

MINE AND INDUSTRIAL HAULAGE SUPPLIES



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Mine and Industrial Haulage Supplies



UNIV. OF CALIFORNIA

GENERAL ELECTRIC COMPANY SUPPLY DEPARTMENT SCHENECTADY, N. Y.

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MINE AND INDUSTRIAL HAULAGE SUPPLIES

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.

GENERAL ELECTRIC COMPANY



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

BRAKE SHOES BRAKE SH Cat. No. Cat. N	BRAKE SHOES Cat. No. Cat. N	SHOES BRAKE SH No. Cat. N	BRAKE SH HEADS	SC	OE	JOURN SPRIN	IAL GS Vo	мс	TORS	H	eeth 7	eeth]	Dia.	Gear	RHEOS'	TAT	Con-	-	Cable
Jou	ning	Right Hand	Left Hand	Cat. Right Hand	Left Hand	Outside	Inside	Type A	ture ture	Vol- P	inion	in Jear	of Axle Cc	tt. No. T	ype Di	Con- ection iagram	Type	Type	Type
65204		120332	120332	None	None	119733	None	GE-60 CB 14	1 00	250	14	67	40	52376	Pr D.9	S. 2434	R-22 D 11	A	None
65212		120312	120313	None	None	65129	None	CB-14	17	500	14	99	0 00	51985	Pr D.S	S. 1945	R-14 R-14	D C	None
65204		120332	120332	None	None	119733	None	GE-60	33	250	14	67	4	52376	Pr D.S	S. 1537	R-22	D	None
65204 1	-	20356	120356	None	None	119738	None	GE-53	C1 0	250	15	69	41/4	52585 1700e	Pr D.S	S. 2431	R-22	US-2	None
		uo	applicati o	u.				CB-14	17 0	500	14	99	# c.	51085		S 9434	R-19	0-en	None
65204]	-	20356	120356	None	None	119734	None	GE-53	: 01	250	15	69	414	52585	Pr D.	S. 2422	R-22	7-00	None
65212 1	-	20312	120313	None	None	65129	None	CB-14	10	250	14	66	3	51985	Pr D.S	S. 2434	R-14	D	None
65204 1		20356	120356	None	None	119734	None	GE-53	4	500	15	69	41/4	52585	Pr D.	S. 1530	R-22	D	None
65919 1		20355	120355	120387 None	120387 None	65127	65128 None	GE-53	01 F	250	15	69	414	52585	Pr D.	S. 4798	R-22		None
65204 1		20332	120332	None	None	119733	None	GE-60		250	14	00	0 4	52376	Pr D.	5. 1940 S 1537	R-33		None
65204		65226	65227	120371	120372	119733	None	GE-60	9	500	14	67	4	52376	Pr D.	S. 2504	R-86B	D D	None
65212 1	-	20312	120313	None	None	65129	None	CB-14	17	500	14	66	3	51985	Pr D.9	S. 4875	R-14	US-2	None
65204 1	-	20332	120332	None	None	119733	None	GE-60	9	200	14	67	4	52376	Pr D.	S. 2504	R-22	D	None
65204 1	-	20356	120356	None	None	119738	None	GE-53	67	250	15	69	4	52585	Pr	*	R-22 R-22	VS-2	None
65202 1	Г	20347	120348	None	None	65127	65128	GE-53	4	500	15	69	414	52585	Pr D.S	S. 1530	R-16	D	None
65202 1	-	20359	120360	None	None	65127	65128	GE-61	4	200	14	81	41/4	39381	Pr D.	S. 1552	R-22	D	None
119274 1	- ·	20305	120306	None	None	119726	None	NWP2	26	500	14	58	234 1	06000	Pr D.	S. 2956	R-14		None
65909		90355	190355	190387	190387	65197	65198	CE-23	NM	250	15	60	4 14	50505	Pr D.	S. 1545	**K-22		None
20200		no uo	applicati o	uoen71	1000171	17100	07100	CB-14	17	200	14	66	3 4 14	51985	Pr D.	5. 1432 S 9434	R-14	D Rrd rail	None
										2		2	,					shoe	211011
65202		120359	120360	None	None	65127	65128	GE-61	4	500	14	81	41/4	39381	Pr D.S	S. 1552	°R-22	D	None
65202		120355	120355	120387	120387	65127	65128	GE-53	01 0	250	15	69	414	52585	Pr D.	S. 4798	R-37B	A	None
65202		120347	190348	None	None None	65197	86129	GE-33	2 0	250	15	80	4 14	59585	Pr D.	5. 4798 C 4400	D 99		None
65202		120326	120327	None	None	65127	65128	GE-58	3 00	250	15	69	4 4	50440	Pr D.S	S. 1544	R-22		None
65202		120326	120327	None	None	65127	65128	GE-58	3	250	15	69	4	50440	Pr D.	S. 1544	R-22	A	None
65202		120326	120327	None	None	65127	65128	GE-58	3	250	15	69	4	50440	Pr D.	S. 1544	R-22	D	None
110970		120326	120327	None	None	65101	65124	GE-60	m c	250	14	67	4	52376	Pr Dr	+	R-22	D	None
119275		120359	120360	None	None	110739	None	CE-20	24	200	14	00	074	20381	-d -d	0. 2010 C	00 d	Nono	None
119275		120359	120360	None	None	119732	None	GE-61	H 41	500	14	81	4/4	39381	Pr D.	S. 1543	R-22	None	None
65202		120326	120327	None	None	65101	65124	GE-60	9	500	14	67	4	52376	Pr D.	S. 1471	°R-22	D	None
65202		120326	120327	None	None	65101	65124	GE-60	9	500	14	67	4	52376	Pr D.	S. 1471	°R-22	D	None
65202		120355	120355	120387	120387	65127	65128	GE-53	67	250	15	69	4	52585	Pr D.	S. 4798	R-22	D	None
6520	2	120361	120362	120392	120393	65127	65128	GE-51	4	500	16	69	41/2	38621	Pr	++	R-37B	0-SU	None
6520	2	120361	120362	120392	120393	65127	65128	GE-51	4	500	16	69	41/2	38621	Pr		R-15	US Dbl.	None
100												-	- / -		-		-	MOG	
04 89	1	2. 9 hove	e No 104-	A P2 D	0 - 0 hove	e No 104	DA DA	T Late	r equip	103 C	DE DA	1.5. 98.	42.)		•				
104-A		R2-R3: 2 1	boxes No.	104-B. R	3-R4: 2	hoxes No.	103-C.	R4-R5:	2 hoxes	No. 10	4-C R5	RG							
	_	- 1017-70	10000 1101		- IENT-OT		in-ont .	** Lat	er equi	pped w	ith R-3'								

MINE AND INDUSTRIAL HAULAGE SUPPLIES

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Cable	Type	None	NIGHT	Mone	NICHT	NUME	None	None	None	None	None	None	None	None	None		None	Nono	MULTE	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	NIONO	None	None				
	Type	None	Dune	2 6	4 6	4 6	14	2	a	D	US Std.	D	D	D	D		D			2	0-S-0	D	US-2	D	D	D	10			1-S11	D	US-6	115-2	D	D	† D	D	q	8 T) (L'	1 12	1 F		21	D				693.
Con-	Type	K-14 D 99	00 D	77-VI	11-11-V	D 14	K-14	K-14	K-14	R-22	K-10	K-10	R-22	R-22-E	R-37-B		R-37	00 Q	D 22 10	d-16-M	R-19	R-22	R-22-E	R-37-B	R-37-B	R-37-B	R-37-B	R-37-B	R-37 B	R-37 B	R-37 B	R-16	R-38-A	R-38-A	R-37-B	R-37-B	R-16	R-37-B	R-37-B	R-38-A	R_38_A	P-38-4	D 14	K-14	R-38-A		-c.		Pr D.S. 5
EOSTAT	Con- nection Diagram	D.S. 1802	D C 1597	D C 0056	D.S. 2930	D.C. 2400	D.0. 2422	D.S. 1968	D.S. 1945	D.S. 2427	D.S. 2000	D.S. 2435	D.S. 1543	D.S. 1544	D.S. 1432		AD.S. 1456	D C 0100	DOTO	D.00 1.0090	++	D.S. 1456	D.S. 1471	D.S. 1537	D.S. 1530	D.S. 1519	D.S. 1471	D S 1552	D-S 8479	D S 1471	D.S. 1432	0	D S 1945	D.S. 1945	D.S. 1456	D.S. 1432	D.S. 1188	*	D S 1552	D.S. 1945	D S 1945	D S 1045	D C 1060	D.5. 1908	D.S. 1945		I with R-60		pped with]
RH	Type	14			1.	-d	L, c	Pr.	Pr	Pr	Pr	Pr	Pr	Pr	Pr		Pr			5	Pr	Pr	Pr	Pr	Pr	Pr	Pr	. d	10	p.	Pr	Pr	p.	Pr	Pr	Pr	Pr	Pr.	p.	pr.	D.	Dr.	- 0	1	Pr	~~	uipped		er equi
Gear	Cat. No.	01980	10000	014400	1000001	02000	0/020	17140	51985	52585	50249	50696	39381	50440	52585		52585	NON CH	10101	02020	38621	52585	50440	52376	52585	52585	50440	30381	50440	59376	52585	50440	51985	51985	52585	52585	52585	52585	30381	51985	51085	21065	07121	1/140	51985		2 later eq		. 1602 late
Dia	of Axle	3	4 74	4	4/3	4/7	0 %4	4	3	4	41/2	3	414	4	414		414	41/4	41/	4/4	2	41/4	4	4	414	414	4 4	41%	4 4	+ +	414	4/4			414	41%	41%	414	414	4 6	0 0	5 00	2 4	4	e		Io. 160		0. No.
Tooth	in Gear	99	10	202	00	000	10	2.9	99	69	69	60	81	69	69		69	00	200	60	69	69	69	67	69	69	69	18	69	67	69	69	99	99	69	69	69	69	81	66	99	99	27	10	99		4	6.	D Loc
Tooth	Pinion	14	1 - F	01	14	14	14	14	14	15	16	14	14	15	15		15	0 11 4 F	1 1	61	16	15	15	14	15	15	14	14	H 10	14	1.5	2.1	14	14	15	15	1.5	15	14	14	14	FT FT	F F	14	14			C. R5-R	A PERSON
	Vol- tage	250	0002	0002	0002	000	000	200	500	250	500	250	250	500	500		250		0002	one	500	250	500	250	500	250	200	2002	200	500	500	500	200	500	250	500	500	500	200	200	200			000	500		R-86-E	. 104-0	
OTORS	Arma- ture Turns	10	4 c	0 0	07	07	0	4	17	67	e C	10	4	9	10		6	1 -	4 4	4	4	67	9	3	4	2) (C	4	4 (2	2	4	. 6	17	17	5	4	4	4	4	17	17	17		4	17		with.	xes No	
W	Type	CB-14	10-20	OC-JD	VITT DOI	EZJ M N	00-30	GE-800	CB-14	GE-53	GE-57	LWP-5	GE-61	GE-58	GE-53		GE-53	00-10	00-40	56-45	GE-51	GE-53	GE-58	GE-60	GE-53	GE-53	GE-58	CP-45	GE-58	GE-60	GE-53	GE-58	CB-14	CB-14	GE-53	GE-53	GE-53	GE-53	GE-61	CB-14	CB 14	ET-UD	TT-OD	008-35	CB-14		equipped	R5: 2 bo	4-R5.
AL GS	Inside	None	anoni	471001.	INGETT	None	None	65124	None	None	65128	None	65128	65124	65128		65128	N	anone	97100		65128	65124	65124	65128	65128	65124	65198	65194	65194	65128		None	None	65128	65128	65128	65128	None	None	None	None	DITONT	471C0	None		Later	-B. R4-	04-C. R
JOURN	Cat. I Outside	119721	20121	10100	OTIATI	07/611	119/33	65101	65129	119738	65127	119730	65127	65101	65127		65197	110790	OCILIT	12100		65127	65101	65101	65127	65127	65101	6197	65101	65101	65127		65190	119721	65127	65127	65127	65127	110739	65190	65190	00129	10120	TOTCO	65129			s No. 104	box No. 1
SHOE	No. Left Hand	None	None	None	None	None	None	None	None	None	120393	None	None	None	120387		190387	Marrie	10000	120351		120387	None	None	None	None	None	190301	None	None	120387		None	None	120387	120387	120387	120387	None	None	None	None	NICHO	INone	None		1 R-77.	4: 2 boxe	23-R4; 1
BRAKE	Cat. Right Hand	None	None	None	None	ivone	None	None	None	None	120392	None	None	None	120387		120387	N	TODOC	120387	on	120387	None	None	None	None	None	190300	None	None	120387	000	None	None	120387	120387	120387	120387	None	None	Nono	Nono	NTOTIC	None	None		pped with	-A. R3-R	104-B, F
SHOES No.	Left Hand	120315	120300	120321	120304	120304	120332	120327	120315	120356	120362	120344	120360	120327	120355		120355	000001	1200017	120300	applicati	120355	120327	120327	120348	120348	120397	859AD	190397	190397	120355	annlicati	190315	120315	120355	120355	120355	120355	190360	190315	190315	190915	100004	120321	120315		tter equir	5 No. 104	box No.
BRAKE Cat.	Right Hand	120314	120300	120320	120300	120303	120332	120326	120314	120356	120361	120344	120359	120326	120355		120355	000000	00001	120300	uo	120355	120326	120326	120347	120347	120326	65930	190396	190396	120355	uu	190314	120314	120355	120355	120355	120355	190350	190314	190314	190914	#T007T	120320	120314	-	†L ⁶	3:2 boxe	R2-R3; 1
-	Journal Lining	65212	C/2611	20200	21200	21200	65204	65202	65212	65204	119279	65204	65202	65202	65202		62209	20200	+0200	20200		65202	65202	65202	65202	65202	65202	665909	665909	62000	62202		65919	65212	65202	65202	65202	65202	110975	62619	62010	61010	01770	20200	65212	-	90.)	04. R2-R	o. 104-A.
CAT. NO.	Journal Box	65190	119103	101184	06100	09190	65185	65184	65190	65185	119171	65185	65184	65184	65184		65184	10120	00100	00184		65184	65184	65184	65184	65184	65184	65184	65184	66184	65184		65190	65190	65184	65184	65184	65184	110163	65190	65100	0etron	Det no	10100	65190		D.S. 156	X No. 1	boxes N
	Wheels and Axle	119939	I IAAAI I	1201021	178611	016611	120248	120211	119975	120076	120287	120075	119957	120157	120079		190070		1100101	201021		120079	120257	120047	120168	120168	120157	600011	190157	190047	120168	004	119975	119939	120079	120168	120228	120228	100011	120004	190004	190004	10001	112021	119975		th IG (I	.R2: 1 bc	1-R2; 3
OMOTIVE	Rating	LM-103-A-1	LM-104-E-2	LM-106-B-2	Z-A-601-MJ	LM-105-A-2	LM-108-D-2	LM-101-C-2	LM-103-A-2	LM-104-D-1	LS -209-C-2	LS -203-B-1	LM-104-A-1	I.M-106-B-2	L M-202-C-2		I.M.909.B.1	T-11-70	LM-10/-B-2	T-9-202-W-7	LS -209-E-2	LM-202-B-1	LM-106-B-2	LM-101-B-1	LM-102-B-2	I.M-102-B-1	L.M.106_B-2	T M-104-4-9	L.M.106-B-9	L.M.101-B-9	L.M. 202-B-2	LS -311-R-2	I.M.103. A.9	L.M-1C3-A-2	LM-202-B-1	L.M202-B-2	L.M-202-B-2	L.M-202-B-2	I.M.104.F-9	L.M.103-A-2	T M 102 4 9	1 N 102 A 9	S-W-OOT-WIT	Z-7-101-101	LM-103-A-2		er equipped wi	x No. 103, R1-	xes No. 104. R
100	Serial Number	1585	1356	1587-88	1589	1590	1591	1592	1593	1594	1595	1596	1597	1598	1599-	1600	1601-04		0001	10()0	1607	1608	1609	1610	1611-12	1613	1614	1615	1616	1617	1618	1619	1690-93	1624	1625	1626	1627	1628	1690	1630	1631	1629	1699	1033	1634	-	* Lat	‡1 bo	• 2 bo

GENERAL ELECTRIC COMPANY

MOTIVE			CAT. NO		BRAK	E SHOES	BRAKE HEA	SHOE	JOURN	IAL GS	OW	TORS						RHE	OSTAT			
		-			Ca	t. No.	Cat.	No.	Cat. N	Vo.	-	-		Feeth 7	reeth	Dia.	Gear	-		Con-	Trolley	Cable
Rating Wheels Journal Journal R and Box Journal Journal R Axle	Wheels Journal Journal R and Box Lining H	Journal Journal R Box Lining H	Lining H	NH NH	ight and	Left Hand	Right Hand	Left Hand	Outside	Inside	Type	ture furns	Vol- tage	Pinion	Gear	Axle C	at. No.	[] I I I I I I I I I I I I I I I I I I I	Con- nection Diagram	Type	Type	Type
L.M.102-A-2 119992 65184 65202 65	119992 65184 65202 65	65184 65202 65	65202 65	65	230	65240	120390	120391	65127	65128	GE-61	4	200	14	81	41/	39381	Pr T	0.S 1530	B_37_B	6	None
LM-202-B-1 120016 65184 65202 1215	120016 65184 65202 1215	65184 65202 1215	65202 1215	1215	640	121541	120385	120386	65127	65128	GE-53	1 01	250	15	69	41/4	52585	Pr T	D.S. 1456	R-37-B		None
LM-202-B-2 120168 65184 65202 1203	120168 65184 65202 1203	65184 65202 1203	65202 1203	1203	55	120355	120387	120387	65127	65128	GE-53	4	500	15	69	41/4	52585	Pr I	D.S. 1432	R-37-B	A	None
LM-103-A-1 119975 65190 65212 1203	119975 65190 65212 1203	65190 65212 1203	65212 1203	1203	14	120315	None	None	65129	None .	CB-14	10	250	14	66	3	51985	Pr I	D.S. 1802	R-38-B	D	None
LM-101-B-1 120047 65184 65202 1203	120047 65184 65202 1203	65184 65202 1203	65202 1203	1203	26	120327	None	None	65101	65124	GE-60	e	250	14	67	4	52376	Pr I	D.S. 1537	R-37-B	D	None
LM-105-A-2 119916 65190 65212 1203	119916 65190 65212 1203	65190 65212 1203	65212 1203	1203	03	120304	None	None	119726	None 1	NWP23	26	500	14	58	23/4]	06000	Pr I	D.S. 1936	R-38-A	D	None
LM-202-B-2 120228 65184 65202 1203.	120228 65184 65202 1203	65184 65202 1203	65202 1203	1203	55	120355	120387	120387	65127	65128	GE-53	4	500	15	69	41_{4}	52585	Pr I	D.S. 1432	R-37-B	D	None
LM-105-A-2 119916 65190 65212 12030	119916 65190 65212 12030	65190 65212 12030	65212 1203(1203(03	120304	None	None	119726	None 1	NWP24	26	500	14	58	234]	06000	Pr I	D.S. 1936	R-38-A	US-2	None
LM-103-A-1 119974 65190 65212 12030	119974 65190 65212 12030	65190 65212 12030	65212 12030	12030	Q.	120310	None	None	65129	None	CB-14	9	250	14	99	3	51985	Pr I	D.S. 1802	R-38-A	US-2	None
LM-103-A-2 119975 65190 65212 12031	119975 65190 65212 12031	65190 65212 12031	65212 12031	12031	4	120315	None	None	65129	None	CB-14	17	500	14	66	3	51985	Pr I	D.S. 1801	R-38-A	D	None
LM-105-A-2 119916 65190 65212 12030	119916 65190 65212 12030	65190 65212 12030	65212 12030	12030	00	120304	None	None	119726	None 1	NWP2	14	250	14	58	234]	06000	Pr I	D.S. 1940	R-38-A	D	None
LM-202-B-2 120228 65184 65202 12035	120228 65184 65202 12035	65184 65202 12035	65202 12035	12035	10	120355	120387	120387	65127	65128	GE-53	4	500	15	69	41/4	52585	Pr I	D.S. 1432	R-37-B	D	None
LM-202-B-2 120168 65184 65202 12035	120168 65184 65202 12035	65184 65202 12035	65202 12035	12035	10	120355	120387	120387	65127	65128	GE-53	4	500	15	69	414	52585	Pr I	D.S. 1432	R-37-B	D	None
LM-106-B-2 120157 65184 65202 120326	120157 65184 65202 120326	65184 65202 120326	65202 120326	120326	10	120327	None	None	65101	65124	GE-58	9	500	15	69	4	50440	Pr I	D.S. 1471	R-37-B	D	None
LM-101-C-1 120159 65184 65202 65226	120159 65184 65202 65226	65184 65202 65226	65202 6522(6522(10	65227	120371	120372	65101	65124	GE-800	2	250	14	67	4	17140	Pr I	D.S. 1956	R-37-B	US-2	None
LM-101-E-3 120254 119169 119277 120330	120254 119169 119277 120330	119169 119277 120330	119277 120330	120330	-	120331	120375	120376	119728	None	GE-800	1	110	14	67	4	17140	Pr I	D.S. 2119	R-37-B	5 +	None
LM-202-B-2 120079 65184 65202 121540	120079 65184 65202 121540	65184 65202 121540	65202 121540	121540	-	121541	120385	120386	65127	65128	GE-53	4	500	15	69	414	52585	Pr I	D.S. 1432	R-37-B	D	None
LS -103-A-2 119941 119156 119273 120316	119941 119156 119273 120316	119156 119273 120316	119273 120316	120316	-	120317	None	None	119709	None	CB-14	17	500	14	66	3	51985	Pr I	D.S. 1969	R-38-B	None	None
LM-105-A-1 119960 65190 65212 120303	119960 65190 65212 120303	65190 65212 120303	65212 120303	120303		120304	None	None	119726	None 1	VWP2 ¹ / ₂	14	250	14	58	234]	06000	Pr I	D.S. 1940	R-38-A	D	None
LM-202-B-2 120168 65184 65202 120358	120168 65184 65202 120358	65184 65202 120358	65202 12035	12035	10	120355	120387	120387	65127	65128	GE-53	4	500	15	69	414	52585	Pr I	D.S. 1432	R-37-B	D	None
LS -201-E-3 120273 65184 65202 12033	120273 65184 65202 12033	65184 65202 12033	65202 12033	12033	4	120335	120377	120378	65101	65124	GE-800	2	250	14	67	4	17140	Pr I	D.S. 1537	R-37-B	US-2	None
LR -554-A-3 126374 126435 126436 12645	126374 126435 126436 12645	126435 126436 12645	126436 12645	12645	00	126458	*126459	†126460	126542	126543	CB-14	10	250	14	66	3	51985	Pr I	D.S. 1802	R-38-B	D	None
LM-202-B-2 120118 65184 65202 12035	120118 65184 65202 12035	65184 65202 12035	65202 12035	12035	20	120355	120387	120387	65127	65128	GE-53	4	200	15	69	41/4	52585	Pr I	D.S. 1432	R-37-B	D-4	None
LM-104-C-2 120111 65184 65202 12032	120111 65184 65202 12032	65184 65202 12032	65202 12032	12032	9	120327	None	None	65127	65128	GE-58	9	500	15	69	4	50440	Pr I	D.S. 1553	R-37-B	D	None
LM-101-B-1 126375 65184 65202 1203	126375 65184 65202 1203	65184 65202 12033	65202 1203	1203:	50	120327	None	None	65101	65124	GE-60	ŝ	250	14	67	4	38619	Pr I	D.S. 1537	R-37-B	D	None
LM-102-A-1 119992 65184 65202 652	119992 65184 65202 652	65184 65202 652	65202 652:	652	39	65240	120390	120391	65127	65128	GE-61	4	250	14	81	41/4	39381	Pr I	D.S. 1930	R-37-E	D	None
LM-106-B-1 120157 65184 65202 1203	120157 65184 65202 1203	65184 65202 1203	65202 1203	1203	26	120327	None	None	65101	65124	GE-58	<i>c</i> o	250	15	69	4	50440	Pr I	D.S. 1537	R-37-B	D	None
M 101 D 1 190100 85104 65202 1203	12015/ 05184 05202 1203 190100 25104 25500 255	05184 05202 1203 arior aroon aro	65202 1203	1203	97	120327	None	None	10100	62129	GE-58	00	500	15	69	4	49551	Pr L	D.S. 1471	R-37-B	A	None
LM-103-A-1 119939 65190 65212 1203	119939 65190 65212 1203	65190 65212 1203	65212 1203	1203	54	120315	None	None	10100	None	CB-14	0	250	14	91	4 G	22013	1 1	1.5. 103/	R-31-B	119.9	None
LM-103-A-2 120021 65190 65212 1203	120021 65190 65212 1203	65190 65212 1203	65212 1203	1203	14	120315	None	None	65129	None	CB-14	17	500	14	66	0 00	51985	Pr	D.S. 1945	R-38-A	102	None
LS -209-F-1 120284 65184 65202 1203	120284 65184 65202 1203	65184 65202 1203	65202 1203	1203	61	120362	120392	120393	65127	65128	GE-57	4	500	15	69	41/2	49539	Pr I	D.S. 1986	R-37-B	G	None
LM-102-B-1 120079 65184 65202 6523	120079 65184 65202 6523	65184 65202 6523	65202 6523	6523	36	65238	120381	120382	65127	65128	GE-53	63	250	15	69	414	52585	Pr I	D.S. 1519	R-37-B	D	None
LM-105-A-1 119934 65190 65212 659.	119934 65190 65212 659.	65190 65212 659.	65212 659.	629	54	65955	None	None	119726	None 1	VWP23	14	250	14	58	2 3/4]	06000	Pr I	D.S. 1940	R-38-A	D	None
LM-102-B-2 120116 65184 65202 652	120116 65184 65202 652	65184 65202 652	65202 652	652	36	65238	120381	120382	65127	65128	GE-53	4	500	15	69	414	52585	Pr I	D.S. 1530	R-37-B	D	None
LM-101-B-2 120047 65184 65202 652	120047 65184 65202 652	65184 65202 652	65202 652	652	226	65227	120371	120372	65101	65124	GE-60	9	500	14	67	4	52376	Pr D	D.S. 1471	R-38-A	N	None
LM-104-C-2 120157 65184 65202 6.	120157 65184 65202 6.	65184 65202 6.	65202 6.	9	5226	65227	120371	120372	65127	65128	GE-58	9	500	15	69	4	49551	Pr L	D.S. 1553	R-37-A	D	None
LM-103-A-1 120130 65190 65212 12	120130 65190 65212 12	65190 65212 12	65212 12	12	0314	120315	None	None	65129	None	CB-14	10	250	14	99	3	51985	Pr L	D.S. 1802	R-38-A	D-4	None
LM-106-B-1 120157 65184 65202	120157 65184 65202	65184 65202	65202	_	35226	65227	120371	120372	65101	65124	GE-58	3	250	15	69	4	50440	Pr I	D.S. 1537	R-37-B	D	None
LM-104-B-1 120079 65184 65202	120079 65184 65202	65184 65202	65202		65236	65238	120381	120382	65127	65128	GE-53	5	250	15	69	414	52585	Pr D	D.S. 1545	R-37-B	D	None
LS -201-D-1 120276 119170 119278 12	120276 119170 119278 12	119170 119278 12	119278 12	12	0334	120335	120377	120378	65101	65124	GE-52	3	250	14	67	4	17986	Pr L	D.S. 1966	R-37-B	US-2	None
LS -204-C-1 121449 119170 119278 120	121449 119170 119278 120	119170 119278 120	119278 120	12(0334	120335	120377	120378	65127	65128	GE-58	co	250	15	69	4	49551	Pr D	D.S. 2111	R-37-B	US-2	None
LM-105-A-1 119916 65190 65212 120	119916 65190 65212 120	65190 65212 120	65212 120	120	373	120373	None	None	119726	None	VWP23	14	250	14	58	234 1	06000	Pr D	D.S. 1940	R-38-A	H	None
	-	-								-	-		-	-	-	-		-				

‡Later equipped with R-60-C.

† For rear brake shoes.

* For front brake shoes.

MINE AND INDUSTRIAL HAULAGE SUPPLIES

	Cable	Type	None	None	None	None	None	None	None	VR-A1	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	1															
	Prolley	Type	E	D	D	D	D	D	D	D	D	D	D	D	D	D	D	Η	D	D	D	D	D	D	D	D	H	D	D-4	A	A		21		7-20	2 1	4	A	D	D	US-2	US-2	D	
	Con-	Type	R-38-A	R-38-A	R-37-B	R-37-B	R-37-B	R-37-B	R-37-B	R-38-A	R-38-A	R-38-A	R-37-B	R-14	R-37-B	R-38-A	R-38-A	R-38-B	R-37-F	R-37-B	R-38-A	R-38-A	R-38-A	R-38-A	R-37-B	R-38-A	R-38-A	R-37-B	R-37-B	R-37-B	R-37-B	R-38-A	K-38-A	K-37-B	K-3/-B	K-38-A	K-37-B	R-37-B	R-38-A	R-38-A	R-38-A	R-38-A	R-38-A	
AT		on- tion gram	1471 I	1802]	1432 I	1432*]	1471]	1432]	1554]	1945 1	1945]	2106]	1471†]	2956]	14321]	14718]	9842]	1945]	1552]	1456]	1471 1	1802 1	1471 1	1471 I	1537 I	2956 I	2499 I	1432]	1432 1	1537]	1537	1945 1	1802 1	1456 1	153/	1471	153/ 1	1554 1	1471]	1471]	3123 1	1471]	1940 1	
RHEOST	-	be Dia	D.S.	D.S.	D.S.	D.S.	D.S.	D.S.	D.S.	D.S.	D.S.	D.S.	D.S.	D.S.	D.S.	D.S.	D.S.	D.S.	N.S.	2.0	D.S.	ю. П	D.S.	D.S.	D.S.	D.S.	D.S.	D.S.																
		o. Typ	Br Pr	5 Pr	5 Pr	0 Pr	D Pr	5 Pr	0 Pr	0 Pr	5 Pr	D Pr	3 IG	5 Pr	1 Pr	5 Pr	3 Pr	5 Pr	0 Pr	0 Pr	3 Pr	0 Pr	5 Pr	5 Pr	5 Pr	3 Pr	Pr	Pr	Pr	L L	L L	T PT	LI C	5 Pr	D Pr	D Pr	5 Pr	3 Pr) Pr	-				
	Gear	Cat. N.	52370	5198	5258	5044(5044(5258	5258	5198	5198	5198	5044	10009	5258	5044	5237	5198	3938	5258.	5237	5198	5044(5044(5237	10009	5198	5258	5258	5237(5237	5198	5198	5258	923/1	5044	2231	5258	5044(5044(5198	5237(10009	1
	Dia.	Axle	4	en	41/4	4	4	41/4	4 1/4	3	со	3	4	234	41/4	4	4	ŝ	414	4 3/4	4	3	4	4	4	234	e	41/4	41/4	4	4	m	20	414	4 .	4.	4	41/4	4	4	co	4	234	_] •
	Teeth	Gear	67	99	69	69	69	69	69	99	99	99	69	58	69	69	67	99	81	69	67	66	69	69	67	58	99	69	69	67	29	99	99	69	19	69	19	69	69	69	99	67	58	
	Teeth	Pinion	14	14	15	15	15	15	15	14	14	14	15	14	15	15	14	14	14	15	14	14	15	15	14	14	14	15	15	14	14	14	14	10 1	14	01 	14	15	15	15	14	14	14	
		Vol- tage	500	250	500	500	200	500	500	500	200	500	500	200	500	500	500	500	500	250	500	250	500	500	250	500	250	500	500	250	250	500	250	250	200	000	ngz	200	500	500	500	500	250	
DTORS		Arma- ture Turns	9	10	4	9	9	4	4	17	17	17	9	26	4	9	9	17	4	67	9	10	9	9	3	26	10	4	4	en	m	17	10	21	9 0	9	ю .	4	9	9	17	9	14	
MC	-	Type	GE-60	CB-14	GE-53	GE-58	GE-58	GE-53	GE-53	CB-14	CB-14	CB-14	GE-58	VWP23	GE-53	GE-58	GE-60	CB-14	GE-61	GE-53	GE-60	CB-14	GE-58	GE-58	GE-60	NWP24	CB-14	GE-53	GE-53	GE-60	GE-60	CB-14	CB-14	GE-33	09-35	GE-28	09-HO	GE-53	GE-58	GE-58	CB-14	GE-60	WP23	-
NL SS	.0	Inside	65124	None	65128	65124	65124	65128	65128	None	None	None	65124	None	65128	65124	65124		65128	65128	65124	None	65124	65124	65124	None 1	None	65128	65128	65124	65124	None	None	65128	42100	65124	65124	65128	65124	65124	None	65124	None I	
JOURN	Cat. N	utside	65101	65129	65127	65101	65101	65127	65127	65129	65129	65129	65101	19726	65127	65101	65101		65127	65127	65101	65129	65101	65101	65101	19726	19709	65127	65127	65101	65101	19908	65129	65127	10169	65101	65101	65127	65101	65101	19709	65101	19726	
IOE		Left 0 Iand	20372	None	20387	Vone -	20372	20386	20382	None	None	None	20372	None 1	20386	20372	20372		20391	20386	20372	None	20372	20372	20372	None]	None 1	120386	20386	120372	20372	None]	None	20386	203/2	20372	20372	20382	20372	20372	None 1	20376	None 1	
BRAKE SI HEADS	Cat. N	Right I I	20371	None 1	20387 1	None 1	20371]	120385 1	120381	None	None]	None	120371	None]	120385 1	120371	120371	1	120390	120385]	120371	None 1	120371	120371	120371	None	None	120385	120385	120371	120371	None	None	20385	1203/1	1/203/1	17203/1	120381	120371	120371	None	20375 1	None	
DES		Left I Iand I	35227]	20315 1	20355 1	20327 1	35227 1	21541]	35238]	20315	20315	20315	65227	20306	21541	65227	65227	plicati or	65240	21541 1	65227	20315	65227	65227	65227	65955	20317	21541	21541	65227	65227	20311	20315	21541	17700	17700	17720	35238	35227	35227	20317	20331 1	26450	
SRAKE SH	Cat. 1	ight and I	5226	0314 1	0355 1	0326 1	5226	1540 1	5236	0314 1	30314 1	30314 1	55226	20305 1	11540 1	55226	35226	on at	35239	21540 1	5226	20314 1	5226	35226	5226	5954	20316 1	21540 1	21540 1	55226	5226	20311 1	20314 I	1040 1	07700	9770	02220	5236	5226	5226	0316 1	0330 1	6449 1	-
		ning H	5202 6	5212 12	5202 12	5202 12	5202 6	5202 12	5202 (5212 12	5212 12	5212 12	5202 (9274 12	5202 12	5202 (5202 (5202 6	5202 12	5202 (5212 15	5202 (5202 (5202 (5212 (9273 12	5202 12	5202 15	5202 (5202	9273 1	0212 1	1 2020	2020	2020	207	5202 (5202 (5202 6	9273 12	9278 12	5212 12	
NO.		x Li	84 6	9 06	84 6	84 6	84 6.	84 6	84 6	9 06	90 6	9 06	84 6	58 11	84 6	84 6	84 6		84 6	84 6	84 6	9 06	84 6	84 6	84 6	9 06	56 11	84 6	84 6	84 6	84 6	56 11	90 6	84 0	84 0	84 0	84 0.	84 6	84 6.	84 6.	56 11	11 02	9 06	
CAT.		Journ	7 651	1 651	8 651	7 651	7 651	8 651	9 651	5 651	129 1	1 651	7 651	5 1191	8 651	7 651	7 651		3 651	8 651	7 651	5 651	7 651	7 651	8 651	4 651	1 1191	8 651	8 651	7 651	7 651	9 1191	109 4	100 6	100 /	100 1	TCOL	3 651	7 651	7 651	1 1191.	4 1191	6 651	
		Wheel and Axle	12348	12002	12016	12015	12015	12016	12007	11997	12002	12002	12015	11995	12016	12015	12004		11995	12022	12004	11997	12015	12015	12000	11993	11994	12016	12016	12004	12004	11997	0007T	10021	12004	GIUZI	12004	12009	12015	12015	11994	12007	12637	
MOTIVE		Rating	LM-101-B-2	LM-103-A-1	LM-202-B-2	LM-106-B-2	LM-106-B-2	LM-202-B-2	LM-104-B-2	LM-103-A-2	LM-103-A-2	LM-103-A-2	LM-106-B-2	LM-105-A-2	LM-202-B-2	LM-106-B-2	LM-101-F-2	LS -203-C-2	LM-104-A-2	LM-202-B-1	LM-101-B-2	LM-103-A-1	LM-106-B-2	LM-106-B-2	LM-101-F-1	LM-105-A-2	LS -103-A-1	L M-202-B-2	LM-202-B-2	LM-101-B-1	LM-101-G-1	LS -203-A-2	L-M-103-A-1	1-9-202-W-1	Z-9-101-W-1	2-9-001-WT	T-ST-TOT-W	LM-104-B-2	LM-106-B-2	LM-106-B-2	LS -203-A-2	LS -401-A-2	LM-105-A-1	
LOCO		Serial Number	1697-99	1700 1	1701-02	1703-04	1705 1	1706-07	1708 1	1709	1710	1711	1712-13	1714	1715-16	1717-18	1719 1	1720 1	1721	1722 1	1723 1	1724 1	1725 1	1726-27	1728 1	1729 1	1731-33	1734 1	1735	1736	1737	1738-39 1	1/40	1 141	1142	1/43-44	1/40	1746-49	1750	1751-52	1753	1754-55	1756-57	

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GENERAL ELECTRIC COMPANY

* 1704 later equipped with IG (D.S. 12607.)
† 1712 later equipped with IG (D.S. 12607.)
‡ 1715 later equipped with IG (D.S. 8268.)

	Cable Reei Type		None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	THONY
	Trolley Type		US-1	D	None	D	AI	A 1				D	D	D	US-2	D	None	D	D	US-1	D	D	D	D	D	D	A	ar		5	D-4	D-4	D	D	D	D-4	D-4	US-2	D-4	D-4	4-U	4-U	2
	Con- troller Type	A COLUMN	R-15	R-37-B	R-38-A	R-37-B	R-37-B	R-37-B	R-37-B	R-38-A	R-38-A	R-38-A	R-37-B	R-37-B	R-38-A	R-38-A	R-38-A	R-38-A	R-38-A	R-37-B	R-37-B	R-37-F	R-38-A	R-38-A	R-38-A	R-37-B	R-38-A	K-37-B	D 27 D	R-37-B	R-37-B	R-37-B	R-38-A	R-37-B	R-38-A	R-37-B	R-37-B	R-38-A	R-37-B	R-37-B	K-3/-b	K-31-B	1-10-V
OSTAT	Con- nection Diagram		S. 2998	0.S. 4799	S. 1802	.S. 1544	.S. 1537	.S. 1537	S. 1432	.S. 1471	.S. 1945	S. 1802).S. 1554	S. 1432	0.S. 1802	0.S. 1553	7967	D.S. 1802	0.S. 1969	D.S. 1537).S. 1554	D.S. 1552	D.S. 1945	D.S. 1945	D.S. 1945	o.S. 1966	0.S. 1471	0.5. 15690	1.0. 1004	S. 1537).S. 1456	D.S. 1456	0.S. 1945	0.S. 1545	0.S. 1471).S. 1432	0.S. 1432	D.S. 2957	0.S. 1545	S. 1545	0.5. 1045	0.5. 1400	100 T 100
RHE	ype		CG L	Pr D	Pr I	Pr I	Pr I	Pr T	Pr L	Pr T	Pr II	Pr D	Pr I	Pr I	Pr I	Pr I	Pr I	Pr I	Pr I	Pr I	Pr I	Pr I	Pr I	Pr I	Pr I	Pr I	Pr I		Ъ. Т. Г.	Pr T	Pr I	Pr L	Pr T	L L	Pr L								
	Gear Case at. No.		50566	52585	51985	50440	52376	52376	52585	52376	51985	51985	52585	52585	51985	50440	17986	51985	51985	52376	52585	39381	51985	51985	51985	52376	50440	02020	59585	50440	52585	52585	51985	52585	50440	52585	52585	06000	52585	52085	32363	59376	01070
	of Axle C	-	41/4	11/4	~				11/1	+ 14		~	414	41/4	~	+	++	~	~	#	414	41/4	~	~	~			1/4	± ½4	4 4	4 14	4 1/4	3	414	4	414	414	234 1	41/4	414	414	4 /4	н
	in in rear	-	56 4	69 4	69	69	67	29	60	29	99	66 3	69	69	66	69	67 4	99	66 3	67	69	81 4	66 3	99	66 ;	67	69	60	80	69	69	69	99	69	69	69	69	58	69	69		67	
	in nion (-	1	15	14	S.	4	4 r	0 1	4	14	14	15	15	14	15	14	14	14	14	15	14	14	14	14	14	15	01		15	15	15	14	15	15	15	15	14	15	15	01	01	H
	Toll- Pi	_	00	50	50 1	50	50	50	00	00	00	50	00	00	50	00	00	50	00	50	00	00	00	00	00	50	00	00	0.00	50	50	50	00	20	00	00	00	20	50	50	00	20	200
ORS	rma- ture t	-	ى ت	2 2	10 2	c1 1	0 1 0	20 -	4 c 0 c	1 C	17 5	10 2	4 5	4 5	10 2	6 5	6	10 2	17 5	3 2	4	4	17 5	17 5	17 5	8	9 ·	4 4	# 4	1 00	2 2	2 2	17 5	57	9	4	4	14 2	010	2 0		4 6	2
LOW	ype A	-	E-55	E-53	3-14	E-58	E-60	E-60	E-53	E-60	8-14	8-14	E-53	E-53	B-14	E-58	E-52	B-14	B-14	E-60	E-53	E-61	B-14	B-14	B-14	E-60	E-58	E-03	E-00	E-58	E-53	E-53	B-14	E-53	E-58	E-53	E-53	NP23	E-53	E-53	E-00	00-H	20-21
	T I I I I I I I I I I I I I I I I I I I	_	749 G	128 G	ne Cl	128 G	124 G	124 G	128 6	124 G	ne Cl	ne C	128 G	128 G	ne Cl	128 G	124 G	one C.	one C.	124 G	128 G	128 G	one C.	one C.	one C.	124 G	124 G	100 001	0 271	124 G	128 G	128 G	one C	128 G	124 G	128 G	128 G	ne N	128 G	128 0	0 071	194 6	> I Eat
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Jo	Ce Outsi		1197	6512	6512	6515	651(651(6513	651(6513	651	651	651	1197(651	651(651;	11970	651	651	651	651	651	651	651	651	100	651	651	651	651	651	651	651	651	651	1197	1651	100	100	100	
SHOE ADS	No. Left Hand		120395	120382	None	120372	120372	1002072	120386	120372	None	None	120382	120386	None	120372	120378	None	None	120372	120382	120391	None	None	None	120376	120372	1903061	120385	120372	120386	120386	None	120382	120372	120386	120386	None	120382	1902001	190386	120375	
BRAKE HE/	Cat. Right Hand		120394	120381	None	120371	120371	1/203/1	120387	120371	None	None	120381	120385	None	120371	120377	None	None	120371	120381	120390	None	None	None	120375	120371	190901	120381	120371	120385	120385	None	120381	120371	120385	120385	None	120381	190901	100021	120371	
HOES	Left Hand		120364	65238	120310	65227	65227	12220	191541	65227	120315	120315	65238	121541	120317	65227	120335	120315	120317	65227	65238	65240	120315	120315	120315	120331	65227	140121	65238	65227	121541	121541	120315	65238	65227	121541	121541	120308	65238	002230	101541	65227	
BRAKE S	Right Hand	-	120363	65236	120309	65226	65226	02220	191540	65226	120314	120314	65236	121540	120316	65226	120334	120314	120316	65226	65236	65239	120314	120314	120314	120330	65226	040171	65236	65226	121540	121540	120314	65236	65226	121540	121540	120307	65236	00200	191540	65226	
	ournal Lining	-	19279	65202	65212	65202	65202	20200	65202	65202	65212	65212	65202	65202	19273	65202	65202	65212	19273	65202	65202	65202	65212	65212	65212	19278	65202	85909	65202	65202	65202	65202	65212	65202	65202	65202	65202	119273	20209	20200	62909	65202	
T. NO.	Box		9171	5184	5190	5184	5184	10184	5184	5184	5190	12190	5184	5184	9156 1	5184	5184	12190	9156 1	5184	55184	55184	92190	35190	35190	0170	10124	10104	35184	35184	35184	35184	35190	55184	55184	00184	10184	19156	05184	10100	10100	35184	
C	Vheels Jc and Axle	_	20292 11	20079 6	19974 6	20157 6	20047 6	2004/ 0	20079 6	20047 6	19975 6	19970 6	20093 €	20168 6	19941 11	20126 6	20274 6	19975 6	119941 11	20047 6	120093 6	19992	119975	120021	120021	1 20074 1	190100	90006	20096	120157 6	120168 6	120079 6	119975	120079	120157	891021	6/0021	1 876611	8/0021	610071	120079	120092	
IVE	ating	-	210-B-2	102-B-1	103-A-1	104-C-1	101-B-1	1-g-101	202-B-2	101-B-2	103-A-2	103-A-1	.104-B-2	202-B-2	203-D-1	.104-C-2	-101-D-2	-103-A-1	103-C-2	101-B-1	104-B-2	-104-A-2	-103-A-2	-103-A-2	-103-A-2	-401-B-1	2-9-001-	104_B_2	104-B-2	106-B-1	202-B-1	-202-B-1	-103-A-2	-104-B-1	-106-B-2	-202-B-2	-202-B-2	1-A-602-	-104-B-1	104-B-1	202-B-1	-101-B-1	
OCOMOT	R	_	- SJ	LM-	LM-	-WT	-W1	T M	-WT	LM-	71 LM-	74 LM-	76 LM-	-M-	- ST	-W-T	LM-	82 LM-	- SJ	LM-	LM-	LM-	88 LM-	-W-	-WJ	- ST	-WIT	-W1 66	LM-	LM-	LM-	TM.	00 TW-	F.M.	L M.	TW	TC	T N	18 I.M.	TW	L.M.	LM-	-
I	Serial		1758	1759	1760	1761	1763	1764	1765	1766	1767-	1772-	1775-	1777	1778	1779	1780	1781-	1783	1784	1785	1786	1787-	1789	1790	1700	2611	1794-	1800	1801	1802	1803	1808-	1810	1121	1012	1014	1014	1817-	1819	1820	1821	

