINDERS

T-20, T-20-A, T-20-B and T-20-C Controllers



Cat. No.	Description
88494	Complete set of segments, with screws
17733	Screw for segments . . . . .

T-21 and T-21-A Controllers



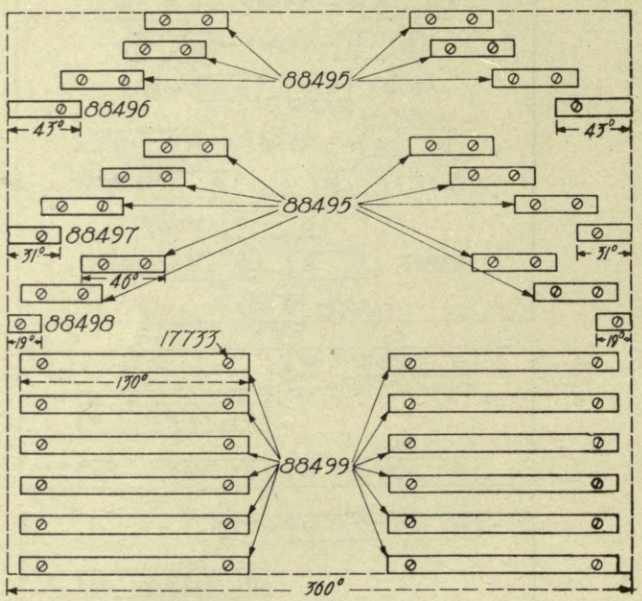
Cat. No.	Description
118972	Complete set of segments, with screws
17733	Screw for segments . . . . .

CYLINDER SEGMENTS FOR LOCOMOTIVE, CRANE AND HOIST CONTROLLERS

TYPE T CONTROLLERS

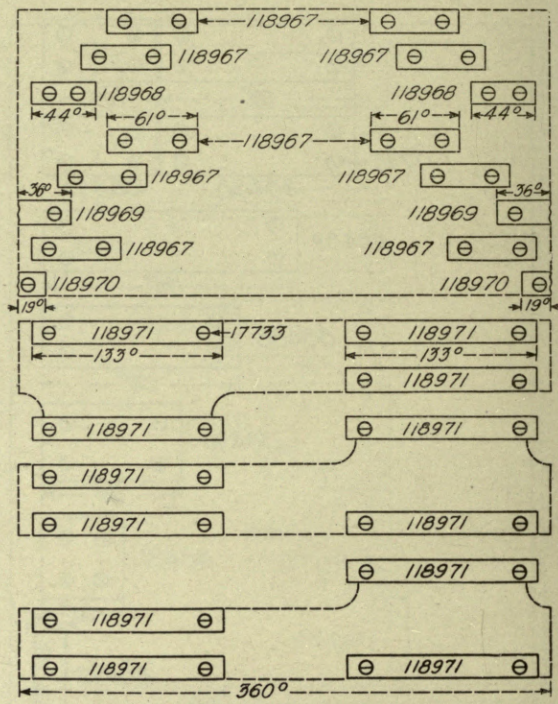
OPERATING CYLINDERS

T-26 and T-26-A Controllers



Cat. No.	Description
88623	Complete set of segments, with screws
17733	Screw for segments . . . . .

T-27 and T-27-A Controllers



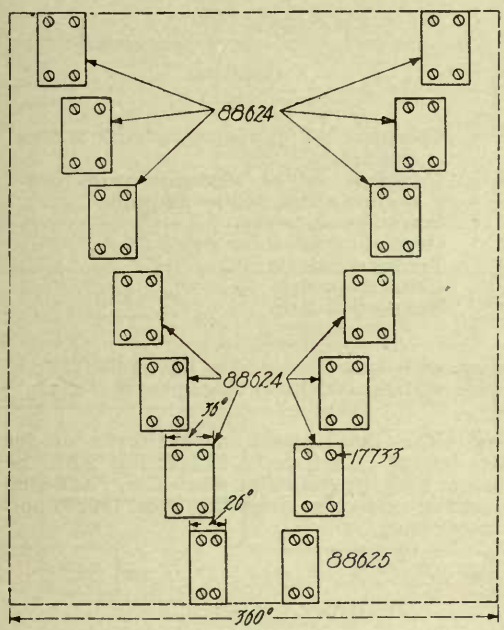
Cat. No.	Description
118973	Complete set of segments, with screws
17733	Screw for segments . . . . .

CYLINDER SEGMENTS FOR LOCOMOTIVE, CRANE AND HOIST CONTROLLERS

TYPE T CONTROLLERS

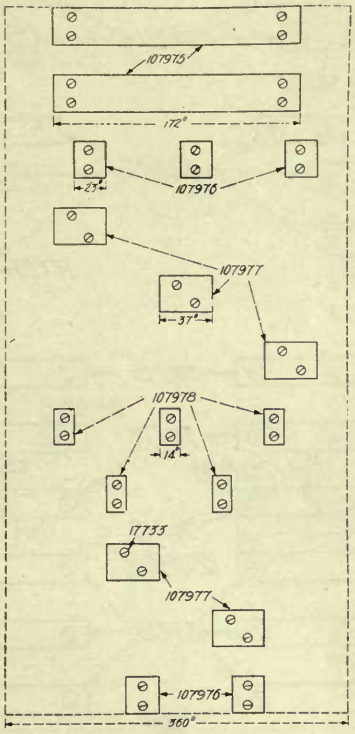
OPERATING CYLINDERS

T-28, T-28-A, T-29, and T-29-A Controllers



Cat. No.	Description
88626	Complete set of segments, with screws
17733	Screw for segments . . . . .

T-33 and T-33-A Controllers



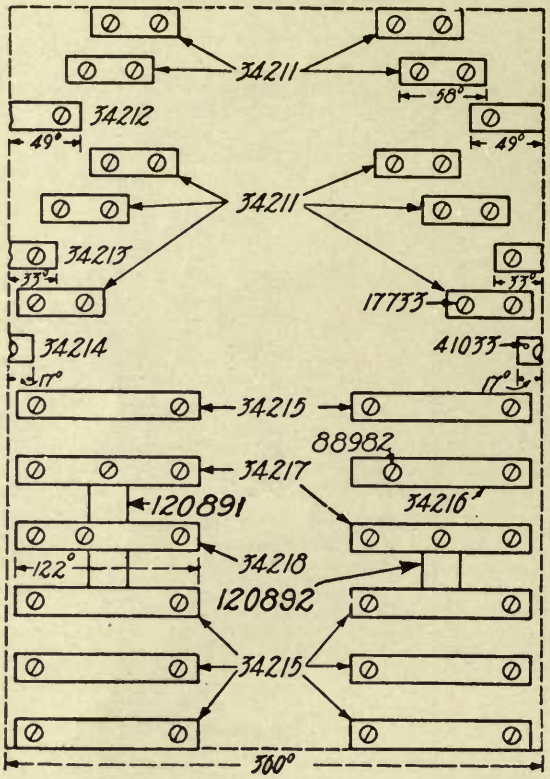
Cat. No.	Description
107979	Complete set of segments, with screws
17733	Screw for segments . . . . .

CYLINDER SEGMENTS FOR LOCOMOTIVE, CRANE AND HOIST CONTROLLERS

TYPE T CONTROLLERS

OPERATING CYLINDERS

T-34, T-34-A, T-34-E, T-34-F, T-34-G and T-34-L Controllers

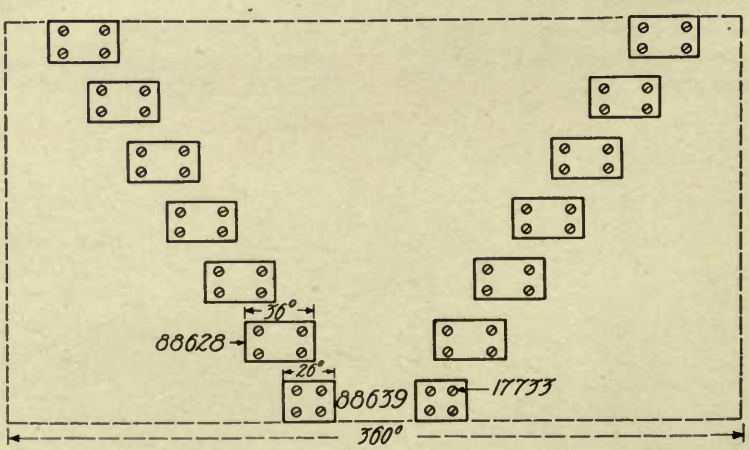


Cat. No.	Description
* 88627	Complete set of segments, with screws and pins
†121080	Complete set of segments, with connection strips, screws and pins
17733	Screw for segments
* 88982	Grounding screw for segments
41033	Pin for segments
†120891	Connection strip
†120892	Connection strip

* For use with controllers having round shaft.
† For use with controllers having hexagonal shaft.

NOTE.—The development of the cylinder for controllers having round shafts is identical with the above, except that the grounding screw Cat. No. 88982 is used and the connection strips Cat. Nos. 120891 and 120892 are omitted.

T-36 and T-36-A Controllers



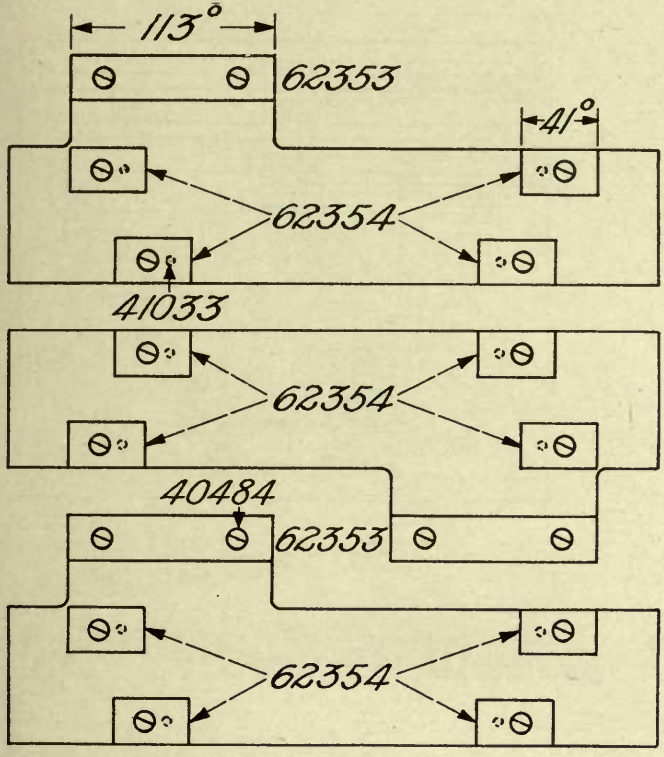
Cat. No.	Description
88640	Complete set of segments, with screws
17733	Screw for segments

CYLINDER SEGMENTS FOR LOCOMOTIVE, CRANE AND HOIST CONTROLLERS

TYPE T CONTROLLERS

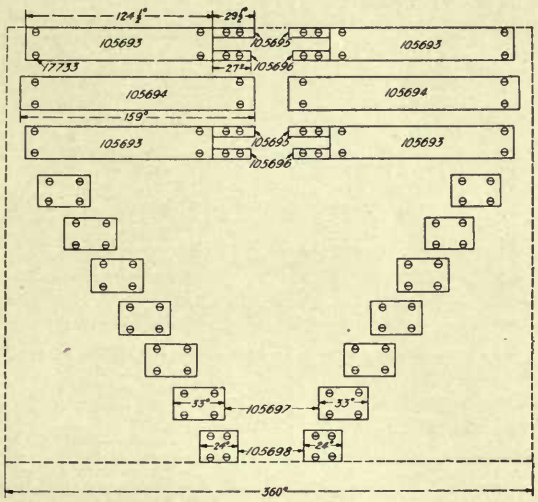
OPERATING CYLINDERS

T-40, T-40-A and T-40-C Controllers



Cat. No.	Description
60446	Complete set of segments, with screws and pins
40484	Screw for segments
41033	Pin for segments

T-42 and T-42-A Controllers



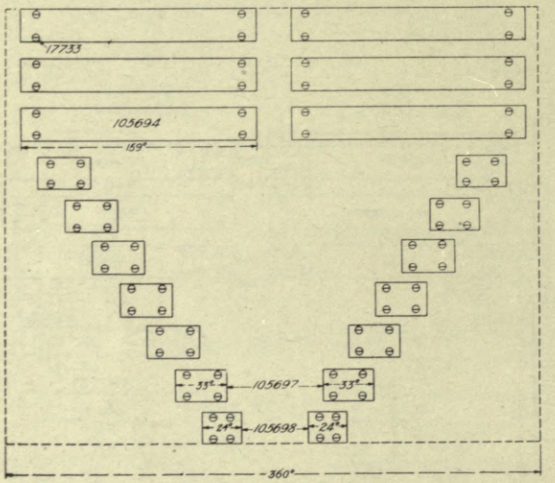
Cat. No.	Description
105699	Complete set of segments, with screws
17733	Screw for segments

CYLINDER SEGMENTS FOR LOCOMOTIVE, CRANE AND HOIST CONTROLLERS

TYPE T CONTROLLERS

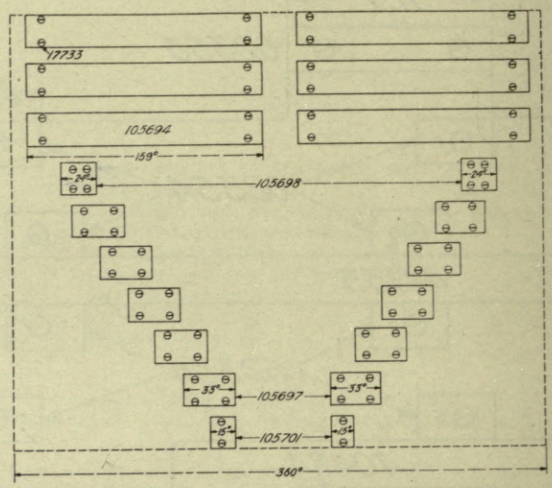
OPERATING CYLINDERS

T-42-C Controller



Cat. No.	Description
105700	Complete set of segments, with screws
17733	Screw for segments . . . . .

T-42-D and T-42-E Controllers



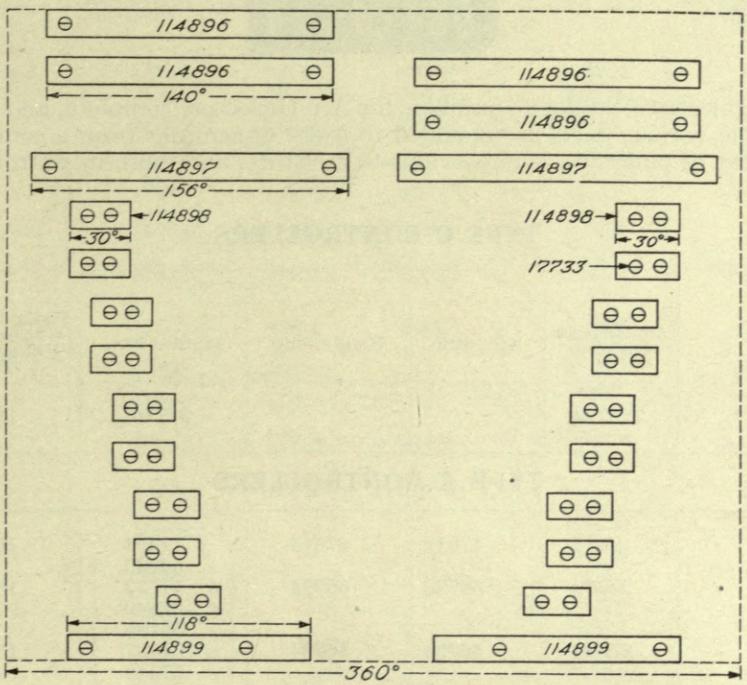
Cat. No.	Description
105702	Complete set of segments, with screws
17733	Screw for segments . . . . .

CYLINDER SEGMENTS FOR LOCOMOTIVE, CRANE AND HOIST CONTROLLERS

TYPE T CONTROLLERS

OPERATING CYLINDERS

T-52 and T-52-A Controllers



Cat. No.	Description
114900	Complete set of segments, with screws
17733	Screw for segments

ARC DEFLECTORS AND PARTS

FOR

Locomotive, Crane and Hoist Controllers

The following tables give catalogue numbers for Arc Deflectors complete, and separately for their insulation parts. The various parts are moulded to exact dimensions from a compound which offers high resistance to heat or puncture, is impervious to moisture, and uniformly strong and tough.

TYPE C CONTROLLERS

Controller	CAT. NO.					
	Arc Deflector Complete	Wide Strip	Narrow Strip	Division Plate	Insulating Bushing for Screw Fastening Deflector to Pole Piece	Misc.
C-205-A	123724			22776	13635	S 123725

TYPE K CONTROLLERS

K-2, K-2-A	17611	17612	17613	14994	13635	
K-6, K-6-A, K-6-B	27539	56793	56794	A 56795 B 51737 C 27540	13635	
K-6-G	27539	56793	56794	A 56795 B 51737 C 27540	13635	
K-8, K-8-A, K-9, K-9-A, K-10, K-10-A	14991	14992	14993	D 14994 C 56756	13635	
K-11, K-11-A, K-11-D	19873	14992	14993	D 14994 C 56756	13635	E 19874
K-12, K-12-A	19876	14992	14993	14994		E 19877
K-13, K-13-A, K-13-C, K-13-E	19924	19925	19926	19928	13635	
K-15, K-15-A	*123726	19925	19926	19928	13635	
	§123727	123728	37936	19928	13635	
K-27, K-27-A, K-27-C	27486	27487	27488	D 14994 C 56756	13635	
K-28, K-28-A, K-28-B, K-28-C, K-28-L	33761	H 33766	I 33767	A 33764 B 33765	13635	J 33762
K-34-E	110073	110075	110076	110077		J 110074
K-35-C, K-35-E	110078	K 110079 L 110080	110081	A 110084 B 110085 C 110082 M 110083		

A–Large.
B–Small.
C–Upper end.
D–Except upper end.
E–Fiber shield plate.
F–Long inside strip.
G–Short inside strip.
H–Long fiber brace for large division plates.
I–Short fiber brace for large division plates.
*Right hand.
§Left hand.
J–Back plate.
K–Outer.
L–Inner.
M–Lower end.
N–Intermediate.
O–Large intermediate.
P–Medium intermediate.
Q–Small, offset on lower side.
R–Small, offset on upper side.
S–Back plate with lining.

ARC DEFLECTORS AND PARTS
FOR
Locomotive, Crane and Hoist Controllers
TYPE R CONTROLLERS

Controller	CAT. NO.					
	Arc Deflector Complete	Wide Strip	Narrow Strip	Division Plate	Insulating Bushing for Screw Fastening Deflector to Pole Piece	Misc.
R-6, R-6-A, R-6-B, R-6-C	22749	22725	22726	19928	13635	
R-9, R-9-A	24320	24321	24322	19636	13635	
R-11, R-11-A, R-11-B, R-12, R-12-A	17642	17643	17644	14994	13635	
R-13, R-13-A	19891	19894		19895	19893	
R-14, R-14-A, R-14-C, R-14-E	17690	17691	17692	A 14994 B 56756	13635	
R-15, R-15-A	19238	19239	19240	A 14994 B 56756	19630	
R-16, R-16-A, R-16-C, R-16-D	21433	21434	21435	14994	19630	
R-17, R-17-A, R-17-F, R-19, R-19-A, R-19-B, R-19-C, R-19-D, R-19-E	17642	17643	17644	14994	13635	
R-21, R-21-A	19891	19894		19895	19893	
R-22, R-22-A, R-22-C, R-22-E, R-22-F	17690	17691	17692	A 14994 B 56756	13635	
R-27, R-27-A, R-27-B, R-27-D, R-27-M	56722	C 56723	D 56724	C 110095 D 19636	19893	
R-27-J	114311	C 56723	D 56724	C 110095 D 19636	19839	
R-28, R-28-A, R-28-P	56856			A 56858 B 56870	13635	E 56857
R-28-F, R-28-N	56890			A 56858 B 56870	13635	E 56857
R-28-G, R-28-V	56856			A 56858 B 56870	13635	E 56857
R-29, R-29-A	17642	17643	17644	14994	13635	
R-32, R-32-A, R-32-B, R-32-G	56722	C 56723	D 56724	C 110095 D 19636	19893	
R-37, R-37-A, R-37-B, R-37-C, R-37-D, R-37-E R-37-F, R-38, R-38-A, R-38-B	17690	17691	17692	A 14994 B 56756	13635	
R-52, R-52-A	124596	124597	124598	19636	13635	
R-53, R-53-A, R-53-B, R-53-C, R-53-D, R-53-G	49071				49072	
R-55, R-55-A	29335	29332	29333	C 104839 D 19895	13635	
R-56-A	110096	110097	110098	19895	13635	
R-60-A, R-60-B, R-60-C	37713	37714	37715	19895	13635	
R-65-A	110099	110507	110508	110509	13635	
R-69, R-69-A, R-69-B,	110529			19745	19893	E 110530
R-70, R-70-A, R-70-B,	124600			19745	19893	E 124601
R-75-A, R-75-A-2, R-75-A-5, R-75-B, R-75-C-5, R-75-E-2, R-75-H, R-76-A, R-76-A-2, R-76-A-5, R-76-B-2				41002		
R-77-A	37713	37714	37715	19895	13635	
R-82, R-82-A, R-82-B	29335	29332	29333	C 104839 D 19895	13635	
R-84, R-84-A, R-84-C, R-84-D	110510			19745	19893	E 110511
R-86, R-86-A, R-86-B, R-86-C, R-86-D, R-86-E, R-86-F	38528	38529	38530	G 14994 F 56756	13635	
R-91, R-91-A	124602	124603	124604	19895	13635	

A–Intermediate and lower end.
B–Upper end.
C–Large.
D–Small.
E–Back plate.
F–Upper and lower ends.
G–Intermediate.

ARC DEFLECTORS AND PARTS

FOR

Locomotive, Crane and Hoist Controllers

TYPE R CONTROLLERS—(Continued)

Controller	CAT. NO. Arc Deflector Complete	Wide Strip	Narrow Strip	Division Plate	Insulating Bushing for Screw Fastening Deflector to Pole Piece	Misc.
R-98, R-98-A, R-99, R-99-A	H 110512 I 110513			33765 33765	13635 13635	E 110514 E 110515
R-109, R-109-A, R-109-B, R-109-C, R-109-D	110516	110518	110519	110520		E 110517
R-112, R-112-A	110521	110523	110524	110520		E 110522
R-113, R-113-A, R-114, R-114-A	110525	110527	110528	110520		E 110526
R-115, R-115-A	124605			19745	19893	E 124606
R-121, R-121-A	110529			19745	19893	E 110530
R-121-B, R-121-C	110531			C 19745 D 110532	19893	E 110530
R-122-A	124654			124658 †124656		E 124655
R-128-A	56856			A 56858 B 56870	13635	E 56857

C–Large
D–Small
A–Intermediate and lower end
E–Back plate
H–Right-hand.
B–Upper end
I–Left-hand.
†Lower end

TYPE T CONTROLLERS

Controller	CAT. NO. Arc Deflector Complete	Division Plate	Back Plate
T-1, T-1-A, T-1-G, T-1-H		110533	
T-1-K, T-1-L, T-1-N, T-1-P, T-1-Q, T-1-R		110533	
T-7, T-7-A		124663	
T-10, T-10-A		110534	
T-10-J, T-10-N, T-10-P		110534	
T-11, T-11-A	None	None	
T-20, T-20-A	None	None	
T-20-B	None	None	
T-20-C	None	None	
T-21, T-21-A		110534	
T-26, T-26-A		110535	
T-27, T-27-A		110534	
T-28, T-28-A		110536	
T-29, T-29-A		110536	
T-33, T-33-A		*110537 †110538 ‡110539 §110540	

Controller	CAT. NO. Arc Deflector Complete	Division Plate	Back Plate
T-34, T-34-A, T-34-E, T-34-F, T-34-G, T-34-L		110541	
T-36, T-36-A		110536	
T-40, T-40-A	110542	110544	110543
T-40-C	110542	110544	110543
T-42, T-42-A		110536	
T-42-C		110536	
T-42-D		110536	
T-42-E		110536	
T-52, T-52-A		104999	

* Upper end.
† Lower end.
‡ Intermediate with bushings.
§ Intermediate without bushings.

HANDLES FOR LOCOMOTIVE, CRANE AND HOIST CONTROLLERS

General Electric Controller handles are made from a special brass alloy or malleable iron forgings—depending on conditions of operation.

Each handle has a catalogue number stamped or cast on it, to assist customers in ordering.

TYPE C CONTROLLERS

Controller	OPERATING HANDLES		REVERSING HANDLES	
	Cat. No.	Material	Cat. No.	Material
C-205-A	27345	Brass	11314	Brass

TYPE K CONTROLLERS

K2-, K-2-A	* 16921	Brass	* 16922 °‡ 35594	Brass Mal. iron
K-6, K-6-A	* 51459	Brass	* 17778	Brass
	° 34400	Mal. iron		
	△11299	Brass		
	† 23911	Brass		
K-6-B	56518	Brass	None	
K-6-G	* 51459	Brass	* 17778	Brass
K-8, K-8-A	* 16921	Brass	* 17778	Brass
K-9, K-9-A	* 16921	Brass	* 17778	Brass
K-10, K-10-A	* 16921	Brass	* 17778 ‡° 33624	Brass Mal. iron
	° 30365	Mal. iron		
	π 56779	Brass		
	△35312	Brass		
	△14430	Brass		
K-11, K-11-A	* 16921	Brass	* 17778	Brass
K-11-D	* 16921	Brass	* 17778	Brass
K-12, K-12-A	* 16921	Brass	* 17778	Brass
K-13, K-13-A	s 38671	Mal. iron	17670	Brass
K-13-C	29123	Mal. iron	None	
K-13-E	s 38671	Mal. iron	17670	Brass
K-15, K-15-A	14419	Mal. iron	51432	Brass
K-27, K-27-A	* 16921	Brass	* 17778	Brass
K-27-C	* 16921	Brass	* 17778	Brass
K-28, K-28-A	* 51459	Brass	* 17778	Brass
	△32431	Brass		
K-28-B	* 51459	Brass	* 17778	Brass
	△32431	Brass		
K-28-C	* 51459	Brass	* 17778	Brass
	△32431	Brass		
K-28-L	* 51459	Brass	* 17778	Brass
	△32431	Brass		
K-34-E	61868	Mal. iron	60916	Steel, D.F.
K-35-C	* 51459	Brass	60916	Steel, D.F.
K-35-E	* 51459	Brass	60916	Steel, D.F.

* Similar mal. iron handles shown on page 177.
° Special malleable iron handle.
△Special.
† Special handle with flat knob.
‡ Includes brass bushing and galvanized iron cap.
s For 1¾ shaft extension.
π Special handwheel.

HANDLES FOR LOCOMOTIVE, CRANE AND HOIST CONTROLLERS

TYPE R CONTROLLERS

Controller	OPERATING HANDLES		REVERSING HANDLES	
	Cat. No.	Material	Cat. No.	Material
R-6, R-6-A	38671	Mal. iron	17670	Brass
R-6-B	56520	Mal. iron	None	
R-6-C	56520	Mal. iron	None	
R-9, R-9-A	51444	Brass	None	
R-11, R-11-A	* 16921	Brass	* 16922	Brass
R-11-B	* 16921	Brass	* 16922	Brass
R-12, R-12-A	* 16921	Brass	* 16922	Brass
R-13, R-13-A	17799	Brass	None	
R-14, R-14-A	* 16921	Brass	* 16922	Brass
R-14, R-14-C	* 16921	Brass	* 16922	Brass
R-14-E	None		* 16922	Brass
R-15, R-15-A	* 16921	Brass	* 16922	Brass
R-16, R-16-A	* 16921	Brass	* 16922	Brass
R-16-C	* 16921	Brass	* 16922	Brass
R-16-D	* 16921	Brass	* 16922	Brass
R-17, R-17-A	* 16921	Brass	* 16922	Brass
R-17-F	* 16921	Brass	* 16922	Brass
R-19, R-19-A	* 16921	Brass	* 16922	Brass
R-19-B	* 16921	Brass	* 16922	Brass
R-19-C	* 16921	Brass	* 16922	Brass
R-19-D	* 16921	Brass	* 16922	Brass
R-19-E	* 16921	Brass	* 16922	Brass
R-21, R-21-A	17799	Brass	None	
R-22, R-22-A	* 16921	Brass	* 16922	Brass
R-22-C	* 16921	Brass	* 16922	Brass
R-22-E	* 16921	Brass	* 16922	Brass
R-22-F	None		* 16922	Brass
R-27, R-27-A	89592	Mal. iron	None	
	B 17799	Brass		
	π 11478	Brass		
R-27-B	89592	Mal. iron	None	
	B 17799	Brass		
R-27-D	89592	Mal. iron	None	
	B 17799	Brass		
R-27-J	△51463	Brass	None	
R-27-M	89592	Mal. iron	None	
	B 17799	Brass		
R-28, R-28-A	89588	Mal. iron	None	
	B 14417	Brass		
	×29187	Brass		
	π 11479	Brass		
+R-28-F	None		None	
R-28-G	89588	Mal. iron	None	
	B 14417	Brass		
R-28-N	△11371	Brass	None	
R-28-P	89588	Mal. iron	None	
	B 14417	Brass		
R-28-V	89588	Mal. iron	None	
	B 14417			
R-29, R-29-A	* 16921	Brass	* 16922	Brass
R-32, R-32-A	89592	Mal. iron	None	
	B 17799	Brass		
R-32-B	89592	Mal. iron	None	
	B 17799	Brass		
R-32-G	89592	Mal. iron	None	
	B 17799	Brass		
R-37, R-37-A	* 16921	Brass	×56752	Brass
			36699	Brass
R-37-B	* 16921	Brass	×56752	Brass

* Similar handles of malleable iron are shown on page 177.
B Brass special.
π Operating wheel, rope drive.
△Marine handle.
×Hand wheel.
+No handle furnished.

HANDLES FOR LOCOMOTIVE, CRANE AND HOIST CONTROLLERS

TYPE R CONTROLLERS

Controller	OPERATING HANDLES		REVERSING HANDLES	
	Cat. No.	Material	Cat. No.	Material
R-37-C	* 16921	Brass	×56752	Brass
R-37-D	* 16921	Brass	×56752	Brass
R-37-E	* 16921	Brass	×56752	Brass
R-37-F	* 16921	Brass	×56752	Brass
R-38, R-38-A	* 16921	Brass	×56752	Brass
R-38-B	* 16921	Brass	×56752	Brass
R-52, R-52-A	51444	Brass	None	
R-53, R-53-A	23912	Mal. iron	None	
	π 61897	Mal. iron		
	π 100129	Brass		
R-53-B	△33440	Brass	None	
R-53-C	△33440	Brass	None	
R-53-D	23912	Mal. iron	None	
R-53-G	23912	Mal. iron	None	
R-55, R-55-A	* 16921	Brass	* 17778	Brass
R-56, R-56-A	23912	Mal. iron	None	
R-60, R-60-A	* 16921	Brass	32330	Brass
R-60-B	* 16921	Brass	32330	Brass
R-60-C	* 16921	Brass	32330	Brass
R-65, R-65-A	34161	Mal. iron	None	
R-69, R-69-A	17799	Brass	None	
R-69-B	17799	Brass	None	
R-70, R-70-A	17799	Brass	None	
R-70-B	17799	Brass	None	
R-75, R-75-A	36536	Mal. iron	None	
	×36319	Cast iron		
R-75-A-2	36536	Mal. iron	None	
	×36319	Cast iron		
R-75-A-5	36536	Mal. iron	None	
	×36319	Cast iron		
R-75-B	36536	Mal. iron	None	
	×36319	Cast iron		
R-75-C-5	36536	Mal. iron	None	
	×36319	Cast iron		
R-75-E-2	36536	Mal. iron	None	
	×36319	Cast iron		
R-75-H	36536	Mal. iron	None	
	×36319	Cast iron		
R-76, R-76-A	36536	Mal. iron	None	
	×36319	Cast iron		
R-76-A-2	36536	Mal. iron	None	
	×36319	Cast iron		
R-76-A-5	36536	Mal. iron	None	
	×36319	Cast iron		
R-76-B-2	36536	Mal. iron	None	
	×36319	Cast iron		
R-77, R-77-A	* 16921	Brass	32330	Brass
R-82, R-82-A	* 16921	Brass	* 17778	Brass
R-82-B	* 16921	Brass	* 17778	Brass
	=42421	Brass		
R-84, R-84-A	17799	Brass	None	
R-84-C	17799	Brass	None	
R-84-D	17799	Brass	None	
R-86, R-86-A	* 16921	Brass	36699	Brass
			×56752	Brass
R-86-B	* 16921	Brass	36699	Brass
			×56752	Brass
R-86-C	* 16921	Brass	36699	Brass
			×56752	Brass
R-86-D	* 16921	Brass	36699	Brass
			×56752	Brass

* Similar handles of malleable iron are shown on page 177.
×Hand wheel.
π Operating wheel, rope drive, special.
△Marine handle.
=Special.

HANDLES FOR LOCOMOTIVE, CRANE AND HOIST CONTROLLERS

TYPE R CONTROLLERS

Controller	OPERATING HANDLES		REVERSING HANDLES	
	Cat. No.	Material	Cat. No.	Material
R-86-E	* 16921	Brass	36699 ×56752	Brass Brass
R-86-F	* 16921	Brass	36699 ×56752	Brass Brass
R-91, R-91-A	* 16921	Brass	32330	Brass
R-98, R-98-A	17799	Brass	None	
R-99, R-99-A	33941	Mal. iron	None	
R-109, R-109-A	60917 =110053	Mal. iron Brass	51529	Brass
R-109-B	60917 =110053	Mal. iron Brass	51529	
R-109-C	107644 =110053	Mal. iron Brass	51529	
R-109-D	60917	Mal. iron	51529	
R-112, R-112-A	60917	Mal. iron	51529	Brass
R-113, R-113-A	60917	Mal. iron	51529	Brass
R-114, R-114-A	60917	Mal. iron	51529	Brass
R-115, R-115-A	17799	Brass	None	
R-121, R-121-A	17799	Brass	None	
R-121-B	17799	Brass	None	
R-121-C	17799	Brass	None	
R-122, R-122-A	23912	Mal. iron	None	
R-128, R-128-A	89588 B 14417	Mal. iron	None	

* Similar handles of malleable iron are shown on page 177.
= Special.
B Brass special.

HANDLES FOR LOCOMOTIVE, CRANE AND HOIST CONTROLLERS

TYPE T CONTROLLERS

Controller	OPERATING HANDLES		REVERSING HANDLES	
	Cat. No.	Material	Cat. No.	Material
T-1, T-1-A	89588	Mal. iron	None	
	B 14417	Brass		
	π 11479	Brass		
	△22976	Brass		
T-1-G	89588	Mal. iron	None	
	B 14417	Brass		
	π 11479	Brass		
T-1-H	89588	Mal. iron	None	
	B 14417	Brass		
	π 11479	Brass		
T-1-K	89588	Mal. iron	None	
	B 14417	Brass		
	π 11479	Brass		
	△22976	Brass		
T-1-L	π 11479	Brass	None	
T-1-P	π 11479	Brass	None	
T-7, T-7-A	51444	Brass	None	
T-10, T-10-A	89592	Mal. iron	None	
	B 17799	Brass		
	÷22975	Brass		
	×33939	Brass		
T-10-J	89592	Mal. iron	None	
T-10-N	B 17799	Brass		
T-11, T-11-A	35596	Brass	None	
T-20, T-20-A	35339	Brass	None	
T-20-B	51530	Brass	None	
T-20-C	×68976	Brass	None	
T-21, T-21-A	17799	Brass	None	
T-26, T-26-A	17799	Brass	None	
T-27, T-27-A	17799	Brass	None	
T-28, T-28-A	29123	Mal. iron	None	
T-29, T-29-A	58416	Mal. iron	None	
T-33, T-33-A	* 51459	Brass	* 17778	Brass
T-34, T-34-A	89588	Mal. iron	None	
T-34-E		Brass		
T-34-F	B 14417			
T-36, T-36-A	29123	Mal. iron	None	
T-40, T-40-A	29700	Mal. iron	None	
T-40-C	π 49240	Brass	None	
T-42, T-42-A	29123	Mal. iron	None	
T-42-C	29123	Mal. iron	None	
T-42-D	29123	Mal. iron	None	
T-42-E	29123	Mal. iron	None	
T-52, T-52-A	17799	Brass	None	

* Similar handles of malleable iron are shown on page 177.
B Brass special.
π Operating wheel, rope drive.
△Special.
÷Special handle with extension shaft socket.
×Hand wheel.

HANDLES FOR LOCOMOTIVE, CRANE AND HOIST CONTROLLERS

MALLEABLE IRON HANDLES

Special malleable iron controller handles are furnished to meet the demand for handles less expensive and less liable to loss by theft than the corresponding standard brass handles with which they are interchangeable.

For protection of the iron from rust, these handles are sherardized and will withstand the standard marine acid test. They are provided with renewable brass bushings which prevent wear of the controller shaft.

OPERATING		REVERSING	
Malleable Iron Handle Cat. No.	Interchangeable With Brass Handle Cat. No.	Malleable Iron Handle Cat. No.	Interchangeable with Brass Handle Cat. No.
30365	16921	35594	16922
34400	51459	33624	17778

BRASS BUSHINGS FOR MALLEABLE IRON CONTROLLER HANDLES

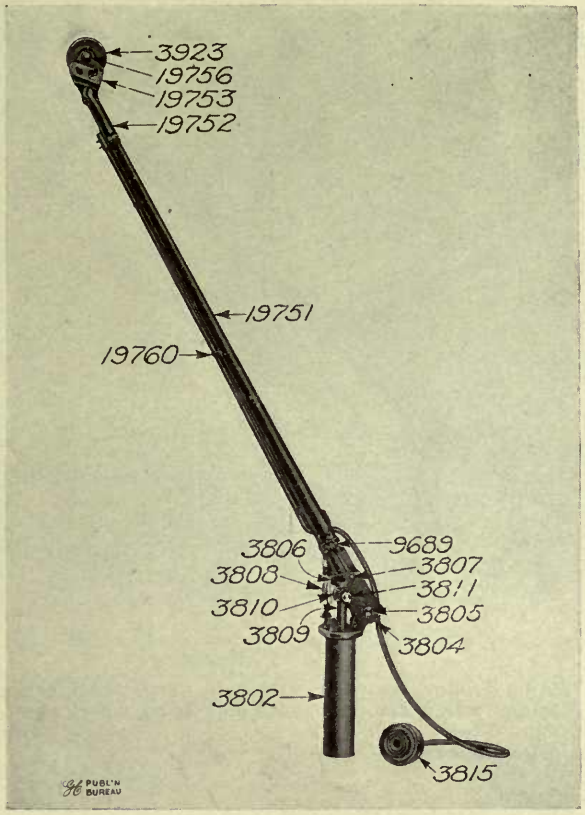
* Brass Bushing Cat. No.	For Use with Mall. Iron Controller Handle Cat. No.
65952	30365
65953	34400
38139	35594
38139	33624

The above brass bushings prevent wear on the controller shaft. They are easily renewable and are placed in the controller handles with a pressing fit.

* Includes two halves.

UNION STANDARD TROLLEYS

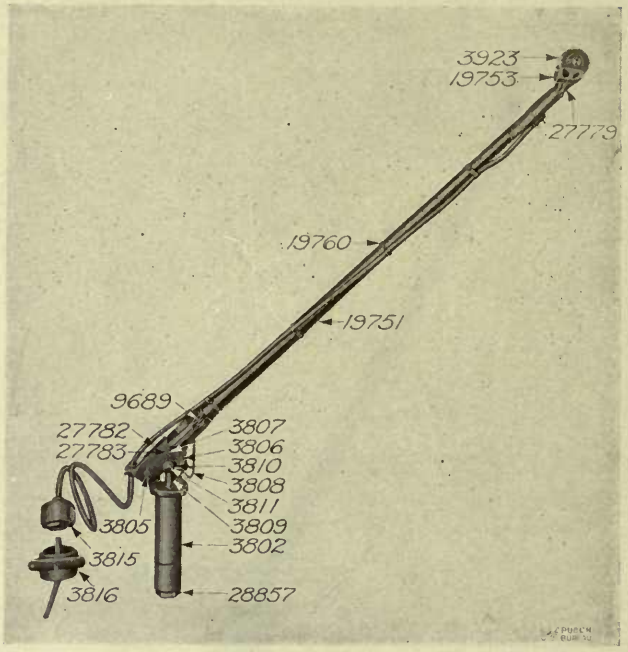
FORM D



Cat. No.	Description
3800	Form D Mining Trolley, complete, with pole, harp, wheel, contact blocks and protection cap
19751	Wood pole, plain (specify length)
19752	Pole head, with screws
19753	Harp
19756	Wheel axle pin
19754	Harp swivel screw
19755	Washer for swivel screw
19757	Cotter for wheel axle pin
3923	Trolley wheel
3801	Trolley base, complete
3802	Trolley base
3803	Bottom nut for base
3804	Pole socket
3805	Pole socket axle pin
16064	Cotter for socket axle pin
9689	Clamp screw for pole socket
3806	Hook for pole socket
3807	Pin for pole socket hook
19757	Cotter for pole socket hook pin
3808	Chain, with rings
3809	Plunger
3810	Cross head for plunger
3811	Cap screw for cross head
3812	Stop nut for plunger
3813	Rubber buffer for stop nut
3814	Compression spring
3815	Movable cable contact block, complete
3816	Stationary, controller cable contact block complete
13687	Soft rubber bushing for No. 3816
9887	Cap screw for No. 3816
3817	Protection cap for No. 3816
19760	Brass clips for cable
3818	Bracket for cable
10430	Screw for bracket
5250	Clamp screw for pole head

UNION STANDARD TROLLEYS

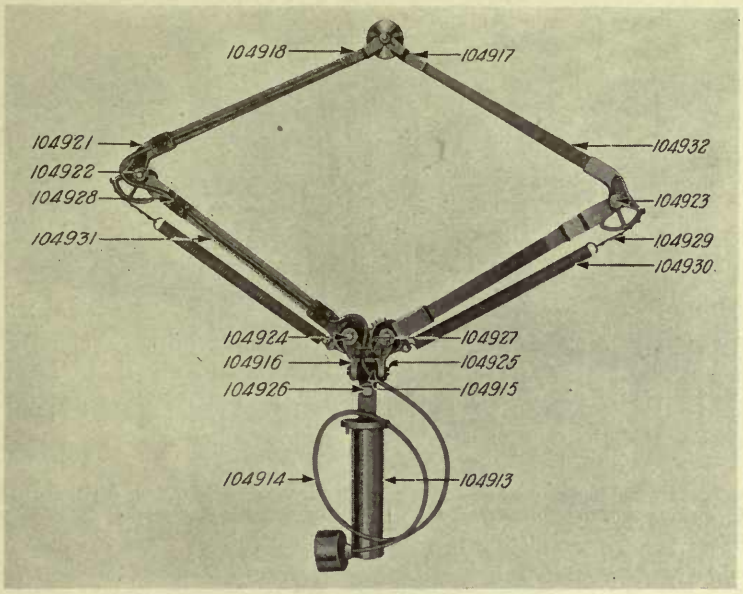
FORMS D-4 AND D-5



Cat. No.	Description
27778	Form D-4 Mining Trolley, complete, with pole, harp, wheel, contact blocks and protection cap
38597	Form D-5 Mining Trolley, complete, with pole, harp, wheel, contact blocks and protection cap
19751	Wood pole, plain, 6 feet . . . . . *(Other sizes, prices according to length.)*
27779	Pole head with screws . . . . .
19753	Harp, less axle pin . . . . .
19756	Wheel axle pin . . . . .
19754	Harp swivel screw . . . . .
27780	Washer for swivel screw . . . . .
19757	Cotter for wheel axle pin . . . . .
3923	Trolley wheel . . . . .
27781	Trolley base, complete, less pole and cables, for Form D-4 mining trolley . . . . .
108464	Trolley base, complete, less pole and cables, for Form D-5 mining trolley . . . . .
3802	Trolley base or cylinder, for Form D-4 mining trolley . . . . .
38598	Trolley base or cylinder, for Form D-5 mining trolley . . . . .
28857	Bottom nut for base . . . . .
27782	Pole socket . . . . .
3805	Pole socket axle pin . . . . .
16064	Cotter for socket axle pin . . . . .
9689	Clamp screw for pole socket . . . . .
3806	Hook for pole socket . . . . .
3807	Pin for pole socket hook . . . . .
19757	Cotter for pole socket hook pin . . . . .
3808	Chain with rings . . . . .
3809	Plunger pipe . . . . .
3810	Cross head for plunger . . . . .
3812	Stop nut for plunger . . . . .
3811	Cap screw for cross head . . . . .
3813	Rubber buffer for stop nut . . . . .
3814	Compression spring, for Form D-4 mining trolley . . . . .
38599	Compression spring, for Form D-5 mining trolley . . . . .
3815	Movable cable contact block, complete . . . . .
3816	Stationary controller cable contact block, complete . . . . .
13687	Soft rubber bushing for No. 3816 . . . . .
9887	Cap screw for No. 3816 .. . . . .
3817	Protection cap for No. 3816 . . . . .
19760	Brass clips for cable . . . . .
27783	Washer for pole hook pin . . . . .
5250	Clamp screw for pole head . . . . .

UNION STANDARD TROLLEYS

FORM N

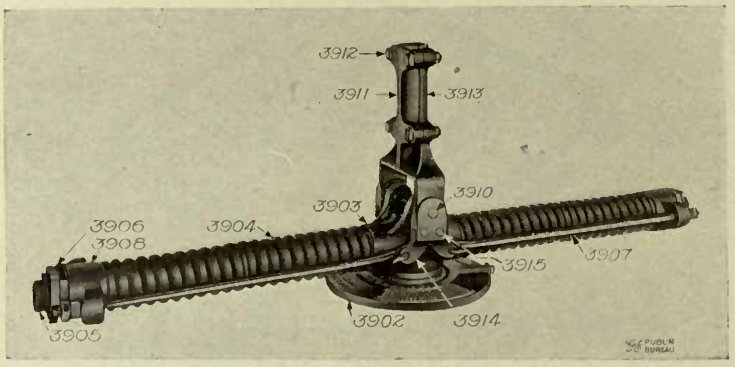


Cat. No.	Description
104912	Trolley, complete
104913	Base
104914	Cable, complete, with block
104915	Inside swivel
104916	Outside swivel
104917	Outside trolley fork
104918	Inside trolley fork
104919	Right-hand gear socket
104920	Left-hand gear socket
104921	Hinge cam
104922	Hinge fork
104923	Hinge pin with cotters
104924	Gear pin with cotters
104925	Swivel pin with cotters
104926	Hinge bolt and nut
104927	Swivel cable cleat
104928	Bar cable cleat
104929	Chain
104930	Tension spring
104931	Lower bar
104932	Upper bar

UNION STANDARD TROLLEYS

* No. 1 TROLLEY BASE AND FORM 6 HARP AND WHEEL

Approximate Weight, 104 Lb.



* The maximum length of pole to allow of successful operation of this base is 13 feet. If longer pole is desired, the General Electric Company must decline the responsibility for the successful operation of the trolley. Poles 1½ in. diameter at base.

By adjusting the compression springs, the pressure on the trolley wire may be varied from 12 to 25 lb., with a 12 ft. pole, standard harp, and Form 6 wheel, at an angle of 45 degrees.

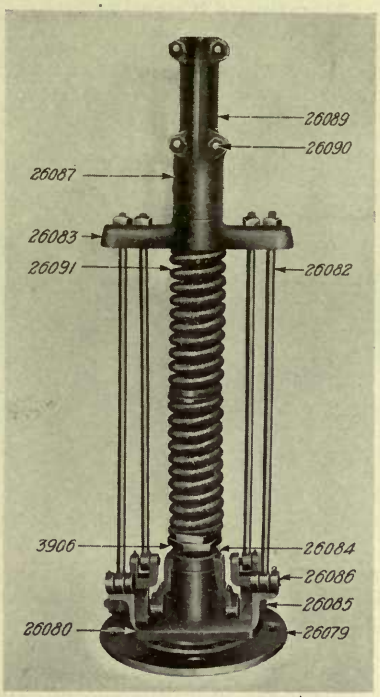
Cat. No.	Description
3901	Trolley base, without pole
120400	Form 40-A trolley wheel (standard low speed)
3918	Form 6 trolley harp (standard low speed) takes Form 40-A wheel
	‡ Steel trolley poles (give length of pole)
	Repair parts for Cat. No. 3901
3902	Stand or foot, with terminal binding screws
3903	Swivel
3904	Compression spring (4 required)
3905	Spring guide (2 required)
3906	Nut for spring guide (4 required)
3907	Side rod, with nuts (4 required)
3908	End yoke (2 required)
3909	Pole socket, complete, with legs and pole clamp
3910	Pole socket axle pin, with cotter (2 required)
3911	Pole socket clamp
3912	Bolt and nut for pole clamp (4 required)
3913	Pole socket body
3914	Pole socket leg (2 required)
3915	Pole socket leg pin, with cotter (4 required)
121965	Brass washer for foot

The U. S. 1 Base is used only where the trolley pole cannot be reversed by swiveling.

‡ In ordering trolley poles care should be taken to state whether the specified length is the length of pole alone or pole equipment. The length of a pole equipment is taken from butt of pole to center of wheel.

UNION STANDARD TROLLEYS

No. 2 TROLLEY BASE AND FORM 6 HARP AND WHEEL



This is a modification of the No. 1 trolley base and is constructed in the same substantial manner.

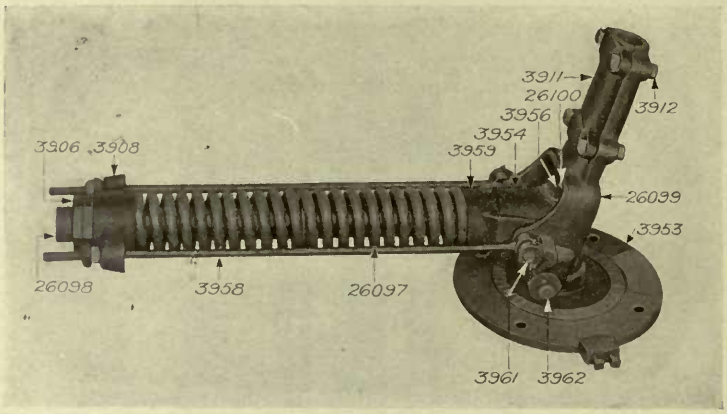
Cat. No.	Description
3932	Trolley base, without pole
120400	Form 40-A trolley wheel
3918	Form 6 trolley harp, takes Form 40-A wheel
	‡ Steel trolley poles (give length of poles)
	Repair parts for Cat. No. 3932
26079	Stand or foot, with terminal binding screws
26080	Swivel
26081	Spring guide
3906	Nut for spring guide (2 required)
26082	Side rod with nut (4 required)
26083	Upper end yoke
26084	Lower end yoke
26085	Pole socket axle pin with cotter (2 required)
26086	Side rod pin with cotter (4 required)
26087	Pole socket, complete
26088	Pole socket body
26089	Pole socket clamp
26090	Bolt and nut for clamp (4 required)
26091	Compression spring (2 required)

‡ In ordering trolley poles care should be taken to state whether the specified length is the length of pole alone or pole equipment. The length of a pole equipment is taken from butt of pole to center of wheel.