MINE AND INDUSTRIAL HAULAGE SUPPLIES

	:	Cable	Type		None	None	None	VR-A1	VR-A1	- TI-NT	None	None	Nune	None	None	None	attont	None	AUDIT	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	VR-A1	VR-A1	VR-AI
		Trolley	17.00		D	D	D-4	D.4	1-4		110.0	2-00		-4- L				4-7 4	*-1 *	4-1 4	10-4 2	a	D-4	D-4	D-4	D-4	D	D.	D	US-6	D	A	4-0	*-1 -1		AC	A	D-4	D-4	D-4	D-4	D-4	D-4	D-4	D-4	D-4	D-4
	(Con- troller	Type		R-38-A	R-38-A	R-37-B	R-37-B	R-37-B	D 27 D	d 76 d	R-3(-B	N-35-A	N-31-D	N-00-N	V 06 Q	V 00 0	N-00-A	d-10-1	N-30-A	K-37-B	R-55	K-37-E	R-38-A	R-37-B	R-38-A	R-38-A	R-38-A	R-37-B	R-37-B	R-14	R-38-A	K-38-A	A-76-A	R-38-A	R-38-A	R-38-A	R-37-B	R-37-B	R-37-B	R-37-B	R-38-A	R-38-A	R-37-C	R-37-B	R-37-B	R-37-B
	EOSTAT		Con- nection Diagram		D.S. 2957	D.S. 2957	D.S. 1519	D.S. 1537	D.S. 1537	D S 1537	D C 1960	0074 .C.C	1001 .C.U	D.0. 1404	D.52. 13'±0	D C 1046	1441 200	11±1.0.U	D C 1000	D.S. 1900	D.S. 1990	D.S. 1545	D.S. 1543	D.S. 2952	D.S. 1432	D.S. 1553	D.S. 1471	D.S. 2957	D.S. 1537	D.S. 1966	D.S. 2956	D.S. 1945	D.S. 1553	D.S. 1809	D.S. 1945	D.S. 2957	D.S. 1471	D.S. 1456	D.S. 1544	D.S. 1432	D.S. 1432	D.S. 1968	D.S. 1802	D.S. 4799	D.S. 1537	D.S. 1537	D.S. 1537
	RF		Type	L W.C.	Pr	Pr	Pr	Pr	Pr	p.	100		L d	14	1.0	1 T	10	1 0		L C	5	Fr	Fr	Pr	Pr	Pr	Pr	Pr	Pr	Pr	Pr	Pr	Pr.	pr	Pr	IG	Pr	Pr	r1								
		Case	Cat. No.		51985	100090	52585	52376	52376	59376	200040	50440	COTOF	6100E	+17006	51005	50440	COTOC C	17140	17140	1/140	00249	29381	51985	52585	50440	52376	51985	52376	52376	100090	51985	50361	51985	51985	100090	50440	52585	50440	52585	52585	17140	51985	52585	52376	52376	97.929
		of	Axle		284	2%	414	4	4	4	416	2/4	11/	3 4	414	4 6	4	417	4/4	H -	41/	472	4:4	2%4	4 1/4	4	4	23/4	4	4	2 %4		41/	₩ C:	0 00	234	4	414	4	4 1/4	414	4	3	41/4	4	4.	4
	Tant	in	Gear		99	58	69	67	67	67	60	60	60	99	67	99	60	80	67	67	00	60	10	99	69	69	67	99	67	29	58	90	61	99	66	58	69	69	69	69	69	67	99	69	67	229	19
	Track	in	Finion	-	14	14	15	14	14	14	16		15	14	14	14	15	12	14	11	# 4	01	14	14	15	15	14	14	14	14	14	14	CT VI	14	14	14	15	15	15	15	15	14	14	15	14	14	14
			Vol- tage		250	250	250	250	250	250	200	200	200	200	200	200	500	200	200	950	950	000	0020	002	500	200	500	250	250	250	500	0002	000	250	500	250	500	250	250	500	500	500	250	250	250	250	002
	TORS		ture urns		16	14	67	3	3	3	4	1 00	• 4	17	4	17		4	4	• 6	10	4	יז ע ד	01	4 0	9	9 9	16	en (26	, T	0 4	10	17	14	9	2	3	4	4	4	10	c3 1	co a	e	r,
	OW	-	Type 7		CB-15	NWP2	GE-53	GE-60	GE-60	GE-60	GE-57	GE-58	GE-53	CR-14	GE-54+	CB-14	GE-58	GE-53	G.EROD	GE-SOO	CB-57	10 40	10-20	01-00	GE-23	GE-28	GE-60	CB-15	09-3D	09-35	*24 M N	CD-14	GE-41	CB-14	CB-14	VWP24	GE-58	GE-53	GE-58	GE-53	GE-53	GE-800	CB-14	GE-53	09-35	08-30	00-20
AL	2		Inside		None	None	65128	65124	65124	65124	None	65124	65128	None	65128	None	65124	65128	65124	65124	10742	04100	07TON	None	65128	82109	65124	None	65124	42100	None	CE100	65128	None	None	None	65132	65128	65128	65128	65128	65124	None	65128	65124	65124	17100
JOURN.	SPRING	Cat. N	Outside	10000	65130	119726	65127	65101	65101	65101	119727	65101	65127	119721	65127	119721	65101	65127	65101	65101	110749	CC101	65120	neteo	12109	12109	65101	65130	10109	10100	02/611	00173	65127	119721	119721	65135	65131	65127	65127	65127	65127	65101	119721	65127	65101	65101	TOTOO
SHOE	Sal	No.	Left Hand		None	None	120382	120372	120372	120372	120395	120372	120386	None	120386	None	120372	120386	120372	120372	120305	190301	None	allow	120370	1203/2	120372	None	120372	1203/0	None	190979	120391	None	None	None	120372	120386	120372	120386	120386	120372	None	120382	120372	1203/2	1400041
BRAKE	A H	. Cat.	Right Hand		None	None	120381	120371	120371	120371	120394	120371	120385	None	120385	None	120371	120385	120371	120371	120304	190300	None	anout	CS5U31	120021	120371	None	1203/1	CICU21	None	190371	120390	None	None	None	120371	120385	120371	120385	120385	120371	None	120381	120371	1203/1	TENO
SHOES	No.		Left Hand		120319	1203/3	65238	65227	65227	65227	120364	65227	121541	120319	121541	120319	65227	121541	65227	65227	120364	65940	190310	1012101	140121	17700	12269	120319	122001	1000001	0100071	610071	65240	120319	120319	65957	65227	121541	65227	121541	121541	65227	120319	65238	17700	17700	
BRAKE	Cat.		Right Hand	San The	120318	1203/3	65236	65226	65226	65226	120363	65226	121540	120318	121540	120318	65226	121540	65226	65226	120363	65930	120318	0101010	040171	07700	97220	012027	02200	190906	190910	65996	65239	120318	120318	65956	65226	121540	65226	121540	121540	65226	120318	65236	02220	02200	
	14		Journal Lining		65212	21200	65202	65202	65202	65202	19279	65202	65202	65212	65202	65212	65202	65202	65202	65202	19279	65202	65212	62000	20200	20200	00202	21700	202001	017611	51029	65202	65202	65212	65212	65212	65202	65202	65202	65202	65202	65202	65212	65202	20200	65202 65202	
	·04 ·14		Box.		65190	ORTCO	65184	65184	65184	65184	19171 1	65184	65184	65190	65184	65190	55184	65184	65184	65184	19171	35184	65190	VOI DO	10101	10100	00104	OSTOC	10170	10120	00121	35184	35184	35190	35190	35190	55184	35184	35184	55184	35184	35184	55190	55184	10104	10104	
	,	Wheale	Axle J	Taures -	119937	OTAATT	120230	120007	120007	120008	120286 1	120157	120094	119940	120168	119940	120157	120168	120159	120159	120283 1	120159	1199611	100102	000001	190001	110061	TOPETT	1 20021	110055 1	1 CORETT	120157	119966	119977	119940	119917	120215	120168	120272	120169	120241	120240	119940	1200021	1000001	120007	
AMITONO	- ATTONO		Rating	and the second	LM-105-C-1	I-W-001-W-1	L-M-102-B-1	LM-101-H-1	LM-101-H-1	LM-101-H-1	LS -209-G-2	LM-106-B-2	LM-202-B-2	LM-103-A-2	LM-202-B-2	LM-103-A-2	LM-106-B-2	LM-202-B-2	LM-101-C-2	LM-101-C-1	LS -202-A-1	LM-104-A-1	LM-105-C-1	0-8-00-W.I	L.M.104.C.9	C L LUL M L	L.M.105.C.1	T-O-COT-WIT	1-8-101-W17	1-0-105-0-	L M-103-A-2	LM-104-C-2	LM-102-A-1	LM-103-A-1	LM-103-A-2	LM-105-B-1	LM-106-B-2	LM-202-B-1	LM-104-C-1	LM-202-B-2	LM-202-B-2	L.M-101-C-2	LM-103-A-1	T-97-201-W	1-H-101-W-1	L-H-101-MJ	
100	-		Serial Number		1002	0701	1824	1825	1826-29	1830-32	1834	1835	1836	1838	1839	1840	1841	1842	1843	1844	1845-49	1850-51	1852-61	1869.	1863	1264	1865	1866	1867-64	1869	1870	1871	1872	1873-76	1877	1878	1879	1880	1881	1000	1001	1884	10001	1880-00	1891-94	1895-96	

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*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.

| TOC | OMOTIVE | | CAT. NO. |
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Cable	Type	None	None	None	None	None	None	None	None	None	None	VR-A1	None	VR-A1	None	None	None	None	VR-A3	None	VR-B1	None	None	None	None	None	VR-A3	None	VR-A4	None	None	VR-A3	None	None	None	None	None	None	None	None	None	None	None	
	Type	D-4	D-4	D-4	D-4	D-4	D-4	US-2	0-SU	D-4	D-4	N	D-4	US-1	D-4	D-4	{D-2}	D-4	US-2	D-4	D-4	D-4	0-SU	D-4	D-4	D-4	D-4	H	D-4	D-4	Ċ													
Con-	Type	R-37-B	R-16-C	R-38-A	R-37-B	R-37-B	R-38-A	K-6	R-38-A	R-38-A	R-38-A	R-37-B	R-37-B	R-37-B	R-37-B	R-38-A	R-38-A	R-38-A	R-37-B	R-60-C	R-38-A	R-38-A	R-38-A	R-38-A	R-37-B	R-37-B	R-38-A	R-38-A	R-37-B	R-37-B	R-38†	R-37-B	R-37-B	R-38-A	K-12‡	R-37-B	R-37-B	R-37-B	R-38-A	R-38-A	R-37-B	R-37-B	R-37-B	
EOSTAT	Con- nection Diagram	 D.S. 1554	D.S. 1554	D.S. 1802	D.S. 1537	D.S. 1545	D.S. 1802	D.S. 3343	D.S. 1471	D.S. 1945	D.S. 1802	D.S. 1537	D.S. 1537	D.S. 1537	D.S. 1554	D.S. 1471	D.S. 1802	D.S. 1802	D.S. 1537*	D.S. 1530	D.S. 1802	D.S. 1802	D.S. 1802	D.S. 1802	D.S. 1554	D.S. 4288	D.S. 1471	D.S. 1945	D.S. 1537	D.S. 1554	D.S. 1945	D.S. 1537	D.S. 1552	D.S. 1945	D.S. 4848	D.S. 1537	D.S. 1544	D.S. 1554	D.S. 1471	D.S. 2957	D.S. 1544	D.S. 1544	D.S. 2119	
RH	Type	Pr	Pr	Pr	Pr	Pr	Pr	CG	Pr	CG	Pr	Pr	CG	Pr	Pr	Pr	Pr	Pr	Pr	Pr.	Pr																							
Grear	Cat. No.	52585	52585	51985	52376	52585	51985	50249	52376	51985	51985	52376	52376	52376	52585	50440	51985	51985	52376	49590	51985	51985	51985	51985	52585	50249	52376	51985	52376	50440	51985	52376	39381	51985	51985	52376	50440	52585	50440	100090	50440	50440	17140	
Dia	of Axle	414	4 1/4	3	4	41/4	3	41/2	4	3	3	4	4	4	4 1/4	4	3	33	4	10	3	0 00	3	3	4 1/4	41/2	4	с С	4	4	ŝ	4	$4\frac{1}{4}$	33	ŝ	4	4	41/4	4	234	4	4	4	
Teeth	in Gear	69	69	66	67	69	66	69	67	66	99	67	67	67	69	69	99	66	67	81	66	66	66	66	69	69	67	99	67	69	99	29	81	99	99	29	69	69	69	58	69	69	67	
Teeth	Pinion	15	15	14	14	15	14	16	14	14	14	14	14	14	14	15	14	14	14	16	14	14	14	14	15	16	14	14	14	15	14	14	14	14	14	14	15	15	15	14	15	15	14	
	Vol- tage	500	500	250	250	250	250	250	500	500	250	250	250	250	500	500	250	250	250	500	250	500	250	250	500	500	500	500	250	250	500	250	500	500	500	250	250	500	500	250	250	250	110	
OTORS	Arma- ture Turns	4	4	10	3	2	10	5	9	17	10	e	3	3	4	9	10	10	~	5	10	17	10	10	4	4	9	17	3	3	17	3	4	17	17	3	e	4	8	14	с С	3	-	
M	Type	GE-53	GE-53	CB-14	GE-60	GE-53	CB-14	GE-57	GE-60	CB-14	CB-14	GE-60	GE-60	GE-60	GE-53	GE-58	CB-14	CB-14	GE-60	GE-71	CB-14	CB-14	CB-14	CB-14	GE-53	GE-57	GE-60	CB-14	GE-60	GE-58	CB-14	GE-60	GE-61	CB-14	CB-14	GE-60	GE-58	GE-53	GE-58	NWP2	GE-58	GE-58	GE-800	-
IAL	Inside	 65128	65128	None	65124	65128	None	119745	65124	None	None	65124	65124	65124	65128	65132	None	None	65124	119747	None	None	None	None	65130	65128	65124	None	65124	65128	None	65124	65128	None		65124	65128	65128	65132	None	65128	65128	None	
JOURN	Outside	65127	65127	65129	65101	65127	119721	119744	65101	119721	65129	65101	65101	65101	65127	65131	65129	65129	65101	119746	65129	119721	65129	65129	65101	65127	65101	65129	65101	65127	65129	65101	65127	119721		65101	65127	65127	65131	65135	65127	65127	119728	
SHOE	Left Hand	120382	120382	120368	120372	120382	None	120395	120372	None	120368	120372	120372	120372	120382	120372	120368	120368	120372	126447	120368	None	120368	120368	120382	120391	120372	120368	120372	120372	120368	120372	120391	None		120372	120372	120382	120372	None	120372	120372	120376	1000
BRAKE	Right Hand	120381	120381	120367	120371	120381	None	120394	120371	None	120367	120371	120371	120371	120381	120371	120367	120367	120371	126446	120367	None	120367	120367	120381	120390	120371	120367	120371	120371	120367	120371	120390	None	ication	120371	120371	120381	120371	None	120371	120371	120375	
SHOES No.	Left Hand	65238	65238	65200	65227	65238	120319	120364	65227	120319	65200	65227	65227	65227	65238	65227	65200	65200	65227	65240	65200	120319	65200	65200	65238	65240	65227	65200	65227	65227	65200	65227	65240	120319	on appl	65227	65227	65238	65227	65957	65227	65227	120331	
BRAKE Cat.	Right Hand	 65236	65236	65186	63226	65236	120318	120363	65226	120318	65186	65226	65226	65226	65236	65226	65186	65186	65226	65239	65186	120318	65186	65186	65236	65239	65226	65186	65226	65226	65186	65226	65239	120318		65226	65226	65236	65226	63956	65226	65226	120330	
	Journal Lining	 65202	65202	65212	65202	65202	65212	119279	65202	65212	65212	65202	65202	65202	65202	65202	65212	65212	65202	119276	65212	65212	63212	65212	65202	119279	65202	65212	65202	65202	65212	65202	65202	65212		65202	65202	65202	65202	65212	65202	65202	119277	
CAT. NO.	Journal Box	65184	65184	65190	65184	65184	65190	119171	65184	65190	65190	65184	65184	65184	65184	65184	65190	65190	65184	119164	65190	65190	65190	65190	65184	119171	65184	65190	65184	65184	65190	65184	65184	65190		65184	65184	65184	65184	65190	65184	65184	119169	
	Wheels and Axle	 120167	120167	119977	120110	120229	119940	120283	120047	119940	120023	120055	120047	120007	120167	120157	119977	120023	120055	120185	119962	119940	120023	120131	120079	120285	120154	120131	120055	120157	119977	120055	1199996	119940	119941	120047	120157	120167	120157	119917	120212	120212	120254	
OMOTIVE	Rating	LM-104-B-2	LM-104-B-2	LM-103-A-1	LM-101-B-1	LM-104-B-1	LM-103-A-1	LS -202-A-1	LM-101-B-2	LM-103-A-2	LM-103-A-1	LM-101-B-1	LM-101-B-1	LM-101-H-1	LM-104-B-2	LM-106-B-2	LM-103-A-1	LM-103-A-1	LM-101-B-1	LM-207-B-2	LM-103-A-1	LM-103-A-2	LM-103-A-1	LM-103-A-1	LM-204-B-2	LS- 209-B-2	LM-101-B-2	LM-103-A-2	LM-101-B-1	LM-104-C-1	LM-103-A-2	LM-101-B-1	LM-104-A-2	LM-103-A-2	LS -301-A-2	LM-101-B-1	LM-104-C-1	LM-104-B-2	LM-106-B-2	LM-105-B-1	LM-104-C-1	LM-104-C-1	LM-101-E-3	
007	Serial Number	1950-53	1954-55	1956-57	1958	1959	1960-61	1962	1963	1964	1965	1966	1967-68	1969	1970	1971	1972-73	1974-75	1976-77	1978	1979	1980	1981-82	1983	1984	1985	1986	1987	1988-89	1990	1991	1994	1995-96	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	

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GENERAL ELECTRIC COMPANY

§ Later equipped with R-60-C.

‡ Later equipped with R-77-A.

+Later equipped with R-77-A.

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

Cable	Cable Reel Type		V K-A4	None	None	None	None	None	None	VR-A4	VR-A4	None	None	None	None	None	ALIONT	None	None	VR-B1	None	None	None	None	None	None	None	None	None	None	None	None	None	VR-A5	None	VR-A4	None	None	VR-A4	None	
	Type		D-4	D-4	D-4	t D-4	D-4	D-4	D-4	D-4 *	Z	S US-6	D-4	D-4	1 d	T C		1-4- 4-7	D-4	D-4	D-4	0-SU	D-4	US-8	D-4	D-4	D-4	None	D-4	D-4	D-4	None	D-4	D-4	0	D-4	D-4	D-4	D-4	D-4	
	Type		K-37-B	R-37-B	R-14	R-37-B	R-37-B	R-37-B	P-38-4	R.37-B	R-37-R	R-37-B	R-37-F	R-37-F	P 37 P	D 30 A	10-00-VI	K-38-A	R-37-B	R-38-A	R-37-B	R-38-A	R-38-A R-77-A	R-37-B	R-37-B	R-14	R-37-F	K-11 A	R-37-B	R-37-B	R-37-B	R-38	R-37-B	R-38	R-37-D	R-38	R-37-B	R-37-B	R-37-B	R-38	
STAT	Con- lection iagram		5. 1537	S. 1537	S. 2956	S. 1554	S. 1537	S. 1537	S 1471	S. 1537	S. 1537	S. 1432	S. 15524	S. 1552+	S 1554	S 1045	0101 · 0	0. 14/1	S. 1554	S. 1802	S. 1554	S. 1802	S.S. {	S. 1537	S. 1554	S. 2956	S. 1929	S. 1544	S. 1537	S. 1537	S. 1537	S. 1471	S. 1537	S. 1945	S. 1956	S. 1471	S. 1537	S. 1537	S. 1537	S. 2957	
RHEO	ype D		Fr D.	Pr D.	Pr D.	Pr D.	Pr D.	Pr D	pr D	Pr D	Pr D.	Pr D.	pr D.	Pr D	p. 1	-1			Pr D.	Pr D.	Pr D.	Pr D.	Pr 1	Pr D.	Pr D.	Pr D.	Pr D.	Pr D.	Pr D.	Pr D.	Pr D.	Pr D.	Pr D.	Pr D.	Pr D.	Pr D.	Pr D.	Pr D.	Pr D.	Pr D.	
	Case Case Dat. No. 7		0/220	52376	100090	52585	52376	50440	52376	52376	52376	52585	39381	39381	59585	51985	00010	01070	52585	51985	52585	51985	51985	52376	52585	100090	39381	49558	52376	52376	52376	52376	52376	51985	17140	52376	39528	52376	39528	100090	
	Axle C		4	4	2%	414	4	4	4	4	4	414	414	414	414	* 6		++	4 1/4	e 2	$41/_{4}$	ന	3	4	414	234	41/4	4	4	4	4	4	4	en	4	4	4	4	4	234	-
Tooth	in Gear	L.	10	10	58	69	67	69	67	67	67	69	81	81	69	99	57	50	69	99	69	66	99	67	6.9	58	81	69	67	67	67	29	67	99	67	67	67	67	67	58	
Teath	Pinion	:	14	14	14	15	14	15	14	14	14	14	14	14	14	14		# •	14	14	14	14	14	14	14	14	14	15	14	14	14	14	14	14	14	14	14	14	14	14	-
	Vol- tage	010	002	200	500	500	250	250	500	250	250	500	500	.500	500	500	2002	0001	000	250	500	250	250	250	500	500	500	250	250	250	250	500	250	500	250	500	250	250	250	220	
OTORS	Arma- ture Turns		~ ~	0	26	4	~	3	9		~	4	4	4	4	17			4	10	4	10	10	60	4	26	4	e	က	က	3	9	3	17	57	9	ŝ	ŝ	3		
W	Type	00 80	00-25	09-3-D	NWP2	GE-53	GE-60	GE-58	GE-60	GE-60	GE-60	GE-53	GE-61	GE-61	GE-53	CB-14	CE BO	00-40	GE-23	CB-14	GE-53	CB-14	CB-14	GE-60	GE-53	NWP2	GE-61	GE-59	GE-60	GE-60	GE-60	GE-60	GE-60	CB-14	GE-800	GE-60	GE-77	GE-60	GE-77	NWP2	
AL	o. Inside	101.40	47100	P0124	None	65128	None	65132	65124	None	65124	65128	65128	65128	65128	None	65194	17100	87100	None	65128	None	None	65124	65128	None	65128	65128	65124	65124	65124	65124	65124	None	65124	65124	65124	65124	65124	None	
JOURN	Cat. N Outside	04404	Inteo	TOTCO	119726	65127	119733	65131	65101	119717	65101	65127	65127	65127	65127	65129	65101	TOTOO	12100	65129	65127	65129	65129	65101	65127	119726	65127	65127	65101	65101	65101	65101	65101	65129	65101	65101	65101	65101	65101	65135	
SHOE	No. Left Hand	04000+	120312	1203/2	None	120382	None	120372	120372	120372	120272	120382	120391	120391	120382	120368	190379	710001	120382	120368	120382	120368	120368	120372	120382	None	120391	120372	120372	120372	120372	120372	120372	120368	120372	120372	120372	120372	120372	None	
BRAKE	Cat. Right Hand		119021	1203/1	None	120381	None	120371	120371	120371	120371	120381	120390	120390	120381	120367	120371	TICOTT	120021	120367	120381	120367	120367	120371	120381	None	120390	120371	120371	120371	120371	120371	120371	120367	120371	120371	120371	120371	120371	None	
SHOES No.	Left Hand	10020	12200	17700	120306	65238	120332	65227	65227	65227	65227	65238	65240	/ 65240	65238	65200	65997	17700	09230	65200	65238	65200	65200	65227	65238	120306	65240	65227	65227	65227	65227	65227	65227	65200	65227	65227	65227	65227	65227	65957	
BRAKE Cat.	Right Hand	00020	07700	07700	120305	65236	120332	65226	65226	65226	65226	65236	65239	65239	65236	65186	66996	00000	092200	65186	65236	65186	65186	65226	65236	120305	65239	65226	65226	65226	65226	65226	65226	65186	65226	65226	65226	65226	65226	65956	
	Journal Lining	00040	20200	20200	119274	65202	65204	65202	65202	119277	65202	65202	65202	65202	65202	65212	66909	00000	20200	65212	65202	65212	65212	65202	65202	119274	65202	65202	65202	65202	65202	65202	65202	65212	65202	65202	65202	65202	65202	65212	
AT. NO.	ournal Box		+0100	12100	19158	65184	65185	65184	65184	19169	65184	65184	65184	65184	65184	65190	65124	LOTOO	50100	65190	65184	65190	65190	65184	65184	19158	65184	65184	65184	65184	65184	65184	65184	65190	65184	65184	65184	65184	65184	65190	
0	Wheels J and Axle	100001	100001	120008	119955 1	120167	120210	120215	120256	120038 1	120055	120079	119953	119958	120167	119977	190047	120021	101021	119962	120167	120023	119940	120047	120167	119955 1	119993	120040	120047	120047	120047	120047	120047	120245	120159	120155	120013	120013	120013	119918	- AAAAA
DMOTIVE	Rating		1-G-101-1417	1-9-101-WT	LM-105-A-2	LM-104-B-2	LM-101-B-1	LM-106-B-1	LM-101-B-2	LM-101-K-1	LM-101-B-1	LM-202-B-2	LM-104-A-2	LM-104-A-2	LM-104-B-2	LM-103-A-2	I.M.101_B_9	I M 104 D 9	Z-G-+01-MIT	LM-103-A-1	LM-104-B-2	LM-103-A-1	LM-103-A-1	LM-101-B-1	L M-104-B-2	LM-105-A-2	LM-102-A-2	LM-104-D-1	LM-101-B-1	LM-101-B-1	LM-101-B-1	LM-101-B-2	LM-101-B-1	LM-103-A-2	LM-101-C-1	LM-101-B-2	LM-101-L-1	LM-101-L-1	LM-101-L-1	LM-105-B-1	
1000	Serial		2001-002	01-600Z	2011	2012	2013	2014	2015	2016-17	2018-20	2021	2022-23	2024-25	2026	2027-28	0000	0000 00	66-0602	2035	2036	2037-38	2039-40	2041	2042-43	2044	2045	2046	2047-48	2049	2050-51	2052	2053	2054	2055	2056	2057-59	2060	2061-62	2064	-

MINE AND INDUSTRIAL HAULAGE SUPPLIES

PILOT TABLE FOR LOCOMOTIVES

* 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-B.
Å Later equipped with R-32-B.

ALL MARTIN

elder of der	Reel	R-A4 R-A4 None None None None None None None None	R-B2 R-C
	ype	NN 4-69 	V 4-0
	T T T T T T	8:5-3 8:5-4 8:5-4 8:5-4 1 5:5-5 1 5:5-6 1 5:5-7 5:5-7 5:5-8 5:5-7 5:5-7 5:5-8 5:5-8 5:5-7 5:5-8 5	8-A 1
- C	1 Juli		1 K-3 1* R-3
HEOSTAT	Con- nection Diagram	* 10.5 154 * 155 * 15	D.S. 147
R	Type	机环转转转 扰 机环转转转转转转转转转转转转转转转转转转转转转转转转转转	Pr
Gear	Cat. No.	39528 50440 50440 50440 50440 50440 50440 51985 51985 51985 51985 51985 51985 51985 51985 51985 51985 51985 51985 51985 51985 51985 50440 5049 5005 5005	39528
Dia.	of Axle	キャッキャ 30 まののまれますすののののですすすするのですすますのますのす る。 して、 ない、 ない、 ない、 ない、 ない、 ない、 ない、 ない	44
Teeth	Gear	60 60 60 60 60 60 60 60 60 60 60 60 60 6	67
Teeth	Pinion	4 L 4 L 4 4 L 4 4 4 4 4 4 4 4 4 4 4 4 4	14 14
	Vol- tage	250 250 250 250 250 250 250 250 250 250	500
TORS	Arma- ture Turns	0013333644603336445111111111111111111111111111111111	9 9
MC	Type	GE-77 GE-77 GE-58 GE-58 GE-58 GE-58 GE-58 GE-58 GE-58 GE-59 GE-14 GE-14 GE-61 GE-77 GE-77 GE-77 GE-77 GE-58	GE-77 GE-77
S	o. Inside	65124 65132 65132 65132 65132 855132 None 65132 65132 65124 65124 65124 65124 65124 65128 65124 65128 8 65128 8 6 65128 8 6 65128 8 6 65128 8 6 65128 8 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	None
JOURN/ SPRINC	Outside	65101 65131 65131 65131 65131 65131 65131 65131 65131 65131 65129 65129 65129 65129 65127	65126 65126
SHOE	Left Han1	120372 120372 120372 120372 120372 120372 120368 120368 120368 120368 120368 120368 120372 12	120372
BRAKE HEA	Right Hand	120371 120371 120371 120371 120371 120367 120367 120367 120367 120371 120371 120371 120371 120377 12	120371
SHOES No.	Left Hand	65227 655227 65227	65232 65232
BRAKE Cat.	Right Hand	65226 65226 65186 65226 65226 65226 65226 65226 65226 65226 65228 65528 655588 65528 65528 65528 65528 65528 65528 65528 65528 65528	05231 65231
	Journal Lining	65202 65202 65202 65202 65202 65212 65212 65212 65212 65212 65212 65212 65212 65212 65212 65212 65202 65502 65002 65002 65002 65002	65210 65210
AT. NO.	ournal Box	65184 65184 65184 65184 65184 65184 65184 65189 65190 65199 65184 65584665584 655884 65584665884 65586684865884 655884665884 655866884866884868886	65188 65188
Ŭ	Wheels J and Axle	120009 120157 110940 120157 119977 119977 119967 119963 119963 120023 120023 120023 120023 120013 120013 120013 120013 120013 120013 1200157 1200057 1200057 1200057 1200057 1200057 1200057 1200057 1200057 1200057 1	120142
MOTIVE	Rating	LM-101-L-1 LM-106-B-2 LM-106-B-2 LM-106-B-1 LM-106-B-1 LM-106-B-1 LM-106-B-1 LM-103-A-2 LM-103-A-2 LM-103-A-2 LM-103-A-2 LM-103-A-2 LM-103-A-2 LM-103-A-2 LM-103-A-1 LM-103-A-2 LM-103-A-1 LM-103-A-1 LM-103-A-1 LM-103-A-1 LM-101-C-2 LM-102-C-2	LM-101-N-2
POCC	Serial	2065 2066 2066 2066 2076 2076 2077 2077 2078 2078 2078 2078 2078 2078	2155 2155

GENERAL ELECTRIC COMPANY

PILOT TABLE FOR LOCOMOTIVES

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

LOC	OMOTIVE		CAT. NO		BRAK	E SHOES	BRAKE	SHOE	JOURN SPRIN	IAL GS	MG	TORS						RHE	OSTAT			
-					Ca	L. 170.	Cat.	No.	Cat. 1	Vo.		-		Teeth .	[reeth	Dia.	Gear	-		Con-	Prolley	Cable
Serial umber	Rating	Wheels and Axle	Journal Box	l Journal Lining	Right Hand	Left Hand	Right Hand	Left Hand	Outside	Inside	Type	Arma- ture Turns	Vol- tage	Pinion	Gear	Axle C	t. No.	ype	Con- nection Diagram	Type	Type	Type
0156	1 M. 101 R. 9	190149	65188	65910	65921	65939	190371	190379	65196	Nono	CF 77	ų	200	14	67	4	10598	D-	S 1471	R-39.4	10	Jan
2157-58	LM-101-N-3	120142	65188	65210	65231	65232	120371	120372	65126	None	GE-77	9	500	14	67	4 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	9	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	9	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	9	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	9	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	9	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	99	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	99	co •	51985	Pr D	.S. 1945	R-38-A	D-4	None
2117	1-0-+01- MIT	ICIN71	10100	70700	07700	17700	176021	1203/2	17100	97100	00-45	0	007	10	60	4	00440	FT L	++01 .0.	G-10-N	P-4	-YI A INT
2175	I.M-101-N-1	120142	65188	65210	65931	65939	120371	190379	65196	None	GE-77	~	250	14	67	4	39598	Pr T	S 1537	R-37-B	D-4	49-A3 VR_R1
9176	L A COL-MI	110002	65124	62909	65920	65940	TICOTT	100001	107100	CE100	CE 81	~	950	11	51	414	10200		C 1030	D 37 F		Nono
0117	1-W-201-WT	190070	FOLUU FELON	20200	00700	05000	196051	TRCO7T	17100	07100	10-20	# c	020	# 11 	10	11/	TOPECE		0061 .0.	D 27 D	# C	Mone
1117	1-9-202-WT	100001	40100	20200	00200	00700	1200001	120302	17100	87100	CE-23	2 -	200	10	60	4/4	00000		0071 .0.	d-16-M	+- A	None
0117	7-9-207-WT	102021	#9100	20200	00234	09230	022021	120380	12100	02100	01-03	4 1	one	01	RO	4 1/4	02020		.0. 1432	R-3/-B	4-1 4-1	INORE
51/9	LM-103-A-2	119940	06169	69212	65186	65200	120367	120368	62129	None	CB-14	17	200	14	99	2	51985	L I	.5. 1945	K-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	99	~	51985	Pr L	.S. 5665	R-38-A	D	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	en	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	41/4	52585	Pr D	.S. 1554	R-37-B	D-4	None
2190-91	LM-104-A-2	1199996	65184	65202	65239	65240	120390	120391	65127	65128	GE-61	4	500	14	81	4 1/4	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	NWP23	14	250	14	58	234 1	06000	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	ero	51985	Pr D	.S. 5665	R-38-A	D	None
2198-99	I-W-101-W-1	119989	65184	65202	65228	65230	120371	120372	65101	65124	GE-79	0	250	14	69	4	43391	Pr I	.S. 5793	R-37-B	D-4	None
20-0022	I-W-101-W-1	119989	65184	65202	55228	65230	120371	120372	65101	65124	GE-79	m	250	14	69	4	13391	Pr D	.S. 5793	R-37-B	D-4	None
2203-05	I-W-101-W-1	119987	65184	65202	65228	65230	120371	120372	65101	65124	GE-79	3	250	14	69	4	13391	Pr L	.5. 5793	K-37-B	D-4	VR-B2
5206	LM-106-C-1	120041	65184	65202	65226	65227	120371	120372	65131	65132	GE-59	en	250 1	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	126435	65127	65128	GE-53	4	500	15	69	41/4	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	9	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	19558	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	NWP24	26	500	14	58	234 10	06000	Pr D	.S. 1936	R-14	D-4	None
2220	LM-105-B-2	119917	65190	65212	65956	65957	None	None	65135	None	NWP2	26	500	14	58	234 10	06000	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	9	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	0	250	15	. 69	4	19558	Pr D	.S. 1544	R-37-B	D-4	None
La Carros														}								

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

MINE AND INDUSTRIAL HAULAGE SUPPLIES

			_				_																			_				_		_		-			
Cable	Type	None	None	MVR-	49-A3	None	None	VR-C2	VR-C2	None	None	None	VR-B5	None	VR-C2	VR-C2	VR-C2	VR-C2	VR-C2	None	None	None	None	None	None	None	None	VR-A4	None	VR-B5	VR-A4	VR-A4	None	None	None	None	Nune
	Type	{ D-4 }	H	D-4	× C	D-4	US-6	D-5	D-5	D-4	D-4	110 G	D-60	D-4	D-5	D-5	D-5	D-5	D-5	US-2	D-4	D-4	D-4	D-4	US-2	0.S-6	4 C	D-4	D-4	D-4	D-4	D-4	D-4	D-4	D-4	10-2	D-4
Con-	Type	2-37-B	A-38-A	2-37-B	A 92.0	A-37-A		K-38-A	K-38-A	2-38-A	C-37-B	60 C	2-00-C	C-37-B	R-38-A	t-38-A	R-38-A	K-38-A	C-38-A	C-60-C	A-13	C-38-A	K-38-A	C-37-B	C-53-A	-37-B	-38-A	-37-B	L-37-B	C-37-B	K-38-A	C-37-B	C-37-B	K-38-A	C-38-A	7-00-2	-30-A
E	n- cion ram	1537 I	2957 I	1544 F	1 6091	1544 F	4236 F	1471 F	1471 F	1802 F	1545 F	1 4001	1 0071	1554 F	1471 F	1471 F	1471 F	1471 F	[471* F	4285 F	1045 F	1802 F	1802 F	1537 F	3335 F	1966	1 809 F	1537 F	H	5793 F	1471 F	1537 F	1544 F	2956 F	1 1262	T 000	1202
ZHEOST	e Diag	D.S.	D.S.	D.S.	s C	D.S.	D.S.	D.S.	D.S.	D.S.	D.S.	L	0.0	D.S.	e c	D.S.	D.S.	D.S.	D.S.	D.S.		D.S.	.01	D.S.	D.S.	D.S.	D.S.	D.S.	D.S.	-	.e.U						
	Type	Pr	Pr	Pr	ď	L L	CG	Pr	Pr	Pr	L L	LA C	P	Pr	Pr	Pr	Pr	Pr	Pr	5 CC	P 4	Pr	Pr	Pr	Pr.	Pr.	L'd	Pr	Pr§	Pr	Pr	Pr	Pr	Pr	Pr -	L L	5
Gear	Cat. No	50440	100090	50440	51085	50440	50249	39528	39528	51985	52585	50940	43391	52585	39528	39528	39528	39528	39528	38622	51985	51985	51985	52376	100090	52376	51025	52376	52376	43391	52376	39528	50440	51985	51985	02080	01200
Dia.	of Axle	4	284	4	~	o 4	41%	4	4	ۍ : ع	414	4.14	4	414	4	4	4	4	4	24.	3 %		3	4	234	4 •	4 cr	. 4	4	4	4	4	4	234	234	4/4	0
Teeth	in Gear	69	58	69	86	69	69	67	67	99	69	60	69	69	29	29	29	67	29	69	90	66	99	67	58	19	97	67	67	69	29	29	69	99	66	60	00
Teeth	Pinion	15	14	15	14	15	16	14	14	14	15	10	14	15	14	14	14	14	14	16	14	14	14	14	14	14	14	14	14	14	14	14	15	14	14	01 1	14
	Vol- tage	250	250	250	026	250	250	500	500	250	250	000	250	500	500	500	500	500	500	500	005	250	250	250	125	250	026	250	250	250	500	250	250	500	250	200	nez
OTORS	Arma- ture Turns	ŝ	14	ŝ	10	2 00	0	9	9	10	ca *	4 C	1 00	4	8	9	9	9	9	4,	17	10	10	3	- 1		01	ç	3	က	9	e	e	30	16	2 1	IU
M	Type	GE-58	NWP24	GE-58	CB-14	GE-58	GE-57	GE-77	GE-77	CB-14	GE-53	CE-33	GE-79	GE-53	GE-77	GE-77	GE-77	GE-77	GE-77	GE-51	CB-14	CB-14	CB-14	GE-60	NWP2	CB-60	CB-14	GE-60	GE-60	GE-79	GE-60	GE-77	GE-58	CB-15	CB-15	GE-23	CB-14
AL	Inside	65132	None	65128	None	65128	119747	None	None	None	65128	87100	65124	65128	None	None	None	None	None	None	None N	None	None	65124	None	65124	47100	65124	65124	65124	65124	65124	65128	None	None	87100	None
JOURN SPRING	Dutside	65131	65135	65127	65190	65127	19746	65126	65126	65129	65127	12100	65101	65127	65126	65126	65126	65126	65126	19727	65129	65129	65129	65101	11211	65101	10100	65101	65101	65101	65101	65101	65127	65130	65130	12100	67100
HOE	Left Hand	120372	None	120372	190368	120372	120395	120372	120372	120368	120382	190905	120372	120435	120372	120372	120372	120372	120372	120395	120368	120368	120368	120372	120368	120376	120368	120372	120372	120372	120372	120372	120372	None	None	100060	onenz I
BRAKE S HEAD	Right Hand	120371	None	120371	190367	120371	120394	120371	120371	120367	120381	190204	120371	120434	120371	120371	120371	120371	120371	120394	120367	120367	120367	120371	120367	120375	120367	120371	120371	120371	120371	120371	120371	None	None	100067	laenzi
HOES	Left Hand	65230	65957	65227	65999	65230	126453	65232	65232	65200	65238	00264	65230	65235	65232	65232	65232	65232	65232	20364	65200	65200	65200	65227	65200	20331	62229	65227	65227	65230	65227	65227	65227	65959	65959	002230	0.0260
BRAKE S	Right Hand	65228	65956	65226	65206	65228	126452	65231	65231	65186	65236	190262	65228	65234	65231	65231	65231	65231	65231	120363	65186	65186	65186	65226	65186	120330	65206	65226	65226	65228	65226	65226	65226	65958	65958	00234	noteo
	ournal Lining	65202	65212	65202	65216	65202	19279	65210	65210	65212	65202	10270	65202	65202	65210	65210	65210	65210	65210	19279	65212	65212	65212	65202	19273	19278	65216	65202	65202	65202	65202	65202	65202	65212	65212	20200	71700
T. NO.	Box	5184	5190	5184	5194	5184	9171 1	5188	5188	5190	5184	1 1210	5184	5184	5188	5188	5188	5188	5188	1 1/16	1 1116	0619	5190	5184	9156 1	9170 1	5194	5184	5184	5184	5184	5184	5184	5190	5190	49100	DATO
C	Theels J. Axle	20259 6	19917 6	20157 6	90198	20160 6	20282 11	20142 6	20142 .6	20023 6	20079 6	01102	19964	20170 6	20142 6	20142 6	20142 6	20142 6	20142 6	20286 11	10040	20023	20023 6	20047 6	19919 11	20074 11	20100 6	20055 6	20047 6	19987 6	20047 6	20013 6	20157 6	19936	20019 0	1001	13211
	8	.B-1 1	·B-1 1	-C-1 1	F_1 1	C-1 1	-A-1 1	-R-2 1	-R-2 1	-A-1 1	-B-1 1	- p-z-q-	1 1-W.	-B-2 1	-R-2 1	-A-2 1	-C-1 1	-A-1 1	-A-1 ‡1	-B-1 1	-A-3 1	-B-1 1	-L-1 1-1-1	-B-1 1	-B-1 1	-M-1 1	-F-2 1	-L-1 1	-C-1 1	-C-2	-C-1 1	- D-1 1-1-1	- I-W-				
OMOTIVE	Ratin	LM-106-	LM-105-	LM-104.	I.M.103	LM-104-	LS -211-	LM-101-	LM-101.	LM-103.	LM-104	1.S. 2000	LM-101-	LM-104.	LM-101.	LM-101.	LM-101.	LM-101.	LM-101.	LS -209	LM-103-	LM-103.	LM-103.	LM-101.	LS -005	LN 101	LM-103-	LM-101.	LM-101-	LM-101.	LM-101.	LM-101.	LM-104.	LM-105	LM-105	202-W1	POT-TATT
TOC	Serial	225-28	2239-30	2231	939	2233	2234	2235-39	2240	2242	2243	1177	2246	2247	2248	2249	2250	2251	2252	2203	2256	2257	2258-61	2262	2263	4077 4077	2266	2267	2268	2269	2270-71	2272-85	2286	2287	2288-89	16-0677	00 0000

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* 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.

10 10 0010

	olley Cable	ype Type	-5 VR-C	0-4 None	1-4 None	S-2 None	D-4 None	0-4 None)-4 § Spec	S-2 None	S-7 & Snec	S-7 § Spec	S-7 § Spec	S-7 § Spec	0-4 § Spec	0-5 VR-C	0-4 None	1-4 None	A-Y VK-A	1-4 None	-4 None	0-5 VR-C	0-5 VR-C	0-5 VR-C	D None	D-D VK-C	-4 VR-A	1-4 None	0-4 VR-B:	N VR-A	0-4 None	1-4 None	1-5 VR-C	1-5 VR-C	1-5 VR-C	N VR-A	-		oller.		
	Con- Tr	Type T	R-38-A I	R-38-A I	R-37-B I	K-6 U	R-38-A I	R-37-B I	R-37-B I	R-60-C U	R-37-C U	R-37-C U	R-37-C U	R-37-C U	R-37-C I	R-86-B I	R-86-A I	K-82-B L	R-3/-B L	R-38.4 T	R-38-A I	R-86-B I	R-86-B I	R-86-B I	R-86-B	D 06 D T	R-86-B T	R-60-C L	R-86-B L	R-37-B	R-82-B I	R-91 L	R-86-B L	R-86-B L	R-86-B L	R-37-B	-		-86-E contr		
EOSTAT		Con- nection Diagram	D.S. 5665	D.S. 1802A	D.S. 1537	D.S. 3343	D.S. 1968	D.S. 2957	D.S. 1537	D.S. 4798 D.S. 1544	D.S. 1544	D.S. 11392	D.S. 1544	D.S. 1544	D.S. 1544	D.S. 1471	D.S. 1537	× × ×	D.S. 1037	- +	D.S. 1945	D.S. 1471	D.S. 1471	D.S. 1471	D.S. 5793	D.S. 14/1 D.S. 1045	D.S. 1537	D.S. 4798	D.S. 5793	D.S. 1471	D.S. 5618	D.S. 1929	D.S. 1471	D.S. 1471	D.S. 1471	D.S. 1471			0708 and R.		
RH		Type	Pr	Prd	Pr h	CG	Pr	Pr	Pr	r r	Pr.	IG	Pr	Pr	Pr	Pr	Pr	5	14	p.	Pr	Pr	Pr	Pr	Pr	1. d	, d	Pr	Pr	Pr	Pr	Pr	Pr	Pr	Pr	Pr	-	(22.)	s DS 1		
	Gear	Cat. No.	51985	* 51985	50440	50249	17140	49558	39528	02000 49558	49558	49558	49558	49558	49558	39528	50440	02020	51005	51985	51985	39528	39528	39528	43391	53025	39528	52585	43391	52376	50440	39381	39528	39528	39528	52376		G (DS 158	J rheostat	.1606 or	
	Dia.	Axle		n 4	r 4	41/2	4	4	4	4 14	4	4	4	4	4	4.	4	4 1/4	4 0	.		4	4	4	4.	4 01	0 4	414	4	4	4	41/4	4	4	4	4	1	with I	vith 1(Ind sp	
	Teeth	Gear	99	99 80 80	69	69	67	69	67	69	69	69	69	69	69	29	69	67	* 66	* 66	66	67	67	29	69	10	67	69	69	67	69	81	67	67	67	67		pedd	pped v	Techen	
	Teeth	Pinion	14	* 14	15	16	14	15	14	12	15	15	15	15	15	4 1	10	11	+ 1 V	* 14	14	14	14	14	14	14	14	15	14	14	15	14	14	14	14	14		ter equ	ter equi	1100 101	
		Vol- tage	250	250	250	250	500	250	250	250	250	250	250	250	250	500	200	000	950	250	500	500	500	500	250	200	250	250	250	500	250	500	500	500	500	500		ΔLa	TLa	PT V	
TORS		Arma- ture Furns	10	* 10	0 00	53	4	(C) (m 6	1 00	6	ę	33	m (ç0 (6		4 c	¢ 10	k 10	17	9	9	9		0 11	in	63	3	9	ŝ	4	9	9	9	9	-				
MC	-	Type	CB-14	CB-14 CE-58	GE-58	GE-57	GE-800	GE-59	GE-77	GE-29	GE-59	GE-59	GE-59	GE-59	GE-59	GE-77	80-HD	CE-33	CB-14	CB-14	CB-14	GE-77	GE-77	GE-77	GE-79	CB-14	GE-77	GE-53	GE-79	GE-60	GE-58	GE-61	GE-77	GE-77	GE-77	GE-60	1010	se 65270.			
IAL GS	Vo.	Inside	None	None 65139	65132	119745	65124	65132	65124	65128	65128	65128	65128	65128	65128	None	00132	02100	None	None	None	None	None	None	65124	None	65124	65128	65124	65124	65128	65128	None	None	None	65124	-	gear ca			
JOURN SPRIN	Cat. 1	Outside	65129	65129	65131	119744	65101	65131	65101	65127	65127	65127	65127	65127	65127	65126	16100	12100	62150	65129	65129	65126	65126	65126	65101	62120	65101	65127	65101	65101	65127	65127	65126	65126	65126	65101		gear and		111	
SHOE	Vo.	Left Hand	120368	120368	120372	120395	120372	120372	120372	120372	120372	120372	120372	120372	120372	120372	190906	190279	120368	120368	120368	120372	120372	120372	120372	120368	120372	120382	120372	120372	120372	126447	120372	120372	120382	120372		3 tooth		1 911 -: -	TIT A TTT O
BRAKE 9 HEAI	Cat. I	Right Hand	120367	120367	120371	120394	120371	120371	120371	120371	120371	120371	120371	120371	120371	1720371	110021	190371	120367	120367	120367	120371	120371	120371	120371	120367	120371	120381	120371	120371	120371	1264465	120371	120371	120381	120371		pinion,		0 00000 0	n orrea DI
HOES		Left Hand	65222	65230	65227	126457	65227	65227	65227	65230	65230	65230	65230	65230	69230	00232	06260	66200	65200	65200	65200	65232	65232	65232	65230	65222	65227	65238	65230	65227	65230	126462	65232	65232	65232	65227		16 tootn		toh and th	TULI GIU UN
BRAKE S	Cat.	Right Hand	65206	65228	65226	126456	65226	65226	65226	65228	65228	65228	65228	65228	0.0228	15200	02260	85996	65186	65186	65186	65231	65231	65231	65228	65206	65226	65236	65228	65226	65228	126461	65231	65231	65231	65226		t motors,		norte arh	THAT ON THAT
		ournal Lining	65216	65202	65202	19279	65202	65202	65202	65202	65202	65202	65202	65202	00202	01200	20200	600200	65212	65212	65212	65210	65210	65210	65202	65216	65202	65202	65202	65202	65202	65202	65210	65210	65210	65202	010	10A 0.02 '		+ contact	IL CULLER
AT. NO.	-	Box]	65194	65184	65184	19171 1	65184	65184	65184	65184	65184	65184	65184	65184	100134	00100	10104	65184	65190	65190	65190	65188	65188	65188	65189	65194	65184	65184	65184	65184	65184	65184	65188	65188	65188	65184		3, 2 turn	. 190061 .0	in all her	TTO TTO TTT
0		Wheels and Axle	120189	120023	120157	120283 1	120214	120041	1200091	120044	120044	120044	120044	120044	1200449	190161	101071	120103	120023	120023	119940	120142	120142	120142	190149	120191	120009	120079	119964	120055	120160	119953	120142	120142	120142	120055	TTAF 70	N WH U	it flance	S VP-44	
MOTIVE		Rating	LM-103-F-1	LM-106-B-1	LM-106-B-1	LS -202-A-1	LM-101-C-2	LM-106-C-1	L M 909 B 1	LM-104-D-1	LM-104-D-1	LM-104-D-1	LM-104-D-1	LM-104-D-1	LM-104-D-1	2-X-101-W1	6 8 606 W J	L.M.101-I.1	LM-103-A-1	LM-103-A-1	LM-103-A-2	LM-101-R-2	LM-101-R-2	LM-101-R-2	L-M-101-M-1	LM-103-G-2	LM-101-L-1	LM-202-B-1	LM-101-M-1	LM-101-B-2	L M-104-C-1	LM-509-A-2	LM-101-R-2	LM-101-R-2	LM-101-R-2	LM-101-B-1	taine Bonneimon	equipped with	r wheels witho	Teel-came a	
TOCC	-	Serial Number	2294	2293-90	2298	2299	2300	2301	2302	2305	2306	2307	2308	2309	2310	21-1107	0314	2315	2316	2317	2318	2319	2320	2321	2394-95	2326	2327-36	2337	2338-41	2342	2344-51	2352	2353-55	2356	2357	2358	* T 040	+ Later	t Cente	& Sneria	

MINE AND INDUSTRIAL HAULAGE SUPPLIES

	Cable	Type	None VR-B5 VR-B5 None None None None VR-A4 None VR-A4 None None None None None None None None	None
	1	Trolley Type	US-4 US-2 US-2 US-2 US-4 US-4 US-4 US-4 US-4 US-4 US-4 US-4	None
	Con-	Type	R-86-B R-	R-77-A K-13-A
TEOSTAT		Con- nection Diagram	D.S. 1554 D.S. 1554 D.S. 15793 D.S. 1471 D.S. 1471 D.S. 1537 D.S. 1537 D.S. 1537 D.S. 1537 D.S. 1537 D.S. 1537 D.S. 1552 D.S. 1557 D.S. 15570 D.S. 15570 D.S. 15570 D.S. 15570 D	D.S. 8205
RH		Type		CG
	Gear	Case Cat. No.	52585 52585 52585 52585 52585 52585 51985 51985 51985 51985 51985 51985 51985 51985 51985 51985 51985 52585 52585 52585 50440 50400 504400 504400 50400000000	38622
	Dia.	of Axle	anananananananananananananananana a K K K K K K K	in c
	Teeth	in Gear	* 60 * 7 * 7 * 7 * 7 * 7 * 7 * 7 * 7	69
	Teeth	Pinion	***************************************	16
		Vol- tage	500 250 550 550 550 550 250 250	250
OTORS		Arma- ture Turns	4 ° ° ° ° ° ° ° ° ° ° ° ° ° ° ° ° ° ° °	
M		Type	GE-53 GE-73 GE-79 GE-79 GE-79 GE-79 GE-79 GE-71 GE-71 GE-71 GE-71 GE-71 GE-71 GE-71 GE-71 GE-71 GE-73 GE-77 GE-77 GE-77 GE-77 GE-77 GE-78 GE-77 GE-78	GE-51
AL GS	10	Luside	65128 65128 65128 65124 65124 65124 65124 65124 65124 65124 65124 65124 65124 65124 65124 65124 65124 65124 65124 65124 65128 65124 65128 655128 6555	119749
JOURN	Cat N	Outside	65127 65127 65127 65127 65101 65101 65101 65101 65101 65101 65101 65101 65101 65101 65101 65127 65101 65127 65101 65127 651210 651210 651210 6512000000000000000000000000000000000000	119748
SHOE	No	Left Hand	120382 120372 12	120395
BRAKE	Cat	Right Hand	120351 120371 120371 120371 120371 120371 120371 120371 120371 120371 120371 120371 120371 120371 120371 120371 120371 120377 12	120394
SHOES	No.	Left Hand	120343 120343 65230 65230 65527 65527 65527 65527 65523 6552	126455
BRAKE	Cat.	Right Hand	120342 65228 65228 65228 65226 65226 65226 65226 65226 65226 65226 65226 65226 65226 65226 65226 65226 65228 65528	126454
		Journal Lining	65202 65202	119913
CAT. NO.		Journal Box	65184 65584 65584665584 65584 65584 65584665846 65584665866684665866668668666686666686666686666666666	119171
0		Wheels and Axle	120087 119967 119967 119967 120041 120041 120055 119946 119946 119946 119946 119946 119946 119946 119946 119946 119946 119946 119946 119965 119965 119965 120079 120079 120055 120069 120055 12	120291
MOTIVE		Rating	LM-104-B-2 LM-101-M-1 LM-101-M-1 LM-101-M-1 LM-101-M-1 LM-101-M-1 LM-101-L-1 LM-101-L-1 LM-101-B-1 LM-101-C-2 LM-101-B-1 LM-101-C-2 LM-101-C-2 LM-101-C-2 LM-101-C-2 LM-101-C-2 LM-101-C-2 LM-101-C-2 LM-101-C-1 LM-10-C-1 LM-10	LS -210-C-1
LOCO		Serial Jumber	2359 2360-62 2386-66 2386-71 2385-66 2385-71 2377 2377 2377 2377 2377 2377 2377 23	2433

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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.

		Cable	Type		None	None	None	VR-B7	None	None	Nono	Nono	Nono	None	Manue	None	None	M	None	None	None	VR-B7	None	None	None	VR-B8	None	None	None	None	VR-C4	VR-C4	VR-C4	VR-C4	VR-C4	None	VR-C4	VR-C4	VR-C4	VR-C4	VR-C4	None	None	None	None	None
		Profley	Type		D-4	US-2	D-4	D-4	D-4	1-4 1-4									# t	4-1 4-1	1-4 2	D-4	D-4	D-4	None	s	D-4	D-4	D-4	D-4	D-4	D-4	4-1 7	D-4	D-4	D-4	D-4	None	D-4	D-4	D-4	D-4	0-SU	c	D-4	D-4
	-	Con-	Type	_	R-77-A	R-86-B	R-86-B	R-86-D	R-86-A	R_86_B	D B G C	D 26 D	2-00-M	D 98 0	V 46 Q	V 65 Q	V 98 Q	0 00 D	0-00-V	D-00-N	G-00-N	K-86-B	R-86-B	R-86-B	R-14-A	R-86-B	R-86-A	R-14	R-37-B	R-86-A	R-86-B	K-86-B	d-00-M	R-86-B	R-60-C	R-60-C	R-60-C	R-86-A								
	TEOSTAT	Service Service	Con- nection Diagram		D.S. 1563	D.S. 1945	D.S. 1802	D.S. 1552	D.S. 1537	D.S. 1945	D S 5618	*	D S 4798	D S 4805	D C 1456	D C 5610	DIS 1544	D C 1597	D.C. 1249	D C 1471	D.0. 14/1	D.S. 1802	D.S. 1471	D.S. 1432	D.S. 1471	D.S. 8147	D.S. 1537	D.S. 2956	D.S. 1530	D.S. 8093	D.S. 8096	D.S. 8096	D.S. 8006	D.S. 8096	D.S. 8096	D.S. 8096†	D.S. 8096	D.S. 8093	D.S. 4801	D.S. 3318	D.S. 4799	D.S. 1543				
	RH		Type		Pr	Pr	Pr	Pr	Pr	Pr	Dr.	Dr.	p.	D.	- D-	D.	D.	De	- D-	I I	5 4	4	Pr	Pr	Pr	IG	Pr	Pr	Pr	IG	IG	50	101	IG	CG	Pr	Pr	Pr								
		Gear	Cat. No.		50440	51985	51985	39381	49558	51985	50440	51085	59585	100000	202001	50440	50440	30598	20281	LOUGO	LOOLS	CONTO	50440	52585	52376	43391	49558	100090	52585	52585	39528	239228	30528	39528	39528	39528	39528	39528	39528	39528	39528	52585	38622	17140	52585	39381
		Dia.	Axle		4	<i>c</i> 2	en	41/4	4	3	4		414	9.8%	* 6	4	4	4	417	4/4	нс	0 4	4	41/4	4	4	4	234	414	41/4	4 •	4 •	4 4	4	4	4	4	4	4	4	4	4 1/4	41/2	4	4	414
		Teeth	Gear		69	99	99	81	69	66	69	66	69	28	99	69	69	67	5 6	60	00	00	60	69	67	69	69	58	69	69	19	10	67	67	67	29	67	67	67	67	67	69	69	29	69	81
		Teeth	Pinion		15	14	14	14	15	14	15	14	15	14	14	12	15	14	14	1 10	14	# #	10	15	14	14	15	14	15	15	14	14	14	14	14	14	14	14	14	14	14	15	16	14	15	14
			Vol- tage		500	500	250	500	250	500	250	250	250	125	250	250	250	250	250	200	950	200	000-	0002	200	250	250	200	500	250	250	067	250	250	250	250	250	250	250	250	250	250	500	110	250	250
	OTORS		Arma- ture Turns		9	17	10	4	3	17	2	10	2	2	2	5	5		4		10	9	0 *	4 0	9		~~ ;	26	4	21 0	no c	~ ~	0 00	ŝ	ŝ	3	ŝ	ŝ	3	3	3	53	4	1	63 .	4
	M		Type		GE-58	CB-14	CB-14	GE-61	GE-59	CB-14	GE-58	CB-14	GE-53	NWP24	GE-53	GE-58	GE-58	GE-77	GE-61	GE-58	CB 14	CT KO	00-45	00-20	09-HD	GE-79	GE-59	NWP23	GE-53	GE-53	11-20	1-40	GE-77	GE-53	GE-51	GE-800	GE-53	GE-61								
NAL	NGS	No.	Inside		65128	None	None	65128	65132	None	65128	None	65128	None	65128	65128	65128	None	65128	65132	None	62139	20100	02100	65124	65124	65132	None	65128	65128	42100 42100	12100	65124	65124	65124	65124	65124	65124	65124	65124	65124	65128	None	None	65128	65128
JOURI	SPRIM	Cat.	Outside		65127	65129	65129	65127	65131	119721	65127	65129	65127	65135	65127	65127	65127	65126	65127	65131	65190	65121	10100	17100	10109	65101	65131	119726	65127	12169	10100	10100	65101	65101	65101	65101	65101	65101	65101	65101	65101	65127	119727	119728	65127	12109
SHOE	DS	No.	Left Hand		120372	120368	120368	120391	120368	None	120372	120368	120382	None	120382	120372	120372	120372	120391	120372	120368	120379	190906	000071	1203/2	1203/2	1203/2	None	120435	120352	190210	120372	120372	120372	120372	120372	120372	120372	120372	120372	120372	120382	120395	120376	120435	120384
BRAKE	HEA	Cat.	Right Hand		120371	12030/	120367	120390	120367	None	120371	120367	120381	None	120381	120371	120371	120371	120390	120371	120367	120371	190325	100001	175021	120371	1/203/1	None	120434	10001	190371	120371	120371	120371	120371	120371	120371	120371	120371	120371	120371	120381	120394	120375	120434	120353
SHOES	No.		Left Hand		65230	00200	65200	65240	65200	120319	65230	65200	65238	65957	65238	65230	65230	65232	65240	65227	65200	65230	65935	66000	17700	17700	177001	120300	00230	002230	65930	65230	65230	65230	65230	65230	65230	65230	65230	65230	65230	65238	120364	120331	65235	07200
BRAKE	Cat.		Right Hand		65228	00100	09100	65239	65186	120318	65228	65186	65236	65956	65236	65228	65228	65231	65239	65226	65186	65228	65934	20700	07700	07700	077001	CUCU21	62002	00700	65998	65228	65228	65228	65228	65228	65228	65228	65228	65228	65228	65236	120363	120330	65234	11700
			Journal Lining	-	20200	71700	21200	65202	65202	65212	65202	65212	65202	65212	65202	65202	65202	65208	65202	65202	65212	65202	65202	665909	00700	20200	2020011	61000	20200	20200	65202	65202	65202	65202	65202	65202	65202	65202	65202	65202	65202	65202	119279	1192/7	652UZ	02200
	AT. NO.		ournal Box		100122	DATAD	OATCO	65184	65184	65190	65184	65190	65184	65190	65184	65184	65184	65187	65184	65184	65190	65184	65184	65184	10100	10100	10160	00161	10100	10100	65184	35184	35184	35184	35184	55184	55184	55184	05184	35184	55184	35184	12161	60161	10104 108	00100
	U U	-	Wheels J and Axle		001021	1100101	07661T	CRAATT	120010	119940	120160	119977	120242	119917	120230	120160	120160	120202	1199996	120215	126377	120259	120231	120059	110040	190005	110055 1	1 001001	190018	120011	120011	120011	120011	120011	120011	120011	110021	120011	110071	120011	120011	120018	120289 1	1 90162	190000	000071
	HALLOW		Rating		T M 109 A 9	P-V-COL IN I	T-W-COL-MIT	2-A-4-104-A-2	LM-106-C-1	LM-103-A-2	LM-104-C-1	LM-103-A-1	LM-202-B-1	LM-105-B-3	LM-202-B-1	LM-104-C-1	LM-104-C-1	LM-101-R-1	LM-104-A-1	LM-106-B-2	LM-103-A-1	LM-106-B-2	LM-202-B-2	LM-101-B-2	1. M-101-M-1	I.M. TOR C 1	L-M-105-4-9	L.M.109-B 9	LM-104-B-1	LM-101-1-1	LM-101-L-1	LM-101-L-1	LM-101-L-1	LM-101-L-1	1-7-101-W7	1-1-101-W7	1-1-101-W1	1-7-101-W7	1-7-101-WT	1-7-101-W7	1-7-101-W7	LM-104-B-1	Lo -209-A-2	L.M.109_B.1	LM-104-F-1	
	FOCI		Serial Number	10 0010	9498	0420	0110	2440	2441-42	2444	2445	2446-47	2448-49	2450	2451	2452	2453	2454	2460-61	2462	2463	2465	2466	2467	2468	2460	2470	2471	2472	2473-74	2475-76	2477-79	2480-81	2482-83	2484	2400 00	06-6017	26-1657	5400 - 040	0406	2490	1847	2409	2500	2501	

MINE AND INDUSTRIAL HAULAGE SUPPLIES

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

				_										_	_				_										_			_	_								
	Cable	Type		None	None	None	None	VR-A8	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	VR-C4	None	None	VR-A8	None	VR-C4	VR-B9	VR-B9	None	None	
10		Trolley Type		D-4	US-2	D-4	D-4	US-2	US-2	US-6	US-8	US-8	D-4	D-4	D-4	‡ D-4	D-4	D-4	D-4	US-2	None	US-2	c	US-2	D-4	4-U	D-4	D-4	D	US-6	4-U	# - C	D-4	D-4	D-4	D-4	D-4	D-4	D-4	US-6	2
	000	Type		R-86-A	R-86-B	R-77-A	R-86-B	R-86-B	R-60-C	R-86-A	R-86-B	R-86-B	R-86-B	R-86-A	R-86-B	R-86-B :	R-86-B	R-86-B	R-86-B	K-6	R-14	R-86-B	R-86-B	R-86-B	R-86-B	R-86.B	R-60-C	R-60-C	R-86-B	R-86-B	K-86-B	R-86-A	R-86-D	R-86-A	R-37-B	R-37-B	R-86-B	R-86-B	R-86-B	R-86-B	
	IVIS	Con- ection iagram		S. 1543	S. 5915	S. 1553	S. 1553	S. 1471	S. 4798	S. 2111	S. 1537	S. 1554	S. 1802	S. 1537	S. 1945	S. 5793	S. 1802	S. 1802	S. 1471	S. 3343	S. 1471	S. 1945	S. 5793	S. 7981	S. 1945	S 1471	S. 8496	S. 8897	S. 1802	5. 3072	5. 14/1	0. 1950 8441	5. 1552	5. 8495	5. 1537	5.12953	5. 1471	3. 1537	5. 5793	5. 3072	
	KHEO	Type D		Pr D.	Pr D.	Pr D.	Pr D.	Pr D.	Pr D.	Pr D.	Pr D.	Pr D.	Pr D.	Pr D.	Pr D.	Pr D.	Pr D.	Pr D.	Pr D.	CG D.	Pr D.	Pr D.	Pr D.	Pr D.	Pr D.	Pr D.	Pr D.	IG D.	Pr D.	Pr D.			Pr D.S	C D.S	Pr D.S	IG D.	Pr D.	Pr D.	Pr D.	Pr D.S	
	Goor	Case at. No.		39381	50440	50440	50440	52376	52585	52585	52376	52585	51985	49558	51985	43391	51985	51985	52376	50249	52376	51985	43391	49558	51985	52376	52585	49607	51985	52376	39528	49558	39381	49558	52376	39528	39528	39528	43391	52376	
	Die	Azle C.		414	4	4	4	4	414	41/4	4	41/4	3	4	3	4	3	3	4	41/2	4	3	4	4	m ₹	4 4	414	5	3	4.	4 1 1	4 4	41/	4	4	4	4	4	4 •	1 4	
	Tooth	Gear		81	69	69	69	67	69	69	67	69	66	69	66	69	99	99	67	69	67	66	69	69	66	67	69	72	99	67	10	69	81	69	67	67	67	19	69	67	-
	Teeth	Pinion		14	15	15	15	14	15	15	14	15	14	15	14	14	14	14	14	16	14	14	14	15	14	14	15	15	14	14	14	12	14	15	14	14	14	14	14	14	
		Vol- tage	_	250	500	500	500	500	250	250	250	500	250	250	500	250	250	250	500	250	500	500	250	500	500	200	250	500	250	250	200	250	500	250	250	500	500	250	200	250	
TOPC	SNULL	Arma- ture Turns	-	4	9	9	9	9	67	5	3	4	10	3	17	e	10	10	9	5	9	17	ŝ	9	17	0 c	2	67	10	m .	00	ç «	4	3	en	9	9	~ ~ ~	ю с	ററ	
	W	Type		3E-61	3E-58	GE-58	GE-58	3E-60	GE-53	GE-53	3E-60	GE-53	CB-14	GE-59	CB-14	3E-79	CB-14	CB-14	GE-60	GE-57	GE-60	CB-14	GE-79	GE-59	CB-14	3E-60	GE-53	3E-97	CB-14	GE-60	11-10	GE-59	GE-61	GE-59	GE-60	3E-77	3E-77	3E-77	JE-19	GE-60	
7.0		o. nside	_	35128	55128	55128 0	55128 (Vone (55128 0	55128 0	55124 (55128 (Vone (35132 (Vone (35124 (Vone (Vone (Vone	19745	35124	Vone	35124	35132	Vone	55124	35128	35128	Vone	55124	Vone V	55132	35128	35128	35124 (35124 (Vone	Vone	47100	5124 (-
JOURNA	ONINAS	Cat. N utside		55127 6	55127 6	35127 6	35127 6	35126 I	35127 6	65127 (55101 (55127 (55129 I	55131 (65129 I	65101 6	65129 1	65129 I	65126 1	19744 1	65101 (65129 1	65101	65131	65129 I	65101 6	65127 (65127 (65129	10129	1 02100	65131 6	65127 (65127 (65101 (65101 (65126	65126 I	INTCO	65101 (_
HOE		o. Left Hand O	_	20384	20378	20372	20372	20372	20386	20368	20372	20382	None	20372	20368	20372	20368	20368	20372	20395 1	120372	20368	120372	120372	20368	20372	120435	120391	120368	120376	Vione 1	120372	120391	120372	120372	20372	20372	20372	210021	20376	-
RRAKE S	UNAH C	Right 1 1		120383 1	120377 1	20371 1	120371 1	120371 1	120385 1	120367 1	120371 1	120381 1	None 1	120371	120367]	120371	120367	120367]	120371	120394]	120371	120367	120371	120371	120367	120371	120434]	120390	120367	120375	T I CUAL	120371	120390	120371	120371	120371	120371	120371	110021	120375	
HOES	0.	Left . Hand	-	65246	20335	65230	65230	65232	65235	65200	65227	20343	20321	65227	65200	65227	65200	65200	65232	126457	65227	65200	65227	65230	652200	65227	65235	65243	65200	620331	26260	65230	65240	65230	65227	65230	65232	65232	00200	120331	
BRAKE SI	Cat. N	Right Hand		65244	20334 1	65228	65228	65231	65234	65186	65226	20342 1	20320 1	65226	65186	65226	65186	65186	65231	26456	65226	65186	65226	65228	65931	65226	65234	65242	65186	65021	1070202	65228	65239	65228	65226	65228	65231	65231	002200	20330	
		urnal		55220	9278 1	5202	5202	5208	5202	55212	5202	5202 1	5212 1	5202	5212	55202	55212	5212	55208	9279	55202	55212	55202	55202	52120	35202	35202	35202	55212	8/261	01200	35202	35202	35202	35202	35202	55210	55210	35908	19278	
NO.		urnal Jc Sox L		198 6	11 0210	184 6	184 6	187 6	184 6	061	184 6	184 6	190 6	184 6	190 6	184 6	190 6	0619	187 6	11 11	5184 C	190 6	184 6	184 6	0610	5184 6	5184 6	5184 6	190 6	1 0/16	1158 11	5184	5184 6	5184 6	5184 6	5184 6	188	5188 C	1010	11 0216	
747	TV)	eels Jou id tle	-	000 65	449 119	112 65	112 65	296 65	281 65	940 65	059 65	087 65	972 65	010 65	940 65	946 65	942 65	940 65	1269 65	283 119	0059 65	9177 65	946 65	0063 65	142 65	0059 65	0121 65	0236 65	9977 65	1149 6 ²	99.55 11 C	0042 65	9953 65	0044 65	0047 65	0000 65	0142 65	0142 00	12.02 65	0074 119	
		Wh ar As		.1 12(2 121	2 120	2 120	2 120	1 120	1 118	1 120	2 120	1 116	1 120	2 119	-1 118	1 118	11 116	-2 120	-1 120	-2 120	-2 118	-1 11	121 2-	11 12	-2 120	.1 12(-2 120	11 11	21 1-	21 2	-1 12	2 11	-1 12(-1 120	-2 12	121 2-	-1 17	-1 120	-1 120	
AUTOM	TATION	Rating		LM-104-E-	LS -204-C-	LM-104-C-	LM-104-C-	LM-101-T-	LM-202-B-	LS -204-B-	L M-101-B-	L M-104-B-	L M-103-A-	LM-106-C-	L M-103-A-	LM-101-M	LM-103-A-	LM-103-A-	LM-101-T-	LS -202-A-	LM-101-B.	LM-103-A-	LM-101-M	L.M-106-C-	LM-101-R-	LM-101-B-	LM-104-B-	LM-202-D	LM-103-A-	I.M.101-P.	L M-105-A-	LM-106-C-	L M-104-A-	LM-104-D	LM-101-B.	LM-101-L	N-101-101	N-101-W 1	W-101-W1	LS -401-B-	
1 000	FOCO	Serial		2502 1	2503	2504	2505	2506	2507	2508-09	2510	2511	2512	2513	2514	2515	2516	2517-19	2520	2521	2523	2524-26	2527	2028-29	2531	2532	2533	2534	2535-36	2001-08	2541-42	2543-44	2545	2546	2550	2551	2002-03	2004	2556-63	2564-66	-

* 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.

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GENERAL ELECTRIC COMPANY

	Cable	Type	VR-A8 VR-B7 MVR-	None None VR-C4 VR-C4	VR-C4 VR-C4 VR-C4 VR-C4	VR-C4 VR-C4 None VR-C4	None VR-A8 VR-A8	None VR-B7 None None None	None None None None None None None None	None None
	Trollev	Type	N D-4 D-4	D-4 D-4 D-4		4 4 4 4	0 0 4-0 4-0 0 4-7-0	4-0 4-0 4-0 4-0 4-0	D 4 D 4 D 4 D 4 D 4 D 4 D 4 D 4 D 4 D 4	н <u>1</u> О 4- О 4- Ф
	Con-	Type	R-37-B R-86-B R-86-B	R-60-C R-60-C R-86-B R-86-B	R-86-B R-86-B R-86-B R-86-B R-86-B	R-86-B R-86-B R-86-A	R-86-A R-86-A R-86-A R-86-A	R-86-A R-86-B R-86-B R-86-B R-86-A R-86-D	R-86-B R-86-A R-86-A R-86-A R-86-A R-86-B R-	R-86-B R-86-B
COSTAT		Con- nection Diagram	D.S. 1537 D.S. 5793 D.S. 1537*	D.S. 9751 D.S. 4798 D.S. 8495 D.S. 8495	D.S. 8495 D.S. 8495 D.S. 8495 D.S. 8495 D.S. 8495	D.S. 8495 D.S. 8495 D.S. 8693 D.S. 8693	D.S. 1544 D.S. 1537 D.S. 1553	D.S. 1537 D.S. 5793 D.S. 1553 D.S. 1553 D.S. 1552 D.S. 1552	D.S. 1432 D.S. 1537 D.S. 1537 D.S. 1537 D.S. 1537 D.S. 1537 D.S. 1537 D.S. 1537 D.S. 1557 D.S. 1553 D.S. 1553 D.S. 15537 D.S. 15734	D.S. 1945 D.S. 1945
RHE		Type	Pr Pr Pr	0 L U U	00000	00004	Pr Pr	Pr Pr Pr	2222222222222222	Pr Pr
	Gear	Cat. No.	39528 43391 39528	52585 52585 39528 39528	39528 39528 39528 39528	39528 39528 52585 39528	49560 39528 49558	49558 43391 50440 49558 39381	52585 52585 43391 49558 51985 50440 50440 50440 51985 50440 51985 50440 50788 50440 507885 507885 507885 507885 507885 507885 507885 507885 507885 507885 507885 507885 507885 507885 507885 507885 507885 507885 507885 507885 50755 507555 507555 507555 507555 507555 50755555 50755555 50755555555	51985 51985
	Dia.	ot Axle	4 4 4	414 414 414 4	4 4 4 4 4	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	* 4 4 4	4 4 4 4 4 1 1 1 1 1 1 1 1 1 1 1 1	本 4 4 4 9 0 4 4 4 9 0 4 4 4 20 え	~~ ~~
	Teeth	Gear	67 69 67	69 67 67	67 67 67 67	67 69 69	69 69	69 69 69 81	69 69 67 67 69 69 69 69 69 69 69	66 66
	Teeth	Pinion	14 14 14	15 15 14 14	14 14 14 14	14 15 15	15 14 15	15 14 15 15 14 15	15 14 14 14 15 15 15 15 15 15 15	14 14
		Vol- tage	250 250 250	250 250 250 250	250 250 250 250	250 250 250	250 250 500	250 250 250 250	500 500 500 500 500 500 500 500 500 500	500
OTORS		Arma- ture Turns	ოოო	00 00 10				იი 0 ↔ 4	4	17 17
M	-	Type	3E-77 3E-79 3E-79	3E-53 3E-53 3E-77 3E-77	3E-77 3E-77 3E-77 3E-77	CE-77 CE-77 CE-53	GE-59 GE-77 GE-59	5E-59 5E-79 5E-79 5E-58 5E-61	3 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	CB-14 CB-14
2.	-	iside	5124 (5124 (5124 (5128 5128 5128 5124 5124	5124 (5124 (5124 (5124 (5124 (5124 (5124 (5128 (5128 (5128 5128 5128 5128	5132 5124 5128 5128 5132 5132 5128	55128 55124 55124 55124 55124 55122 55122 55122 55122 55122 55122 55122 55122 55122 55122 55122 55122 55122 55122 55123 55125 55123 551255	one (
OURNAI	Cat. No	side	101 6 101 6 101 6	127 6 127 6 101 6 101 6	101 6 101 6 101 6 101 6 101 6 8	101 6 101 6 127 6 127 6	127 6 127 6 127 6	131 6 101 6 127 6 131 6 127 6 127 6	127 6 101 6 131 6 121 101 6 101 6 101 6 101 6 101 6 101 6 101 6 101 6 131 6 131 6 131 6 101 6 101 6 101 6 101 6 127 6 127 6 127 6 127 6 127 6 127 6 127 6 127 6 127 7 128	129 N
		Outs	2 65 65 65	2 2 2 65	2 12 12 12 12 12 12 12 12 12 12 12 12 12	0.0000	82 82 8 5 7 7 7	1 2 2 5 6 2 2 5 1 1 2 3 5 1 1 2 3 5 1 2 3 1 2 3 1 2 3 1 2 3 1 2 3 1 2 3 1 2 3 1 2 3 1 2 3 1 2 3 1 2 3	1 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	8 651 8 651
ADS ADS	No.	Left Hand	12037 12037 12037	12038 12038 12037 12037 12037	12037 12037 12037 12037 12037	12037 12037 12038 12038	12037 12037 12037 12037	12037 12037 12037 12037 12037 12039	12035 12037 12037 12037 12037 12037 12037 12037 12037 12037 12037 12037 12037 12037 12037	12036
BRAKE	Cat.	Right Hand	120371 120371 120371 120371	120381 120381 120371 120371	120371 120371 120371 120371 120371	120371 120371 120371 120381 120381	120371 120371 120371 120371	120371 120371 120371 120371 120390	120351 120351 120371 120367 120367 120367 120371 120371 120371 120371 120371 120371 120370 120371	120367
SHOES	No.	Left Hand	65227 65230 65227	65238 65238 65230 65230	65230 65230 65230 65230 65230	65230 65230 65238 65238	65227 65227 65227 65230	65230 65230 65230 65230 65230 65240	65238 65230 65227 65227 65227 65227 65230 65230 65230 65230 65230 65233 65230 65233	65200 65200
BRAKE	Cat.	Right Hand	65226 65228 65228 65226	65236 65236 65228 65228	65228 65228 65228 65228 65228	65228 65228 65236 65236	65226 65226 65228 65228	65228 65228 65228 65228 65228	65228 65228 65228 65228 65228 65228 65228 65228 65228 65228 65228 65228 65228 65228	65186 65186
		Journal Lining	65202 65202 65202	65202 65202 65202 65202	65202 65202 65202 65202 65202	65202 65202 65202 65202	65202 65202 65202	65202 65202 65202 65202 65202	65202 65202 65202 65202 65202 65202 65202 65202 65202 65202 65202 65202 65202 65202	65212 65212
AT. NO.		ournal Box	65184 65184 65184	65184 65184 65184 65184 65184	65184 65184 65184 65184 65184 65184	65184 65184 65184 65184	65184 65184 65184 65184	65184 65184 65184 65184 65184 65184	65184 65184 65184 65184 65184 65184 65184 65184 65184 65184 65184 65184 65184 65184	65190 65190
0		Wheels J and Axle	120009 119964 120009	120079 120079 120011 120011	120011 120011 120011 120011	120011 120011 120018	120041 12009 120044	120063 119965 120160 120113 119996	120080 119990 120063 120159 120159 120161 120161 120161 119978 120163 120052 120063 120052 120182	119977
MOTIVE		Rating	LM-101-L-1 LM-101-M-1 LM-101-M-1	LM-202-B-1 LM-202-B-1 LM-101-L-1 LM-101-L-1	L-1-101-MJ L-1-101-MJ L-1-101-L-1 L-M-101-L-1	LM-101-L-1 LM-101-L-1 LM-104-B-1 LM-101-L-1	LM-104-D-1 LM-101-L-1 LM-104-D-2	LM-106-C-1 LM-101-M-1 LM-104-C-2 LM-104-C-2 LM-106-C-1 LM-104-A-2	LM-202-B-2 LM-202-B-2 LM-101-M-1 LM-101-C-1 LM-101-C-1 LM-101-L-1 LM-101-L-1 LM-101-L-1 LM-106-B-2 LM-106-C-2 LM-106-C-2 LM-104-C-2 LM-101-L-1 LM-101-L-1 LM-101-L-1 LM-101-L-1 LM-101-L-1 LM-202-D-2	LM-103-A-2 LM-103-A-2
LOCC	-	Serial Number	2567 2568–69 2570–71	2572 2573 2574 2575	25776 2577-85 2586-89 2590 2590	2592 2593-94 2595 2596	2599 2599 2599- 2600	2601 2602 2603 2603 2606 2606	2607-08 2615 2616-18 2619 2619 2620 2621 2621-27 2628-29 2631-33 2634-35 2637 2637 2637 2637 2638	2639-40 2641

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

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MINE AND INDUSTRIAL HAULAGE SUPPLIES

LOC	OMOTIVE		CAT. NO.		BRAKE	SHOES No	BRAKE HRA	SHOE	JOURN SPRIN	AL	MO	TORS					×	HEOSTAT			
		1					Cat.	No.	Cat. N	Io			L	eeth Te	eth D	ia. Gea			Con-	Trolley	Cable
Serial umber	Rating	Wheels and Axle	Journal Box	Journal Lining	Right Hand	Left Hand	Right Hand	Left Hand	Outside	Inside	Type 1	ture ture	Vol- P	inion G	ear A	xle Cat. N	Io. Type	Con- nection Diagram	Type	Type	Type
Sur 1								- Interest					-	-		-	-				
2642	LM-105-C-1	120019	65190	65212	65958	65959	None	None	65130	None	CB-15	16	250	14 6	6 2	34 5198	35 Pr	D.S. 2957	R-86-B	D-4	None
2643	LM-202-B-1	120281	65184	65202	65234	65235	120385	120356	65127	65128	GE-53	63	250	15 6	9 4	14 525	35 Pr	*	R-60-C	US-2	None
CP-4407	1-A-FUI-M-1	ORGETT	69164	20202	65239	65240	120390	120391	65127	65128	GE-61	4	250	14 8	1 4	14 3938	31 Pr	D.S. 1543	R-86-C	D-4	None
2040	1-9-101-W-1	600021	65184	20209	65226	65227	120371	120372	65101	65124	GE-60	3	250	14 6	7 4	523	76 Pr	D.S. 1537	R-86-B	D-4	None
2647-48	LM-103-A-1	119940	06129	65212	65186	65200	120367	120368	65129	None	CB-14	10	250	14 6	6 3	5198	85 Pr	D.S. 1802	†R-86-B	D.4	None
2654	LM-104-A-2	1199955	65184	65202	65239	65240	120390	120391	65127	65128	GE-61	4	500	14 8	1 4	14 393	31 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	5	250	15 6	9 4	14 525	35 Pr	D.S. 4798	R-60-C	D-4	None
2656-57	LM-101-L-1	120003	65184	65202	65226	65227	120371	120372	65101	65124	GE-77	<i>c</i> 2	250	14 6	1 4	395:	28 Pr	D.S. 1537	R-86-B	D-4	VR-A8
2658-59	LM-101-M-1	119964	63184	65202	65228	65230	120371	120372	65101	65124	GE-79	ŝ	250	14 6	9 4	433)1 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	ŝ	250	14 6	7 4	395	28 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 6	9 4	14 525	35 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 6	9 4	433	91 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	ŝ	250	14 6	7 4	523	76 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 6	7 4	395:	28 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	ŝ	250	14 6	7 4	395	28 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	9	500	15 6	9 4	504	40 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	~	250	14 6	7 4	523	76 Pr	D S 1537	R_86_B	D.4	Nono
2671	LM-103-A-1	119977	65190	65212	65186	65200	120367	120368	65129	None	CB-14	10	250	14 6	6 3	5198	25 pr	D S 1802	B_86_B	T C	Nono
2672	LM-103-A-1	119977	65190	65212	65186	65200	120367	120368	65129	None	C.B-14	10	250	14 6	0 00	510	25 D+	D S 1809	D 26 B		NTONE
2673	LM-101-L-1	120060	65184	65202	65228	65230	120371	120372	65101	65124	GE-77	9 63	250	14 6	7 4	3955	NA IG	D S 9849	R_86_B		VP CA
2674	LM-105-C-2	119937	65190	65212	65958	65959	None	None	65130	None	CB-15	30	500	14 6	6 2	3/4 5198	85 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	2	500	15 6	9 4	14 525	S5 Pr	D.S. 1432	R-86-B	6-SII	None
2681	LM-105-B-2	119922	65190	65212	65956	65957	None	None	65135	None 1	WP24	26	500	14 5	8	34 1000	90 Pr	D.S. 2956	R-86-B	D-4	VR-R0
2682-83	LM-104-K-1	120277	65198	65220	120340	120341	120379	120380	65223	65224	GE-58	3	250	15 6	9 4	504	to 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	9	500	15 6	9 4	504	10 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	9	500	15 6	9 4	504	to 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 6	7 4	3955	28 Pr	D.S. 1537	R-86-B	D-4	VR-C4
2687-89	LM-104-A-2	1199996	65184	65202	65239	65240	120390	120391	65127	65128	GE-61	4	500	14 8	1 4	14 3938	31 Pr	D.S. 1552	R-86-D	D-4	None
16-0602	1-7-101-WT	600021	65184	65202	65226	65227	120371	120372	65101	65124	GE-77	e	250	14 6	7 4	3955	28 Pr	D.S. 1537	R-86-B	N	VR-A8
4607	T 100 01 101	100000	06160	21200	98169	65200	120367	120368	62129	None	CB-14	17	200	14 6	6 3	5198	35 Pr	D.S. 1945	R-38-A	D-4	None
0101 00	L M 104 D 1	10001	491cq	20200	02228	65230	120371	120372	65131	65132	GE-59	er 1	250	15 6	9 4	495	38 Pr	D.S. 1537	R-86-A	D-4	None
20-1012	1-1-+01-WT	190000	10124	20200	82200	65230	120371	120372	65127	65128	GE-59	~	250	15 6	9 4	4958	58 Pr‡	D.S. 1544‡	R-82-B	None	None
9704 DE	T-T-TOT-INT	GUUU21	100120	20200	02200	12200	1203/1	1203/2	10109	65124	CE-77	m :	250	14 6	7 4	3952	Pr	D.S. 1537	R-86-B	D-4	VR-A8
01-4012	T-V-COL-INT	0766TT	06100	21700	98760	00200	12036/	120368	62129	None	CB-14	10	250	14 6	9	5198	35 Pr	D.S. 1802	R-86-B	D-4	None
0017	1-7-107-INT	RODOT	49100	20200	97700	12200	1203/1	120372	65101	65124	GE-77	m	250	14 6	7 4	3952	Pr	D.S. 1537	R-86-B	D-4	VR-A8
21012	T-T-101-WT	110021	65184	65202	65228	65230	120371	120372	65101	65124	GE-77	e 2	250	14 6	7 4	3952	28 IG	D.S. 8495	R-86-B	D-4	VR-C4
21/02 10	T-0-202-IV-1	120182	60184	65202	65242	65243	126446	126447	65127	65128	GE-97	61	250	15 7	2 5	496()8 IG	D.S. 15388	R-60-C	§ D-4	None
01-6012	T-9-901-IV7	120101	65184	65202	65228	65230	120371	120372	65131	65132	GE-58	3	250	15 6	9 4	504	10 Pr	D.S. 1537	R-86-A	D-4	None
11/2	LM-103-H-2	120240	65194	65216	65206	65222	120367	120368	65129	None	GE-96	9	500	14 6	6 3	1/2 496()6 Pr	D.S. 9898	R-86-B	D-4	VR-C4
2112-11	LM-202-D-2	120182	65184	65202	65242	65243	126446	126447	65127	65128	GE-97	5	500	15 7	2 5	496()8 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 6	9 4	433(91 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 6	6 3	5198	35 Pr	D.S. 1802	R-38-A	D-4	None
																					1

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GENERAL ELECTRIC COMPANY

§ Later equipped with R-109-A.