UNION STANDARD TROLLEYS

* No. 6 TROLLEY BASE AND FORM 6 HARP AND WHEEL

Approximate Weight, 82 Lb.



* The maximum length of pole to allow of successful operation of this base is 13 feet. If longer pole is desired, the General Electric Company must decline the responsibility for the successful operation of the trolley. Poles 1½ in. diameter at base.

By adjusting the compression spring the pressure on the trolley wire may be varied from 10 to 30 lb., with a 12 ft. pole, standard harp and Form 6 wheel at an angle of 45 degrees.

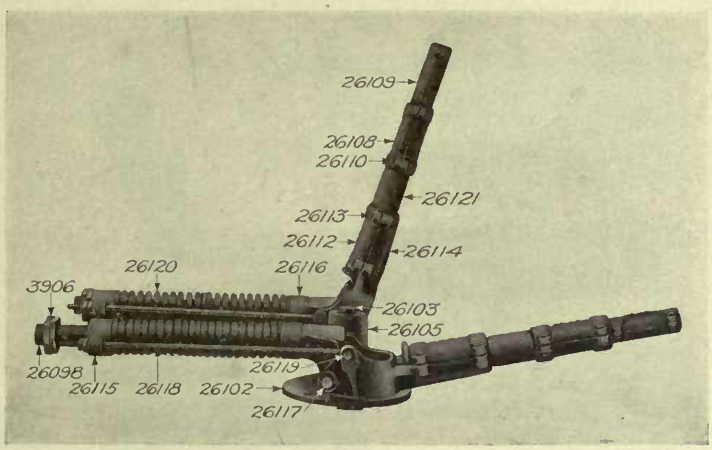
Cat. No.	Description
3934	Trolley base, without pole
120400	Form 40-A trolley wheel (standard low speed)
3918	Form 6 trolley harp (standard low speed) takes Form 40-A wheel
	‡ Steel trolley pole
	Repair parts for Cat. No. 3934
3953	Stand or foot, with terminal binding screws
3954	Swivel with brass bushing
26096	Brass bushing for swivel
26097	Compression spring (2 required)
26098	Spring guide
3906	Nut for spring guide (2 required)
3958	Side rod with nuts (2 required)
3961	Side rod pin with cotter (2 required)
3960	Pole socket, complete
26099	Pole socket body
3911	Pole socket clamp
3912	Bolt and nut for clamp (4 required)
3962	Pole socket axle pin with cotters
3956	Brass washer for stand or foot
26100	Cap screw for stand or foot
3959	Buffer
3908	End yoke

‡ In ordering trolley poles care should be taken to state whether the specified length is the length of pole alone or of pole equipment. The length of a pole equipment is taken from butt of pole to center of wheel.

UNION STANDARD TROLLEYS

* No. 7 TROLLEY BASE AND FORM 6 HARP AND WHEEL

Approximate Weight, 197 Lb.



* The maximum length of pole to allow of successful operation of this base is 12 feet. If longer pole is desired, the General Electric Company must decline the responsibility for the successful operation of the trolley. Poles 1½ in. diameter at base.

By adjusting the compression springs the pressure on the trolley wires may be varied from 10 to 30 lb., with a 12 ft. pole standard harp and Form 6 wheel at an angle of 45 degrees.

Cat. No.	Description
26101	Trolley base (double), without poles
120400	Form 40-A trolley wheel (standard low speed)
3918	Form 6 trolley harp (standard low speed) takes Form 40-A wheel
	‡ Steel trolley pole
	Repair parts for Cat. No. 26101
26102	Stand or foot
26103	Swivel pin for stand or foot
26104	Brass bushing for swivel pin
26105	Swivel or frame, with brass bushing
26106	Brass bushing for swivel
26107	Upper pole socket, complete
26108	Upper pole socket clamp (large)
26109	Upper pole socket clamp (small)
26110	Upper pole socket clamping bolt and nut
26111	Lower pole socket, complete
26112	Lower pole socket clamp
26113	Lower pole socket bolt and nut
26114	Lower pole socket body
26115	End yoke
3906	Nut for spring guide
26116	Buffer
26117	Pole socket axle pin
26118	Side rod, with nuts
26119	Side rod pin, with cotter
26098	Spring guide
26120	Compression spring
26121	Insulator section
26122	Brass washer for swivel pin

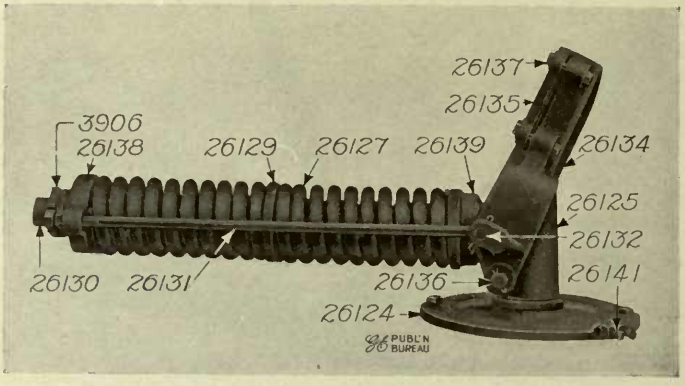
The U. S. 7 Base is for use with double trolley metallic return circuit. The distance between pole centers is 18 inches.

‡ In ordering trolley poles care should be taken to state whether the specified length is the length of pole alone or of pole equipment. The length of a pole equipment is taken from butt of pole to center of wheel.

UNION STANDARD TROLLEYS

* No. 8 TROLLEY BASE AND FORM 6 HARP AND WHEEL

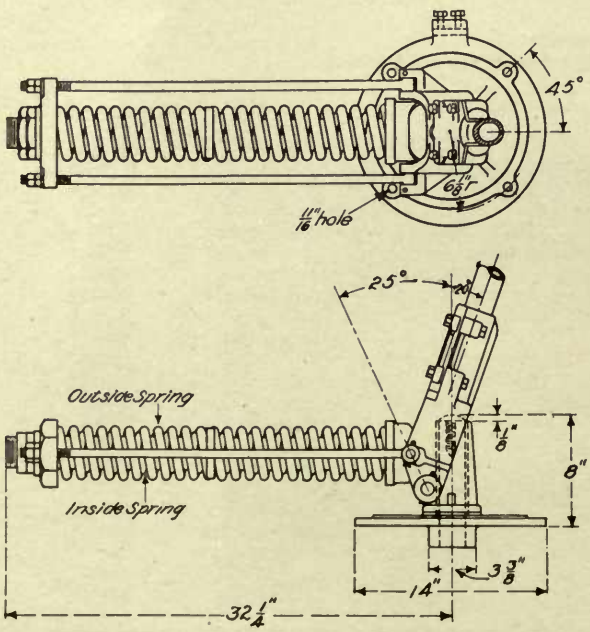
Approximate Weight, 173 Lb.



* The maximum length of pole to allow successful operation of this base is 18 feet. If longer pole is desired, the General Electric Company must decline the responsibility for the successful operation of the trolley. Poles 2 in. diameter at base.

By adjusting the compression spring the pressure on the trolley wire may be varied from 25 to 45 lb. with a 15 ft. pole, Form 12 harp and Form 17 wheel at an angle of 45 degrees.

DIMENSIONS



Cat. No.	Description
26123	Trolley base, without pole
120400	Form 40-A trolley wheel (standard low speed)
3918	Form 6 trolley harp (standard low speed) takes Form 40-A wheel
	‡ Steel trolley pole
	Repair parts for Cat. No. 26123
26124	Stand or foot, with terminal binding screw
26125	Swivel, with bushing
26126	Brass bushing for swivel
26127	Compression spring (large) (2 required)
26128	Compression spring (small) (2 required)
26129	Washer for springs
26130	Spring guide
3906	Nut for spring guide (2 required)
26131	Side rod with nuts (2 required)
26132	Side rod pin, with cotter (2 required)
26133	Pole socket, complete
26134	Pole socket body
26135	Pole socket clamp
26136	Pole socket axle pin, with cotters
26137	Bolt and nut for pole socket (4 required)
26138	End yoke
26139	Buffer yoke
26140	Stop pin for stand or foot
26141	Connecting clamp screw for stand or foot

The U. S. 8 base is designed for use only with extra long poles or when extra heavy upward pressure is required.

‡ In ordering trolley poles, care should be taken to state whether the specified length is the length of pole alone or of pole equipment. The length of a pole equipment is taken from butt of pole to center of wheel.

MAGNETIC BLOWOUT SWITCHES

TYPE MS

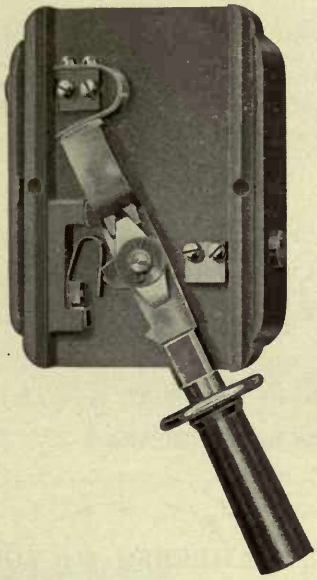
Type MS switches are small, compact and thoroughly reliable. All parts are readily accessible for repair and inspection.

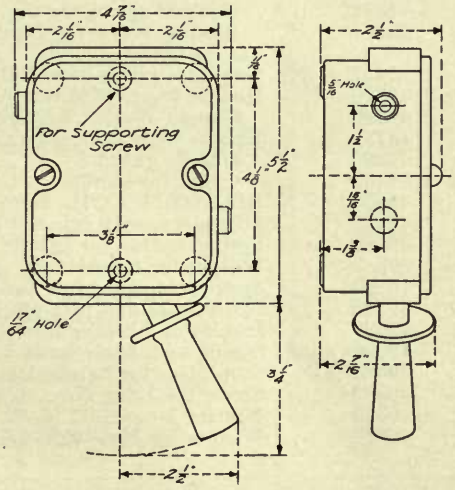
In these switches the arc is definitely localized and quickly ruptured by the magnetic blowout and snap action of the switches.

The switch consists of a neat, substantial metal box enclosing a moulded compound case or chute to which the lever carrying the handle and contact is pivoted. All live parts are thoroughly protected and the moulded compound used in the chute is not affected by any service temperature.

TYPE MS-2 FORM A

15 AMPERES, 600 VOLTS





Dimensions

The upper left-hand terminal of this switch is the positive terminal. The switch is held in its last thrown position by the trigger spring at the lower left-hand corner; this spring also gives a positive snap action in opening the switch.

MAGNETIC BLOWOUT SWITCHES

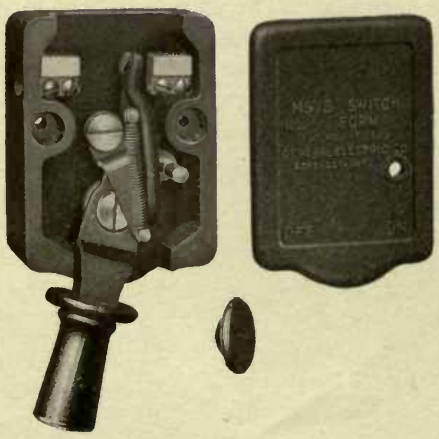
TYPE MS-2 FORM A

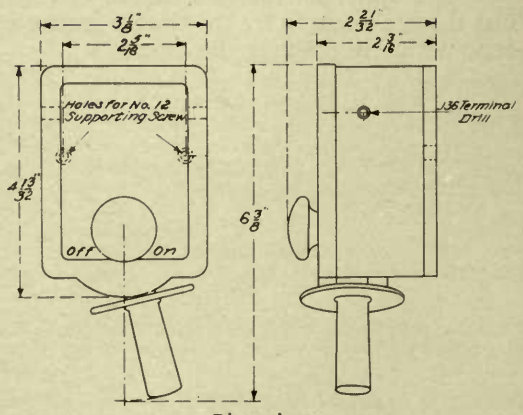
Cat. No.	Description
30421	MS-2 Form A Magnetic Blowout Switch, complete

REPAIR PARTS

49357	BOX CASTING
49397	Cover for box casting, with arc chute cover
49398	Arc chute cover with rivets
48312	Screw fastening cover to box casting and arc chute in position (14–24, 1¾ in. r.h. blued)
49375	Bushing for leads for box casting
49399	ARC CHUTE body
49377	Terminal block, upper, with contact spring
49401	Terminal block, lower
49378	Contact spring for No. 49377
23261	Binding screw for Nos. 49377, 49401 and screw fastening contact spring in position (8–32, ¼ in. r.h. blued)
1657	Screw fastening Nos. 49377, 49401 to arc chutes (8–32, ⅜ in. f.h.)
49379	Handle lever, with copper contact
49380	Copper contact with rivets
49381	Handle with stud, collar and guard
49382	Handle guard
49383	Collar for handle
49400	BLOWOUT COIL, complete
49385	Pole piece, with fulcrum pin for handle lever
49386	Spring washer for handle lever
49387	Washer for fulcrum pin ($\frac{13}{32}$ in. by ¾ in. by 0.034 in.)
10110	Spring cotter for fulcrum pin ($\frac{5}{64}$ in. by ½ in.)
49388	Screw fastening pole piece in position (14–24, ¾ in. f.h. brass)
49389	Insulation bushing for No. 49388
49390	Spring for handle lever
49391	Stop plate for handle lever
49392	Screw fastening Nos. 49390, 49391 to arc chute (6–32, ½ in. r.h.)
49393	Nut for No. 49392 (6–32, sq. brass)
35829	Washer for No. 49392 ($\frac{5}{32}$ in. by $\frac{5}{16}$ in. by 0.030 in. brass)

TYPE MS-5 FORM B, 15 AMPERES, 600 VOLTS





Dimensions

MAGNETIC BLOWOUT SWITCHES

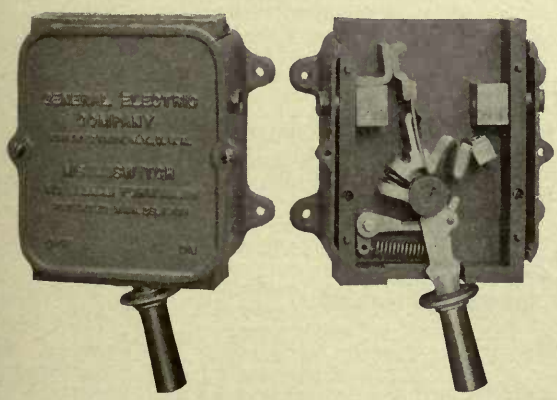
*TYPE MS-5 FORM B

REPAIR PARTS

Cat. No.	Description
111784	SWITCH BOX
111785	Cover
49460	Back plate for switch box
4011	Screw fastening No. 49460 to box (No. 6, $\frac{5}{8}$ in. f.h.)
49461	Terminal block, right-hand
111786	Terminal block, left-hand
23691	Binding screw for terminal blocks (8–32, $\frac{1}{2}$ in. r.h. blued)
58736	Screw fastening terminal blocks to box (8–32, $\frac{5}{16}$ in. f.h.)
49463	Blowout coil, wound, complete
111787	Outer pole piece with bearing and terminal posts
49465	Inner pole piece with blowout coil core
10076	Screw fastening No. 111787 to blowout coil core (10–32, $\frac{3}{8}$ in. f.h.)
49466	Mica insulation between inner pole piece and box
111788	Contact arm with copper contact and spring post
111789	Copper contact
111790	Operating lever with handle, stud and guard
100440	Handle
100441	Handle guard
111791	Bearing post for contact arm
111792	Bearing screw for contact arm and operating lever (10–32, $1\frac{11}{64}$ in. sp'l)
111793	Secondary operating lever with pin and spring post
111794	Tension spring for secondary operating lever and contact arm (31 turns, 0.036 in. steel music wire, copper plated)
111795	Bearing post for No. 111793
111796	Bearing screw for No. 111793 (10–32, $\frac{5}{16}$ in. sp'l)
30511	Washer for No. 111796 (0.199 in. by $\frac{3}{4}$ in. by 0.0625 in.)
49479	Knob holding cover in position
111797	Stud for No. 49479 (14–24, $1\frac{7}{8}$ in. long)
48385	Nut for No. 111797 (14–24, $\frac{3}{16}$ in. thick, $\frac{1}{2}$ in. across flats hex. cham. one side brass)
110624	Positive lock washer for No. 48385 ($\frac{9}{32}$ in. by $\frac{9}{16}$ in. by $\frac{5}{64}$ in. thick)

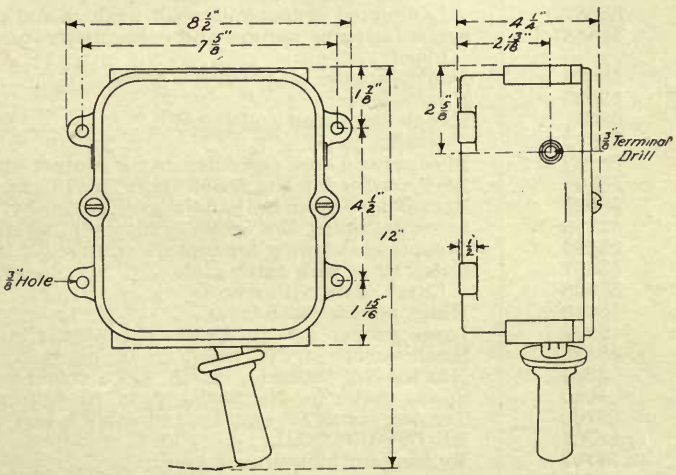
*The MS-5, Form B Switch is listed for convenience of customers in ordering repair parts.

TYPE MS-8 FORM A, 200 AMPERES, 600 VOLTS



Enclosed

With Cover Removed



Dimensions

The Main Circuit Switch MS-8-A is suitable for equipments not exceeding 200 horse power.

MAGNETIC BLOWOUT SWITCHES

TYPE MS-8 FORM A

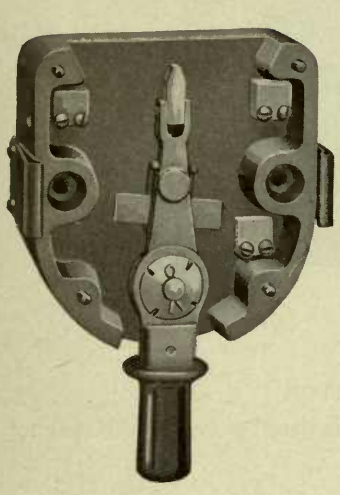
This switch is of the quick-break type, and has split fingers supported by springs in such a manner that in closing, a wiping motion is imparted to them, tending to clean the surfaces and insure good electrical contact.

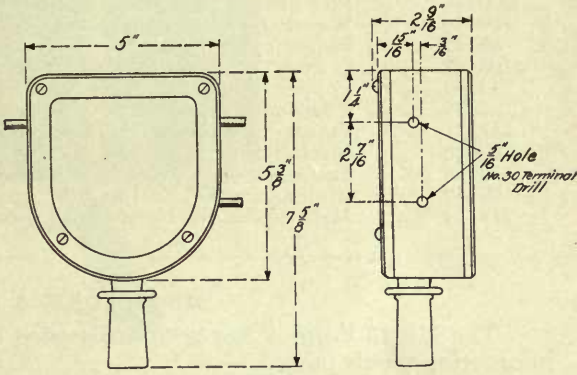
Cat. No.	Description
36881	MS-8 Form A Magnetic Blowout Switch, complete
	REPAIR PARTS
58666	Cover for box casting
49412	Screw fastening cover to box casting ($\frac{5}{16}$ in.–18, $\frac{5}{8}$ in. r.h. blued)
58667	Bushing for leads for box casting
58668	ARC CHUTE, complete
58669	Front plate
58670	Back plate
58671	Side plate with pins, right-hand
58672	Side plate with pins, left-hand
58673	Bottom plate
44077	Screw fastening bottom plate to back and side plates (10–32, $\frac{7}{8}$ in. f.h.)
49419	Screw fastening arc chute to box casting (14–24, $2\frac{1}{4}$ in. fill. h.)
58674	Terminal block, right-hand, with stud and bushing
58675	Terminal block, left-hand, with contact tip and bushing
58676	Contact tip, for No. 58675
22345	Screw fastening No. 58676 to block (14–24, $\frac{1}{2}$ in. f.h. brass)
58677	Bushing for terminal blocks
32895	Binding screw for terminal blocks and screw fastening No. 58675 in position (14–24, $\frac{3}{4}$ in. f.h. blued)
2028	Screw fastening No. 58674 in position (14–24, $\frac{5}{8}$ in. f.h.)
58680	Terminal post
58678	Nut for terminal block stud and terminal post ($\frac{1}{2}$ in.–13, $\frac{3}{16}$ in. thick, hex. brass cham. both sides)
58679	Lock washer for No. 58678 ($\frac{17}{32}$ in. by 1 in. by 0.10 in. ph. brz.)
58681	Nut for terminal post ($\frac{1}{2}$ in.–13, hex. brass cham. one side)
58682	Contact lever with catch plate
58683	Catch plate
58684	Screw fastening No. 58683 to lever (6–32, $\frac{3}{8}$ in. f.h. blued)
58685	CONTACT FINGERS, complete, with springs and laminated connections
58686	Contact finger, with rivets
58687	Laminated connections with washers and rivets
58688	Screw fastening springs and connections to contact lever and terminal post (10–32, $\frac{1}{2}$ in. f.h. blued)
58689	Double washer plate for No. 58688
58690	Handle lever
58691	Handle with stud and guard
58692	Handle guard
58693	Blowout coil core and fulcrum for contact and handle levers
58694	Lock washer for No. 58693 ($\frac{21}{32}$ in. by $1\frac{1}{8}$ in. by 0.10 in. ph. brz.)
58695	Retaining washer for handle lever ($\frac{5}{16}$ in. by $1\frac{3}{4}$ in. by $\frac{3}{16}$ in. thick, countersunk hole)
42595	Screw fastening No. 58695 to blowout coil core ($\frac{5}{16}$ in.–18, $\frac{5}{8}$ in. f.h. blued)
58696	Compression spring for contact and handle levers ($3\frac{1}{2}$ turns, 0.091 in. ph. brz. wire)
58697	Catch lever with catch plate
58698	Catch plate with rivets
58699	Hinge pin for catch lever
9997	Large washer for No. 58699 ($\frac{13}{32}$ in. by $\frac{3}{4}$ in. by 0.060 in. brass)
48135	Small washer for No. 58699 ($\frac{21}{64}$ in. by $\frac{5}{8}$ in. by 0.060 in. brass)
3884	Nut for No. 58699 ($\frac{5}{16}$ in.–18, $\frac{1}{4}$ in. thick, hex. brass cham. both sides)
4030	Spring cotter for No. 58699 ($\frac{3}{32}$ in. by $\frac{5}{8}$ in.)
58700	Tension spring for contact and catch levers
58701	BLOWOUT COIL
58702	Bushing for blowout coil core
58703	Fiber sleeve for bushing ($\frac{7}{8}$ in. by 1 in. by $\frac{3}{4}$ in. long)
58704	Pole piece
58705	Washer between pole piece and blowout coil ($1\frac{1}{16}$ in. by 3 in. by 0.010 in. mica)
51726	Screw fastening pole piece to blowout coil core ($\frac{5}{16}$ in.–18, $\frac{5}{8}$ in. f.h.)
56743	Screw fastening pole piece to arc chute (14–24, $\frac{1}{2}$ in. f.h.)
58706	Insulation between blowout coil and arc chute

MAGNETIC BLOWOUT SWITCHES

TYPE MS-13

15 AMPERES—600 VOLTS





Dimensions

The MS-13 Form B is the standard setting and tripping switch. The switch is normally held in its central position by the action of a strong spring.

Cat. No.	Description
112147	Type MS-13, Form B magnetic blowout switch, complete

REPAIR PARTS

119564	Switch box
100435	Front cover for switch box
100436	Back cover for switch box
4011	Screw fastening No. 100436 to box (No. 6, 5/8 in. f.h.)
119565	Spring catch for No. 100435
119566	Guard for No. 119565
10259	Long screw fastening Nos. 119565, 119566 to box (6–32, 5/8 in. r.h. blued)
119567	Short screw fastening Nos. 119565, 119566 to box (No. 4, 1/32 in. r.h. blued)
119568	Washer for No. 10259 (5/32 in. by 5/16 in. by 0.034 in.)
119569	Nut for No. 10259 (6–32, 1/8 in. thick, 5/16 in. across flats hex. cham. one side)
100437	Terminal block, upper
100438	Terminal block, lower
14434	Binding screw for Nos. 100437, 100438 (8–32, 3/8 in. r.h. blued)
1193	Screw fastening terminal blocks to switch box (8–32, 1/2 in. f.h.)
119570	Handle lever with handle, stud, guard and contact
100440	Handle
100441	Handle guard
100442	Copper contact with rivets
100443	Bearing post for handle lever
17352	Nut for No. 100443 (3/8 in. –16, 3/16 in. thick, 11/16 in. across flats hex. brass cham. both sides)
21392	Washer for No. 100443 (13/32 in. by 3/4 in. by 0.0625 in.)
49386	Spring washer for No. 100443
110774	Spring cotter for No. 100443 (3/32 in. by 5/8 in. sherardized)
119571	Spring for handle lever
119572	Guard for No. 119571
119573	Screw fastening No. 119572 in position (10–32, 3/4 in. r.h.)
44071	Washer for No. 119573 (13/64 in. by 1/2 in. by 0.044 in.)
44072	Nut for No. 119573 (10–32, 5/32 in. thick, 3/8 in. across flats hex. cham. one side)

MAGNETIC BLOWOUT SWITCHES

TYPE MS-13

REPAIR PARTS FOR MS-13, FORM B (Concluded)

Cat. No.	Description
100445	Pole piece with blowout coil cores
100446	Washer for blowout coil cores
58762	Blowout coil
100447	Copper terminal for blowout coil and bearing post
44061	Copper terminal for blowout coil and lower terminal block
5089	Connection screw for No. 44061 and lower terminal block (8–32, ½ in. r.h. brass)
111121	Positive lock washer for No. 5089 ($\frac{11}{64}$ in. by $\frac{23}{64}$ in. by $\frac{3}{64}$ in. thick)
100448	Insulation for blowout coil
22013	Screw fastening pole piece in position (14–24, ⅞ in. f.h. brass)
100449	Bushing for No. 22013 (¼ in. by ½ in. by $\frac{7}{16}$ in. long, fiber)
119574	Mica washer for blowout coil cores

MS-13, FORM A MAGNETIC BLOWOUT SWITCH

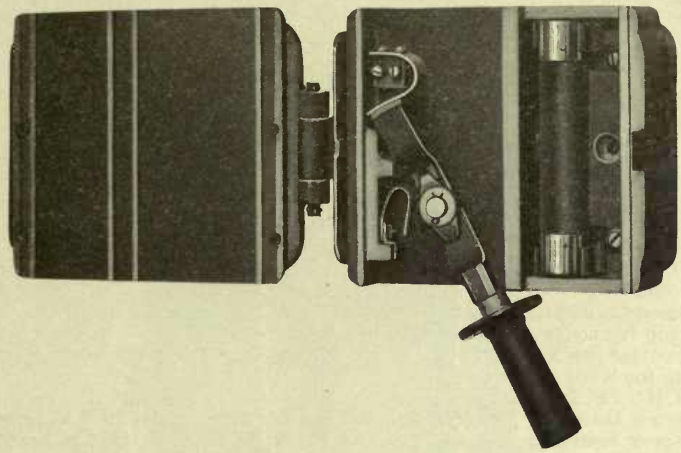
The MS-13 Form A has been superseded by the MS-13 Form B and is listed only for convenience in ordering repair parts.

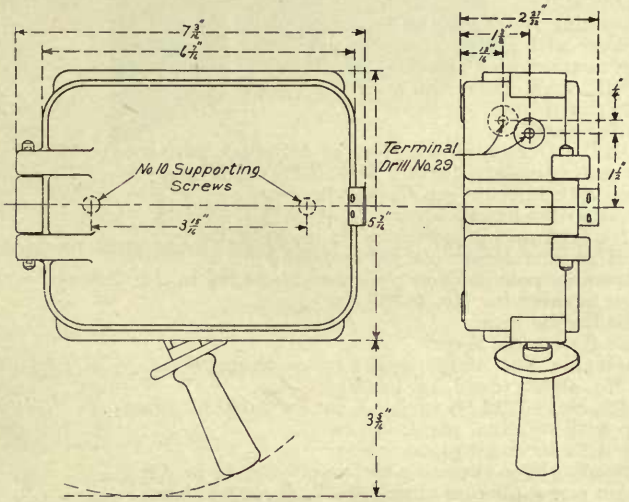
REPAIR PARTS

Cat. No.	Description
100432	SWITCH BOX, with pin for handle lever spring
100433	Pin for handle lever spring
100434	Washer for No. 100433 ($\frac{3}{16}$ in. by ¾ in. by 0.034 in.)
100435	Front cover for switch box
100436	Back cover for switch box
26870	Screw fastening No. 100435 to box (10–24, ⅝ in. r.h. blued)
4011	Screw fastening No. 100436 to box (No. 6, ⅝ in. f.h.)
100437	Terminal block, upper
100438	Terminal block with connection pin, lower
14434	Binding screw for terminal blocks (8–32, ⅜ in. r.h. blued)
1193	Screw fastening terminal blocks to switch box (8–32, ½ in. f.h.)
100439	Handle lever with handle, stud, guard and contact
100440	Handle
100441	Handle guard
100442	Copper contact with rivets
100443	Bearing post for handle lever
17352	Nut for bearing post (⅜ in.–16, $\frac{3}{16}$ in. thick, $\frac{11}{16}$ in. across flats hex. brass cham. both sides)
58783	Washer for bearing post ($\frac{21}{64}$ in. by ⅝ in. by 0.034 in.)
49386	Spring washer for bearing post
100505	Spring cotter for bearing post ($\frac{3}{32}$ in. by ⅝ in. copper plated)
100444	Spring for handle lever
100445	Pole piece with blowout coil cores
100446	Washer for blowout coil cores (⅝ in. by 1⅜ in. by 0.034 in.)
58762	Blowout coil
100447	Copper terminal for blowout coil
100448	Insulation for blowout coil
49388	Screw fastening pole piece in position (14–24, ¾ in. f.h. brass)
100449	Bushing for No. 49388 (¼ in. by ½ in. by $\frac{7}{16}$ in. long fiber)

MAGNETIC BLOWOUT SWITCHES

TYPE MS-40, FORMS A AND F





Dimensions

FORMS A AND F

The MS-40-A and F switches and fuse cutouts are used for air compressors.

The upper left-hand terminal is the positive side of the switch. The trigger spring in the lower left-hand corner of the box insures that the switch will remain in its last thrown position.

MAGNETIC BLOWOUT SWITCHES

TYPE MS-40, FORMS A AND F

COMBINED SWITCH AND FUSE CUTOUT

Cat. No.	Description
30400	MS-40 Form A Magnetic Blowout Switch, complete
108465	MS-40 Form F Magnetic Blowout Switch, complete

REPAIR PARTS

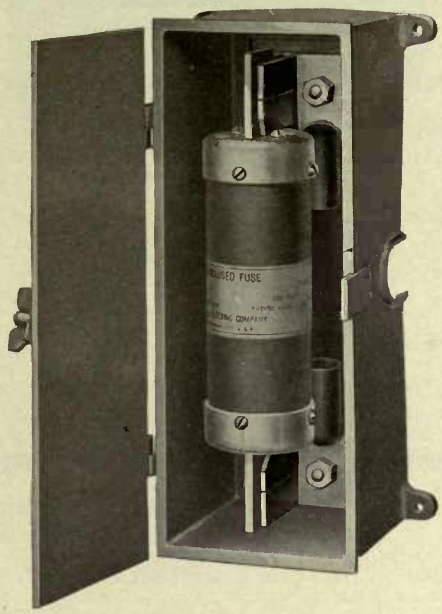
49370	Spring catch, with tip and rivets
49371	Cover for box casting with arc chute cover and releasing button for spring catch
49372	Arc chute cover with rivets
49373	Releasing button with pin
49374	Hinge pin for cover (¼ in. by 2⅝ in.)
3839	Spring cotter for No. 49374 ($\frac{5}{64}$ in. by ⅜ in.)
49375	Bushing for leads for box casting
49376	ARC CHUTE BODY
25726	Long screw fastening No. 49376 to box casting (10–24, 1¼ in. f.h. brass)
1397	Short screw fastening No. 49376 to box casting (10–24, ¾ in. f.h. brass)
49377	Terminal block, with contact spring
49378	Contact spring
23261	Binding screw for terminal block and screw fastening contact spring to block (8–32, ¼ in. r.h. blued)
1657	Screw fastening No. 49377 to arc chute (8–32, ⅜ in. f.h.)
49379	Handle lever with copper contact
49380	Copper contact with rivets
49381	Handle with stud, collar and guard
49382	Handle guard
49383	Collar for handle
49384	BLOWOUT COIL, complete, for the MS-40-A switch only
111220	Blowout coil, complete, for the MS-40-F switch only
49385	Pole piece with fulcrum pin for handle lever
49386	Spring washer for handle lever
49387	Washer for fulcrum pin ($\frac{13}{32}$ in. by ¾ in. by 0.034 in.)
10110	Spring cotter for fulcrum pin ($\frac{5}{64}$ in. by ½ in.)
49388	Screw fastening pole piece in position (14–24, ¾ in. f.h. brass)
49389	Insulation bushing for No. 49388
49390	Spring for handle lever
49391	Stop plate for handle lever
49392	Screw fastening Nos. 49390, 49391 to arc chute (6–32, ½ in. r.f.)
49393	Nut for No. 49392 (6–32, sq. brass)
35829	Washer for No. 49392 ($\frac{5}{32}$ in. by $\frac{5}{16}$ in. by 0.030 in. brass)
49394	Fuse clip with terminal plate, upper
49395	Fuse clip with terminal plate, lower
25	Screw fastening fuse clips in position (10–32, ¼ in. f.h.)
10195	Connection screw for fuse clips (10–32, $\frac{5}{16}$ in. r.h. brass)
33795	Washer for No. 10195 ($\frac{13}{64}$ in. by $\frac{13}{32}$ in. by 0.040 in. brass)

The cutouts accommodate fuses of the following capacities:

Type of Switch	Continuous Capacity of Switch	Cat. No. of Fuse	Capacity of Fuse—Amperes
MS-40-A	15 amp.	42398	5
		29177	10
		37800	15
		37801	20
MS-40-F	35 amp.	37802	30
		37803	40

FUSE BOXES AND FUSES FOR LOCOMOTIVES

Mining locomotives are equipped with either automatic overload circuit breakers or enclosed fuses to protect the electrical apparatus from injurious overloads and short circuits. When a fuse is used the fuse block with cartridge fuse is enclosed in a metal box with a cover in order to avoid accidental contact with the fuse terminals.



Enclosed Cartridge Fuse

FUSE BOXES

(Cat. Nos. are for boxes complete with covers and wood bases. Order fuse bases and fuses separately.)

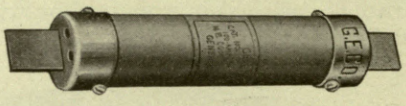
Cat. No.	Dimensions of Base	Capacity of Enclosed Cutout
119178	6½ in. by 11½ in.	200 amps.
119179	7 in. by 13½ in.	400 amps.
119180	8¾ in. by 14 in.	Two 400 amps.

Cat. No. 35125

Cat. No.	Description
21474	Single-pole cutout 61–100 amps., 600 volts, without fuse
35114	Single-pole cutout 101–200 amps., 600 volts, without fuse
35125	Single-pole cutout 201–400 amps., 600 volts, without fuse

FUSE BOXES AND FUSES FOR LOCOMOTIVES

FUSES



FUSES FOR 600 VOLT CUTOUT CAT. NO. 21474

Length over terminals, 7⅞ in. Diameter of tube, 1¼ in.
Length over ferrules, 5⅞ in. Width of terminals, ¾ in.
Thickness of terminals, ⅛ in.

Cat. No.	Ampere Capacity	Std. Pkg.	Cat. No.	Ampere Capacity	Std. Pkg.
35108	65	50	35111	80	50
35109	70	50	35112	90	50
35110	75	50	35113	100	50

FUSES FOR 600 VOLT CUTOUT CAT. NO. 35114

Length over terminals, 9$\frac{11}{16}$ in. Length over ferrules, 6$\frac{13}{16}$ in.
Diameter of tube, 1¾ in. Width of terminals, 1⅛ in.
Thickness of terminals, $\frac{3}{16}$ in.

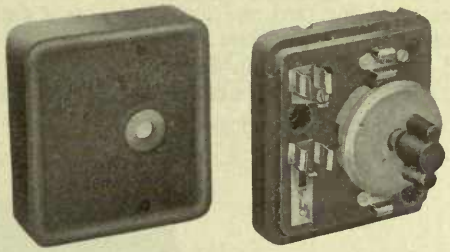
Cat. No.	Ampere Capacity	Std. Pkg.	Cat. No.	Ampere Capacity	Std. Pkg.
35115	110	25	35120	160	25
35116	120	25	35121	170	25
35117	130	25	35122	180	25
35118	140	25	35123	190	25
35119	150	25	35124	200	25

FUSES FOR 600 VOLT CUTOUT CAT. NO. 35125

Length over terminals, 11¾ in. Length over ferrules, 7⅝ in.
Diameter of tube, 2½ in. Width of terminals, 1⅝ in.
Thickness of terminals, ¼ in.

Cat. No.	Ampere Capacity	Std. Pkg.	Cat. No.	Ampere Capacity	Std. Pkg.
35126	225	25	35130	325	25
35127	250	25	35131	350	25
35128	275	25	35132	375	25
35129	300	25	35133	400	25

SNAP SWITCHES



Cat. No. 107629

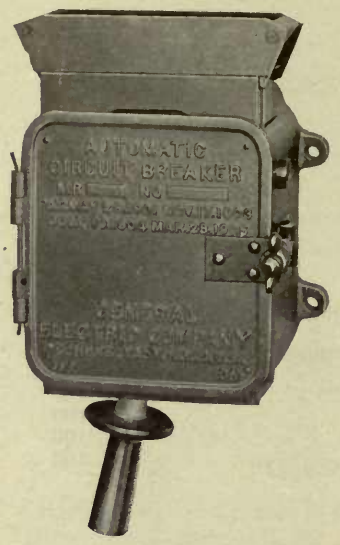
Cat. No.	Description	Std. Pkg.
107628	Combined switch and cutout, 10 amp., 600 volt, moulded compound, non-indicating, without fuse	50
107629	Combined switch and cutout, 20 amp., 250 volt, moulded compound, non-indicating, without fuse	50
28839	Enclosed fuse, 3 amp., 600 volt, for use in Cat. No. 107628	100
113239	Enclosed fuse, 5 amp., 600 volt, for use in Cat. No. 107628	100
107679	Enclosed fuse, 10 amp., 600 volt, for use in Cat. No. 107628	100
34955	Enclosed fuse, 20 amp., 250 volt, for use in Cat. No. 107629	100

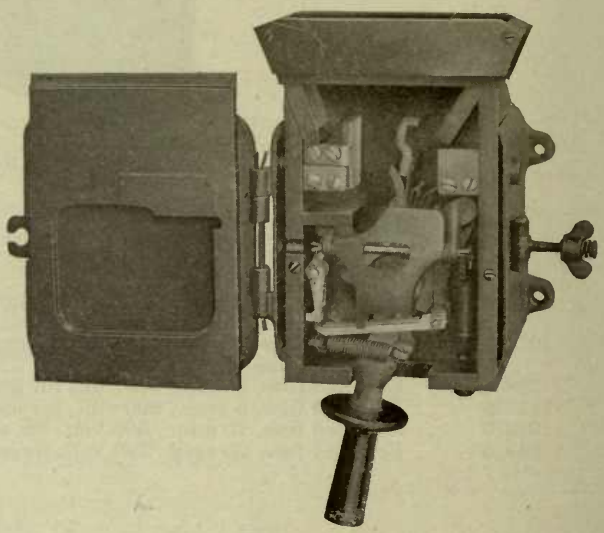
TRANSFER SWITCH

Cat. No.	Description
29327	S.P.D.T. knife switch, 200 amp., to change connection from cable to trolley pole

TYPE MR CIRCUIT BREAKERS

These circuit breakers are designed especially for electric railway cylinder controller equipments up to 400 h.p. capacity, and are used for two purposes, *viz., as a device to automatically break the main trolley circuit in case of excessive overloads or short circuits, and as a hand-operated main circuit switch.* They are small, compact and thoroughly reliable, the operating mechanism being surrounded by a fiber lining of the metal box, thus preventing accidental contact with live parts.





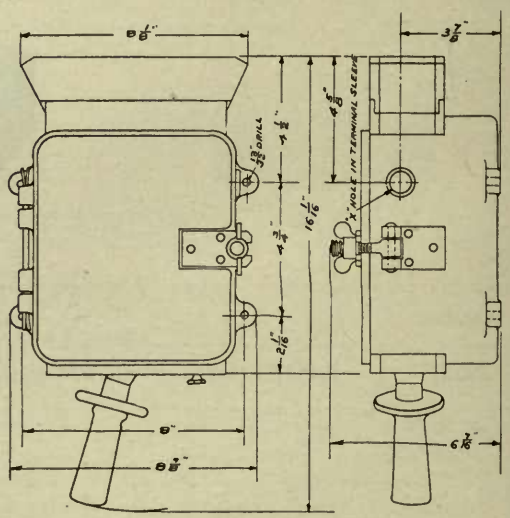
MR Circuit Breaker

Contact is made by arcing fingers together with a heavy brush, which in closing are brought face to face against the fixed contact. The brush is designed to carry nearly all the current and the fingers are so located with reference to the brush that while closing they make contact approximately ¼ in. ahead of the brush. They, therefore, thoroughly protect the brush by shunting and opening the circuit after the brush is well away from the contact block.

The outer box is made of non-magnetic metal and has a cast iron cover which acts as part of the magnetic circuit for the blow-out and tripping mechanism.

The cover is hinged to the box and held closed by a latch operated by a hinged screw. All parts of the breaker are, therefore, readily accessible for repair or inspection.

DIMENSIONS



Cat. No.	Type	Description	RATED CAPACITY		
			Minimum Calibration	Maximum Calibration	Maximum Voltage
104787	MR-10-D	Front connected circuit breaker	50 amp.	150 amp.	600
104788	MR-11-D	Front connected circuit breaker	100 amp.	300 amp.	600
104789	MR-12-D	Front connected circuit breaker	200 amp.	600 amp.	600
104790	MR-13-D	Front connected circuit breaker	300 amp.	900 amp.	600
104791	MR-14-D	Front connected circuit breaker	400 amp.	1200 amp.	600

TYPE MR CIRCUIT BREAKERS

REPAIR PARTS

The following repair parts for the MR-10-11-12-13 and 14 Form D breakers are the same as for the MR-10-11-12 and 13 Form B and MR-14 Form A respectively. Form D differs from Form B of MR-10-11-12 and 13 and Form A of MR-14 in having different device for holding the cover closed.

BLOWOUT COILS

Cat. No.	Description
105660	OVERLOAD AND BLOWOUT COIL, wound complete, with terminals, for No. 104787
105661	Overload and blowout coil, wound, complete with terminals, for No. 104788
105662	Overload and blowout coil, wound, complete with terminals, for No. 104789
105663	Overload and blowout coil, complete, for No. 104790
105664	Overload and blowout coil, complete, for No. 104791

ARC CHUTE

105669	ARC CHUTE, complete

TERMINAL BLOCKS

105633	TERMINAL BLOCK, right-hand, with stud and bushing, for Nos. 104787, 104788, 104789, 104790
105634	Terminal block, right-hand, with stud and bushing, for No. 104791
105635	Terminal block, left-hand, with copper contact and bushing, for Nos. 104787, 104788, 104789, 104790
105636	Terminal block, left-hand, with copper contact and bushing, for No. 104791

CONTACTS

105628	Laminated contact brush
105629	Contact fingers with springs and rivets (includes two fingers)
105639	Copper contact for Nos. 105635, 105636

LEVERS

105625	Contact lever with catch plate
105647	Tripping lever with wearing plate
105650	Catch lever

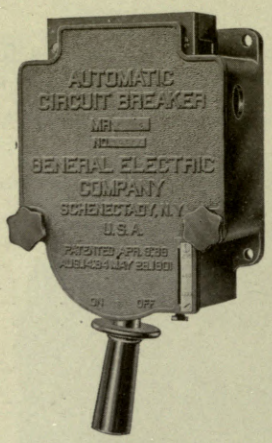
SPRINGS

105627	Tension spring for contact lever
105643	Calibrating spring with holder
105649	Spring for No. 105647
105652	Spring for No. 105650
105656	Compression spring for handle and contact levers

CALIBRATING SCREW

105644	Calibrating screw (10–24, 2½ in. brass oxidized finish)
88038	Check nut for calibrating screw (10–24, $\frac{5}{32}$ in. thick, $\frac{3}{8}$ in. across flats hex. brass cham. both sides)

TYPE MR CIRCUIT BREAKERS



Type MR Circuit Breaker

FRONT CONNECTED, 650 VOLTS

Cat. No.	Type	Continuous Ampere Capacity	CALIBRATION		Superseded By
			Min.	Max.	
23853	MR-2-B	15	15	45	
* 23854	MR-3-C	50	50	150	MR-10
* 23855	MR-4-C	100	100	300	MR-11
* 23856	MR-5-C	200	200	600	MR-12

* Cat. Nos. 23854, 23855 and 23856 are listed only for convenience in ordering repair parts.

REPAIR PARTS

WOODEN BOXES

Cat. No.	Description
29303	Wooden box, complete, for Cat. Nos. 23854, 23855
29302	Wooden box, complete, for Cat. No. 23856

BLOWOUT SPOOLS

32798	Blowout spool, wound, complete, with connection block, for Cat. No. 23853
32799	Blowout spool, wound, complete, with connection block, for Cat. No. 23854
32800	Blowout spool, wound, complete, with connection block, for Cat. No. 23855
32801	Blowout spool, wound, complete, with connection block, for Cat. No. 23856

CHUTES

32819	Fiber chute, complete, for Cat. No. 23853
32820	Fiber chute, complete, for Cat. Nos. 23854, 23855
32821	Fiber chute, complete, for Cat. No. 23856

CONTACT BASES

32839	Contact base, complete, with finger and spring, for Cat. No. 23853 (right-hand)
32840	Contact base, complete, with finger and spring, for Cat. Nos. 23854, 23855 (right-hand)
32841	Contact base, complete, with finger and spring, for Cat. No. 23856 (right-hand)
32842	Contact base, complete, with finger and spring, for Cat. No. 23853 (left-hand)
32843	Contact base, complete, with finger and spring, for Cat. Nos. 23854, 23855 (left-hand)
32844	Contact base, complete, with finger and spring, for Cat. No. 23856 (left-hand)
32853	Contact finger, complete, with spring and reinforcing strips, for Cat. No. 23853
32854	Double contact finger, complete, with spring and reinforcing strips, for Cat. Nos. 23854, 23855
32855	Double contact finger, complete, with spring and reinforcing strips, for Cat. No. 23856

ARCING TIPS

32858	Arcing tip, with stud and pin fastening Cat. Nos. 32839, 32842 in position
32859	Arcing tip, with stud fastening Cat. Nos. 32840, 32843 in position
32860	Arcing tip, with stud fastening Cat. Nos. 32841, 32844 in position

TYPE MR CIRCUIT BREAKERS

REPAIR PARTS

CONTACT SUPPORTS

Cat. No.	Description
32870	Contact support, complete, with fiber joint and contact head, for Cat. No. 23853
32871	Contact support, complete, with fiber joint and contact head, for Cat. Nos. 23854, 23855
32872	Contact support, complete, with fiber joint and contact head, for Cat. No. 23856
32883	Contact segment, for Cat. No. 23853
32884	Contact segment, for Cat. Nos. 23854, 23855
32885	Contact segment, for Cat. No. 23856

MAIN AND TENSION SPRINGS

32896	Main spring, for Cat. No. 23853 (1½ turns, 0.102 in. ph. brz. wire)
32897	Main spring, for Cat. Nos. 23854, 23855 (1½ turns, 0.144 in. ph. brz. wire)
32898	Main spring, for Cat. No. 23856 (1½ turns, 0.182 in. ph. brz. wire)
32899	Tension spring, for handle and contact support, for Cat. No. 23853 (11½ turns, 0.045 in. ph. brz. wire) . . . . . per 100
32900	Tension spring, for handle and contact support, for Cat. Nos. 23854, 23855 (11½ turns, 0.072 in. ph. brz. wire)
32901	Tension spring, for handle and contact support, for Cat. No. 23856 (8½ turns, 0.072 in. ph. brz. wire)

CATCH LEVERS

32902	Catch lever, complete, with spring and catch plate, for Cat. No. 23853
32903	Catch lever, complete, with spring and catch plate, for Cat. Nos. 23854, 23855
32904	Catch lever, complete, with spring and catch plate, for Cat. No. 23856

LOCKING LEVERS

32910	Locking lever, for Cat. No. 23853
32911	Locking lever, for Cat. Nos. 23854, 23855
32912	Locking lever, for Cat. No. 23856

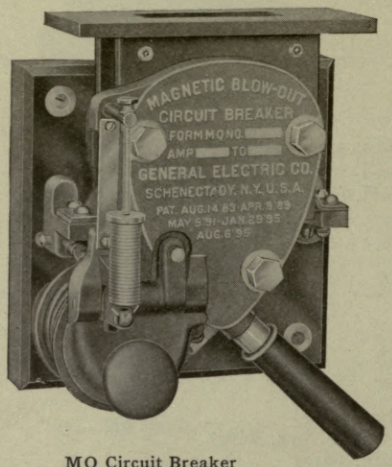
CALIBRATING SPRINGS

32933	Calibrating spring, with holder (16½ turns, 0.045 in. oxidized steel wire, ½ in. outside diam., closed), for Cat. No. 23853
32934	Calibrating spring, with holder (18½ turns, 0.050 in. oxidized steel wire, ½ in. outside diam., closed), for Cat. Nos. 23854, 23855
32935	Calibrating spring, with holder (16 turns, 0.089 in. oxidized steel wire, $\frac{23}{32}$ in. outside diam., closed), for Cat. No. 23856

CALIBRATING RODS

32936	Calibrating rod, with thumb nut, for Cat. No. 23853
32937	Calibrating rod, with thumb nut, for Cat. Nos. 23854, 23855
32938	Calibrating rod, with thumb nut, for Cat. No. 23856

TYPE MQ CIRCUIT BREAKERS



MQ Circuit Breaker

Cat. No.	Ampere Capacity	CALIBRATION		Style Handle	Superseded by
		Min.	Max.		
* 14395	110	60	150	Fixed handle	MR-10
* 14396	200	100	250	Fixed handle	MR-11
* 14390	400	200	400	Fixed handle	MR-12

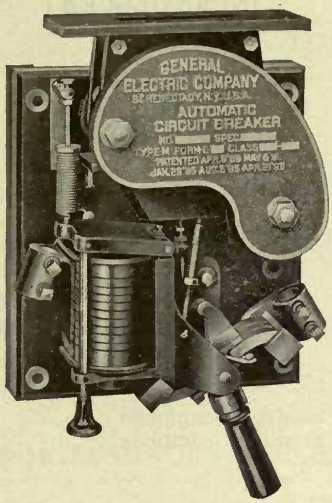
* Includes wooden cover not illustrated here.