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

	Cable	Type	None	None	None	None	None	None	None	None	VR-A8	None	None	None	None	None	None	None	None	VR-C4	TUD DO	None	VR-B7	None	VR-A8	VR-C4	None	VR-B7	VR-A8	VR-A8	VR-A8	None	None	None	None	VIC-U4	None	None	None	None	None	VIKAO	None 1	1
	Trolley	Type	D-4	D-4	D-4	D-4	D-4	D-4	D-4	D-4	D-4	D-4	D-4	D-4	D-4	D-4	D-4	1 D.4		1-4 1-4		# C	None	D-4	D-4	D-4	D-4	D-4	D-4	D-4	z	D-4	-4-U	D-4-0	52	4-7 F	4-1 4	4- C	4. Y	4-U	4-U	#-1 +	D-4	
	Con-	Type	R-38-A	R-38-A	R-86-B	R-86-B	R-86-B	R-77-A	R-86-B	R-86-B	R-86-B	C205-A	C205-A	C205-A	R-86-B	R-86-B	R-86-B	R_86_B	D og D	R_86.B	D 00 D	R-86-R	R-86-D	R-86-A	R-86-B	R-86-B	R-86-A	R-86-B	R-86-B	R-86-B	R-86-B	R-60-C	K-86-A	K-86-B	N-00-7	R-00-D	d-00-M	R-80-B	K-60-C	R-86-B	d-08 X	K-31-D	q-02-X	
LEOSTAT		Con- nection Diagram	D.S. 1802	D.S. 1802	D.S. 9936	D.S. 2956	D.S. 1471	D.S. 4807	D.S. 1537	D.S. 1554	D.S. 1537	D.S. 10553	D.S. 10553	D.S. 10553	D.S. 2957	D.S. 9842	D.S. 9842	D.S. 1537	D C 0007	D.S. 9849	D C 9057	D.S. 6700	D.S. 1552*	D.S. 1544	D.S. 1471	D.S. 9898	D.S. 1537	D.S. 10655	D.S. 9842	D.S. 9842	D.S. 9842	D.S. 12734	D.S. 1537	D.S. 9842	10/6 .C.U	D.0. 4042	UU001 .6.U	D.5. 1802	D.S. 8897	D.S. 10588	D.5. 10034	D.0. 3642	D.92 4042	
RH		Type	Pr	Pr	IG	Pr	Pr	Pr	Pr	Pr	Pr	IG	IG	IG	Pr	IG	DI DI	p. d		b C		p.	Pr	Pr	Pr	Pr	Pr	IG	IG	IG	IG	D G	L'L	5	50			L'L	5	51	50	5	10	
(Gear	Cat. No.	51985	51985	51985	51985	39528	49558	52376	52585	39528	49590	49590	49590	100090	39.528	39528	52376	30301	30528	51085	43391	39381	49558	39528	49606	49558	43391	33528	39528	52376	49608	0440	97520	20200	10861	TACCT	COSTC	\$0007 ·	43391	49000	07060	07660	
ż	Dia.	Axle	3	3	3	234	4	4	4	414	4	2	2	22	234	4	4	4	11/	4/4	93/	4 4	414	4	4	31/2	4	4	4	4	4	۰ م	4 -	4 r	0 4	4 4	41 C	0 1	o ,	4	372	1 •	4	
E	Teeth	Gear	66	66	99	66	67	69	67	69	67	81	81	81	58	67	67	67	510	10	99	69	81	69	. 67	66	69	69	67	67	67	72	60	10	77	10	20	00	27	69	00	10	10	
1	leeth	Dinion	14	14	14	14	14	15	14	15	14	16	16	16	14	14	14	14	14	14	14	14	14	15	14	14	15	14	14	14	14	15	01 01	14	11	14	14	14	10	14	14	14	 	
1.5		Vol- I tage	250	250	250	500	500	250	250	500	250	250	250	250	250	250	250	250	200	250	950	500	500	250	500	500	250	250	250	250	250	500	0020	200	007	007	0020	007	000	250	0020	0020	0.07	
TORS	-	ture ture	10	10	10	30	9	ŝ	3	4	3	1	1	1	14	3	~		4	H 03	16	9 6	4		9	9	3	3	3	en	m (cv c	n c	50	10	5 0	0 0		1 0	50	00	00	0	
	-	Type T	 CB-14	CB-14	CB-14	CB-15	GE-77	GE-59	GE-60	GE-53	GE-77	GE-71	GE-71	GE-71	WP23	GE-77	GE-77	GE-60	C.E.G1	GE-77	CB-15	GE-79	GE-61	GE-59	GE-77	GE-96	GE-59	GE-79	GE-77	GE-77	GE-60	GE-97	01-10	00-70 D	12 22	01-40	61-10 0 1 1	1-1-1-	10-10	0 F-19	02-25	11-40	11-25	
SEL		inside	None	None	None	None	None	65132	65124	65128	65124	19747	19747	19747	None 1	None	None	65124	Vone	55124	Vone	65124	35128	35128	35124	Vone	35132	35124	35124	55124	55124	00128	70100	47100	07100	- and	DIION	26190	07100	lone	arro v	10122	17100	
JOURNA SPRING	Cat. N	utside	65129 1	65129 1	65129 1	65130 1	65126 1	65131 (65101 (65127 (65101 (19746 1	19746 1	19746 1	65135 1	19719 1	19719 1	65101 (10739 1	65101 6	65130	65101 (65127 (65127 (65101 (65129 1	65131 (65101 (65101 (65101 6	10120	05127 (10122	10100	17100	1 96178	1 07100	1 22100	17100	02100	1 67100	TOTO	TATO	
S	vo.	Left Hand 0	120368	120368	120368	None	120372	120372	120372	120435	120372	i20389 1	120389 1	120389 1	None	120372 1	120372 1	120372	1 20301	120372	None	120372	120391	120372	120372	120368	120372	120372	120372	120372	120372	126447	210021	210021	121001	190380	000071	000071	11100000	120350	0000071	710071	710071	
BRAKE S HEAD	Cat. N	Right Hand	120367	120367	120367	None	120371	120371	120371	120434	120371	120388	120388	120388	None	120371	120371	120371	120390	120371	None	120371	120390	120371	120371	120367	120371	120371	120371	120371	120371	126446	1/0071	1/2021	12001	190370	190367	100021	044001	190367	100071	10031	110071	
SHOES No.		Left Hand	 65200	65200	65200	65959	65232	65230	65227	65235	65230	120358	120358	120358	65957	65232	65232	65227	65240	65230	65959	65227	65240	65230	65230	65222	65230	65230	65227	65227	65227	65243	00200	17700	62020	62939	85900	62949	01770	00202	000000 85997	100000 85997	19900	
BRAKE S	-	Right Hand	65186	65186	65186	65958	65231	65228	65226	65234	65228	120357	120357	120357	65956	65231	65231	65226	65230	65228	65958	65226	65239	65228	65228	65206	65228	65228	65226	65226	65226	00242	07770	07700	65931	65931	65186	67629	16629	10200	65996	85996	00000	
		Journal Lining	65212	65212	65212	65212	65208	65202	65202	65202	65202	119276	19276	119276	65212	65210	65210	65202	19975	65202	65212	65202	65202	65202	65202	65214	65202	65202	65202	65202	65202	20209	20200	20200	65908	82908	62919	61000	20200	00200 41628	60658	62909	20200	
T. NO.	-	Box	35190	55190	35190	35190	55187	55184	55184	55184	55184	9164	9164]	9164	55190	55188	55188	5184	9163 1	5184	5190	5184	55184	55184	55184	5192	5184	5184	55184	5184	5184	10184	10104	10104	18187	5187	10101	5184	10101	60121	10100	1010	HOT P	
C	-	/heels Jo and Axle	120023	20023	119915 6	120020	20202	120063 6	20059 6	120170 6	120046 6	120091 11	120091 11	120091	119917 6	120103 €	120103 6	120047 6	119951 11	120060	19938	19946	120001 6	120049 6	120053 6	20268	120258	19964 6	120009 6	20009 6	20055 6	20102	00040	00000	90950	86006	10077 6	90926 6	POLOG	100106	BUUUG	00006		
MOTIVE		Rating	LM-103-A-1	LM-103-A-1	LM-103-I-1	LM-105-C-2 1	LM-101-R-2	LM-106-C-1 1	LM-101-B-1	LM-104-B-2	LM-101-L-1	LM-207-B-1	LM-207-B-1 1	LM-207-B-1 1	LM-105-B-1 1	LM-109-A-1	LM-109-A-1	LM-101-B-1	I.M-104-E-2	LM-101-L-1	LM-105-C-1	LM-101-M-2	LM-104-A-2 1	LM-104-D-1	LM-101-L-2 1	LM-103-H-2	LM-106-C-1 1	LM-101-M-1	LM-101-L-1	1-7-101-WT	L.M101-B-1	T M 106 D 1	1 1 1 1 101-W1	1 1-Q-606-W.1	I.M-101-R-1	I.M.101-S-1	T.M.103-A-1	1. M.209.D.2	T.M.101 S.1	L 1-H-201-W.1	T.M.101.M.1	T_M_101_T_1		
LOCC		Serial Number	2724	2725	2726	2727	2728	2729	2730	2731	2732-33	2734	2735	2736	2737-46	2747	2748	2749-50	2751-52	2753	2754	2755	2756-58	2759	2760	2761	2762	2763-65	2766-72	2113-13	81-0112	6117	0017	2783	2784	2785	2786	2787	2788_80	0626	2791-93	2794-95		

* 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.

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MINE AND INDUSTRIAL HAULAGE SUPPLIES

GENERAL ELECTRIC COMPANY

PILOT TABLE FOR LOCOMOTIVES

† 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.

	Type	VR-B7	None	MVR 49-A1	MVR	MVR	49-A1 MVR	49-A1 MVR	49-A1 None	None	VR-A8	None	49-A1	MVR 49-A1	None	None	VR-C4	None	None	None	MVR	49-A1 None	MVR	40-A1 None	None		None	MVR	49-A-1	None
	Type	D-4	D-4	D-4	D-4	D-4	D-4	D-4	D-4	US-2	D-4	US-8	r 1	D-4	D-4	D-4	D-4	D-4	None	D-4	D-4	D-4	D-4	D-4	US-2	~	D-4	D-4		D-4
400	Type	R-86-B	R-86-B	R-86-B	R-86-B	R-86-B	R-86-B	R-86-F	R-86-B	K-6	R-86-F	R-86-B	J-00-V	R-86-B	R-86-B	R114-A	R-86-B	R-86-B	K-80-B	R-86-B	R-86-B	R-86-F	R-86-E	R-86-F	R-77-A	R-86-B	R-86-B	R-86-F		R-86-F
EOSTAT	Con- nection Diagram	D.S. 10655	D.S. 11605	D.S. 10655	D.S. 11653	D.S. 11653	D.S. 11653	D.S. 11653	D.S. 9898	D.S. 8610	D.S. 9842	D.S. 9842	E0001 .0.1	D.S. 11653	D.S. 11448	D.S. 12665	D.S. 9898	D.S. 10659	D.S. 9930	D.S. 10708	D.S. 9842	D.S. 11448	D.S. 12673	D.S. 9842	D.S. [*	12736 14	D.S. 1945	D.S. 9842		D.S. 12607
RH	Type	IG	IG	IG	IG	IG	IG	IG	Pr	CG	DI	51	2	IG	IG	IG	Pr	D C	50	b CI	IG	IG	IG	10	IG		Pr	D DI		IG
	Case Case Cat. No.	43391	51985	43391	39528	39528	39528	39528	49606	50249	39528	52376	00064	39528	63961	39381	49606	51985	51085	50440	39528	65961	39381	39528	49558		51985	49608	Did Lin	50440
	of Axle	4	3	4	4	4	4	4	31%	41/2	4.	4	0/2	4	234	4 1/4	31/2	ст с	53/	4/4	4	28/	41/4	4	4		°° ,	0 4		4
11	in Gear	69	99	69	67	29	29	67	99	69	29	67	20	67	58	81	99	99	99	69	67	58	81	67	69		99	69		69
11.04	l eeth in Pinion	14	14	14	14	14	14	14	14	16	14	14	14	14	14	14	14	14	14	1 1	14	14	14	14	15		14	15		15
	Vol- tage	250	125	250	250	250	250	250	500	250	250	250	0.02	250	250	250	500	250	250	250	250	250	250	950	500		500	500		500
OTORS	Arma- ture Turns	0	10	en .	ŝ	ŝ	ŝ	ŝ	ç	0 01	3		o	ŝ	2	4	9	10	10	01 e		1	. 4	6	9 0		17	en es		9
M	Type	GE-79	CB-14	GE-79	GE-77	GE-77	GE-77	GE-77	GE-96	GE-57	GE-77	GE-60	06-30	GE-77	GE-95	GE-61	GE-96	CB-14	CB-14	GE-13	GE-77	GR-05	GE-61	CF 77	GE-59		CB-14	GE-97 GE-79		GE-58
AL	Inside	65124	None	65124	65124	65124	65124	65124	None	119745	65124	65124	None	65124	None	65128	None	None	None	A5139	None	None	65128	Mone	65132		None	65128		65132
JOURN. SPRING	Cat. N Dutside	65101	65129	65101	65101	65101	65101	65101	65190	119744	65101	65101	62100	65101	65135	65127	65129	65129	65129	00130	65126	65135	65127	65196	65131		65129	65127		65131
SHOE	Vo. Left Hand	120372	120368	120372	120372	120372	120372	120372	190368	120395	120372	120372	120308	120372	None	120391	120368	120368	120368	190379	120380	None	120384	190279	120372		120368	126447		120372
BRAKE S HEAI	Cat. 1 Right Hand	120371	120367	120371	120371	120371	120371	120371	190267	120394	120371	120371	12036/	120371	None	120390	120367	120367	120367	190371	120379	None	120383	190971	120371		120367	126446	-	120371
shoes No.	Left Hand	65230	65200	65230	65227	65227	65227	65227	65900	126457	65227	65227	22209	65227	65957	65240	65222	65200	65200	66930	65232	65057	65246	65990	65230		65200	65243		65230
BRAKE : Cat.	Right Hand	65228	65186	65228	65226	65226	65226	65226	65186	126456	65226	65226	65206	65226	65956	65239	65206	65186	65186	65998	65231	65056	65244	66990	65228		65186	65242		65228
	Journal Lining	65202	65212	65202	65202	65202	65202	65202	65919	119279	65202	65202	69214	65202	65212	65202	65214	65212	65212	21200	65210	65919	65220	6000	65202		65212	65202		65202
AT. NO.	ournal Box	65184	65190	65184	65184	65184	65184	65184	65100	121611	65184	65184	26169	65184	65190	65184	65192	65190	65190	06160	65188	65100	65198	110150	65184		65190	65184	-	65184
0	Wheels J and Axle	119964	120023	119990	120013	120013	120013	120013	110042	120283	120009	120059	120193	120009	119924	1199966	120268	119977	120023	190950	120144	060011	120089	190060	120063		119977	110046		120220
MOTIVE	Rating	LM-101-M-1	LM-103-A-3	L.M-101-M-1	LM-101-L-1	LM-101-L-1	LM-101-L-1	LM-101-L-1	I M.102.W.9	LS -202-A-1	LM-101-L-1	LM-101-B-1	LM-103-L-1	LM-101-L-1	LM-105-E-1	LM-104-A-1	LM-103-H-2	LM-103-A-1	LM-103-A-1	I M 106 B 1	LM-109-A-1	T.M.105.F.1	LM-104-G-1	1 M 100 B 1	LM-106-C-2		LM-103-A-2	LM-202-D-2 I.M-101-M-1		L.M-106-B-2
1 OCC	Serial Number	2856-57	2858	2859-68	2869	2870	2871	2872	9272	2886	2887-90	2891	2896	2897	2898	2899	2900	2901	2902-03	2904	2906	9007-19	2913	9014-15	2916-17		2918	2919-20		2925

MINE AND INDUSTRIAL HAULAGE SUPPLIES

PILOT TABLE FOR LOCOMOTIVES

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

																				-	_	_					_	_		-	-						
		Cahle	Type	None	None	MVR	45-A1 MVR	49-A1	MVR	40-A2	VR-A8	MVR	49-A1	None	None	None	None	None	None	None	NI V IV	None	None	None	None	None	None	None	MVR 40-A1								
		:	Trolley Type	D-4	D-2	D-4	D-4	D-4	D-4	D-4	D-4	++	D-4	D-4	D-4		D-4		D-4	D-4		US-2	US-2	D-4	D-4	D-4	D-4	4-U	1- 1	D-4		D-4	D-4	D-4-S	D-4	D-4	D-4
		Con-	Type	R-60-C	R-86-E	R-86-A	R-86-A	R-86-A	R-86-F	R-86-E	R-86-E	R-86-B	R-86-F	R-86-F	R-86-F		R-86-F		R-86-F	R-86-F		R-77-A	R-86-F	R-86-E	R-86-E	R-86-F	R-86-F	K-80-F	1-00-V	R_86_F	P 26 F	R-86-F	R109-B	T-1-H	R-86-E	R-86-F	R-86-F
-	t.	14	ton- ction gram	12959	12955	12790	10708	10708	9842	10708	11564	12973	11331	9842	11653		12953		12953	11653		13000	12999	12974	10708	9842	15100	1471	10011	10650	11564	10659	12959 1	15246	12955	9936	15135
	LoCand	TEOGUY	be Dia	D.S.	D.S.	DS	D.S.	D.S.	D.S.	D.S.	D.S.	D.S.	D.S.	D.S.	D.S.		D.S.		D.S.	D.S.	1	D.S.	D.S.	D.S.	D.S.	D.S.	D.S.	N. C	0.7	D S C	S C	DS	D.S.	D.S.	D.S.	D.S.	D.S.
	-		o. Tyı	I I C	S§ IC	. 10	IC	OI (S IG	S IG	S IG	S IG	IC	16	S IG		I IG		S IG	S IG		IC	DI IC	0 IC	IC	S IC	IC		1	U I	TOT		I I C	IG	0 IG	S IG	3 IG
		Gear	Cat. N	49608	49558	39381	5044(5044(39528	49558	49558	52376	49606	39528	39528		65137		39528	39528		4339]	43391	5044(5044(39528	5044(39528	nne#	49606	40555	49600	65130	None	5044(49606	49600
		Dia	of Axle	10	4	414	4	4	4	4	4	4	31/2	4	4	-	4		4	4		4	4	4	4.	4	4.	4 01/	0/2	31%	4	31%	414		4	31/2	3½2
		Teeth	Gear	72	69	81	69	69	29	69	69	67	99	29	67		69		29	29		69	69	69	69	2.9	69	10	8	99	60	99	72	n ation	69	99	99
-		Teeth	Pinion	15	15	14	15	15	14	15	15	14	14	14	14		14		14	14		14	14	15	15	14	15	14	Ŧ	14	12	14	15	o applic	15	14	14
			Vol- tage	250	250	250	250	250	250	250	250	200	500	250	250		500		200	250	1	200	200	250	250	250	200	0002	200	250	250	250	250	220	250	250	250
	SaOror	CYNTOT	Arma- ture Turns	5	3	4	3	3	0	<i>c</i> o	61	9	9 9	n	e0		9		9	en .		9	9	m	~ ~	~~ ~	9 0	0 4	>	~		0 00	57	60 Cycles F'm K	es	3	က
		4	Type	GE-97	GE-59	GE-61	GE-58	GE-58	GE-77	GE-59	GE-59	GE-60	GE-96	11-30	GE-77		H M 701		GE-77	GE-77	1	GE-79	GE-79	GE-58	GE-58	11-30	GE-28	11-20	00-770	GE-96	GE-50	GE-96	H M 709	$\left\{ \begin{bmatrix} ITC \\ 5009 \end{bmatrix} \right\}$	GE-58	GE-96	GE-96
	AL	3	Inside	65128	65132	65128	65132	65132	65124	65132	65132	65124	None	None	65124		None		65124	65124		65124	65124	65224	65132	None	65128	None	DITON	None	65139	None	65224	None	65132	None	None
	JOURN	A A A	Outside	65127	65131	65127	65131	65131	65101	65131	65131	65101	119709	92109	65101		65126		65101	65101		65101	65101	65223	65131	92100	65127	02100	67100	65130	65131	65129	65223	65130	65131	65129	65129
	SHOE	-	NO. Left Hand	126447	120372	120384	120372	120372	120372	120372	120372	120372	None	120380	120372		120380		120372	120372		120372	120372	120380	120435	1203/2	120372	190960	000071	None	120379	120368	120386	None	120372	120368	120368
	BRAKE	Neu I	Right Hand	126446	120371	120383	120371	120371	120371	120371	120371	120371	None	120379	120371		120379		120371	120371		120371	120371	120379	120434	1/203/1	1/20371	190967	100071	None	120371	120367	120385	None	120371	120367	120367
	SHOES	No.	Left Hand	65243	65230	65246	65230	65230	65230	65230	65230	65227	120311	120339	65227		65232		65227	65227		65230	65230	65232	65235	02230	65230	00020	00000	62959	65230	65200	65235	65959	65230	65222	65200
	BRAKE	Cat.	Right Hand	65242	65228	65244	65228	65228	65228	65228	65228	65226	120311	120338	65226		65231		65226	65226	000000	65228	65228	65231	65234	82260	87700	16200	00700	65958	65228	65186	65234	65958	65228	65206	65186
			Journal Lining	65202	65202	65220	65202	65202	65202	65202	65202	65202	119273	01200	65202		65208		65202	65202	000000	65202	65202	126438	20200	20200	20200	00200	ETTON	65212	65202	65212	65202	65212	65202	65214	65212
	CAT NO		Journal Box	65184	65184	65198	65184	65184	65184	65184	65184	65184	119156	00100	65184		63187	1	65184	65184		65184	65184	65198	10124	RCIGII	10129	10100	70100	65190	65184	65190	65184	65190	65184	65192	65190
			Wheels and Axle	120183	*120050	120179	120161	120259	120060	120258	120063	120059	119983	201021	120009		120032		120009	120009	00000 * *	1199990	1199990	120270	1201021	120004	891021	190104	101071	119943	120063	120026	120171	119923	*120218	120134	119980
	OMOTIVE		Rating	LM-202-D-1	LM-106-G-1	LM-104-G-1	LM-106-B-1	LM-106-B-1	LM-101-L-1	LM-106-C-1	LM-106-F-1	LS -201-A-2	LS -203-E-2	1-X-101-W-T	L M-101-L-1		LM-101-W-2		LM-101-L-2	LM-101-L-1		L.M-101-M-2	LM-101-M-2	LM-104-K-1	1-0-901-WT	1-9-601-WT	LM-104-C-2	6 1 601 W 1		LM-105-F-1	I.M-106-C-1	LM-103-K-1	LM-202-E-1	LMA-105-A-1	LM-106-H-1	LM-103-L-1	LM-103-K-1
	100		Serial Number	2926	2927	2928	2929	2930	2931	2932-33	2934	2935-46	2947	2948	2949-50		2951		2952	2953-54		2935	2956	2957	2998-67	2908	2969	0127	-	2972	2973	2974	2975	2976	2977	2978-81	2982-83

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

* Front.

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GENERAL ELECTRIC COMPANY

	Reel	Type	Mana	INUITE	None	None	None	None	MVR	49-A2	None	49-A1	None	None	MVR	49-A1	VR-B	11	None	None	VR-C4	MVR	49-A1	MVR	49-A1	None	MVR	49-A2	None	None			None	MVR	1A-41	anon	None	None None	
	Trolley	Type	r r		D-4	US-2	US-2	None	D-4		D-4	ľ	D-4	D-4	D-4		None		D-4	D-4	D-4	D-4		D-4		4 6	1-4 4-0	4	D-4	SU	102-A		D-4	D-4	TTC	106-D	D-4	D-4	
	Con-	Type	a so d	1-00-VI	K-80-F	K-82-B	R-86-B	R-37-B	R-86-F		R-86-E	1-00-11	\$109-B	R-86-F	R-86-F		R-86-F		\$109-B	R-14	R-86-F	R-86-F		R-86-F		K-20-F	R-90-D		2109-B	R-28-A			C109-B	R-86-F	1 00 C	-00-V	R-86-E	R-86-F	-
COSTAT		Con- nection Diagram	0 2 10650	ernnt	0.0. 9842	U.S. 15229	D.S. 15229	D.S. 9842	D.S. 11331		D.S. 12790		D.S. 15213 I	D.S. 10655	D.S. 10655		D.S. 12677		D.S. 15213 I	D.S. 1936	D.S. 11653	D.S. 11653		D.S. 10655	0,00	1.0. 9842	0.5 11561		D.S. 15521 H	D.S. 15631			D.S. 15678 H	D.S. 9842	70801 2 C	10071.0.0	D.S. 11543	D.S. 9842 D.S. 15399 H	
RHF	-	Type	UI		5	16	IG	IG	IG		510	2	IG 1	IG	IG		IG		IG	Pr	IG	IG 1	-	IG					IG I	IGI			IG	IG	I U	- 5	IG	CG I	
	Case	Cat. No.	40606	10100	19100	39381	39381	39528	49606		39528	0000	39381	43391	43391	N. La	39381		39381	100090	65137	65137	-	43391	00-00	02020	49606		50440	earing	wheels	ion rods	65136	65137	50440	04400	52585	65137 50566	
Ë	Dia.	Axle	312	2/0	4	4 14	414	4	31/2		4 4		41/4	4	4		41/4		41/4	23/4	4	4		4		4	31%	4	4	ction g	e and	onnecti	41/4	4	4	н	414	4 5¼	-
E	leeth	Gear	99	60	60	10	81	67	99		18	5	81	69	69		81		81	58	69	69		69	10	10	99	2	69	le redu	ont axl	I with c	72	69	60	20	69	69 56	
the t	1 eeth	Pinion	14	T T	14	14	14	14	14		14		14	14	14		14		14	14	14	14		14		14	14		15	Doub	on fro	coupled	15	14	15	CT.	15	14 17	-
		Vol- tage	950	020	007	000	200	250	500		250		250	250	250		500		250	200	250	250		250	010	105	200		250	220 V			500	250	200	200	500	250 500	-
OTORS		Arma- ture Turns	er		• •	4,	4	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	9		4 03	,	4	es	eo		4		4	26	e	e		e	c	10	. 9		60	25	Cycles		5	က	ø	>	4	ro 01	
M		Type	G.F96	INT TOT	TO TATE	10-3-0	GE-61	CE-17	GE-96	1	GE-77	:	GE-61	GE-79	GE-79		GE-61		GE-61	NWP23	102 MH	102 MH		GE-79	11 20	10-35	GE-96		GE-58	AZ-113			602 WH	102 W H	GF-58	00-70	GE-53	HM 701 GE-55	
AL GS	vo.	Inside	None	CE194	17100	97100	65128	65124	None		65128		65128	65124	65124		65128		119747	None	65124]	65124		65124	NT	None	None		65132	None			65128	None	65198	07100	65128	65124 119910	
JOURN SPRIN	Cat. N	Outside	65129	66101	10100	12100	65127	65101	65129	10.10	65101		65127	65101	65101		65127		119746	119726	65101	65101		65101	00120	07100	65129		65131	65126	200		65127	65126	65127	17TOO	65127	65101 119909	
SHOE	No.	Left Hand	120368	190379	100001	120391	120391	1203/2	120368		120384		120391	120372	120372		120391		120391	None	120372	120372		120372	046061	N 0004	120368		120372	120380			120386	120380	120378	0.000	120435	120372	
BRAKE HEA	Cat.	Right Hand	120367	190371	1000001	120500	120390	175021	120367		120371		120390	120371	120371	1.22	120390		120390	None	120371	120371		120371	140001	T ICODT	120367		120371	120379			120385	120379	120377		120434	120371	
SHOES No.		Left Hand	65200	65997	14400	01020	65243	12033/	65222		65230		65243	65230	65230		65240		65243	120306	65230	65227		65230	66990	190204	65222		65230	65232			65235	65232	120335	0000	65235	65227 120364	
BRAKE Cat.		Right Hand	65186	65996	07700	74700	65242	120330	65206		65228		65242	65228	65228		65239	010000	65242	120305	65228	65226		65228	6 E990	190209	65206		65228	65231			65234	16260	120334	-	65234	65226 120363	
		Journal Lining	65212	62202	60000	20200	20209	20200	65214	00000	65202		65202	65202	65202		65202	000040	65202	1192/4	65202	65202		65202	62000	610200	65214		65202	65208			65202	01200	119278		65202	65202 119913	-
CAT. NO.		Journal Box	65190	65184	65104	10100	10104	10100	65192	00140	65184		65184	65184	65184		65184		65184	SCIETI	65184	65184		65184	10150	65100	65192		65184	119165			65184	99100	19170		65184	00184	
		Wheels and Axle	120026	119946	1100070	LOUOLL	1666TT	on appu cation	120194	101001	120053		119967	119965	119965		120001	100011	196611	CCARTT	127090	120054		1199900	190060	119990	120268	Callon C	120259	*120036	1120035		120232	COZOZT	120180 1		120170	119946	
OMOTIVE		Rating	LM-103-K-1	I.M-101-V-1	T M-104 4 9	Z-V-FOI-MIT	L M-104-A-2	T-7-101-W7	LM-103-L-2	T NE TOT OT	L-D-101-M-1	- SAME	LM-102-A-1	LM-101-M-1	LM-101-M-1		LM-104-A-2	T NE TON A T	L-M-104-A-1	LIM-100-A-2	L-Y-101-N-1	LM-101-Y-1		1-W-101-W7	I.M-100-R-1	L.M-105-C-3	LM-103-H-2		LM-106-B-1	LSA-001- {	B-1(1 16 000 T 0	L M-202-F-2	I-D-ROI-INT	LS -206-B-2		LM-104-B-2	LS -210-G-2	-
LOC		Serial umber	984	98-2-86	087	000	200 00	ne-eoe	166	0000	993	10.7.1	994-95	666	86-266		666	000	00 100	70-100	003	004-06		100	008-00	010-12	013		014	015		010	010	ITO	018		019	022	1

MINE AND INDUSTRIAL HAULAGE SUPPLIES

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* Front. † Rear.

	Cable Reel	Type	None MVR	40-A2 MVR	40-A2 None VR-	B11 None	None	40-A2 MVR 40-A9	MVR	40-A2 None	None	None	None	None	Non	MVR	49-AI None	MVR	49-A1 MVR	49-A2		MVR	MVR 40.41	MVR	40-A2	None	MVR 40.49
	Type		D-4 D-4	D-4	D-4 None	D-4	D-4 D-4	D-4	US-6	D-4	D-4	D-4	US-8	D-4	D-19	D	D-4	N	D-4	IIC	124-A	D-4	D-4	D-4		4- C	D-4
	Con- troller	Lype	R-86-F R-86-F	R-86-F	R-109 R-86-F	R109-D	R-82-B R-86-A	R-86-E	R-86-F	R-109	R-109	R-86-F	R-86-B	R-86-B	R109-D	R109-C	R109-B	R-86-F	R-86-F	9 100-B		R-86-F	R-86-F	R-86-F	0 90 D	R-86-B	R-86-F
EOSTAT		Con- nection Diagram	D.S. 12607 D.S. 15522	D.S. 15522	D.S. 15678 D.S. 12677	D.S. 15609	D.S. 5618 D.S. 15628	D.S. 15628	D.S. 9936	D.S. 15614	D.S. 15614	D.S. 9842	D.S. 11543	D.S. 12607	D.S. 15609 1	D.S. 17013]	D.S. 15683	D.S. 11653	D.S. 15964	D S 15007		D.S. 11653	D.S. 15953	D.S. 15673	T C 10607	T S 10607	D.S. 9842
RH		Type	IG IG	IG	IG IG	IG	Pr IG	IG	IG	IG	IG	IG	IG	IG	IG	IG	IG	IG	IG	16		16	IG	IG	10	101	IG
	Gear Case	Cat. No.	49558 65137	65137	65136 39381	65136	50440 49558	49558	49606	65136	65136	65137	52585	49558	39381	103579	52585	52376	49558	65140		65137	65137	39528	10261	13301	39528
	Dia.	AXIe	4 4	4	414	414	44	4	31/2	414	414	4	$4^{1/4}$	4	414	4	41/4	4	4	41/	*	4	4	4		* *	4
	Teeth	Gear	69	69	72 81	72	69	69	66	72	72	69	69	69	81	68	69	67	69	81	5	69	66	29	60	60	229
	Teeth	HOIHIT	15 14	14	15 14	15	15	15	14	15	15	14	15	15	14	16	15	14	15	14		14	14	14	14	14	14
		Vol- tage	500 500	500	500 500	500	250	250	250	250	250	250	500	500	500	250	250	250	500	250		250	250	500	020	250	250
DTORS	A	ture Turns	9	9	07 44	07	6 69	3	3	61	5	3	4	9	4 (m	5	3	9	6		~	60	9	~	5 er.	000
MG		Type	GE-59 HM 701	HM 701	HM 709 GE-61	602 W H	GE-59 GE-59	GE-59	GE-96	HM 709	602 MH	102 MH	GE-53	GE-59	GE-61	H M 708	GE-53	GE-60	GE-59	H M 702		107 M H	HM 701	GE-77	GF-70	GE-79	GE-77
AL	10.	Inside	None None	None	65224 65128	65128	65128 None	None	None	65224	65224	65124	65128	65132	119747	65124	65128	65124	65132	65198		65124	65132	None	65194	65194	None
JOURN SPRIN	Cat. N	Outside	65126 65126	65126	65223 65127	65127	65127 65126	63126	65129	65223	65223	65101	65127	65131	119746	65101	65127	65101	65131	65127		10169	65131	65126	65101	10100	65126
SHOE	No.	Left Hand	120372 120435	120435	None 120391	120435	120378	120380	120368	120380	120380	120372	120282	120372	120391	120372	120435	120372	120433	120391		1203/2	120372	120380	190379	120372	120380
BRAKE HEA	Cat.	Right Hand	120371 120434	120434	None 120390	120434	120377	120379	120367	120379	120379	120371	120381	120371	120390	120371	120434	120371	120432	120390		1203/1	120371	120379	190371	120371	120379
SHOES		Left Hand	65232 65232	65232	120346 65240	65235	120335 65232	65232	65200	120352	120352	65227	120343	65230	65240	65227	65235	65227	65230	65243		12209	65230	65232	65930	65230	65232
BRAKE Cat.	Car.	Right Hand	65231 65231	65231	120345 65239	65234	120334 65231	65231	65186	120351	120351	65226	120342	65228	65239	65226	65234	65226	65228	65242		02200	65228	65231	659.98	65228	65231
		Journal Lining	65208 65210	65210	65202 65202	65202	652U2 65210	65210	65212	65220	65220	65202	65202	65202	65202	65202	65202	65202	65202	65202	00040	20200	65202	65210	65202	65202	65210
CAT. NO.		Journal Box	65187 119166	119166	119160 65184	65184	119166	119166	65190	65198	65198	65184	65184	65184	65184	65184	65184	65184	65184	65184	101-0	00184	65184	119166	65184	65184	119166
	Wheele	w neers and Axle	120271	120033	1200S6 120001	120233	120251	*120261	119943	120280	120279	119946	120087	120063	120000	120015	120265	120055	120063	119998	1 10001	120014	*120056	120206	119987	119987	120252
MOTIVE		Rating	LM-101-A-2 LM-109-C-2	LM-109-C-2	LM-202-E-2 LM-104-A-2	LM-104-L-2	LM-109-D-1	LM-109-E-1	LM-103-K-1	LM-104-M-1	L M-104-M-1	LM-101-Y-1	LM-104-B-2	LM-106-C-2	LM-104-H-2	L.M-127-C-1	LM-104-B-1	LM-101-B-1	LM-106-K-2	LM-102-D-1	- 12 +04 + 1	1-1-101-101-1	LM-2T7- E-1	LM-109-A-2	I.M-101-M-1	LM-101-M-1	LM-109-A-1
LOCO		Serial umber	023 1024-39	3040-47	8048 1049	3050	8052-55	3056 1	3057	3058	3059	3060-61	3062	3063	3064	81-0005	3079	3080	3081-82	3083		1004	3085-87	3088	3089-91	3092	3093-94

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* Front. † Rear.

GENERAL ELECTRIC COMPANY

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	Cable Reel Type	MVR	49-A1 None	None	None	None MVR	49-A1	None	MVR	40-AI None	None	MVR	40-A1	None	None	None	None	None	None	None	MVR	40-A1 MVR	40-A1	MVR	MVR	40-A1	None	None	M V K 40-A1	None					
	Type	D-4	D-4	US-102	D-4	D-4 D-4	ç	G-4	D-4	US-2	D-4	D-4		D-4	D-4	D-4	** C	1-4-C	+	D-4	D-4	D-4		·D-4	D-4		D-4	8-SD	D-4	D-4					
	Con- troller Type	R-86-F	R-86-F	R-86-F	R-86-F	R-86-F	4 001	K109-B	R-86-F	R-86-E	2-86-F	R-86-F		R-86-F	8109-B	C109-B	1-00-N	100-B	8-86-B	R-86-F	R-86-E	R-86-E		R-86-E	R-86-F		R-86-F	x-13		R-86-E					
AT	on- tion gram	9936]	9842	15864]	9842	15609 F 9842 1	1 0200	128599 F	15903]	9842]	11653 1	9936 1		9842]	15898 4	15898 F	1 00641	15898 8	1 2793	12607 I	9842 I	9842 I		9842 H	15522 I		10708	8205	1 22001	15955 H					
RHEOST/	e nec	D.S.	D.S.	D.S.	D.S.	D.S. D.S.	6	D.S.	D.S.	D.S.	DS	D.S.		D.S.	D.S.	D.S.		2.0	DS	D.S.	D.S.	D.S.	1	D.S.	D.S.		D.S.	n.s.	D.S.	D.S.					
	Typ	IG	IG	IG	IG	IG	(50	IG	IG	1G	IG		Ð S	5 I C	510		201	51	IG	IG	IG	1	IG	IG		ÐI	5.5	16	IG					
	Gear Case Cat. No.	49606	39528	65270	65137	65136 65137		65136	39528	65137	65137	49606		39528	103579	103579	50440	103579	52376	50440	65137	65137		65137	65137		50440	38624	12100	65270					
	Dia. of Axle	31/2	4	31⁄2	4	414	ł	0 41⁄4	4	4	4	31/2		4.	4	4 -	1 4	4 4	4	4	4	4		4	4		4.1	0	4	31/2					
1	Teeth in Gear	66	67	73	69	72 69	C.	72	29	69	69	99		67	89	89	60	89	67	69	69	69		69	69		69	69	69	73					
1	Teeth in Pinion	14	14	16	14	15 14	1.	15	14	14	14	14		14	16	16	0 H	16	14	15	14	14		14	14		15	16	14	16					
	Vol- tage	250	250	500	250	500 250	0-0	200	500	250	250	250		250	250	250	026	250	200	500	250	250		250	500		250	002	000	250					
OTORS	Arma- ture Turns	60	00	4	es	c3 60	c	1 01	9	<i>c</i> o	~	3			~ ~	~ ~	0 0	o er.	9	9	3	0		m	9		∞ +	- 0	٥	63					
MG	Type	GE-96	GE-77	HM 703	HM 701	H M 709 H M 701	1111 700	602 WH	GE-77	HM 701	HM 701	GE-96		GE-77	801 WH	HM 708	00-20	HM 708	GE-60	GE-58	102 MH	H M 701		102 W H	101 M H		GE-58	10-90	IO, MH	HM 703					
IAL GS	No. Inside	None	None	None	65124	65128 65124	NT	119755	None	65124	None	None		None	60124	65124	42100	65124	65124	65132	None	None	;	None	None		65132	N1-149	INONE	None					
JOURN SPRIN	Cat.] Outside	65129	65126	65130	65101	65127 65101	107011	119754	65126	65101	65126	65129		65126	10109	10109	10100	65101	65101	65131	65126	65126		65126	65126		65131	061100	07100	65129					
SHOE	No. Left Hand	120368	120380	120368	120372	120382 120372	100001	120391	120380	120376	120380	120368		120380	120433	190970	120379	120372	120372	120372	120380	120380		120380	120380		120435	1000001	120300	120368	_				
BRAKE HEA	Cat. Right Hand	120367	120379	120367	120371	120381 120371	10/100	120390	120379	120375	120379	120367		120379	120432	120371	190311	120371	120371	120371	120379	120379	04000	120379	120379		120434	120394	E PENZT	120367	-				
SHOES No.	Left Hand	65222	65232	65222	65230	65238 65230	01020	03240 126445	120339	120331	65232	65222		65232	05230	05230	65930	65230	65227	65230	65232	65232	000000	65232	65232	1.202	65235	000000	70700	65200					3.
BRAKE S	Right Hand	65206	65231	65206	65228	65236 65228	02011	00244 126444	120338	120330	65231	65206		65231	87700	00720	65998	65228	65226	65228	65231	65231		65231	65231		65234	120401	10700	65186				Io. 123746	No. 11945
	Journal Lining	65214	65210	65212	65202	65202 65202	110014	119214	65208	126437	65210	65214		65210	20200	20200	65202	65202	65202	65202	65210	65210	01010	65210	65210		65202	CIGGIT	01700	65212				els Cat. N	cels Cat.
AT. NO.	ournal Box	65192	19166	65190	65184	65184 65184	10175	02161	65187	02161	65188	19174		65188	04250	04250	14286	04286	35184	35184	19166	19166	00 101	99161	19166		35184	1/161	DOTAT	35190				ed whee	ron whe
J	Vheels J and Axle	120135	120145 1	120005	120058	120172	1 00000	120088 1	120253	119950 1	120146	120136 1	1	120147	1 622021	1 522021	120260 1	120223 1	120059	120220	120207 1	120207 1	1 10000	1 /02021	120105 1	-	120165	1 167071	1 641071	120031	-		shoes.	steel tir	chilled i
E	ting	03-L-1	1-A-90)5-A-1	T7-A-1	04-L-2 T7-A-1	EV VIO	04-B-2	01-R-2	01-E-1	01-W-1	T4-B-1		01-R-1	8 1-J-01	1-1-01	T-A-1	T8-F-1	01-A-2	06-B-2	09-C-1	09-C-1		1-7-60	09-C-2		06-D-1	Te B 9	7-0-01	03-M-1	-		hird rail	ped with	ped with
COMOTIV	Ra	LM-10	L.M-1	8 LM-00]LM-2	5 LM-1	IC IL I	LS -4(2 LM-1	LS -40	LM-1	LM-2		L-M-1	Z-WIT	Z-INT P	L.M-2'	LM-2'	1 LS -20	LM-10	7 LM-10	LM-10	TATA	1-W-1	LM-10		1.5 -91	T.M. 9	-with	LM-1(nt.	-46-A, t	er equip	er equip
IO	Serial Number	3095	3096	3097-98	3099 3100-01	3102 3103-00	2107 00	3109	3110-12	3113	3114	3115		3116	1110	0618	3121	3122	3123-24	3125	3126-27	3128	9100 90	96-6210	3132		3134-3	3140-41	E DETO	3142		* Fro	t DN	§ Lat	Lat

Cable	Type	None	None	None	None	None	None	None	MVR	40-A1	None	None	None	None	MVR	40-A1	MVR	49-A2 MVR	40-A1	MVR	40-A1	49-A2	None	None	MVR	49-A2	None	None	None	VK-C4	MVK MVK	None	None	None	None	None	MVR	40-A1	None
:	Type	D-4	D-4	US-2	D-4	D-4	D-4-0	1-4 4-1	D-4		D-4	D-4	D-4	D-4	D-4		D-4	D-4		D-4	r C	1	D-4	0-SU	D-4		D-4	4-4	4-U	U-4	D-4	r r	D-4	1-4 1-4	1 4-D	T-U	D-4		D-4
Con-	Type	R109-B	R-86-F	3109-B	R-86-E	K-77-A	K-86-E	H-00-M	R-86-F		R-86-B	F-86-F	R-86-F	R-86-F	R-86-F		R-86-E	R-86-E	01.10	R-86-F	D OG T		C205-A	R-86-B	R-86-E		K109-B	K-00-F	H-08-7	K-80-F	H-08-2	D OG T	R-86-F	100-B	109-B	100-B	2-86-F		R-86-F
OSTAT	Con- nection Diagram	.D. 15976	S. 9842	.S. 12959]	.S. 15962	.S. 17002	.S. 17002		.S. 17048		.S. 11653	.S. 11543	.S. 9936	.S. 15955	.S. 15955		.S. 9842	.S. 9842	I III	.S. 15522	17171 S		.S. 10553	.S. 17189	.S. 12955		.S. 12959 F	.5. ISY35		. 5. 10900	.5. 19602	C 10708	S. 11448	S 17166 F	S. 17288 F	S 19950 F	.S. 17002 1		.S. 10659
RHB	lype	IG S	IG I	IG	IG D	IG DI			IG DI		IG D		IG D	IG D		IG D	10.1	2	IG D	CG D	IGD						ח או	TC D		D DI	D DI		IG DI		IG D				
Gear	Cat. No.	65140	39528	65136	65270	65137	65137	20440	65270		65137	52585	49606	65270	65270	10.200	65137	65137		65137	65137	Inton	49590	52376	49558		65136	01200	49000	01200	0013/	50440	65961	65136	65140	65136	65137		49606
Dia.	of Axle	414	4	414	3.2	4 .	4 •	# 4	312		4	41/4	31/2	31/2	31/2		4	4		4	P	4	10	4	4		4/4	0 1/2	0 1/2	3 /2	4	4	9.84	414	414	414	* 4		31/2
Teeth	in Gear	81	67	72	73	60	60	80	73		69	69	99	73	73	00	69	69		69	99	2	81	67	69	1	77	00	00	50	00	60	001	72	81	20	69		99
Teeth	Pinion	14	14	15	16	41	14	2 1	16		14	15	14	16	16	;	14	14		14	14		16	14	15	1	15	01	16	01	14	12 F	14	15	14		14		14
	Vol- tage	500	250	250	250	250	200	000	500		250	500	250	250	250	0.0	250	250		500	950		250	250	250	0=0	250	0020	020	0.02	0.62	950	250	250	250	250	250		250
OTORS	Arma- ture Turns	4	en 1	c4 (21 0	00	no c		o 4₁		e	4	3	5	2	c	ŝ	3		9	er.	,	1	3	er	(4 0	° °	2 0	o	~		. 6	1 01	10	n co		3
W	Type	H M 702	GE-77	601 M H	H M 703	IN WE	IN WE	00-10	HM 703		102 M H	GE-53	GE-96	H M 703	H M 703		107 W F	107 M H		101 M F	107 M F		GE-71	GE-60	GE-59		607 M F	CUN MIL	06-705	SUN ME	IN WE	CF-58	GE-95	602 M H	H M 702	F M 709	102 W F		GE-96
2 S C	Inside	65128	None	65128	None	None J	None	66139	None 1	1	65124 1	65128	None	None 1	None 1		None	None 1		None 1	65194 1		19747	65124	65132		None	I allo N	None	None I	1 47100	65139	None	65224 1	65128]	65128	None 1		None
JOURNA SPRING	Outside	65127	65126	65127	119712	02100	02120	10100	119712		65101	65127	119714	119712	119712	00110	65126	65126	-	65126	65101		119746 1	65101	65131		119731	417011	110710	21/611	TOLGO	65131	65130	65223	65127	65197	65126		65130
SIIOE	Left Hand	120391	120372	120386	120368	120380	120380	190425	120368		120372	120435	120368	120368	120368	040001	120372	120380	- NOT	120380	190379		120389	120376	120372		120384	000001	000001	000071	7/9071	190435	None	120382	120384	120386	120380		None
BRAKE	Right Hand	120390	120371	120385	120367	1203/9	1203/9	190494	120367		120371	120434	120367	120367	120367	FEOOD F	1203/1	120379		120379	190371		120388	120375	120371	000001	100000	100001	100021	100021	176021	120134	None	120381	120383	120385	120379		None
SHOES No.	Left Hand	65240	65230	65235	65222	0.0232	05232	66935	65222		65230	65235	65200	65200	65222	000040	65230	65232		65232	65230		120358	120331	65230	0=000+	120350	77700	77700	77700	09230	65935	65957	65238	65246	65235	65232		62959
BRAKE Cat.	Right Hand	65239	65.228	65234	65206	19220	0.0231	10700 86924	65206		65228	65234	65186	65186	65206	000000	65228	65231		65231	65998		120357	120330	65228	010001	120349	00200	00200	00200	07700	65934	65956	65236	65244	65234	65231		65958
	Journal Lining	65202	65202	65202	65214	01200	01220	60050	65214		65202	65202	119281	119281	65214	00010	20200	65210	No. of	65210	65202		119276	119278	65202	000011	119280	22014	62014	\$17C0	20200	65202	65212	65202	65220	65202	65210		65212
AT. NO.	ournal Box	65184	119159	65184	19174	991611	991611	10100 B	19174		65184	65184	119176	119176	119174	10101	191611	119166		119166	04286		119164	021611	65184		C/1611	FJ1011	121011	+) TAT 1	007701	65184	65190	104286	119173	65184	119166		65190
	Wheels and Axle	120181	120060	120266	120140	104921	104021	291001	120199		119988	120170	119944	119984	120197	040001	0/00ZT	120149	No. of Contraction	120149	120068		120091	120074	*120061	120062	1001021	071071	001001	061071	710071	120165	119920	120082	120180	120233	120033		119943
OMOTIVE	Rating	LM-104-P-2	LM-109-B-1	LM-202-F-1	LM-275-B-1	1-9-012-W1	LM-216-B-1	1-0-001-W1	LM-2T5-B-2		LM-101-Y-1	LM-104-B-2	LM-2T4-A-1	LM-275-A-1	LM-275-G-1	Tar other A	T-W-212-W1	LM-2T6-B-1		LM-276-B-2	I.M.277-G-1		LM-207-B-1	LS -401-B-1	TW-106-G-1	1 10 0100 11 1	LM-ZUIS-C-Z	T-J-LT MIT	I M STE V 1	I.V. CLO IV I	1-W-1 1 7-1W 1	L.M.106-D-1	LM-105-E-1	LM-104-R-1	LM-2C10-A-1	LM-202-F-1	LM-2T6-B-1		LM-105-F-1
LOCI	Serial Number	3143	3144-45	3146	3147	3148	3149	9161-69	3153-54		3155-56	3157	3158	3159	3160	00 1010	20 1012	3163		3164	3165-66		3167	3168-69	3170-71	0440	3179	0110	2175	0110	0/10	3177-90	3191-93	3194-96	3197-98	3199	3200		3201

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GENERAL ELECTRIC COMPANY

* Front. † Rear.