These MQ circuit breakers are listed only for convenience in ordering repair parts.

REPAIR PARTS

Cat. No.	Description
3886	Arcing tip, with studs, for Nos. 14395, 14396
11067	Arcing tip, with studs, for No. 14390
11097	Blowout spool, wound, complete, with connection block, for No. 14395
32778	Blowout spool, wound, complete, with connection block, for No. 14396
32432	Blowout spool, wound, complete, with connection block, for No. 14390
3881	Conducting strip, for Nos. 14395, 14396
11066	Conducting strip, for No. 14390
11098	Connection block, for Nos. 11097, 32778
32781	Connection block, for No. 32432
3872	Contact base, complete, with finger and conducting strip, for Nos. 14395, 14396 (left-hand)
3997	Contact base, complete, with finger and conducting strip, for No. 14390
11099	Contact base, complete, with finger and conducting strip, for Nos. 14395, 14396 (right-hand)
32782	Contact base, complete, with finger and conducting strip, for No. 14390 (right-hand)
3967	Contact segment, for Nos. 14395, 14396
11090	Contact segment, for No. 14390
32784	Calibrating spring, with holder (22 turns, 0.073 in. steel wire, oxidized finish) for Nos. 14395, 14396, 14390
3880	Double contact finger, complete, with spring and reinforcing strips, for Nos. 14395, 14396
11065	Double contact finger, complete, with spring and reinforcing strips, for No. 14390
3858	Fiber chute, complete, for Nos. 14395, 14396
3979	Fiber chute, complete, for Nos. 14390
3968	Fiber joint, for Nos. 14395, 14396
11092	Fiber joint, for No. 14390
3971	Handle, complete, with fulcrum, contact head and contact segment, for Nos. 14395, 14396
11078	Handle, complete, with fulcrum, contact head and contact segment, for No. 14390
11080	Handle, with stud and ferrule, for No. 14390
14516	Handle, with stud and polished ferrule, for Nos. 14395, 14396
3969	Spring for handle, for Nos. 14395, 14396 (2¼ turns, 0.028 in. ph. brz. wire)
11093	Spring for handle, for No. 14390 (2 turns, 0.181 in. ph. brz. wire)

TYPE ML-2 CIRCUIT BREAKER



ML-2 Circuit Breaker

This circuit breaker is listed only for convenience in ordering repair parts. The breaker complete includes wooden cover not shown in illustration.

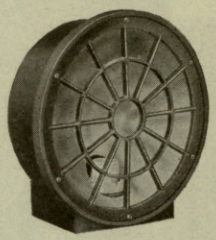
CAT. NO.	Ampere Capacity	CALIBRATION		Style of Handle	Superseded by
Front Connected on ½ Inch Base		Min.	Max.		
23207	500	100	800	Locking	MR-13

REPAIR PARTS

Cat. No.	Description
32688	Blowout spool, complete, with stud, insulation sleeve and cap
13978	Core with stud, for blowout spool and pole pieces
32695	Blowout chute, complete
32700	Support for secondary contact (right-hand)
32701	Support for secondary contact (left-hand)
32703	Double contact finger, with spring and reinforcing strips, for secondary contact (right-hand)
32704	Double contact finger, with spring and reinforcing strips, for secondary contact (left-hand)
32706	Copper connection strip, for Cat. No. 32703
32707	Copper connection strip, for Cat. No. 32704
32708	Arcing tip
32709	Insulating joint, complete, with contact segment
13987	Main contact stud
13999	Laminated contact brush,
14236	Spring for brush-holder (4 turns, 0.156 in. ph. brz. wire, closed)
32722	Locking handle, with stud and ferrule
14256	Calibrating spring with holder (22 turns, 0.073 in. steel wire, closed)

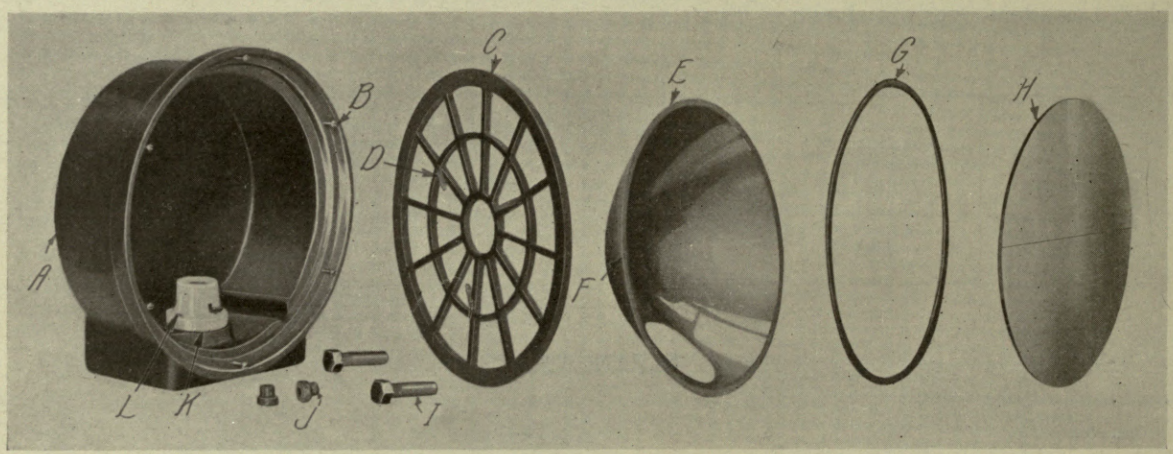
HEADLIGHTS FOR LOCOMOTIVES

INCANDESCENT



Cat. No.	Description
100545	250 volt incandescent headlight, complete
100546	500 volt incandescent headlight, complete

REPAIR PARTS FOR INCANDESCENT HEADLIGHTS



When ordering repair parts give the Cat. No. of the headlight for which they are wanted, as well as the names of the parts.

A Frame
B Screw Cat. No. 9635
C Door for frame
D Spring with pin for door
E Reflector
F Screw (4-36, $\frac{7}{32}$ in. f.h. brass)
G Rubber gasket for reflector
H Glass face for headlight (2 halves)
I Bolt Cat. No. 10180
J Rubber bushing
K Cat. No. 28795
L Screw Cat. No. 10065

For 250 volt locomotive use 125 volt 32 candle-power P.S.-21 bulb, conical spiral filament lamp.
For 500 volt locomotive use 275 volt 32 candle-power P.S.-21 bulb, conical spiral filament lamp.

HEADLIGHTS FOR LOCOMOTIVES

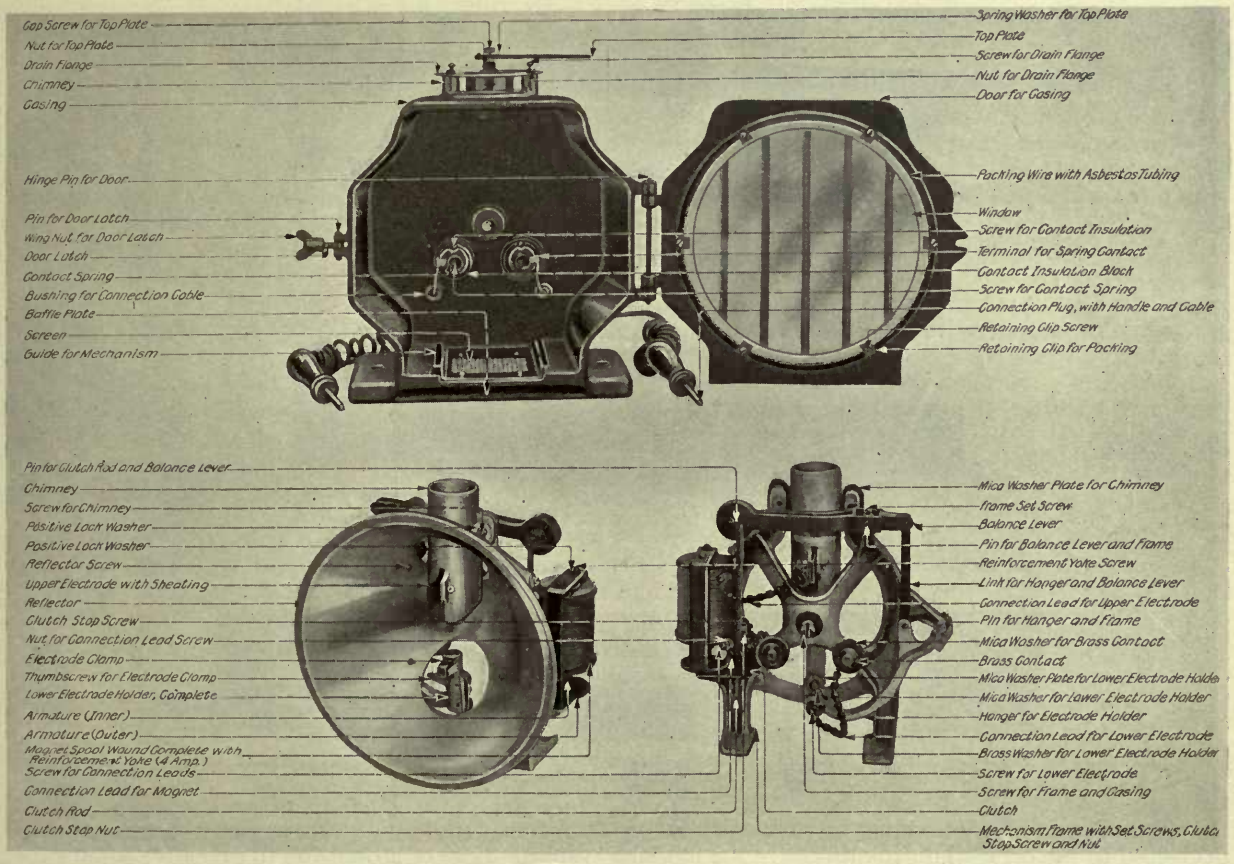
Form E Mine Headlight

LUMINOUS ARC

Cat. No.	Description
60137	Luminous arc mine headlight with plugs, cable and steadying resistance
60138	Luminous arc mine headlight with plugs and cable, without steadying resistance
61328	Steadying resistance for 550 volts

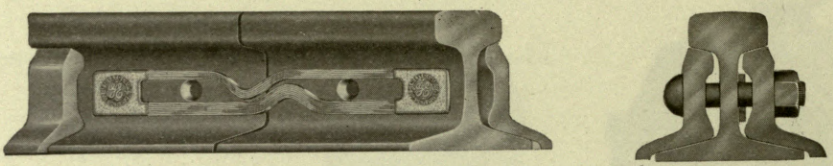
This headlight has not the reversing feature. It throws a very broad beam of light.

REPAIR PARTS FOR LUMINOUS ARC HEADLIGHTS

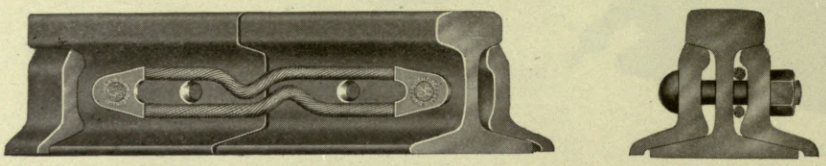


When ordering repair parts give the Cat. No. of the headlight for which they are wanted, as well as the names of the parts.

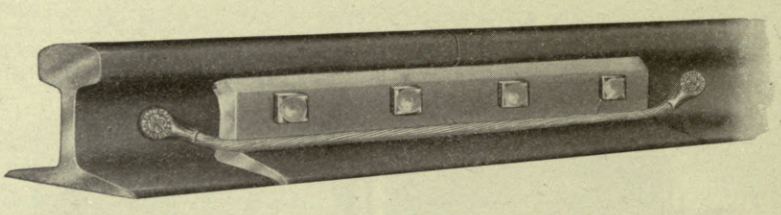
RAIL BONDS



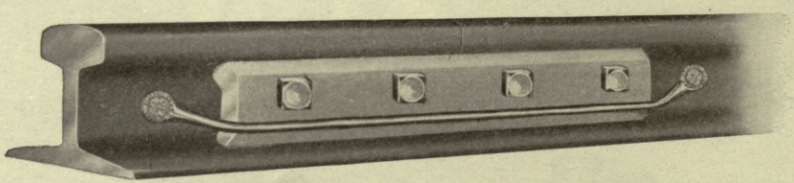
T Rail Bonded with One Form A-7 Unbalanced Ribbon Bond



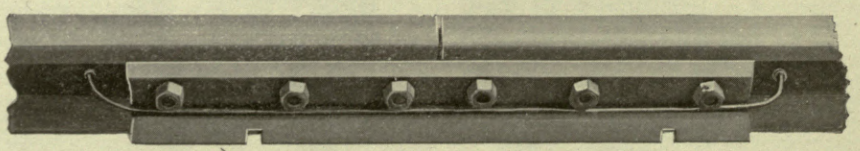
T Rail Bonded with One Form F-5 Bond, Spanning Both Inner Bolts



Form D Bond Spanning Joint Plate of T Rail



Form E Bond Spanning Joint Plate of T Rail



Joint Bonded with Channel Pins and Wire

The subject of rail bonding in mine work is too often considered unimportant and not infrequently neglected to the decided disadvantage of the haulage system. Loss of power due to excessive resistance in the track return circuit is a fruitful source of annoyance limiting the load and speed of the locomotives and unnecessarily loading the power plant. Assuming a fair degree of care in the installation of railbonds, so that the electrical resistance of contact between bonds and rails will not be excessive, it may be said that the total cross section of the bonds in both rails, should equal the cross section of the trolley wire plus the cross section of the feeder: or the bonding of each joint should have a cross section of half that value.

RAIL BONDS

Exceptional conditions so often arise that it is impossible to make any hard and fast rule, and whenever possible, opportunity should be given to make recommendations for each case. The General Electric Company will gladly submit recommendations and drawings to meet any bonding conditions which may be referred to it. Requests for such information, in addition to stating the general conditions of load, size of trolley wire, feeders, etc., should be accompanied by the following:

(a) Name of maker and section numbers of rail and joint plate, or a sketch showing section through rail and joint plate.
(b) Distance from end of rail to center of first bolt hole, and distance between centers of first and second bolt holes.
(c) Diameter of joint plate bolts.
(d) Length of joint plate.

Where conditions permit, the compressed terminal bond concealed under the joint plate is to be preferred. Its location on the rail protects it from injury from outside sources and prevents its being stolen. Its construction is such as to make it perfectly adapted to withstand both the vertical and the horizontal movements of the joint. Where the space available under joint plates is insufficient to accommodate the size of bonds required, compressed terminal bonds with cable or solid wire conductors spanning the joint plates give the best results. The method of applying compressed terminal bonds calls for the exercise of only ordinary care in drilling the holes and mounting the compressor and the uniformly good results obtained depend less upon the exercise of personal judgment by the bonding gang than is the case with any other type of bond. Notwithstanding this fact, however, there is a legitimate field for each of the methods of bonding shown in this catalogue.

COMPRESSED TERMINAL BONDS COMPARED WITH CHANNEL PINS

Bonding by means of channel pins and a wire is the least expensive in first cost and is satisfactory where the haulage service is exceedingly light, the tracks but temporary, and the cost of power low. If, however, these three conditions do not hold, the compressed terminal bonds offer the best means of bonding. In the channel pin method, electrical contact must be made from rail to pin and from pin to wire, and although the latter contact may be made highly efficient that secured between rail and pin, even though the pin is of soft steel and copper coated, is necessarily inefficient. Since the copper wire is considerably softer than the pin or the rail the force of the hammer blows driving the pin is largely expended in compressing the wire so that it is quite impossible by ordinary means to force the steel surfaces into anything like an intimate contact. On the other hand, the stud terminal of a rail bond makes contact with the rail direct and under the powerful force of the screw compressor, with which it is installed, is readily driven into intimate contact with the steel, filling even the minute pores of the harder metal. While it would be impossible without actual testing to state definitely the difference in contact resistance of joints bonded with channel pins and rail bonds in any particular case, from the foregoing it is evident that the resistance of the former is more than twice that through the rail bond and in all probability it is fully four times as great.

COPPER EQUIVALENT OF STEEL RAILS

The following table gives in circular mils the sectional area of copper equivalent to steel rails of various weights and having various resistance coefficients.

Weight of Rail in Lb. per Yard	RATIO OF RESISTANCE OF STEEL TO RESISTANCE OF COPPER					
	10	11	12	13	14	15
	cm.	cm.	cm.	cm.	cm.	cm.
12	152788	138898	127323	117529	109134	101858
16	203717	185198	169764	156706	145512	135811
20	254647	231497	212206	195882	181890	169764
25	318309	289371	265257	244853	227363	212206
30	381970	347246	318309	293823	272836	254647
35	445632	405120	371360	342794	318308	297088
40	509294	462994	424412	391764	363780	339528
45	572956	520869	477463	440735	409253	381968
50	636618	578743	530515	489705	454725	424410
60	763942	694491	636618	587646	545670	509292
70	891266	810239	742721	685587	636615	594174
75	954927	868115	795773	734558	682087	636615

RAIL BONDS

The ratio of resistance of steel ordinarily used for track rails (with the present tendency to use steel high in carbon), to the resistance of copper, averages closely 13 to 1. The area of the cross section of a rail is one-tenth of its weight in pounds per yard. A 40 pound rail will, therefore, have a sectional area of four square inches, the equivalent of 391,764 circular mils of copper at the 13 to 1 ratio.

HOW TO DESCRIBE BONDS

A complete description of a compressed terminal bond consists of the length between centers of the stud terminals, the cross section of the bond conductor, the diameter of the stud terminal and the form letter and numeral indicating style of bond and arrangement of conductor: Thus the rating 8 in.–2/0–5/8 in. A-7 describes a bond measuring 8 in. between terminal centers, with a 2/0 conductor and terminals 5/8 in. in diameter, having a ribbon (flat wire) conductor unequally divided and tucked at its center.

The length of Form A and Form F bonds is measured after bonds are formed and tucked: i.e., it equals the distance between centers of the bond holes in the rail. The length of Form D and Form E bonds is measured when they are straight and extended; Form M-1 bonds are described by Form letter and conductor cross section only, terminal diameters and length of conductor being fixed for each size of conductor. Form M-2 bonds are described by form letters together with conductor cross section and length between terminal centers. The nominal diameter of all stud terminals is that of the holes in which they fit.

When ordering bonds give full rating with form letter and numeral, or else give the rating with form letter and instead of the form numeral give description of the joint to be bonded (same as when asking for recommendations).

TUCKING

In all bonds installed under joint plates, provision is made for longitudinal expansion and contraction by the tucking which is of liberal dimensions. Forms A and F bonds, in which the conductor is divided to span joint plate bolts, should be tucked at the point coming opposite the spacing between rail ends. Thus when one bond per joint is used, drilling for its terminals is generally made at points midway between first and second bolt holes in the two rails and, therefore, the bond is tucked at its center. When two bonds per joint are used, they are generally staggered making it necessary to offset the tucking from the middle of the bond so as to avoid interfering with the insertion of the joint plate bolts or the terminals of the other bond. On orders calling for offset tucking, unless otherwise specified, the tuck is made one inch off center. The Form B bonds are for use where the terminals must be put between the rail ends and first bolts. They are tucked in a wave or S shape and give as great flexibility as is possible in short lengths.

TERMINAL LENGTH

Unless otherwise specifically ordered, rail bonds are furnished having terminal lengths shown in the following table. These lengths have been found best suited to average conditions.

DIMENSIONS OF TERMINAL	
Diameter	Length
1/2	11/16
5/8	11/16
3/4	3/4
7/8	3/4
1	13/16

APPLICATION OF BONDS

Holes should be drilled with well sharpened tools so that the walls and edges of the hole will be smooth and free from burrs and other irregularities. Bond holes should be of the exact diameter of the bond stud to be inserted.

RAIL BONDS

APPLICATION OF BOND—(Continued)

Oil should not be used in the drilling of holes, as all traces of it cannot readily be removed from the hole, and oil will prevent proper contact between the copper and the steel. A solution of soda and water or plain water may be used, but care should be exercised to see that the hole is wiped perfectly dry before the terminal is inserted. Bonds should not be installed in damp weather. If these simple precautions be disregarded, the electrical efficiency of the bonding will be greatly affected.

If bond holes have been drilled some time prior to the applying of the bonds, the holes should be reamed, as a clean, bright contact is essential.

Rail bond terminals should be rubbed clean and bright with a piece of fine emery cloth before they are inserted in the rail.

Compressed terminal rail bond studs should never be upset with a hammer. Hammering a terminal merely puts a rivet head over the hole, and does not force the copper back into contact with the steel surrounding the hole.

The compression method of installing bonds is admitted generally to be the correct one. After the head of the bond has been drawn up tightly against the web of the rail by the outer screw of our special compressor, the inner screw forces the copper back into the hole. The compressing portion of this inner screw is so designed that a rivet head cannot be formed on the terminal until the hole has been completely filled, even to the pores of the steel. The rivet or button head seals the union, and insures practically a moisture-proof joint. A solution of red lead and linseed oil may be applied to the terminal and adjacent steel, after compression. This will effectually seal the joint against the admission of moisture.

To effect radial expansion of the copper in the hole equally in all directions, the inner screw of the bond compressor should be centered in the depression in the end of the terminal.

Bond holes should be located so as to allow for the spacing determined upon between the abutting rail lengths. For instance, in single bonding the holes for a 10 in. bond to be applied to rail lengths spaced $\frac{1}{16}$ in. apart, should be drilled $4\frac{5}{16}$ in. from the end of the rail.

The General Electric Company strongly advises against the locating of bond holes close to the end of the rail. In most cases this sort of drilling provides for a bond too short to embody the necessary flexibility. Moreover, it has been found that where the shock caused by the wheels pounding on the joint is dissipated through the copper at the point where it is fixed rigidly to the rail, it has a tendency to shorten the life of the copper.

The accompanying illustration shows in cross section a $\frac{7}{8}$ in. diameter terminal compressed into a $\frac{7}{8}$ in. diameter hole in a piece of steel $\frac{5}{8}$ in. thick, representing the web of a rail. It was compressed with a double-screw compressor, exerting a pressure of 20 tons, operated by one man with the standard 40 in. wrench. Two annular grooves $\frac{1}{16}$ in. wide and $\frac{1}{16}$ in. deep were cut in the walls of the hole, and it will be observed that these grooves became completely filled with copper. This indicates that the studs are soft and malleable, flowing easily and evenly under the pressure of the screw, and that the compressor screw forces the copper back into the hole, entirely filling it before it forms the rivet head over the hole.

We illustrate in the following pages all of the standard forms of compressed stud terminal bonds. They should be installed with our special, double-screw compressors.

LIST PRICES OF FORMS A, B AND F BONDS

Conductor	Diam. Terminal in In.	LENGTHS BETWEEN TERMINAL CENTERS AND LIST PRICES PER 100 BONDS											
		4 In.	5 In.	6 In.	7 In.	8 In.	9 In.	10 In.	11 In.	12 In.	13 In.	14 In.	15 In.
0	$\frac{1}{2}$	$40.00	$41.50	$43.00	$44.50	$46.00	$47.50	$49.00	$50.60	$52.20	$53.80	$55.40	$57.00
0	$\frac{5}{8}$	42.50	44.00	45.50	47.00	48.50	50.00	51.50	53.10	54.70	56.30	57.90	59.50
00	$\frac{5}{8}$	45.00	46.60	48.20	49.80	51.40	53.00	54.60	56.30	58.00	59.70	61.40	63.10
00	$\frac{3}{4}$	50.50	52.10	53.70	55.30	56.90	58.50	60.10	61.80	63.50	65.20	66.90	68.60
000	$\frac{3}{4}$	54.20	56.60	59.00	61.40	63.80	66.20	68.60	71.10	73.60	76.10	78.60	81.10
000	$\frac{7}{8}$	56.20	58.60	61.00	63.40	65.80	68.20	70.60	73.10	75.60	78.10	80.60	83.10
0000	$\frac{3}{4}$	56.50	59.00	61.50	64.00	66.50	69.50	72.50	75.60	78.70	81.80	84.90	88.00
0000	$\frac{7}{8}$	59.00	61.50	64.00	66.50	69.00	72.00	75.00	78.10	81.20	84.30	87.40	90.50

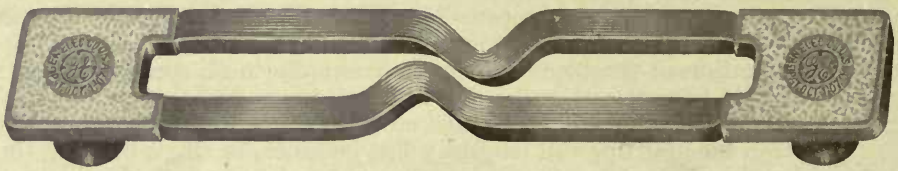
RAIL BONDS

FORM A RIBBON BONDS

The Form A ribbon bond is furnished for use under the joint plate where, usually, the space is restricted, and extreme compactness of design is necessary. The conductor of this bond is composed of thin copper ribbons pressed into the desired shape. The relative movement of the rails is almost wholly in the vertical plane, therefore the laminations are horizontal so as to afford maximum flexibility in the vertical plane.

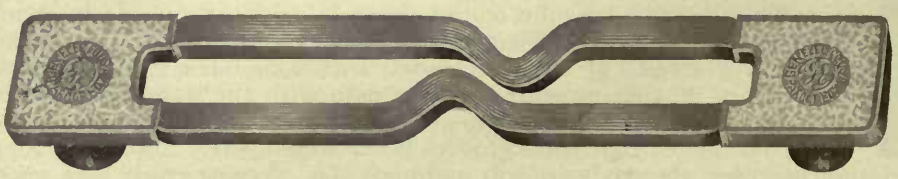
The bonding space provided in most rail sections with standard angle bars is so distributed as to require the unbalanced form of bond, having more than half of the total conductor section in the lower branch. The balanced form of bond is suitable for use in the great majority of cases only under special angle bars and the patented joints. Bonds may be unbalanced to any degree desired but unless otherwise ordered, unbalanced bonds with 4/0 cross section will have 10 ribbons in the upper and 18 ribbons in the lower branch; and bonds of other cross section will be unbalanced proportionally. If the amount of unbalancing cannot be determined readily, order bonds of the size wanted and state they are to be divided to fit the joints on which used; giving maker's name and section number of rail.

FORM A-5 RIBBON BOND



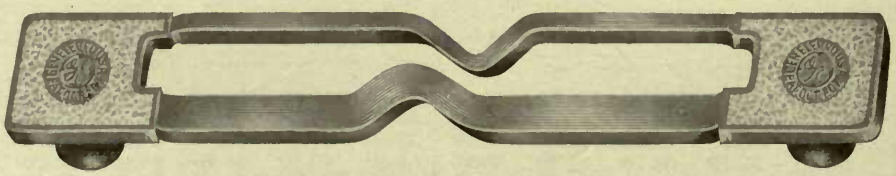
The above style of bond is used for single bonding rail joints where the available space both above and below the bolts is sufficient to accommodate one-half the total cross sectional area of the bond.

FORM A-6 RIBBON BOND



This bond is similar to the Form A-5 excepting that the tucking in the equally divided conductor is offset from the middle of the bond. It is used for double bonding.

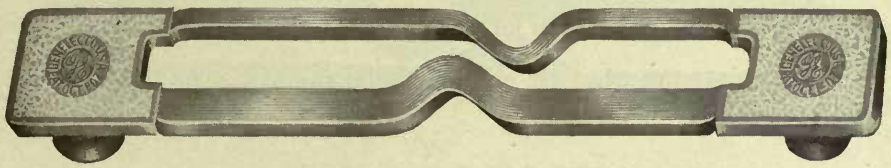
FORM A-7 RIBBON BOND



This bond is similar to the Form A-5 excepting that it has more ribbons in one branch than in the other. It is adapted for use where the available space on one side of the bolts is insufficient to accommodate one-half of the total conductor section.

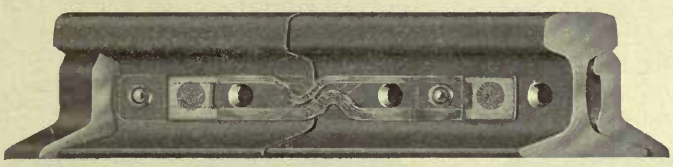
RAIL BONDS

FORM A-8 RIBBON BOND



Form A-8 is similar to the Form A-7 excepting that the tuck is offset from the middle. It is used in double bonding.

T Rail Bonded with One Form A-7 Unbalanced Ribbon Bond

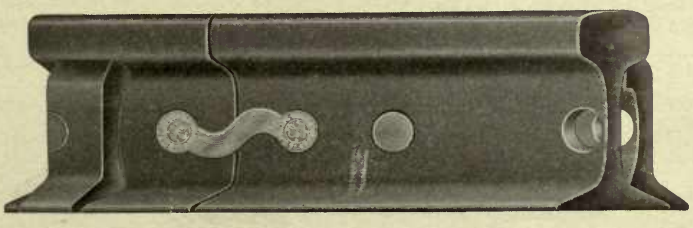


T Rail Double Bonded with Two Form A-8 Unbalanced Ribbon Bonds

FORM B RIBBON BOND

Form B Ribbon Bond

Where the inner bolt holes are located so as to permit the drilling of a bond hole between the end of the rail and the bolt hole, a short bond with undivided conductor in the form of a letter "S" may be installed. This bond must be made too short to embody the requisite flexibility and is recommended only for temporary work, where the rails are frequently shifted and the bond destroyed. It is an efficient bond at low cost for this class of work.



T Rail Bonded with One Form B Bond

RAIL BONDS

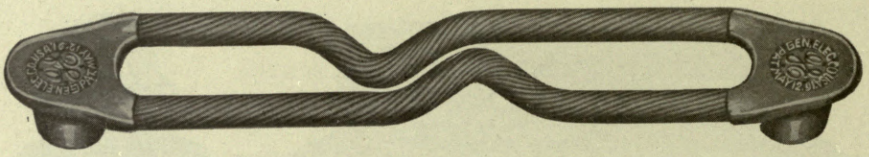
FORM F CABLE BOND

The Form F bond is intended for use under the joint plate. It has cable wire instead of flat wire conductors.

Cable conductors are equally flexible in all planes, and are well adapted for use where the bonding space is not restricted.

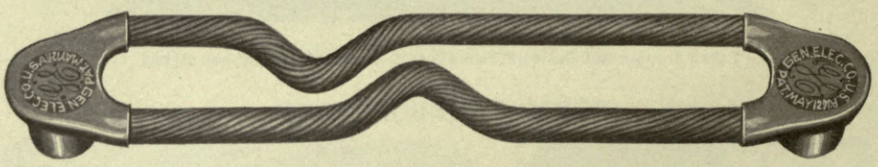
The general recommendations that are given for selecting and installing flat wire bonds apply also to cable bonds.

FORM F-5 CABLE BOND

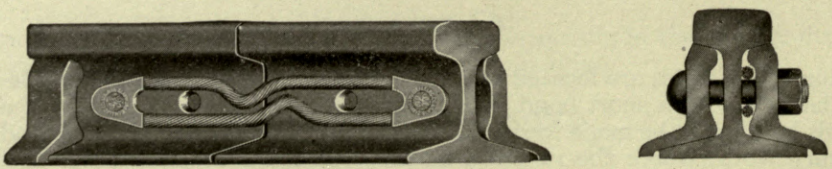


This bond is similar to the Form A-5 excepting the conductor is of extra flexible cable instead of ribbon. It is intended for use under the joint plate when the bonding space permits.

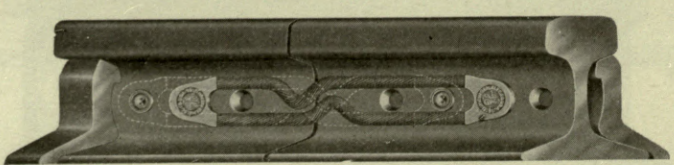
FORM F-6 CABLE BOND



This bond is similar to Form F-5 except the tucking is offset from the middle. It is adapted to double bonding of joints.



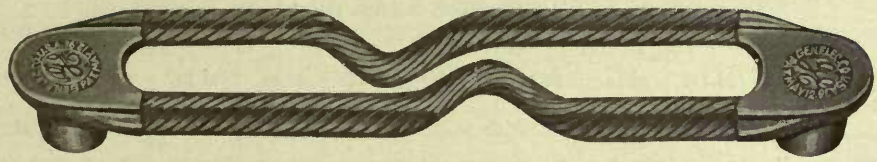
T Rail Bonded with One Form F-5 Bond, Spanning Both Inner Bolts



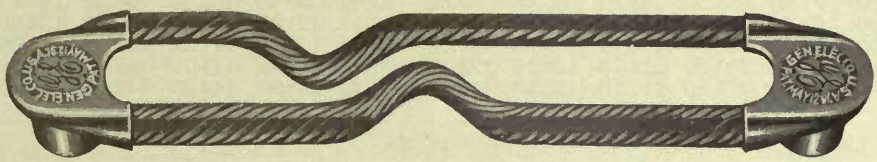
T Rail Double Bonded with Two Form F-6 Bonds

RAIL BONDS

FORM F-9 BOND



FORM F-10 CABLE BOND

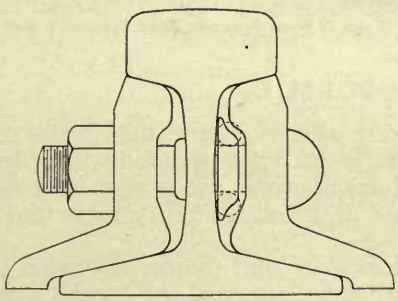


In many sections of rail the bonding space is so distributed that it will not accommodate the standard forms of bonds with equal branches, there being more room below than above the joint plate bolts. When ribbon bonds are employed this condition is met by a bond having more ribbons in the lower branch than in the upper. This method of unbalancing the branches cannot be followed satisfactorily in the cable form of bond because the cable is not so compact as the flat wire conductor, and when a sufficient number of wires are transferred from the upper to the lower conductor to obtain the requisite clearance for the upper branch, the lower branch is too large to fit into the space below the bolts without being badly pinched between the rail and the plate. This pinching will very materially shorten the life of the bond, as the conductor is not free to move.

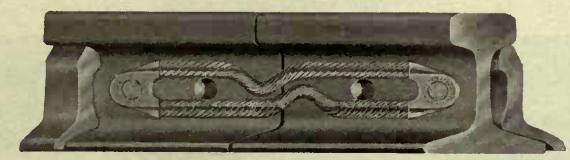
When the cable form of bond is desired for use where the rail conditions are such as described, this Company recommends that the standard balanced bond be used with the conductors pressed at the factory to a shape that will insure ample clearance between the bond and the joint plate.

The accompanying illustrations show the General Electric Company's Forms F-9 and F-10 cable bonds with the conductor pressed to approximately a triangular section excepting in the tuck, where the original round shape of the cable is preserved. The tuck coming between the bolts where there is ample room does not require a change in shape.

Flexibility tests prove that the pressing of the conductor does not affect the life of the bond.



Sectional View of 70 Lb. A.S.C.E. Rail with Standard Joint Plates, Showing 4/0 Bond with Round Cable Conductors in Dotted Lines and Pressed Cable Conductors in Solid Lines



T Rail Bonded with One Form F-9 Bond

RAIL BONDS

LIST PRICES OF FORMS D AND E BONDS

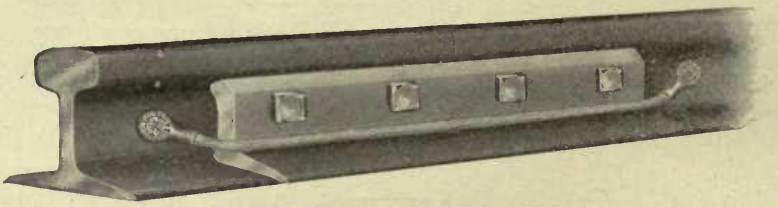
Conductor	Diameter Trimmed in In.	LENGTHS BETWEEN TERMINAL CENTERS AND LIST PRICES PER 100 BONDS											
		18 In.	20 In.	22 In.	24 In.	26 In.	28 In.	30 In.	32 In.	34 In.	36 In.	38 In.	40 In.	For Each Additional In. Over 40 In. Add
0	½	$62.10	$65.10	$68.10	$71.10	$74.10	$77.10	$80.10	$83.10	$86.10	$89.10	$92.10	$95.10	$1.50
0	5/8	64.60	67.60	70.60	73.60	76.60	79.60	82.60	85.60	88.60	91.60	94.60	97.60	1.50
00	5/8	68.50	72.10	75.70	79.30	82.90	86.50	90.10	93.70	97.30	101.00	104.60	108.20	1.80
00	¾	74.00	77.60	81.20	84.80	88.40	92.00	95.60	99.20	102.80	106.50	110.10	113.70	1.80
000	¾	88.90	93.50	98.10	102.70	107.30	111.90	116.50	121.10	125.70	130.30	134.90	139.50	2.30
000	7/8	90.90	95.50	100.10	104.70	109.30	113.90	118.50	123.10	127.70	132.30	136.90	141.50	2.30
0000	¾	98.50	103.90	109.30	114.70	120.10	125.50	130.90	136.30	141.70	147.10	152.50	157.90	2.70
0000	7/8	101.00	106.40	111.80	117.20	122.60	128.00	133.40	138.80	144.20	149.60	155.00	160.40	2.70

Intermediate lengths at corresponding intermediate prices.

FORM D

In the Form D bond the conductor consists of a single stranded cable. This form is especially recommended for bonding joints when, owing to lack of space under the joint plate, it is necessary to span the plate. It is also recommended for cross bonding between rails and tracks.

When Form D bonds are used to span joint plates, the bond holes should be drilled at least 2 inches outside the joint plates and the bonds should be at least 1½ inches longer than the distance between the bond holes. Bonds are furnished in any length or section.

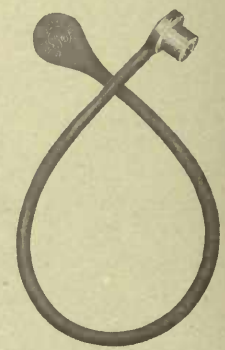


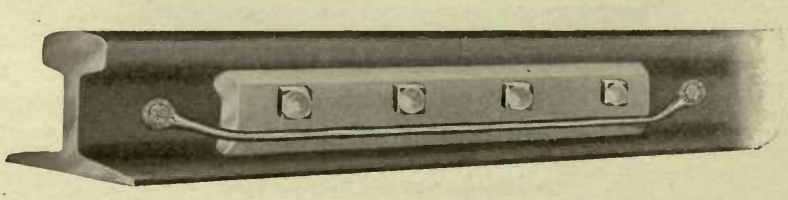
Form D Bond Spanning Joint Plate of T Rail

FORM E

The Form E bond is similar to the Form D excepting in the conductor which is solid wire. This bond is generally used for spanning long distances such as around switches and other special track work; it is also used for spanning the joint plate though it does not afford as much flexibility as is frequently required in that location.

When Form E bonds are used to span joint plates, the bond holes should be drilled at least 2 inches outside the joint plates and the bond should be 1½ inches longer than distance between bond holes. Bonds are furnished in any length or section and either straight or formed ready for installation.





Form E Bond Spanning Joint Plate of T Rail

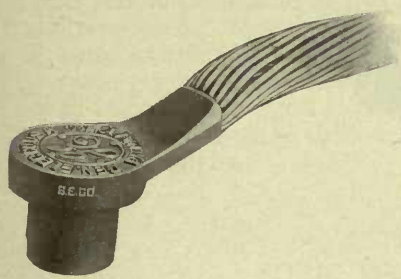
RAIL BONDS

FORMS D AND E STUB END BONDS

LIST PRICES OF 12 IN. STUB END BONDS—FORMS D AND E

Conductor	Diameter Terminal in Inches	List Price per 100
0	1/2	$35.55
0	5/8	36.80
00	5/8	39.65
00	3/4	42.40
000	3/4	51.35
000	7/8	52.35
0000	3/4	57.35
0000	7/8	58.60

A stub end bond is a conductor with a terminal on one end only. It is frequently employed in special work, where the cable end is to be spliced to a long bond spanning crossings and special work. The standard length is 12 in. but they can be furnished in any length desired.



Form D Stub End Bond

Form E Stub End Bond

SEPARATE BOND TERMINALS

Drilling for Conductor	LIST PRICES PER 100 TERMINALS — Diameter of Stud in Inches				
	1/2	5/8	3/4	7/8	1
0 and 00	$20.00	$25.00	$30.00	$35.00	
000 and 0000			37.50	42.50	$47.50

Separate bond terminals are furnished, drilled and tinned for soldering to a conductor which may be scrap trolley wire or feeder cable. They are useful in bonding special work, where many different distances are to be spanned and where it is difficult to predetermine the exact length.

RAIL BONDS

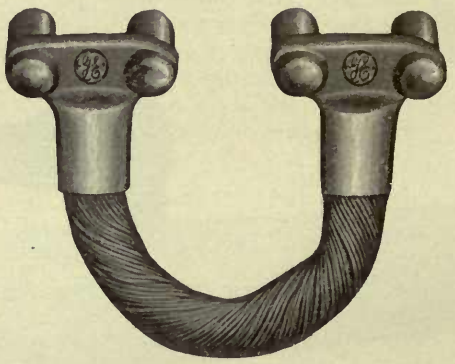
DRILLING OF TERMINAL SHANKS

Orders should specify size of wire or cable conductor to be used and diameter of stud required. When size of conductor is given, in the absence of specifications to the contrary, drilling will be made as follows:

Conductor Cross Section	Diameter of Hole in Shank in In.
0	$\frac{13}{32}$
00	$\frac{15}{32}$
000	$\frac{17}{32}$
0000	$\frac{9}{16}$

FORM M-1 TWIN STUD TERMINAL BOND

(Prices on Application)



Form M-1 bonds are made with 0, 00, 000 and 0000 conductor sections. This bond is a new development and is for application to the outer side of the head of T rails. This form of bond is applied without disturbing the joint plate. It is short—has the requisite flexibility, and is efficient and durable. The bond is installed with simple tools, and its first cost and the cost of installation are low. Its position on the rail makes it easy to inspect. Each terminal with its two studs is forged from soft, pure copper. The studs are ½ in. in diameter, and spaced 1¼ in. between centers. The conductor portion of the bond is flexible cable, which is welded to the terminals at low temperature, and all air is excluded. This process insures a perfect union between the terminals and the conductor, and preserves the purity and malleability of the copper. The conductor issues from the lower side of each terminal, and in the direction of the vertical movement of the joint. This construction removes all stress from the terminals and confines it to the flexible portion of the bond.

It is recommended that the four holes for Form M-1 bond be drilled simultaneously with the General Electric Company's double-twin spindle drilling machine, which will insure their being spaced exactly on the required centers and drilled on the same horizontal plane.

RAIL BONDS

FORM M-1 TWIN STUD TERMINAL BOND—(Continued)

APPLICATION

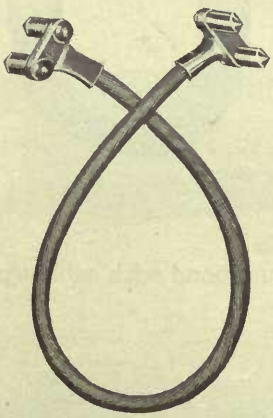
The four holes in the head of the rail are drilled simultaneously by the four spindles of the drilling machine shown on page 222, and the bonds applied with a riveting hammer. The sharp edges of the holes should be dulled with a blunt punch, to avoid cutting the terminal studs as they enter the holes. After drilling, a hand milling cutter, shown on page 223, should be inserted in each hole and a small annular groove cut in its wall near the orifice. The copper will flow into this groove, firmly anchoring the stud and sealing the hole against the admission of moisture. The stud in our standard 4/0 bond is $\frac{9}{16}$ in. long, exclusive of the conical end, the straight wall of the hole should be ½ in. deep. On the outer side of the bond terminal, opposite each stud, is a small copper boss. To install the bond, the hammer should be applied to this boss, lightly at first, and gradually with more force, until the boss has disappeared. This operation will completely fill the hole with dense copper, perfect contact being obtained at the ends of the studs, as well as at the sides.

The same general precautions relating to the application of compressed terminal bonds should be observed in connection with twin stud bonds.

The holes should not be drilled with oil. The contact surfaces of the steel and copper should be dry, clean and bright.

FORM M-2 TWIN STUD TERMINAL BOND

(Prices on Application)

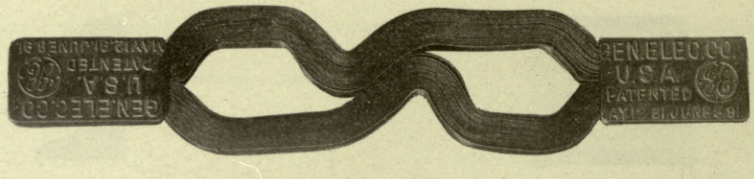


The Form M-2 bonds are like the Form M-1 in that the conductor is a single stranded cable; the terminals are of the twin terminal type and as in the Form M-1 each stud is ½ inch in diameter. They are used for cross bonding and bonding around special work and are attached to the head of the rails like the Form M-1 bonds. The rail drilling is conveniently done by means of the four-spindle drilling machine with two drills removed.

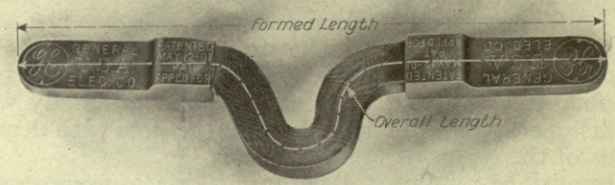
RAIL BONDS

SOLDERED TYPE

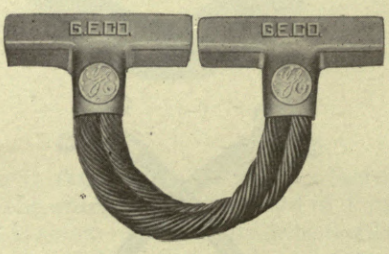
(Prices on Application)



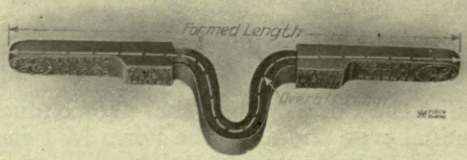
Form AS soldered terminal rail bond with branched flat wire or ribbon conductors, for use on web of rail under splice bar.



Form BS soldered terminal rail bond with flat wire or ribbon conductors, for use on head of rail.



Form GS soldered T shaped terminal bond with cable wire conductor, for use on head of rail.



Form CS soldered terminal rail bond with flat wire or ribbon conductor, for use on flange or foot of rail.

RAIL BONDS

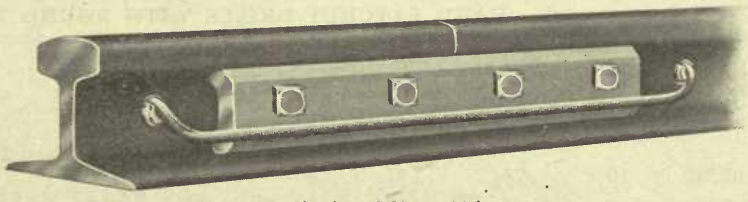
SOLDERED TYPE—(Continued)

Form DS soldered terminal rail bond with single cable conductor, for spanning splice bar or cross-bonding. The conductor may pass under splice bar when space permits.

CHANNEL PINS

Channel pins are not recommended for permanent bonding but are occasionally useful for temporary work. They are made with a straight groove deep enough to avoid cutting the wire in driving. The pins are taper pointed and slightly larger than the hole, so that when driven they envelop the wire and make a solid joint. The pins are made of soft steel, copper coated.

Cat. No. 17315

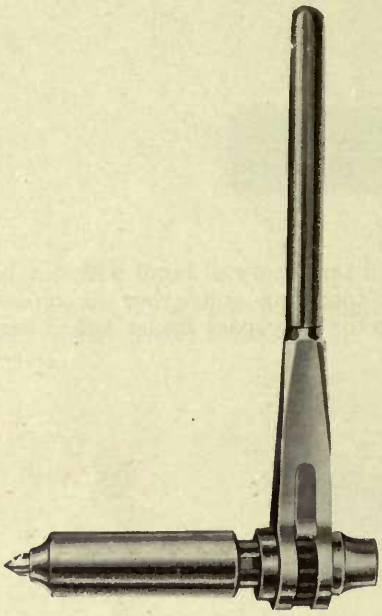


Application of Channel Pins

Cat. No.	Diameter of Pin	Diameter of Hole in which Pins fit	Size of Wire	Weight per 1000
17225	$\frac{3}{8}$	$\frac{11}{32}$	4	20
17224	$\frac{19}{32}$	$\frac{9}{16}$	0	40
17315	$\frac{3}{4}$	$\frac{23}{32}$	00	90
17553	$\frac{3}{4}$	$\frac{23}{32}$	0000	70

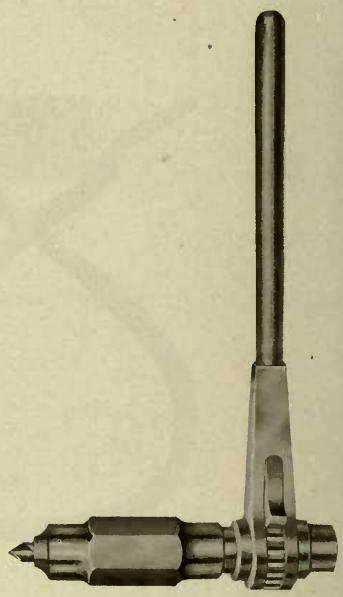
RAIL BONDS

TRACK DRILLING AND PUNCHING DEVICES AND ACCESSORIES—DRILLS



Many methods are employed for drilling bond holes in rails. Without definite knowledge of the amount of work and the conditions under which it is to be performed, it is difficult to recommend the style of machine to employ. The intention in compiling this information has been to give data on a complete line of devices generally used for drilling, from the simplest hand ratchet to the more elaborate power drills.

In many cases bond holes are punched or drilled in rails at the rail mills. It is important that such holes be reamed bright before the bond is applied.



HAND RATCHET DRILLS WITH SQUARE TAPER SOCKET

CAT. NO.		DIMENSIONS		Feed in In.	Weight in Lb.	Socket Accommodates
Round Feed Sleeve	Hex. Feed Sleeve	Length of Handle in In.	Length of Sleeve in In.			
103273		10	7¾	2	5	No. 1 sq. taper shank drill ⅛ in. to 1½ in. dia.
103274		12	8½	2⅛	7	No. 1 sq. taper shank drill ⅛ in. to 1½ in. dia.
103275	103278	15	9½	3	9¾	No. 1 sq. taper shank drill ⅛ in. to 1½ in. dia.
103276	103279	17	10¼	3⅜	12	No. 2 sq. taper shank drill ⅛ in. to 2 in. dia.
103277	103280	20	11¼	3¾	15¾	No. 2 sq. taper shank drill ⅛ in. to 2 in. dia.

HAND RATCHET DRILLS WITH ROUND TAPER SOCKET

CAT. NO. Round Feed Sleeve	Length of Handle in In.	Length of Sleeve in In.	Feed in In.	Weight in Lb.	TAKES MORSE ROUND TAPER SHANK DRILL		Socket Accommodates
					Min. in In.	Max. in In.	
103281	10	7¾	1⅜	5	1/16	19/32	
103282	12	8½	1½	6½	39/64	29/32	{ Cat. No. 103285 taper drill sleeve Cat. No. 103289 flat drill socket

TAPER SLEEVE FOR HAND RATCHET DRILLS

Taper Sleeve

Cat. No.	Used with Hand Ratchet No.	Takes Standard or Morse Tapered Shank Drills
103285	103282	1/16 in. to 19/32 in. dia.

RAIL BONDS

FLAT DRILL SOCKETS FOR HAND RATCHET DRILLS

Flat drill sockets accommodate drills (flat or round) with standard or Morse square taper shank No. 1 or No. 2.

Cat. No. 103289 fits in hand ratchet Cat. No. 103282.

SQUARE TAPER SHANK DRILLS (No. 1 SHANK)

FOR USE WITH HAND RATCHET DRILLS

Shank 1½ in. long, tapered ⅝ in. to ⅜ in.

Cat. No.	Diameter in In.	Length Overall in In.	Length Twist in In.
126213	11/32	5	2¾
103310	½	6½	4⅜
103312	9/16	6½	4⅜
103314	⅝	6½	4⅜
103317	23/32	6½	4⅜
103318	¾	6½	4⅜
103322	⅞	7½	5¼

SQUARE TAPER SHANK DRILLS (No. 2 SHANK)

FOR USE WITH HAND RATCHET DRILLS

Shank 1¾ in. long, tapered ¾ in. to ½ in.

Cat. No.	Diameter in In.	Length Overall in In.	Length Twist in In.
126214	11/32	5	2½
103329	½	6½	4
103331	9/16	6½	4
103333	⅝	6½	4
103336	23/32	6½	4
103337	¾	6½	4
103341	⅞	7½	5

TAPER SHANK TWIST DRILLS

STANDARD OR MORSE TAPER FOR USE WITH HAND RATCHETS

Cat. No.	Diameter in In.	Length Overall in In.	Length Twist in In.
126215	11/32	6½	3⅜
103348	½	7¾	4½
103350	9/16	8¼	5
103352	⅝	8¾	5⅛
103355	23/32	9½	5⅞
103356	¾	9¾	6⅛
103360	⅞	10½	6⅞

RAIL BONDS

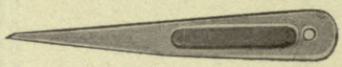
FLAT DRILLS WITH STANDARD OR MORSE SQUARE TAPER SHANK

No. 1

Flat Drill

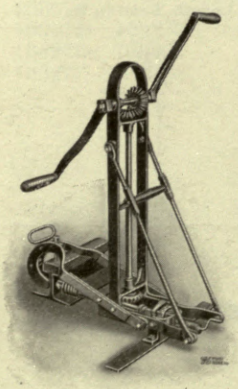
CAT. NO. No. 1 Shank	Diameter in In.
103292	1/2
103293	5/8
103294	3/4
103295	7/8

All drills 6 in. long. Drills easily sharpened and capable of fast work. Adapted to hand ratchets with square taper sockets.



Drift—Cat. No. 103386

Cat. No. 103386 drift is used to remove taper drills and sockets from ratchet drill shanks. It is 7 in. long, finished complete and case hardened.



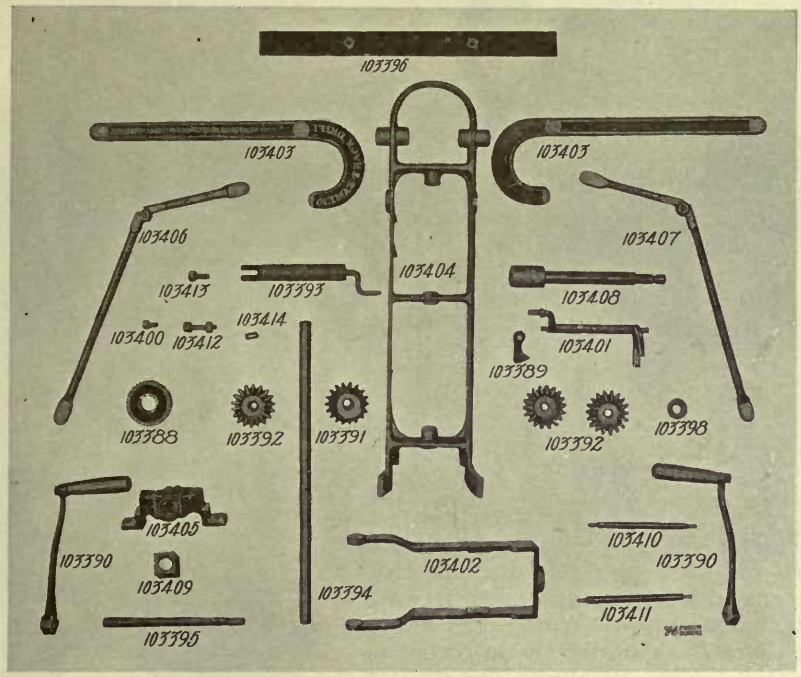
CLIMAX TRACK DRILL

This track drill is substantially built and well adapted to hard usage. It has crucible steel gears and forged steel hooks. The hooks are shaped to permit drilling of holes as close as 1/2 in. to the end of the rail, and are adjustable lengthwise to extend over a Weber joint or a guard rail. The hooks may be adjusted to the height of the rail by a set screw. To clear the track it is necessary only to break the back brace and throw the hooks backward.

Cat. No.	Description	Wt. in Lb.
103387	Climax track drill for T rail	60

RAIL BONDS

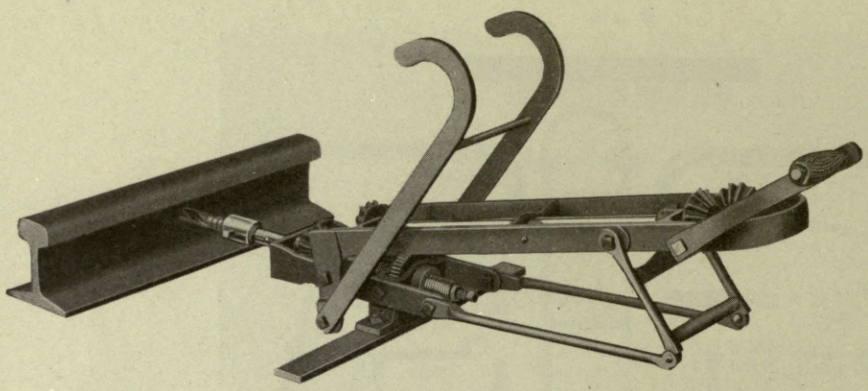
REPAIR PARTS FOR CLIMAX DRILL

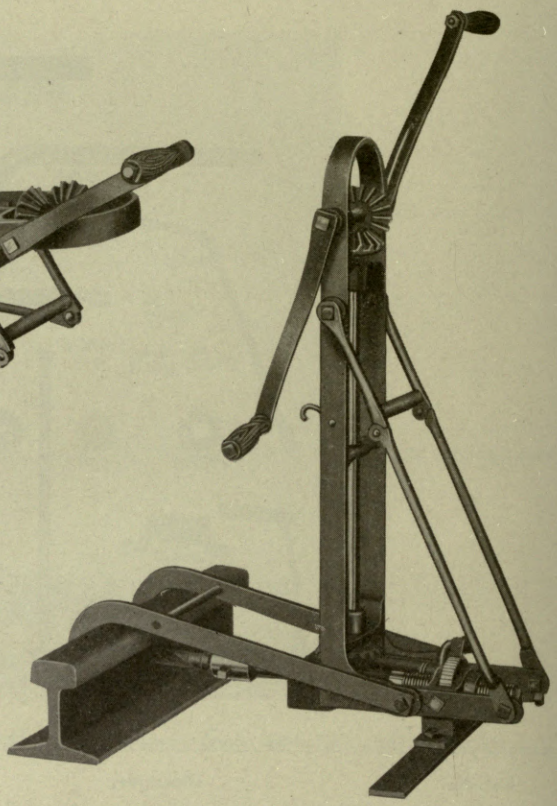


Cat. No.	Description	Cat. No.	Description
103388	Ratchet wheel	103402	Bottom frame
103389	Ratchet feed dog	103403	Hook (2)
103390	Crank (2)	103404	Upright frame
103391	Eccentric gear	103405	Nut box
103392	Bevel gear (3)	103406	Right toggle joint
103393	Feed screw	103407	Left toggle joint
103394	Vertical shaft	103408	Spindle
103395	Crank shaft	103409	Steel nut
103396	Foot plate	103410	Joint handle
103397	Foot plate bolt (2)	103411	Hook coupling
103398	Ball bearing	103412	1½ in. bolt (6)
103399	Brass bushing	103413	1 in. bolt (3)
103400	Spindle cap set screw	103414	Key for ratchet wheel
103401	Rocker shaft		

RAIL BONDS

PAULUS TRACK DRILL





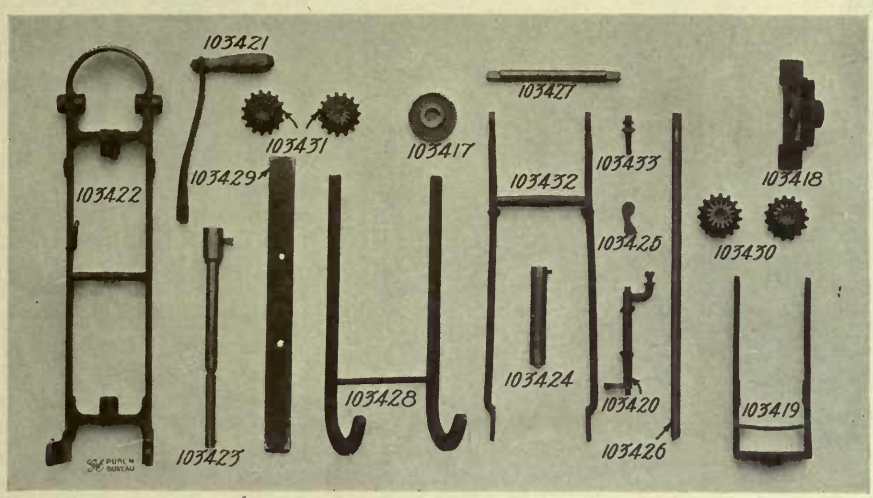
The Paulus Track Drill has proved to be a most satisfactory hand operated upright machine for drilling rails. It is provided with an automatic feeding device that requires no attention. A dog connecting ratchet on the feed screw is operated by an eccentric which is put in motion by the revolving spindle and results in as coarse a feed as is consistent with the best results from a point of view of time and of safety to the bit.

Cat. No.	Description	Wt. in Lb.
103415	Paulus track drill for T rail	60

RAIL BONDS

REPAIR PARTS OF PAULUS TRACK DRILL

When ordering repair parts for this drill please state that they are required for the Cat. No. 103415 pattern.



Cat. No.	Description	Cat. No.	Description
103417	Ratchet wheel	103426	Vertical shaft
103418	Housing for ratchet wheel	103427	Crank shaft
103419	Lower frame	103428	Rail hooks
103420	Rocker shaft	103429	Foot plate
103421	Two cranks	103430	Two upper gears
103422	Upper frame	103431	Two lower gears
103423	Spindle	103432	Back brace
103424	Feed screw	103433	Set screw
103425	Ratchet feed dog		

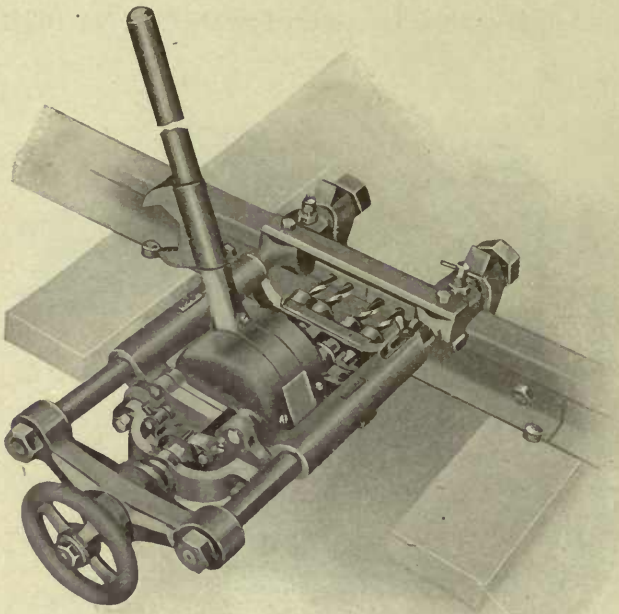
ROUND STRAIGHT SHANK DRILLS

These drills are adapted to the climax and Paulus drilling machines.
Diameter of shank is $\frac{41}{64}$ in.; length of shank $2\frac{1}{4}$ in.; length overall 6 in.; length of twist 3 in.

Cat. No.	Diameter in In.	Cat. No.	Diameter in In.
126218	$\frac{11}{32}$	103441	$\frac{23}{32}$
103434	$\frac{1}{2}$	103442	$\frac{3}{4}$
103436	$\frac{9}{16}$	103446	$\frac{7}{8}$
103438	$\frac{5}{8}$		

RAIL BONDS

DOUBLE-TWIN SPINDLE DRILL



This machine is designed to drill all four holes at one time in the head of T rails for the Twin Stud Terminal Bond. The machine is easy to handle and operate, and it works rapidly and accurately. It has a positive automatic feeding device, which can be adjusted within wide limits. The drills are operated by a lever, each stroke of which rotates the drills through a positive mechanism which provides equal rotation for all drill points.

Each spindle is provided with an adjusting sleeve so that each drill may be set independently of the others. This provision offsets uneven wearing or setting of rails and disalignment of rails on curves. Each machine is equipped with a gauge for determining the depths of the holes. Frames can be raised or lowered quickly to bring the holes into their correct positions. The machines are attached to the rails and operated without disturbing rail joints. The drill points are held rigidly in the machine and seldom break or chip. For the same reason the desired holes may be started without first prick punching the rail.

The levers by which the machines are operated are detachable so that the tools may be moved easily from place to place.

Each drilling machine is equipped with all fittings and one complete set of new drills. Many parts of these machines are interchangeable and small parts may be ordered by mail.

Cat. No.	Description	Wt. in Lb.
103470	Hand operated double-twin spindle drill	125

TWIST DRILLS

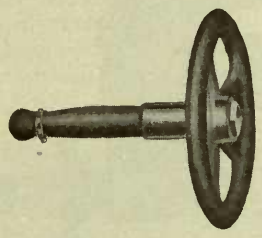
These drills are made especially for the Double-Twin Spindle Drill and are uniform in size, being ½ in. in diameter by 6 in. long. The drills give very good results without lubrication if they are properly sharpened.

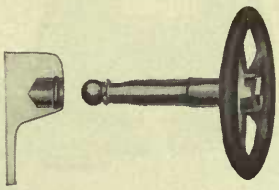
Cat. No.	Description
103472	Special ½ in. twist drill . . . . .

RAIL BONDS

HAND TOOLS FOR TWIN STUD TERMINAL BONDS

HAND MILLING CUTTER





The Hand Milling Cutter cuts the small groove in the hole. With a swinging motion that will keep the milling teeth pressed against the sides of the hole, the cutter is rotated several times within the hole.

Cat. No.	Description	Wt. in Lb.
103473	Milling cutter with handle	½
103474	Extra cutter only	¼

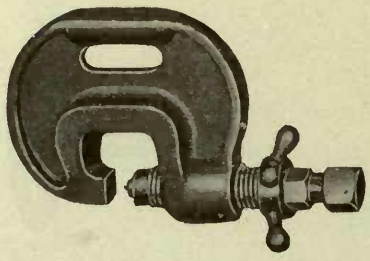
The punch is made of tool steel, tempered. It is to round off and blunt the sharp edge of the hole.

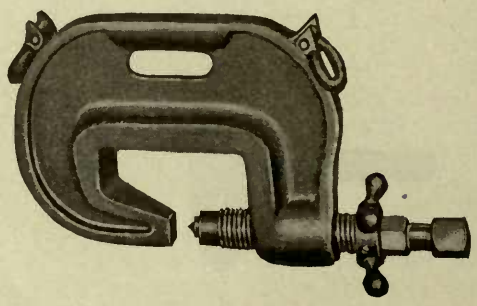
The double faced riveting hammer is especially adapted for applying twin stud terminal bonds.

Cat. No.	Description	Weight
103475	Dulling punch	3 oz.
103476	Riveting hammer	2½ lb.

RAIL BONDS

DOUBLE SCREW RAIL BOND COMPRESSORS





Two compressors are offered; one for the lighter rails and the other for rails ranging from 40 to 75 lb.

The distribution of the metal in the frame is such as to make the machines strong and substantial, and as light as is practicable.

After the terminal has been inserted in the hole and the compressor mounted on the rail, the inner screw is centered in the depression in the bond terminal. The outer screw is then drawn up with the handwheel until it rests against the rail web, thus holding the machine rigid and drawing the bond head up tight against the opposite side of the web. Compression is then effected with the wrench on the inner screw.

The end of the compressing screw is so designed that the hole in the rail must be completely filled with copper before the terminal can be riveted or button-headed over the hole.

The handwheel may be detached easily and discarded when work is to be done in limited space, as over ties, as the outer screw is provided with a hexagonal end to take a wrench.

The compressing power of the large machine is approximately 30 tons.

Cat. No. 68935 is designed to take the lighter rails up to 40 lb. It has a vertical adjusting screw to center the compressing screw in the depression in the bond terminal. Power exerted 12 tons.

All compressors are furnished with operating wrench. Extra wrenches may be ordered by catalogue number.

Cat. No.	Used on	Diameter of Terminal Up to Inches	Top of Jaw to Center of Screw Inches	Wt. in Lb.
68935	T rails—40 lb. and smaller	3/4	2 1/8	30
61040	T rails—40 lb. to 75 lb.	7/8	3 3/8	51

PARTS OF COMPRESSORS

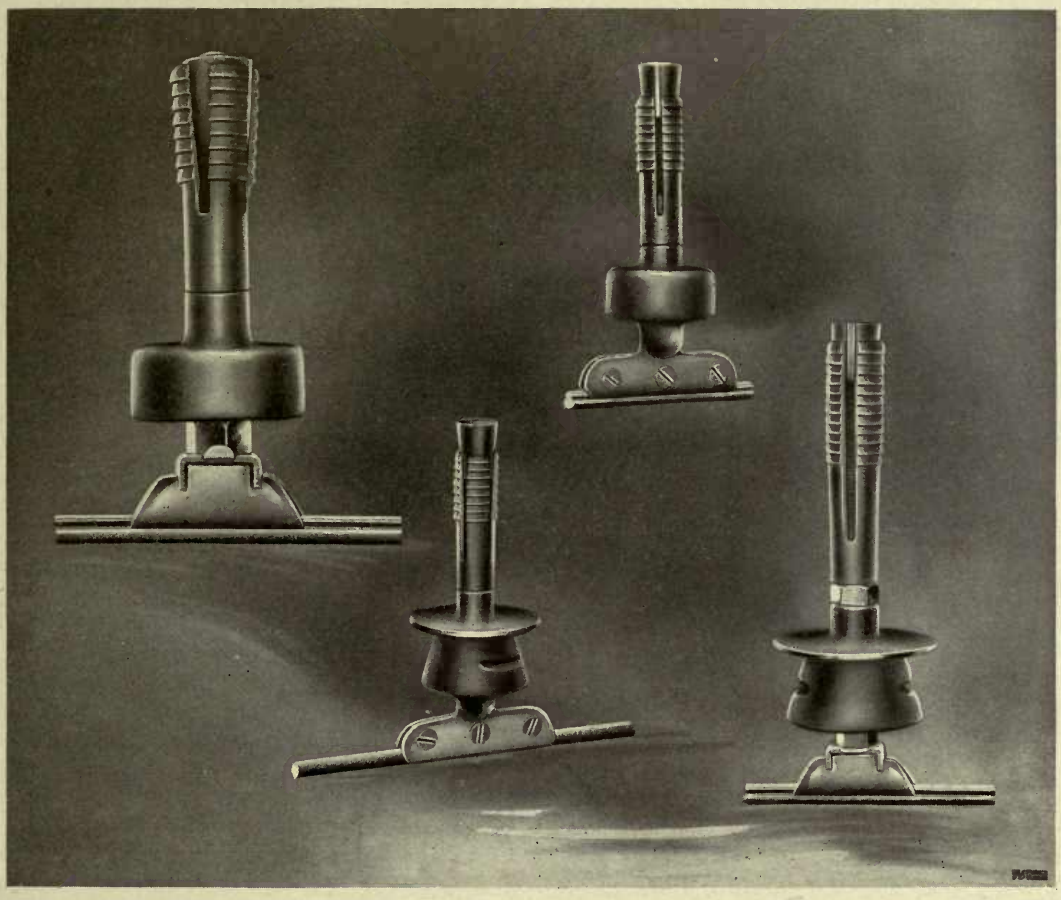
Cat. No.	Used on	Wt. in Lb.
68936	24 in. wrench for compressor, Cat. No. 68935	6
61180	40 in. wrench for compressor, Cat. No. 61040	13
103490	Inner screw only, for compressor Cat. No. 68935	5
103488	Inner screw only, for compressor Cat. No. 61040	5
103493	Outer screw only, for compressor Cat. No. 68935	3
103491	Outer screw only, for compressor Cat. No. 61040	3
103499	Frame only, for compressor Cat. No. 68935	22
103494	Frame only, for compressor Cat. No. 61040	40
103500	Handwheel only, for compressor Cat. No. 61040	3

TROLLEY LINE MATERIAL

On the following pages is shown a very elaborate line of devices for the support of trolleys and feeders in all mine and other industrial haulage systems.

The line is complete in every particular containing every device required for systems using grooved, round or figure 8 trolley wires and also containing a wide variety of forms of each device in order to meet the requirements of both the usual and the unusual conditions.

Every device listed is thoroughly practical and may be depended upon to accomplish successfully the purpose for which it was designed.

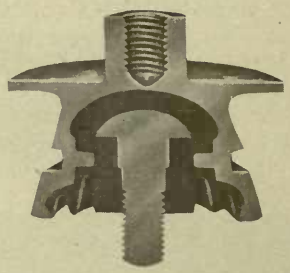


The accompanying illustration shows a few of the possible combinations of expansion bolts, suspensions and ears.

The studs of all expansion bolts and suspensions and the taps in all suspensions and ears and all other line devices in this catalogue are 5/8 in. in diameter and therefore any one of the devices may be used interchangeably with any other device.

TROLLEY WIRE SUSPENSIONS

Mining Suspension—Form H

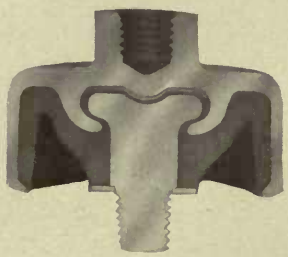


The height of the Form H mine roof suspension, from the ear seat to the top of the shell, is 2 inches.

The extended flange at the top gives wide bearing surface against the mine roof to resist transverse stress on curves and the sides are grooved for the reception of a wrench with which the suspension can be set up tight on the roof bolt. The double petticoat provides ample leakage surface for voltages up to 600.

Diameter of top flange 4 in.; diameter of shell 3¼ in.; height from ear seat to top of flange 2 in.

Cat. No.	Description	Approx. Weight per 100
35687	Form H mine roof suspension, japanned	250
35688	Form H mine roof suspension, sherardized	250



Low Mining Suspension—Form H3

To produce a suspension of minimum height and long creepage surface together with high mechanical strength, an entirely new feature has been introduced into the manufacture of the Form H3 suspension. The new feature is the "crimped cup" method of clamping the stud into the shell—the method being similar to that employed in the manufacture of Giant Strain Insulators. The insulation between shell and stud cap is sheet mica, ⅛ in. thick, with a fiber backing.

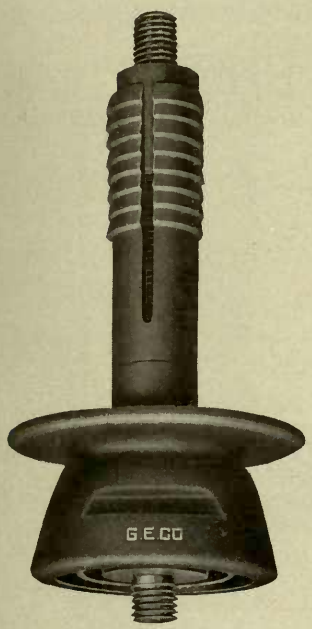
This design throws the entire mechanical load on the malleable iron cup which is of ample strength to care for the greatest loads possible under operating conditions; thus the moulded insulation, used to give the long creepage surface, is entirely relieved of mechanical strain.

Height from ear seat to top of shell 1¼ in.; diameter of shell at top 3 in.; height of boss above shell ¾ in.

Cat. No.	Description	Approx. Weight per 100
114735	Form H3 mining suspension, japanned	150
64561	Form H3 mining suspension, sherardized	150

TROLLEY WIRE SUSPENSIONS

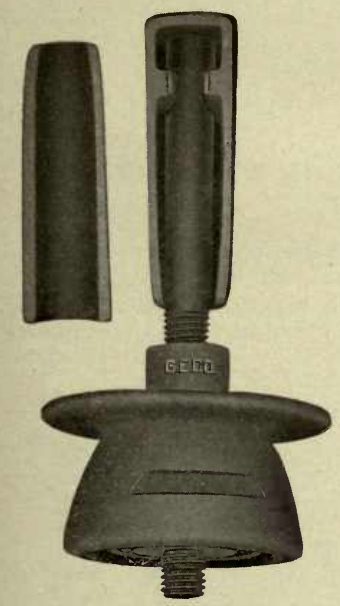
FORM H MINE ROOF SUSPENSION WITH 4 IN. EXPANSION BOLT



Mine Roof Suspension

The catalogue numbers in the following table cover Form H suspensions with expansion bolts complete. The roof bolt being properly seated in the suspension boss, the shell is readily expanded in the roof hole by a few turns of the suspension. Roof drilling should be 1¼ in. in diameter and at least 5 in. deep.

Cat. No.	Description	Approx. Weight per 100
68942	Form H mine roof suspension with expansion bolt, japanned	350
68941	Form H mine roof suspension with expansion bolt, sherardized	350



Mine Roof Suspension

FORM H MINE ROOF SUSPENSION WITH ROOF WEDGES

This suspension consists of the Form H suspension, with a 5 in. roof bolt and two expansion wedges. The bolt is slotted near the top and the upper wedge is arranged to engage it so as to prevent turning of the bolt in screwing up the suspension. When the suspension is removed from the bolt the whole device is loosened in the hole by a blow with a hammer and may thus be readily recovered.

The roof drilling should be 1⅜ in. in diameter and at least 6 in. deep.

Cat. No.	Description	Approx. Weight per 100
35685	Form H mine suspension with roof wedges, japanned	370
35686	Form H mine suspension with roof wedges, sherardized	370

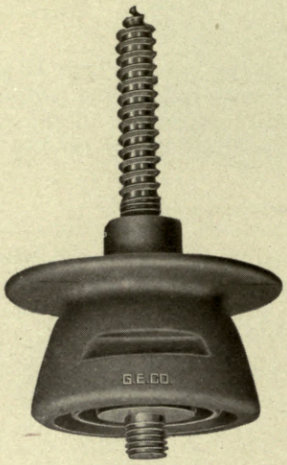
TROLLEY WIRE SUSPENSIONS

FORM H MINE ROOF SUSPENSION WITH LAG SCREW

This suspension consists of the Form H suspension, with a gimlet point lag screw threaded in the top and projecting 3 in. above the tapped boss.

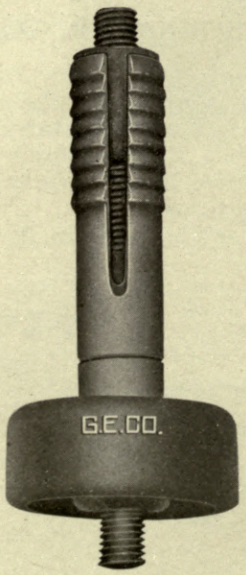
It is used in connection with a wooden plug, Cat. No. 34137, which is drilled axially for the lag screw. The plug is driven into a hole drilled in the mine roof and the lag screwed into the plug, its taper splitting the wood and expanding it permanently in place.

The roof drilling should be 1½ in. in diameter and 4 in. deep.



Mine Roof Suspension

Cat. No.	Description	Approx. Weight per 100
34135	Form H mine roof suspension with lag screw, japanned	275
34136	Form H mine roof suspension with lag screw, sherardized	275



Mine Roof Suspension

FORM H3 MINE ROOF SUSPENSION WITH 4 IN. EXPANSION BOLT

The catalogue numbers in the following table cover Form H3 suspensions with expansion bolts complete. The roof bolt being properly seated in the suspension boss, the shell is readily expanded in the roof hole by a few turns of the suspension. Roof drilling should be 1¼ in. in diameter and at least 5 in. deep.

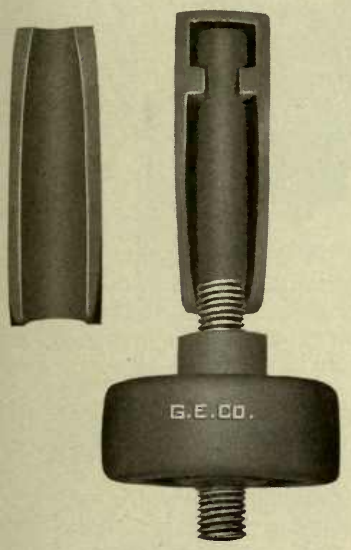
Cat. No.	Description	Approx. Weight per 100
116063	Form H3 mine roof suspension with expansion bolt, japanned	250
116062	Form H3 mine roof suspension with expansion bolt, sherardized	250

TROLLEY WIRE SUSPENSIONS

FORM H3 MINE ROOF SUSPENSION WITH ROOF WEDGES

This consists of the Form H3 suspension with 5 in. roof bolt and two expansion wedges. The bolt is slotted and the upper wedge arranged to engage it so as to prevent turning of the bolt when screwing up the suspension.

When the suspension is removed from the bolt the whole device is loosened in the hole by a hammer blow and thus readily recovered. Roof drilling should be $1\frac{3}{8}$ in. in diameter and at least 6 in. deep.



Mine Roof Suspension

Cat. No.	Description	Approx. Weight per 100
116067	Form H3 mine roof suspension with roof wedges, japanned	370
116066	Form H3 mine roof suspension with roof wedges, sherardized	370

FORM H3 MINE ROOF SUSPENSION WITH LAG SCREW

This suspension consists of the Form H3 suspension, with a gimlet point lag screw threaded in the top and projecting 3 in. above the tapped boss.

It is used in connection with a wooden plug, Cat. No. 34137, which is drilled axially for the lag screw. The plug is driven into a hole drilled in the mine roof and the lag screwed into the plug, its taper splitting the wood and expanding it permanently in place.

The roof drilling should be $1\frac{1}{2}$ in. in diameter and 4 in. deep.

This is also an excellent ceiling suspension for use in timbered entries, or in car-barn wiring as the lag can be screwed into the roof timbers.

Mine Roof Suspension

Cat. No.	Description	Approx. Weight per 100
116069	Form H3 mine roof suspension with lag screw, japanned	175
116068	Form H3 mine roof suspension with lag screw, sherardized	175

TROLLEY WIRE SUSPENSIONS

FORM H MINE SUSPENSION AND COMBINATION CLAMP

Combination Mine Suspension—Form H

Bracket Clamp

This suspension differs from other Form H mine suspensions in the elimination of any boss above the flange. It may be attached directly to the roof by means of an expansion bolt or to timbers by means of the lag screw shown on page 232. Its design makes it possible to properly seat the suspension against the mine roof without forcing the expansion bolt into the roof hole beyond recovery and also permits attachment to timbers without countersinking. By use of the combination clamp the suspension may be attached to either a 1¼ in. standard pipe fastened vertically in the mine roof or a 1½ in. pipe held horizontally from a side wall or as in outside construction when a pipe cross span or bracket arm is used.

The suspension is 2$\frac{5}{16}$ in. in height and has side grooves so it may be turned into place with the standard wrench. The top flange is 4 in. in diameter and the shell 3¼ in. in diameter. Height of combination clamp is 4¼ inches.

Cat. No.	Description	Approx. Weight per 100
125330	Form H combination mine suspension, sherardized	300
125331	Form H combination mine suspension, japanned	300
125334	Form H combination mine suspension with lag screw, sherardized	325
125335	Form H combination mine suspension with lag screw, japanned	325
125336	Form H combination mine suspension with roof wedges, sherardized	420
125337	Form H combination mine suspension with roof wedges, japanned	420
125338	Form H combination mine suspension with 4 in. expansion bolts, sherardized	400
125339	Form H combination mine suspension with 4 in. expansion bolts, japanned	400
125340	Form H combination mine suspension with 6 in. expansion bolts, sherardized	410
125341	Form H combination mine suspension with 6 in. expansion bolts, japanned	410
119828	Combination pipe clamp for 1½ in. and 1¼ in. pipe, sherardized	225
119829	Combination pipe clamp for 1½ in. and 1¼ in. pipe, japanned	225

Expansion Case

EXTENSION SUPPORT

These parts are useful in making up trolley supports of varying lengths by using ¾ in. diameter pipe. The expansion case is first inserted in the hole in the roof after which the pipe is driven into the case expanding same against the sides of the hole. The bolts are then tightened securely, gripping the pipe. The pipe clamps consist of two pieces bolted together and holding a standard ⅝ in. square head stud for screwing on the suspension.

Cat. No.	Description	Weight
125328	Expansion case ¾ in. pipe, sherardized	250
125329	Expansion case ¾ in. pipe, japanned	250
125332	Pipe clamp ¾ in. pipe, sherardized	200
125333	Pipe clamp ¾ in. pipe, japanned	200

Pipe Clamp

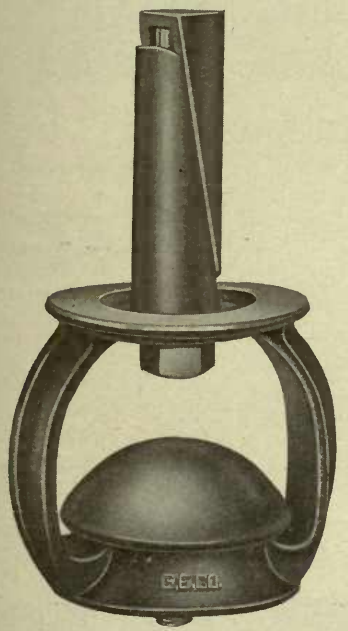
TROLLEY WIRE SUSPENSIONS

FORM D MINE ROOF SUSPENSIONS

(CAP AND CONE)

The height of the Form D mine roof suspension from the top of the ear seat to the top of the body is $4\frac{5}{16}$ inches.

The suspensions are furnished with roof wedges, or with the 4 in. expansion bolt; for the former the roof drilling should be $1\frac{3}{8}$ in. in diameter, and for the latter $1\frac{1}{4}$ in. in diameter; the depth of the hole being at least 4 in. in either case.



Mining Suspension
With Roof Bolt and Wedges

Greatest diameter 5 in.; diameter of top body flange 4 in.; height of body $4\frac{5}{16}$ in.

Cat. No.	Description	Approx. Weight per 100
37681	Form D mine roof suspension with roof wedges, japanned	510
37995	Form D mine roof suspension with roof wedges, sherardized . . .	510
68938	Form D mine roof suspension with expansion bolt, japanned	490
68937	Form D mine roof suspension with expansion bolt, sherardized . . .	490
16387	Form D mine roof suspension body only, japanned	285
39704	Form D mine roof suspension body only, sherardized	285

The insulating parts, Cat. No. 16925 cap and Cat. No. 16926 cone, are listed on another page. The cross sectional view on page 237 shows the fit of the cap and cone in the body.

Mining Suspension
With Expansion Bolt

EXPANSION BOLTS

The expansion bolts consist primarily of a malleable iron shell $1\frac{1}{4}$ in. in diameter, a roof bolt and a conical nut by means of which the shell is expanded when in position. The Fig. 3 is like the Fig. 1 except for the addition of a hexagonal shoulder on the roof bolt which is of service in recovering the device from the roof hole.

The roof drilling should be $1\frac{1}{4}$ in. in diameter.

Fig. 1
Expansion
Bolt

Cat. No.	Fig. No.	Length in Inches	Finish	Suspensions Used with	Approx. Weight per 100
116079	1	4	Japanned	Forms H and H3	100
66334	1	4	Sherardized	Forms H and H3	100
116081	2	4	Japanned	Form D	105
68397	2	4	Sherardized	Form D	105
116082	3	4	Japanned	Forms H and H3	105
100409	3	4	Sherardized	Forms H and H3	105
116080	1	6	Japanned	Forms H and H3	110
66336	1	6	Sherardized	Forms H and H3	110
116071	2	6	Japanned	Form D	115
116070	2	6	Sherardized	Form D	115
116083	3	6	Japanned	Forms H and H3	115
100410	3	6	Sherardized	Forms H and H3	115

Fig. 2
Expansion
Bolt

TROLLEY WIRE SUSPENSIONS

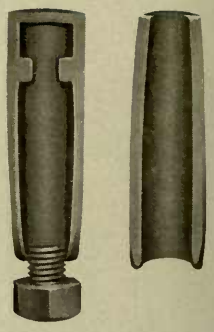
For Forms H and H3 Suspensions

ROOF WEDGES

A very effective method of attaching suspensions to the mine roof is here illustrated. The bolt is slotted near the top and the upper wedge is arranged to engage it so as to prevent turning of the bolt in screwing up the suspension. When the suspension is removed from the bolt the whole device is loosened in the hole by a blow with a hammer and may thus be readily recovered.

The roof drilling should be 1⅜ in. in diameter and at least 6 in. deep.

The roof bolt is furnished with sherardized finish but the wedges may be either sherardized or japanned.



For Form D Suspensions

Cat. No.	Description	Approx. Weight per 100
114862	Upper roof wedge, japanned	45
35690	Upper roof wedge, sherardized	45
114683	Lower roof wedge, japanned	35
35691	Lower roof wedge, sherardized	35
35689	Roof bolt (⅝ in.–11, 5 in. special) sherardized	40
41069	Roof bolt (⅝ in.–11, 5 in. special) with nut, sherardized	45

ROOF PLUG

The Forms H and H3 suspensions may be attached to the mine roof by means of the wooden plug and gimlet point lag screw threaded to fit the suspension and projecting three inches above it. The plug is drilled axially for the screw and is driven into the hole in the mine roof. The lag is then screwed into the plug, its taper splitting the wood and expanding it permanently in place.

The roof drilling should be 1½ in. in diameter and 4 in. deep.

Cat. No.	Description	Approx. Weight per 100
34137	Wooden plug (3 in. x 1½ in.)	10
36310	Lag screw (⅝ in. x 3⅞ in. special) sherardized	25

TROLLEY WIRE SUSPENSIONS

FORM H CEILING SUSPENSION

Ceiling Suspension

For use where roof timbers are available for attachment of suspensions.

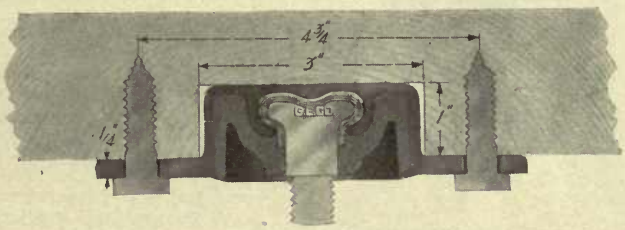
Total height of suspension above ear seat is 2 in. The supporting arms are slotted for ½ inch lag screws.

Distance between centers of screw slots 4¼ in.; thickness of slotted ears ⅜ in.; diameter of shell 3¼ in.

Cat. No.	Description	Approx. Weight per 100
19044	Form H ceiling suspension, japanned	230
27370	Form H ceiling suspension, sherardized	230

FORM H3 CEILING SUSPENSION

Cat. No. 105705



Cat. No. 64560

The Form H3 ceiling suspension is for attachment to roof timbers where head room is limited. They are furnished with the supporting arms either at the bottom or the top of the shell; in the former case they are designed to be counter sunk in the supporting timber, bringing the top of the ear hub ¼ in. below the bottom of the timber. When the supporting arms are at the top they may be attached to the overhead structure without countersinking; its total height above the ear seat is 1¼ in.; ½ in. screws are required for the supporting arms.

Cat. No.	Description	Approx. Weight per 100
116061	Form H3 ceiling suspension, with arms at bottom, japanned	150
64560	Form H3 ceiling suspension with arms at bottom, sherardized	150
116078	Form H3 ceiling suspension with arms at top, japanned	150
105705	Form H3 ceiling suspension with arms at top, sherardized	150

TROLLEY WIRE SUSPENSIONS

FORM D CEILING SUSPENSION

(CAP AND CONE)

Ceiling Suspension

Height above ear seat $2\frac{7}{16}$ in.; diameter of screw holes $\frac{9}{16}$ in.

Cat. No.	Description	Approx. Weight per 100
17570	Form D ceiling suspension, japanned	350
37991	Form D ceiling suspension, sherardized	350
15819	Form D ceiling body only, japanned	250
39703	Form D ceiling body only, sherardized	250

The insulating parts, Cat. No. 16925 cap and Cat. No. 16926 cone, are listed separately on another page. The cross sectional view on page 237 shows the fit of the cap and cone in the body.

FORM G CEILING SUSPENSION

(INSULATED BOLT)

Height above ear seat $3\frac{9}{16}$ in.; diameter of screw holes $\frac{9}{16}$ in.

Ceiling Suspension

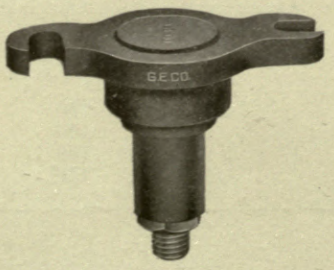
Cat. No.	Description	Approx. Weight per 100
16396	Form G ceiling suspension, japanned	225
25998	Form G ceiling suspension, sherardized	225
17524	Body only for Cat. No. 16396	75
25991	Body only for Cat. No. 25998	75
17701	Cap only for Cat. No. 16396	60
25999	Cap only for Cat. No. 25998	60

The insulated bolt, Cat. No. 17207, used in above suspensions is listed separately on another page. The fit of the insulated bolt in the suspension bodies is illustrated on page 243.

FORM G SOCKET CEILING SUSPENSION

(INSULATED BOLT)

Height above ear seat $3\frac{7}{16}$ in.; width of screw slots $\frac{9}{16}$ in.

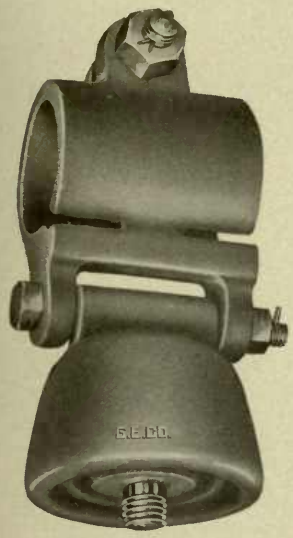


Socket Ceiling Suspension

Cat. No.	Description	Approx. Weight per 100
38688	Form G socket ceiling suspension, japanned	170
38690	Form G socket ceiling suspension, sherardized	170
38689	Body only for Cat. No. 38688	80
38691	Body only for Cat. No. 38690	80

The insulated bolt, Cat. No. 17207, used in above suspensions is listed separately on another page. The fit of the insulated bolt in the casting is illustrated on page 243.

TROLLEY WIRE SUSPENSIONS



Bracket Suspension

FORM H BRACKET SUSPENSION

The Form H bracket suspension consists of the standard 3¼ in. shell to which the bracket arm clamp is hinged, thus providing the flexibility required to care for vibration in the trolley wire.

For suspensions for 2 in. pipe the height from ear seat to center of bracket arm clamp is 5⅛ in.; for 1½ in. pipe the height is 4⅞ in.; diameter of shell 3¼ in. All metal parts including stud have sherardized finish.

Cat. No.	Description	Approx. Weight per 100
25992	Bracket suspension complete, for 2 in. pipe	540
25993	Bracket suspension complete, for 1½ in. pipe	530
25994	Bracket suspension, without clamp	275
25996	Clamp for 2 in. pipe, for use with Cat. No. 25992	265
25997	Clamp for 1½ in. pipe, for use with Cat. No. 25993	255

The clamps for the Form H bracket suspensions are the same as those used with Form G bracket suspensions.

Bracket Suspension

FORM D BRACKET SUSPENSION

(CAP AND CONE)

For suspensions for 2 in. pipe the height from ear seat to center of bracket arm clamp is 3½ in.; for 1½ in. pipe the height is 3¼ in. All metal parts including studs have sherardized finish.

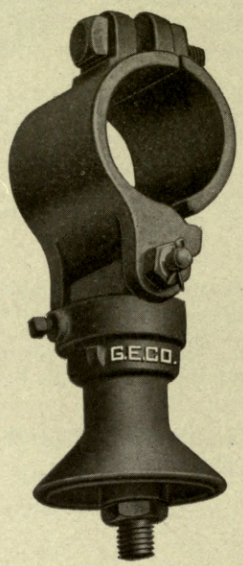
Cat. No.	Description	Approx. Weight per 100
38005	Bracket suspension, for 2 in. pipe	400
38008	Bracket suspension, for 1½ in. pipe	375
39706	Bracket body, for 2 in. pipe	305
39707	Bracket body, for 1½ in. pipe	280

The insulating parts, Cat. No. 16925 cap and Cat. No. 16926 cone, are listed separately on another page. The cross sectional view on page 237 shows the fit of the cap and cone in the body.

TROLLEY WIRE SUSPENSIONS

FORM G BRACKET SUSPENSION

(INSULATED BOLT)



Bracket Suspension

For suspensions for 2 in. pipe the height from ear seat to center of bracket arm clamp is 6½ in.; for 1½ in. pipe the height is 6¼ in. All metal parts including stud have sherardized finish.

Cat. No.	Description	Approx. Weight per 100
25989	Bracket suspension, for 2 in. pipe	480
25990	Bracket suspension, for 1½ in. pipe	460
25991	Body	75
25995	Cap	40
25996	Clamp for 2 in. pipe	275
25997	Clamp for 1½ in. pipe	255

The insulated bolt, Cat. No. 17207, used in above suspensions is listed separately on another page. The fit of the insulated bolt in the casting is illustrated on page 243.

SPECIAL HEAT RESISTING INSULATION FOR COKE OVENS AND SMELTER PLANTS

For use where excessive temperatures are met, as about coke ovens and smelter plants, a special insulation can be furnished which will withstand fully 350 degrees centigrade.

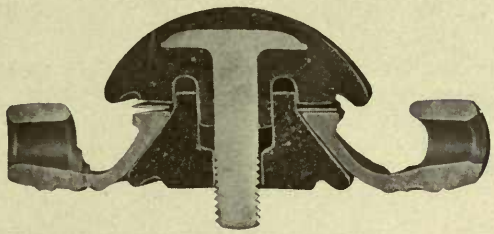
This insulation is used in the form of caps and cones and also insulated bolts and can therefore be used in all Form D and Form G suspensions listed in this bulletin.

Orders for suspensions with this "heat resisting" insulation should be made very clear: The following indicates a wording which cannot be mistaken—"100 Form D mine suspensions similar to Cat. No. 37681 but **to have special heat resisting cap and cone.**"

TROLLEY WIRE SUSPENSIONS

FORM D SUSPENSIONS FOR SURFACE CONSTRUCTION

(CAP AND CONE)



Section of Form D Suspension

In the Form D suspensions the cap, cone and malleable iron body casting (also the lock washer when ordered) are assembled as shown in the sectional view above. The cap and cone dovetail together in such a way as to prevent the formation of a film of moisture between them. The stud bolt head is made considerably larger than the opening in the body casting so that accidental breakage of the insulation will not allow the trolley wire to fall. A dead load of over six tons is required to crush the insulation between the stud cap and body.

Cap and cone Cat. Nos. 16925 and 16926 are standard and are furnished with all Form D suspensions unless otherwise ordered: for use where excessive temperatures are met a special insulation is offered, which will withstand fully 350 degrees centigrade. This "heat resisting" insulation is used in Cat. Nos. 113978 and 113979.

The lock washer, which is supplied only when specially ordered, engages directly with the screw cap and the body and effectively prevents any tendency to unscrew from vibration.

CAP AND CONE INSULATORS

For convenience in ordering parts, caps, cones and lock washers are listed separately in the following table. They are interchangeable for all Form D suspensions having studs of corresponding diameter.

The bodies are listed separately in the tables of complete suspensions.

All studs and lock washers have sherardized finish.

Cap

Cone

Lock Washer

Cat. No.	Description	Approx. Weight per 100
16925	Insulating cap, standard	70
16926	Insulating cone for No. 16925, standard	25
113978	Insulating cap, special heat resisting	70
113979	Insulating cone for Cat. No. 113978, special heat resisting	25
19480	Lock washer for all Form D suspensions	3

TROLLEY WIRE SUSPENSIONS

STRAIGHT LINE

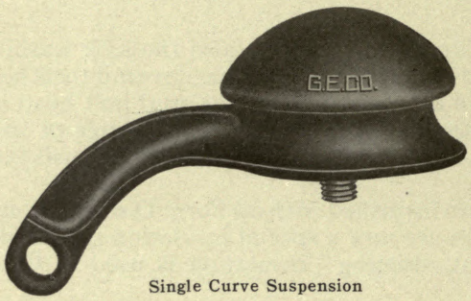
Overall length 6½ in.; height above ear seat 2⅛ in.; arm yokes accommodate ⅜ in. span wire. Stud and body have sherardized finish.

Straight Line Suspension

Cat. No.	Description	Approx. Weight per 100
37979	Straight line suspension	195
39700	Straight line body	100

SINGLE CURVE

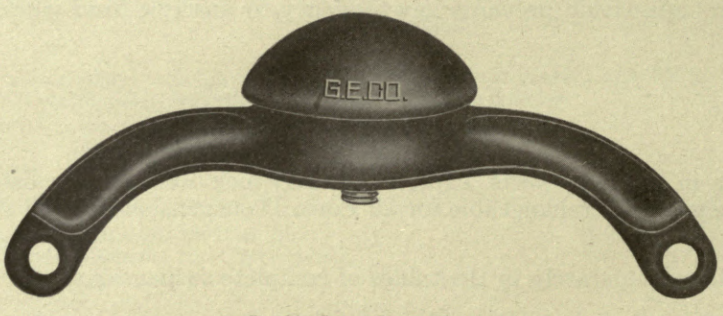
Distance between center line of stud and center of pull off eye 4⅝ in.; diameter of pull off eye $\frac{9}{16}$ in.; thickness of arm at eye ½ in. Stud and body have sherardized finish.



Single Curve Suspension

Cat. No.	Description	Approx. Weight per 100
37983	Single curve suspension	245
39701	Single curve body	150

DOUBLE CURVE



Double Curve Suspension

Length between centers of eyes 9¼ in.; diameter of pull off eye $\frac{9}{16}$ in.; thickness of arms at eyes ½ in. Stud and body have sherardized finish.