	Cable Reel Type	None None	None None None MVR	45-AI None None None MVR	MVR 40-A1	None None None	None None MVR	None None None None None None None	None None MVR	None MVR	None MVR 40-A1	None None None	40-A2 None MVR	None
	Type	D-4 None	D-4 D-4 D-4 D-4	D-4 D-4 D-4 D-4	D-4	D-4 D-4 D-4	D-4 D-4 D-4	D-4 D-4 D-4 US-8	D-4 D-4 D-4	US-2 D-19	D-19 D-4	D-4 D-4 D-4	D-4 D-4 D-4	D-4
	Type	R109-B T-52-A	R-86-E R-86-B R109-B R-86-F	R-86-E R-86-F R109-B R-86-E	R-86-F	R109-B R109-B R109-B	R-86-F R-86-E R-86-F	R-86-F R109-B R109-B R-60-C	R-86-F R-86-F R-86-F	R-86-E R109-C	R109-D R-86-E	R109-B R-86-D R-86-F	R-86-F R-86-E R-86-F	R109-B
GOSTAT	Con- nection Diagram	D.S. 12959 D.S. 17295	D.S. 10708 D.S. 1802 D.S. 15609 D.S. 9842	D.S. 11564 D.S. 15522 D.S. 15609 D.S. 17171	D.S. 15522	D.S. 15614 D.S. 12959 D.S. 15609	D.S. 9936 D.S. 9842 D.S. 17177	D.S. 17177 D.S. 15614 D.S. 15614 D.S. 15614 D.S. 17190	D.S. 15522 D.S. 15522 D.S. 15522	D.S. 1432 D.S. 17013	D.S. 15609 1 D.S. 12974	D.S. 15614 D.S. 9987 D.S. 17237	D.S. 15955 D.S. 15628 D.S. 15955	D.S. 12959
RHJ	Type	IG IG	IG IG IG	0 0 0 0 0 1 0 0 0	IG	1G IG	1G IG	01000 0100	01 10 10	Pr IG	·IG	10 10 10	10 10 10	IG
	Gear Case Cat. No.	65136 None	50440 51985 65136 39528	49558 65137 65136 65136 65137	65137	65136 49608 65136	49606 65137 49606	49606 65136 65136 65136 17140	65137 65137 65137	52585 103579	39381 39381	65136 39381 39528	65270 49558 65270	55285
	Dia. of Axle	4 14	4 4 4 4 4 4 4	4 4 4 4 4 4 4	4	414 5 414	12 4 K	22 4 4 4 24 4 4 24 4 4 24 4 4 24 4 24 4	4 4 4	414	414 414	414 414 4	3½ 4 3½ 3½	41/4
	Teeth in Gear	72 90	69 66 72 67	69 69 72 66	. 69	72 72 72	66 66	66 72 67	69 69	69	81 81	72 81 67	73 69 73	69
	Teeth in Pinion	15 18	15 14 15 14	15 14 15 14	14	15 15 15	14 14 14	14 15 14	14 14 14	15 16	14 14	15 14 14	16 15 16	15
	Vol- tage	250 220	250 250 250 250	250 500 250 250	500	250 250 500	250 250 500	500 250 250 110	500 500	500 250	500 250	250 500 500	250 250 250	250
TORS	Arma- ture Turns	¢1	3 5 10 3 3 5 10 3	0 0 0 0	9	~ ~ ~ ~	1000	- 6 6 6	999	10 69	4 4	0 4 9	10 00 10	5
MC	Type	001-1M	GE-58 CB-14 HM 709 GE-77	GE-59 HM 701 HM 709 HM 701	107 M H	HM 711 GE-97 HM 711	GE-96 HM 701 GE-96	GE-96 HM 711 HM 711 GE-800	102 MH 102 MH	GE-53 HM 708	GE-61 GE-61	HM 711 GE-61 GE-77	H M 703 GE-59 H M 703	GE-53
AL	o. Inside	65224 119753	65124 None 65128 None	65132 None 65128 None	None	65224 65128 65224	None None None	None 104285 104285 None	None None None	65128 65124	119747 65128	65224 None None	None 65124 None	65128
JOURN	Cat. N Outside	65223 119752	65101 65129 65129 65126 65126	65131 65126 65127 65127 65126	65126	65223 65127 65223	119716 65126 65129	65129 65223 65223 65223 119728	65126 65126 65126	65127 65101	119746 65127	65223 119732 65126	119712 65101 119714	65127
SHOE	No. Left Hand	120382 120397	120372 120368 120382 120382 120380	120372 120380 120382 120382 120380	120380	120382 126447 120435	120368 120372 120372	120368 120386 120386 120386 120376	120380 120380 120380	120386 120372	120391 120384	$\begin{array}{c} 120380\\ 120391\\ 120372\end{array}$	120368 120372 120368	120382
BRAKE HEA	Cat. Right Hand	120381 120396	120371 120367 120367 120381 120379	120371 120379 120381 120381 120379	120379	120381 126446 120434	120367 120371 120371 120367	120367 120385 120385 120385 120375	120379 120379 120379	120385 120371	120390 120383	120379 120390 120371	120367 120371 120367	120381
SHOES No.	Left Hand	65238 120366	65227 65200 65238 120339	65230 65232 65238 65238 65232	65232	65238 65243 65235	65222 65227 65227	65222 65235 65235 65235 120331	65232 65232 65232	120354 65227	65240 65246	120352 65240 65230	65200 65230 65222	65238
BRAKE Cat.	Right Hand	65236 120365	65226 65186 65236 120338	65228 65231 65236 65231	65231	65236 65242 65242	65206 65226 65226	65206 65234 65234 120330	65231 65231 65231	120353 65226	65239 65244	120351 65239 65228	65186 65228 65206	65236
	Journal Lining	65202 119279	65202 65212 119912 65210	65202 65210 119912 65210	65210	65202 65202 65202	65214 65202 65214	65214 119912 119912 119277	65210 65210 65210	65202 65202	65202 65220	65220 119275 65202	119281 65202 65214	65202
AT. NO.	ournal Box	65184 19172	04286 65190 19911 65188	65184 19166 19911 19168	19166	04286 65184 65184	19174 19161 19174	119174 19911 119911 19169	(19166 119166 119166	65184 65184	65184 65198	65198 119163 119161	119176 104286 65192	65184
U	Wheels J and Axle	120122 120294 1	120162 1 119940 120084 1 120152	120063 120099 1 120235 1 120148 1	120149 1	126378 1 120184 120173	120137 1 119948 1 120195 1	120101 1 120083 1 120176 1 120254 1	120034 120208 120034	120177 120015	120000 120089	120280 119951 120071	120029 1 120069 1 120027	120243
MOTIVE	Rating	LM-202-G-1 LSA-2E15	-A-1 LM-2T8-A-1 LM-103-A-1 LM-2C13-A-1 LM-101-R-1	LM-106-C-1 LM-2T6-B-2 LM-2C13-A-2 LM-2T7-B-1	L M-2T7-B-1	LM-2T10-F-1 LM-202-D-1 LM-104-S-2	LM-2T3-D-1 LM-2T6-A-1 LM-2T4-B-2	LM-2T4-B-2 LM-2C10-B-1 LM-2C10-B-1 LM-2C10-B-1 LM-101-E-3	LM-2T6-E-2 LM-2T6-E-2 LM-2T6-E-2	LM-202-C-2 LM-2T7-C-1	LM-104-H-2 LM-2T8-G-1	LM-104-R-1 LM-104-E-2 LM-2T5-D-2	LM-2T5-H-1 LM-2T8-B-1 LM-2T5-B-1	LM-202-B-1
FOC	Serial	3202-03. 3204-07	3208 3209-10 3211 1 3212	3213 3214 3215 3216	3217	3218 3220 3223-24	3225-26 3227-29 3230	3231 3232 3233-46 3247	3248 3249 3250	3251-54 3255-64	3265 3267	3268-69 3270 3271	3272 3273 3274	3275

MINE AND INDUSTRIAL HAULAGE SUPPLIES

PILOT TABLE FOR LOCOMOTIVES

	Cable	Type	None	None	None	None	None	40-A1	MVR 40-41	MVR	40-A1	None	40-A1	None	None	None	None	None	None	MVK	40-A2 MVR	MVR 49.42	None	VR- A10	None	None	MVR	40-A1 None	MVR 40-A1	None	MVR	40-A2	40-A2	None	None
	Teollow	Type	D-4	D-4	D-4	D-4	D-4	†	D-4	D-4		D-4 D-4		D-4	D-4	D-4	D-4	D-4	D-4	D-4	D-4	D-4	D-4		D-4	D-4	D-4	D-4	D-4	D-4	D-4		1- 1	D-4	D-4 D-4
	Con-	Type	R-86-E	R109-B	R109-B	R-86-E	R-86-B	.1-00-VI	R-86-F	R-86-F		R109-B R-86-F		R109-B	R-86-F	R109-B	R-86-F	R-86-E	R-86-E	R-86-F	R-86-E	R-86-E	R-86-F	T-52-A	R-86-F	R-86-E	R-86-F	R109-B	R-86-F	R-86-F	R-86-E	1 00 L	K-00-F	R109-B	R-86-E R-86-F
	10100	Con- nection Diagram	0.S. 10708	0.S. 12959	D.S. 12959	D.S. 10708	O.S. 10659	77001 .0.0	D.S. 17177	D.S. 17048		0.S. 17423		D.S. 15609	D.S. 17281	D.S. 15609	D.S. 17177	D.S. 17438	D.S. 17348).S. 9936	D.S. 10708	D.S. 10708	D.S. 9842	D.S. 17640	D.S. 15135	D.S. 9842	0.S. 17048	O.S. 12959]).S. 15962	0.8. 9936	D.S. 9842	0 1 1 1 0 0	77001 .0.0	.S. 15609 1	0.S. 12974 0.S. 9936
	1 LY	Lype	IG	IG	IG	IG	10 10		IG]	IG		IG DI		IG	IG	IG	IG	IG	Ð	16	IG I	IG I	IG I	IG I	IG I	IG I	IG I	IG I	IG I	IG I	IG I	I UI	101	IG I	IG I
	Gear	Case Cat. No.	49558	49608	49608	49558	51985	Inten	49606	65270		65140 65137		65136	43391	65136	49606	65137	65137	49606	49558	49558	39528	None	49606	65137	65270	65136	65270	49606	65137	20120	16160	65136	50440 49606
	Dia.	of Axle	414	# 10	10	4	co ₹	H	31/2	31/2		414		414	4	414	31/2	4	4	31/2	4	4	4	4	31/2	4	31/2	414	31/2	316	4		4	4 1/4	4 3½
	Teeth	in Gear	69	72	72	69	66 60	20	66	73		81 69		72	69	72	99	69	69	66	69	69	67	69	99	69	73	72	73	66	69		60	72	66 66
	Teeth	in Pinion	15	1 10	15	15	14	f	14	16		14		15	14	15	14	14	14	14	15	15	14	23	14	14	16	15	16	14	14	1.4	14	15	15
		Vol- tage	250	250	250	250	250	000	500	500		250		500	500	500	500	250	250	250	250	250	250	220	250	250	500	250	250	250	250	005	000	500	250
OTOBC	CUDIO	Arma- ture Turns	8	0 01	5	0	10	>	9	4		0 10		67	9	01	9	~	~ ~	07	3	3	3		3	e	4	67	5	~		0	0	010	n m
		Type	GE-59	GE-97	GE-97	GE-59	CB-14 4 M 701	101 101	GE-96	HM 703		1 M 701		117 MH	GE-79	117 MH	GE-96	102 WH	102 WH	0F-30	GE-39	GE-59	GE-77	TC 5010	GE-96	102 M F	HM 710	4 M 709	1 M 703	GE-96	107 M H	INT TOT	107 W I	117 MH	GE-96
TV	vo.	Inside	65132	65128	65128	65124	None I	T DIION	None	None I		65128 I None I		65224 I	None	65224 I	None	65124 1	65124 H	None	65132	65132	None	None I	None	None I	None I	65128 H	None H	None	None H	VI I	I AUONT	104285 I	65128 None
JOURN	Cat. 1	Outside	65131	65127	65127	65101	65129	07100	65129	119712	1	65127 65126		65223	65126	65223	65129	65101	65101	119714	65131	65131	65126	65126	119716	65126	119714	63127	119712	119714	65126	20122	07100	65223	65127 119714
SHOE	No.	Left Hand	120382	126447	126447	120372	120368	000071	120368	120368		120384		120435	120372	120382	120368	120372	120372	120368	120372	120372	120372	120372	120368	120380	120368	120382	120368	120368	120380	190900	000071	120382	120368
BRAKE	Cat.	Right Hand	120381	126446	126446	120371	120367	610071	120367	120367		120383		120434	120371	120381	120367	120371	120371	120367	120371	120371	120371	120371	120367	120379	120367	120381	120367	120367	120379	026061	610071	120381	120367
SHOES	No.	Left Hand	65238	65243	65243	65227	65200	70700	65222	65222		65246 65232		65235	65230	65238	65222	65230	65230	65222	65230	65230	65230	65227	65200	65232	65222	65238	65222	65222	65232	66030	70700	65238	65200
BRAKE	Cat.	Right Hand	65236	65242	65242	65226	65186	10700	65206	65206		65231 65231		65234	65228	65236	65206	65228	65228	60206	65228	65228	65228	65226	65186	65231	65206	65236	65206	65206	65231	66093	10700	65236	65186
		Journal Lining	65202	65202	65202	65202	65212	01700	65214	65214		65220 65210		65202	65202	65202	65214	65202	65202	60214	65202	65202	65202	65202	119281	65210	65214	119912	65214	65214	65210	65010	01700	119912	65202 119281
	·00 ·10	Journal Box	65184 65184	65184	65184	104286	65190 119166	DOTOTI	119174	119174		65198 119166		65184	119161	104286	119174	65184	65184	119174	65184	65184	119159	119162	119176	119166	119174	119911	119174	119174	119166	110166	001611	116611	119176
		Wheels and Axle	120244	120184	120184	120225	1190140	OFINTI	120101	120141		120097		120173	119956	120267	120101	1199990	1199990	120195	120067	120067	120064	120073	119981	120106	120102	120124	120141	120138	120208	190106	101100	120166	120221
	TATION	Rating	LM-106-E-1	LM-202-D-1	LM-202-D-1	L M2T8-B-1	LM-103-A-1		LM-2T4-B-2	LM-2T5-B-2		LM-104-T-1 LM-2T6-B-2		LM-104-S-2	LM-2T6-F-2	LM-2T10-F-2	LM-2T4-B-2	LM-2T7-A-1	LM-2T7-A-1	LM-214-C-1	LM-2T8-H-1	LM-2T8-H-1	LM-109-B-1	LMA-2T6-A1	LM-2T3-C-1	LM-2T6-E-1	LM-2E4-A-2	LM-2C13-A1	LM-2T5-G-1	LM-2T4-C-1	LM-2T6-E-1	o d are N I	7-017-W7	LM-2C10-B 2	LM-104-C-1 LM-2T4-A-1
	FUC	Serial Number	3276	3279	3280	3281	3282 3.983-85	00-00-0	3286	3287		3289-91		3292	3293	3294	3296	3297	3298-99	3.300	3301-03	3304-05	3306	3307-08	3309-13	3314	3315	3316	3317	3318-19	3320	1999	1700	3322-27	3329

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GENERAL ELECTRIC COMPANY
COMOTIVE CAT. NO. CAT. NO. CAT. NO.	CAT. NO. Cat. No. Cat. No.	CAT. NO. CAT. NO. CAT. NO.	D. Cat. No. BRAKE SHOE	BRAKE SHOES BRAKE SHOE Cat. No.	SHOES BRAKE SHOE No.	BRAKE SHOE HEADS	SHOE		JOURI	VAL VGS	ом	TORS		4400	Parth			RH	EOSTAT	ć		:
Rating Wheels Journal Journal Right Left Right L	Wheels Journal Journal Right Left Right L	^a Journal Journal Right Left Right L	I Journal Right Left Right L	Right Left Right L Hand Hand U	Left Right L	Cat. No Right L	ž H	o.	Cat.	No. Inside	Type	Arma- ture	Vol- I	in in inion	in Gear	of Axle C	Gear Case at. No.	Type	Con- nection	Con- troller Type	Trolley Type	Cable Reel Type
					nerr nierr	TOTT DITETY	TOTT					entin	-				NI NO		Diagram			
L.M102-D-1 119999 65184 65202 65239 65240 120390 12039	1 119999 65184 65202 65239 65240 120390 12039	9 65184 65202 65239 65240 120390 12039	65202 65239 65240 120390 12039	65239 65240 120390 12039	65240 120390 12039	120390 12039	12039	-	65127	65128	HM 704	4	500	14	81	4 1/4	65140	IG	D.S. 15907	R109-B	US124/	None
021 7W-210-D-2 120148 118100 00210 00201 00202 12020 12020	-2 12014611010 00210 02200 12200 12020 12020 12020 12020	1110100 00210 00201 00202 12000 1200	02210 02232 120379 120379 1203	00201 00202 120019 1203	00232 1203/9 1203	1203/9 1203	1203	20	92169	None	102 W H	9	200	14	69	4	65137	16	D.S. 15522	R-86-F	D-4	MVR 40-A1
7 LM-104-S-2 120173 65184 65202 65234 65235 120434 1204	2 120173 6 5184 6 5202 6 5234 6 5235 120434 1204	3 6 5184 6 5202 6 5234 6 5235 120434 1204	65202 65234 65235 120434 1204	65234 65235 120434 1204	65235 120434 1204	120434 1204	1204	35	65223	65224	HM 711	2	500	15	72	4 1/4	65136	IG	D.S. 15609	R109-B	D-4	None
L.M-2T6-A-2 119948 119161 65202 65226 65227 120371 120	-2 119948 119161 65202 65226 65227 120371 120	8 119161 65202 65226 65227 120371 120	65202 65226 65227 120371 120	65226 65227 120371 120	65227 120371 120	120371 120	120	372	65126	None	102 MH	9	500	14	69	4	65137	IG	D.S. 17281	R-86-F	None	None
L.MZCI3-AI 120085 [1991] [19912 65234 65235 120385 120	11 120085 119911 119912 65234 65235 120385 120	5 119911 119912 65234 65235 120385 120	119912 65234 65235 120385 120	65234 65235 120385 120	65235 120385 120	120385 120	120	386	65127	65128	602 WH	~	250	15	72	414	65136	IG	D.S. 12959	R109-B	D-4	None
I M 9TE C 1 120000 85100 85014 85014 85000 85000 100500 100500 100	1 100000 05154 05202 05220 0522/ 1205/1 120 1 100000 05100 05014 05000 05000 100500 100	0 00154 00202 00220 00221 1203/1 120 0 01154 0520 05220 00221 1203/0 120	05202 05226 05221 120310 120 25014 25006 25000 100500 100	00220 00221 1203/1 120 65006 65009 100200 100	0022/ 1203/1 120	120371 120	121	312	10109	47100	GE-29		250	15	69	4	49558	10	D.S. 10708	R-37-C	D-7	None
I.M2T-0-C-1 1200-08 85109 85914 85908 85908 120 03209 120 120	1 100002 85100 85914 85900 00200 100360 100360 100	2 85100 85014 85000 00222 120000 100 2 85100 85014 85006 85000 100380 100	85914 85906 85906 85909 190380 190	00200 00227 120000 120 85906 65999 190360 190	001 00001 77700 100 001 00000 1700	120360 120	DZ1	010	21/611	None	U 1 M 103		250	10	13	2/2	65270	510	D.S. 15955	R-86-F	D-4	None
L.M278-A-2 190114 104988 65909 65998 65997 190371 190	2 120114 104288 65909 65996 65997 1200371 190	4 104988 65909 65996 65997 190371 190	65909 65996 65997 190371 190	65296 65997 190371 190	65997 190371 190	190371 190	191	379	85101	R5194	CU MIN	1 4	200	15	80	0/3	01200	50	D.S. 19959	R-86-F	D-4	None
LM-2T7-F-1 120066 65184 65202 65228 65230 120371 120	1 120066 65184 65202 65228 65230 120371 120	6 65184 65202 65228 65230 120371 120	65202 65228 65230 120371 120	65228 65230 120371 120	65230 120371 120	120371 120	120	372	65131	65132	HM 713	0 00	250	14	69	H 4	65137	10	D.S. 9842	R-86-F	D-4	MVR
								-		:								1				49-A1
2 LNI-ZI 3-A-1 11992111191/6 126442 65186 65200 120367 120	-1 119921 1191/6 126442 65186 65200 120367 120	1 119176 126442 65186 65200 120367 120	126442 05186 65200 120367 120 65014 07040 120367 120	65186 65200 120367 120	65200 120367 120	120367 120	120	898	119716	None	GE-95	- 0	250	14	58	2%	65961	Ð	D.S. 19302	R-86-F	D-4	None
I S_901_R_1 190975110170 110970 85991 85991 190971 1909	-1 1201075 110170 110970 85991 85999 120383 1200 190975 110170 110970 85991 85991 19097	C 119170 110370 85991 85999 190971 1909	00214 00244 00246 120333 1200 110070 65091 85099 190071 1900	05244 05240 120383 120 85991 85999 190971 1909	05240 120383 1200 85999 190971 1909	120383 120	190	584	119/14	None	HM 703		250	16	73	3%	65270	51	D.S. 15955	R-86-F	D-4	None
LM-2T7-D-1 120149 [19166 65210 65231 65232 120370 1203	1 120149 119166 65210 65231 65232 120370 1203	9 119166 65210 65231 65232 120379 1203	65210 65231 65232 120370 1203 65210 65231 65232 120370 1203	65231 65232 120370 1203 65231 65232 120370 1203	65232 120379 1203	120379 1203	1203	100	65126	021CO	102 M H	5 0	200	14	60	4 4	50440	510	D.S. 10708	R-86-E	US-6	None
								2				>				H	10100	2	00111.0.0	1-00-VI	D=4	VI A INI
LM-2T6-C-1 120030 119176 119281 65186 65200 120367 1203	1 120030 119176 119281 65186 65200 120367 1203	0 119176 119281 65186 65200 120367 1203	119281 65186 65200 120367 1203	65186 65200 120367 1203	65200 120367 1203	120367 1203	1203	68	119713	None	H M 703	5	250	16	73	3 1/2	65270	IG	D.S. 15953	R-86-E	D-4	None
LMA-005-B-2 120073 119162 65202 65226 65227 120371 1203	-2 120073 119162 65202 65226 65227 120371 1203	3 119162 65202 65226 65227 120371 1203	65202 65226 65227 120371 1203	65226 65227 120371 1203	65227 120371 1203	120371 1203	1203	12	65126	None	SOLO		440	23	70	41	None	16	D.S. 19321	T-1-H	D-4	None
LM-2T5-B-2 120199 119174 65214 65206 65222 120369 12037	2 120199 119174 65214 65206 65222 120369 12037	9 119174 65214 65206 65222 120369 12037	65214 65206 65222 120369 12037	65206 65222 120369 12037	65222 120369 12037	120369 12037	12037	0	119712	None	HM 703	4	500	16	73	3 1/2	65270	IG	D.S. 17048	R-86-F	D-4	MVR
[.M2T6-B-1 120200 110166 85210 85231 85232 120270 1302	1 120200 110166 85210 85221 85222 120270 130	3 110166 85910 65931 85939 190370 190	65910 65931 65939 190370 190	65931 65939 190370 190	85939 190370 190 ³	190370 190	190	000	AE196	None	107 M I	c	020		00		10110	0.	0,00 0.0			40-A1
LM-105-D-1 *119933 119157 65212 120333 120333 None N	1 *119933 119157 65212 120333 120333 None N	3 119157 65212 120333 120333 None N	65212 120333 120333 None N	120333 120333 None N	120333 None N	None N	Ż	one	119715	None	CB-15	ر 16	250	14	66	9.8%	51085	5 0	D.S. 9842	R-86-E	D-4	None
LM-2T7-A-1 120072 104286 65202 65228 65230 120371 12	1 120072 104286 65202 65228 65230 120371 12	2 104286 65202 65228 65230 120371 12	65202 65228 65230 120371 12	65228 65230 120371 12	65230 120371 12	120371 12	12	0372	65101	65124	102 WH	, eo	250	14	69	4 4	65137	IG	D.S. 15602	R-86-E	1-4-D	MVR
LM-2E4-B1 120198 119174 65214 65206 65222 120369 120	1 120198 119174 65214 65206 65222 120369 120	8 119174 65214 65206 65222 120369 120	65214 65206 65222 120369 120	65206 65222 120369 120	65222 120369 120	120369 120	120	370	119714	None	HM 710	61	250	16	73	31%	65270	10	D.S. 15955	R_86_F	D-4	49-A2 M V P
LM-103-I-1 119915 65190 65212 65186 65200 120367 120	110915 65190 65212 65186 65200 120367 120	5 65190 65212 A518A 65200 120387 120	65212 65186 65200 120367 120	45186 65000 190367 190	65200 120367 120	190367 190	190	368	85190	None	CB.14	10	980		gg		Mone		0000 0 0			40-A1
k LM-2T6-B-1 120209 119166 65210 65231 65232 120379 12	1 120209 119166 65210 65231 65232 120379 120	9 119166 65210 65231 65232 120379 120	65210 65231 65232 120379 120	65231 65232 120379 120	65232 120379 120	120379 120	120	3380	65126	None	102 WH	2 က	250	14	69	2 4	65137	10 DI	D.S. 9842	R-86-F	4-0 4-0	MVR
TW OT A DECEMBER OF A DECEMBER										:												40-A1
LM-214-A-2 119982 119176 119281 65186 65200 120367 120 LM-2710-F-1 120934 164986 65909 65934 65934 190434 190	- 1190934 [64986 65909 65934 85934 85934 190434 190	2 1191.0 119281 65186 65200 120367 120 1 104986 65909 65934 65935 190434 190	4190 45909 65934 65935 120367 120 65909 65934 65935 190434 190	65186 65200 120367 120 65934 65935 190434 190	65200 120367 120 65235 120434 190	120367 120	120	368	119714 85993	None AF994	GE-96	60	500	14	66	37	49606	16	D.S. 17177	R-86-F	D-4	None
LM-2T5-B-1 1201971119174 65214 65206 65222 120369 120	1 120197 119174 65214 65206 65222 120369 120	7 119174 65214 65206 65222 120369 120	65214 65206 65222 120369 120	65206 65222 120369 120	65222 120369 120	120369 120	120	370	119712	None	H M 703	1 0	250	16	73	316	02100	201	D.S. 10014	P og P	4-0	None
								2				1	2	24	2 .	2/0	0.700	2	100001 .0. M	J-00-VI	D-4	40-A1
1 LM-2T8-D-2 119952 104286 65202 65239 65240 120390 1203	2 119952 104286 65202 65239 65240 120390 1203	2 104286 65202 65239 65240 120390 1203	65202 65239 65240 120390 1203	65239 65240 120390 1203	65240 120390 1203	120390 1203	1203	91	65101	65124	HM 702	4	500	14	81	41%	65140	IG	D.S. 15100	R-86-E	US-6	None
LM-2T4-G-1 120197 119174 65214 65206 65222 120369 1203	1 120197 119174 65214 65206 65222 120369 1203	7 119174 65214 65206 65222 120369 1203	65214 65206 65222 120369 1203	65206 65222 120369 1203	65222 120369 1203	120369 1203	1203	20	119714	None 1	HM 710	67	250	16	73	315	65270	IG	D.S. 15955	R-86-F	D-4	MVR
T M 9TTO E 0 19017 10000 00000 000001 271001 0 0 0TTO M					01 0001 10010			* ***	00000		and and				-							40-A1
LM-2710-F-2 120100 104250 05202 05234 05235 120434 1 LM-2710-F-2 190187104908 85909 85924 85924 190494 1	2 190187 104998 85909 85994 85954 190187 10498	0 104230 00202 00234 00235 120434 I	00202 00234 05230 120434 I	00234 05235 120434 I	05233 120434 1 85995 190494 1	1 90434 1	-	20435	00223	65224	ILL WH	21 0	000	15	72	4 14	65136	D	D.S. 15609	R109-B	D-4	None
LS-005-B-1 120139 119156 119273 190311 190311 None N	120139119156 1110273 190311 190311 None N	9 119156 110273 190311 190311 Nome N	110273 190311 190311 None N	190311 190311 None N	190311 None N	None N	12	OCT-OS	002001	N'000	TTI WIL	20	000	11	20	4 %	02130	5	D.S. 15609	R109-B	D-4	None
LS-203-E-2 119983 119156 119273 120311 120311 None No	119983 119156 119273 120311 120311 None No	3 119156 119273 120311 120311 None No	119273 120311 120311 None No	120311 120311 None No	120311 None No	None No	z	ane	119709	None	GE-96	0 00	EDO	14	66	272	40606	201	D.S. 8930	N-3/-U	1-20	None
LM-101-M-1 119989 65184 65202 65228 65230 120371 12	1 119989 65184 65202 65228 65230 120371 12	9 65184 65202 65228 65230 120371 12	65202 65228 65230 120371 12	65228 65230 120371 12	65230 120371 12	120371 12	12	0372	65101	65124	GE-79	0 00	250	14	69	4	43391	201	D.S. 10697	R-86-F	D-4	None

PILOT TABLE FOR LOCOMOTIVES

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

MINE AND INDUSTRIAL HAULAGE SUPPLIES

	:	Cable Reel Type	MVR 40-41	None MVR	36-B1 None MVR	49-A1 MVR	None	None	None	MVR	40-AZ None	None	None	M V K 40-A1	None	M VK	None	None	None	MVR	40-A1 MVR	40-A1	None	MVR	40-AI None	MVR 40-A1	None	M V K 40-A2	None	MVK 40-A
		Type	D-4	D-4 D-4	D-4 D-4	D-4	D-4	D-4	D-4	D-4	US-2	D-4	D-4	D-4	D-4	-4- -4-	D-4	D-4	D-4	D-4	D-4	1	D-4 D-4	D-4	D-4	D-4	D-4	D-4	D-4	D-4
	(Type	R109-B	R109-B R-86-E	R-86-F R-86-E	R-86-F	R-86-E	R-86-F	R109-B R109-B	R-86-E	R-86-F	R-86-F	R-86-F	H-06-M	R-86-F	H-02-N	R-86-E	R109-B	R-86-F	R-86-F	R-86-F		R-86-F	R-86-F	R109-B	R-86-F	R-86-E	R-86-E	R-86-E	R-86-F
	EOSTAT	Con- nection Diagram	D.S. 19626	D.S. 15609 D.S. 19682	D.S. 17281 D.S. 15964	D.S. 15955	D.S. 17171	D.S. 19661	D.S. 15609 D.S. 15609	D.S. 9842	D.S. 15955	D.S. 19302	D.S. 17048	D.o. 19962	D.S. 9842	D.5. 10022	D.S. 9842	D.S. 15609	D.S. 15955	D.S. 15955	D.S. 17048		D.S. 15135 D.S. 9842	D.S. 17048	D.S. 17288	D.S. 15955	D.S. 15953	D.S. 15962	D.S. 19922	D.S. 15955
	RE	Type	IG	IG	IG	IG	IG	IG	IG	IG	IG	IG	IG	IG	1G	PL -	IG	1G	201	IG	IG	2	01	IG	IG	IG	ÐI	IG	IG	IG
	(Gear Case Cat. No.	65137	65136 65137	65137 49558	65270	65137	65270	65136 65136	65270	65270	65961	65270	01200	65137	19100	65137	65136	65270	65270	65270		49606	65270	65140	65270	65270	65270	65137	65270
	i	Dia. of Axle	4	414 4	4 4	31/2	4	31%	414	31/2	31/2	234	312	3 1/2	4 .	4	4	414	31%	31/2	31%	2/2	31/2	31/2	414	31/2	31/2	31/2	4	31/2
		Teeth in Gear	69	72 69	69	73	66	73	72	73	73	58	73	13	69	60	69	72	23	73	73		66 69	73	81	73	73	73	69	73
	:	Teeth in Pinion	14	15 14	14 15	16	14	16	15 15	16	16	14	16	10	14	14	14	15	14	16	16	2	14	16	14	16	16	16	14	16
	in the second	-Vol- tage	250	250 250	500	250	250	250	500	250	250	250	500	0.02	250	000	250	500	250	250	500	-	250	500	250	250	250	250	250	250
	TORS	Arma- ture furns	en	09 <i>1</i> 9	9 9	63	3	5	2 2	2	61	2	4 0	N		0	3	01 0	5 C	101	4	•	നന	4	5	63	53	CN	es	67
	OM	Type	102 M H	102 MH	HM 701 GE-59	HM 703	HM 701	HM 703	112 MH	HM 703	HM 703	GE-95	H M 703	FU 103	102 WH	10, WH	HM 713	HM 711	1012 WH	HM 710	H M 703		GE-96 HM 701	H M 703	HM 702	HM 703	HM 703	H M 703	HM 713	H M 703
T	s	o. Inside	65124	None None	65124 65132	None	65124	None	65224 04285	None	None	None	None	None	65124	None	None	65224	None	None	None		None	None	65128	None	None	None	None	None
JOURNA	SPRING	Cat. N Outside	65101	119731 65126	65101 65131	119712	65101	119714	65223 1 65223 1	119710	119709	119716	119712	21/611	65101	02100	65126	65223	02160	119714	119712		119716	119712	65127	119712	119713	119710	65126	119712
SHOE	DS	No. Left Hand	120372	120384 120380	120272 120372	120370	120372	120370	120435	120370	120368	120368	120370	1203/0	120372	120380	120380	120435	120368	120370	120370		120368	120370	120384	120370	120368	120370	120380	120370
BRAKE	HEA	Cat. Right Hand	120371	120383 120379	120371 120371	120369	120371	120369	120434	120369	120367	120367	120369	120309	120371	1203/9	120379	120434	120367	120369	120369		120367	120369	120383	120369	120367	120369	120379	120369
BRAKE SHOES Cat. No.	Left Hand	65230	120350 65232	65227 65230	120323	120325	65222	65235 65238	65222	65200	65200	65222	77700	65227	00232	65232	65235	65200	65222	65929		652200	65222	65246	65222	65200	65222	65232	65222	
	Right Hand	65228	120349 65231	65226 65228	120322	120324	65206	65234 65236	65206	65186	65186	65206	00200	65226	09231	65231	65234	65186	65206	65206		65186	65206	65244	65206	65186	65206	65231	65206	
	Journal Lining	65202	119280 65210	65202 65202	65214	65202	65214	65202	65214	119273	119281	65214	00202	65202	01200	65208	65202	119281	65214	65214	-	119281	65214	65220	65214	119281	65214	65208	65214	
	AT. NO.	ournal Box	65184	19175 19166	04286 65184	19174	04286	65192	04286 19911	19174	19156	19176	65192	04250	65184	00161	19167	65184	00161	19174	19174		19176	19174	19173	19174	19176	19174	19167	19174
	0	Wheels J and Axle	119990	120226 1 120149 1	119947 1 120067	120201	119931 1	120028	120187 1 120166 1	120141 1	119969 1	119921 1	120027	120140 1	119946	120149 1	120150 1	120173	1 101021	120198 1	1 20199 1		1201061	120200 1	120180 1	120247 1	119985	120141 1	120037 1	120247 1
	OMOTIVE	Rating	LM-2T7-A-1	LM-2C10-C-1 LM-2T6-H-1	LM-2T7-A-2 LM-2T8-H-2	LM-2T5-G 1	LM-2T7-A 1	LM-2T4-E'1	LM-2710 F-2 LM-2C10-B 2	LM-2T6-G-1	LS-103-E-1	LM-2T3 A-1	LM-275-G-1	L-D-612-MJ	LM-101-Y-1	7 9-91.Z-WT	LM-2T8 K-1	LM-104-S-2	LM-210-B-1 LM-2T4-H-1	LM-2E4 B-1	L.M-275-G-2		LM-2T3 C-1 LM-2T6-F-1	LM-275-L-2	LM-2C10-A1	LM-2T5-G-1	LM-276-C-1	LM-2T6-G-1	L.M-2T8-K-1	LM-2T5-G-1
	TOC	Serial	3383-85	3386 3387-88	3389 3390	3391	3392-93	3394	3395 3396	3397	3398-99	3400	3401-04	3405	3406-07	3408	3409	3410-11	3412 3413	3414	3415	0110	3416-17 3418	3419	3420	3421	3422	3423	3424	3425

PILOT TABLE FOR LOCOMOTIVES

36

GENERAL ELECTRIC COMPANY

	ley Cable	pe Type
	ler Trol	pe ¹
	tro.	Ty.
EOSTAT		Con- nectior Diagrar
RH		Type
	Gear Case	Cat. No.
	Dia.	Axle
	Teeth	Gear
	Teeth	Pinion
		Vol- tage
IOTORS		Arma- ture Turns
A		Type
S	0.	Inside
SPRING	Cat. N	itside
		it Ou
SADS	. No.	Lef Han
AH	Cat	Right Hand
No	-0.01	Left Hand
Co+	Cat.	Right Hand
-		ining
. NO.	-	rnal Jo
CAT.	-	els Jou e
		Whee and Axle
VE		ating
COMOTI	-	R
ro		Serial umber

MINE AND INDUSTRIAL HAULAGE SUPPLIES

PILOT TABLE FOR LOCOMOTIVES

37

 Δ Used on intermediate shaft, double gear reduction.

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	Cable	Type	None MVR	40-A None	None None	MVR	49 None	None	None	MVR 36.B1	None	None	None	None MVR	40-A None	MVR	MVR	MVR 40-A		
	Trollev	Type	D-4 D-4	D-4	D-19 D-4	D-4	D-4	D-4	D-4	D-4	D-4	D-4	D-4	None D-4	US-2	D-4	D-4	D-4		
	Con-	Type	T-52-A R-86-E	R-86-F	R-14	R-86-E	R-86-F	c109-B	C109-B	R-86-F	C109-B	R109-B	t109-B	L-62-A R-86-F	R-86-F	R-86-F	R-86-E	R-86-F		
AT		on- ction gram	23010 9842	15955	15609 F	15602	23113	23109 F	. 23189 F	. 23122	. 15609 F	. 15614 F	. 23109 F	. 23139	. 23118	. 15962	23110	.23111		
RHEOS1		be Dia	D.S.	D.S.	D.S.	D.S.	D.S.	D.S.	D.S.	D.S	D.S	D.S	D.S	D.S.	D.S	D.S.	D.S.	D.S.		
		o. Tyr	7 16	0 IG	1 IG D PB	7 16	0 1G	6 IG	6 1G	0 IC	6 IG	6 10	6 IC	0 IC	6 IG	0 10	7 16	7 IG		
	Gear	Cat. No Cat. No	None 65137	6527(39381	65133	6527(65130	65130	6527	6513	6513	6513	None 6527	5237	6527	6513	6513		
	Dia.	Axle	4 4	31/2	414 234	4	3 1/2	41/4	414	31/2	414	41/4	41/4	5 3½	7	31/2	4	4		
	Teeth	Gear	70 A	73	81 58 ·	69	73	72	72	73	72	72	72	90 73	67	73	69	69		
	Teeth	Pinion	23 A 14	16	14 12	14	16	15	15	16	15	15	15	18 16	14	16	14	14		
	-	Vol- tage	220 250	250	500	250	250	250	250	250	500	500	250	220	500	250	250	500		
OTORS		Arma- ture Turns	e	c1	4 26	ŝ	5	61	ŝ	¢1	51	2	5	5	9	7	3	9		
W		Type	ITC5011 HM 713	-B 103 103	GE-61 NWP	2 ½-A H M 701	-B HM 703	HM 711	HM711	HM 703	IIL WH	HM 711	112 WH	MI -106 HM 703	GE-60	-MH 703	102 MH	102 MH		
S: Th	0.	Inside	55124 Sone	Vone	19747 None	65124	None	04285	04285	None	65224	04285	65224	19753 65224	65124	65224	None	None		
JOURN	Cat. N	utside	35101 35126	19712	19746 1 19726	33101	19714	55223 1	65223 1	19712	65223	65223 1	65223	19752 1 65223	65101	65223	65126	65126	-	14
		o pd	80 6	370 11	773 11 1e 1	372 6	368 1	386	386	370 1	386	386	386	397 1	372	370	380	380		
EADS	t. No.	Let Har	9 120	120	2 74' Noi	1 1200	7 120	5 120	5 120	9 120	5 120	5 120	5 120	6 120 9 120	1 120	9 120	9 120	9 120		
BRAK	Cat	Right Hand	120432 120379	120369	7477: None	12037	12036	12038	12038.	120369	12038.	12038.	12038.	12039	12037	12036	12037	12037		
SHOES	No.	Left Hand	65227 65232	65222	65240 *120306	65230	65200	65238	65235	65222	65238	65238	65238	120366 65222	125356	65222	65232	65232		
BRAKE	Cat.	Right Hand	65226 65231	63206	65239 *120305	65228	65186	65236	65234	65206	63236	65236	65236	120365 65206	125355	65206	65231	65231		
		Journal Lining	65202 63210	65214	65202 119274	65202	119281	119912	119912	65214	65202	119912	65202	119279 65202	65202	65202	65210	65210		
AT. NO.		ournal Box	104286	119174	65184 119158	104286	119176	119911	119911	119174	104286	119911	104286	119172 104286	65184	104286	119166	119166		
0		Wheels J and Axle	122828 120209	120199	122829 119955	120072	120029	122824	120176	122830	120267	120166	120267	120294	122831	120140	122823	122823		
OTIVE		Rating	4-2T7-A-2 4-2T6-B-1	A-2T5-G-1	M-2T10-C-2 M-105-A-2	M-2T7-A-1	M-2E4-C-1	M-2C10-B-1	M-2C10-D-1	M-2T4-F-1	M-2T10-F2	M-2C10-B-1	M-2T10-F-1	SA-2E18-A-1 M-2T5-G-1	M-101-B-2	M-2T5-G-1	M-2T6-K-1	M-2T6-K-2		
LOCOM		Serial Number	3469 LN 3470-71 LN	3473 LA	3474 L3 3475 L1	3476 L1	3477 LI	3478 L1	3479-80 LN	†3481-84 L1	3485 LI	3486 L1	3487-89 L1	3490-92 L	3494 L1	3495 L1	3496 L.	3497 to L. 3501 inc.		

GENERAL ELECTRIC COMPANY

 \triangle 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.



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



Wheels and Axle of Outside Frame Locomotive (Plate Type-Steel Tired)



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



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 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

	Sec. 20	DIMENSIO	NS IN INCHE	s			-	DIMENSIO	NS IN INCHE	s	
Cat. No.	Gauge	Diam. of Wheels	Diam. of Axle at Gear Fit	Overall Length	Fig. No.	Cat. No.	Gauge	Diam. of Wheels	Diam. of Axle at Gear Fit	Overall Length	Fig. No.
119915	17	22	3	37%	I	119980	30	22	31/2	43 %	III
119916	18	20	23/	311/2	Ĩ	122825	30	22	31/2	45 3%	T
119917	18	20	234	34 %	Ī	119981	30	22	31/2	453%	TÎT
119918	18	20	234	34 %	Ī	119982	30	22	31/2	453%	T
119919	18	20	2.34	34 %	Ť	119983	30	22	31/2	513%	Ť
119920	18	20	2.34	347%	Ŧ	119984	30	24	31/2	453	Î
119921	18	20	2.34	353%	Î	119985	30	24	31/2	453%	TIT
119922	18	20	2.34	377%	Ť.	119986	30	24	31/2	467%	T
119923	18	22	3 4	317%	Ť	119987	30	28	4	491	Ť
119924	20	20	2.3/	337%	Î	119988	30	28	4	491/2	Ť
119925	20	20	234	347%	Ť	119989	30	28	4	4912	Î
119927	22	20	23/	351/2	Î	119990	30	28	4	4912	Ī
119928	221/2	20	23/	39	Ī	122822	30	33	41/4	5012	I
119929	*23	20	234	361/2	Ī	119991	30	33	41/	461/2	Ī
119930	231/2	22	234	37 1/8	Ī	119992	30	33	41/4	501%	Ī
119931	23 5/8	28	4	441/4	III	119993	30	33	41/4	501/2	I
119932	24	14	23/4	373/4	I	119994	30	33	41/4	501%	III
119933	24	14	$2\frac{13}{18}$	373/4	III	119995	30	33	41/4	50 1/2	I
119934	24	20	23/4	371/2	I	119996	30	33	41/4	501/2	I
119935	24	20	23/4	37 1/8	I	119997	30	33	41/4	5012	III
119936	24	22	234	37 1/8	I	119998	30	33	41/4	501/2	III
119937	24	22	234	37 1/8	I	119999	30	33	41/4	501/2	III
119938	24	22	$2\frac{3}{4}$	41 1/8	I	120000	30	33	$4\frac{9}{32}$	$50\frac{1}{2}$	I
119939	24	22	3	371/2	I	120001	30	33	$4\frac{9}{32}$	$50\frac{1}{2}$	III
119940	24	22	3	37 1/8	I	120002	33	22	3	467/8	I
119941	24	22	3	39	I	120003	34	22	$3\frac{1}{2}$	493/8	III
119942	24	22	3	43 1/8	I	120004	35	22	3	481/2	I
119943	24	22	$3\frac{1}{2}$	37 1/8	I	123487	35	28	4	551/2	I
119944	24	22	$3\frac{1}{2}$	393/8	I	120005	$35\frac{1}{2}$	22	$3\frac{1}{2}$	51	I
119945	24	28	4	$41\frac{1}{2}$	III	120006	$35\frac{1}{2}$	22	$3\frac{1}{2}$	51	Ī
119946	24	28	4	$43\frac{1}{2}$	I	120007	351/2	28	4	$55\frac{1}{2}$	1
119947	24	28	4	441/4	III	120008	351/2	28	4	551/2	1
119948	24	28	4	44%	1	120010	351/2	28	4	551/2	1 T
119949	24	28	4	401/2	1	120011	35/2	28	4	35 1/2	Ļ
119950	24	28	4	48%	Ļ	120012	351/2	28	4	551/2	÷.
119951	24	00	4 4	40 1/2		120013	301/2	28	4	00 ¹ /2	L T
110052	24	00	4/4	501/	1 T	120014	251/	20	4	551/	1 T
4110054	24	22	41/	5016	÷	120015	351/	20	41/	5516	Ť
110055	26	20	23/	30.92	Ť	120010	3516	30	41/	5516	Ť
119956	26	28	4 4	463/	III	120018	3516	30	414	5516	Ť
119957	26	33	41/	501%	Ť	123745	36	14	2.3/	493	TT
119958	26	33	41/	501/2	Ť	120019	36	22	234	49%	ÎÎÎ
119959	271/2	22	3 4	4034	Ĩ	120020	36	22	234	49%	I
126376	28	20	23/	41 1/2	Ī	120021	36	22	3 *	491/2	Ī
119960	28	20	23/4	411/2	I	120022	36	22	3	491/2	I
119961	28	22	23/4	41 7/8	Ī	120023	36	22	3	49 %	I
119962	28	22	3	43 7/8	I	126377	36	22	3	49 %	I
119963	28	22	31/2	433/8	I	120024	36	22	3	523/8	I
119964	28	28	4	471/2	I	120025	36	22	$3\frac{1}{2}$	43	II
119965	28	28	4	491/2	I	120026	36	22	31/2	49 1/8	I
119966	28	33	41/4	501/2	I	120027	36	24	31/2	43	II
119967	28	33	41/4	$50\frac{1}{2}$	I	120028	36	24	$3\frac{1}{2}$	43	IV
119968	281/2	22	3	43 1/8	I	120029	36	24	$3\frac{1}{2}$	51 3/8	I
119969	29	24	31/2	45	111	120030	36	24	31/2	51 3/8	III
119970	291/2	22	3	431/2	1 I	120031	36	28	31/2	49 1/8	
119971	291/2	22	3	431/2	1	120032	36	28	4	43	
119972	291/2	22	3	43/2	Ļ	120033	30	28	4	43	IV
119973	30	22	2%	43 /8	1	120034	36	28	4	43	E Consi-1
119974	30	22	3	43 1/2	1 T	120035	30	28	4	43	Special
119975	20	22	2	40 1/2	TTT	120030	30	28	4	40	III
110077	30	22	3	40/8	T	120037	36	20	4	40	IV
110079	30	22	3	451/	Ť	120401	36	20	4	501/	I
110070	30	22	3	5136	Ť	120038	36	20	4	533/	Ť
113979	00	1 22	0	01 78	1	120039	00	20	T	0074	1

*In one instance used on $23\frac{1}{2}$ in. gauge.

 ϕ Wheels have no Flange.

WHEELS AND AXLES FOR LOCOMOTIVES

								Carlo Carlo Andrea			
	D. Ch	DIMENSIO	NS IN INCHE	s				DIMENSIO	NS IN INCHE	s	
Cat. No.	Gauge	Diam. of Wheels	Diam. of Axle at Gear Fit	Overall Length	Fig. No.	Cat. No.	Gauge	Diam. of Wheels	Diam. of Axle at Gear Fit	Overall Length	Fig. No.
$120040 \\ 120041 \\ 120042 \\ 120043 \\ 120044$	36 36 36 36 36	28 28 28 28 28 28	4 4 4 4	$55\frac{1}{2}$ $55\frac{1}{2}$ $55\frac{1}{2}$ $55\frac{1}{2}$ $55\frac{1}{2}$ $55\frac{1}{2}$	I III I I	120104 120105 119433 120106 120107	$40 \\ 40 \\ 40 \\ 40 \\ 40 \\ 40$	28 28 28 28 28 28	4 4 4 4	47 47 47 47 $57^{3}/_{4}$	IV IV II IV I
$120045 \\ 120046 \\ 120047 \\ 120048 \\ 120049 \\ 120050$	36 36 36 36 36 36 36	28 28 28 28 28 28 28 28	4 4 4 4 4 4	$ \begin{array}{c} 5512\\ 5512\\ 5512\\ 5512\\ 5512\\ 5512\\ 5512\\ 5512\\ 5512\\ 5512 \end{array} $	Special III I I I III	$\begin{array}{c} 120108\\ 120109\\ 120110\\ 120111\\ 120111\\ 120112\\ 120113\\ \end{array}$	$ \begin{array}{c} 40 \\ 40 \\ 40 \\ 40 \\ 40 \\ 40 \\ 40 \\ 40 \end{array} $	28 28 28 28 28 28 28 28	4 4 4 4 4 4	$59\frac{1}{2}$ $59\frac{1}{2}$ $59\frac{1}{2}$ $59\frac{1}{2}$ $59\frac{1}{2}$ $59\frac{1}{2}$ $59\frac{1}{2}$ $59\frac{1}{2}$	
$\begin{array}{c} 120051\\ 120009\\ 120053\\ 120054\\ 120055\\ 120056\\ \end{array}$	36 36 36 36 36 36 36	28 28 28 28 28 28 28 28	4 4 4 4 4 4	$55\frac{1}{2}$ $55\frac{1}{2}$ $55\frac{1}{2}$ $55\frac{1}{2}$ $55\frac{1}{2}$ $55\frac{1}{2}$ $55\frac{1}{2}$	III I I I I I I	$\begin{array}{r} 120114\\ 120115\\ 120116\\ 120117\\ 120118\\ 120119\\ \end{array}$	$ \begin{array}{r} 40 \\ 40 \\ 40 \\ 40 \\ 40 \\ 40 \\ 40 \\ 40 \\$	28 28 30 30 30 30 30	$ \begin{array}{c} 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\$	$\begin{array}{c} 60 \frac{1}{4} \\ 62 \\ 59 \frac{1}{2} \\ 57 \frac{3}{4} \\ 59 \frac{1}{2} \\ 59 \frac{1}{2} \\ 59 \frac{1}{2} \end{array}$	III Special I I I I
$120057 \\ 120058 \\ 120059 \\ 120060 \\ 120061 \\ 120062 \\$	36 36 36 36 36 36	28 28 28 28 28 28 28 28	4 4 4 4 4 4	$55\frac{1}{2} \\ 55\frac{1}{2} \\ 55$		$\begin{array}{c} 120120\\ 120121\\ 120122\\ 120123\\ 120123\\ 120124\\ 120125\\ \end{array}$	$ \begin{array}{r} 40 \\ 40 \\ 40 \\ 40 \\ 40 \\ 41 \\ 41 \end{array} $	$ \begin{array}{r} 30 \\ 30 \\ 30 \\ 30 \\ 30 \\ 24 \\ 24 \end{array} $	$ \begin{array}{r} 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\$	$59\frac{1}{2} \\ 59\frac{1}{2} \\ 59\frac{1}{2} \\ 61\frac{1}{2} \\ 61\frac{5}{8} \\ 48 \\ 48 \\ 48 \\ 11 \\ 11 \\ 12 \\ 12 \\ 12 \\ 12 \\ 12 \\ 1$	III I III III IV
$120063 \\ 120064 \\ 120065 \\ 120066 \\ 120067 \\ 120068 \\$	36 36 36 36 36 36 36	28 28 28 28 28 28 28 28	4 4 4 4 4 4	$55\frac{1}{2}$ $55\frac{1}{2}$ $55\frac{1}{2}$ $55\frac{1}{2}$ $55\frac{1}{2}$ $55\frac{1}{2}$ $56\frac{1}{4}$	I III I I I I I I	$120126 \\ 120127 \\ 120128 \\ 120129 \\ 120130 \\ 120131 \\ 120120 \\ 12010 \\ 12010 \\ 12010 \\ 12010 \\ 12010 \\ 12010 \\ 12010 \\ 12010 \\ 12010 \\ 12010 \\ 12010 \\ 12010 \\ 12010 \\ 12010 \\ 12010 \\ 12010 \\ 12010 \\ 12010 \\ 12010 \\ 12000 \\ 12$	$ \begin{array}{c} 41 \\ 41 \\ 42 \\ 42 \\ 42 \\ 42 \\ 42 \\ 42 \\ 42 \\ 42$	28 33 22 22 22 22 22	$4 \\ 4 \\ 3 \\ 3 \\ 3 \\ 3 \\ 3 \\ 3 \\ 3 \\ 3 \\ $	$ \begin{array}{r} 61 \frac{1}{2} \\ 48 \\ 49 \\ 55 \frac{1}{2} \\ 55 \frac{7}{8} \end{array} $	IV II II I I I
$120069 \\ 120070 \\ 120071 \\ 120072 \\ 120073 \\ 120074$	36 36 36 36 36 36 36	28 28 28 28 28 28 28	4 4 4 4 4 4	$56\frac{1}{4} \\ 56\frac{3}{8} \\ 56\frac{3}{8} \\ 56\frac{1}{4} \\ 58\frac{3}{8} \\ 65\frac{5}{8} $	I I I I I I	$120132 \\ 120133 \\ 120134 \\ 120135 \\ 120136 \\ 120137$	$42 \\ 42 \\ 42 \\ 42 \\ 42 \\ 42 \\ 42 \\ 42 \\$	22 22 22 22 22 22 22 22 22	$ \begin{array}{c} 3 \\ 3 \\ 1 \\ 2 \\ 3 \\ 1 $	$55\frac{7}{8}$ 49 49 49 49 49 49	I II IV II II IV
$\begin{array}{c} 120075\\ 120076\\ 120077\\ 120078\\ 120079\\ 122826\end{array}$	36 36 36 36 36 36 36	30 30 30 30 30 30 30	$ \begin{array}{c} 4 \\ 3 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4$	$53\frac{3}{4} \\ 53\frac{3}{4} \\ 53\frac{3}{4} \\ 55\frac{1}{2} \\ 55\frac{1}{2} \\ 56$	I I III I I I I	$\begin{array}{r} 120138\\ 120139\\ 120140\\ 120141\\ 120142\\ 120143 \end{array}$	$ \begin{array}{r} 42 \\ 42 \\ 42 \\ 42 \\ 42 \\ 42 \\ 42 \\ 42 \\$	$22 \\ 22 \\ 24 \\ 24 \\ 28 \\ 28 \\ 28$	$ \begin{array}{r} 3 \frac{1}{2} \\ 3 \frac{1}{2} \\ 3 \frac{1}{2} \\ 3 \frac{1}{2} \\ 4 \\ 4 \end{array} $	$ \begin{array}{r} 49 \\ 58^{1/2} \\ 49 \\ 49 \\ 49 \\ 49 \\ 49 \\ 49 \\ 49 \\ 49 \\ \end{array} $	IV IV II · III II
$\begin{array}{r} 120080\\ 120081\\ 120082\\ 120083\\ 120083\\ 120084\\ 120085\end{array}$	36 36 36 36 36 36 36	30 30 30 30 30 30 30	$\begin{array}{c} 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 $	$59\frac{1}{2}\\60\frac{5}{8}\\56\frac{1}{2}\\56\frac{5}{8}\\57\frac{5}{8}\\57\frac{5}{8}\\57\frac{5}{8}$		$\begin{array}{c} 120144 \\ 120145 \\ 120146 \\ 120147 \\ 120148 \\ 120149 \end{array}$	$\begin{array}{r} 42 \\ 42 \\ 42 \\ 42 \\ 42 \\ 42 \\ 42 \\ 42 $	28 28 28 28 28 28 28 28	4 4 4 4 4	49 49 49 49 49 49 49 49 49	IV II IV II II II
$\begin{array}{c} 120086\\ 120087\\ 120088\\ 120089\\ 120090\\ 120090\\ 120091 \end{array}$	36 36 36 36 36 36 36	30 30 30 33 33 33 33	$ \begin{array}{r} 4 1 \\ 4 1 \\ 4 1 \\ 4 1 \\ 4 1 \\ 4 1 \\ 4 \\ 4 1 \\ 4 \\ 5 \\ \end{array} $	$ \begin{array}{c} 581_{2} \\ 591_{2} \\ 601_{2} \\ 43 \\ 43 \\ 561_{2} \end{array} $	III I III IV II III	$\begin{array}{r} 120150\\ 120151\\ 120152\\ 120153\\ 120153\\ 120154\\ 120155\\ \end{array}$	$ \begin{array}{r} 42\\ 42\\ 42\\ 42\\ 42\\ 42\\ 42\\ 42\\ 42\\ \end{array} $	28 28 28 28 28 28 28 28	4 4 4 4 4 4	$\begin{array}{r} 49\\ 49\\ 49^{7}_{8}\\ 59^{3}_{4}\\ 61^{1}_{2}\\ 61^{1}_{2}\end{array}$	IV IV Special I I I
$120092 \\ 120093 \\ 120094 \\ 120095 \\ 120096 \\ 120097$	$\begin{array}{r} 36\frac{1}{2} \\ 37\frac{1}{2} \\ 37\frac{1}{2} \\ 38 \\ 38 \\ 38 \\ 38 \end{array}$	28 30 30 28 30 33	$ \begin{array}{c} 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\$	$55\frac{1}{2} \\ 57 \\ 61\frac{1}{2} \\ 57\frac{1}{2} \\ 57\frac{1}{2} \\ 57\frac{1}{2} \\ 45$	I I I I IV	$\begin{array}{r} 120156 \\ 120157 \\ 120158 \\ 120159 \\ 120160 \\ 120161 \end{array}$	$ \begin{array}{r} 42 \\$	28 28 28 28 28 28 28 28		$\begin{array}{c} 611/2 \\ 611/2 \\ 611/2 \\ 611/2 \\ 611/2 \\ 611/2 \\ 611/2 \\ 611/2 \end{array}$	I I I I I I
$120098 \\ 120099 \\ 123488 \\ 120100 \\ 120101 \\ 120102$	$39 \\ 39 \\ 40 \\ 40 \\ 40 \\ 40 \\ 40 $	28 28 22 22 22 22 22 24	$ \begin{array}{c} 4 \\ 4 \\ 3 \\ 3^{1/2} \\ 3^{1/2$	$ \begin{array}{r} 46 \\ 46 \\ 53 \\ 7 \\ 8 \\ 47 \\ 47 \\ 47 \\ 47 \\ 47 \\ 47 \\ 47 \\ 47$	IV IV I IV IV IV	$120162 \\ 120163 \\ 120164 \\ 126378 \\ 120165 \\ 120166 \\ 1$	$ \begin{array}{r} 42 \\ 42 \\ 42 \\ 42 \\ 42 \\ 42 \\ 42 \\ 42 \\$	$28 \\ 30 \\ 30 \\ 30 \\ 30 \\ 30 \\ 30 \\ 30$	$ \begin{array}{c} 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\$	$\begin{array}{c} 62\frac{1}{4} \\ 61\frac{1}{2} \\ 61\frac{1}{2} \\ 62 \\ 61\frac{1}{2} \\ 62 \\ 61\frac{1}{2} \\ 62\frac{5}{8} \end{array}$	III I Special III I IV
120102	10	90	1	47	IV	120100		1.	14		Section 1

WHEELS AND AXLES FOR LOCOMOTIVES

		DIMENSIO	NS IN INCHE	s				DIMENSIO	NS IN INCHE	s	
Cat. No.	Gauge	Diam. of Wheels	Diam. of Axle at Gear Fit	Overall Length	Fig. No.	Cat. No.	Gauge	Diam. of Wheels	Diam. of Axle at Gear Fit	Overall Length	Fig. No.
120167	42	30	41/4	$60\frac{1}{2}$	I	120233	44	30	41/4	631/2	III
120168	42	30	414	61 1/2	Ī,	120234	44	30	41/4	64	I
120169	42	30	41/4	$61\frac{1}{2}$	I	120235	44	30	41/4	65 %	III
120170	42	30	41/4	$61\frac{1}{2}$	I	120236	44	33	5	$63\frac{1}{2}$	I
120171	42	30	4 1/4	$61\frac{1}{2}$	Special	120237	44	33	5	631/2	
120172	42	30	4 1/4	$ \begin{array}{c} 01 \frac{1}{2} \\ 61 \frac{1}{6} \end{array} $	111	120238	44	33 98	032	51 631/	T
120175	42	30	41/	62	Ť	120239	45	28	4	64 1/2	T
120176	42	30	41/4	62 5/8	Î	120241	45	30	41/4	641/2	Î
120177	42	30	41/4	64	I	120242	471/4	30	41/4	$67\frac{1}{2}$	I
120178	42	33	$3\frac{1}{2}$	49	IV	120243	471/4	30	$4\frac{1}{4}$	$67\frac{1}{2}$	III
120179	42	33	41/4	49		120244	411/4	30	41/4	617/	
120180	42	33	4 /4	621/2	T	120245	48	22	31/2	55	1 II
120182	42	33	5	61 1/2	Î	120247	48	24	31/2	55	IV
120183	42	33	5	61 1/2	III	120248	48	28	334	653/4	I
120184	42	33	5	$61\frac{1}{2}$	I	120249	48	28	4	55	II
120185	42	33	5	$62\frac{1}{2}$		120250	48	28	4	55	IV
120186	43	28	4	00 62	T II	120251	48	28	4	00 55	
120187	431/2	28	4 /4	631/2	Ť	120252	48	28	4	55 1/2	Special
120189	44	22	3	51	ÍI	120254	48	28	4	6514	I
120190	44	22	3	51	II	120255	48	28	4	$67\frac{1}{2}$	I
120191	44	22	3	51	II	120256	48	28	4	$67\frac{1}{2}$	I
120192	44	22	3	591/2	I	120257	48	28	4	671/2	I
120193	44	22	31/2	51	TT	120258	48	28	4	671/2	T
120195	44	22	31/2	51	IV	120260	48	28	4	681/	Î
120196	44	24	31/2	51	IV	120261	48	28	$4\frac{1}{32}$	55	IV
120197	44	24	31/2	51	II	120262	48	28	4	55	IV
120198	44	24	$3\frac{1}{2}$	51		122823	48	28	4	55	IV
120199	44	24	3 1/2	51 51	IV	120203	48	30	4 1/4	6716	I T
120200	44	24	31/2	511/2	IV	120265	48	30	41/4	67 1/2	1 TTT
120202	44	28	4	51	ÎÌ	120266	48	30	41/4	67 1/2	I
120203	44	28	4	51	II	120267	48	30	41/4	68	III
120204	44	28	4	51	11	120268	561/2	22	$3\frac{1}{2}$	$63\frac{1}{2}$	
120205	44	28	4	51	IV	120269	561/2	28	4	621/	
120200	44	28	4	51	IV	120270	561/2	28	4	631/2	Î
120208	44	28	Â.	51	ÎV	120272	561/2	28	4	76	Ī
120209	44	28	4	51	IV	120273	561/2	28	4	77 3/4	I
120210	44	28	4	613/4	1	120274		28	4	773/4	I
120211	44	28	4	631/2	1 T	120275	561/2	28	4	80 1/2	I T
120212	44	28	4	631/2	Í	120270	561/2	28	4	8034	I
120214	44	28	4	631/2	Î	120277	561/2	29	4	63 3/8	ĪV
120215	44	28	4 .	631/2	I	120278	561/2	30	4	80 3/4	I
120216	44	28	4	$63\frac{1}{2}$	1	120279	561/2	30	41/4	$63\frac{1}{2}$	IV
120217	44	28	4	621/2	Special	120280	561/2	30	4 4	03 1/2	II
120218	44	28	4	631/2	İ	120281	561/2	30	4 1/4	791/	Special
120220	44	28	4	631/2	Î	120283	561/2	30	41/2	7914	I
120221	44	28	4	$63\frac{1}{2}$	I	120284	561/2	33	41/2	771/2	I
126375	44	28	4	631/2	I	120285	561/2	33	41/2	791/4	I
120222	44	28	4	64 1/2	I	120286	561/2	33	41/2	791/4	I
120223	44	28	4	64 1/	III	120287	561/2	33	4 1/2	82.3/	I
120224	44	28	4	67 1/2	I	120289	561/2	33	43/4	791/4	Î
120225	44	28	4	69	III	120290	561/2	33	5	76	I
120226	44	30	41/4	51	IV	120291	561/2	33	5	791/4	Special
120227	44	30	41/4	61 3/4	I	120292	561/2	33	514	791/4 993/	I
120228	44	30	4 4 4 4 1/	631/2	I	120293	561/2	36	54	823/	Special
120229	44	30	41/4	63 1/2	Î	120295	561/2	28	4	813/8	III
120231	44	30	41/4	631/2	I	126374	561/2	33	51/4	85 5/8	III
122824	44	30	41/4	64 5/8	III	120296	621/4	28	4	691/4	II
120232	44	30	41/4	631/2							

JOURNAL BOXES AND LININGS FOR LOCOMOTIVES



Fig. I Outside Frame Journal Box (New Type)



Fig. III Outside Frame Journal Box (Old Type)



Inside Frame Journal Box



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		LINING	S	
					Dimen	sions in I	nches
Cat. No.	Pattern No.	Fig. No.	Remarks	Cat. No.	Length	Bore	Diam Shell
65185	18800	I		65204	51/4	3 17 64	41/8
119156	21800	I		119273	4	25/8	$3\frac{1}{16}$
65190	55252	1 T	Recess for journal spring 3/4 in. deep	65212	4	241	31/2
119157	85220-A	Ť	Recess for journal spring % in. deep	119274	4	249	41/2
65194	85220-K	II		65216	4	$3\frac{1}{64}$	41/8
65184	95023-P	I	Without wearing plate		0.0	- 0*	-/0
119159	95023-P	I	Plug in spring recess for use with single journal		10 - 11		
110100	05000 D	-	spring				
119100	95023-P	1	Like Cat. No. 05184 except has $\frac{1}{2}$ in. wearing		100		-
119161	95023-P	I	Like Cat. No. 119159 except has 3% in. wearing	65202	6	349	41/2
104286	95023-P	I	Like Cat. No. 65184 except has 3% in. wearing				5.61
119162	95023-P	I	Like Cat. No. 119159 except has 5% in. wearing				
119163	99457-A	T	place	119275	413	349	41/2
126435	122000-A	Special		126436	8	41/4	1/4
119164	122829-F	I		119276	6	$4\frac{33}{64}$	51/2
119911	122829-F	II	With wearing plate	119912	61/8	4164	51/2
119165	122927-XE	I	Has finished guides	65208	5	4164	43/4
119166	122927-XF		With wearing plate	65210	4 1/2	464	4%
00187	122927-AE 199097-XE		With wearing plate	65208	5	$4\frac{1}{64}$	43/4
65188	122927-XE	ŤŤ	Without wearing plate	05010	11/		
119168	122927-XF	ÎÎ	With wearing plate for LM-2T7-B1 only	65210	41/2	464	4 3/4
119169	123030-A	II	01	119277	4 9 16	349	41/2
119170	123182-E	I		119278	7	1.883	516
				126437	71/	2.258	516
119171	123334-G	I		119279	71/2	464	51/2
119172	123334-G	I	With dust guard	119279	71/2	433	51/2
65198	225211-D	Î	Without wearing plate	65220	51/2	417	5
119173	225211-D	II	With wearing plate	126438	51/2	$4\frac{1}{64}$	5
65192	242153-E	II	Without wearing plate	65214	4	333	41/
119174	242153-E	II	With wearing plate	65919	5	049	13/
09190	242490-A	1	1	119280	3	064 417	6
119175	854152-A	II		119914	4	5	6
110176	867109 A	T		119281	4	317	4
119170	00/100-A	1		126442	4	241	4
					1		

JOURNAL AND MOTOR SUSPENSION SPRINGS FOR LOCOMOTIVES



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 Elec-



Fig. II

Single Journal and Motor Suspension Spring tric mine locomotives, very materially reduces the Double Journal Spring 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.

0 · · · ·	DIMENSIONS IN	INCHES		DIMENS	IONS IN INCHES
Cat. No.	Length	Outside Diam.	Cat. No.	Length	Outside Diam.
$\begin{array}{c} 119908\\ 119709\\ 119710\\ A \ 119711\\ B \ 119712\\ 119713\\ 119714\\ 119715\\ 119716\\ 65130\\ 119717\\ 65126\\ 119719\\ C \ 65129\\ \end{array}$	$ \begin{array}{r} 4 \frac{3}{16} \\ 4 \frac{1}{4} \\ 4.9 \\ 5 \\ 5 \\ 5 \\ 5 \\ 5 \\ 5 \\ 5 \\ 5 \\ 5 \\ 6 \\ 6 \\ 6 \\ 6 \\ 1 \\ 4 \\ 6 \\ 6 \\ 6 \\ 6 \\ 6 \\ 6 \\ 1 \\ 4 \\ 6 \\ 6 \\ 6 \\ 1 \\ 4 \\ 6 \\ 1 \\ 4 \\ 6 \\ 1 \\ 4 \\ 6 \\ 1 \\ 4 \\ 6 \\ 1 \\ 4 \\ 6 \\ 1 \\ 4 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1$	$\begin{array}{c} 3 \frac{3}{4} \\ 3 \frac{1}{2} \\$	D 119721 119726 119727 119728 65135 119729 119730 119731 119732 E 119733 F 119734 119738	$\begin{array}{c} 6\frac{1}{4}\\ 6\frac{1}{2}\\ 6\frac{1}{2}\\ 7\\ 7\\ 7\frac{1}{8}\\ 7\frac{1}{4}\\ 7\frac{3}{8}\\ 7\frac{1}{16}\\ 8\\ 8\frac{1}{4}\\ 9\frac{1}{2}\\ 9\frac{1}{2}\\ \end{array}$	$\begin{array}{c} 3\frac{5}{8}\\ 3\frac{3}{8}\\ 5\frac{1}{2}\\ 4\\ 3\frac{1}{2}\\ 3\frac{5}{8}\\ 4\frac{1}{8}\\ 4\frac{1}{8}\\ 4\frac{3}{8}\\ 4\frac{3}{8}\\ 4\frac{3}{8}\\ 4\frac{3}{8}\\ 8\end{array}$
A-has 5½ turn B-has 4½ turn	s. C-Plain s. D-Japar D	finish. 1 finish. 1 OUBLE JOUR	E-wire 1 in. diameter. F-wire 1 1/8 in. diameter. RNAL SPRINGS		1
	OUTSIDE SPRING			INSIDE SPRING	
C. I. N.	Dimensions	in Inches	Cat Na	Dimensio	ons in Inches
Cat. No.	Length	Outside Diam.	Cat. No.	Length	Outside Diam.
$\begin{array}{c} 119739 \\ 119742 \\ 119744 \\ J \ 119746 \\ K \ 65127 \\ L \ 65101 \\ M \ 119748 \\ N \ 119748 \\ N \ 119718 \\ 119909 \\ O \ 65131 \\ P \ 119752 \\ 126502 \\ 119754 \\ 65223 \\ 126542 \end{array}$	5 5 ¹ / ₄ 5 ³ / ₄ 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 8 8 6 3/8 6 1/2 6 1/8 6 7 1/2 8 3/8	$5\frac{1}{2}$	$\left\{\begin{array}{c} G \ 119740 \\ H \ 119741 \\ 119743 \\ 119745 \\ 119747 \\ 65128 \\ 65124 \\ 119749 \\ 119907 \\ 119910 \\ 65132 \\ 119753 \\ 126503 \\ 119755 \\ \{ \ 65224 \\ 104285 \\ 126543 \end{array}\right.$	$\begin{array}{c} 4\frac{1}{2}\\ 4.92\\ 5\\ 5\frac{1}{2}\\ 6\\ 6\\ 6\\ 6\\ 6\\ 6\\ 6\\ 6\\ 6\\ 6\\ 6\\ 6\\ 7\\ 7\\ 7\\ 7\\ 8\\ 8\\ 8\\ 8\\ 8\\ 8\end{array}$	$ \begin{array}{r} 3 \frac{3}{4} \\ 3 \frac{3}{4} \\ 3 \frac{1}{4} \\ 2 \frac{3}{4} \\ 3 \frac{1}{2} \\ 2 \frac{1}{2} \\ 2 \frac{1}{2} \\ 3 \frac{1}{2} \\ 2 \frac{3}{4} \\ 3 \frac{1}{4} \\ 5 \\ \end{array} $
G-For side opp H-For cab side J-wire 1¼ in. c	osite cab K-w L-w liameter M-v M (ire 1 in. diameter ire 1 ⁴⁶ in. diamete vire 1 ³ % in. diame OTOR SUSPE	r 4 turns N-wire 1 i r O-wire $\frac{1}{k}$ eter $*P$ -wire $\frac{1}{16}$ NSION SPRINGS	in. diameter 4½ in. diameter in. diameter	turns
	UPPER SPRING			LOWER SPRING	

SINGLE JOURNAL SPRINGS

Dimensions in Inches Dimensions in Inches Cat. No. Cat. No. Length Outside Diam. Length Outside Diam. 21/2 119757 $3\frac{1}{16}$ $3\frac{1}{2}$ 119756 25/8 $2\frac{1}{2}$ 65134 $3\frac{1}{2}$ 31/2 31/2 65133

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)

- Brake stand complete
- ABCDEFGHIJKL Pulley for brake chain
- Clevis for brake chain
- Link for clevis and brake chain
- Pin for clevis and equalizer
- Brake chain
- Spring cotter, Cat. No. 16064
- Brake rod
- Brake hanger, left hand
- Brake hanger, right hand
- Brake shoe head, left hand (see tables) Brake shoe head, right hand (see tables)
- M Brake shoe, left hand (see tables)
- Brake shoe, right hand (see tables) N O
- Pin for brake hanger and locomotive side frame

- P Spring cotter $\left(\frac{3}{16} \text{ in. by } 1\frac{3}{4} \text{ in.}\right)$
- Brace with pin, for chain pulley QR
- Equalizer for brake rods and brake chain
- S Spring cotter $(\frac{1}{4} \text{ in. by 2 in.})$
- Т Brake lever
- Non-adjustable link for brake lever and brake
 - shoe head Pin for brake lever and brake rods v
 - W Pin for brake shoe head, brake hanger and link

 - X Y
 - Ζ
 - Brake release spring, upper Brake release spring, lower Spring cotter $(\frac{3}{16} \text{ in. by 2 in.})$ Set screw for brake shoe and brake shoe head Aa
- Screw eye for nut and brake shoe △ Ab
- Nut for screw eye and brake lever △ Ac

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



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 $(\frac{1}{4}$ in. by $1\frac{3}{4}$ in.)
- M Set screw for brake shoe and brake shoe head $(\frac{5}{8}$ in.-11, $2\frac{1}{2}$ 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.





- 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 $\frac{3}{16}$ 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 ½ in.-10 ¾ in. hexagon)
- P Nut, Cat. No. 16074
- Q Nut, Cat. No. 15443
- R Spring cotter, Cat. No. 16323
- S Spring cotter (1/4 in. by 13/4 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 (5% in.-11, 2½ 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, 55% in. hex. H.)
- Fa Bolt (5/8 in.-11, 51/4 in. hex. H.)
- Ga Bolt (5% in.-11, 5 in. hex. H.)



- 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 (1/2 in.-11, 15/8 in. hex. H.)
- P Spring cotter, Cat. No. 16064
- Q Spring cotter, Cat. No. 52517

Fig. IV Vertical Screw Brake Stand for Center Location



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

Removable Brake Shoe and Head

Left Hand

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.

GENERAL ELECTRIC COMPANY

BRAKE SHOES AND HEADS FOR LOCOMOTIVES BRAKE SHOES

CAT. NO.	OF SHOE	PATTERN	NUMBERS	Diam. of Wheel	CAT. NO. OF SHOE	HEADS USED WITH
Right	Left	Right	Left	Used With	Right	Left
65186	65200	122460 E	122460 F	22	120367	120368
65206	65222	122973 A	122973 B	22	{ 120367	120368
65226	65997	111144 M	111144 N	28	120369	120370 120272
65228	65230	120009 C	120009 D	28	120371	120372
65231	65232	122928 G	122928 H	28	{ 120371	120372
65234	65235	122017 A	199017 B	30	120379	120380
65236	65238	103972 M	103972 N	30	120385	120380
65239	65240	102689 XB	102689 XC	33	{ 120390	120391
					126446	126447
65242	65243	228338 A	228338 B	33	126446	126447
65244	65246	227095 A	227095 B	33	120383	120384
* 65956	* 65957	34400 122378 A	34404 122378 B	20	*	*
* 65958	* 65959	120969 A	120969 B	20	*	*
*120303	*120304	34454 C	34455 D	20	*	*
*120305	*120306	34454 199227 A	34455 199227 B	20	*	*
*120309	*120310	122337 A 123322 A	122337 B	$\frac{20}{22}$	*	*
*120311	*120311	39448 OC	39448 OC	22	*	*
*120312	*120313	96675 A	96675 B	22	*	*
*120314	*120315	98061 E 112520 G	98061 F 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
*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
*120333	*120333	30515 D	30515 D	$\frac{28}{28}$	*	*
120334	120335	123022 G	123022 H	28	120377	120378
120336	120337	839186 A	839186 B	28	120371	120372
120338	120339	246810 A	246810 B	28	120379	120380
120342	120343	160386 A	160386 B	30	120381	120382
*120344	*120344	27814	27814	30	*	*
*120345	*120346	839792 A 97610 G	97610 H	30	*	*
120349	120350	236112 C	236112 D	30	120383	120384
120351	120352	862163 A	862163 B	30	120379	120380
120353 120355	120354	871142 C 95258 C	871142 D 95258 C	30	120385	120380
*120356	*120356	39269 D	39269 D	30	*	*
120357	120358	819199 C	819199 D	33	120388	120389
*120359 120361	*120360	80346 C	80346 D	33	190309	120303
120363	120364	122277 M	122277 N	33	120392	120395
120365	120366	855137 A	855137 B	36	120396	120397
121540	121541	111358 M 102680 YD	111358 N 102680 YF	30	120385	120386
*126449	*126450	39471	39472	20	*	*
126452	126453	122277 P	122277 R	30	120394	120395
126454	126455	122277 M	122277 N 199977 P	33	120394	120395
126458	126457	1222002 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

CA	T. NO.	PATTERN NU	JMBERS	CAT. NO. OF SHO	ES USED WITH
Right Hand	Left Hand	Right Hand	Left Hand	Right	Left
120367	120368	122460-C	122460-D	65186	65200
120369	120370	811132-A	811132-B	$\left\{\begin{array}{c} 05200\\ 120322\\ 65206\\ \end{array}\right.$	$\left\{\begin{array}{c} 0.5222\\ 120323\\ 65222\\ \end{array}\right.$
120371	120372	111144-K	111144-L		
100275	190276	102000 17	192090 I	120324 120336	120325 120337
120375 120377	120376 120378	123029-K 123022-J	123029-L 123022-K	120330 120334 (65231	120331 120335 $\int 65232$
120379	120380	233159-A	233159-B	120338 120340 120351	$\begin{array}{c} 120339 \\ 120341 \\ 120352 \end{array}$
120381	120382	103972-L	103972-K	$\left\{\begin{array}{c} 65236\\ 120342\\ \end{array}\right.$	$\left\{\begin{array}{c} 120332\\ 65238\\ 120343\\ 20343\end{array}\right.$
120383	120384	227094-A	227094-B		
120385	120386	111358-L	111358-K	120353 121540	$\begin{cases} 120354 \\ 121541 \\ 120255 \end{cases}$
120387 120388	120387 120389	95258-B 102689-W	95258-B 102689-XA	120355 120357 (65239)	120355 120358 $\int 65240$
120390 120392	120391 120393	102689-S 92969-E	102689-T 92969-F	$\begin{cases} 65242 \\ 126444 \\ 120361 \end{cases}$	$\begin{cases} 65243 \\ 126445 \\ 120362 \end{cases}$
120394	120395	122277-E	122277-F	$\left\{\begin{array}{c} 120363\\ 126452\\ 126452\end{array}\right.$	$ \left\{ \begin{array}{c} 120364 \\ 126453 \\ 126453 \end{array} \right. $
120396	120397	855137-C	855137-D	$ \begin{array}{c c} 126454 \\ 126456 \\ 120365 \end{array} $	$\begin{bmatrix} 126455\\ 126457\\ 120366 \end{bmatrix}$
120432	120433	248187-A	248187-В	$ \left\{ \begin{array}{c} 120328 \\ 65226 \\ 65228 \end{array} \right. $	$\left\{\begin{array}{c} 120329\\ 65227\\ 65230\end{array}\right.$
120434	120435	122991-A	122991-B	65234 65239	65235 (65240
126446 *126459	126447 \$126460	102689-XJ 122002-I	102689-XK 122002-H	$\begin{cases} 65242 \\ 126461 \\ 126458 \end{cases}$	$\left\{egin{array}{c} 65243 \\ 126462 \\ 126458 \end{array} ight.$
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 man 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

Lever for front connecting rod and valve rod Lever for rear connecting rod and valve rod Sand box, rear right hand and front left hand Sand box, rear left hand and front right hand Sand pipe

Hose for sand pipe Clamp for sand pipe and hose

Pin for connecting rods, levers and handles

Operating shaft for handles

Nut for operating handle shaft Operating handle for rear sand valves

Operating handle for front sand valves

Lever for front and side connecting rods

- - N Spring cotter for levers, handles and valve rods
 - 0 Spring cotter for valve rod and valve
 - P Cover for sand box
 - QRSTUV Sanding device rod, side

 - Sanding device rod, front Sanding device rod, rear Bolt for front and side connecting rod lever Bracket for handle

 - Sand valve
 - Rod for sand valve
 - Sand valve release spring
 - Set screw for levers and handles



Fig. III Sanding Device for Locomotives having Cast Iron Sides

N

0

P *

Q

R

S

Т

*

*

Pin for connecting rods and levers

Sand pipe

Sand valve

Hose for sand pipe

front left hand

- 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
- * Sand pipe Sand valve release spring
- DEFG Valve rod, except rear left hand
- Side connecting rod for valve rods
- Front connecting rod for valve rods H
- Rear connecting rod for valve rods I
- Sand box bottom, rear right hand and front left hand
- ĸ Spring cotter for valve rods and valves
- U Operating handle for front sand valves

Set screw for handles and levers

Operating handle for rear sand valves

Clamp for sand pipe and hose

- v
- Spring cotter for levers, handles and valve rods Sand box bottom, rear left hand and front right hand W

Lever for connecting rod and valve rod, except

* 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.

M

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.