Cat. No.	Description	Approx. Weight per 100
37986	Double curve suspension	295
39702	Double curve body	200

STRAIN

Overall length 7½ in.; diameter of pull off eyes $\frac{7}{16}$ in.; arm yokes accommodate ⅜ in. span wire. Stud and body have sherardized finish.

Strain Suspension

Cat. No.	Description	Approx. Weight per 100
37997	Strain suspension	245
39705	Strain body	150

TROLLEY WIRE SUSPENSIONS

DOUBLE TROLLEY FORM D SUSPENSIONS FOR SURFACE CONSTRUCTION

The Form D double trolley suspensions are particularly suited for use where there is a difference of potential between the two wires, inasmuch as they insulate the wires from each other.

The distance between centers is 6½ in. which allows ample space for frog and crossing devices where double trolley turnouts are installed.

The bodies are heavier throughout than the bodies of corresponding single trolley suspensions and are fully adequate to the stresses of the heaviest line construction.

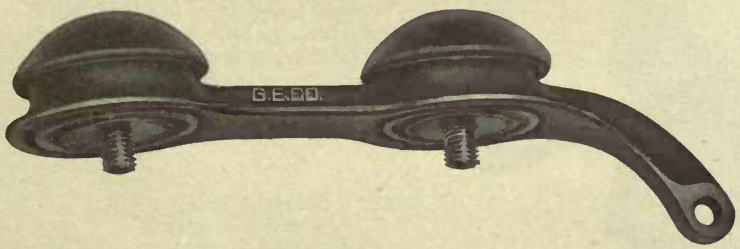
STRAIGHT LINE

Straight Line Suspension

Overall length 13¼ in.; distance between centers of studs 6½ in.; arm yokes accommodate ⅜ in. span wire. Studs and body have sherardized finish.

Cat. No.	Description	Approx. Weight per 100
38010	Straight line suspension	470
39708	Straight line body	280

SINGLE CURVE



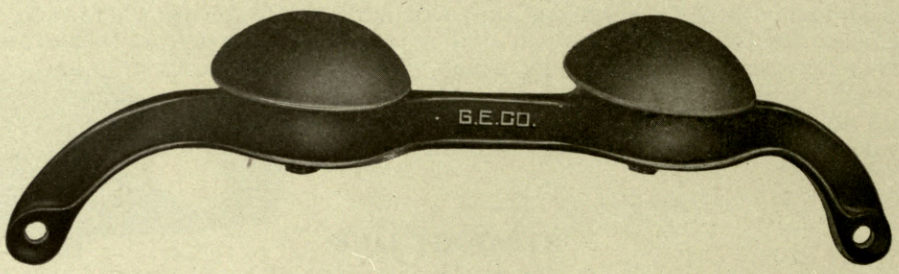
Single Curve Suspension

Length between center line of outer stud and center of pull off eye 11⅛ in.; distance between centers of studs 6½ in.; diameter of pull off eye $\frac{9}{16}$ in.; thickness of pull off arm at eye ½ in. Studs and body have sherardized finish.

Cat. No.	Description	Approx. Weight per 100
38014	Single curve suspension	500
39709	Single curve body	310

TROLLEY WIRE SUSPENSIONS

DOUBLE CURVE



Double Curve Suspension

Length between centers of pull off eyes 15¾ in.; distance between centers of studs 6½ in.; diameter of pull off eyes $\frac{9}{16}$ in.; thickness of pull off arms at eye ½ in. Studs and body have sherardized finish.

Cat. No.	Description	Approx. Weight per 100
39927	Double curve suspension	565
39710	Double curve body	375

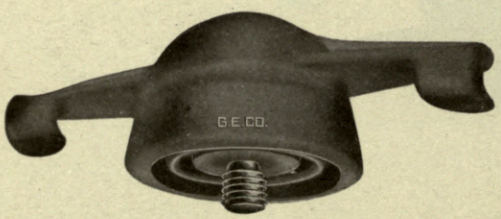
FORM H SUSPENSIONS FOR SURFACE CONSTRUCTION

(ROUND TOP)

STRAIGHT LINE, FORM H

These are made in two sizes 3¼ in. and 3½ in. in diameter. The 3½ in. suspension has extra heavy shell and arms and is designed especially for the heaviest construction.

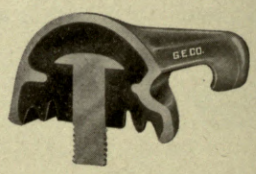
Each of these suspensions, being in one piece, is held against turning by the span wire, and cannot therefore become unscrewed as a result of vibration in service.



Straight Line Suspension—Form H

Overall length 6½ in.; arm yokes accommodate ⅜ in. span wire. Shell and stud have the sherardized finish.

Cat. No.	Description	Approx. Weight per 100
25980	Straight line suspension, 3¼ in. shell	210
39690	Straight line suspension 3½ in. shell	265

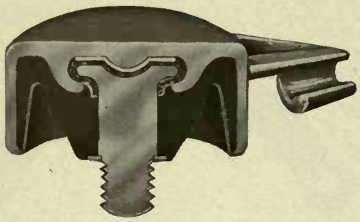


Section of Straight Line Suspension

TROLLEY WIRE SUSPENSIONS

STRAIGHT LINE, FORM H3

Straight Line Suspension—Form H3



This suspension is made in one size, 3 in. diameter and $\frac{5}{8}$ in. stud.

The stud is mechanically fastened in the shell and insulated by the best sheet mica. The moulded compound affords efficient protection against moisture.

Overall length 6½ in., fits $\frac{3}{8}$ in. span wire. Shell and stud sherardized.

Cat. No.	Description	Approx. Weight per 100
112200	Straight line suspension	170

SINGLE CURVE, FORM H

Single Curve Suspension

Length between center line of stud and center of pull off eye 4½ in.; height above center of pull off eye 3½ in.; diameter of pull off eye $\frac{9}{16}$ in.; thickness of pull off arm at eye ½ in.; diameter of shell 3½ in. All metal parts including stud have sherardized finish.

Suspension Body

Cat. No.	Description	Approx. Weight per 100
68953	Single curve suspension, 3½ in. shell	310
68961	Single curve suspension body, for Cat. No. 68953	255
128424	Removable arm, for Cat. No. 68953	55

TROLLEY WIRE SUSPENSIONS

DOUBLE CURVE

Double Curve Suspension

Length between centers of pull off eyes 9 in.; height above center of pull off eyes 3½ in.; diameter of shell 3½ in.; diameter of pull off eyes $\frac{9}{16}$ in.; thickness of pull off arms at eyes ½ in. All metal parts including stud have sherardized finish.

Suspension Body

Cat. No.	Description	Approx. Weight per 100
68957	Double curve suspension, 3½ in. shell	395
66330	Double curve suspension body, for Cat. No. 68957	285
128424	Removable arm, for Cat. No. 68957	55

FORM S SUSPENSIONS FOR SURFACE CONSTRUCTION

These suspensions consist of liberally designed malleable iron yokes fitted with 2 in. giant strain insulators or wood strain insulators either 1 in. or 1¼ in. in diameter. If other insulators are desired, bodies and insulators should be ordered separately.

STRAIGHT LINE

WITH 2 IN. GIANT STRAIN INSULATORS, CAT. NO. 64425

Length between centers of outer eyes 15⅝ in. All metal parts including stud have sherardized finish. Approximate weight 410 lb. per 100.

Straight Line Suspension—Cat. No. 66648

WITH 1 IN. WOOD STRAIN INSULATORS, CAT. NO. 16727

Length between centers of outer eyes 27 in. All metal parts including stud have sherardized finish. Approximate weight 515 lb. per 100.

Straight Line Suspension—Cat. No. 66640

WITH 1 1/4 IN. WOOD STRAIN INSULATORS, CAT. NO. 37488

Length between centers of outer eyes 27 in. All metal parts including stud have sherardized finish. Approximate weight 585 lb. per 100.

Straight Line Suspension—Cat. No. 89483

TROLLEY WIRE SUSPENSIONS

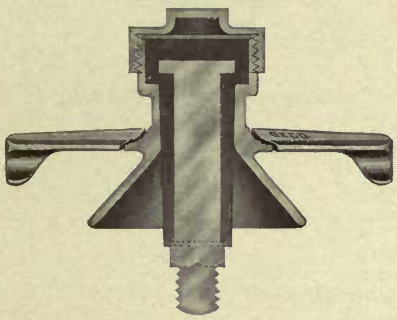
BODIES FOR STRAIGHT LINE SUSPENSIONS

COMPLETE WITH BOLTS, WASHERS AND PINS

Length between pin centers 8 in.; clevis opening $\frac{9}{16}$ in.; diameter of pins $\frac{1}{2}$ in. All metal parts including stud have sherardized finish. Approximate weight 235 lb. per 100.

Straight Line Suspension Body—Cat. No. 66632

FORM G SUSPENSIONS FOR SURFACE CONSTRUCTION



Section of Form G Suspension

The Form G suspensions consist of malleable iron castings and insulated bolts assembled as indicated in the sectional view. The insulated bolt is held firmly in place by a cap casting threaded to the body casting. A dead load of over 6 tons is required to crush the insulation between the stud cap of the insulated bolt and the body casting. Particular attention is called to the shoulder of the forged steel bolt which is under cut providing a considerable recess into which the insulating compound is moulded. The effect of the undercut is to provide a flange which very effectively binds the compound to the bolt at the point which otherwise would be weakest.

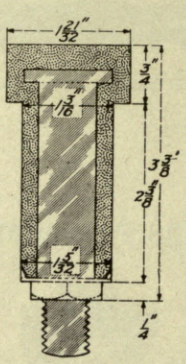
Insulated bolt Cat. No. 17207 is standard and is furnished with all Form G suspensions unless otherwise ordered. For use where excessive temperatures are met, a special insulation is offered which will withstand fully 350 degrees centigrade; this "heat resisting" insulation is used in Cat. No. 113980 which is otherwise a duplicate of Cat. No. 17207.

TROLLEY WIRE SUSPENSIONS

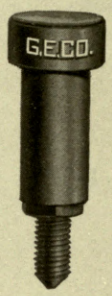
INSULATED BOLTS

Insulated bolts, Cat. Nos. 17207 and 62561 are interchangeable for all Form G suspensions, having studs of corresponding diameter, and fit all standard ears except the automatic ear, Cat. No. 17338, for which a special insulated bolt, Cat. No. 17341, with pointed stud is provided. The studs have sherardized finish.

Cat. No. 17207



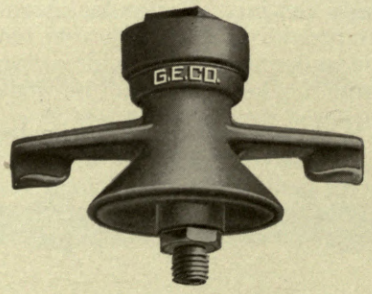
Cross Section of Insulated Bolts



Cat. No. 17341

Cat. No.	Description	Approx. Weight per 100
17207	Insulated bolt, standard	90
113980	Insulated bolt, special heat resisting	90
17341	Insulated bolt, for automatic ear, Cat. No. 17338	95

STRAIGHT LINE



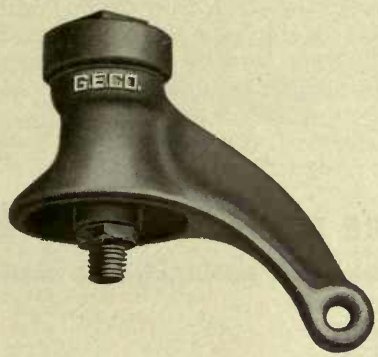
Straight Line Suspension

Overall length across arms 6 in.; height above ear seat 3 7/8 in.; arm yokes accommodate 3/8 in. span wire. All metal parts including studs have sherardized finish.

Cat. No.	Description	Approx. Weight per 100
25976	Straight line suspension	245
25977	Body	120
25978	Cap	35

TROLLEY WIRE SUSPENSIONS

SINGLE CURVE



Single Curve Suspension

Length from center line of stud to center of pull off eye 4 in.; height above ear seat 3⅞ in.; diameter of pull off eye $\frac{9}{16}$ in.; thickness of pull off arm at eye ½ in. All metal parts including stud have standard sherardized finish.

Cat. No.	Description	Approx. Weight per 100
25981	Single curve suspension	270
25982	Body	145
25978	Cap	35

DOUBLE CURVE

Double Curve Suspension

Length between centers of pull off eyes 8 in.; height above ear seat 3⅞ in.; diameter of pull off eyes $\frac{9}{16}$ in.; thickness of pull off arm at eye ½ in. All metal parts including stud have sherardized finish.

Cat. No.	Description	Approx. Weight per 100
25984	Double curve suspension	310
25985	Body	185
25978	Cap	35

TROLLEY WIRE SUSPENSIONS

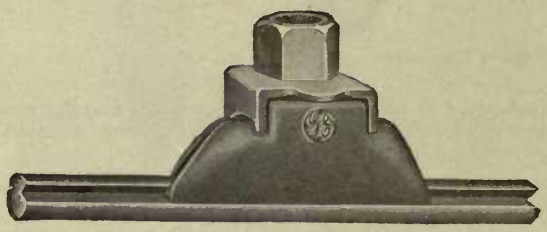
FORM M MECHANICAL EAR

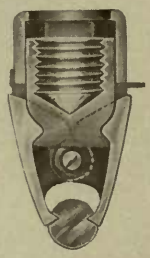
The Form M mechanical ear consists of steel drop forgings and a machine steel socket stud and pin, so interlocked that it is impossible for the parts to become separated and lost. The use of forgings insures absolute accuracy in the fit of the lips on the wire and maximum clearance to the trolley wheels. The parts are strong and durable though lighter in actual weight than any of the malleable iron clamping ears.

The ears are made suitable for grooved, round and figure 8 wires, and each ear accommodates all sizes of the wire for which it was designed.

EARS FOR GROOVED WIRE

FORM M MECHANICAL EAR





The Form M ear consists of two drop forged steel jaws hinged together with a steel pin. The clamping plate insures positive bearing upon the jaws under pressure exerted by the clamping nut. The simple turning of the hexagonal nut tightens the ear on the wire and suspension in one operation. The ear is 3 in. long and 2 in. in height and will fit any suspension with $\frac{5}{8}$ in. stud.

Cat. No.	Description	Approx. Weight per 100
114905	Form M mechanical ear for Nos. 00, 000 and 0000 wires, malleable iron, japanned	55
113052	Form M mechanical ear for Nos. 00, 000 and 0000 wires, malleable iron, sherardized	55

FORM A SCREW CLAMP EARS

The form of the grooved trolley wire permits the use of a clamping ear which holds the wire with perfect security, and at the same time offers no obstruction to the passage of the trolley wheel.

Diagram Showing How The Clamping Ear Holds Grooved Trolley Wire

Diameter flange $1\frac{7}{16}$ in.; Thickness $\frac{1}{8}$ in.; Height 2 in.; Boss tapped $\frac{5}{8}$ in. thread.

The lips of the ears are so shaped as to give a four-point bearing in the grooves which prevents any tendency of the wire to roll out of the ear as a result of torsional or transverse stress.

The 5 in. and 7 in. plain ears are listed in both malleable iron and composition.

The feeder and strain ears are composition with lips tinned for soldering to the wire.

All screw clamp ears for grooved wires are interchangeable on Nos. 00, 000 and 0000 wires. They have $1\frac{7}{8}$ in. hub flanges and have $\frac{5}{16}$–18 screws.

EARS FOR GROOVED WIRE

FORM A SCREW CLAMP EARS

5 IN. PLAIN

Cat. No.	Description	Approx. Weight per 100
19432	For Nos. 00, 000 and 0000 wires, malleable iron, japanned	66
37804	For Nos. 00, 000 and 0000 wires, malleable iron, sherardized	66
27627	For Nos. 00, 000 and 0000 wires, comp.	75

7 IN. PLAIN

The 7 in. plain ears, being designed especially for use with Nos. 000 and 0000 grooved wires, are extra heavy throughout.

34123	For Nos. 00, 000 and 0000 wires, malleable iron, japanned	88
37805	For Nos. 00, 000 and 0000 wires, malleable iron, sherardized	88
34124	For Nos. 00, 000 and 0000 wires, comp.	100

10 IN. CURVE

The curve ears may also be advantageously employed in straight line construction, especially with Nos. 000 and 0000 wires.

34125	For Nos. 00, 000 and 0000 wires, malleable iron, japanned	125
37808	For Nos. 00, 000 and 0000 wires, malleable iron, sherardized	125

7 IN. FEEDER

Cat. No. 59565

Cat. No. 48455

59565	For Nos. 00, 000 and 0000 wires, comp.	115
48455	For Nos. 00, 000 and 0000 wires, comp.	100

Will accommodate feeder wire up to and including No. 0000.

EARS FOR GROOVED WIRE

FORM A SCREW CLAMP EARS

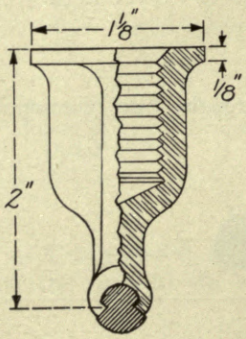
12 IN. STRAIN

Cat. No.	Description	Approx. Weight per 100
34127	For Nos. 00, 000 and 0000 wires, comp.	165

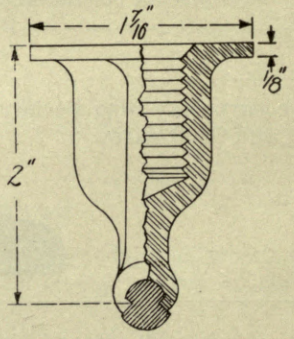
7 IN. HALF STRAIN

61232	For Nos. 00, 000 and 0000 wires, comp.	90

SOLDERED CLINCH EARS



Form P



Form P2

Clinch ears for grooved wire are designed to be sprung on the wire by hand and the sides crimped together, making a snug fit. They are then usually soldered. The 00 ears are furnished with the hub flange either $1\frac{1}{8}$ in. or $1\frac{7}{16}$ in. in diameter; the difference being designated by the absence or presence of a numerical exponent after the form letter. Special attention is called to the fact that the grooves are formed to give an exact fit both at the groove bottom and the lips. The ears are furnished in three lengths and have their lips tinned for soldering.

EARS FOR GROOVED WIRE

SOLDERED CLINCH EARS

Cat. No.	Description	Approx. Weight per 100
39876	9 in. Form P, for No. 00 wire	80
39879	9 in. Form P2, for No. 00 wire	85
40941	9 in. Form P2, for No. 000 wire	100
40937	9 in. Form P2, for No. 0000 wire	120
39877	12 in. Form P, for No. 00 wire	94
39880	12 in. Form P2, for No. 00 wire	100
40943	12 in. Form P2, for No. 000 wire	129
40939	12 in. Form P2, for No. 0000 wire	140
39878	15 in. Form P, for No. 00 wire	108
39881	15 in. Form P2, for No. 00 wire	125
39882	15 in. Form P2, for No. 000 wire	150
39884	15 in. Form P2, for No. 0000 wire	170

15 IN. FEEDER EARS

39891	Form P, for No. 00 wire	140
39892	Form P-2, for No. 000 wire	185
39894	Form P-2, for No. 0000 wire	200
39896	Set screw for feeder ears, 14-24, ½ in. square head	

The feeder boss on all Nos. 0 and 00 ears is drilled to take wire 00 and smaller. The Nos. 000 and 0000 ears take feeder wires up to 0000.

15 IN. STRAIN

60351	Form P, for No. 00 wire	130

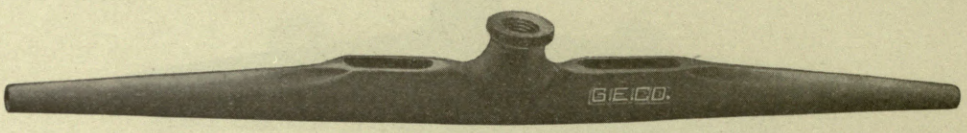
SINGLE END STRAIN

68442	8 in. half strain ear for No. 00 wire	60
68444	9 in. half strain ear for No. 000 wire	75
68445	9 in. half strain ear for No. 0000 wire	90

EARS FOR GROOVED WIRE

SPLICING EARS—SOLDERED

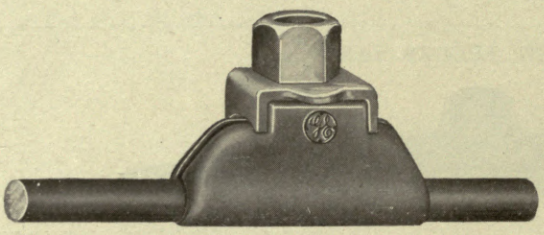
Designed for soldering in same manner as soldered splicing sleeves.

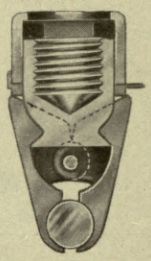


Cat. No.	Description	Approx. Weight per 100
19436	19½ in. splicing ear for No. 00 wire	225
19437	21½ in. splicing ear for No. 000 wire	250
19438	23½ in. splicing ear for No. 0000 wire	285

EARS FOR ROUND WIRE

FORM M MECHANICAL EARS





This ear is of the forged steel type shown on page 246 with lips of the clamping jaws arranged to accommodate round wires. The clamps are 3 in. long and 0 in. in height and suitable for any suspension having ⅝ in. stud.

Cat. No.	Description	Approx. Weight per 100
114904	Form M mechanical ear for Nos. 00, 000 and 0000 wires, malleable iron, japanned	58
113298	Form M mechanical ear for Nos. 00, 000 and 0000 wires, malleable iron, sherardized	58

FORM B CLAMPING EAR

Although this ear was designed primarily for use on round wire it is frequently used on 2/0 grooved wire which has been worn to such an extent that the regular grooved wire ears will not hold it. The clamping sheath which surrounds and holds the trolley wire is formed from hard bronze sheet 0.032 in. thick so its obstruction to a slow moving trolley wheel is negligible. It is evident from the accompanying illustration that the sheath is the only part of the ear subject to wear and that it can be very readily replaced.

EARS FOR ROUND WIRE

FORM B CLAMPING EAR

Overall length 8 in.; height from center of trolley wire to top of hub 1⅝ in.

Cat. No.	Description	Approx. Weight per 100
16379	Clamping ear, Form B, for Nos. 0 and 00 wires, malleable iron sherardized	85
15901	Clamping sheath, for Cat. No. 16379, hard bronze	15
15902	Clamping block, for Cat. No. 16379, malleable iron, sherardized	12
15903	Clamping screw, for Cat. No. 16379, steel, sherardized	6

6 IN. AUTOMATIC EAR

The automatic ear is clamped on the wire by the spreading action of a special pointed stud in the suspension, for which the special insulated bolt, Cat. No. 17341, is furnished with Form G suspensions.

This ear is often very useful for temporary work, and, together with the adapter, can be used with standard suspensions.

Cat. No.	Description	Approx. Weight per 100
17338	6 in. automatic ear, for Nos. 0 and 00 wires, malleable iron, sherardized	125
17400	Adapter for No. 17338, comp.	50

SCREW CLAMP—FORM A

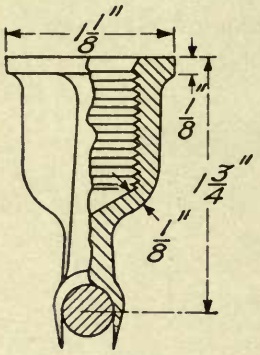
The ease of installation and removal of the screw clamp ears for round wire make them increasingly useful, not only for temporary installations but also for more permanent work.

5 IN. PLAIN

Cat. No.	Description	Approx. Weight per 100
41047	For Nos. 0 and 00 wires, malleable iron, sherardized	70
41048	For Nos. 0 and 00 wires, malleable iron, japanned	70
41443	For Nos. 0 and 00 wires, comp.	80
41049	For Nos. 000 and 0000 wires, malleable iron, sherardized	75
41050	For Nos. 000 and 0000 wires, malleable iron, japanned	85
41444	For Nos. 000 and 0000 wires, comp.	85

EARS FOR ROUND WIRE

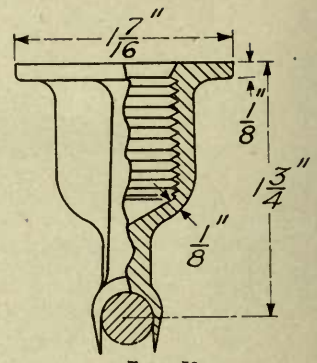
CLINCH



Form J

Clinch ears for round wire are furnished in two forms,—the "J" and the "J2" which differ only in the diameter of the hub flange. The Form J, with a $1\frac{1}{8}$ in. flange is particularly suitable for use with suspensions of the insulated bolt type, Form G. The Form J2 ears have a $1\frac{7}{16}$ in. hub flange and are especially suitable for suspensions presenting a large bearing surface at the base of their studs, such as the Forms H, S, and D.

The clinch ears have an extra deep groove so that the lips approximately meet beneath the wire and are generally used without solder.



Form J2

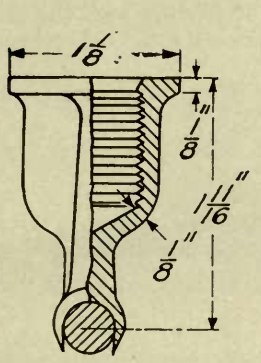
In the design of these ears all angles are filled with generous fillets, and in their manufacture extreme care is exercised to maintain accurate dimensions of the milled grooves and of the lips which are tapered to a knife edge.

Grooves are milled to exact dimensions and unless specially ordered are furnished untinned.

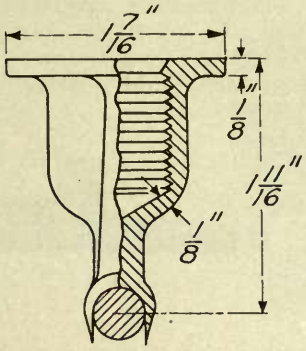
Cat. No.	Description	Approx. Weight per 100
32574	9 in. Form J, for No. 0 wire	57
32576	9 in. Form J, for No. 00 wire	63
32575	9 in. Form J2, for No. 0 wire	69
32577	9 in. Form J2, for No. 0C wire	74
32570	12 in. Form J, for No. 0 wire	72
32572	12 in. Form J, for No. 00 wire	82
32571	12 in. Form J2, for No. 0 wire	75
32573	12 in. Form J2, for No. 00 wire	85
19424	15 in. Form J, for No. 0 wire	85
19425	15 in. Form J, for No. 00 wire	94
32568	15 in. Form J2, for No. 0 wire	88
32569	15 in. Form J2, for No. 00 wire	97
34113	15 in. Form J2, for No. 000 wire	124
34114	15 in. Form J2, for No. 0000 wire	140

EARS FOR ROUND WIRE

SOLDERED



Form H



Form H2

Soldered ears for round wire are furnished in two Forms—the "H" and the "H2" which differ only in the diameter of the hub flange. The Form H with a $1\frac{1}{8}$ in. flange is particularly suitable for use with suspensions of the insulated bolt type, Form G. The Form H2 ears have a $1\frac{7}{16}$ in. hub flange and are especially suitable for suspensions presenting a large bearing surface at the base of their studs, such as the Forms H, S and D.

These ears have a groove depth equal to the diameter of the wire so that when the lips are peened down and soldered the bottom of the wire is exposed, allowing unobstructed passage of the trolley wheel.

In the design of these ears all angles are filled with generous fillets, and in their manufacture extreme care is exercised to maintain accurate dimensions of the milled grooves and of the lips which are tapered to a knife edge.

Grooves are milled to exact dimensions and, unless specially ordered, are tinned for soldering.

Cat. No.	Description	Approx. Weight per 100
16034	9 in. Form H, for No. 0 wire	54
15157	9 in. Form H, for No. 00 wire	62
31666	9 in. Form H2, for No. 0 wire	57
31668	9 in. Form H2, for No. 00 wire	68
32562	12 in. Form H, for No. 0 wire	63
32564	12 in. Form H, for No. 00 wire	72
32563	12 in. Form H2, for No. 0 wire	66
32565	12 in. Form H2, for No. 00 wire	85
16394	15 in. Form H, for No. 0 wire	82
15022	15 in. Form H, for No. 00 wire	94
31665	15 in. Form H2, for No. 0 wire	88
31667	15 in. Form H2, for No. 00 wire	104
34111	15 in. Form H2, for No. 000 wire	122
34112	15 in. Form H2, for No. 0000 wire	128

EARS FOR ROUND WIRE

All feeder, strain and splicing ears for use on round wire are of the deep groove form as denoted by the letter J. The 0 and 00 sizes have hub flanges $1\frac{1}{8}$ in. in diameter and the 000 and 0000 sizes have $1\frac{7}{16}$ in. flanges, the size of the flange being indicated by the absence or presence of the numerical exponent (2) after the form letter.

All these ears are designed for soldering and unless especially ordered are furnished with tinned lips.

15 IN. FEEDER

Cat. No.	Description	Approx. Weight per 100
15120	Form J, for No. 0 wire	95
15121	Form J, for No. 00 wire	100
34115	Form J2, for No. 000 wire	145
34116	Form J2, for No. 0000 wire	155
39896	Set screw for above feeder ears, 14–24, $\frac{1}{2}$ in. long, square head	

The feeder lug of the 0 and 00 ears is drilled to take 00 B.&S. solid wire. The 000 and 0000 ears take wire up to and including 0000 B.&S.

15 IN. STRAIN

68446	Form J, for No. 0 wire	100
60348	Form J, for No. 00 wire	110
60349	Form J2, for No. 000 wire	150
60350	Form J2, for No. 0000 wire	190

SINGLE END STRAIN

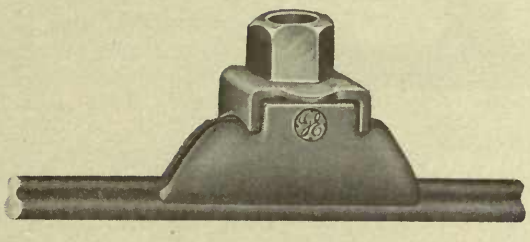
30459	8 in., for No. 0 wire	40
30460	8 in., for No. 00 wire	50
34121	9 in., for No. 000 wire	60
34122	9 in., for No. 0000 wire	70

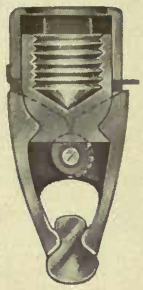
15 IN. SOLDERED SPLICING

15138	Form J, for No. 0 wire	125
12900	Form J, for No. 00 wire	130
34119	Form J2, for No. 000 wire	210
34120	Form J2, for No. 0000 wire	250

EARS FOR FIG. 8 WIRE

FORM M MECHANICAL EAR





This ear is the same as shown on page 246 excepting that it is made to hold figure 8 wire. It consists of steel forgings which insure accurate fit on the wire and maximum clearance to the trolley wheel. Ear is 3 in. long and 2 in. in height suitable for any suspension with $\frac{5}{8}$ in. stud.

Cat. No.	Description	Approx. Weight per 100
114906	Form M mechanical ear for Nos. 00, 000 and 0000 wires, malleable iron, japanned	60
113053	Form M mechanical ear for Nos. 00, 000 and 0000 wires, malleable iron, sherardized	60

FORM A SCREW CLAMP

5 IN. PLAIN

Cat. No.	Description	Approx. Weight per 100
115812	For Nos. 00, 000 and 0000 wires, malleable iron, japanned	70
109898	For Nos. 00, 000 and 0000 wires, malleable iron, sherardized	70

7 IN. PLAIN

116060	For Nos. 00, 000 and 0000 wires, malleable iron, japanned	94
114878	For Nos. 00, 000 and 0000 wires, malleable iron, sherardized	94

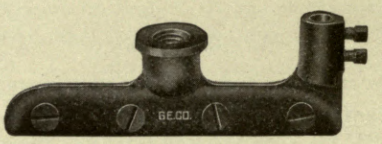
EARS FOR FIG. 8 WIRE

FORM A SCREW CLAMP

10 IN. CURVE

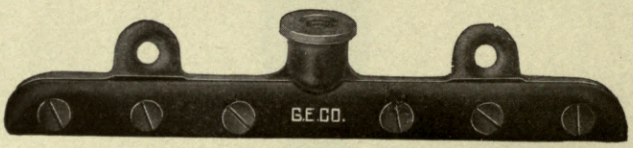
Cat. No.	Description	Approx. Weight per 100
115717	For Nos. 00, 000 and 0000 wires, malleable iron, japanned	130
114882	For Nos. 00, 000 and 0000 wires, malleable iron, sherardized	130

7 IN. FEEDER



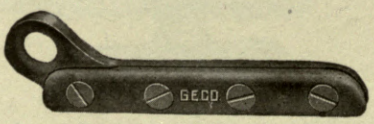
114884	For Nos. 00, 000 and 0000 wires, comp.	120

12 IN. STRAIN



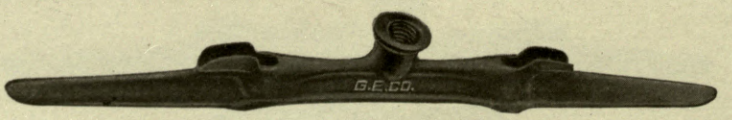
114880	For Nos. 00, 000 and 0000 wires, comp.	170

7 IN. HALF STRAIN



114907	For Nos. 00, 000 and 0000 wires, comp.	90

15 IN. SPLICING



12900	Form J, for No. 00 wire	130
34119	Form J2, for No. 000 wire	210
34120	Form J2, for No. 0000 wire	250

POLE BRACKETS

The following pole brackets represent the various forms called for in modern line construction and include the three styles of tube, the use of which has been approved in the best practice.

The wrought iron pipe referred to in the table is standard welded gas and water pipe, and the structural tubing is a special high carbon steel tube with butt joint, which, because of the great stiffness of the material does not require a welded seam.

All diameters given are the nominal inside diameters of standard wrought iron pipe.

All parts of these brackets are finished in black japan.

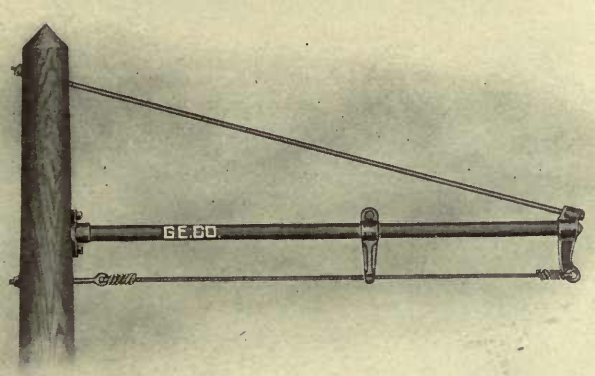
The following table gives dimensions and weights of the various tubes employed.

Material	Nominal Inside Diameter in In.	Actual Outside Diameter in In.	Thickness of Wall in In.	Weight in Lb. per Ft.
Wrought iron pipe	1¼	1.66	0.140	2.2
	1½	1.90	0.145	2.6
	2	2.375	0.154	3.6
"A" tubing	1¼	1.66	0.095	1.5
	1½	1.90	0.095	1.87
	2	2.375	0.107	2.50
"C" tubing	1¼	1.66	0.140	2.2
	1½	1.90	0.145	2.5
	2	2.375	0.154	3.5

FLEXIBLE BRACKETS

9 ft. long with Guy Rod and Galvanized Steel Cable

FORM A1 BRACKETS



Cat. No.	Description	Approx. Weight per 100	Cat. No.	Description	Approx. Weight per 100
40009	1½ in. "A" tubing	3250	40012	2 in. "A" tubing	3450
40010	1½ in. "C" tubing	3800	40013	2 in. "C" tubing	4000
40011	1½ in. wrought iron pipe	3900	40014	2 in. wrought iron pipe	4100

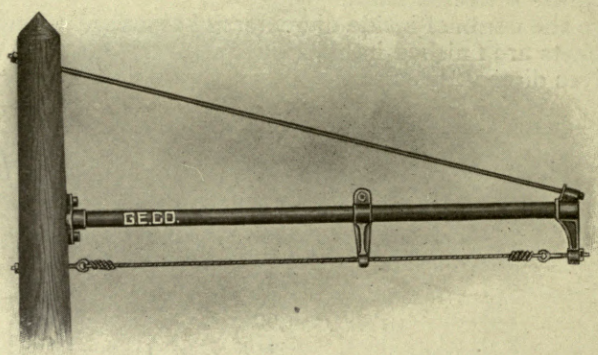
For sherardized brackets or brackets other than 9 feet in length, prices will be quoted on application.

POLE BRACKETS

FLEXIBLE BRACKETS

9 ft. long with Guy Rod and Galvanized Steel Cable

FORM A2 BRACKETS



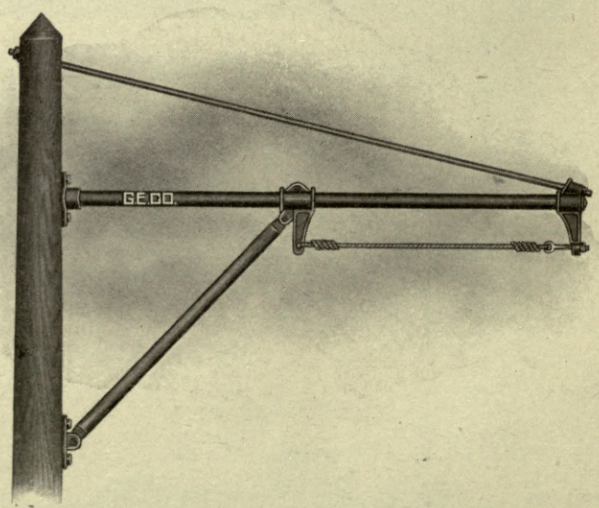
This bracket differs from the Form "A1" only in that it has additional adjustment for tension of span wire.

Cat. No.	Description	Approx. Weight per 100	Cat. No.	Description	Approx. Weight per 100
40015	1½ in. "A" tubing	3300	40018	2 in. "A" tubing	3500
40016	1½ in. "C" tubing	3850	40019	2 in. "C" tubing	4050
40017	1½ in. wrought iron pipe	3950	40020	2 in. wrought iron pipe	4150

For sherardized brackets or brackets other than 9 feet in length, prices will be quoted on application.

9 ft. long with Guy Rod and Galvanized Steel Cable

FORM B COMBINATION BRACKETS



Cat. No.	Description	Approx. Weight per 100	Cat. No.	Description	Approx. Weight per 100
40021	"A" tubing, arm 1½ in., strut 1¼ in.	4150	40024	"A" tubing, arm 2 in., strut 1½ in.	5050
40022	"C" tubing, arm 1½ in., strut 1¼ in.	5000	40025	"C" tubing, arm 2 in., strut 1½ in.	6250
40023	Wrought iron pipe, arm 1½ in. strut 1¼ in.	5100	40026	Wrought iron pipe, arm 2 in., strut 1½ in.	6400

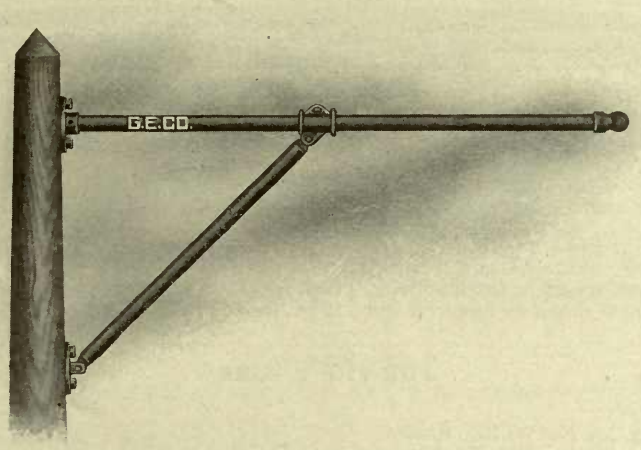
For sherardized brackets or brackets other than 9 feet in length, prices will be quoted on application.

POLE BRACKETS

RIGID BRACKETS

9 ft. long

FORM C BRACKETS

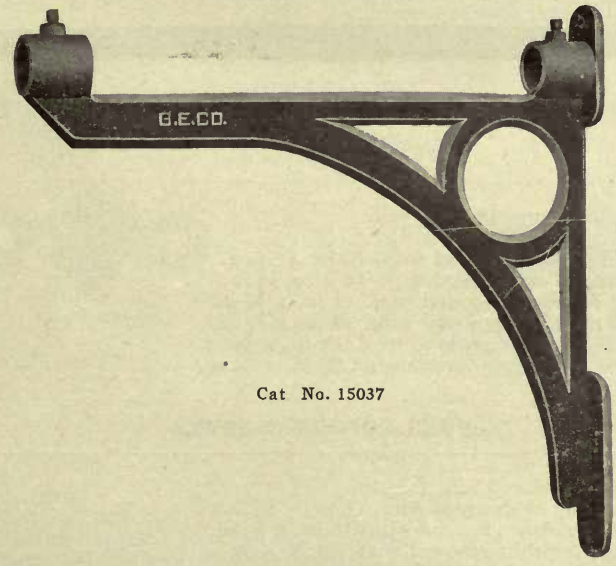


Cat. No.	Description	Approx. Weight per 100	Cat. No.	Description	Approx. Weight per 100
40027	"A" tubing, arm 1½ in., strut 1¼ in.	2850	40030	"A" tubing, arm 2 in., strut 1½ in.	3800
40028	"C" tubing, arm 1½ in., strut 1¼ in.	3700	40031	"C" tubing, arm 2 in., strut 1½ in.	5000
40029	Wrought iron pipe, arm 1½ in., strut 1¼ in.	3800	40032	Wrought iron pipe, arm 2 in., strut 1⅝ in.	5100

For sherardized brackets or brackets other than 9 feet in length, prices will be quoted on application.

WALL BRACKETS—CAST IRON

FOR SUPPORTING PIPE BRACKET ARM



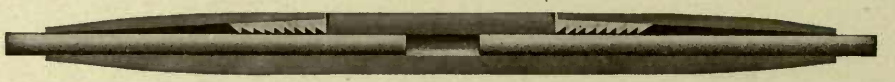
Cat No. 15037

Cat. No.	Description	Approx. Weight per 100
15026	Short bracket for 1½ in. pipe, length 22 9/16 in., height 28½ in., diameter of hole, 2⅛ in.	2400
15037	Long bracket for 1½ in. pipe, length 30 9/16 in., height 28½ in., diameter of hole, 2⅛ in.	3100

SPLICING SLEEVES

MECHANICAL

For use without solder. Made of brass with tempered steel wedges.



FOR ROUND AND GROOVED WIRE

Cat. No.	Description	Approx. Weight per 100
64441	For No. 0 round wire, 10 in. long	75
64442	For No. 00 round or grooved wire, 11 in. long	90
64443	For No. 000 round or grooved wire, 11 in. long	115
64444	For No. 0000 round or grooved wire, 12 in. long	125

FOR FIG. 8 WIRE

42448	10 in. long, for No. 00 Fig. 8 wire	115
42449	10 in. long, for No. 000 Fig. 8 wire	125
42450	12 in. long, for No. 0000 Fig. 8 wire	140

SOLDERED—FOR GROOVED AND ROUND WIRE

In order to secure the greatest possible strength, soldered splicing sleeves are made from hard drawn seamless tubing, so annealed as to relieve all internal strains in the metal and avoid all danger of weather cracks to which hard drawn brass is liable. The sleeves are tinned for soldering.

BRASS SLEEVES

Cat. No.	Description	Approx. Weight per 100
64431	For No. 0 round wire, 10 in. x 5/8 in.	50
64432	For No. 0 round wire, 15 in. x 5/8 in.	75
64433	For No. 00 round or grooved wire, 10 in. x 5/8 in.	55
64434	For No. 00 round or grooved wire, 16 in. x 5/8 in.	75
64435	For No. 000 round or grooved wire, 11 in. x 3/4 in.	90
64436	For No. 000 round or grooved wire, 18 in. x 3/4 in.	130
64437	For No. 0000 round or grooved wire, 12 in. x 7/8 in.	150
64438	For No. 0000 round or grooved wire, 20 in. x 7/8 in.	210

PURE COPPER SLEEVES

88641	For No. 0 round wire, 15 in. x 5/8 in.	80
88651	For No. 00 round or grooved wire, 16 in. x 5/8 in.	80
88672	For No. 000 round or grooved wire, 18 in. x 3/4 in.	130
88785	For No. 0000 round or grooved wire, 20 in. x 7/8 in.	200

STRAIN INSULATORS

GIANT

Recent radical improvements in design give the Giant Strain Insulator a largely increased mechanical strength and a dielectric strength to care for the potentials encountered in direct suspension work. The insulation under stress is exclusively sheet mica (under compression) and the limit of its mechanical strength is the rupturing limit of the metal parts without regard to temperature or other service conditions. The insulators are made in two sizes, having 2 in. and 2⅝ in. diameters, and equipped with standard and large eyes and standard and large clevises in any combination. All metal parts are sherardized.

STRENGTH

MECHANICAL			ELECTRICAL		
	2 In.	2⅝ In.		2 In.	2⅝ In.
Test load	2500 lb.	4000 lb.	Test voltage	5000 v.	5000 v.
Average breaking load	5000 lb.	8000 lb.	Average breakdown voltage	12000 v.	15000 v.

DIMENSIONS

DIMENSIONS OF EYES IN IN.			DIMENSIONS OF CLEVISES IN IN.		
	Inside Diameter	Outside Diameter		Spread	Diameter of Through Bolt
Standard eye for 2 in. ins.	9/16	1 5/16	Standard clevis for 2 in. ins.	9/16	3/8
Large eye for 2 in. ins.	11/16	1 9/16	Standard clevis for 2⅝ in. ins.	5/8	1/2
Standard eye for 2⅝ in. ins.	9/16	1 7/16	Large clevis for 2⅝ in. ins.	3/4	5/8
Large eye for 2⅝ in. ins.	13/16	1 13/16			

2 IN. GIANT

Cat. No. 64425

Cat. No. 64417

Cat. No.	Description	Distance Between Centers of Eyes or Clevis Bolt Holes in In.	Approx. Weight per 100
64417	With standard eye and clevis	4 5/32	105
64418	With 2 standard clevises	4 19/32	115
64419	With large eye and standard clevis	4 9/32	110
64425	With 2 standard eyes	3 23/32	87
64427	With large eye and standard eye	3 27/32	92
64428	With 2 large eyes	3 31/32	95

STRAIN INSULATORS

2 5/8 IN. GIANT

Cat. No. 64426

Cat. No. 64420

Cat. No.	Description	Distance Between Centers of Eyes or Clevis Bolt Holes in In.	Approx. Weight per 100
64420	With standard eye and clevis	$4\frac{7}{16}$	165
64421	With standard eye and large clevis	$4\frac{7}{16}$	173
64422	With large eye and large clevis	$4\frac{5}{8}$	182
64423	With 2 standard clevises	$4\frac{7}{8}$	180
64424	With 2 large clevises	$4\frac{7}{8}$	200
64426	With 2 standard eyes	4	155
64429	With large eye and standard eye	$4\frac{3}{16}$	165
64430	With 2 large eyes	$4\frac{3}{8}$	200
108054	With large eye and standard clevis	$4\frac{5}{8}$	180

SPHERICAL

The Spherical Strain Insulators are made in two sizes having diameters $2\frac{1}{4}$ in. and $2\frac{3}{4}$ in. They are designed especially for use in span and guy wires in relatively light construction. The smaller size is suitable for a working load of 1000 lb.; the average tensile strength is 3000 lb. The $2\frac{3}{4}$ in. size has an average tensile strength of 5000 lb., and is suitable for a working load up to 2000 lb. Both sizes are subjected to a potential test of 5000 volts.

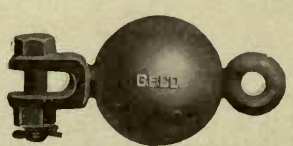
DIMENSIONS OF EYES IN IN.			DIMENSIONS OF CLEVISES IN IN.		
	Inside Diameter	Outside Diameter		Spread	Diameter of Through Bolt
Eye for $2\frac{1}{4}$ in. insulator	$\frac{17}{32}$	$1\frac{1}{4}$	Clevis for $2\frac{1}{4}$ in. insulator	$\frac{17}{32}$	$\frac{1}{2}$
Eye for $2\frac{3}{4}$ in. insulator	$\frac{17}{32}$	$1\frac{1}{4}$	Clevis for $2\frac{3}{4}$ in. insulator	$\frac{17}{32}$	$\frac{1}{2}$

Cat. No. 27378

Cat. No. 27380

Cat. No.	Description	Distance Between Centers of Eyes or Clevis Bolt Holes in In.	Approx. Weight per 100
27378	$2\frac{1}{4}$ in. insulator, with malleable iron eyes, sherardized	$3\frac{9}{16}$	85
16399	$2\frac{1}{4}$ in. insulator, with comp. eyes	$3\frac{9}{16}$	85
27380	$2\frac{3}{4}$ in. insulator, with malleable iron eyes, sherardized	4	125
17221	$2\frac{3}{4}$ in. insulator, comp. eyes	4	125

Cat. No. 27379



Cat. No. 27381

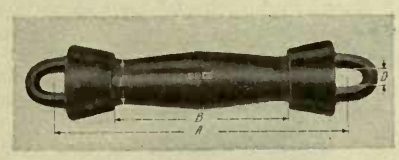
27379	$2\frac{1}{4}$ in. insulator, with malleable iron eye and clevis, sherardized	4	130
16400	$2\frac{1}{4}$ in. insulator, with comp. eye and clevis	4	130
27381	$2\frac{3}{4}$ in. insulator, with malleable iron eye and clevis, sherardized	$4\frac{7}{16}$	155
17222	$2\frac{3}{4}$ in. insulator, with comp. eye and clevis	$4\frac{7}{16}$	155

STRAIN INSULATORS

WOOD

WITH TWO EYES

The Wood Strain Insulators are made from selected hickory, treated by a special oil impregnating process which permanently excludes moisture, and have transparent finish. All end caps have sherardized finish.



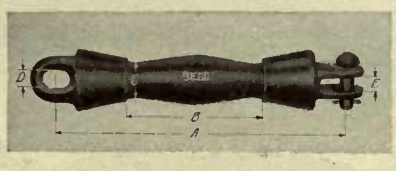
WITH STANDARD EYES

Cat. No.	DIMENSIONS IN INCHES				Test Load in Lb.	Average Breaking Load in Lb.	Approx. Weight per 100
	A	B	C	D			
16727	9 1/2	5	1	9/16	3500	7000	140
37488	9 1/2	5	1 1/4	9/16	5000	10000	175
61563	12	5	1 3/4	3/4	7500	15000	440
37489	20	15	1	9/16	3500	7000	180
36313	20	15	1 1/4	9/16	5000	10000	235
48433	28 1/2	24	1 1/4	9/16	5000	10000	300

WITH LARGE EYES

124863	10	5	1	3/4	3500	7000	150
114138	10	5	1 1/4	3/4	5000	10000	185
119272	18	12	1 3/4	1	7500	15000	600

WITH EYE AND CLEVIS



Cat. No.	DIMENSIONS IN INCHES					Test Load in Lb.	Average Breaking Load in Lb.	Approx. Weight per 100
	A	B	C	D	E			
43229	9 3/4	5	1	9/16	17/32	3500	7000	160
43230	9 3/4	5	1 1/4	9/16	17/32	5000	10000	185
43231	20 1/4	15	1	9/16	17/32	3500	7000	225
43232	20 1/4	15	1 1/4	9/16	17/32	5000	10000	295

Clevis has 17/32 in. bolt hole and 1/2 in. bolt.

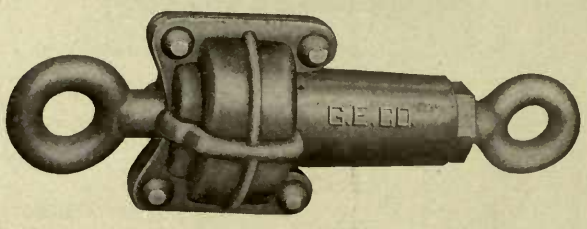
WITH EYE AND TAPPED BOSS

Cat. No.	DIMENSIONS IN INCHES					Test Load in Lb.	Average Breaking Load in Lb.	Approx. Weight per 100
	A	B	C	D	Tap			
17030	9 1/4	5	1	9/16	5/8-11	3500	7000	110
100126	9 1/4	5	1 1/4	9/16	5/8-11	5000	10000	190

TURNBUCKLES

INSULATED TURNBUCKLE

Insulated turnbuckles are provided with drop forged steel eyebolts. In turnbuckles with malleable iron castings, the eyebolts are sherardized to prevent rusting and in the composition turnbuckles the eyebolt is heavily plated with copper. The casting is made in two halves which fit around the head of the insulated portion and are then riveted together, thus affording a resistance to tensile strain limited only by the ultimate breaking point of the solid metal. The swivel bearing is metal to metal and is designed so that there is no relative motion between the insulated portion and the adjoining head. The maximum draw-up for both sizes is 4 in.



Cat. No.	Description	Test Load in Lb.	Average Breaking Load in Lb.	Max. Length Between Eyes in In.	Diameter of Eyes in In.	Approx. Weight per 100
27382	5/8 in. bolt, malleable iron, sherardized	4000	8000	11 3/4	3/4	325
17223	5/8 in. bolt, comp.	2500	5000	11 3/4	3/4	350
40802	3/4 in. bolt, malleable iron, sherardized	7000	14000	12	1	350
40803	3/4 in. bolt, comp.	4500	9000	12	1	375

TURNBUCKLE WITH INSULATED EYE

This consists of a forged steel turnbuckle with one eye insulated with moulded compound, protected on the inside by a special steel ring having its edges beveled to prevent cutting the guy wire. These turnbuckles have sherardized finish.

Turnbuckle with Insulated Eye

Cat. No.	Description	Test Load in Lb.	Average Breaking Load in Lb.	Max. Take-up in In.	Diameter Bolt in In.	Max. Length Between Centers of Eyes in In.	Approx. Weight per 100
27383	Forged turnbuckle, with ins. eye	3000	6000	6	1/2	18 3/4	275
100293	Forged turnbuckle, with ins. eye	4000	8000	6 3/16	5/8	18 3/4	325
114997	Forged turnbuckle, with ins. eye	3000	6000	12	1/2	23 3/4	325
114998	Forged tunrbuckle, with ins. eye	4000	8000	12 3/16	5/8	24	410

TROLLEY FROGS

For different classes of service three sets of frogs, differing in the divergence angle of tongues and length of pan, are furnished.

For ordinary service, with turnout radii not exceeding about 50 feet, the 20 deg. frogs are suitable, but, with the longer radii, smaller divergence angles are necessary.

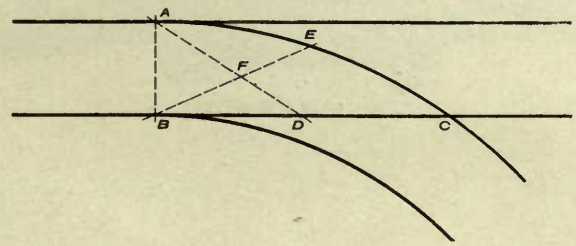
The following table gives the range of distance from track switch point to track frog with which each set of trolley frogs may be most satisfactorily used:

Frog Distance	Divergence Angle of Trolley Frog
Up to 22 feet	20 deg.
From 20 to 30 feet	15 deg.
Above 28 feet	8 deg.

In order to insure smooth transition of the wheel between tongue and pan, the pans of all Form G frogs have, at each end, an inclined plane rising at a very acute angle from the horizontal, which receives the flange of the wheel at a point depending upon the depth of the wheel groove. The depth of tongues and rise of the inclined plane admit the use of a groove depth of from ¾ in. to 1⅛ in.

All standard frogs are provided with four pull off rings, but similar frogs with two rings can be furnished if specially ordered.

The following diagram shows an excellent method of properly placing the frogs on the line, and while certain variables will necessitate slight variation of setting, this location will be found so nearly correct that a very small alteration, which must be determined by experiment, will compensate for the variable conditions.



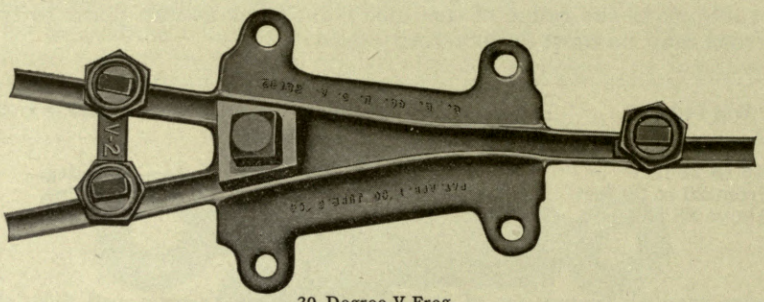
TO LOCATE TROLLEY FROG

From track switch point A, draw a line to center point D, of track frog distance BC, and from switch point B, draw a line to center point E, of arc AEC. Directly over the intersection of these two lines at F will be the proper location of the trolley frog.

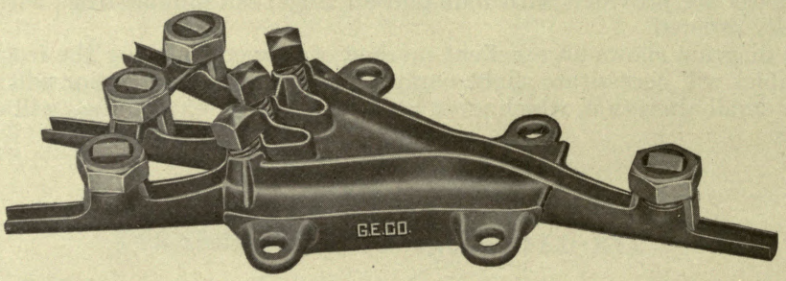
TROLLEY FROGS

FORM G

20 DEGREE FROGS FOR ROUND, GROOVED OR FIG. 8 WIRES



20 Degree V Frog



20 Degree 3-Way Frog

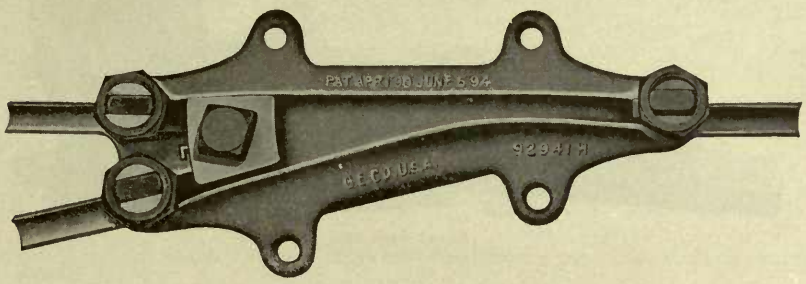
Cat. No.	Description	Overall Length in In.	Overall Width in In.	Approx. Weight per 100
29133	Right-hand frog, for Nos. 0 and 00 wires, comp.	17	6½	710
29134	Left-hand frog, for Nos. 0 and 00 wires, comp.	17	6½	710
29132	V frog, for Nos. 0 and 00 wires, comp.	17	6½	725
29135	3-way frog, for Nos. 0 and 00 wires, comp.	17	7⅜	1000
46645	Right-hand frog, for Nos. 000 and 0000 wires, comp.	17	6½	710
46646	Left-hand frog, for Nos. 000 and 0000 wires, comp.	17	6½	710
46644	V frog, for Nos. 000 and 0000 wires, comp.	17	6½	725
46647	3-way frog, for Nos. 000 and 0000 wires, comp.	17	7⅜	1000

All pull off eyes are ½ in. in diameter.

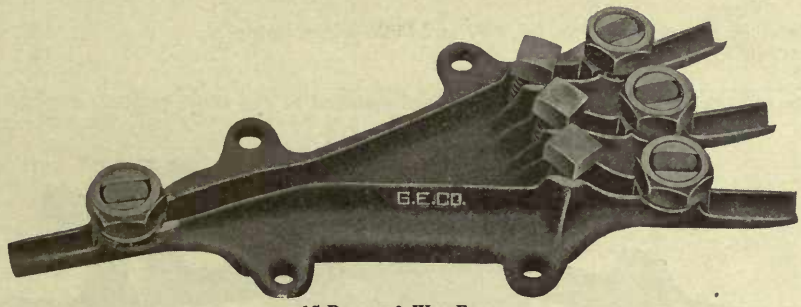
TROLLEY FROGS

FORM G

15 DEGREE FROGS FOR ROUND, GROOVED OR FIG. 8 WIRES



15 Degree Left-hand Frog

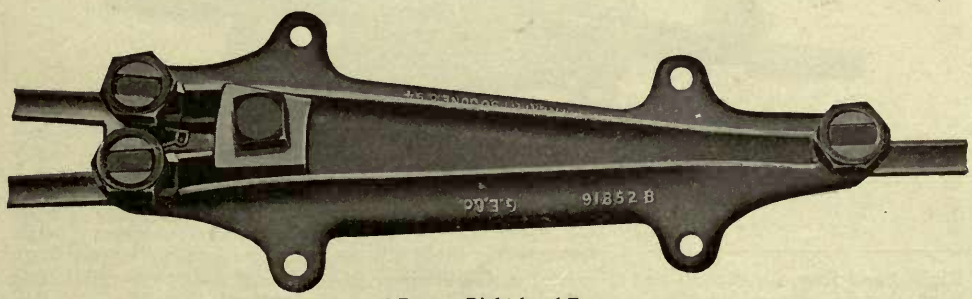


15 Degree 3-Way Frog

Cat. No.	Description	Overall Length in In.	Overall Width in In.	Approx. Weight per 100
29130	Right-hand frog, for Nos. 00, 000 and 0000 wires, comp.	18	$5\frac{9}{16}$	875
29131	Left-hand frog, for Nos. 00, 000 and 0000 wires, comp.	18	$5\frac{9}{16}$	875
29129	V frog, for Nos. 00, 000 and 0000 wires, comp.	18	$5\frac{9}{16}$	890
37487	3-way frog, for Nos. 00, 000 and 0000 wires, comp.	18	$7\frac{3}{8}$	1150

All pull off eyes are ½ in. in diameter.
Frogs similar to the above but for 1/0 wire will be furnished at the same price.

8 DEGREE FROGS FOR ROUND OR GROOVED WIRES



8 Degree Right-hand Frog

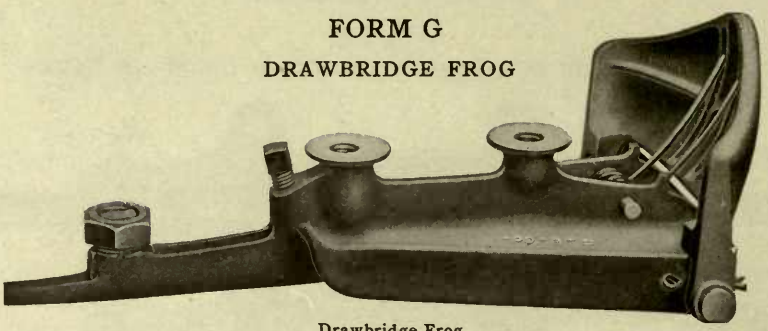
29127	Right-hand frog, for Nos. 00, 000 and 0000 wires, comp.	$21\frac{7}{8}$	6	1300
29128	Left-hand frog, for Nos. 00, 000 and 0000 wires, comp.	$21\frac{7}{8}$	6	1300
29126	V frog, for Nos. 00, 000 and 0000 wires, comp.	$21\frac{7}{8}$	6	1350

All pull off eyes are ½ in. in diameter.
Frogs similar to the above but for 1/0 wire will be furnished at the same price.

TROLLEY FROGS

FORM G

DRAWBRIDGE FROG



Drawbridge Frog

Cat. No.	Description	Overall Length in In.	Overall Width in In.	Approx. Weight per 100
16395	Complete, 5/8 in. tap, for Nos. 00, 000 and 0000 wires, comp.	15	7 7/8	875
15993	Without spring contact, comp.	15	7 7/8	690

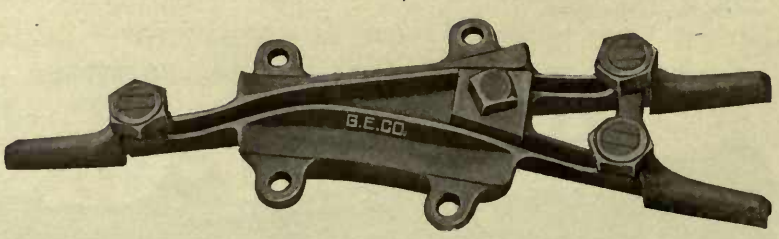
Frogs similar to the above but for 1/0 wire will be furnished at the same price.

FORM G2

Frog with One Tongue in Position, Other Two Disconnected

The Form G2 frogs are like the Form G, excepting in material and the arrangement of the end tongues. The body of the Form G2 is sherardized malleable iron and the renewable end tongues are composition. The tongue proper, which is peaned over the trolley wire, and the shoe, which clamps the wire under pressure from the large clamping nut, are in one piece and may be removed and replaced without in any way disturbing the frog body.

20 DEGREE FROGS FOR ROUND, GROOVED OR FIG. 8 WIRES



20 Degree Left-hand Frog

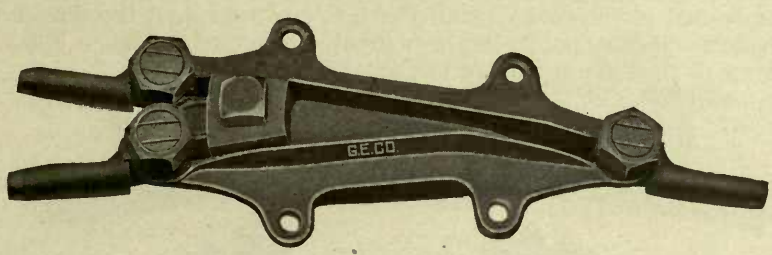
Cat. No.	Description	Overall Length in In.	Overall Width in In.	Approx. Weight per 100
110745	Right-hand frog, for Nos. 0 and 00 wires, malleable iron, sherardized	17	6 1/2	710
60302	Right-hand frog, for Nos. 000 and 0000 wires, malleable iron, sherardized	17	6 1/2	710
110746	Left-hand frog, for Nos. 0 and 00 wires, malleable iron, sherardized	17	6 1/2	710
60301	Left-hand frog, for Nos. 000 and 0000 wires, malleable iron, sherardized	17	6 1/2	710
110747	V frog, for Nos. 0 and 00 wires, malleable iron, sherardized	17	6 1/2	725
60303	V frog, for Nos. 000 and 0000 wires, malleable iron, sherardized	17	6 1/2	725
110748	3-way frog, for Nos. 0 and 00 wires, malleable iron, sherardized	17	7 3/8	1000
60307	3-way frog, for Nos. 000 and 0000 wires, malleable iron, sherardized	17	7 3/8	1000
110756	End tongue for all frogs for Nos. 0 and 00 wires, comp.			50
65856	End tongue for all frogs for Nos. 000 and 0000 wires, comp.			50

All pull off eyes 1/2 in. in diameter.

TROLLEY FROGS

FORM G2

15 DEGREE FROGS FOR ROUND, GROOVED OR FIG. 8 WIRES



15 Degree Left-hand Frog

Cat. No.	Description	Overall Length in In.	Overall Width in In.	Approx. Weight per 100
110749	Right-hand frog, for Nos. 0 and 00 wires, malleable iron, sherardized	18	5 9/16	875
60228	Right-hand frog, for Nos. 000 and 0000 wires, malleable iron, sherardized	18	5 9/16	875
110750	Left-hand frog, for Nos. 0 and 00 wires, malleable iron, sherardized	18	5 9/16	875
60226	Left-hand frog, for Nos. 000 and 0000 wires, malleable iron, sherardized	18	5 9/16	875
110751	V frog, for Nos. 0 and 00 wires, malleable iron, sherardized	18	5 9/16	890
60229	V frog, for Nos. 000 and 0000 wires, malleable iron, sherardized	18	5 9/16	890
110752	3-way frog, for Nos. 0 and 00 wires, malleable iron, sherardized	18	7 3/8	1150
60234	3-way frog, for Nos. 000 and 0000 wires, malleable iron, sherardized	18	7 3/8	1150
110756	End tongue for all frogs, for Nos. 0 and 00 wires, comp.			50
65856	End tongue for all frogs, for Nos. 000 and 0000 wires, comp.			50

All pull off eyes are ½ in. in diameter.

8 DEGREE FROGS FOR ROUND, GROOVED OR FIG. 8 WIRES

8 Degree Left-hand Frog

110753	Right-hand frog, for Nos. 0 and 00 wires, malleable iron, sherardized	21 7/8	6	1300
60131	Right-hand frog, for Nos. 000 and 0000 wires, malleable iron, sherardized	21 7/8	6	1300
110754	Left-hand frog, for Nos. 0 and 00 wires, malleable iron, sherardized	21 7/8	6	1300
60132	Left-hand frog, for Nos. 000 and 0000 wires, malleable iron, sherardized	21 7/8	6	1300
110755	V frog, for Nos. 0 and 00 wires, malleable iron, sherardized	21 7/8	6	1350
60133	V frog, for Nos. 000 and 0000 wires, malleable iron, sherardized	21 7/8	6	1350
110756	End tongue for all frogs, for Nos. 0 and 00 wires, comp.			50
65856	End tongue for all frogs, for Nos. 000 and 0000 wires, comp.			50

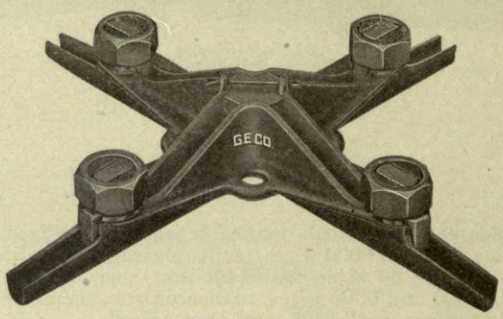
All pull off eyes are ½ in. in diameter.

CROSSINGS

FORM G, UNINSULATED

The principle of the inclined plane to insure smooth transition of the trolley wheel between tongue and pan has been embodied in the design of all Form G crossings, and the maximum speed at which the trolley will operate at crossing points has been greatly increased thereby. They will accommodate round or grooved wires of the sizes indicated in the tables.

RIGHT ANGLE CROSSING FOR ROUND, GROOVED OR FIG. 8 WIRES

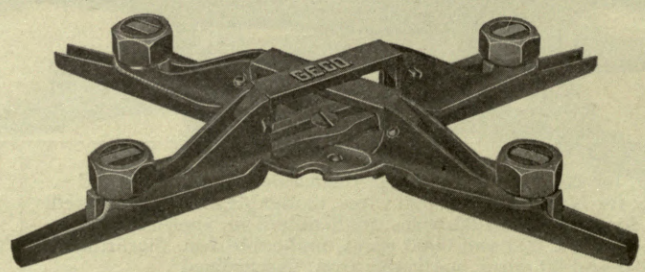


Cat. No.	Description	Overall Length in In.	Overall Width in In.	Approx. Weight per 100
11297	For Nos. 00, 000 and 0000 wires, comp.	15 3/8	15 3/8	910

Crossings similar to the above, but for 1/0 wire will be furnished at the same price.

ADJUSTABLE CROSSING FOR ROUND, GROOVED OR FIG. 8 WIRES

The Form G adjustable crossing can be set at any angle between 30 and 90 degrees.



Overall length of each runway 20 3/8 in.

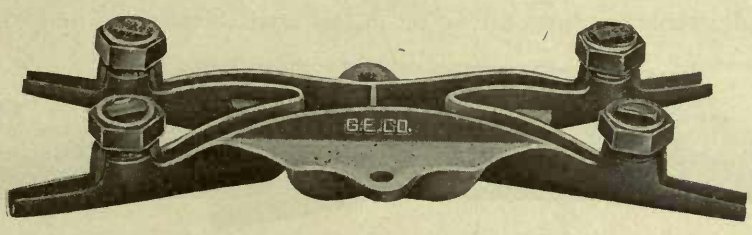
Cat. No.	Description	Approx. Weight per 100
11298	For Nos. 00, 000 and 0000 wires, comp.	1075

Crossings similar to the above, but for 1/0 wire will be furnished at the same price.

CROSSINGS

FORM G, UNINSULATED

35 DEGREE CROSSINGS FOR ROUND, GROOVED OR FIG. 8 WIRES



Cat. No.	Description	Overall Length in In.	Overall Width in In.	Approx. Weight per 100
42413	Crossing for Nos. 00, 000 and 0000 wires, comp.	16	5½	865

Crossings similar to the above, but for 1/0 wire will be furnished at the same price.

15 DEGREE CROSSING FOR ROUND, GROOVED OR FIG. 8 WIRES

19490	Crossing for Nos. 00, 000 and 0000 wires, comp.	21¼	5⅜	1025

Crossings similar to the above, but for 1/0 wire will be furnished at the same price.

FORM L, INSULATED

The Form L insulated crossing consists of a beam of selected second growth hickory thoroughly impregnated with preservative oils to exclude moisture, finished with black japan, and castings of standard composition metal with a replaceable white fiber runway. Attachment to the trolley wires is effected by mechanical clamps so that the crossing may be installed quickly without soldering and without cutting either wire.

The fiber runways as listed include fiber plates with screws. The crossings will accommodate round or grooved wires of the sizes indicated in the tables.

SINGLE TROLLEY—RIGHT ANGLE CROSSING FOR ROUND, GROOVED OR FIG. 8 WIRES

Overall length 35½ in.; overall width 18½ in.

Cat. No.	Description	Approx. Weight per 100
46184	Right angle crossing, for Nos. 00, 000 and 0000 wires	1750
100935	White fiber runway, for Cat. No. 46184	

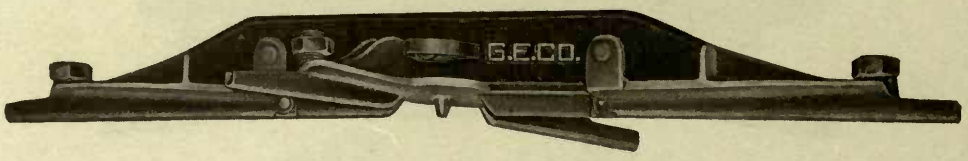
Crossings similar to the above, but for 1/0 wire will be furnished at the same price.

CROSSINGS

FORM L, INSULATED

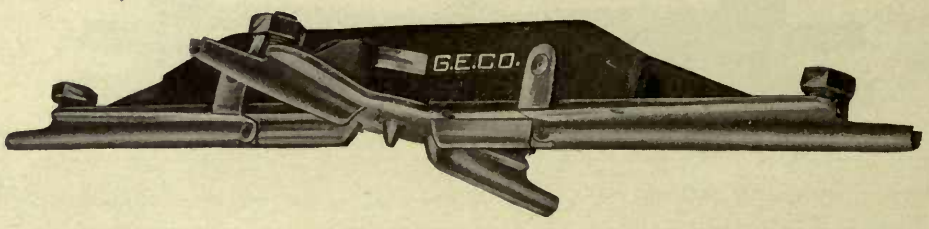
SINGLE TROLLEY—ADJUSTABLE CROSSINGS FOR ROUND, GROOVED OR FIG. 8 WIRES

The Form L adjustable crossings can be set at any angle between 45 and 90 degrees.



Overall length 36 in.; maximum overall width 16½ in.

Cat. No.	Description	Approx. Weight per 100
19406	Adjustable crossing for Nos. 0 and 00 wires	1275
19407	White fiber runway for Cat. No. 19406	18



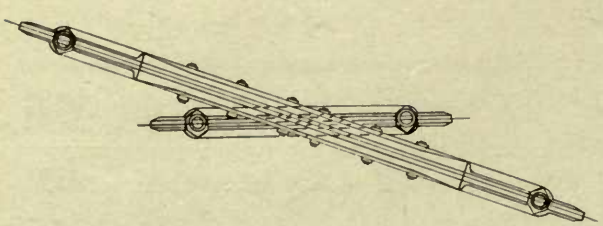
Overall length 35½ in.; maximum overall width 16½ in.

26150	Adjustable crossing, for Nos. 00, 000 and 0000 wires	1400
19407	White fiber runway for Cat. No. 26150	18

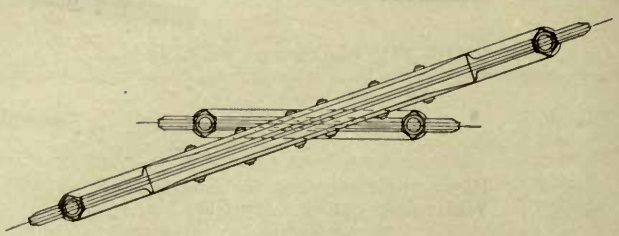
Crossings similar to the above, but for 1/0 wire will be furnished at the same price.

ACUTE ANGLE

The acute angle crossings can be furnished either right or left hand. The right hand crossing is considered standard and is generally applicable. However, under certain conditions such as the crossing of a 250 and 500 volt line, right and left crossings are not interchangeable. The left hand crossings are, therefore, listed and will be made up on order at the same prices as the corresponding right hand crossings.



Left-hand Crossing

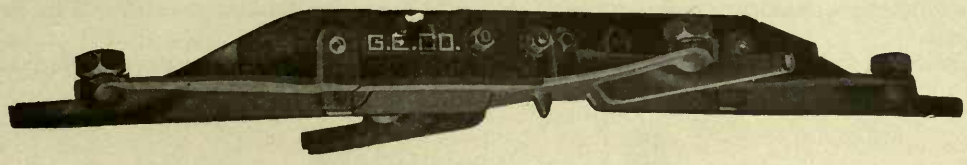


Right-hand Crossing

CROSSINGS

FORM L, INSULATED

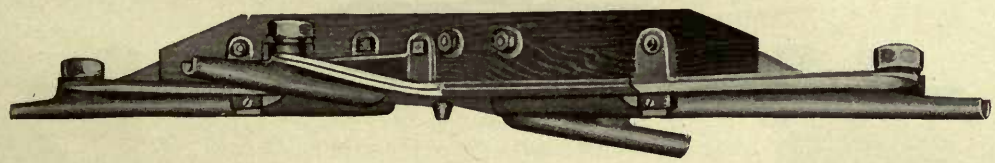
SINGLE TROLLEY—ACUTE ANGLE—RIGHT-HAND CROSSINGS FOR ROUND, GROOVED OR FIG. 8 WIRES



Cat. No.	Description	Overall Length in In.	Overall Width in In.	Approx. Weight per 100
30615	35 deg. right-hand crossing, for Nos. 00, 000 and 0000 wires	39	9½	1725
30616	White fiber runway, for Cat. No. 30615			25
30613	27 deg. right-hand crossing, for Nos. 00, 000 and 0000 wires	39	9⅛	1700
30614	White fiber runway, for Cat. No. 30613			25
30611	20 deg. right-hand crossing, for Nos. 00, 000 and 0000 wires	46½	6¾	1685
30612	White fiber runway, for Cat. No. 30611			25
30609	15 deg. right-hand crossing, for Nos. 00, 000 and 0000 wires	46½	6⅜	1685
30610	White fiber runway, for Cat. No. 30609			25
46181	8 deg. right-hand crossing, for Nos. 00, 000 and 0000 wires	56½	5	1675
100919	White fiber runway, for Cat. No. 46181			25

Crossings similar to the above, but for 1/0 wire will be furnished at the same price.

LEFT-HAND CROSSINGS



Cat. No.	Description	Overall Length in In.	Overall Width in In.	Approx Weight per 100
100181	35 deg. left-hand crossing, for Nos. 00, 000 and 0000 wires	39	9½	1725
100924	White fiber runway, for Cat. No. 100181			25
100180	27 deg. left-hand crossing, for Nos. 00, 000 and 0000 wires	39	9⅛	1700
100923	White fiber runway, for Cat. No. 100180			25
64167	20 deg. left-hand crossing, for Nos. 00, 000 and 0000 wires	46½	6¾	1685
100922	White fiber runway, for Cat. No. 64167			25
64166	15 deg. left-hand crossing, for Nos. 00, 000 and 0000 wires	46½	6⅜	1685
100921	White fiber runway, for Cat. No. 64166			25
100179	8 deg. left-hand crossing, for Nos. 00, 000 and 0000 wires	56½	5	1675
100920	White fiber runway, for Cat. No. 100179			25

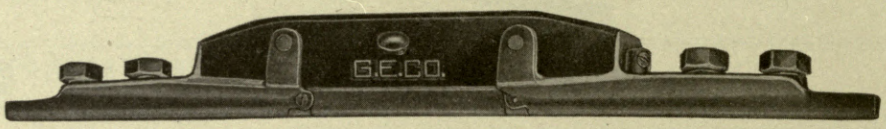
Crossings similar to the above, but for 1/0 wire will be furnished at the same price.

SECTION INSULATORS

FORM L

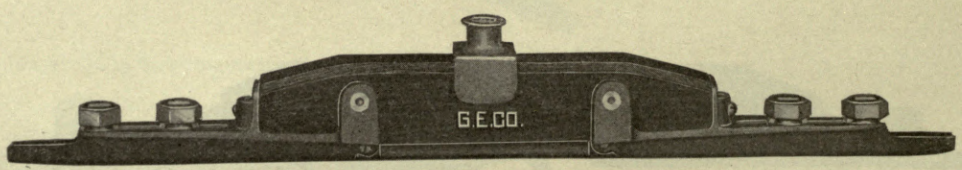
The Form L section insulator consists of a beam of selected second growth hickory well seasoned and treated with preservative oils to exclude moisture, finished with black japan, and castings of the standard composition metal, with a replaceable runway of hickory. Attachment to the trolley wires is made by double mechanical clamps at each end. The wood runway provides a 7 in. break in the trolley circuit.

The insulators will accommodate round, grooved or Fig. 8 wires of the sizes indicated in the tables.



Overall length 31½ in.

Cat. No.	Description	Approx. Weight per 100
19410	Section insulator, for Nos. 0 and 00 wires	1010
19491	Section insulator, for Nos. 00, 000 and 0000 wires	975
21456	Wooden runway, for Cat. Nos. 19410 and 19491	15



Overall length 31½ in.

46740	Section insulator, for Nos. 0 and 00 wires	1060
60434	Section insulator, for Nos. 00, 000 and 0000 wires	1025
21456	Wooden runway, for Cat. Nos. 46740, 60434	15

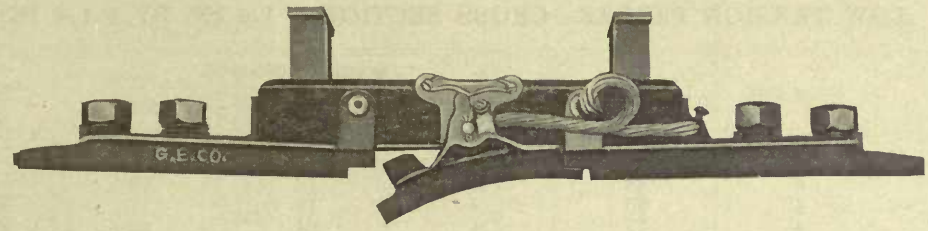
SECTION INSULATORS

AUTOMATIC SECTION INSULATORS—600 VOLTS

This device is a combined section insulator and automatic section switch, and, while it is designed especially for use in mine work, may often be used to advantage on spur tracks in surface work where it is desirable to cut out the spur section after the car has run back on to the main line.

The switch blade is operated by the trolley wheel, and is permanently connected to the feeder or to the main line trolley wire.

Insulator will accommodate round, grooved or figure 8 wires.

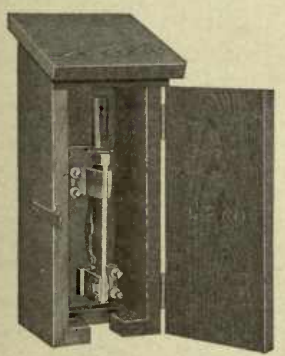


Overall length 30½ in.; height 5⅛ in.

Cat. No.	Description	Approx. Weight per 100
34870	Automatic section insulator, for Nos. 00, 000 and 0000 wires	1650
34871	Switch clips with screws	12
34872	Locking spring	5

Section insulators similar to the above, but for 1/0 wire will be furnished at the same price.

SECTION SWITCHES

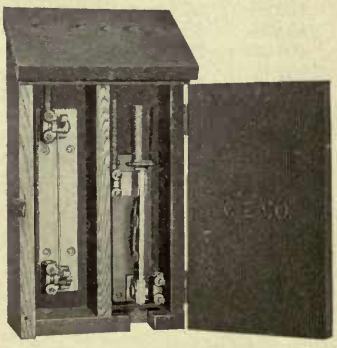


Cat. No. 40307
Section Switch

In these switch boxes, the hinge clip of the switch is connected to the trolley line, and the box is so constructed that the cover can be closed and locked whether the switch is open or closed, thus preventing any interference with the line by unauthorized persons.

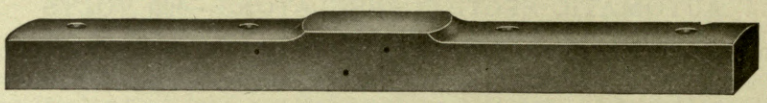
CAT. NO.		Ampere Capacity	WEIGHT EACH	
With Box	Without Box		With Box	Without Box
40305	40313	200	12	5
40307	40315	400	17½	8
* 40321		400	32	
40309	40317	600	23	11
40311	40319	1200	46	28

*Has fuse block.



Cat. No. 40321
Section Switch and Fuse

WOOD CROSS ARMS



The wood cross arms are furnished in yellow pine—painted two coats. The low tension feeder and the high tension arms are bored for 1½ in. pins and two ½ in. lag screws. The telephone arms are bored for 1¼ in. pins and two ½ in. lag screws. Arms with other boring will be furnished to order.

LOW TENSION FEEDER—CROSS SECTION 3 1/4 IN. BY 4 1/4 IN.

Cat. No.	No. of Pins	Length in In.	SPACING IN INCHES			Approx. Weight per 100
			Ends	Center	Sides	
40179	2	36	4	28		100
40180	4	48	4	16	12	140
40181	4	60	4	18	17	170
40182	4	72	4	24	20	210
40183	6	72	4	16	12	210

CROSS ARM BRACES

Diameter of hole at pole end $\frac{9}{16}$ in.; at cross arm end $\frac{7}{16}$ in.

Cat. No.	Description	Approx. Weight per 100
40190	20 in. x $1\frac{7}{32}$ in. x $\frac{7}{32}$ in., plain	160
40191	20 in. x $1\frac{7}{32}$ in. x $\frac{7}{32}$ in., galvanized	160
40192	24 in. x $1\frac{7}{32}$ in. x $\frac{7}{32}$ in., plain	190
40193	24 in. x $1\frac{7}{32}$ in. x $\frac{7}{32}$ in., galvanized	190
40194	28 in. x $1\frac{7}{32}$ in. x $\frac{7}{32}$ in., plain	220
40195	28 in. x $1\frac{7}{32}$ in. x $\frac{7}{32}$ in., galvanized	220
100017	20 in. x 1 in. x $\frac{3}{16}$ in., plain	110
100018	20 in. x 1 in. x $\frac{3}{16}$ in., galvanized	110
100019	24 in. x 1 in. x $\frac{3}{16}$ in., plain	125
100020	24 in. x 1 in. x $\frac{3}{16}$ in., galvanized	125
100021	28 in. x 1 in. x $\frac{3}{16}$ in., plain	140
100022	28 in. x 1 in. x $\frac{3}{16}$ in., galvanized	140

BOLTS, NUTS AND WASHERS

CROSS ARM BOLTS

FOR FASTENING WOOD CROSS ARMS TO WOOD POLES

CAT. NO.		Length in In.	Diameter in In.	Approx. Weight per 100
Plain	Galvanized			
100097	100103	10	1/2	65
100098	100104	12	1/2	75
100099	100105	14	1/2	85
100100	100106	16	1/2	95
100101	100107	18	1/2	105
100102	100108	20	1/2	115
42427	42433	10	5/8	100
42428	42434	12	5/8	125
42429	42435	14	5/8	140
42430	42436	16	5/8	155
42431	42437	18	5/8	175
42432	42438	20	5/8	190

The above catalogue numbers cover bolts with nuts but without washers.

WELDED STEEL EYE BOLTS

40210	40220	6	1/2	60
40211	40221	10	1/2	80
40212	40222	12	1/2	95
40213	40223	14	1/2	105
43684	43686	16	1/2	120
40214	40224	10	5/8	130
40215	40225	12	5/8	150
40216	40226	14	5/8	170
43685	43687	16	5/8	190
40217	40227	12	3/4	235
40218	40228	14	3/4	260
40219	40229	16	3/4	285

The above catalogue numbers cover bolts with nuts and washers.

DROP FORGED STEEL EYE BOLTS

CAT. NO.		Length in In.	DIAMETER IN IN.		Approx. Weight per 100
Plain	Galvanized		Stock	Eye	
40798	40780	6	1/2	11/16	60
40799	40781	8	1/2	11/16	70
64544	40782	10	1/2	11/16	80
40230	40232	12	1/2	11/16	95
64545	40783	14	1/2	11/16	105
64546	40784	16	1/2	11/16	120
64548	40786	6	5/8	3/4	90
64549	40787	8	5/8	3/4	110
64550	40788	10	5/8	3/4	130
40231	40233	12	5/8	3/4	150

The above catalogue numbers cover bolts with nuts and washers.
The bolts are threaded four inches.
Variations in length can be furnished at corresponding prices.

BOLTS, NUTS AND WASHERS

DROP FORGED STEEL EYE BOLTS—(Concluded)

CAT. NO.		Length in In.	DIAMETER IN IN.		Approx. Weight per 100
Plain	Galvanized		Stock	Eye	
64551	40789	14	5/8	3/4	170
64552	48837	16	5/8	3/4	190
64553	40791	18	5/8	3/4	210
64555	40793	10	3/4	1	210
64556	40794	12	3/4	1	235
64557	40795	16	3/4	1	285
64558	40796	18	3/4	1	310
64559	40797	20	3/4	1	335

The above catalogue numbers cover bolt with nuts and washers.
The bolts are threaded four inches.
Variations in length can be furnished at corresponding prices.

FORK BOLTS

Cat. No.	Description	Approx. Weight per 100
19464	Fork bolt with porcelain insulator, 12 in. x 5/8 in.	195
43683	Fork bolt with porcelain insulator, 14 in. x 5/8 in.	360

The above catalogue numbers cover bolts with nut but no washer.

CARRIAGE BOLTS

Length of thread is about three times the diameter.

PRICE PER HUNDRED

Length in Inches	DIAMETER			
	1/4 In.	3/8 In.	1/2 In.	5/16 In.–5/8 In.
1 1/2	$1.00	$1.90	....	....
1 3/4	1.04	1.98	....	....
2	1.08	2.06	....	....
2 1/2	1.16	2.22	$3.00	$5.20
3	1.24	2.38	3.22	5.54
3 1/2	1.32	2.54	3.44	5.88
4	1.40	2.70	3.66	6.22
4 1/2	1.48	2.86	3.88	6.56
5	1.56	3.02	4.10	6.90
6	1.72	3.34	4.54	7.58
7	1.88	3.66	4.98	8.26
8	2.04	3.98	5.42	8.94
9	2.20	4.30	5.86	9.62
10	2.36	4.62	6.30	10.30
11	2.52	4.94	6.74	10.98
12	2.68	5.26	7.18	11.66

Prices on galvanized bolts will be quoted on application.

WEIGHT IN LB. PER HUNDRED

Length in Inches	DIAMETER				Length in Inches	DIAMETER			
	1/4 In.	3/8 In.	1/2 In.	5/8 In.		1/4 In.	3/8 In.	1/2 In.	5/8 In.
1 1/2	3.2	8.9	17.4	32	5	7.6	19.1	35.5	60.4
1 3/4	3.7	9	18.6	34	6	8.9	22	40.6	68.4
2	3.9	10.3	20	36.4	7	10.2	24.9	45.8	76.4
2 1/2	4.5	11.8	22.6	40.4	8	11.4	27.8	50.9	84.4
3	5.1	13.2	25.1	44.4	9		30.8	56.1	92.4
3 1/2	5.8	14.7	27.7	48.4	10		33.7	61.3	101
4	6.4	16.2	30.3	52.4	11		34.8	66.4	109
4 1/2	7	17.6	32.9	56.4	12		37.5	71.6	117

BOLTS, NUTS AND WASHERS

STANDARD MACHINE BOLTS

The prices given below apply to bolts with square heads and nuts. For hexagonal nuts add 10 per cent. For hexagonal heads and nuts add 20 per cent.

PRICE PER HUNDRED

Length in Inches	DIAMETER						
	¼ In.	5/16 In.	⅜ In.	7/16 In.	½ In.	9/16 In.–⅝ In.	¾ In.
1½	$1.70	$2.00	$2.40	$2.80	$3.60	$5.20	$7.20
2	1.78	2.12	2.56	3.00	3.86	5.58	7.70
2½	1.86	2.24	2.72	3.20	4.12	5.96	8.20
3	1.94	2.36	2.88	3.40	4.38	6.34	8.70
3½	2.02	2.48	3.04	3.60	4.64	6.72	9.20
4	2.10	2.60	3.20	3.80	4.90	7.10	9.70
4½	2.18	2.72	3.36	4.00	5.16	7.48	10.20
5	2.26	2.84	3.52	4.20	5.42	7.86	10.70
5½	2.34	2.96	3.68	4.40	5.68	8.24	11.20
6	2.42	3.08	3.84	4.60	5.94	8.62	11.70
6½	2.50	3.20	4.00	4.80	6.20	9.00	12.20
7	2.58	3.32	4.16	5.00	6.46	9.38	12.70
7½	2.66	3.44	4.32	5.20	6.72	9.76	13.20
8	2.74	3.56	4.48	5.40	6.98	10.14	13.70
9	2.90	3.80	4.80	5.80	7.50	10.90	14.70
10	3.06	4.04	5.12	6.20	8.02	11.66	15.70
11	3.22	4.28	5.44	6.60	8.54	12.42	16.70
12	3.38	4.52	5.76	7.00	9.06	13.18	17.70
13			6.08	7.40	9.58	13.94	18.70
14			6.40	7.80	10.10	14.70	19.70
15			6.72	8.20	10.62	15.46	20.70
16			7.04	8.60	11.14	16.22	21.70
17					11.66	16.98	22.70
18					12.18	17.74	23.70
19					12.70	18.50	24.70
20					13.22	19.26	25.70

Length of thread is about three times the diameter of bolt head. Bolts with longer thread furnished to order. Prices on galvanized bolts will be quoted on application.

AVERAGE WEIGHT PER HUNDRED INCLUDING NUTS

Length in Inches	DIAMETER							
	¼ In.	5/16 In.	⅜ In.	7/16 In.	½ In.	9/16 In.	⅝ In.	¾ In.
1½	3.9 lb.	6.2 lb.	9.7 lb.	14.7 lb.	20.4 lb.	26 lb.	37 lb.	58 lb.
2	4.6	7.2	11.3	16.5	22.4	29	39.9	63.2
2½	5.4	8.2	12.9	18.5	25	32.2	44.1	69
3	6.2	9.3	14.5	20.5	27.8	35.4	48.3	75.2
3½	6.9	10.4	16.1	22.6	30.6	38.7	52.5	81.4
4	7.6	11.5	17.7	24.7	33.4	42	56.7	87.6
4½	8.3	12.6	19.2	26.8	36.2	45.3	60.9	93.8
5	9	13.7	20.7	28.9	39	48.6	65.1	100
5½	9.7	14.8	22.2	31	41.8	51.9	69.2	106
6	10.4	15.9	23.7	33.1	44.6	55.2	73.4	112
6½	11.1	17	25.2	35.2	47.4	58.5	77.6	118.5
7	11.8	18.1	26.7	37.3	50.2	61.8	81.8	124.5
7½	12.5	19.2	28.2	39.4	53.1	65.1	86	130.5
8	13.2	20.3	29.7	41.5	56	68.5	90	136.5
9			33.1	45.7	61.5	75.2	98	149
10			36.5	49.9	67	81.9	106.3	161
11			40	54	72.5	88.7	114.6	173
12			43.5	58.3	78	95.5	122.9	184.5
13			47	62.5	83.5	102.3	131.2	196.5
14			50.5	66.7	89	109.1	139.5	209
15			54	70.9	94.5	116	148	221
16			57.5	75.1	100	123	156.5	233
17					105.5	130	165	245
18					111	137	173.5	257.5
19					116.5	144	182	270
20					122	151	190.5	282

BOLTS, NUTS AND WASHERS

ROUND PLATE WASHERS

DIMENSIONS IN INCHES		Thickness Wire Gauge	Size of Bolt in Inches	Average Number in 100 Lb.	List Price per 100 Lb.
Outside Diam.	Diam. of Hole				
3/4	5/16	No. 16	1/4	13900	$12.20
7/8	3/8	No. 16	5/16	11250	11.40
1	7/16	No. 14	3/8	6800	10.50
1 1/4	1/2	No. 14	7/16	4300	9.70
1 3/8	9/16	No. 12	1/2	2600	9.20
1 1/2	5/8	No. 12	9/16	2250	9.10
1 3/4	11/16	No. 10	5/8	1300	9.00
2	13/16	No. 10	3/4	1010	8.80
2 1/4	15/16	No. 9	7/8	860	8.80
2 1/2	1 1/16	No. 9	1	625	8.80

Prices on galvanized round plate washers quoted on application.

SQUARE PLATE WASHERS

DIMENSIONS IN INCHES			Approx. Weight per 1000	List Price per 100 Lb.
Width	Thickness	Size Bolt		
2	1/8	1/2	140	$9.20
2	3/16	1/2 or 5/8	200	9.00
2 1/4	3/16	5/8 or 3/4	250	8.80
3	3/16	5/8 or 3/4	450	8.80
4	3/16	5/8 or 3/4	800	8.80
5	3/16	3/4 or 1	1250	8.80

Prices on galvanized square washers quoted on application.

NATIONAL LOCK WASHERS

Description	List Price per 1000 Lb.
For 1/4 in. bolt	$8.25
For 3/8 in. bolt	9.50
For 1/2 in. bolt	9.75
For 9/16 in. bolt	10.75
For 5/8 in. bolt	12.25
For 3/4 in. bolt	13.25

GIMLET OR CONE POINT LAG SCREWS

PRICE PER HUNDRED

Length under Head in Inches	DIAMETER					
	1/4 In. and 5/16 In.	3/8 In.	7/16 In.	1/2 In.	9/16 In.–5/8 In.	3/4 In.
2	$2.45	$2.96	$3.47	$4.11	$6.00	
2 1/2	2.65	3.22	3.79	4.47	6.50	$9.20
3	2.85	3.48	4.11	4.83	7.00	9.90
3 1/2	3.05	3.74	4.43	5.19	7.50	10.60
4	3.25	4.00	4.75	5.55	8.00	11.30
4 1/2	3.45	4.26	5.07	5.91	8.50	12.00
5	3.65	4.52	5.39	6.27	9.00	12.70
5 1/2	3.85	4.78	5.71	6.63	9.50	13.40
6	4.05	5.04	6.03	6.99	10.00	14.10
6 1/2	4.25	5.30	6.35	7.35	10.50	14.80
7	4.45	5.56	6.67	7.71	11.00	15.50
7 1/2	4.65	5.82	6.99	8.07	11.50	16.20
8	4.85	6.08	7.31	8.43	12.00	16.90
9	5.25	6.60	7.95	9.15	13.00	18.30
10	5.65	7.12	8.59	9.87	14.00	19.70

Prices will be quoted upon application for galvanized lag screws or for larger sizes.

BOLTS, NUTS AND WASHERS—TURNBUCKLES

GIMLET OR CONE POINT LAG SCREWS—(Concluded)

AVERAGE WEIGHT PER HUNDRED

Length under Head in Inches	DIAMETER						
	5/16 In.	3/8 In.	7/16 In.	1/2 In.	9/16 In.	5/8 In.	3/4 In.
2	4.8 lb.	6.7 lb.	10.3 lb.	13 lb.	22.8 lb.	24 lb.	
2 1/2	5.6	8.4	11.9	15.6	25.3	27.2	39 lb.
3	6.5	9.1	13.5	18.2	27.8	30.5	45
3 1/2	7.3	10.6	15.1	20.6	30.4	33.7	51
4	8.2	12	16.7	22.9	33	37	57
4 1/2	9	13	18.6	25.2	35.5	40.2	62
5	9.9	14	20.5	27.5	38	43.5	67
5 1/2	10.8	15	22.4	30.3	40.7	47	72
6	11.7	16	24.2	32	43.3	50.6	77
7			28	36.5	50	57.8	87
8				41	56.8	64.7	97
9				45.5	63.5	72	107
10				50	70.3	79.2	117

TURNBUCKLES

DROP FORGED STEEL

WITH TWO EYES

Cat. No. 40237

Plain	Galvanized	Description	Approx. Weight per 100
40236	40240	3/8 in. bolts, 4 in. opening	75
40237	40241	1/2 in. bolts, 6 in. opening	160
40238	40242	1/2 in. bolts, 9 in. opening	190
40239	40243	5/8 in. bolts, 12 in. opening	395

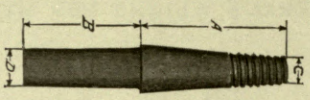
WITH EYE AND HOOK

Cat. No. 40245

40244	40248	3/8 in. bolts, 4 in. opening	75
40245	40249	1/2 in. bolts, 6 in. opening	170
40246	40250	1/2 in. bolts, 9 in. opening	215
40247	40251	5/8 in. bolts, 12 in. opening	400

INSULATOR PINS

ALL WOOD PINS



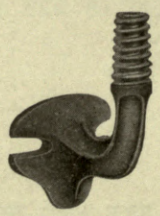
Cat. No.	Description	DIMENSIONS A	B	C	D	Approx. Weight per 100
100023	Oak pin, painted	4	4	1	1¼	45
100024	Oak pin, unpainted	4	4	1	1¼	40
100025	Locust pin, unpainted	4	4	1	1¼	35
8749	Oak pin, painted	4¼	4¾	1	1½	50
8750	Oak pin, unpainted	4¼	4¾	1	1½	45
8751	Locust pin, unpainted	4¼	4¾	1	1½	40
100026	Oak pin, painted	4¼	4¾	1⅜	1½	55
100027	Oak pin, unpainted	4¼	4¾	1⅜	1½	50
100028	Locust pin, unpainted	4¼	4¾	1⅜	1½	45
40252	Locust pin, unpainted (special for trans. insulators)	5¾	4¼	1	1½	50

WOOD SIDE BRACKETS

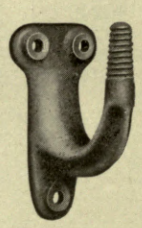
Cat. No.	Description	Approx. Weight per 100
7798	Oak bracket, painted, 12 in. long	80
8747	Oak bracket, unpainted, 12 in. long	75
8841	Locust bracket, unpainted, 12 in. long	70

IRON BRACKETS

Cat. No. 8744



Cat. No. 40201



Cat. No. 17194

Of these brackets, Cat. No. 8744 is intended for light feeder wires. Cat. No. 40201 is a heavier bracket with curved back for pole use, and will carry the largest size feeder. Cat. Nos. 17194 and 60669 are extra heavy and made of gray iron.