Cat. No.	Illustration Letter (Fig. 1)	Description
31830	V-1	Rase
31840	W	Can for base
31841	F	Short sleeve bearing cap
31842	D-2	Long sleeve hearing cap
31843	B	Sprocket bearing cap
405		Cap screw fastening No. 31840 to base (1/2 in13, 11/2 in. hex. h.)
15887		Cap screw fastening bearing caps to base (5% in11, 21/4 in. hex. h.)
31848	R-1	Cable clip
56740	S-1	Screw for cable clip (14–24, 1/2 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 ($\frac{9}{8}$ in. by $\frac{9}{8}$ in. by $4\frac{1}{16}$ in. round ends)
31873	L-1	Bushing for No. 31852
31874	G	Reel sprocket (15 teeth, 1/8 in. pitch)
01000	N 9	Clutch, complete, includes parts indented below
21855	C 1	Dir for pawl (1/ in by 21/ in)
4030	U-1	Spring cotter for pin $(\frac{3}{2}$ in by $\frac{5}{2}$ in)
31856	· · ·	Ratchet with bin
31857	H	Pin for ratchet (¼ in, by 2% in.)
31858	Ŕ	Roll for ratchet (³ / ₄ in. diam., ⁴ / ₄ in. long)
31859	Z	Roll race
31865	X	Bushing for No. 31859
31860	E	Roll retainer
9624		Screw fastening No. 31860 to roll race $(6-32, \frac{5}{16} \text{ in. f.h.})$
31861	K-2	Tension spring for clutch
31862	Y	Pin for spring $(\frac{1}{4}$ in. by $1\frac{16}{16}$ in. sp'l)
4030		Spring cotter for pin $(\frac{3}{32}$ in. by $\frac{3}{8}$ in.)
31866	A	Stop for clutch $(\frac{1}{16}$ in. by $1\frac{3}{32}$ in.)
31803	U-2	Shatt There are the factor
01004	U F 1	Chitting lower
31845	r-1	Can can be for No. 21867 (5/ in -11 15 in her h sp ²)
31877	1.	Stop with rivels for shifting lever
31868	E-1	Shipper
31869	D-1	Collar with pin for shipper
31870	Ē	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, ¹ / ₂ in. f.h.)
31875		No. 00 tiger grease cup
31876	T	Terminal for motor cable
31891	P-2	Cable strap
31881	S D 1	Reel bushing
31923	P-1 D	Screw for No. 31881 (No. 14, % in. f.f.)
21889	F O 1	Cost insulated contact and connector
31884	7-2	Real ring
31885	V-2	Lower reel bar
104304	X-2	Upper reel bar
31886	A-3	Rivet for Nos. 31885, 104304
104305	0-2	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 (3/8 in16, 17/8 in. hex. h.)
31889	V-1	Washer for No. 31890 $\left(\frac{13}{32}\right)$ in. by 1 in. by $\frac{1}{16}$ in. thick copper)
6529	U-1	Nut for No. 31890 (3/8 in16, hex. brass fin. st'd)
31892	M	Supporting ring for cover (2 thicknesses)

TYPE VR, FORM A3 CABLE REEL

GENERAL ELECTRIC COMPANY

REPAIR PARTS OF CABLE REELS FOR LOCOMOTIVES

TYPE VR, FORM A3 CABLE REEL—(Continued)

Cat. No.	Illustration Letter (Fig. 1)	Description
$\begin{array}{c} 31900\\ 31894\\ 31898\\ 31895\\ 31895\\ 31897\\ 31897\\ 31901\\ 31901\\ 31902\\ 31903\\ 31903\\ 31904\\ 31905\\ 121536\\ 121536\\ 121537\\ 31980 \end{array}$	L H-1 K-1 N-1 N O M-1 R C-2 B-2 	Cover Contact plate Spring for contact plate, with rivets Flexible connection Equalizer Screw for No. 31896 (No. 16, 1 in. f.h.) Rivet for Nos. 31895, 31896 ($\frac{3}{6}$ in. by $\frac{1}{4}$ in.) Cap insulation Guard ring Ballast with pins Dowel pin for No. 31903 ($\frac{1}{2}$ in. by $\frac{2}{2}$ in.) Reel disc Cable hook, complete Clamping block for cable hook Screw for No. 121537 ($\frac{5}{16}$ in18, $\frac{3}{4}$ in. r.h.)
		TYPE VR, FORM A1 CABLE REEL
$121570 \\ 121571 \\ 121572 \\ 121573 \\ 121573 \\ 121574 \\ 121575$	Y-1 W F D-2 B 	 Following are the parts of the Type VR, Form A1 cable reel which differ from those of the Type VR, Form A3: Base Cap for base Short sleeve bearing cap Long sleeve bearing cap Sprocket bearing cap Cable hook, complete
A RUE DI		TYPE VR, FORM A2 CABLE REEL
$121576 \\ 121571 \\ 121572 \\ 121573 \\ 121573 \\ 121574 \\ 121575 \\$	Y-1 W F D-2 B 	 Following are the parts of the Type VR, Form A2 cable reel which differ from those of the Type VR, Form A3: Base Cap for base Short sleeve bearing cap Long sleeve bearing cap Sprocket bearing cap Cable hook, complete
-		TYPE VR, FORM A4 CABLE REEL
64458		Following are the parts of the Type VR, Form A4 cable reel which differ from those of the Type VR, Form A3: Cable hook, complete
		TYPE VR, FORM A5 CABLE REEL
121577 121578 31912 31913	Y-1 	 Following are the parts of the Type VR, Form A5 cable reel which differ from those of the Type VR, Form A3: Base Cable hook, complete Insulation for cable hook 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

GENERAL ELECTRIC COMPANY

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, the Type VR Form A8:
t 64451		CLUTCH complete
† 64452	i	Ratchet
†64453	K	Roll for ratchet $(\frac{1}{2}$ in. diam. $\frac{17}{32}$ in. long)
†64454	Z	Roll race
T 64455 1288	E	Koll retainer Screw for roll retainer (10-24 ³ / ₆ 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' the Type VR, Form A3:
105050	D 1	
105952	B-1	Clutch complete
† 64452	Ť	Ratchet
† 64453	K	Roll for ratchet $(\frac{1}{2}$ in. diam., $\frac{17}{32}$ in. long)
† 64454 + 64455	Z	Roll race
1288	E	Screw for roll retainer (10–24, ³ / ₆ in, f.h.)
122019		Stop with rivets for shifting lever
† 122020	C	Friction disk, large
T 122021	B-2 D-1	Keel disk Support for brush-holder studs
122022	C-1	Screw fastening Nos. 122020, 122022 to reel disk (3% in16, 21% in. f.h.)
122024	· ·	Screw fastening No. 122020 to reel disk (No. 16, 11/2 in. r.h.)
122025	Z	Washer for No. 122023 ($\frac{13}{32}$ in. by 1 ¹ / ₄ in. by 0.0625 in.)
4031	A-I E-1	Nut for No. 122023 (% in16, nex. cnam. one side) Bushing for hevel gear
† 122027	X-2	Upper reel bar
122028		Guard ring
122029	E	Supporting ring for cover
122030	D	Cap screw fastening No. 122029 to reel disk (³ / ₄ in16, 6 ³ / ₄ in. hex. h.)
122025		Washer for No. 122031 ($\frac{13}{32}$ in. by 1 ¹ / ₄ in. by 0.0625 in.)
4031		Nut for No. 122031 (3% in16, hex. cham. one side)
122032		Lag screw fastening No. 122030 to supporting ring (½ in., 3 in. long sp 1)
122033	Ť	Collector ring
122034	Ĥ	Collector ring shell
122035	K	Stud for collector rings (3% in16, 3 ¹³ / ₁₆ in. long)
21392	Y	Washer for No. 122035 ($\frac{32}{2}$ in. by $\frac{94}{4}$ in. by 0.0625 in.) Nut for No. 122035 ($\frac{34}{2}$ in -16 1/ in thick 11 in across flats hav sham one side)
122036	Ŵ	Mica bushing for stud ($\frac{3}{4}$ in. by $\frac{1}{4}$ in. by $\frac{43}{4}$ in. long)
122037	V	Mica washer for No. 122036 ($\frac{1}{2}$ in. by $1\frac{1}{16}$ in. by $\frac{1}{8}$ in. thick)
122038		Set screw for No. 122034 (14-24, 3% in. headless sp'l)
122039	S T	Screw fastening No. 122039 to collector ring (14-24 56 in fill h)
110624	1	Positive lock washer for No. 10063 ($\frac{9}{32}$ in. by $\frac{9}{16}$ in. by $\frac{5}{64}$ in. thick)
122040	N	Contact shaft for collector rings
122041		Key for contact shaft and cap for base ($\frac{1}{4}$ in. by $\frac{1}{4}$ in. by $\frac{313}{16}$ 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
$\begin{array}{c} 122042 \\ 122053 \\ 122054 \\ 122055 \\ 122056 \\ 122057 \\ 31897 \end{array}$	C U F X G P A	Key for contact shaft and collector ring shell (¼ in. by ¼ in. by 3¼ in. round end) Long stud for brush-holder (5% in11, 6¼ in. long) Short stud for brush-holder (5% in11, 5¼ in. long) Insulation sleeve for No. 122053 Insulation sleeve for No. 122054 Strap for cables Screw fastening No. 122057 in position (No. 16, 1 in. f.h.)



Fig. 3

Cat. No.	Illustration Letter (Fig. 3)	Description
$\begin{array}{c} 122043\\ 122044\\ 119774\\ 32537\\ 122045\\ 14426\\ 122046\\ 122046\\ 122047\\ 122048\\ 122048\\ 122049\\ 122050\\ 62060\\ 122051\\ 122052\\ \end{array}$	CGDHJMLNKFIEB	 BRUSH-HOLDER, complete, with terminal, without studs Brush-holder body Clamping screw for No. 122044 (14-24, ³/₄ in. hex. h. blued cap screw) Punched copper tube cable terminal Cap screw fastening No. 32537 to brush-holder body (14-24, ¹/₂ in. hex. h. blued) Washer for No. 122045 (³/₄ in. by ¹/₂ in. by 0.060 in. brass) Pressure spring for carbon brush Spring holder Hinge pin for spring Screw fastening No. 122048 (³/₃₂ in. by ³/₄ in. blued) Lever for spring Screw fastening No. 122047 to brush-holder body (10-32, ³/₈ in. fill. h. blued) Thumbscrew for carbon brush pigtail terminal (10-32, ³/₈ in. brass sp'l) Carbon brush with pigtail and terminal (2¹/₄ in. long, ³/₄ in. wide, ³/₄ in. thick) Two required for each holder, six for each cable reel



Fig. 4. VR Form B Cable Reel

TYPE VR, FORMS B1 AND B5 CABLE REELS

Cat. No.	Illustration Letter (Fig. 4)	Description
104997	Ch	MECHANISM DASE
2104207		Con for mochanism base
31840	Ad	Cap for mechanism base
400	ra	Cap sciew lastering No. 31040 to base (72 m15, 174 m. nex. n.)
104200	ra Vo	Sproket (11 teeth 11 in pitch) with pin
104209	Ma	Shocket (II teeth, 178 In. pitch) with pin
104290	Ma Oo	Sate sorew for gear (3/ in -16 1 in sg h)
10/201	No	Key for gear (3% in by 3% in by 3% in long round ends)
104291	Ind	Key for sprocket (36 in by 36 in by 156 in long round ends)
104292	Oh	Regring for gear and sprocket shaft
104293		Bearing for gen
0825	Vb	Can screw fastening Nos 104293 104294 to base ($\frac{5}{2}$ in -11, 2^{3} / in, bex, h.)
104295	V D	Oil pipe for Nos 104293 104294 (1/ in, pipe, 1 ³ / in, long)
122617		Pipe coupling for oil pipe (14 in, pipe)
31841	Sh	Short sleeve bearing cap
31842	IIa	Long sleeve bearing cap
15887	Qa	Cap screw fastening Nos. 31841, 31842 to base (5% in11, 2¼ in. hex. h.)
31848	¥u.	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		CLUTČH, complete, includes parts indented below
31854	Ib	Clutch pawl
31855	Ўа	Pin for pawl $(\frac{1}{4}$ in. by $2\frac{1}{8}$ in.)
4030	Wa	Spring cotter for pin $(\frac{3}{32}$ in. by $\frac{5}{8}$ in.)
31856	Lb	Ratchet
31857		Pin for ratchet $(\frac{1}{4}$ in. by $2\frac{3}{8}$ in.)
31858	Tb	Roll for ratchet (3% in. diam., 12 in. long)
31859	Kb	Roll race
31865	Va	Bushing for No. 31859

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

Cat. No.	Illustration Letter	Description
	(F1g. 4)	
91060	IIb	Poll retainer
0694	Mb	Sorray fostening No. 21860 to coll room (6.22, 5 in f.h.)
9024	So	Tension spring for clutch
21001	Vo	Din for spring (1/ in by 1 ¹⁵ in sp ²)
4020	Ma	Spring cottor for pin $(3, in, by 5)$
21966	Wa	Stop for clutch (5 in by 15 in)
104200	Ch	$\begin{array}{c} \text{Bisop (9) tasth (5 pitch)} \end{array}$
104299	Nh	Key for pinion (3% in by 3% in by 2% in long round ends)
104300	Rh	Shaft for hevel prince and clutches
31868	Ob	Shipper for dutches
31860	Eb	Collar with nin for shipper
31870	K	Friction disc large
31871	7.	Friction disc small
104302	ĩ	Screw fastening No. 31870 in position (No. 14, 1 in. f.h.)
56743	Da	Screw fastening No. 31871 in position (14–24, 1/4 in f.h.)
31875	Dh	No. 00 tiger grease cup
31876		Terminal for motor cable
31881	Fc	Bushing for reel
104303	Ĩ	Reel ring
31885	Ť	Lower reel bar
104304	Ĝ	Upper reel bar
31886	Gc	Rivet for Nos. 31885, 104304 (1/4 in. by 1 in. f.h.)
104305		Screw for No. 31885 (No. 16, 11/2 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	0	Bolt for cable terminal (3% in16, 17% in. hex. h.)
31889	N	Washer for No. 31890 $\left(\frac{13}{32}\right)$ in. by 1 in. by 0.0625 in. copper)
6529	M	Nut for No. 31890 (3% in16, 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, 2½ 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, 1½ in. f.h.)
31891	la	Cable strap
31923	Ja	Screw fastening No. 31891 in position (No. 14, % in. i.n.)
31894	R	Contact plate
31898	U	Spring for contact plate
31895	P	Flexible connection
31890	S	Equalizer
31897	1	Direct for Nos. 31890 , 31898 (No. 10, 1111, 1.11.)
31899	 Do	Concinentation
31901	Ba	Deal diag
64459	Dh	Cable hook, complete
21977	To	Stop with fivets for shifting lever
31845	Fb	Can screw for fastaning shifting lever (5% in -11 1% in hex h sn'l)
01040	1.0	cap serew for fastening similing lever (79 m. 11, 132 m. nex. n. sp f)

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

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	Ch	MECHANISM BASE
† 104308	C-1	Collector
† 104309	E-1	Collector ring
† 104310	D-1	Support for Nos. 104308, 104309
† 104311	Ū	Base for No. 104310
† 104312	T	Screw fastening base to support (6-32, 34 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, 3% in. f.h. brass)
† 104314	A-1	Insulating bushing for contact
† 29449	B-1	Screw fastening No. 104314 to support (10-24, 5% in. f.h. brass)
† 104315	H-1	Terminal for motor cable
† 104316	F-1	CONTACT FINGER with spring and shunt, for collector
† 104317	М	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	С	Reel disc
. † 104322	J-1	Long bolt fastening reel cable terminal and contact finger in position $(\frac{5}{16}$ in18, 1% in. hex. h. brass)
† 104323	E	Short bolt fastening reel cable terminal and contact finger in position $(\frac{5}{16}$ in18, $1\frac{1}{2}$ in. hex. h. brass)
† 13919	V-1	Nut for Nos. 104322, 104323 ($\frac{5}{16}$ in18, $\frac{5}{16}$ in. thick, $\frac{19}{32}$ in. across flats, hex. brass cham. one side)
† 24262	F	Small washer for Nos. 104322, 104323 (21 in. by 5% in. by 0.0625 in.)
† 104324	W-1	Medium washer for Nos. 104322, 104323 (21 in. by 7% in. by 0.0625 in.)
† 104325	X-1	Large washer for Nos. 104322, 104323 (24 in. by 11/8 in. by 0.0625 in.)
122628	В	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 122630 122631 122632 10805 21937	CB Ma Qb Vb	MECHANISM BASE Shaft for gear and sprocket Bearing for gear and sprocket shaft Small bearing cap for No. 122631 Pipe plug for No. 122631 (¼ in. pipe) Cap screw fastening No. 122632 in position (5% in11, 134 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, 3% in. f.h.)
121536	Pb	Cable hook, complete
121537		Clamping block for cable hook
31980		Screw for No. 121537 (5 in18, 3/4 in. r.h.)

† See illustration on page 66.

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:
$\begin{array}{c} 122629\\ 122630\\ 122631\\ 122632\\ 10805\\ 21937\\ 64451\\ 64452\\ 64452\\ 64453\\ 64453\\ 64455\\ 1288\end{array}$	Cb Ma Qb Vb Lb Tb Kb Ub 	MECHANISM BASE Shaft for gear and sprocket Bearing for gear and sprocket shaft Small bearing cap for No. 122631 Pipe plug for No. 122631 (1/4 in. pipe) Cap screw fastening No. 122632 in position (5% in11, 13/4 in. hex. h.) CLUTCH, complete Ratchet with pin Roll for ratchet Roll ratchet Roll retainer Screw for No. 64455 (10-24, 3% in. f.h.)
		TYPE VR, FORM B9 CABLE REEL
100001	M	Following are the parts of the Type VR, Form B9 cable reel which differ from those of the Type VR, Form B1:
$122624\\122625\\122626\\64451\\64452\\64452\\64453\\64454\\64455\\1288$	Ma Qb Rb Lb Tb Kb Ub 	Bearing for gear and sprocket Bearing cap for No. 122625 CLUTCH, complete Ratchet with pin Roll for ratchet Roll race Roll retainer Screw for No. 64455 (10-24, 3/8 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:
$\begin{array}{c} 64451\\ 64452\\ 64453\\ 64453\\ 64454\\ 64455\\ 1288\\ 122633\\ 122634\\ 122635\\ 31897\\ 122636\\ 122628\\ \dagger 122636\\ \dagger 122628\\ \dagger 122638\\ \dagger 122640\\ 122641\\ 104313\\ 9681\\ \dagger 122642\\ \dagger 122642\\ \dagger 122642\\ \dagger 122643\\ 122644\\ 9508\\ \dagger 122645\\ 122646\\ 122647\\ 122648\\ \end{array}$	Lb Tb Kb Ub Ga K Fc : E B C-1 E-1 D-1 U	CLUTCH, complete Ratchet with pin Roll for ratchet Roll race Roll retainer Screw for No. 64455 (10-24, 3½ in. f.h.) Bushing for bevel gear Friction disc, large Bushing for reel Screw fastening No. 122635 to reel disc (No. 16, 1 in. f.h.) Supporting ring for cover (two thicknesses) Ballast Collector Collector ring Support for Nos. 122637, 122638 Base for No. 122639 Screw fastening base to support (14-24, 1½ in. f.h.) Serew fastening base to support (12-24, ½ in. f.h. brass) Screw fastening collector ring to support (12-24, ½ in. f.h. brass) Screw fastening collector to support (10-24, 1½ in. f.h. brass) Terminal for motor eable CONTACT FINGER with contact tip Contact tip Screw fastening No. 122644 to spring and shunt (6-32, $\frac{5}{16}$ in. r.h. brass) Guard for contact finger Espacing block for contact finger Leatheroid insulation for contact finger Bolt fastening Nos. 122643, 122645, 122646 in position ($\frac{5}{16}$ in18, 13¼ in. hex. h.

† See illustration on page 66.



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:
$\begin{array}{c} 104325\\ 13919\\ \dagger \ 122649\\ 122650\\ 121536\\ 121537\\ 31980 \end{array}$	 G C Pb 	Washer for No. 122648 ($\frac{24}{16}$ in. by 1 $\frac{1}{8}$ in. by 0.0625 in.) Nut for No. 122648 ($\frac{5}{16}$ in18, hex. brass cham. one side) Screw fastening contact finger in position (No. 14, 1 $\frac{1}{4}$ in. r.h.) Reel disk Cable hook, complete Clamping block for cable hook Screw for No. 121537 ($\frac{5}{16}$ in18, $\frac{3}{4}$ in. r.h.)

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

104287	1-2	MECHANISM BASE
31840	Ϋ́	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	7.	Gear (34 teeth, 5 pitch)
104289	D	Sprocket (11 teeth, 1½ pitch) with pin
104290	v	Shaft for year and sprocket
1871	ŵ	Set screw for year $(\frac{3}{6}$ in -16 1 in sg h)
104291	x	Key for gear (3% in by 3% in by 3% in long round ends)
104292	Ĉ	Key for sprocket (3/ in by 3/ in by 15/ in long round ends)
104293	Š	Rearing for gear and sprocket shaft
104204	R	Bearing con
0825	K	Can screw fastening Nos 104203 104204 to have $(54 \text{ in } -11 234 \text{ in have } h)$
104205		Oil pipe for Nos 104204, 104204 ,
199617		Display coupling for oil 200, 104204 (74 Int. pipe, 174 Int. long)
31841	Η̈́	Short cleave bearing cap
31849	V 1	Long sleeve bearing cap
15007	1-1	Congranew fortening Nor 21941 21949 to have (5/ in 11 91/ in her t)
104206	N 1	Cable die helding able to eap for machanism has
22000	M 1	Capter for the finding capter to cap for mechanism base
21940	7 1	Bower latering No. 104230 in position $(14-24, \frac{1}{2})$ in. r.n.)
21050	<i>U</i> -1 <i>V</i> 9	Level philon (20 teeth, 5 phtch)
21951	K-2 T	Sheve for philon
91959	J	Dependence (74 testh 5 siteh)
01002	D T 1	Bevel gear (74 teeth, 5 pitch)
010/0	L-1	Busning for No. 31852
04401	iio	Clutch, complete, includes parts indented below
01004	V-2 11 0	Distor My 21054 (1/1) h 21/1
31833	H-Z	Pin Ior No. 31834 ($\frac{1}{4}$ in. by $\frac{2}{8}$ in.)
4030	ii o	Spring cotter for pin (32 in. by % in.)
04452	U-2 D-2	Ratchet with pin
04403	R-2	Roll for ratchet
04454	5-2	Koll race
04455	P-2	Roll retainer
1288		Screw for No. $64455 (10-24, \frac{3}{8} \text{ in. f.h.})$
31805	1-2	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 $\frac{3}{8}$ in.)
31866	F-2	Stop pin for clutch $\begin{pmatrix} 1\\16 \end{pmatrix}$ in. by $1\frac{3}{32}$ in.)
104299	Р	Pinion (20 teeth, 5 pitch)
104300		Key for pinion (3% in. by 3% in. by 234 in. long round ends)
104301	T	Shalt for bevel pintons 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.)
and the second se		

† See illustration on page 66.

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

Cat. No.	Illustration Letter (Fig. 5)	Description
21875		No 00 tiger grasse cup
21001	ν 1	Ruching for real
104202	N-1 V 9	Dusting for reel
104303	Y-2 V 0	Keel ring
31880	A-Z M.O	Lower reel bar
104304	M-Z	Upper reel bar
31880	L-2	Rivet for Nos. 31885, 104304 (4 in. by 1 in. i.n.)
104305	0	Screw for No. 31889 (No. 16, 1/2 in. I.n.)
31897	i.	Screw for No. 104304 (No. 16, 1 in. i.n.)
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, 34 in. f.h. brass)
104313		Screw fastening collector ring to support (12-24, 1/2 in. f.h. brass)
1382		Screw fastening collector to support (10–24, 3% in. f.h. brass)
104314	A-1	Insulating bushing for contact
29449	B-1	Screw fastening No. 104314 to support (10-24, 5% 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	0-2	Reel disc
104305	0	Screw fastening insulating washer and bushing to reel disc (No. 16, 1 ¹ / ₂ in. f.h.)
104322	J-1	Long bolt fastening reel cable terminal and contact finger in position ($\frac{5}{16}$ in18, 1%
		in. hex. h. brass)
104323	E	Short bolt fastening reel cable terminal and contact finger in position $\binom{5}{16}$ in18, $1\frac{1}{22}$
	States and	in. hex. h. brass)
13919	V-1	Nut for Nos. 104322, 104323 ($\frac{1}{16}$ in18, $\frac{3}{16}$ in. thick, $\frac{3}{2}$ in. across flats hex. brass
	•	cham. one side)
24262	F	Small washer for Nos. 104322, 104323 (21 in. by 5% in. by 0.0625 in.)
104324	W-1	Medium washer for Nos. 104322, 104323 (51 in. by 1/8 in. by 0.0625 in.)
104325	X-1	Large washer for Nos. 104322, 104323 (# in. by 1½ in. by 0.0625 in.)
64458		Cable hook
31877		Stop with rivets for shifting lever
31845		Cap screw for fastening shifting lever $(\frac{5}{8} \text{ in.} -11, 1\frac{5}{32} \text{ in. hex. h. sp'l})$



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 ($\frac{1}{2}$ in -13, 1 $\frac{1}{4}$ in hex. h.)
104288	Nb	Gear (34 teeth, 5 pitch)
104289	Lb	Sprocket (11 teeth, 11/2 pitch) with pin
122653	Qb	Shaft for gear and sprocket
1871	Õb	Set screw for gear $(\frac{3}{8}$ in16, 1 in. sq. h.)
104291	Pb	Key for gear (3% in. by 3% in. by 2% in. long, round ends)
104292	Mb	Key for sprocket (3% in. by 3% in. by 15% 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 ($\frac{5}{8}$ in11, $2\frac{3}{4}$ in. hex. h.)
104295		Oil pipe for bearings (1/4 in. pipe, 1 3/4 in. long)
122617		Pipe coupling for oil pipe (1/4 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	lc	Bevel gear (74 teeth, 5 pitch)
31873	Jc	GUITAU appellate includes parts in dertad helper
31853	i.	Clutch, complete, includes parts indented below
31854	Va	Die for nowl (16 in by 216 in)
31833	- Ua Za	Spring output ($\frac{3}{4}$ in. by $\frac{2}{5}$ in.)
21956	La Vo	Patchet with pin
31857	Id	Pin for ratchet (1/2 in by 2% in)
31858	Th	Roll for ratchet (% in diam # in long)
31850	I.a	Roll race
31865	Ma	Bushing for No. 31859
31860	Hb	Roll retainer
9624	Xa	Screw fastening No. 31860 to roll race (6-32, 5 in. f.h.)

TYPE VR, FORM C1 CABLE REEL—(Continued)

Cat. No.	Illustration Letter (Fig. 6)	Description
01001	TT	
31801	Ka	lension spring for clutch
31862	Na	Pin for spring (1/4 in. by 1ff in. sp 1)
4030	Za	Spring cotter for pin $(\frac{3}{32}$ in. by $\frac{9}{8}$ in.)
31866		Stop for clutch $\left(\frac{1}{16} \text{ in. by } 1\frac{3}{32} \text{ in.}\right)$
104299	Bb	Pinion (20 teeth, 5 pitch)
104300	Cb	Key for pinion (3% in. by 3% in. by 234 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 (% in11, 214 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, $\frac{1}{2}$ 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	1	Lower reel bar
122662	G	Upper reel bar
122663	Е	Guide ring for upper reel bar
31886		Rivet for Nos. 122660, 122661 (14 in. by 1 in. f.h.)
122664	1.	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% in. f.h.)
104305	D	Screw fastening No. 122662 to reel disk (No. 16, 1½ in. f.h.)
31888		Terminal for reel cable
31890	Q	Bolt for No. 31888 (% in16, 1/8 in. hex. h.)
31889		Washer for No. 31890 ($\frac{32}{32}$ in. by 1 in. by 0.065 in. copper)
6529	 D	Nut for No. 31890 (% in16, hex. brass)
31900	R	Cover for contacts
31892	F	Supporting ring for cover (2 thicknesses)
103943	1 TT	Screw fastening supporting ring and cover in position (No. 10, 2% in. r.n.)
31913	H	Definition of the second secon
122028	A	Gallast
31891	Da	Cable strap
31923	Ca	Screw lastening No. 31891 in position (No. 14, % in. i.n.)
00047	A TI	Insulated contact and connector
31883	U	Gear insulation
104303	V	Screw fastening No. 31883 in position (No. 10, 1% in. i.n.)
01094	P	Contact plate
01098	0	Spring for contact plate
21806	N	Prexible connection
31807	Ko	Server for Nos 21806 21808 (No. 16. 1 in f.h.)
21800	W C	Direct for Nos 21620 , 31620 (No. 10, 110, 110, 110, 10, 10)
31001	v	Con insulation
64459	Sh	Cable hook complete
21877	SU Fo	Stop with rivers for chifting layer
31845	Ab	Cop screw for fastening shifting lever (5/ in -11 15 in hav h sp'l)
01010	AU	Cap server for fastening sinting fever (/8 m11, 132 m. nex. n. sp f)

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
$\begin{array}{c} 122666\\ 122667\\ 13394\\ 122668 \end{array}$	Wa Pa	MECHANISM BASE Bearing cap for gear and sprocket shaft Cap screw fastening No. 122667 to base (¾ in10, 2½ in. hex. h.) No. 0 tiger grease cup
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 (34 in10, 21/2 in. hex. h.)
64451		Clutch, complete
64452	Ya	Ratchet with pin
64453	Jb	Roll for ratchet
64454	Ľa ·	Roll race
64455	HB	Roll retainer
1288	XA	Screw for No. 64455 (10-24, 3% 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 Cap for mechanism base Aa 122667 Bearing cap for gear and sprocket shaft 13394 Cap screw fastening No. 122667 to base (3/4 in.-10, 21/2 in. hex. h.) 64451 Clutch, complete 64452 Ya Ratchet with pin Jb La Roll for ratchet 6445364454 Roll race HB Roll retainer 64455 1288 Xa Screw for No. 64455 (10-24, 3% in. f.h.) Jc L 122633 Bushing for bevel gear 122634 Friction disk, large 122668 Pa No. 0 tiger grease cup 122635 W Bushing for reel Screw fastening No. 122635 to reel disk (No. 16, 1 in. f.h.) 31897 i. 122670 Reel disk F 122636 Supporting ring for cover (two thicknesses) 122637 Collector . . 122638 Collector ring . . Support for Nos. 122637, 122638 122639. . 122640 Base for No. 122639 . . 122641 Screw fastening base to support (14-24, 11/2 in. f.h.) . . Screw fastening collector to support $(10-24, \frac{7}{16} \text{ in. f.h. brass})$ Screw fastening collector ring to support $(12-24, \frac{1}{22} \text{ in. f.h. brass})$ 9681 104313 . •. Terminal for motor cable CONTACT FINGER with contact tip 122642122643 . . 122644 Contact tip Screw fastening No. 122644 to spring and shunt (6-32, $\frac{5}{16}$ in. r.h. brass) Guard for contact finger 9508 • • 122645 Spacing block for contact finger 122646 Leatheroid insulation for contact finger Bolt fastening Nos. 122643, 122645, 122646 in position ($\frac{5}{16}$ in.-18, 1 $\frac{3}{4}$ in. hex. h. 122647 122648 brass) Washer for No. 122648 ($\frac{21}{64}$ in. by 1 $\frac{1}{6}$ in. by 0.0625 in.) Nut for No. 122648 ($\frac{5}{16}$ in.-18 hex. brass cham. one side) 104325 13919 . . 122649 Screw fastening contact finger in position (No. 14, 11/4 in. r.h.)

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.





TYPE MVR-36, FORM B1 CABLE REEL

Cat. No.	Illustration Letter (Fig. 7)	Description
	(118. 1)	
122671	С	REEL DISK
122672	I	Upper reel ring
122673	H	Lower reel ring
122674	G	Upper reel bar
122675	A	Lower reel bar
122664	В	Rivet for Nos. 122672, 122674 (1/4 in. by 3/4 in. f.h.)
31886		Rivet for Nos. 122673, 122675 (14 in. by 1 in. f.h.)
122676		Screw fastening No. 122674 to reel disk (No. 16, 1 ¹ / ₄ 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 $1\frac{1}{2}$ in. by
100070		Train, thick, nDer)
122079		Cable terminal for collector ring
40108	D	Screw fastening No. 122079 to conector ring (16 in18, % in. i.i.)
122080	D	Gear (67 teeth, 8 pitch)
22001		Cover for gear
199699	T	Screw fastening cover to geat $(14-24, 72 \text{ m. 1.n.})$
4031	J	Nut for No. 19989 (3, in -16 hey cham one side)
122025		Washer for No. 4031 (28 in by 11/ in by 0.0625 in)
122683		Rall race
122000		Dan race

TYPE MVR-40, FORM A1 CABLE REEL

122685	С	REEL DISK
122686	I	Upper reel ring
122687	Н	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.

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

Cat. No.	Illustration Letter (Fig. 7)	Description
122664	В	Rivet for Nos. 122686 and 122674 (14 in. by 34 in. f.h.)
31886		Rivet for Nos. 122687, 122675 (¹ / ₄ in. by 1 in. f.h.)
122676		Screw fastening No. 122674 to reel disk (No. 16, 1 ¹ / ₄ in. f.h.)
104305		Screw fastening No. 122675 to reel disk (No. 16, $1\frac{1}{2}$ in. f.h.)
122688	E	Collector ring
122024	120101-320	Screw fastening No. 122688 to reel disk (No. 16, 1 ¹ / ₂ in. r.h.)
122678		Washer for No. 122024 between collector ring and reel disk $(\frac{17}{64}$ in. by $1\frac{1}{2}$ in. by $\frac{3}{16}$ in. thick, fiber)
122689		Brass cable terminal for collector ring
322		Screw fastening No. 122689 to collector ring (3% in16, 1 in. f.h.)
122690	D	Gear (108 teeth, 8 pitch)
22735	I	Screw fastening No. 122690 to reel disk (3% in16, 2 in. r.h.)
120487	1	Washer for No. 22735 (13 in, by 14 in, by 0.094 in.)
4031	1	Nut for No. 22735 (% in -16 hex cham, one side)
122691		Ball race
122001		

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 122693 I 122694 I 122695 9616	REEL DISK Upper reel bar Punched copper tube cable terminal for screw fastening gear to reel disk Screw for cable terminal and gear (¾ in16, 2 in. r.h. threaded 1½ in. sp'l) Nut for No. 122695 (⅔ in16, 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	Е	Collector ring

TYPE MVR-45, FORM A1 CABLE REEL

$\begin{array}{c} 122704\\ 103942\\ 104303\\ 104304\\ 31885\\ 31886\\ 31897\\ 15107\\ 122701\\ 122702\\ 15190\\ 4031\\ 122690\\ 22735\\ 120487\\ 4031 \end{array}$	C I H G A B E K F L D J	REEL DISK Upper reel ring Lower reel ring Upper reel bar Lower reel bar Rivet for reel rings and bars (¼ in. by 1 in. f.h.) Screw fastening No. 104304 to reel disk (No. 16, 1 in. f.h.) Screw fastening No. 31885 to reel disk (No. 16, 1 ¾ in. f.h.) Collector ring Screw fastening No. 122701 to reel disk (No. 12, 1¼ in. r.h.) Bolt fastening cable terminal to collector ring (¾ in16, 1¼ in. sq. h.) Nut for No. 15190 (¾ in16, hex. cham. one side) Gear (108 teeth, 8 pitch) Screw fastening No. 122690 to reel disk (¾ in16, 2 in. r.h.) Washer for No. 22735 (¼ in16, hex. cham. one side)
$120487 \\ 4031 \\ 122691$		Washer for No. 22735 ($\frac{13}{2}$ in. by 1 ¹ / ₄ in. by 0.094 in.) Nut for No. 22735 ($\frac{3}{8}$ in16, hex. cham. one side) Ball race

TYPE MVR-49, FORM A2 CABLE REEL

Cat. No.	Illustration Letter (Fig. 7)	Description
$\begin{array}{r} 122699\\ 122663\\ 122660\\ 122700\\ 122661\\ 122661\\ 122664\\ 31886\\ 104305\end{array}$	C I H G A B	REEL DISK Upper reel ring Lower reel ring Upper reel bar Lower reel bar Rivet for Nos. 122663, 122700 (¼ in. by ¾ in. f.h.) Rivet for Nos. 122660, 122661 (¼ in. by 1 in. f.h.) Screw fastening No. 122700 to reel disk (No. 16, 1¼ in. f.h.)
$\begin{array}{c} 104303\\ 15107\\ 122701\\ 122702\\ 122694\\ 15190\\ 4031\\ 122695\\ 9616\\ 122690\\ 22735\\ 120487\\ 4031\\ 122691\\ \end{array}$	E K F L J J	Screw fastening No. 122606 to reel disk (No. 16, 1% in. f.h.) Screw fastening No. 122606 to reel disk (No. 16, 1% in. f.h.) Collector ring Screw fastening No. 122701 to reel disk (No. 12, 1¼ in. r.h.) Punched copper tube cable terminal for collector ring ($\frac{13}{23}$ in. bolt hole) Bolt fastening No. 122694 to collector ring ($\frac{3}{5}$ in16, 1¼ in. sq. h.) Nut for No. 15190 ($\frac{3}{5}$ in16, hex. cham. one side) Screw for cable terminal and gear ($\frac{3}{5}$ in16, 2 in. r.h., threaded, 1½ in. sp'l) Nut for No. 122695 ($\frac{3}{5}$ in16, ¼ in. thick hex. cham. one side) Gear (108 teeth, 8 pitch) Screw fastening No. 122690 to reel disk ($\frac{3}{5}$ in16, 2 in. r.h.) Washer for No. 22735 ($\frac{33}{2}$ in. by 1¼ in. by 0.094 in.) Nut for No. 22735 ($\frac{3}{5}$ in16, hex. cham. one side) Ball race

TYPE MVR-49, FORM A3 CABLE REEL

	and an	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
And the second		

>



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	М	Clamping screw for No. 119773 (14-24, ³ / ₄ in, hex, h, blued cap screw)
119775	А	Connection stud
58681	В	Nut for No. 119775 (1/2 in13, 1/2 in. thick, hex. brass cham. one side)
32540	- E	Punched copper tube cable terminal $(\frac{17}{32}$ in. stud hole)
32710	D	Brass washer for No. 119775 ($\frac{17}{22}$ in. by 1 in. by 0.075 in.)
119776	С	Fiber washer for No. 119775 ($\frac{1}{2}$ in. by 2 in. by $\frac{3}{16}$ in. thick sp'l)
119777	F	Fiber collar for No. 119775
119778	G	Guide for carbon brush
119779	0	Cap screw fastening No. 119778 in position (14-24, 15 in, hex. h. blued sp'l)
119780	Q	Washer for No. 119779 ($\frac{17}{14}$ in. by $\frac{1}{2}$ in. by 0.034 in.)
119781	P	Nut for No. 119779 (14-24, $\frac{3}{16}$ in. thick, $\frac{7}{16}$ 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 ($\frac{5}{64}$ in. by $\frac{1}{2}$ 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, 3/4 in. face), for Form A motor
119508	Fa	Gear (41 teeth, 8 pitch, 1.250 in. bore, ³ / ₄ in. face), for Form B motor
119509	Ka	Pinion (35 teeth, 8 pitch, 0.750 in. bore, 34 in. face), for Form A motor
119510	Ka	Pinion (13 teeth, 8 pitch, 0.625 in. bore, ³ / ₄ in. face), for Form B motor
119511	Q	BRUSH-HOLDER, complete
119512		Carbon brush $(1\frac{1}{8})$ in. long, $\frac{7}{8}$ in. wide, $\frac{3}{8}$ 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	А	End casting, drilled for connection screws
120482	K	End casting, not drilled for connection screws
120492	В	Perforated cover
19682		Screw fastening cover to end castings (14-24, ³ / ₅ 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, 3% in. r.h. brass)
9962		Nut for No. 13034 (10-32, $\frac{3}{32}$ in. thick, $\frac{3}{6}$ in. across flats, hex. brass cham. both
100405		sides)
120495	M	The part for presistance units
120490	C F	Nut for No. 120406 (14, 24, 3) in thick 1/ in correct foto her chart and ide
110624	r T	Nut for No. 120490 (14-24, 16 fit. thick, 72 fit. across hats, nex. chain, one side) Desitive lock washer for No. 40224 (9 in by 9 in by 5 in thick)
46787	Ġ	Washer for No. 190406 ($\frac{12}{5}$ in by $\frac{3}{52}$ III, $\frac{1}{52}$
120491	0	Washer for No. 120496 ($\frac{13}{4}$ in by 2 ($\frac{10}{4}$ by 0.060 in mice)
120497	Ť	Spacing pipe for resistance units (³ / ₄ in pipe ²³ / ₄ in long)
120498	Ď	Insulation sleeve for No. 120496 (2) in by 34 in by 37 in long, mica)
120499		Spacer for resistance units
120866		Reinforcing strip for No. 120499
120867		Tie rod for No. 120499 (10-32, 434 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	0	Connection screw for resistance units (14–24, 134 in. r.h. brass)
14426		Washer for No. 22245 ($\frac{14}{10}$ in. by $\frac{1}{2}$ in. by 0.060 in. brass)
30492		Washer for No. 22245 ($\frac{1}{44}$ in. by $\frac{3}{4}$ in. by 0.060 in. brass)
120489	1. 5. 14. 1/2	Washer for No. 22249 (# in. by 1 in. by 0.060 in. mica)
120490		Which seeve for No. 22240 (4 in. by % in. by % in. long)
120491	п	Washer for No. 120490 (32 in. by 1 in. by 0.060 in. mica)
40080	п	Nut for No. 22245 (14-24, $\overline{16}$ in thick, $\overline{2}$ in across flats, nex. brass cham. one side) Docitive lock washer for No. 48285 (2) in hy 2 in hy 5 in thick.
32537		Punched copper tube cable terminal
02001		r uneneu copper tube cable terminar

* 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 121446		TYPE PA, FORM R, 250 VOLT RHEOSTAT, complete Type PA, Form R, 500 volt rheostat, complete Following are the parts:
$\begin{array}{c} 120481\\ 120482\\ 120483\\ 19682\\ 38937\\ 120484\\ 120485\\ 120486\\ 9616\\ 26182\\ 120487\\ 120488\\ 22245\\ 14426\\ 30492\\ 120489\\ 120490\\ 120490\\ 120491\\ 48385\\ 110624 \end{array}$	E C F F B I N A Q S J R D T H O	End casting, drilled for connection screws End casting, not drilled for connection screws Perforated cover Screw fastening cover to end castings $(14-24, \frac{3}{6})$ in. r.h. blued) Washer for No. 19682 ($\frac{14}{64}$ in. by $\frac{1}{2}$ in. by 0.0625 in.) RESISTANCE UNIT, complete, for No. 121444 Resistance unit, complete, for No. 121446 Tie rod for resistance units ($\frac{3}{6}$ in16, $\frac{6}{16}$ in. long) Nut for No. 120486 ($\frac{3}{64}$ in16, $\frac{1}{4}$ in. thick, $\frac{11}{16}$ in. across flats, hex. cham. one side) Lock washer for No. 9616 Washer for No. 120486 ($\frac{3}{42}$ in. by 1 $\frac{1}{4}$ in. by 0.094 in.) Spacing pipe for resistance unit ($\frac{3}{6}$ in. pipe, 1 $\frac{5}{6}$ in. long) Connection screw for resistance unit ($14-24$, $1\frac{3}{4}$ in. r.h. brass) Washer for No. 22245 ($\frac{14}{64}$ in. by $\frac{3}{2}$ in. by 0.060 in. brass) Washer for No. 22245 ($\frac{14}{64}$ in. by $\frac{3}{6}$ in. by $\frac{3}{5}$ in. long) Mica sleeve for No. 22245 ($\frac{14}{64}$ in. by $\frac{3}{6}$ in. by $\frac{3}{5}$ in. long) Washer for No. 22245 ($\frac{14}{64}$ in. by $\frac{3}{6}$ in. by $\frac{3}{5}$ in. long) Mica sleeve for No. 22245 ($\frac{14}{64}$ in. by $\frac{1}{9}$ in. by 0.060 in. mica) Mica sleeve for No. 22245 ($\frac{14}{64}$ in. by 1 in. by 0.060 in. mica) Nut for No. 22245 ($\frac{14}{64}$ in. by 1 in. by 0.060 in. mica) Nut for No. 22245 ($\frac{14}{64}$ in. by 1 in. by 0.060 in. mica) Nut for No. 22245 ($\frac{14}{64}$ in. by 1 in. by $\frac{9}{6}$ in. by $\frac{5}{64}$ in. thick)
32537	Ğ	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.