8744	Side bracket, 1 in. thread	85
40201	Side bracket, curved back, heavy 1 in. thread	290
17194	Side bracket, extra heavy, 1 in. thread	710
60669	Side bracket, extra heavy, 1⅜ in. thread	800

INSULATORS

FEEDER WIRE, 600 VOLTS

WITH TOP AND SIDE BEARING

Cat. No. 64259 is an all compound insulator suitable for feeders up to and including 500,000 cm. The special compound used will not soften at a temperature less than 650 degrees fahrenheit.

Cat. No. 64259

Cat. No.	Description	Approx. Weight per 100
64259	Insulator with top and side grooves for No. 0000 to 500,000 cm. feeders 1 in. pin hole	225

TIE TOP

WITH TOP AND SIDE BEARING

The tie top insulator consists of a sherardized malleable iron shell into which the standard insulating compound is moulded. It is furnished with both 1 in. and 1⅜ in. pin holes and is suitable for the heaviest loads in all locations excepting corners, for which standard corner insulators are used.

Cat. No. 46012

Cat. No.	Description	Diameter Pin Hole in In.	Approx. Weight per 100
46013	Insulator with top and side grooves for No. 0000 and smaller conductor	1	415
46012	Insulator with top and side grooves for 500,000 cm. and smaller conductor	1	445
46007	Insulator with top and side grooves for No. 0000 and smaller conductor	1⅜	410
46006	Insulator with top and side grooves for 500,000 cm. and smaller conductor	1⅜	440
46005	Insulator with top and side grooves for 800,000 cm. and smaller conductor	1⅜	520
46004	Insulator with top and side grooves for 1,500,000 cm. and smaller conductor	1⅜	540

INSULATORS

FEEDER WIRE, 600 VOLTS—CLIP TOP

WITH TOP AND SIDE BEARING

The clip top insulators have sherardized malleable iron shells with the standard moulded compound insulation. They are listed for two sizes of pins and to accommodate cables up to 1,500,000 cm. cross section. The top clips being well malleableized are readily peaned over the feeder to hold it in place. It should be noted particularly that in all the General Electric Company's iron clad insulators, the iron shells extend well below the lowest bearing point of the insulator pins thereby greatly strengthening them against side strains. The clip top insulators are offered for any service excepting at corners, for which standard corner insulators are used.

Cat. No. 46010

Cat. No.	Description	Diameter Pin Hole in In.	Approx. Weight per 100
46011	Insulator with top clips and side groove for No. 0000 and smaller conductor	1	390
46010	Insulator with top clips and side groove for 500,000 cm. and smaller conductor	1	415
46003	Insulator with top clips and side groove for No. 0000 and smaller conductor	1⅜	385
46002	Insulator with top clips and side groove for 500,000 cm. and smaller conductor	1⅜	410
46000	Insulator with top clips and side groove for 800,000 cm. and smaller conductor	1⅜	495
46001	Insulator with top clips and side groove for 1,500,000 cm. and smaller conductor	1⅜	520

WEDGE TOP

WITH TOP AND SIDE BEARING

Cat. No. 61110

This insulator is like the clip top insulator in general design but the clip tops are replaced by malleable iron clamping wedges, which are free to move up and down the inclined slots but effectually prevented from horizontal movement. This design makes it practically impossible for the feeder to be pulled from the insulator top by side strains. It is furnished with either 1 in. or 1⅜ in. pin holes and for cables up to and including 1,500,000 cm. cross section. All metal parts are sherardized.

Cat. No.	Description	Diameter Pin Hole in In.	Approx. Weight per 100
61110	Insulator with top wedges and side grooves for No. 0000 to 500,000 cm. conductor	1	520
61109	Insulator with top wedges and side groove for No. 0000 to 500,000 cm. conductor	1⅜	515
61108	Insulator with top wedges and side groove for 600,000 to 1,500,000 cm. conductor	1⅜	625

CORNER INSULATOR

WITH SIDE BEARING ONLY

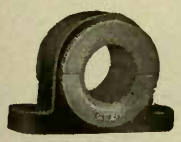
Cat. No. 46008

The corner insulator is arranged with side bearing only and designed for use at street corners where the sharpest turns and greatest side strains are met. Like our other metal clad insulators, it is furnished with a sherardized malleable iron shell which extends well below the lowest bearing point of the pin.

Cat. No.	Description	Diameter Pin Hole in In.	Approx. Weight per 100
46014	For No. 0000 to 500,000 cm. conductor	1	390
46008	For No. 0000 to 500,000 cm. conductor	1⅜	385
46009	For 600,000 to 1,500,000 cm. conductor	1⅜	440

PORCELAIN INSULATORS

PORCELAIN CLAMP INSULATORS



Porcelain Clamp Insulator (Two Pieces)

The porcelain clamp insulator consists of a cast iron seat, a steel strap, and a split porcelain bushing. The iron seat can be attached to any support before clamping the cable in place, thus giving the wireman the use of both hands while inserting the cable.

The General Electric Company's clamp insulators are strong enough to support the heaviest cable, and can be furnished for cables from $\frac{5}{16}$ in. to 3½ in. in diameter.

TWO-PIECE CLAMP INSULATORS, WITHOUT CLAMP

Cat. No.	Description	Std. Pkg.	List Price per 100	Cat. No.	Description	Std. Pkg.	List Price per 100	Cat. No.	Description	Std. Pkg.	List Price per 100
9214	$\frac{5}{16}$ in. hole	100	$5.00	9229	1 in. hole	100	$6.50	9244	2 in. hole	100	$18.00
9215	⅜ in. hole	100	5.00	9230	1⅛ in. hole	100	6.50	65247	2¼ in. hole	100	21.00
9216	½ in. hole	100	5.00	9236	1¼ in. hole	100	11.00	64487	2½ in. hole	100	21.00
9221	⅝ in. hole	100	5.50	9237	1⅜ in. hole	100	11.00	64934	2¾ in. hole	100	21.00
9222	¾ in. hole	100	5.50	9238	1½ in. hole	100	11.00	64488	3 in. hole	100	25.00
9228	⅞ in. hole	100	6.50	9243	1¾ in. hole	100	18.00	64936	3½ in. hole	100	25.00

CLAMPS, COMPLETE, FOR INSULATORS

Cat. No.	Description	Std. Pkg.	List Price per 100	Cat. No.	Description	Std. Pkg.	List Price per 100
9499	For Nos. 9214, 9215, 9216	100	$15.00	* 22718	For Nos. 9214, 9215, 9216	100	$90.00
9498	For Nos. 9221, 9222	100	18.00	* 22750	For Nos. 9221, 9222	100	100.00
9361	For Nos. 9228, 9229, 9230	100	25.00	* 22751	For Nos. 9228, 9229, 9230	100	165.00
9360	For Nos. 9236, 9237, 9238	100	35.00	* 22752	For Nos. 9236, 9237, 9238	100	175.00
9359	For Nos. 9243, 9244	100	45.00	* 22753	For Nos. 9243, 9244	100	185.00
64489	For Nos. 65247, 64487, 64934	100	55.00	* 64490	For Nos. 65247, 64487, 64934	100	195.00
64938	For Nos. 64488, 64936	100	65.00	* 64940	For Nos. 64488, 64936	100	205.00

* These differ from clamps, Cat. Nos. 9359, 9360, 9361, 9498, 9499, 64489 and 64938, in that the straps are composition metal instead of steel.

FEEDER TAP INSULATORS

FOR ATTACHING FEEDER TAP TO BRACKET ARM

For use in pole bracket construction for insulating taps run from the feeder to the trolley wire. Opening in insulating bushings is 1 in.

Feeder Tap Insulator

Cat. No.	Description	Approx. Weight per 100
40207	For 1¼ in. pipe (1.66 in. outside diam.) mall. iron, galv.	160
40208	For 1½ in. pipe (1.9 in. outside diam.) mall. iron, galv.	180
40209	For 2 in. pipe (2.38 in. outside diam.) mall. iron, galv.	200

INSULATORS

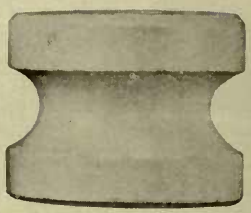
PORCELAIN INSULATORS

Cat. No. 9250 (No. 5½)

Height, $1\frac{5}{16}$ inches; diameter, 1 inch; hole, ¼ inch; groove, $\frac{5}{16}$ inch; standard package, 5000.

Cat. No. 9251 (No. 4½)

Height, $1\frac{7}{8}$ inches; diameter, 1½ inches; hole, $\frac{5}{16}$ inch; groove, $\frac{7}{16}$ inch; standard package, 2000.

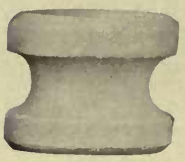


Cat. No. 9255 (No. 24)

Height, $1\frac{3}{4}$ inches; diameter, 2 inches; hole, $\frac{7}{16}$ inch; groove, $\frac{5}{8}$ inch; standard package, 1000.

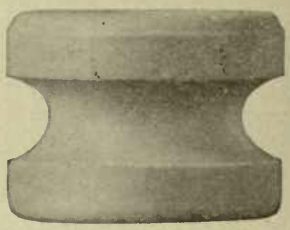
Cat. No. 9252 (No. 3½)

Height, 2 inches; diameter, 2 inches; hole, $\frac{7}{16}$ inch; groove, $\frac{5}{8}$ inch; standard package, 1000.



Cat. No. 9249 (No. 11)

Height, ¾ inch; diameter, 1 inch; hole, ¼ inch; groove, ½ inch; standard package, 3000.



Cat. No. 9257 (No. 0)

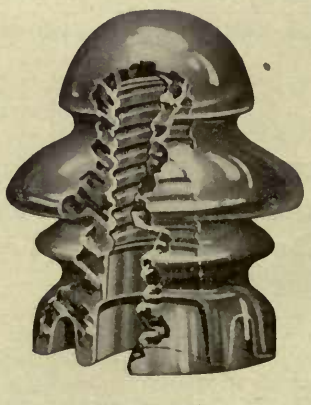
Height, $2\frac{1}{4}$ inches; diameter, 3 inches; hole, $1\frac{1}{4}$ inches; groove 1 inch; standard package, 350.

Cat. No.	Description	Cat. No.	Description
9250	No. 5½ porcelain insulator	9252	No. 3½ porcelain insulator
9251	No. 4½ porcelain insulator	9249	No. 11 porcelain insulator
9255	No. 24 porcelain insulator	9257	No. 0 porcelain insulator

GLASS INSULATORS

FOR TELEPHONE AND FEEDER WIRES

Cat. No. 9322



Cat. No. 40271

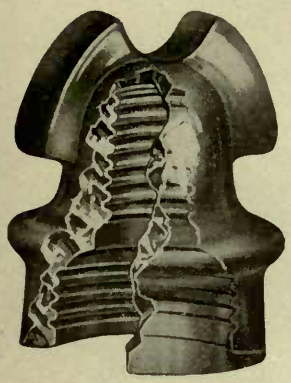
Cat. No. 9312

Cat. No.	Description	DIMENSIONS IN INCHES					Working Voltage	No. per Barrel	Approx. Weight Each
		Diameter	Height	Top Groove	Side Groove	Pin Hole			
9322	Standard pony glass	2¼	3½		⅜	1		400	$\frac{9}{16}$
9312	Standard pony glass, double petticoat	2¾	3½		⅜	1		300	¾
40271	Glass transposition	3⅞	4½		⅜	1		150	1½

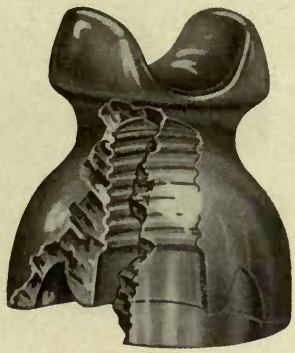
INSULATORS

GLASS INSULATORS

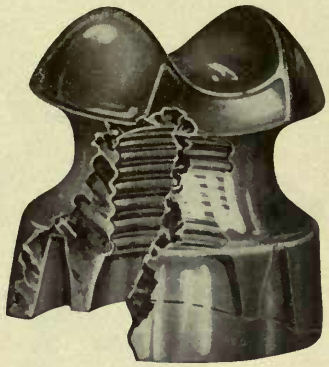
FOR TELEPHONE AND FEEDER WIRES



Cat. No. 40275



Cat. No. 40276



Cat. No. 40278

Cat. No.	DIMENSIONS IN INCHES					No. per Barrel	Approx. Weight Each
	Diameter	Height	Top Groove	Side Groove	Pin Hole		
40275	3 1/2	4 1/2	1	7/8	1	110	2 1/8
40276	3 3/4	4	1 1/8	1	1	125	2
* 40277	4 1/4	5 1/2	1 7/8	1 3/4	1	50	4
40278	4	4 1/4	1 5/8	1 1/4	1 3/8	75	2 5/8

* Similar in appearance to Cat. No. 40276.

PORCELAIN INSULATORS

Cat. No. 74815

Cat. No. 74816

Cat. No. 40274

Cat. No. 40273

Cat. No. 74817

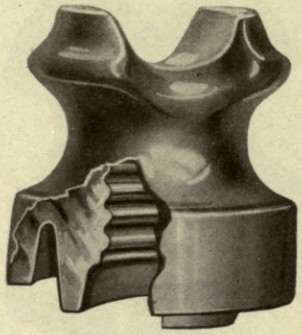
Cat. No. 40279

Cat. No.	DIMENSIONS IN INCHES					No. per Barrel	Approx. Weight Each
	Diameter	Height	Top Groove	Side Groove	Pin Hole		
74815	2 3/8	3 1/2		3/8	1	400	1 1/8 lb.
74816	2 3/8	2 7/8		3/8	1	500	1/2 lb.
40274	3 3/4	3	1/2	3/8	1	200	1 1/4 lb.
40273	3 1/4	3 1/2		5/8	1	200	1 1/4 lb.
74817	3 1/8	3 3/8		3/8	1	150	1 1/2 lb.
40279	3 3/4	3	1 1/4	5/8	1	200	1 1/2 lb.

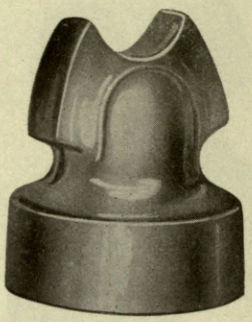
INSULATORS

PORCELAIN INSULATORS

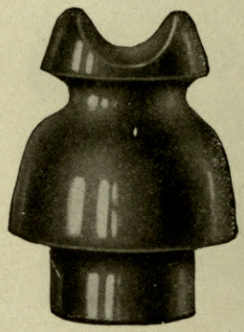
FOR FEEDER WIRES



Cat. No. 40282



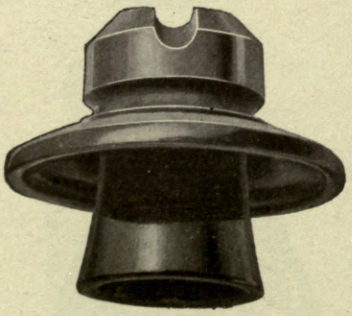
Cat. No. 40280



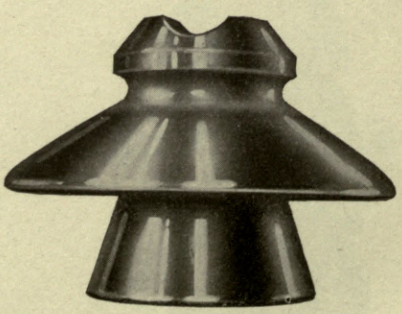
Cat. No. 74818

Cat. No.	DIMENSIONS IN INCHES					No. per Barrel	Approx. Weight Each
	Diameter	Height	Top Groove	Side Groove	Pin Hole		
40282	4 1/4	4 1/4	1 7/8	1 1/2	1 3/8	100	2 3/4
40280	3 1/2	4 1/2	1 1/2	7/8	1	200	1 1/2
74818	3 1/8	3 7/8	1 1/8	5/8	1 7/8	225	1 1/4

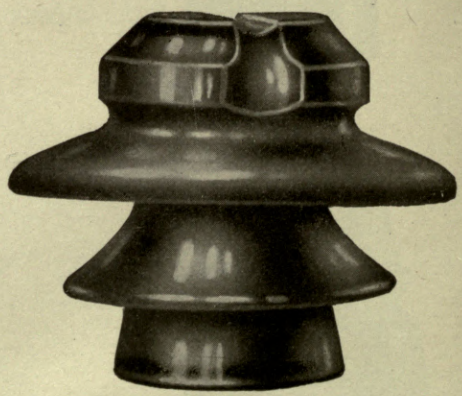
FOR WORKING VOLTAGES UP TO 11,000



Cat. No. 100156



Cat. No. 100158



Cat. No. 100157

Cat. No.	DIMENSIONS IN INCHES					Test Voltage	No. in Barrel	Approx. Weight Each
	Diameter	Height	Top Groove	Side Groove	Pin Hole			
100156	5 3/4	4 1/2	5/8	1/2	1 3/8	50000	65	3
100158	6 3/4	5 3/8	1	7/16	1 3/8	50000	40	4 1/4
100157	5 3/4	5 1/4	5/8	3/4	1 3/8	50000	50	4 1/2

INSULATORS

PORCELAIN INSULATORS

FOR WORKING VOLTAGES UP TO 22,000

Cat. No. 100161

Cat. No. 100160

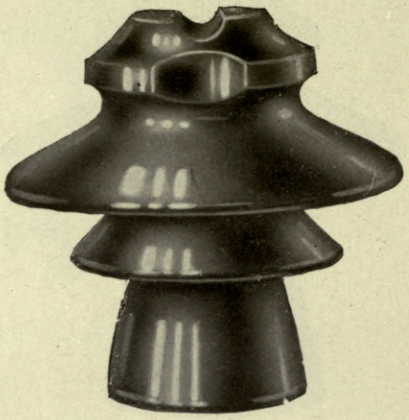
Cat. No. 100159

Cat. No.	DIMENSIONS IN INCHES					Test Voltage	No. in Barrel or Crate	Approx. Ship. Weight Each
	Diameter	Height	Top Groove	Side Groove	Pin Hole			
100161	7 1/4	7	1	5/8	1 3/8	70000	20	8
100159	6 3/4	5 3/4	5/8	1/2	1 3/8	70000	35	6
100160	7 1/8	7	3/4	1/2	1 3/8	70000	26	6

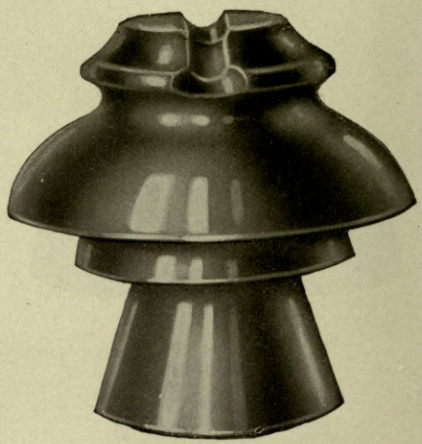
INSULATORS

PORCELAIN INSULATORS

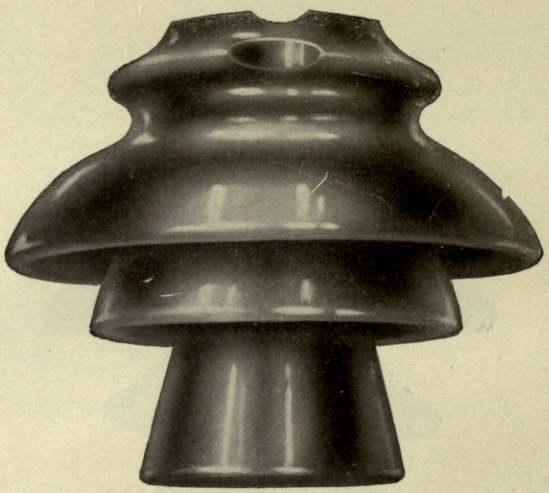
FOR WORKING VOLTAGES UP TO 33,000



Cat. No. 100162

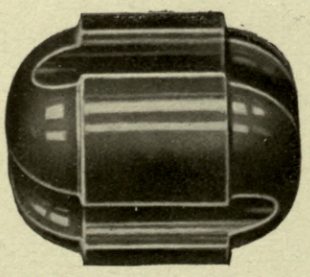


Cat. No. 100163



Cat. No. 100164

Cat. No.	DIMENSIONS IN INCHES					Test Voltage	No. in Barrel or Crate	Approx. Ship. Weight Each
	Diam.	Height	Top Groove	Side Groove	Pin Hole			
100162	8	9	3/4	3/4	1 3/8	86000	15	9 3/4
100164	8 5/8	7 3/8	3/4	5/8	1 3/8	85000	16	10 1/3
100163	8 1/2	8 1/4	3/4	3/4	1 3/8	85000	15	11

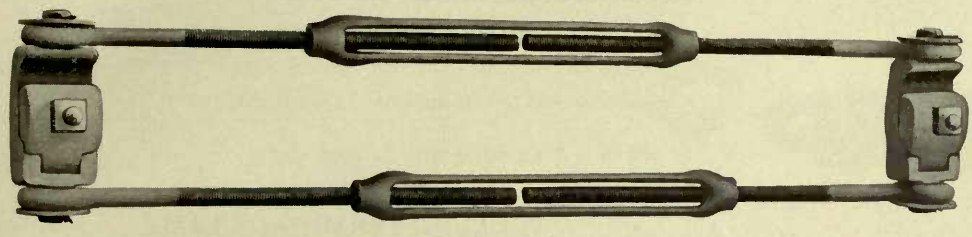


PORCELAIN STRAIN INSULATORS

STANDARD PORCELAIN INSULATOR FOR SPAN AND ANCHOR WIRES

Cat. No.	DIMENSIONS IN INCHES		
	Length	Width	Groove
110900	2 1/2	2 5/16	1/2
110901	3 1/4	2 3/4	5/8

OVERHEAD LINE TOOLS

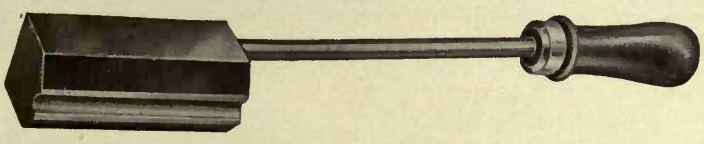


Cat. No. 16914

Cat. No.	Description
16914	Trolley wire tightener, max. length 3 ft. 8½ in., take up 1 ft.
100031	Trolley wire tightener, max. length 5 ft. 8½ in., take up 1 ft. 6 in.

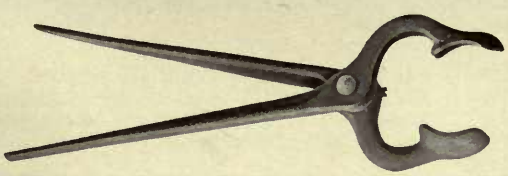
Cat. No. 100029

100029	Trolley wire tightener, max. length 7 ft. 2 in., take up 2 ft. 2 in.
100030	Trolley wire tightener, max. length 10 ft. 2 in., take up 2 ft. 2 in.



Cat. No. 16762

16762	Soldering copper for line work, weight 6 lb.



Cat. No. 19457

19457	Tongs for tightening cap and cone suspensions

Cat. No. 35799

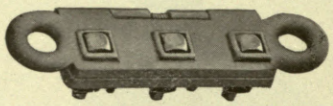
35799	Wrench for Form H mining suspensions

Cat. No. 46765

46765	Wrench for Forms H, D and G straight line suspensions

OVERHEAD LINE TOOLS

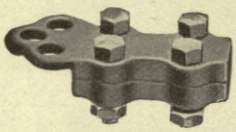
TROLLEY WIRE HAULING CLAMP



Cat. No. 16915

Cat. No.	Description
16915	Trolley wire hauling clamp

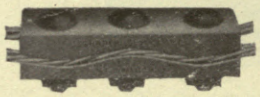
TROLLEY TERMINAL CLAMP



Cat. No. 27437

Cat. No.	Description	Weight per 100
27437	Terminal clamp for dead ending trolley wires, malleable iron, sherardized	355

SCHAPER GUY WIRE CLAMP



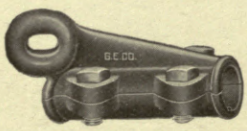
108530	Three bolt clamp for $\frac{3}{8}$ in., $\frac{7}{16}$ in., and $\frac{1}{2}$ in. strand—forged steel galvanized	225

CROSBY CLIPS

Cat. No. 49211

Cat. No.	Description	Weight per 100
49211	Clip for $\frac{1}{4}$ in. strand	30
49212	Clip for $\frac{3}{8}$ in. strand	37
49213	Clip for $\frac{7}{16}$ in. strand	80

FEEDER STRAIN CLAMPS



Cat. No.	Description
100077	For No. 0000 cable—M.I. sherardized
100076	For 250,000-300,000 cm. cable—M.I. sherardized
100075	For 400,000-650,000 cm. cable M.I. sherardized
100074	For 700,000-1,000,000 cm. cable—M.I. sherardized

WIRE CABLE THIMBLES

Cat. No.	Diameter of Cable in In.	Approx. Weight per 100
88390	$\frac{1}{4}$	6
88389	$\frac{5}{16}$	7
88388	$\frac{3}{8}$	10
88387	$\frac{7}{16}$	14
88386	$\frac{1}{2}$	18
88385	$\frac{5}{8}$	25

DISTRIBUTING RINGS

Cat. No.	Description
100032	$2\frac{1}{2}$ in. x $\frac{1}{4}$ in. wrought iron ring
100033	3 in. x $\frac{3}{8}$ in. wrought iron ring
100034	4 in. x $\frac{1}{2}$ in. wrought iron ring

ANCHOR RODS AND ANCHORS

ANCHOR RODS—GALVANIZED

Cat. No. 48838

Cat. No.	Diameter in In.	Length in Ft.	Approx. Weight per 100
100035	1/2	5	425
100036	1/2	6	500
100037	1/2	7	575
100038	1/2	8	650
100039	5/8	5	650
48838	5/8	6	750
100040	5/8	7	850
100041	5/8	8	950
100042	3/4	6	1100
100043	3/4	7	1250
100044	3/4	8	1400
100045	3/4	10	1700
100046	1	8	2500
100047	1	10	2800
100048	1	12	3100

Above catalogue numbers cover anchor rods with nuts but without washers.

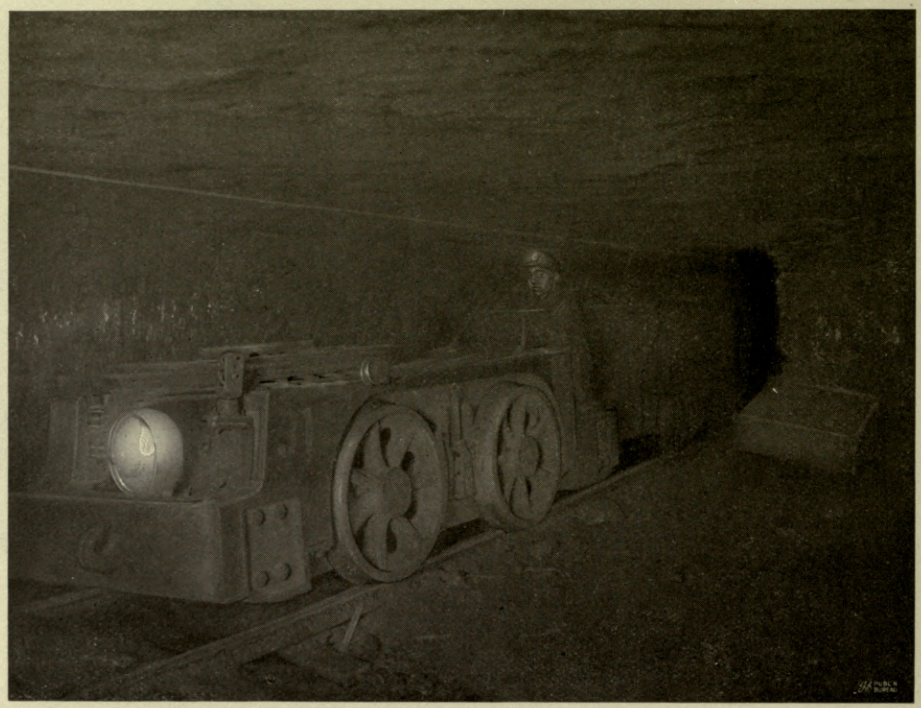
CABLE SPLICER

Cat. No.	Size of Cable	Cat. No.	Size of Cable
43508	250,000 cm.	43511	500,000 cm.
43509	300,000 cm.	43512	750,000 cm.
43510	400,000 cm.	43513	1,000,000 cm.

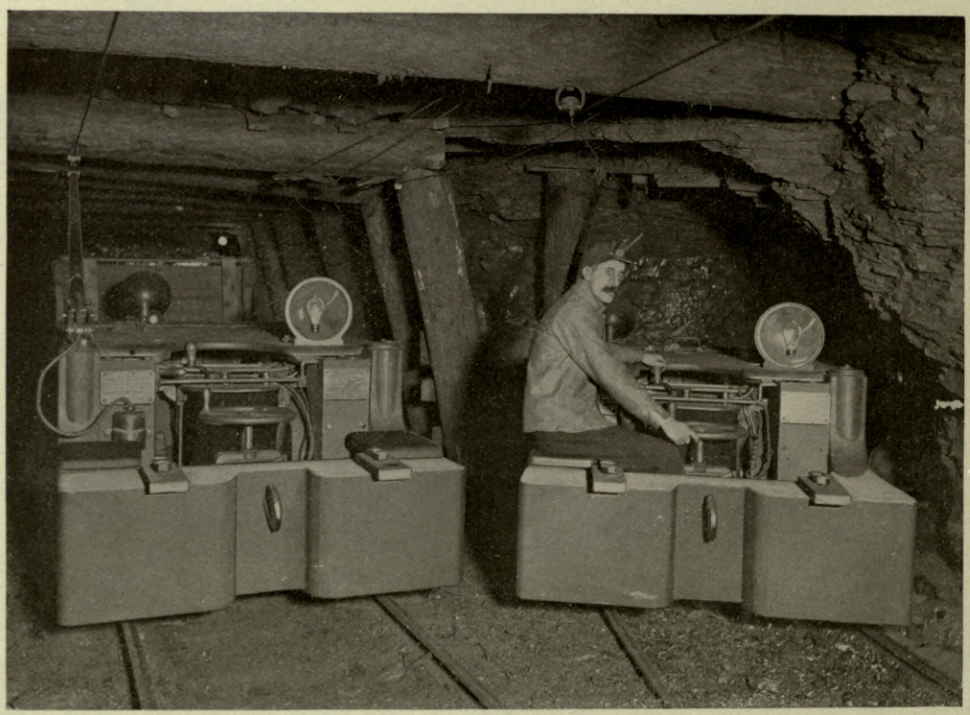
CABLE CONNECTOR

43538	250,000 cm.	43541	500,000 cm.
43539	300,000 cm.	43542	750,000 cm.
43540	400,000 cm.	43543	1,000,000 cm.

MISCELLANEOUS ILLUSTRATIONS OF TROLLEY LINE CONSTRUCTION



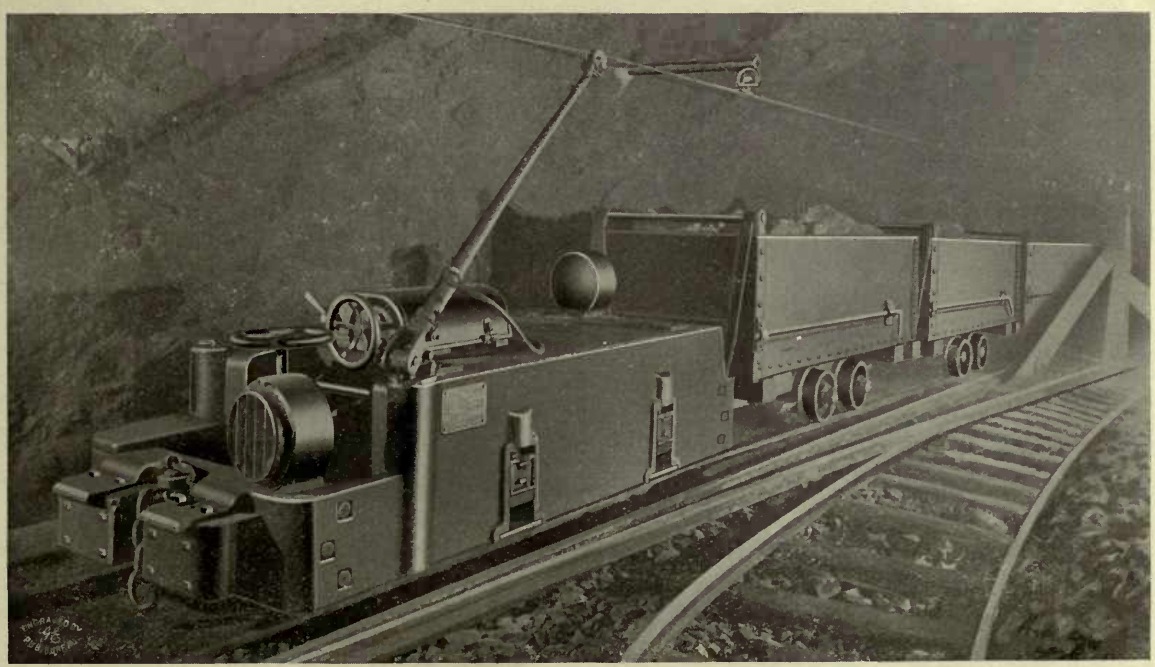
Method of Attaching Trolley Directly to Mine Roof



Method of Attaching Trolley to Overhead Timbers

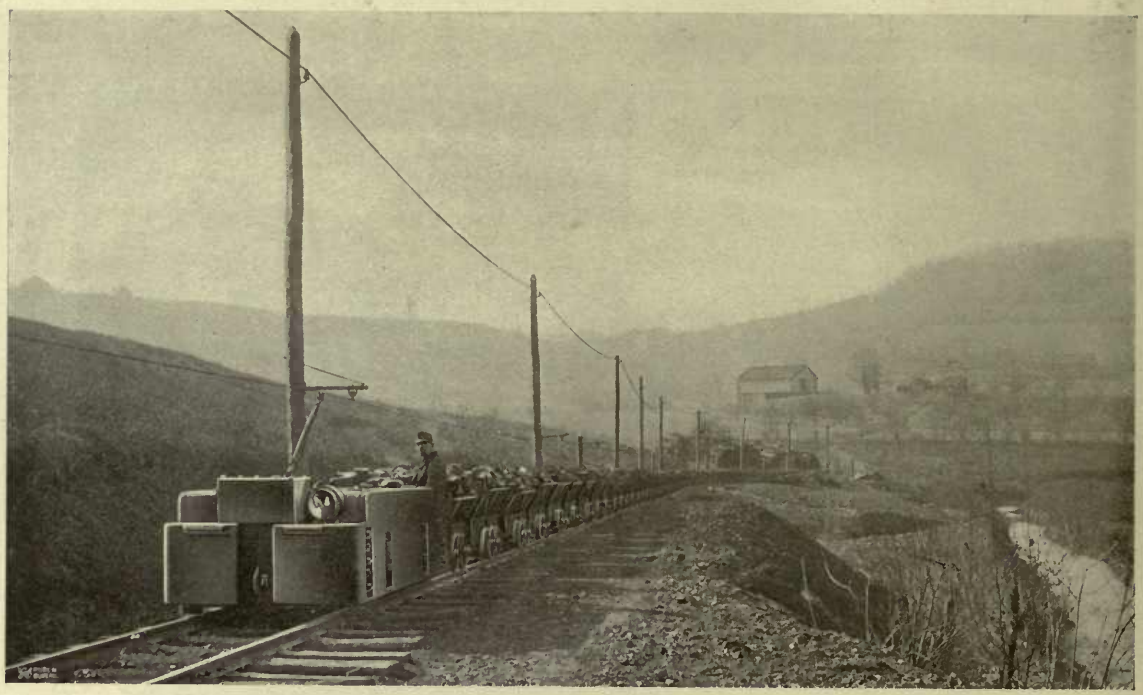
MISCELLANEOUS ILLUSTRATIONS OF TROLLEY LINE CONSTRUCTION

Method of Attaching Trolley Directly to Side Wall (Using Form "D" Suspension)

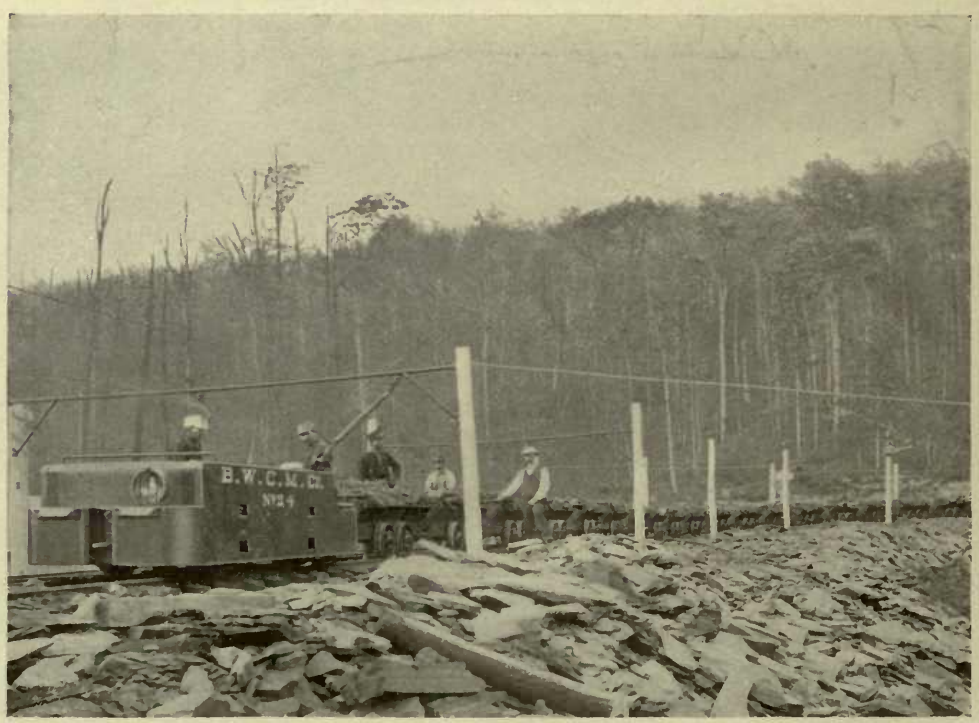


Method of Attaching Trolley Directly to Side Wall (Using Form "H" Suspension)

MISCELLANEOUS ILLUSTRATIONS OF TROLLEY LINE CONSTRUCTION

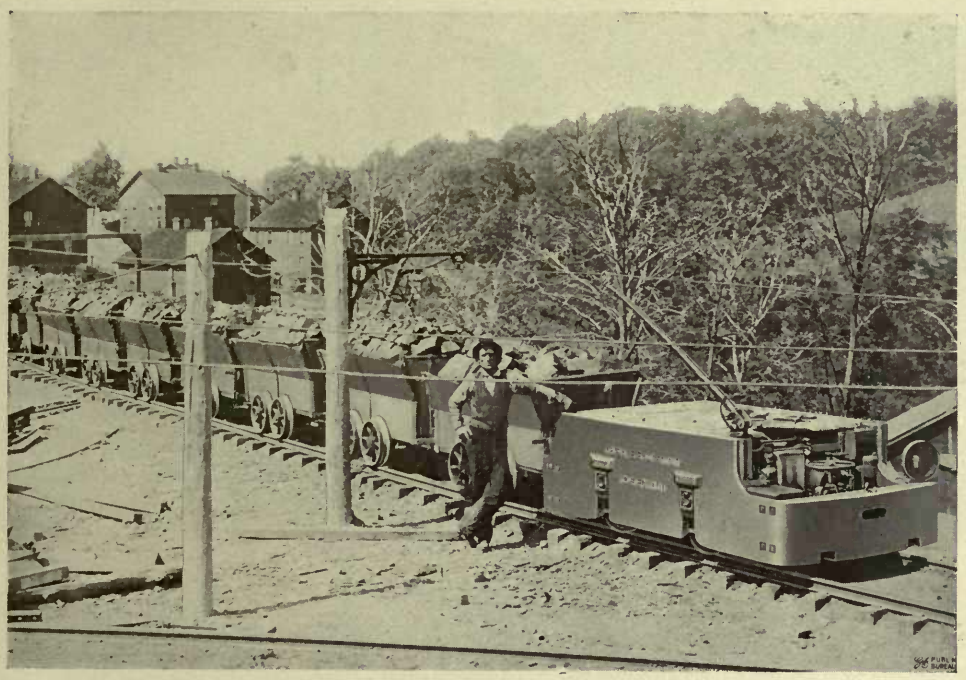


Short Side Bracket Construction

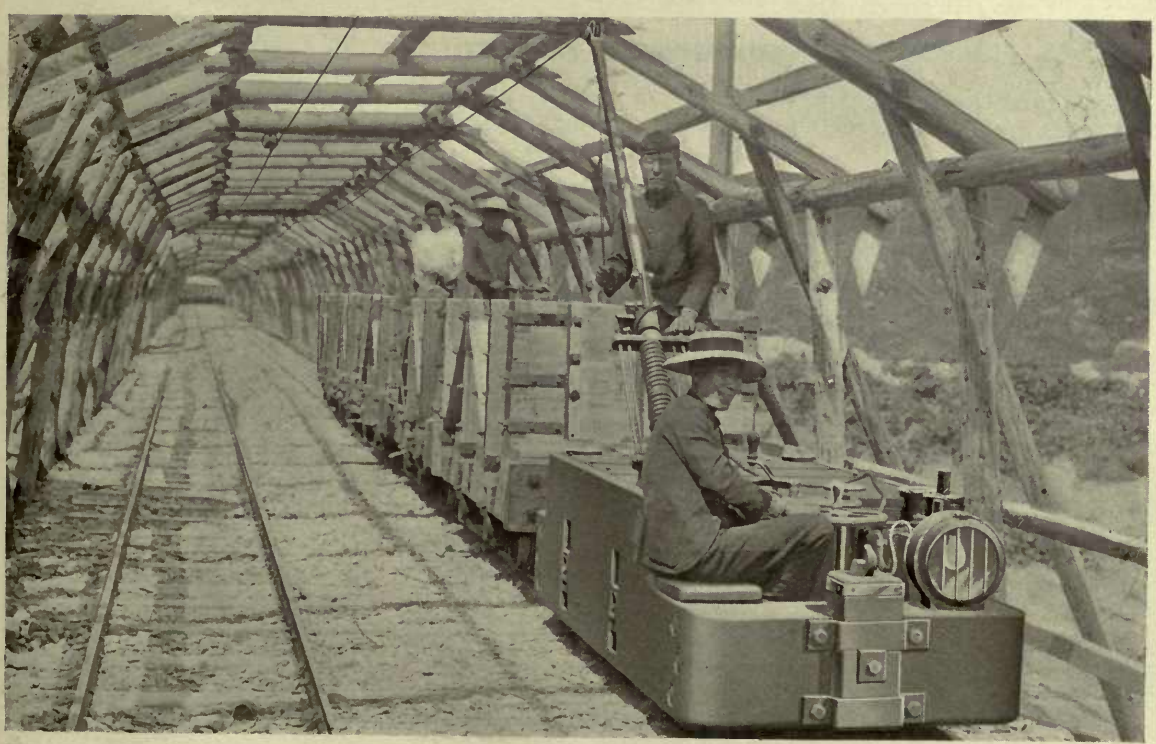


Pipe Span Construction—Double Track

MISCELLANEOUS ILLUSTRATIONS OF TROLLEY LINE CONSTRUCTION



Under Braced Side Bracket Construction



Trolley Construction in a Japanese Snow-shed

CONSTRUCTION NOTES

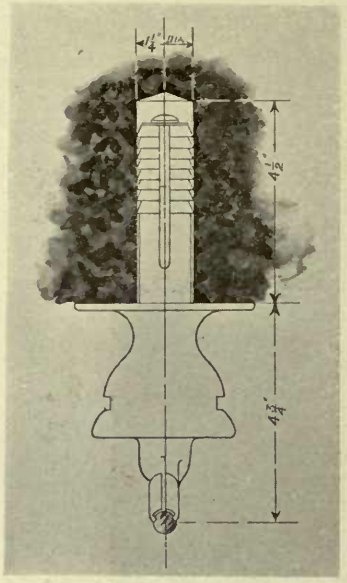


Fig. 1

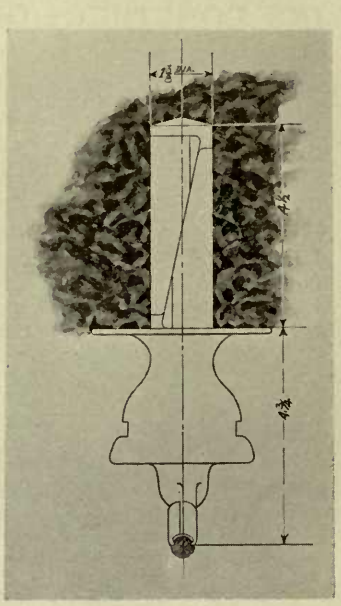


Fig. 2

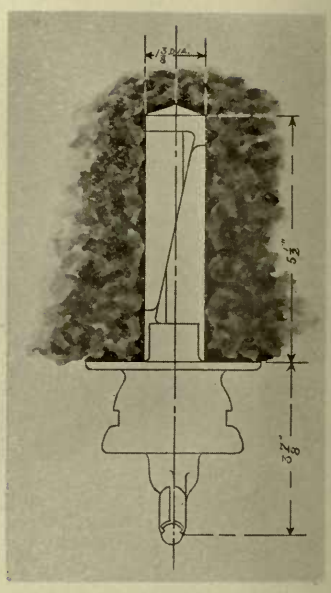


Fig. 3

The following information contains suggestions intended to assist customers in installing line material in mines and industrial properties.

The methods suggested have proven satisfactory for conditions ordinarily encountered in service and are generally recommended as good practice.

SUPPORTING THE TROLLEY

The illustrations, Figs. 1 to 5 inclusive, represent combinations of the standard devices listed in the foregoing pages for suspending the trolley wire directly from the mine roof.

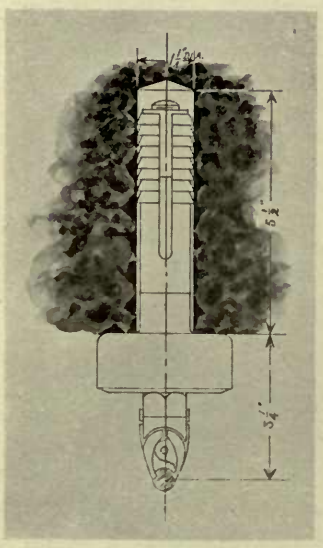


Fig. 4

The suspensions are provided with large circular bearing surfaces which when tightened against the mine roof successfully resist all side strains and maintain the suspension in a vertical position.

Figs. 6 and 7 represent the suspension attached to the overhead timber of the mine entries etc. The special gimlet pointed lag screw is particularly adapted to this construction.

Where the mine roof is of varying heights above the track a length of standard 1¼ in. pipe fastened in the roof and the suspension attached to the pipe by a combination clamp, as shown in Fig. 8 offers means for securing a good level trolley wire.

When necessary to support the trolley from a side wall bracket or horizontal pipe construction as commonly used outside of the

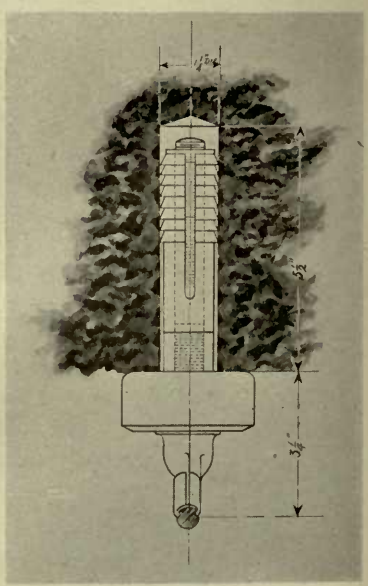


Fig. 5

CONSTRUCTION NOTES

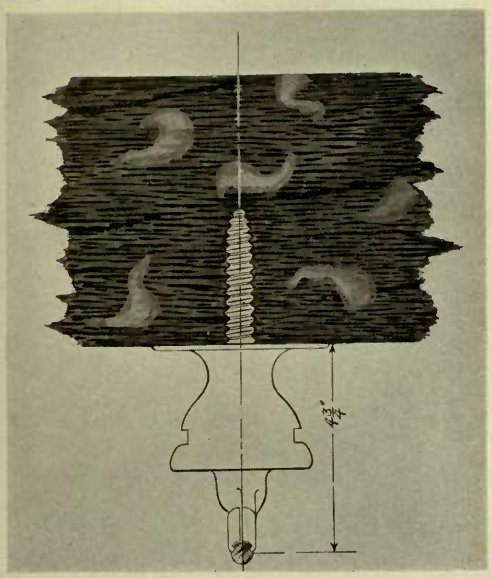


Fig. 6

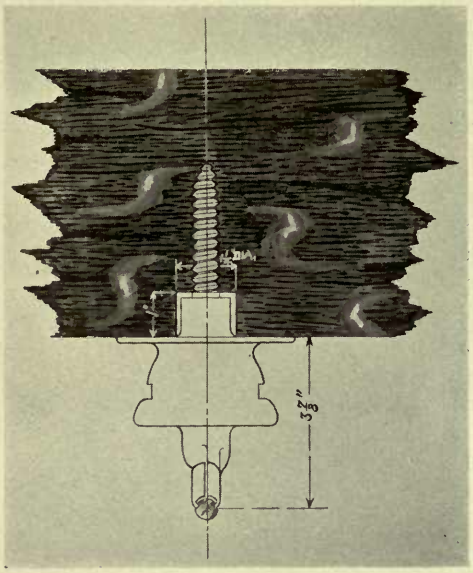


Fig. 7

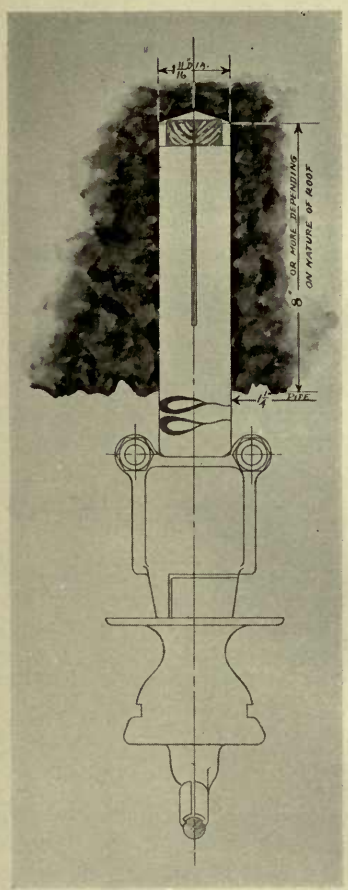


Fig. 8

mine, the same combination clamp shown in Fig. 5 may be used as in Fig. 9 and when so used fits standard 1½ in. pipe.

Fig. 10 shows a suspension attached to a 1¼ in. vertical pipe with standard roof bolt and wedges. This is a simple and efficient method easily installed and quickly removed.

SPACING OF SUSPENSIONS

On tangent track construction the suspension points should be located approximately 25 ft. apart and the trolley wire pulled up sufficiently tight to prevent excessive sagging between the

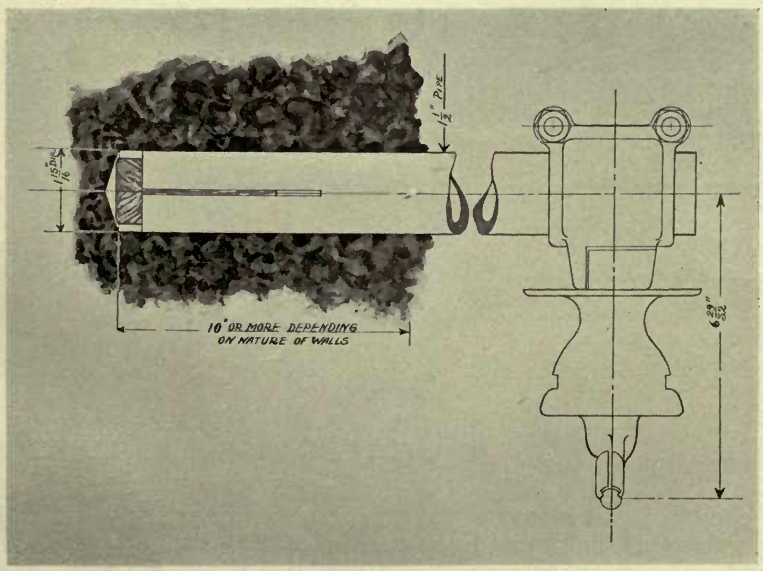


Fig. 9

CONSTRUCTION NOTES

points of support. A loose wire is liable to injury at the clamping ear, or may ground the system against the roof.

On curved track the distance between suspension points should be shortened so as to maintain the trolley wire within 4 inches either side of the center line of the trolley base.

The following table gives a rough and ready method of determining the radius of a curve and the proper location of suspension points on it.

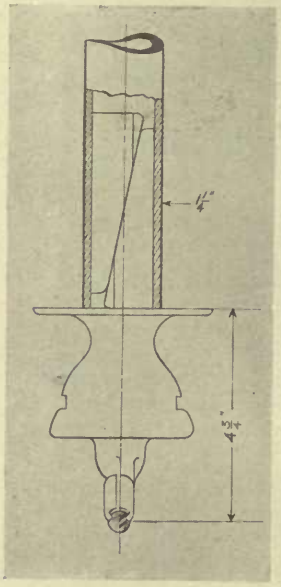
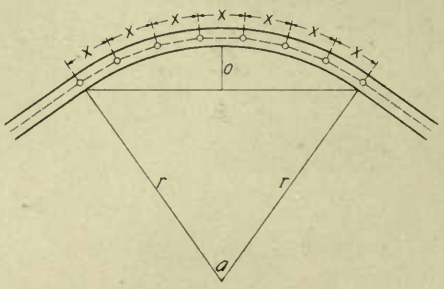


Fig. 10



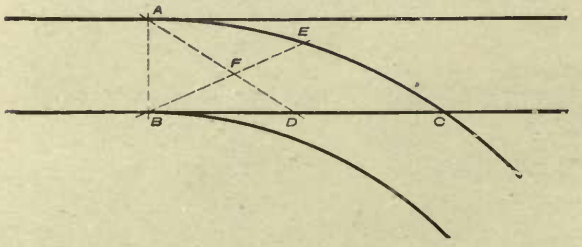
Radius of Curve in Ft. (R)	Chord in Ft. (C)	Middle Ordinate in Inches (O)	Distance Between Suspension Points (X)
40	10	3¾	5
50	10	3	5½
60	10	2½	6
75	10	2	6½
85	10	1¾	7
100	10	1½	7½
200	10	¾	10
300	10	½	15
410	100	36¾	20
573	100	28¾	26

ANCHORAGES

Permanent lines should be anchored frequently by the use of half strain ears and insulated turnbuckles. Soldering the ear to the wire gives a positive and reliable grip. The soldering should be very carefully done as any overheating will injuriously affect the copper trolley wire.

FROGS

The following diagram shows an excellent method of properly placing the frogs on the line, and while certain variables will necessitate slight variation of setting, this location will be found so nearly correct that a very small alteration, which must be determined by experiment, will compensate for the variable conditions.



TO LOCATE TROLLEY FROG

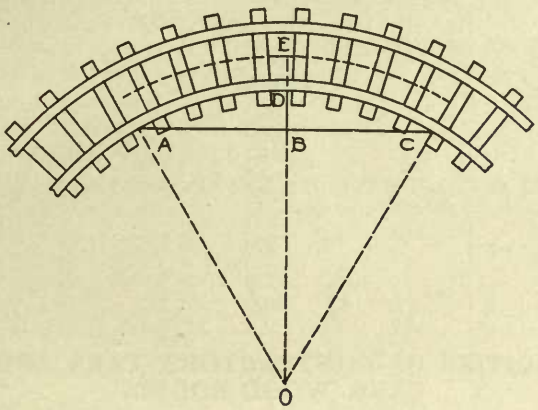
From track switch point A, draw a line to center point D, of track frog distance BC, and from switch point B, draw a line to center point E, of arc AEC. Directly over the intersection of these two lines at F will be the proper location of the trolley frog.

PROTECTIVE FINISH OF LINE MATERIAL

To protect the iron and steel parts of line material from rapid deterioration due to the presence of corrosive water frequently encountered in underground workings, it is generally recommended that standard sherardized material be used and after installation given a coat of heavy asphaltum paint. Occasional subsequent coats will materially increase the length of service obtainable.

MISCELLANEOUS DATA

Formula for determining radius of curvature from the chord of the arc subtended, the middle ordinate and the track gauge.



Formula:

$$\text{Radius (R)} = OE = \frac{\left(\frac{AC}{2}\right)^2 + BD^2}{2\,BD} + \frac{G}{2}$$

Example:

If gauge (G) = 36 in.
Chord (AC) = 20 ft. = 240 in.
Middle ordinate (BD) = 20 in.

$$\text{Then } R = \frac{\left(\frac{240}{2}\right)^2 + 20^2}{2 \times 20} + \frac{36}{2} = \frac{120^2 + 20^2}{40} + 18 = 388 \text{ in.} = 32\tfrac{1}{3} \text{ feet.}$$

For any given service the required weight of rail in pounds per yard may be determined by allowing 10 lb. per yard for each ton of locomotive weight per driving wheel. This gives the *minimum* weight of rail permissible but much better results will be obtained by using the heavier rails recommended.

Weight of Locomotive in Lb.	Weight of Rail per Yard in Lb. Minimum	Weight of Rail per Yard in Lb. Recommended
6000	16	20
9000	16	25
13000	16	30
16000	20	40
20000	25	45
26000	35	50
40000		60

MISCELLANEOUS DATA

WEIGHTS AND CAPACITIES OF COLLIERY CARS (WOOD BODIES)

FOUR WHEELS, USUAL GAUGE 36 IN. TO 44 IN.

Approx. Capacity in Bushels Run-of-Mine Coal	Weight of Empty Car in Lb.	Average Weight of Load in Lb. of Coal
15	500	1200 bituminous
20	600	1500 bituminous
25	850	1900 bituminous
30	950	2300 bituminous
33	1050	2500 bituminous
35	1150	2700 bituminous
40	1250	3000 bituminous
46	1400	3500 bituminous
54	1700	4100 bituminous
2½ long tons	2000	5700 anthracite
3 long tons	2500	6700 anthracite

WEIGHTS AND CAPACITIES OF CONTRACTORS' CARS AND INDUSTRIAL DUMP CARS (WOOD BODIES)

FOUR WHEEL, USUAL GAUGE 36 IN.

Capacity in Cu. Yd.	Weight of Empty Car in Lb.	Average Weight of Load in Lb.
1	1400	3000
1½	2100	4500
2	2500	6000
2½	3000	7500
3	4000	9000
4	5000	12000

A bushel of bituminous coal weighs 76 lb.
A bushel of hard coke weighs 40 lb.
A short ton, 2000 lb., of bituminous coal requires for storage 40 cu. ft.
A long ton, 2250 lb., of bituminous coal requires for storage 45 cu. ft.
A short ton, 2000 lb., of anthracite coal requires for storage 33 cu. ft.
A long ton, 2250 lb., of anthracite coal requires for storage 37 cu. ft.
A cubic yard of loose earth weighs 2200 to 2600 lb.
A cubic yard of loose rock weighs 2600 to 3000 lb.

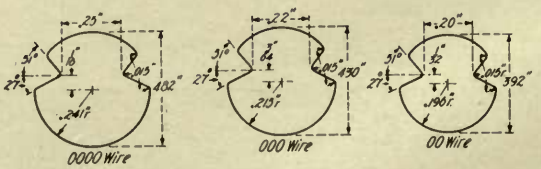
The h.p. exerted by an electric locomotive $= \frac{\text{D.B.P. in lb.} + \text{speed in M.P.H.}}{375}$ and approximately = the kw. input.

The weight of rails per mile of single track, in long tons, equals approximately 1.54 times the weight of rail per yard in lb.

The sectional area of iron or steel rails, in square inches, is approximately one-tenth the weight per yard in lb.

The conductivity of iron or steel rails is from 1/12 to 1/8 that of copper of equivalent cross section.

"AMERICAN STANDARD" GROOVED TROLLEY WIRE SECTIONS



The above diagrams show detailed dimensions of the "American Standard" grooved trolley wire sections which have been adopted by, and can be obtained from, the principal manufacturers of trolley wire. These sections are recommended as insuring highest physical characteristics possible in a grooved wire, together with minimum tendency to kink and twist in handling.

The dimensions and location of the grooves afford means of secure attachment of supporting devices which offer no obstruction to the passage of the trolley wheel.

All General Electric grooved wire fittings are accurately adapted to these sections.

MISCELLANEOUS DATA

APPROXIMATE MEASUREMENT OF ANGLES

(TRAUTWINE)

If the inner edges of a common two-foot rule be opened to the extent shown in the column of inches, they will be inclined to each other at the angles shown in the column of angles. Since each ⅛ inch of opening(up to 19 in. or about 105 deg.) corresponds to about ½ deg. to 1 deg., no great accuracy is to be expected, and beyond 105 deg. still less, for the liability to error then increases very rapidly as the opening becomes greater. Thus, the last ⅛ in. corresponds to about 12 deg.

Angles for intermediate openings may be calculated to the nearest minute or two, by simple proportion, up to 23 in. of opening, or about 147 deg.

TABLE OF ANGLES CORRESPONDING TO OPENINGS OF A TWO-FOOT RULE

Inches	Deg.	Min.	Inches	Deg.	Min.	Inches	Deg.	Min.
¼	1	12	9	44	3	17¾	95	24
½	2	24	9¼	45	21	18	97	11
¾	3	36	9½	46	38	18¼	99	0
1	4	47	9¾	47	56	18½	100	51
1¼	5	58	10	49	15	18¾	102	45
1½	7	10	10¼	50	34	19	104	41
1¾	8	22	10½	51	53	19¼	106	39
2	9	34	10¾	53	13	19½	108	41
2¼	10	46	11	54	34	19¾	110	46
2½	11	58	11¼	55	55	20	112	53
2¾	13	10	11½	57	16	20¼	115	5
3	14	22	11¾	58	38	20½	117	20
3¼	15	34	12	60	0	20¾	119	40
3½	16	46	12¼	61	23	21	122	6
3¾	17	59	12½	62	47	21¼	124	36
4	19	12	12¾	64	11	21½	127	14
4¼	20	24	13	65	35	21¾	129	59
4½	21	37	13¼	67	1	22	132	53
4¾	22	50	13½	68	28	22¼	135	58
5	24	3	13¾	69	55	22½	139	16
5¼	25	16	14	71	22	22¾	142	51
5½	26	30	14¼	72	51	23	146	48
5¾	27	44	14½	74	21	23¼	151	17
6	28	58	14¾	75	51	23½	156	34
6¼	30	11	15	77	22	23¾	163	27
6½	31	26	15¼	78	54	24	180	0
6¾	32	40	15½	80	27			
7	33	54	15¾	82	2			
7¼	35	10	16	83	37			
7½	36	25	16¼	85	14			
7¾	37	41	16½	86	52			
8	38	57	16¾	88	31			
8¼	40	13	17	90	12			
8½	41	29	17¼	91	54			
8¾	42	46	17½	93	38			

DECIMAL EQUIVALENTS

OF EIGHTHS, SIXTEENTHS, THIRTY-SECONDS AND SIXTY-FOURTHS

Fractions Decimals	Fractions Decimals	Fractions Decimals	Fractions Decimals
$\frac{1}{64}=0.015625$	$\frac{17}{64}=0.265625$	$\frac{33}{64}=0.515625$	$\frac{49}{64}=0.765625$
$\frac{1}{32}=0.03125$	$\frac{9}{32}=0.28125$	$\frac{17}{32}=0.53125$	$\frac{25}{32}=0.78125$
$\frac{3}{64}=0.046875$	$\frac{19}{64}=0.296875$	$\frac{35}{64}=0.546875$	$\frac{51}{64}=0.796875$
$\frac{1}{16}=0.0625$	$\frac{5}{16}=0.3125$	$\frac{9}{16}=0.5625$	$\frac{13}{16}=0.8125$
$\frac{5}{64}=0.078125$	$\frac{21}{64}=0.328125$	$\frac{37}{64}=0.578125$	$\frac{53}{64}=0.828125$
$\frac{3}{32}=0.09375$	$\frac{11}{32}=0.34375$	$\frac{19}{32}=0.59375$	$\frac{27}{32}=0.84375$
$\frac{7}{64}=0.109375$	$\frac{23}{64}=0.359375$	$\frac{39}{64}=0.609375$	$\frac{55}{64}=0.859375$
$\frac{1}{8}=0.125$	$\frac{3}{8}=0.375$	$\frac{5}{8}=0.625$	$\frac{7}{8}=0.875$
$\frac{9}{64}=0.140625$	$\frac{25}{64}=0.390625$	$\frac{41}{64}=0.640625$	$\frac{57}{64}=0.890625$
$\frac{5}{32}=0.15625$	$\frac{13}{32}=0.40625$	$\frac{21}{32}=0.65625$	$\frac{29}{32}=0.90625$
$\frac{11}{64}=0.171875$	$\frac{27}{64}=0.421875$	$\frac{43}{64}=0.671875$	$\frac{59}{64}=0.921875$
$\frac{3}{16}=0.1875$	$\frac{7}{16}=0.4375$	$\frac{11}{16}=0.6875$	$\frac{15}{16}=0.9375$
$\frac{13}{64}=0.203125$	$\frac{29}{64}=0.453125$	$\frac{45}{64}=0.703125$	$\frac{61}{64}=0.953125$
$\frac{7}{32}=0.21875$	$\frac{15}{32}=0.46875$	$\frac{23}{32}=0.71875$	$\frac{31}{32}=0.96875$
$\frac{15}{64}=0.234375$	$\frac{31}{64}=0.484375$	$\frac{47}{64}=0.734375$	$\frac{63}{64}=0.984375$
$\frac{1}{4}=0.25$	$\frac{1}{2}=0.5$	$\frac{3}{4}=0.75$	

MISCELLANEOUS DATA

TABLE OF CIRCLES—1

(TRAUTWINE)

DIAMETER IN UNITS AND EIGHTHS, ETC.

Diameter	Circumference	Area	Diameter	Circumference	Area
1/64	.049087	.00019	2 15/16	9.22843	6.7771
1/32	.098175	.00077	3	9.42478	7.0686
3/64	.147262	.00173	1/16	9.62113	7.3662
1/16	.196350	.00307	1/8	9.81748	7.6699
3/32	.294524	.00690	3/16	10.0138	7.9798
1/8	.392699	.01227	1/4	10.2102	8.2958
5/32	.490874	.01917	5/16	10.4065	8.6179
3/16	.589049	.02761	3/8	10.6029	8.9462
7/32	.687223	.03758	7/16	10.7992	9.2806
1/4	.785398	.04909	1/2	10.9956	9.6211
9/32	.883573	.06213	9/16	11.1919	9.9678
5/16	.981748	.07670	5/8	11.3883	10.321
11/32	1.07992	.09281	11/16	11.5846	10.680
3/8	1.17810	.11045	3/4	11.7810	11.045
13/32	1.27627	.12962	13/16	11.9773	11.416
7/16	1.37445	.15033	7/8	12.1737	11.793
15/32	1.47262	.17257	15/16	12.3700	12.177
1/2	1.57080	.19635	4	12.5664	12.566
17/32	1.66897	.22166	1/16	12.7627	12.962
9/16	1.76715	.24850	1/8	12.9591	13.364
19/32	1.86532	.27688	3/16	13.1554	13.772
5/8	1.96350	.30680	1/4	13.3518	14.186
21/32	2.06167	.33824	5/16	13.5481	14.607
11/16	2.15984	.37122	3/8	13.7445	15.033
23/32	2.25802	.40574	7/16	13.9408	15.466
3/4	2.35619	.44179	1/2	14.1372	15.904
25/32	2.45437	.47937	9/16	14.3335	16.349
13/16	2.55254	.51849	5/8	14.5299	16.800
27/32	2.65072	.55914	11/16	14.7262	17.257
7/8	2.74889	.60132	3/4	14.9226	17.721
29/32	2.84707	.64504	13/16	15.1189	18.190
15/16	2.94524	.69029	7/8	15.3153	18.665
31/32	3.04342	.73708	15/16	15.5116	19.147
1	3.14159	.78540	5	15.7080	19.635
1/16	3.33794	.88664	1/16	15.9043	20.129
1/8	3.53429	.99402	1/8	16.1007	20.629
3/16	3.73064	1.1075	3/16	16.2970	21.135
1/4	3.92699	1.2272	1/4	16.4934	21.648
5/16	4.12334	1.3530	5/16	16.6897	22.166
3/8	4.31969	1.4849	3/8	16.8861	22.691
7/16	4.51604	1.6230	7/16	17.0824	23.221
1/2	4.71239	1.7671	1/2	17.2788	23.758
9/16	4.90874	1.9175	9/16	17.4751	24.301
5/8	5.10509	2.0739	5/8	17.6715	24.850
11/16	5.30144	2.2365	11/16	17.8678	25.406
3/4	5.49779	2.4053	3/4	18.0642	25.967
13/16	5.69414	2.5802	13/16	18.2605	26.535
7/8	5.89049	2.7612	7/8	18.4569	27.109
15/16	6.08684	2.9483	15/16	18.6532	27.688
2	6.28319	3.1416	6	18.8496	28.274
1/16	6.47953	3.3410	1/8	19.2423	29.465
1/8	6.67588	3.5466	1/4	19.6350	30.680
3/16	6.87223	3.7583	3/8	20.0277	31.919
1/4	7.06858	3.9761	1/2	20.4204	33.183
5/16	7.26493	4.2000	5/8	20.8131	34.472
3/8	7.46128	4.4301	3/4	21.2058	35.785
7/16	7.65763	4.6664	7/8	21.5984	37.122
1/2	7.85398	4.9087	7	21.9911	38.485
9/16	8.05033	5.1572	1/8	22.3838	39.871
5/8	8.24668	5.4119	1/4	22.7765	41.282
11/16	8.44303	5.6727	3/8	23.1692	42.718
3/4	8.63938	5.9396	1/2	23.5619	44.179
13/16	8.83573	6.2126	5/8	23.9546	45.664
7/8	9.03208	6.4918	3/4	24.3473	47.173

MISCELLANEOUS DATA

TABLE OF CIRCLES—1—(Concluded)

(TRAUTWINE)

DIAMETER IN UNITS AND EIGHTHS, ETC.

Diameter	Circumference	Area	Diameter	Circumference	Area
7 1/8	24.7400	48.707	10	31.4159	78.540
8	25.1327	50.265	1/8	31.8086	80.516
1/8	25.5254	51.849	1/4	32.2013	82.516
1/4	25.9181	53.456	3/8	32.5940	84.541
3/8	26.3108	55.088	1/2	32.9867	86.590
1/2	26.7035	56.745	5/8	33.3794	88.664
5/8	27.0962	58.426	3/4	33.7721	90.763
3/4	27.4889	60.132	7/8	34.1648	92.886
7/8	27.8816	61.862	11	34.5575	95.033
9	28.2743	63.617	1/8	34.9502	97.205
1/8	28.6670	65.397	1/4	35.3429	99.402
1/4	29.0597	67.201	3/8	35.7356	101.62
3/8	29.4524	69.029	1/2	36.1283	103.87
1/2	29.8451	70.882	5/8	36.5210	106.14
5/8	30.2378	72.760	3/4	36.9137	108.43
3/4	30.6305	74.662	7/8	37.3064	110.75
7/8	31.0232	76.589	12	37.6991	113.10

TABLE OF CIRCLES—2

(TRAUTWINE)

DIAMETER IN UNITS AND TENTHS, ETC.

0.1	0.314159	0.007854	3.8	11.93805	11.34115
0.2	0.628319	0.031416	3.9	12.25221	11.94591
0.3	0.942478	0.070686	4.0	12.56637	12.56637
0.4	1.256637	0.125664	4.1	12.88053	13.20254
0.5	1.570796	0.196350	4.2	13.19469	13.85442
0.6	1.884956	0.282743	4.3	13.50885	14.52201
0.7	2.199115	0.384845	4.4	13.82301	15.20531
0.8	2.513274	0.502655	4.5	14.13717	15.90431
0.9	2.827433	0.636173	4.6	14.45133	16.61903
1.0	3.141593	0.785398	4.7	14.76549	17.34945
1.1	3.455752	0.950332	4.8	15.07964	18.09557
1.2	3.769911	1.13097	4.9	15.39380	18.85741
1.3	4.084070	1.32732	5.0	15.70796	19.63495
1.4	4.398230	1.53938	5.1	16.02212	20.42821
1.5	4.712389	1.76715	5.2	16.33628	21.23717
1.6	5.026548	2.01062	5.3	16.65044	22.06183
1.7	5.340708	2.26980	5.4	16.96460	22.90221
1.8	5.654867	2.54469	5.5	17.27876	23.75829
1.9	5.969026	2.83529	5.6	17.59292	24.63009
2.0	6.283185	3.14159	5.7	17.90708	25.51759
2.1	6.597345	3.46361	5.8	18.22124	26.42079
2.2	6.911504	3.80133	5.9	18.53540	27.33971
2.3	7.225663	4.15476	6.0	18.84956	28.27433
2.4	7.539822	4.52389	6.1	19.16372	29.22467
2.5	7.853982	4.90874	6.2	19.47787	30.19071
2.6	8.168141	5.30929	6.3	19.79203	31.17245
2.7	8.482300	5.72555	6.4	20.10619	32.16991
2.8	8.796459	6.15752	6.5	20.42035	33.18307
2.9	9.110619	6.60520	6.6	20.73451	34.21194
3.0	9.424778	7.06858	6.7	21.04867	35.25652
3.1	9.738937	7.54768	6.8	21.36283	36.31681
3.2	10.05310	8.04248	6.9	21.67699	37.39281
3.3	10.36726	8.55299	7.0	21.99115	38.48451
3.4	10.68142	9.07920	7.1	22.30531	39.59192
3.5	10.99557	9.62113	7.2	22.61947	40.71504
3.6	11.30973	10.17876	7.3	22.93363	41.85387
3.7	11.62389	10.75210	7.4	23.24779	43.00840

MISCELLANEOUS DATA

TABLE OF CIRCLES—2—(Concluded)

(TRAUTWINE)

DIAMETER IN UNITS AND TENTHS, ETC.

Diameter	Circumference	Area	Diameter	Circumference	Area
7.5	23.56194	44.17865	9.8	30.78761	75.42964
7.6	23.87610	45.36460	9.9	31.10177	76.97687
7.7	24.19026	46.56626	10.0	31.41593	78.53982
7.8	24.50442	47.78362	10.1	31.73009	80.11847
7.9	24.81858	49.01670	10.2	32.04425	81.71282
8.0	25.13274	50.26548	10.3	32.35840	83.32289
8.1	25.44690	51.52997	10.4	32.67256	84.94867
8.2	25.76106	52.81017	10.5	32.98672	86.59015
8.3	26.07522	54.10608	10.6	33.30088	88.24734
8.4	26.38938	55.41769	10.7	33.61504	89.92024
8.5	26.70354	56.74502	10.8	33.92920	91.60884
8.6	27.01770	58.08805	10.9	34.24336	93.31316
8.7	27.33186	59.44679	11.0	34.55752	95.03318
8.8	27.64602	60.82123	11.1	34.87168	96.76891
8.9	27.96017	62.21139	11.2	35.18584	98.52035
9.0	28.27433	63.61725	11.3	35.50000	100.2875
9.1	28.58849	65.03882	11.4	35.81416	102.0703
9.2	28.90265	66.47610	11.5	36.12832	103.8689
9.3	29.21681	67.92909	11.6	36.44247	105.6832
9.4	29.53097	69.39778	11.7	36.75663	107.5132
9.5	29.84513	70.88218	11.8	37.07079	109.3588
9.6	30.15929	72.38229	11.9	37.38495	111.2202
9.7	30.47345	73.89811	12.0	37.69911	113.0973

TABLE OF CIRCLES—3

(TRAUTWINE)

DIAMETER IN FEET AND INCHES

Diameter Ft.	Diameter In.	Circumference—Feet	Area—Sq. Ft.	Diameter Ft.	Diameter In.	Circumference—Feet	Area—Sq. Ft.
0	1	0.261799	0.005454	2	7	8.11578	5.24144
	2	0.523599	0.021817		8	8.37758	5.58505
	3	0.785398	0.049087		9	8.63938	5.93957
	4	1.047198	0.087266		10	8.90118	6.30500
	5	1.308997	0.136354		11	9.16298	6.68134
	6	1.570796	0.196350	3	0	9.42478	7.06858
	7	1.832596	0.267254		1	9.68658	7.46674
	8	2.094395	0.349066		2	9.94838	7.87580
	9	2.356195	0.441786		3	10.21018	8.29577
	10	2.617994	0.545415		4	10.47198	8.72665
	11	2.879793	0.659953		5	10.73377	9.16843
1	0	3.14159	0.785398		6	10.99557	9.62113
	1	3.40339	0.921752		7	11.25737	10.08473
	2	3.66519	1.06901		8	11.51917	10.55924
	3	3.92699	1.22718		9	11.78097	11.04466
	4	4.18879	1.39626		10	12.04277	11.54099
	5	4.45059	1.57625		11	12.30457	12.04823
	6	4.71239	1.76715	4	0	12.56637	12.56637
	7	4.97419	1.96895		1	12.82817	13.09542
	8	5.23599	2.18166		2	13.08997	13.63538
	9	5.49779	2.40528		3	13.35177	14.18625
	10	5.75959	2.63981		4	13.61357	14.74803
	11	6.02139	2.88525		5	13.87537	15.32072
2	0	6.28319	3.14159		6	14.13717	15.90431
	1	6.54498	3.40885		7	14.39897	16.49882
	2	6.80678	3.68701		8	14.66077	17.10423
	3	7.06858	3.97608		9	14.92257	17.72055
	4	7.33038	4.27606		10	15.18436	18.34777
	5	7.59218	4.58694		11	15.44616	18.98591
	6	7.85398	4.90874	5	0	15.70796	19.63495

MISCELLANEOUS DATA

TABLE OF CIRCLES—3—(Concluded)

(TRAUTWINE)

DIAMETER IN FEET AND INCHES

Diameter Ft.	Diameter In.	Circumference—Feet	Area—Sq. Ft.	Diameter Ft.	Diameter In.	Circumference—Feet	Area—Sq. Ft.
5	1	15.96976	20.29491	8	7	26.96534	57.86312
	2	16.23156	20.96577		8	27.22714	58.99213
	3	16.49336	21.64754		9	27.48894	60.13205
	4	16.75516	22.34021		10	27.75074	61.28287
	5	17.01696	23.04380		11	28.01253	62.44461
	6	17.27876	23.75829	9	0	28.27433	63.61725
	7	17.54056	24.48370		1	28.53613	64.80080
	8	17.80236	25.22001		2	28.79793	65.99526
	9	18.06416	25.96723		3	29.05973	67.20063
	10	18.32596	26.72535		4	29.32153	68.41691
	11	18.58776	27.49439		5	29.58333	69.64409
6	0	18.84956	28.27433		6	29.84513	70.88218
	1	19.11136	29.06519		7	30.10693	72.13119
	2	19.37315	29.86695		8	30.36873	73.39110
	3	19.63495	30.67962		9	30.63053	74.66191
	4	19.89675	31.50319		10	30.89233	75.94364
	5	20.15855	32.33768		11	31.15413	77.23627
	6	20.42035	33.18307	10	0	31.41593	78.53982
	7	20.68215	34.03937		1	31.67773	79.85427
	8	20.94395	34.90659		2	31.93953	81.17963
	9	21.20575	35.78470		3	32.20132	82.51589
	10	21.46755	36.67373		4	32.46312	83.86307
	11	21.72935	37.57367		5	32.72492	85.22115
7	0	21.99115	38.48451		6	32.98672	86.59015
	1	22.25295	39.40626		7	33.24852	87.97005
	2	22.51475	40.33892		8	33.51032	89.36086
	3	22.77655	41.28249		9	33.77212	90.76258
	4	23.03835	42.23697		10	34.03392	92.17520
	5	23.30015	43.20235		11	34.29572	93.59874
	6	23.56194	44.17865	11	0	34.55752	95.03318
	7	23.82374	45.16585		1	34.81932	96.47853
	8	24.08554	46.16396		2	35.08112	97.93479
	9	24.34734	47.17298		3	35.34292	99.40196
	10	24.60914	48.19290		4	35.60472	100.8800
	11	24.87094	49.22374		5	35.86652	102.3690
8	0	25.13274	50.26548		6	36.12832	103.8689
	1	25.39454	51.31813		7	36.39011	105.3797
	2	25.65634	52.38169		8	36.65191	106.9014
	3	25.91814	53.45616		9	36.91371	108.4340
	4	26.17994	54.54154		10	37.17551	109.9776
	5	26.44174	55.63782		11	37.43731	111.5320
	6	26.70354	56.74502	12	0	37.69911	113.0973

U. S. STANDARD SCREW THREADS

Diameter in Inches	Threads per Inch	Diameter at Root of Thread Inches	Area of Bolt in Sq. Inches	Area of Root of Thread in Sq. Inches
1/4	20	0.185	0.049	0.027
5/16	18	0.240	0.077	0.045
3/8	16	0.294	0.110	0.068
7/16	14	0.344	0.150	0.093
1/2	13	0.400	0.196	0.126
9/16	12	0.454	0.249	0.162
5/8	11	0.507	0.307	0.202
3/4	10	0.620	0.442	0.302
7/8	9	0.731	0.601	0.420
1	8	0.837	0.785	0.550
1 1/8	7	0.940	0.994	0.694
1 1/4	7	1.065	1.227	0.893
1 3/8	6	1.160	1.485	1.057
1 1/2	6	1.284	1.767	1.295

MISCELLANEOUS DATA

U. S. STANDARD SCREW THREADS—(Concluded)

Diameter Inches	Threads per Inch	Diameter at Root of Thread Inches	Area of Bolt in Sq. Inches	Area of Root of Thread in Sq. Inches
1 5/8	5 1/2	1.389	2.074	1.515
1 3/4	5	1.491	2.405	1.746
1 7/8	5	1.616	2.761	2.051
2	4 1/2	1.712	3.142	2.302
2 1/4	4 1/2	1.962	3.976	3.023
2 1/2	4	2.176	4.909	3.719
2 3/4	4	2.426	5.940	4.620
3	3 1/2	2.629	7.069	5.428
3 1/4	3 1/2	2.879	8.296	6.510
3 1/2	3 1/4	3.100	9.621	7.548
3 3/4	3	3.317	11.045	9.641
4	3	3.567	12.566	9.963
4 1/4	2 7/8	3.798	14.186	11.329
4 1/2	2 3/4	4.028	15.904	12.753
4 3/4	2 5/8	4.256	17.721	14.226
5	2 1/2	4.480	19.635	15.763
5 1/4	2 1/2	4.730	21.648	17.572
5 1/2	2 3/8	4.953	23.758	19.267
5 3/4	2 3/8	5.203	25.967	21.262
6	2 1/4	5.423	28.274	23.098

DIMENSIONS OF STANDARD BOLT HEADS AND NUTS

(Square or Hexagonal)

Let X = diameter across flats of head or nut
Y = thickness of head
Let Z = thickness of nut
D = diameter of bolt

	Rough	Finished
Then X =	1 1/2 D + 1/8 in.	1 1/2 D + 1/16 in.
Y =	1/2 X	D − 1/16 in.
Z =	D	D − 1/16 in.

STANDARD SIZES OF WELDED WROUGHT IRON PIPE

INSIDE DIAMETER IN INCHES		Thickness in Inches	Weight per Foot in Lb.	Threads per Inch of Screw
* Nominal	Actual			
1/8	0.270	0.068	0.24	27
1/4	0.364	0.088	0.42	18
3/8	0.494	0.091	0.56	18
1/2	0.623	0.109	0.84	14
3/4	0.824	0.113	1.12	14
1	1.048	0.134	1.67	11 1/2
1 1/4	1.380	0.140	2.24	11 1/2
1 1/2	1.611	0.145	2.68	11 1/2
2	2.067	0.154	3.61	11 1/2
2 1/2	2.468	0.204	5.74	8
3	3.067	0.217	7.54	8
3 1/2	3.548	0.226	9.00	8
4	4.026	0.237	10.66	8
4 1/2	4.508	0.246	12.49	8
5	5.045	0.259	14.50	8
6	6.065	0.280	18.76	8
7	7.023	0.301	23.27	8
8	7.982	0.322	28.18	8
9	9.001	0.344	33.70	8
10	10.019	0.366	40.00	8

* Standard iron pipe is known to the trade by its nominal inside diameter which differs from its actual diameter as shown in the table.

MISCELLANEOUS DATA

DATA ON SOLID COPPER WIRE—ROUND

Size B.&S. Gauge	Diameter Mills	Circular Mills	Square Inch	Pounds per 1000 Ft.	Pounds per Mile	Breaking Strain Hard Drawn	Breaking Strain Soft Drawn	Ohms per Mile Soft Drawn 60° F.
0000	460	211600	0.166190	640	3376	8370	5650	0.259
000	410	168100	0.131793	508	2677	6580	4480	0.326
00	365	133225	0.104520	402	2123	5226	3553	0.412
0	325	105625	0.082932	319	1684	4558	2818	0.519
1	289	83521	0.065733	353	1059	3743	2234	0.656
2	258	66564	0.052130	201	839	3127	1772	0.824
3	229	52441	0.041338	159	666	2480	1405	1.04
4	204	41616	0.032784	126	528	1967	1114	1.312
5	182	33124	0.025998	100	419	1559	883	1.656
6	162	26244	0.020617	79	332	1237	700	2.09
7	144	20736	0.016349	63	263	980	555	2.62
8	128	16384	0.012966	50	209	778	400	3.35
9	114	12996	0.010284	40	166	617	349	4.23
10	102	10404	0.008153	31.3	137	489	277	5.27
11	91	8281	0.006467	24.9	104	388	219	6.63
12	81	6561	0.005128	19.7	82.6	307	174	8.37
13	72	5184	0.004067	15.7	65.6	244	138	10.6
14	64	4096	0.003225	12.4	51.9	193	109	13.4
15	57	3249	0.002557	9.84	41.2	153	87	16.9
16	51	2601	0.002028	7.81	32.7	133	69	21.1
17	45	2025	0.001608	6.19	25.9	97	55	27.0
18	40	1600	0.001275	4.91	20.5	77	43	34.2
19	36	1296	0.001011	3.88	16.3	61	34	42.4
20	32	1024	0.000802	3.09	12.9	48	27	53.7

DATA ON COPPER CABLE

Size B.&S. Gauge	No. of Wires in Strand	Diameter of Wires in In.	Diameter of Bare Cable in In.	Nearest 64ths In.	Millimeter	Lb. per 1000 Ft.	Lb. per Mile
14 B.&S.	7	0.0243	0.0729	5/64	1.9843	13	68
12 B.&S.	7	0.0306	0.0918	3/32	2.3812	20	105
10 B.&S.	7	0.0386	0.1158	1/8	3.1749	32	168
8 B.&S.	7	0.0485	0.1455	9/64	3.5718	51	269
6 B.&S.	7	0.0613	0.1839	3/16	4.7624	81	427
5 B.&S.	7	0.0688	0.2064	13/64	5.1592	103	544
4 B.&S.	7	0.0773	0.2319	15/64	5.9530	129	682
3 B.&S.	7	0.0868	0.2604	17/64	6.7467	164	867
2 B.&S.	7	0.0974	0.2922	19/64	7.5404	206	1089
1 B.&S.	19	0.0664	0.3320	21/64	8.3342	259	1368
0 B.&S.	19	0.0746	0.3750	3/8	9.5248	328	1733
00 B.&S.	19	0.0838	0.4190	27/64	10.715	414	2192
000 B.&S.	19	0.094	0.4700	15/32	11.906	520	2745
0000 B.&S.	19	0.1056	0.5280	17/32	13.493	658	3484
250,000 C.M.	37	0.0823	0.5754	37/64	14.684	775	4080
300,000 C.M.	37	0.0906	0.6342	41/64	16.272	843	4984
350,000 C.M.	37	0.0974	0.6818	11/16	17.462	1087	5476
400,000 C.M.	37	0.104	0.7280	47/64	18.653	1242	6566
450,000 C.M.	37	0.111	0.7770	25/32	19.843	1415	7480
500,000 C.M.	61	0.0906	0.8154	13/16	20.637	1554	8222
550,000 C.M.	61	0.095	0.8550	53/64	21.828	1709	9032
600,000 C.M.	61	0.0992	0.8928	57/64	22.621	1864	9852
650,000 C.M.	61	0.1033	0.9297	59/64	23.415	2020	10688
700,000 C.M.	61	0.1072	0.9648	31/32	24.606	2177	11506
750,000 C.M.	61	0.111	0.9990	1	25.3995	2333	12304
800,000 C.M.	61	0.1146	1.0314	1 3/64	26.590	2487	13136
900,000 C.M.	61	0.1216	1.0944	1 3/32	27.781	2813	14864
1,000,000 C.M.	61	0.1281	1.1529	1 5/32	29.368	3110	16498
1,250,000 C.M.	91	0.1173	1.2903	1 19/64	32.940	3888	20534
1,500,000 C.M.	91	0.1284	1.4124	1 27/64	36.115	4660	24610
1,750,000 C.M.	127	0.1173	1.5262	1 1/2	38.893	5435	28700
2,000,000 C.M.	127	0.1255	1.6315	1 41/64	41.671	6212	32800

MISCELLANEOUS DATA

THERMOMETER SCALES

FAHRENHEIT COMPARED WITH * CENTIGRADE

Deg. Fah.	Deg. Cent.	Deg. Fah.	Deg. Cent.	Deg. Fah.	Deg. Cent.	Deg. Fah.	Deg. Cent.
212	100.0	145	62.8	78	25.6	11	−11.7
211	99.4	144	62.2	77	25.0	10	−12.2
210	98.9	143	61.7	76	24.4	9	−12.8
209	98.3	142	61.1	75	23.9	8	−13.3
208	97.8	141	60.6	74	23.3	7	−13.9
207	97.2	140	60.0	73	22.8	6	−14.4
206	96.7	139	59.4	72	22.2	5	−15.0
205	96.1	138	58.9	71	21.7	4	−15.6
204	95.6	137	58.3	70	21.1	3	−16.1
203	95.0	136	57.8	69	20.6	2	−16.7
202	94.4	135	57.2	68	20.0	1	−17.2
201	93.9	134	56.7	67	19.4	0	−17.8
200	93.3	133	56.1	66	18.9	−1	−18.3
199	92.8	132	55.6	65	18.3	−2	−18.9
198	92.2	131	55.0	64	17.8	−3	−19.4
197	91.7	130	54.4	63	17.2	−4	−20.0
196	91.1	129	53.9	62	16.7	−5	−20.6
195	90.6	128	53.3	61	16.1	−6	−21.1
194	90.0	127	42.8	60	15.6	−7	−21.7
193	89.4	126	52.2	59	15.0	−8	−22.2
192	88.9	125	51.7	58	14.4	−9	−22.8
191	88.3	124	51.1	57	13.9	−10	−23.3
190	87.8	123	50.6	56	13.3	−11	−23.9
189	87.2	122	50.0	55	12.8	−12	−24.4
188	86.7	121	49.4	54	12.2	−13	−25.0
187	86.1	120	48.9	53	11.7	−14	−25.6
186	85.6	119	48.3	52	11.1	−15	−26.1
185	85.0	118	47.8	51	10.6	−16	−26.7
184	84.4	117	47.2	50	10.0	−17	−27.2
183	83.9	116	46.7	49	9.4	−18	−27.8
182	83.3	115	46.1	48	8.9	−19	−28.3
181	82.8	114	45.6	47	8.3	−20	−28.9
180	82.2	113	45.0	46	7.8	−21	−29.4
179	81.7	112	44.4	45	7.2	−22	−30.0
178	81.1	111	43.9	44	6.7	−23	−30.6
177	80.6	110	43.3	43	6.1	−24	−31.1
176	80.0	109	42.8	42	5.6	−25	−31.7
175	79.4	108	42.2	41	5.0	−26	−32.2
174	78.9	107	41.7	40	4.4	−27	−32.8
173	78.3	106	41.1	39	3.9	−28	−33.3
172	77.8	105	40.6	38	3.3	−29	−33.9
171	77.2	104	40.0	37	2.8	−30	−34.4
170	76.7	103	39.4	36	2.2	−31	−35.0
169	76.1	102	38.9	35	1.7	−32	−35.6
168	75.6	101	38.3	34	1.1	−33	−36.1
167	75.0	100	37.8	33	0.6	−34	−36.7
166	74.4	99	37.2	32	0.0	−35	−37.2
165	73.9	98	36.7	31	−0.6	−36	−37.8
164	73.3	97	36.1	30	−1.1	−37	−38.3
163	72.8	96	35.6	29	−1.7	−38	−38.9
162	72.2	95	35.0	28	−2.2	−39	−39.4
161	71.7	94	34.4	27	−2.8	−40	−40.0
160	71.1	93	33.9	26	−3.3	−41	−40.6
159	70.6	92	33.3	25	−3.9	−42	−41.1
158	70.0	91	32.8	24	−4.4	−43	−41.7
157	69.4	90	32.2	23	−5.0	−44	−42.2
156	68.9	89	31.7	22	−5.6	−45	−42.8
155	68.3	88	31.1	21	−6.1	−46	−43.3
154	67.8	87	30.6	20	−6.7	−47	−43.9
153	67.2	86	30.0	19	−7.2	−48	−44.4
152	66.7	85	29.4	18	−7.8	−49	−45.0
151	66.1	84	28.9	17	−8.3	−50	−45.6
150	65.6	83	28.3	16	−8.9	−51	−46.1
149	65.0	82	27.8	15	−9.4	−52	−46.7
148	64.4	81	27.2	14	−10.0	−53	−47.2
147	63.9	80	26.7	13	−10.6	−54	−47.8
146	63.3	79	26.1	12	−11.1	−55	−48.3

* Centigrade readings to the nearest decimal.

MISCELLANEOUS DATA

CENTIGRADE COMPARED WITH FAHRENHEIT

Deg. Cent.	Deg. Fah.	Deg. Cent.	Deg. Fah.	Deg. Cent.	Deg. Fah.	Deg. Cent.	Deg. Fah.
100	212.0	62	143.6	24	75.2	−14	6.8
99	210.2	61	141.8	23	73.4	−15	5.0
98	208.4	60	140.0	22	71.6	−16	3.2
97	206.6	59	138.2	21	69.8	−17	1.4
96	204.8	58	136.4	20	68.0	−18	−0.4
95	203.0	57	134.6	19	66.2	−19	−2.2
94	201.2	56	132.8	18	64.4	−20	−4.0
93	199.4	55	131.0	17	62.6	−21	−5.8
92	197.6	54	129.2	16	60.8	−22	−7.6
91	195.8	53	127.4	15	59.0	−23	−9.4
90	194.0	52	125.6	14	57.2	−24	−11.2
89	192.2	51	123.8	13	55.4	−25	−13.0
88	190.4	50	122.0	12	53.6	−26	−14.8
87	188.6	49	120.2	11	51.8	−27	−16.6
86	186.8	48	118.4	10	50.0	−28	−18.4
85	185.0	47	116.6	9	48.2	−29	−20.2
84	183.2	46	114.8	8	46.4	−30	−22.0
83	181.4	45	113.0	7	44.6	−31	−23.8
82	179.6	44	111.2	6	42.8	−32	−25.6
81	177.8	43	109.4	5	41.0	−33	−27.4
80	176.0	42	107.6	4	39.2	−34	−29.2
79	174.2	41	105.8	3	37.4	−35	−31.0
78	172.4	40	104.0	2	35.6	−36	−32.8
77	170.6	39	102.2	1	33.8	−37	−34.6
76	168.8	38	100.4	0	32.0	−38	−36.4
75	167.0	37	98.6	−1	30.2	−39	−38.2
74	165.2	36	96.8	−2	28.4	−40	−40.0
73	163.4	35	95.0	−3	26.6	−41	−41.8
72	161.6	34	93.2	−4	24.8	−42	−43.6
71	159.8	33	91.4	−5	23.0	−43	−45.4
70	158.0	32	89.6	−6	21.2	−44	−47.2
69	156.2	31	87.8	−7	19.4	−45	−49.0
68	154.4	30	86.0	−8	17.6	−46	−50.8
67	153.6	29	84.2	−9	15.8	−47	−52.6
66	150.8	28	82.4	−10	14.0	−48	−54.4
65	149.0	27	80.6	−11	12.2	−49	−56.2
64	147.2	26	78.8	−12	10.4	−50	−58.0
63	145.4	25	77.0	−13	8.6		

HIGH TEMPERATURES JUDGED BY COLOR

(KENT)

The temperature of a body can be approximately judged by the experienced eye unaided, and M. Pouillet has constructed a table which has been generally accepted, giving the colors and their corresponding temperatures as below:

Color	Deg. C.	Deg. F.	Color	Deg. C.	Deg. F.
Incipient red heat	525	977	Deep orange heat	1100	2021
Dull red heat	700	1292	Clear orange heat	1200	2192
Incipient cherry red heat	800	1472	White heat	1300	2372
Cherry red heat	900	1652	Bright white heat	1400	2552
				1500	2732
Clear cherry red heat	1000	1832	Dazzling white heat	to	to
				1600	2912

MISCELLANEOUS DATA

TABLE OF SPECIFIC GRAVITIES AND WEIGHTS

(TRAUTWINE)

The specific gravity of any substance equals its weight in grams per cubic centimetre.

Substance	Average Sp. Gr.	Average Wt. in Lb. of One Cu. Ft.
Aluminum	2.6	162
Antimony, cast, 6.66 to 6.74 . . . . . average	6.70	418
Brass (copper and zinc), cast, 7.8 to 8.4 . . . . . average	8.1	504
Brass, rolled . . . . . average	8.4	524
Bronze, copper 8 parts; tin 1 (gun metal) 8.4 to 8.6 . . . . . average	8.5	529
Cement, hydraulic, American, Rosendale; ground, loose . . . . . average		56
Wide variations in weight of hydraulic cements often occur owing to want of uniformity in the composition of stone, process of manufacture and difficulty of measurement.		
Copper, cast, 8.6 to 8.8	8.7	542
Copper, rolled, 8.8 to 9.0	8.9	555
Granite, 2.56 to 2.88 . . . . . average	2.72	170
Gneiss, Hornblendic, quarried, in loose piles . . . . . average		100
Greenstone, trap, quarried, in loose piles . . . . . average		107
Gravel, about the same as sand, which see		
Iron, cast, 6.9 to 7.4 . . . . . average	7.15	446
Iron, cast, usually assumed at . . . . . average	7.21	450
At 450 lb. a cubic inch weighs 0.2604 lb.; 8601.6 cubic inches a ton; and a lb. = 3.8400 cubic inches; cast iron GUN METAL	7.48	467
Iron, wrought, 7.6 to 7.9; the purest has the greatest sp. gr. . . . . average	7.77	485
Iron, large rolled bars, usually assumed at . . . . . average	7.69	480
Iron, sheet . . . . . average		485
At 480 lb. a cubic inch weighs 0.2778 lb.; and a lb. = 3.600 cubic inches		
Light iron indicates impurity.		
Lead, of commerce, 11.30 to 11.47 either rolled or cast . . . . . average	11.38	709.6
Limestones and marbles, quarried in irregular fragments, one cubic yard solid, makes about 1.9 cubic yards perfectly loose; or about 1¾ yards piled. In this last case, 0.571 of the pile is solid; and the remaining 0.429 part of it is voids: average, piled		96
Mica, 2.75 to 3.1	2.93	183
Platinum, 21 to 22	21.5	1342
Quartz, quarried, loose, one measure solid makes full 1¾ broken and piled		94
Rosin	1.1	68.6
Sand, of pure quartz; perfectly dried, and loose, usually 112 to 133 lb. per struck bushel		90 to 106
Sandstones, quarried and piled, one measure solid makes about 1¾ piled		86
Shales, quarried, in piles . . . . . average		92
Steel, 7.7 to 7.9; the heaviest contains least carbon . . . . . average	7.85	490
Steel is not heavier than the iron from which it is made; unless the iron had impurities which were expelled during its conversion into steel.		
Sulphur . . . . . average	2.0	125
Tin, cast, 7.2 to 7.5 . . . . . average	7.35	459
Trap, quarried, in piles . . . . . average		107
Water, pure rain, or distilled at 62 deg. F. barom. 30 in.	1.0	62.355
Although the weight of fresh water is generally assumed as sixty-two and one-third lb. per cu. ft., yet 62¼ would be nearer the truth, at ordinary temperatures of about 70 deg.; or a lb. = 27.759 cu. in.; and a cu. in. = 0.5764 oz. avoir.; or 0.5254 oz. troy; or 252.175 grains. The grain is the same in troy, avoirdupois and apothecary.		
Zinc or spelter, 6.8 to 7.2 . . . . . average	7.00	437.5

INDEX TO SUBJECTS

INDEX TO SUBJECTS

INDEX TO SUBJECTS

INDEX TO SUBJECTS

INDEX TO CATALOGUE NUMBERS

INDEX TO CATALOGUE NUMBERS

INDEX TO CATALOGUE NUMBERS

INDEX TO CATALOGUE NUMBERS

INDEX TO CATALOGUE NUMBERS

INDEX TO CATALOGUE NUMBERS

INDEX TO CATALOGUE NUMBERS

INDEX TO CATALOGUE NUMBERS

INDEX TO CATALOGUE NUMBERS

INDEX TO CATALOGUE NUMBERS

INDEX TO CATALOGUE NUMBERS

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