GENERAL ELECTRIC COMPANY

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
- **B** Spacer for motor suspension bar bolt
- C Spring cotter for motor suspension bar bolt
- D Spring cotter for motor suspension bar pin
- E Crown nut for motor suspension bar bolt
- F Pin for motor suspension bar and locomotive frame
- G Washer for motor suspension bar bolt and spring
- H Motor suspension bar, complete
- I Spring for motor suspension bar, upper
- 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
Motor NWP-21/2 NWP-21/2 LWP-5 CB-14 CB-14 CB-14 CB-15 CB-15 CB-15 GE-800 GE-800 GE-800 GE-800 GE-51 GE-51 GE-52 GE-52 GE-53 GE-53 GE-55 GE-55 GE-55	Cat. No. 100352 100353 51920 122833 51987 51991 51990 30780 30781 108538 108538 108539 * 18224 † 19345 108531 122834 47903 14584 52593 52590 52591 119199 108533	$\begin{tabular}{c} $Turns$ \\ 14 26 \\ 10$ 10 10 0 10 10 10 6 10 11 11	$\begin{array}{r} Volts \\ \hline 220/250 \\ 500 \\ 250 \\ 125 \\ 250 \\ 250 \\ 500 \\ 250 \\ 500 \\ 110 \\ 250 \\ 500 \\ 110 \\ 250 \\ 500 \\ 250 \\ 500 \\ 250 \\ 500 \\ 250 \\ 500 \\ 220/250 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500 \end{array}$
$\begin{array}{c} {\rm GE-55} \\ {\rm GE-57} \\ {\rm GE-57} \\ {\rm GE-57} \\ {\rm GE-58} \\ {\rm GE-58} \\ {\rm GE-58} \\ {\rm GE-59} \\ {\rm GE-59} \\ {\rm GE-59} \\ {\rm GE-60} \\ {\rm GE-60} \\ {\rm GE-61} \\ {\rm GE-61} \\ {\rm GE-61} \\ {\rm GE-71} \\ {\rm GE-71} \\ {\rm GE-71} \\ {\rm GE-77} \\ {\rm GE-77} \\ {\rm GE-79} \\ {\rm GE-79} \\ {\rm GE-79} \\ {\rm GE-95} \\ {\rm GE-96} \\ {\rm GE-96} \\ {\rm GE-97} \end{array}$	$\begin{array}{c} 108533\\ 108533\\ 50257\\ 108536\\ 66338\\ 66340\\ 50454\\ 122835\\ 61046\\ 100354\\ 52380\\ 52378\\ 39387\\ 39387\\ 39388\\ 122836\\ 122837\\ 61051\\ 61052\\ 61053\\ 61054\\ 66343\\ 61055\\ 61056\\ 61057\\ \end{array}$	$ \begin{array}{r} 3 \\ 2 \\ 3 \\ 4 \\ 2 \\ 3 \\ 6 \\ 2 \\ 3 \\ 6 \\ 3 \\ 6 \\ 4 \\ 4 \\ 1 \\ 2 \\ 3 \\ 6 \\ 3 \\ 6 \\ 7 \\ 3 \\ 6 \\ 2 \\ 3 \\ 6 \\ 3 \\ 6 \\ 7 \\ 3 \\ 6 \\ 2 \\ 3 \\ 6 \\ 3 \\ 6 \\ 7 \\ 3 \\ 6 \\ 2 \\ 3 \\ 6 \\ 7 \\ 3 \\ 6 \\ 2 \\ 2 \\ 3 \\ 6 \\ 7 \\ 3 \\ 6 \\ 2 \\ 2 \\ 3 \\ 6 \\ 7 \\ 3 \\ 6 \\ 2 \\ 2 \\ 3 \\ 6 \\ 7 \\ 3 \\ 6 \\ 2 \\ 3 \\ 6 \\ 7 \\ 3 \\ 6 \\ 2 \\ 3 \\ 6 \\ 7 \\ 3 \\ 6 \\ 7 \\ 3 \\ 6 \\ 2 \\ 3 \\ 6 \\ 7 \\ 3 \\ 6 \\ 2 \\ 3 \\ 6 \\ 7 \\ 3 \\ 6 \\ 2 \\ 3 \\ 6 \\ 7 \\ 3 \\ 6 \\ 2 \\ 3 \\ 6 \\ 7 \\ 3 \\ 6 \\ 7 \\ 3 \\ 6 \\ 7 \\ 3 \\ 6 \\ 7 \\ 3 \\ 6 \\ 7 \\ 3 \\ 6 \\ 7 \\ 3 \\ 6 \\ 7 \\ 3 \\ 6 \\ 7 \\ 3 \\ 6 \\ 7 \\ 3 \\ 6 \\ 7 \\ 3 \\ 6 \\ 7 \\ 3 \\ 6 \\ 7 \\ 3 \\ 6 \\ 7 \\ 3 \\ 6 \\ 7 \\ 7 \\ 3 \\ 6 \\ 7 \\ 7 \\ 3 \\ 6 \\ 7 \\ 7 \\ 7 \\ 3 \\ 6 \\ 7 \\ $	500 250 500 250 250 250 250 250 250 500 500
GE-97 HM-701 HM-701 HM-702 HM-702 HM-703 HM-703 HM-708 HM-708 HM-709 HM-709 HM-710 HM-710 HM-711 HM-711 HM-713	$\begin{array}{c} 61058\\ 100572\\ 100573\\ 104599\\ 104601\\ 100574\\ 100575\\ 104607\\ 104610\\ 100576\\ 100576\\ 100577\\ 100574\\ 100575\\ 100575\\ 100576\\ 100577\\ 100572\\ \end{array}$	2 3 6 2 4 4 2 4 4 3 2 2 2 2 2 2 4 2 2 3	$\begin{array}{c} 500\\ 250\\ 500\\ 250\\ 500\\ 250\\ 500\\ 250\\ 25$

* 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
1 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. 14779 4 500 No. 9 B.&S.	93 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.

GE-1200

¶ Cat. No.	Turns	Voltage	Conductor	¶ Coils per Set
$\begin{array}{c} 24971 \\ \bigtriangleup 18098 \\ \$ 18068 \\ \bigtriangleup 18099 \\ \$ 18069 \\ \bigtriangleup 18069 \\ \bigtriangleup 18189 \\ \$ 18070 \end{array}$	1 2 2 3 3 4 4 4	250 500 500 500 500 500 500 500	 (3) (0.105 in. x 0.15 in.) (2) No. 10 B.&S. (2) No. 9 B.&S. No. 10 B.&S. 0.105 in. x 0.15 in. No. 10 B.&S. No. 9 B.&S. 	105 10 10
		GE-51	3	
24915 122838	1 4	250 500	(4) No. 7 B.&S. No. 7 B.&S.	37 37
		GE-52		
24921 14586	3 6	250 500	(2) No. 11 B.&S. No. 11 B.&S.	29 29
		GE-53		
55759 55755 55756 55757 55757 55758	2 3 4 5 6	220/250 500 500 500 500	 (2) No. 8 B.&S. (2) No. 10 B.&S. No. 8 B.&S. No. 8 B.&S. No. 10 B.&S. 	33 37 33 33 33 33 37
		GE-54		
11352	3	500	No. 10 B.&S.	29
		GE-55		
24940 24944	2 3	500 500	(3) No. 10 B.&S. (2) No. 10 B.&S.	47 47
		GE-57		
24950 50258 24953	2 3 4	250 500 500	 (3) No. 9 B.&S. (2) No. 9 B.&S. No. 8 B.&S. 	33 33 33
		GE-58		
$24956 \\ 24958 \\ 50456$	2 3 6	250 250 500	 (3) No. 9 B.&S. (2) No. 9 B.&S. No. 9 B.&S. 	33 33 33

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

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	
		CE 60			
a de la competition					
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	
02398	0	000	No. 11 B.&S.	37	
		GE-61			
24960	4	250	No 8 B &S	41	
24962	4	500	No. 8 B.&S.	41	
A STATE OF		GE-66			
* 94870)			The states		
+ 24871	1	500	0.065 in. x 0.65 in.	39	
121011)					
GE-67					
36848	3	500	No 0 B &S	27	
24964	4	500	No 9 B &S	95	
21001		500	No. 9 D.ab.	20	
		GE-69			
* 00701)					
* 33731	1	500	0.55 in. x 0.115 in.	31	
† 33732)					
		GE-70			
36848	3	500	No. 9 B.&S.	37	
	Sec. 1 Sec. 1 Sec. 1				
		GE-71			
100000		950	(4) No. 9 D 90	90	
122839	1	250	(4) No. 8 B.&S.	39	
122840	2	000	(2) NO. 8 D.@S.	39	
		GE-77			
59400	2	250	No 11 P&S	27	
52308	6	500	No. 11 B.&S.	37	
02000	U	000	THE IT BILLO.	01	

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

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GENERAL ELECTRIC COMPANY

MOTOR ARMATURE COILS

GE-79

¶ Cat. No.	Turns	Voltage	Conductor	¶ Coils per Set			
60611 60612	3 6	250 500	(2) No. 11 B.&S. No. 11 B.&S.	41 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 60635	3 6	250 500	(2) 0.076 in. T.C.C. 0.076 in. T.C.C.	37 37			
	1	GE-97					
60636 60637	2 2	250 500	(4) No. 10 B.&S. (2) No. 10 B.&S.	25 29			
		GE-202					
59150	3	600	No. 9 B.&S.	25			
		GE-204					
61074	2	600	(2) No. 10 B.&S. (Twinned)	29			

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

GE-205

¶ Cat. No.	Turns	Voltage	Conductor	"¶ Coils per Set			
64299 100668	2 2	600 600	(2) No. 8 B.&S. (3) No. 10 B.&S.	25 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							
$100584 \\ 100585$	3 6	250 500	No. 9 B.&S. No. 9 B.&S.	39 39			
	HM-702						
104611 104612	2 4	250 500	(2) No. 8 B.&S. No. 8 B.&S.	41 41			
, .		HM-703					
100586 100587	2 4	250 500	(2) No. 11 B.&S. No. 11 B.&S.	37 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 60637	2 2	250 500	(4) No. 10 B.&S.(2) No. 10 B.&S.	25 29			

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

		HM-710		
¶ Cat. No.	Turns	Voltage	Conductor	¶ Coils per Set
100586 100587	2 4	250 500	(2) No. 11 B.&S. No. 11 B.&S.	37 37
		HM- 711		
60636 60637	$\frac{2}{2}$	250 500	(4) No. 10 B.&S. (2) No. 10 B.&S.	25 29
		HM-713	1	
100584	3	250	(2) No. 9 B.&S.	39
1.16	and the set	CO-2001		
24915 24917	12	220/250 500	(4) No. 7 B.&S. (2) No. 7 B.&S.	37 37
		CO-2002	4	
$24919 \\ 24921 \\ 14585 \\ 24908 \\ 14586$	2 3 4 5 6	$220/250 \\ 220/250 \\ 50$	 (3) No. 11 B.&S. (2) No. 11 B.&S. No. 10 B.&S. No. 10 B.&S. No. 10 B.&S. No. 11 B.&S. 	29 29 29 29 29 29
	in the second	CO-2003		
$\left. \begin{array}{c} * \ 24935 \\ \dagger \ 24936 \\ 24940 \\ 24944 \end{array} \right\}$	$\frac{1}{2}$	$\begin{array}{c} 220/250\\ 500\\ 500\end{array}$	0.187 in. x 0.50 i (3) No. 10 B.&S. (2) No. 10 B.&S.	n. 31 47 47
		CO-2004		
24956249585045550456	2 3 4 6	$220/250 \\ 220/250 \\ 500 \\ 500$	(3) No. 9 B.&S. (2) No. 9 B.&S. No. 8 B.&S. No. 9 B.&S.	33 33 33 33

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

CO-2005

¶ Cat. No.	Turns	Voltage .	Conductor	¶ Coils per Set
$\begin{array}{c} 27385\\ 27387\\ _17275\\ _15170\\ \$\ 15161\\ \$\ 18221\\ \$\ 19346\\ \$\ 15173\\ *\ 59479\\ \$\ 18222\\ $$18222\\ $$$60309\\ $$19347\\ _17472\\ 15204 \end{array}$	$ \begin{array}{c} 1 \\ 2 \\ 3 \\ 3 \\ 3 \\ 3 \\ 3 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 6 \\ 6 \end{array} $	$\begin{array}{c} 110/125\\ 220/250\\ 500\\ 500\\ 500\\ 500\\ 500\\ 500\\ 500\\ $	 (4) No. 10 B.&S. (2) No. 10 B.&S. † No. 10 B.&S. 	$\begin{array}{c} 105\\ 105\\ 105\\ 105\\ 105\\ 105\\ 105\\ 105\\$
		CO-2006		and the second
122841 122842	$\frac{1}{2}$	$\begin{array}{c} 220/250\\ 500\end{array}$	(2) No. 7 B.&S. No. 7 B.&S.	37 37
		CO-2007		
$\begin{array}{c} 24948\\ 24950\\ 19221\\ 50258\\ 24953\\ 21490\end{array}$	$\begin{array}{c}1\\2\\2\\3\\4\\6\end{array}$	$\begin{array}{r} 220/250\\ 220/250\\ 500\\ 500\\ 500\\ 500\\ 500\\ 500\end{array}$	 (4) No. 9 B.&S. (3) No. 9 B.&S. (2) No. 9 B.&S. (2) No. 9 B.&S. (2) No. 9 B.&S. No. 8 B.&S. No. 9 B.&S. 	37 33 37 33 33 33 33 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

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.

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

NWP-2 1/2

* Upper coil. † Lower coil.



GE-1000 .

Cat. No. Arm. Turns Voltage Condu 14768 3 & 4 500 No. 4 B GE-1200 GE-1200 24972 1 250 0.050 in. 18020 2 & 3 500 0.045 in.	ctor Turns .&S. $143\frac{1}{2}$. x $\frac{13}{12}$ in. 68 . x $\frac{13}{16}$ in. 138 .&S. 198	Illustration Fig. No. 1 1 1 1 1					
14768 3 & 4 500 No. 4 B GE-1200 24972 1 250 0.050 in. 18020 2 & 3 500 0.045 in.	.&S. $143\frac{1}{2}$. x $\frac{13}{12}$ in. 68 . x $\frac{13}{16}$ in. 138 .&S. 198	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1					
GE-1200 24972 1 250 0.050 in. 18020 2 & 3 500 0.045 in.	$\begin{array}{c c} x \frac{13}{16} \text{ in.} & 68 \\ x \frac{19}{16} \text{ in.} & 138 \\ \&S. & 198 \end{array}$	1 1 1 1					
24972 1 250 0.050 in. 18020 2 & 3 500 0.045 in.	$\begin{array}{c c} x \frac{13}{16} \text{ in.} & 68 \\ x \frac{13}{16} \text{ in.} & 138 \\ .\&S. & 198 \end{array}$	1 1 1 1					
18021 4 500 No. 5 B.							
GE-51							
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	x 0.060 in. 36 x 0.040 in. 100	2					
GE-52							
± 24922 3 250 No. 5 B. ± 21489 6 500 No. 6 B.	.&S. 77 ¹ / ₂ .&S. 185 ¹ / ₂	1					
GE-53							
52567 2 220/250 1 in. x 0 52564 3 & 4 500 1 in. x 0 52565 5 500 1 in. x 0 52566 6 500 No. 4 B	.0625 in. 58 .035 in. 120 .035 in. 140 .&S. 250 1/2	2 2 1 1.					
GE-54							
11348 3 500 No. 6 S.	W.G. 128½	· 1					
GE-55							
$ \begin{array}{c cccc} * & 24941 \\ \dagger & 24942 \\ * & 24942 \\ \dagger & 24945 \\ \dagger & 24946 \end{array} \end{array} \begin{array}{c ccccc} 2 & 500 & \begin{cases} 1 \frac{3}{6} & \text{in. x} \\ 1 \frac{3}{6} & \text{in. x} \end{cases}$	x 0.070 in. 86 x 0.070 in. 43 x 0.045 in. 126 x 0.045 in. 63	2 2 2 2 2					
GE-57	and a set						
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccc} 0.080 \text{ in.} & 50\frac{1}{2} \\ 0.035 \text{ in.} & 110\frac{1}{2} \\ 0.030 \text{ in.} & 124 \end{array}$	2 2 2					
GE-58							
‡ 24957 2 250 (2) No. 3 B. ‡ 24959 3 250 (2) No. 4 B. ‡ 19212 6 500 No. 6 S.	&S. 58 ¹ / ₂ &S. 75 ¹ / ₂ W.G. 175 ¹ / ₂	1 1 1					

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

GENERAL ELECTRIC COMPANY

MOTOR FIELD COILS

GE-59

A CONTRACTOR OF THE OWNER OF THE				and the second second	the second second second second					
Cat. No.	Arm. Turns	Voltage	Conductor	Turns	Illustration Fig. No.					
‡ 24957 ‡ 24959 ‡ 40578 ‡ 62463	2 3 4 6	$250 \\ 250 \\ 500 \\ 500 \\ 500$	(2) No. 3 B.&S. (2) No. 4 B.&S. No. 5 B.W.G. .218 in. Asb. & S.C.C.	$58\frac{1}{2} \\ 75\frac{1}{2} \\ 137\frac{1}{2} \\ 166\frac{1}{2}$	1 1 1 1					
and the second states	40	and a share t	GE-60							
‡ 52284 ‡ 52285 ‡ 52282 ‡ 52283	2 3 4 6	250 250 500 500	 (2) No. 5 B.&S. (2) No. 6 B.&S. No. 5 B.&S. No. 6 B.&S. 	$75\frac{1}{2}\\84\frac{1}{2}\\149\frac{1}{2}\\171\frac{1}{2}$	1 1 1 1					
-	- 65 - 67	and a star of	GE-61							
$\begin{array}{c} 1 & 24961 \\ 1 & 24963 \end{array}$	4 4	250 500	(2) No. 5 B.W.G. No. 3 B.&S.	$58\frac{1}{2}$ $118\frac{1}{2}$	1 1					
		. (GE-66							
$\left. egin{array}{c} * \ 24844 \ \dagger \ 24845 \end{array} ight\}$	1	500	$ \left\{ \begin{array}{l} 1\frac{1}{8} \text{ in. x } 0.120 \text{ in.} \\ 1 \text{in. x } 0.120 \text{ in.} \end{array} \right. $	56 29	2 2					
		(GE-67							
$55857 \\ 24965$	3 4	500 500	No. 5 B.W.G. No. 5 B.W.G.	$110\frac{1}{2}$ $125\frac{1}{2}$	1 1					
	GE-69									
$\left. egin{smallmatrix} * \ 33735 \ \dagger \ 33736 \end{smallmatrix} ight\}$. 1	500	$\begin{cases} 2 & \text{in. x 0.110 in.} \\ 2\frac{7}{32} & \text{in. x 0.110 in.} \end{cases}$	35 35	2 2					
		(GE-70							
55857	3	500	No. 5 B.W.G.	1101/2	1					
			GE-71							
π 122845 \triangle 122846 \$ 122847 \$ 122847	1	250	0.080 in. x 1 in.	29 1/2	1					
122848 1	2	500	0.080 in. x 1 in.	601/2	. 1					
-		(GE-77							
‡ 52285 ‡ 52283	3 6	250 500	No. 6 B.&S. No. 6 B.&S.	$\begin{array}{r} 84\frac{1}{2} \\ 171\frac{1}{2} \end{array}$	1 · 1					
		(3E-79		1					
$\left.\begin{array}{c} * \ 60639 \\ + \ 60638 \\ * \ 60641 \\ + \ 60640 \end{array}\right\}$	3 6	250 500	$\left\{\begin{array}{l} No. \ 3 \ B.\&S.\\ No. \ 3 \ B.\&S.\\ No. \ 6 \ B.\&S.\\ No. \ 6 \ B.\&S.\\ No. \ 6 \ B.\&S. \end{array}\right.$	$104 \\ 51 \\ 210 \\ 104$	1 1 1 1					
- A CARLER AND A CARLER AND										

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

 $\begin{array}{l} \pi \mbox{ Top coil.} \\ \triangle \mbox{ Bottom coil.} \\ \$ \mbox{ Suspension side coil.} \end{array}$

|| Axle side coil.

		E-80	G.					
Illustration Fig. No.	Turns	Conductor	Voltage	Arm. Turns	Cat. No.			
1.	1101/2	No. 5 B.W.G.	500	3	55857			
Alexand a		E-81	G					
1	1281⁄2	No. 6 S.W.G.	500	3	11348			
		E-87	G					
1	87 1/2	No. 4 B.&S.	500	2	43100			
		E-88	G	語言の性が生まれた				
1	1101/2	No. 5 B.W.G.	500	3	100796			
		E-90	G	1.2				
1	901⁄2	No. 2 B.&S.	500	2	43098			
		E-95	G					
1	250	No. 8 B.&S.	250	7	61878			
GE-96								
1 1	185 355	No. 5 B.&S. No. 8 B.&S.	$\begin{array}{c} 250 \\ 500 \end{array}$	3 6				
		E-97	G					
1 1	$38\frac{1}{2}$ 80	No. 2 B.&S. No. 5 B.&S.	250 500	2 2				
		2-202	GI					
1 1	70 58	$\left\{ \begin{array}{l} No. \ 5 \ B.W.G. \\ No. \ 5 \ B.W.G. \end{array} \right.$	600	3	$\left.\begin{smallmatrix} \bigtriangleup61071\\ \$ 59142 \end{smallmatrix}\right\}$			
		2-204	· GI		1			
1 1	$\begin{array}{c} 46\\ 40\end{array}$	$\left\{ \begin{array}{l} \text{No. 4 B.&S.} \\ 1.3 \text{ in. x } 0.05 \text{ in.} \end{array} \right.$	600	2	$\left.\begin{smallmatrix} \triangle 61075\\ \$\ 61076 \end{smallmatrix}\right\}$			
		2-205	GI					
1 1 1 1 1 1 1 1	$ \begin{array}{c c} 40 \\ 40 \\ 40 \\ 56 \\ 56 \\ 37.5 \\ 37.5 \\ 37.5 \\ \end{array} $	$\begin{cases} 1 \text{ in. } x \text{ 0.075 in.} \\ 1 \text{ in. } x \text{ 0.075 in.} \\ 2 \text{ in. } x \text{ 0.040 in.} \\ 2 \text{ in. } x \text{ 0.040 in.} \\ 1 \text{ in. } x \text{ 0.075 in.} \\ 1 \text{ in. } x \text{ 0.075 in.} \\ \frac{7}{8} \text{ in. } x \text{ 0.095 in.} \\ \frac{7}{6} \text{ in. } x \text{ 0.095 in.} \end{cases}$	600 600	2 2	$\begin{array}{c} \dagger \ 64265 \\ \ast \ 64264 \\ \ddagger \ 64266 \\ \pi \ 64267 \\ \dagger \ 100665 \\ \ast \ 100666 \\ \ast \ 100666 \\ \ast \ 100667 \\ \end{array} $			
	$ \begin{array}{r} 185 \\ 355 \\ 355 \\ 355 \\ 355 \\ 381 \\ 2 \\ 80 \\ 70 \\ 58 \\ 70 \\ 58 \\ 46 \\ 40 \\ 40 \\ 40 \\ 40 \\ 40 \\ 40 \\ 40 \\ 40 \\ 56 \\ 56 \\ 56 \\ 57.5 \\ 37.5 \\ 37.5 \\ 37.5 \\ \end{array} $	No. 5 B.&S. No. 8 B.&S. E-97 No. 2 B.&S. No. 5 B.&S. No. 5 B.&S. C-202 $\{ No. 5 B.W.G. \\ No. 5 B.W.G. \\ \\ \\ \hline \\ $	250 500 G: 250 500 GH 600 GH 600 GH 600 600	3 6 2 2 3 3 2 2 2 2 2 2 2	$ \begin{array}{c} 60642\\ 60643\\ \hline 60643\\ \hline 60644\\ 60645\\ \hline \\ 61075\\ \hline \\ 61076\\ \hline \\ \\ 64266\\ \hline \\ \pi 64267\\ \hline \\ 64266\\ \hline \\ \pi 64267\\ \hline \\ 100665\\ \hline \\ 8\\ \hline \\ 5\\ \hline \\ \\ \\ 5\\ \hline $			

* 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.

GE-210

Cat. No.	Arm. Turns	Voltage	Conductor	Turns	Illustration Fig. No.
$\left. \begin{array}{c} \bigtriangleup 59890 \\ \$ 59891 \\ \ddagger \$ 88958 \end{array} \right\}$	3	600	$\left\{ \begin{array}{l} \text{No. 2 B.&S.} \\ 1.75 \text{ in. x } 0.030 \text{ in.} \\ 1.75 \text{ in. x } 0.030 \text{ in.} \end{array} \right.$	63 58 58	1 1 1
		G	E-216		
$\left.\begin{smallmatrix} \bigtriangleup 61162\\ \S \ 61164 \end{smallmatrix}\right\}$	3	600	$\left\{\begin{array}{l} \text{No. 5 B.W.G.}\\ \text{No. 5 B.W.G.} \end{array}\right.$	$70 \\ 62\frac{1}{2}$. 1
		G	E-218		
△100807 § 100808 }	3	600	$\left\{ \begin{array}{l} 1 \text{ in. x } 0.055 \text{ in.} \\ 0.07 \text{ in. x } 0.8 \text{ in.} \end{array} \right.$	$66\frac{1}{2}$ $52\frac{1}{2}$	1
		GI	E-219		
$\begin{smallmatrix} \triangle 61162 \\ \S \ 61164 \end{smallmatrix} \Big\}$	3	600	{ No. 5 B.W.G. No. 5 B.W.G.	$70 \\ 62\frac{1}{2}$	1
	N.C.	HI	M-701		
100588 100589	3 · 6	250 500	(2) No. 4 B.&S. No. 4 B.&S.	71 142	1 1
	1	HI	MI-702		
$\frac{104616}{104617}$	2 4	250 500	0.035 in. x $1\frac{5}{16}$ in. 0.035 in. x $1\frac{5}{16}$ in.	$\begin{array}{c} 61\\122\end{array}$	1 1
		HI	MI-703	1	and Co
$\left. \begin{array}{c} \dagger \ 100590 \\ \ast \ 100591 \\ \dagger \ 100592 \\ \ast \ 100593 \end{array} \right\}$	2 4	250 500	$\left\{\begin{array}{l} No. \ 6 \ B.\&S. \\ No. \ 6 \ B.\&S. \\ 0.172 \ in. \\ 0.172 \ in. \end{array}\right.$	$67 \\ 92 \\ 135 \\ 185$	· 1 · 1 · 1 · 1
i Saat	<u>.</u>	HI	M-704		
104617	4	500	0.035 in. x 1 ⁵ / ₁₆ in.	122	1
		HI	M-708		
104622	3	250	(2) No. 4 B.&S.	731⁄2	1
		HI	M-709		
$100594 \\ 100595$	22	$\begin{array}{c} 250\\ 500 \end{array}$	0.054 in. x $1\frac{1}{16}$ in. (2) No. 5 B.&S.	38.5 80	1 1
the second second second second				and the second second second	WHAT IS THE REAL PROPERTY AND

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

HM-710

Cat. No.	Arm. Turns	Voltage	Conductor	Turns	Illustration Fig. No.					
$\left. \begin{array}{c} \$ \ 104625 \\ \ddagger \ 104626 \\ \$ \ 104627 \\ \ddagger \ 104628 \end{array} \right\}$	2 4	250 500	$\begin{cases} (2) \text{ No. 7 B.&S.} \\ (2) \text{ No. 7 B.&S.} \\ \text{ No. 7 B.&S.} \\ \text{ No. 7 B.&S.} \\ \text{ No. 7 B.&S.} \end{cases}$	81 111 169 231	· 1 · 1 · 1 · 1 · 1 · 1 · 1 · 1 · 1 · 1					
HM-711										
103777 103778	$2 \\ 2$	250 500	(3) No. 4 B.&S. (3) No. 7 B.&S.	38.5 80	· 1 1					
HM-713										
104631	. 3	250	(2) No. 4 B.&S.	71	1					
CO-2001										
24916 24918	$\frac{1}{2}$	$220/250 \\ 500$	1¼ in. x 0.060 in. 1¼ in. x 0.080 in.	36 56	$2 \\ 2$					
CO-2002										
¶ 24920 ¶ 24922 ¶ 15761 68244 ¶ 21489	$2 \\ 3 \\ 4 \& 5 \\ 4 \& 5 \\ 6 \\ 6$	$\begin{array}{r} 220/250\\ 220/250\\ 500\\ 500\\ 500\\ 500\end{array}$	No. 4 B.&S. No. 5 B.&S. No. 5 B.&S. No. 5 B.&S. No. 6 B.&S.	$\begin{array}{r} 62 \frac{1}{2} \\ 77 \frac{1}{2} \\ 155 \frac{1}{2} \\ 155 \frac{1}{2} \\ 185 \frac{1}{2} \end{array}$	1 1 1 1 1					
	CO-2003									
$\left. \begin{array}{c} \ddagger 24937 \\ \$ 24938 \\ \ddagger 24941 \\ \$ 24942 \\ \ddagger 24945 \\ \$ 24946 \end{array} \right\}$	1 2 3	220/250 500 500	$ \begin{cases} 1 \frac{3}{6} \text{ in. x } 0.1875 \text{ in.} \\ 1 \frac{3}{6} \text{ in. x } 0.1875 \text{ in.} \\ 1 \frac{3}{6} \text{ in. x } 0.070 \text{ in.} \\ 1 \frac{3}{6} \text{ in. x } 0.070 \text{ in.} \\ 1 \frac{3}{6} \text{ in. x } 0.045 \text{ in.} \\ 1 \frac{3}{6} \text{ in. x } 0.045 \text{ in.} \end{cases} $	$36 \\ 17 \\ 86 \\ 43 \\ 126 \\ 63$	2 2 2 2 2 2 2 2					
		CC	-2004							
¶ 24957 ¶ 24959 ¶ 50420 60329 ¶ 19212	$\begin{array}{c}2\\3\\4\\4\\6\end{array}$	$\begin{array}{r} 220/250\\ 220/250\\ 500\\ 500\\ 500\\ 500\end{array}$	 (2) No. 3 B.&S. (2) No. 4 B.&S. No. 5 B.W.G. No. 5 B.W.G. No. 6 S.W.G. 	$58\frac{1}{2}$ $75\frac{1}{2}$ $144\frac{1}{2}$ $137\frac{1}{2}$ $175\frac{1}{2}$	1 1 1 1 1					
		CC	9-2005							
$\begin{array}{c} 27388\\ 27388\\ *17142\\ \dagger17749\\ *24913\\ \dagger24970\end{array}\}$	$\begin{array}{c}1\\2\\3\&4\\6\end{array}$	$ \begin{array}{r} 110/125 \\ 220/250 \\ 500 \\ 500 \end{array} $	 (2) No. 4 B.&S. (2) No. 4 B.&S. No. 6 B.&S. No. 7 B.&S. 	62 62 203 259	1 1 1 1					

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

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CO-2006

Cat. No.	Arm. Turns	Voltage	Conductor	Turns	Illustratio Fig. No.		
$122850 \\ 122851$	50 1 220/250 0.325 in. x 0.325 in. 44 51 2 500 0.229 in. x 0.229 in. 88						
		CO.	-2007				
24949	1	220/250	$1\frac{5}{16}$ in. x 0.090 in.	44	2		
24951	2	250	l_{16}^{-1} in. x 0.080 in.	$50\frac{1}{2}$	2		
19222	2	500	1_{16}^{+} in. x 0.045 in.	90	2		
50240	3	500	l_{16}^{\bullet} in. x 0.035 in.	110 1/2	2		
24954	4	500	1_{16}^{-10} in. x 0.030 in.	124	2		
01100		500 No. 4 B.&S. 150			0		

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		GE-1000					
Cat. No.	Arm. Turns	Voltage	Remarks	Cat. No.	Arm. Turns	Voltage	Remarks		
	$\frac{14}{26}$	$\begin{array}{r} 220/250\\ 500\end{array}$		$\begin{array}{c} 16390\\ 16391 \end{array}$	$3 \& 4 \\ 3 \& 4$	500 500	Form 2 Form 3		
	LW	P-5							
51907	10	250			GE-1	.200			
	GD			55778	1	250	Form 7		
	CB-	-14		$55790 \\ 55775$	2 3 & 4	500 500	Form 8 Form 1		
$\begin{array}{c} 122853 \\ 51997 \\ 51997 \end{array}$	$\begin{array}{c}10\\6\&10\\17\end{array}$	$125 \\ 250 \\ 500$		$55776 \\ 14501 \\ 55777$	3 & 4 3 & 4 3 & 4 3 & 4	500 500 500	Form 2 Form 4 Form 5		
	CB	-15			GE-	-51			
51997	16	250							
51997	30	500		$\frac{14529}{122854}$	$1\\4$	$\begin{array}{c} 250 \\ 500 \end{array}$			
	GE-	800							
27366	1	110	110		GE-52				
$27367 \\ 16388 \\ 16389 \\ 52985$	2 4 4 4	$250 \\ 500 \\ 500 \\ 500 \\ 500$	Form 4 Form 6 Form 7	55779 14531	3 6	250 50C			
	GE	-53			GE-	59			
Cat. No	. Arm.	Turns	Voltage	Cat. No.	Arm.	Turns	Voltage		
52990 52987 52988 52989	4	2 3 & 5 6	$220/250 \\ 500 \\ 500 \\ 500 \\ 500$	122855610694057962464		2 3 4 6	$250 \\ 250 \\ 500 \\ 500 \\ 500$		
	GE	-54	•	and the	GE	-60			
55780		3	500	52390		2	250		
	GE	-55		52391 52388		3 4	250 500		
04049		0	500	52389	-	0	000		
24943 24947		3	500		GE	-61			
	GE	-57		55786		4	250 & 500		
24952		2	250		GE	-66			
50287 24955		4	500 500	24876		1	500		
	GE	-58			GE	-67			
55785		2	250		OT-	2	500		
50449		6	250 500	24966		4	500		

MOTOR COMMUTATOR SEGMENTS

	GE-69		GE-97				
Cat. No.	Arm. Turns	Voltage	Cat. No.	Arm. Turns	Voltage		
33738	1	500	60587 60610	2 2	250 500		
	GE-70			-			
33739	3	500	GE-202				
	GE-71		- 59152	3	600		
199852 1 950			-	GE-204			
122850	2	230 500	61073	2	600		
	GE-77			GE-205			
36864	3	250		01-203			
36865	6	500	* 100669 † 64315	$\frac{2}{2}$	600 600		
	GE-79		GE-210				
60583 60584	3 6	$\begin{array}{c} 250 \\ 500 \end{array}$	59895	3	600		
an and a second	GE-80			GE-216	-12		
33739	3	500	61165	3	600		
	GE-81			GE-218	* 1		
55780	3	500	100788	3	600		
	GE-87		GE-219				
43104	2	500	61165	3	600		
	GE-88						
100784	3	500		1111-701			
	GE-90		- 100578 100579	3 6	$\begin{array}{c} 250 \\ 500 \end{array}$		
43101	2	500		HM-702	10142		
ton store "	GE-95		104593	2	250		
64849	7	250	104594	4	500		
	GE-96		HM-703				
60585 60586	3	250 500	100580 100581	2 4	$250 \\ 500$		

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

MOTOR COMMUTATOR SEGMENTS

	HM-704		CO-2003					
Cat. No.	Arm. Turns	Voltage	Cat. No.	Arm.	Turns	Voltage		
104595	4	500	24939 24943		1 2	220/250		
	HM-708		24947		3	500		
61069	61069 3 250			CO-2004				
	HM-709		55785		2	220/250		
$100582 \\ 100583$	22	$\begin{array}{c} 250\\ 500 \end{array}$	55784 50448 50449		3 4 6	$220/250 \\ 500 \\ 500$		
	HM-710			CO-2	2005			
100580	100580 2 100581 4	250	Cat. No	Arm. Turns	Volts	Remarks		
100581		500	27366	. 1	110/125			
	HM-711		27367 16388	2 3, 4 & 6	$220/250 \\ 500$	50 Form 4 Form 6 Form 7		
$100582 \\ 100583$	$\frac{2}{2}$	$\begin{array}{c} 250\\ 500 \end{array}$	16389 52985	3, 4 & 6 500 3, 4 & 6 500				
	HM-713		CO-2006					
100578	3	250	Cat. No.	Arm.	Turns	Voltage		
	CO-2001		113990 113991		12	$220/250 \\ 500$		
$14529 \\ 14528$	$\frac{1}{2}$	$\begin{array}{r} 220/250\\ 500\end{array}$		CO-2	CO-2007			
Constant and the	CO-2002		55789		1	220/250		
$\begin{array}{c} 24923 \\ 55779 \\ 14530 \\ 14531 \end{array}$	$ \begin{array}{c} 2 \\ 3 \\ 4 \\ & 5 \\ 6 \end{array} $	$220/250 \\ 220/250 \\ 500 \\ 500$	24952 55783 50287 24955 24989		2 2 2 3 4 6	220/250 220/250 500 500 500 500 500		

BRUSH-HOLDERS FOR LOCOMOTIVE, CRANE AND HOIST MOTORS



Volts	Illustration Fig. No.	ustration PLETE WITH BRUSH- Fig. No. HOLDER		plete with Brush-	lete with COMPL Brush-		DLETE Cat. No. Tension Spring	
		Right-Hand	Left-Hand	Holders	Right-Hand	Left-Hand		
220/250/500	5	100450	100450		100451	100451 50672	100452	
125	3	00000	00000	123425	123426	123427	45407	
250/500	5	51950	51951		51958	51958	51961	
250/500	3	10 35 1		45399	45401	45402	45407	
250/500	5	30762	30763		51958	51958	51961	
250/500	3			123428	45401	45402	45407	
500					16590	16591	9606	
500					16564	16565	10409	
110	4			113128	113133	113133	13731	
250	3			111881	111882	111883	13731	
500	3			17488	17238	17239	13731	
500	3			14752	14755	14756	14763	
	Volts 220/250/500 250 125 250/500 250/500 250/500 250/500 500 110 250 500 500 500 500	Voits Illustration Fig. No. 220/250/500 5 250 5 250/500 5 250/500 5 250/500 3 250/500 5 250/500 3 250/500 3 500 5 500 3 500 3 500 3 500 3 500 3 500 3 500 3 500 3 500 3	Volts Illustration Fig. No. PLETE WT HoL 220/250/500 5 Right-Hand 220/250/500 5 100450 250 5 50663 125 3 500 250/500 5 51950 250/500 3 30762 250/500 3 500 500 3 500 500 3 500 500 3 500 500 3 500 500 3 500 500 3 500 500 3 500 500 3 500	Volts Illustration Fig. No. PLETE WITH BRUSH- HOLDER Right-Hand Left-Hand 220/250/500 5 100450 250 5 100450 250 5 50663 125 3 50663 250/500 5 51950 250/500 3 30762 250/500 3 30763 250/500 3 500 500 3 500 500 3 500 500 3 500 500 3 500 500 3 500 500 3 500 500 3 500	Volts Illustration Fig. No. PLETE WITH BRUSH- HolDER Plote with Brush- Holders 220/250/500 5 100450 100450 250 5 50663 50665 125 3 5 51950 250/500 5 51950 51951 250/500 3 30762 30763 250/500 3 123425 250/500 3 123425 250/500 3 123425 250/500 3 123428 500 3 113128 500 3 111881 500 3 14752	$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	

MOTOR BRUSH-HOLDERS

Motor	Volts	Illustration Fig. No.	CAT. NO. STUD OR SUPPORT COM- PLETE WITH BRUSH- g. No. HOLDER		Cat. No. Yoke Com- plete with Brush-	Cat. No. Yoke Com- plete with Brush- COMPLETE		Cat. No. Tension Spring
			Right-Hand	Left-Hand	Holders	Right-Hand	Left-Hand	
GE-1200 GE-51 GE-51 GE-52 GE-52	$500 \\ 250 \\ 500 \\ 250 \\ 250 \\ 500$	3 3 3 3 3 3			$18045 \\ 100453 \\ 100454 \\ 47886 \\ 15604$	$18048 \\ 100455 \\ 100456 \\ 47887 \\ 15627$	$ 18048 \\ 100457 \\ 100458 \\ 47888 \\ 15628 $	$19348 \\100459 \\100460 \\45174 \\14763$
GE-53 GE-53 GE-53 GE-54 GE-55	220/250 500 500 500 500 500	4 3 3 3 7	50512	50513	52547 k 52531 e 52532 11338	52552 52534 52534 52534 11339 50516	52552 52535 52535 52535 11340 119184	$b 52553 \\ 14763 \\ 14763 \\ 45182 \\ 50520 \\ cm + 100 \\ $
GE-57 GE-57 GE-57 GE-58 GE-58 GE-58 GE-58	$250 \\ 500 \\ 250 \\ 250 \\ 250 \\ 500 \\ 500 $	3 3 3 3 3 3 3 3 3 3			$ \begin{array}{c} 100461 \\ \parallel 38580 \\ \dagger 50226 \\ \triangle 66679 \\ \$ 66680 \\ 50418 \end{array} $	$ \begin{array}{r} 100462 \\ 19213 \\ 50228 \\ 66681 \\ 66682 \\ 14755 \\ \end{array} $	$100463 \\ 19214 \\ 50229 \\ 66683 \\ 66684 \\ 14756$	$ \begin{array}{r} 100464 \\ 55853 \\ 14763 \\ $
GE-59 GE-59 GE-59 GE-60 GE-60 GE-60	$250 \\ 250 \\ 500 \\ 250 \\ 500 \\ 250 \\ 500 \\ 250 \\ 500 \\ 250 \\ 500 \\ 250 \\ 500 \\ 250 \\ 500 $	3 3 3 3 3			$\triangle 123429$ \$ 45152 100465 52272 52271 20244	$123430 \\ 45154 \\ 100466 \\ 52274 \\ 15627 \\ 20248 \\$	$123431 \\ 45155 \\ 100467 \\ 52275 \\ 15628 \\ 20248$	$\begin{array}{c} 45160 \\ 45160 \\ 45160 \\ 14763 \\ 14763 \\ 14763 \\ 142763 \\ 14$
GE-61 GE-61	250 500	4 4			39344 39345	39348 39349	39348 39349	b 39355 b 39355 (h24588
GE-66 GE-67 GE-67	500 500 500	1 3 3	24577	24578	* 47795 8 47794	24581 47797 55847	$24582 \\ 47798 \\ 55848$	a24589 55853 55853
GE-69	500	7	38641	38642	3	38643	38644	{ h38645 a38646
GE-70 GE-71 GE-71 GE-77 GE-77	$500 \\ 250 \\ 500 \\ 250 \\ 250 \\ 500$	3 4 4 3 3			$\begin{array}{r} 34059 \\ 123432 \\ 123433 \\ 45169 \\ 45168 \end{array}$	$\begin{array}{r} 34060 \\ 123435 \\ 123435 \\ 52274 \\ 15627 \end{array}$	$34061 \\ 123435 \\ 123435 \\ 45171 \\ 45170$	$55853 \\ b 123436 \\ b 123436 \\ 45174 \\ 14763 \\ \end{array}$
GE-79 GE-79 GE-79 GE-79 GE-79 GE-79		4 4 4 4 4 2			$\begin{array}{c} c & 100471 \\ d & 100472 \\ c & 100473 \\ d & 100474 \\ \end{array}$	$ \begin{array}{r} 100475\\ 100476\\ 100476\\ 100475\\ 100476\\ 24060 \end{array} $	100475 100476 100475 100475 100476 34061	$ \begin{array}{r} 100477 \\ 100478 \\ 100477 \\ 100478 \\ 55852 \end{array} $
GE-80 GE-87 GE-87 GE-88 GE-88	$500 \\ 500 \\ 500 \\ 500 \\ 500 \\ 500$	3 3 2 2	‡ 108032 ¶ 119100	‡ 108032 ¶ 119100	40400 45180 45188	$ \begin{array}{r} 34000\\ 11339\\ 45190\\ 108033\\ 108033\\ 45000 \end{array} $	$ \begin{array}{r} 34001\\ 11340\\ 45191\\ 108033\\ 108033\\ 45002 \end{array} $	$\begin{array}{r} 35853\\ 45182\\ 55853\\ 108034\\ 108034\\ 55852\end{array}$
GE-90-A GE-90-B GE-95 GE-96 GE-96	$500 \\ 500 \\ 250 $	$ \begin{array}{c} 3 \\ 3 \\ 12 \\ 11 \\ 11 \end{array} $	100479 x 100488 100490	100481 x 100489 100491	45200 45335	$\begin{array}{r} 45202 \\ 45202 \\ 100483 \\ 100496 \\ 100498 \end{array}$	$\begin{array}{r} 45203 \\ 45203 \\ 100485 \\ 100497 \\ 100499 \end{array}$	$\begin{array}{c} 55853 \\ 55853 \\ 100487 \\ 100504 \\ 100487 \end{array}$
GE-96 GE-96 GE-97 GE-97 GE-202 CF 204	$500 \\ 500 \\ 250 \\ 500 \\ 600 \\ 600$	11 11 3 3 3 2	x 100492 100494	x 100493 100495	100506 100507 60338 100513	$\begin{array}{c c} 100500\\ 100502\\ 100508\\ 100509\\ 59130\\ 100514 \end{array}$	$\begin{array}{c} 100501 \\ 100503 \\ 100510 \\ 100511 \\ 59131 \\ 100515 \end{array}$	$\begin{array}{c} 100504\\ 100487\\ 100512\\ 55853\\ 59138\\ 55853\end{array}$
GE-205 GE-210-A	600 600	83	64127	64129	59886	64138 59887	64141 59888	55853 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. t Biste hand compared

k Three, four and five turn armatures. x Metal body only.

MOTOR BRUSH-HOLDERS

Motor	Volts	Illustration Fig. No.	CAT. NO. STUD OR SUPPORT COM- PLETE WITH BRUSH- HOLDER Right-Hand Left-Hand		Cat. No. Yoke Com- plete with Brush- Holders	CAT. NO. BRUSH-HOLDER COMPLETE Right-Hand Left-Hand		Cat. No. Tension Spring
$\begin{array}{c} {\rm GE-210}\ {\rm C,\ D\ \&\ E}\\ {\rm GE-216}\\ {\rm GE-216}\\ {\rm GE-218}\\ {\rm GE-219}\\ {\rm GE-219}\\ {\rm HM-701}\\ {\rm HM-701}\\ {\rm HM-702}\\ {\rm HM-702}\\ {\rm HM-703}\\ {\rm HM-703}\\ {\rm HM-703}\\ {\rm HM-708}\\ {\rm HM-709}\\ {\rm HM-709}\\ {\rm HM-709}\\ {\rm HM-710}\\ {\rm HM-710}\\ {\rm HM-710}\\ {\rm HM-710}\\ {\rm HM-711}\\ {\rm HM-711}\\ {\rm HM-711}\\ {\rm HM-711}\\ {\rm HM-711}\\ {\rm HM-713}\\ {\rm CO-2001}\\ {\rm CO-2002}\\ {\rm CO-2002}\\ {\rm CO-2003}\\ {\rm CO-2003}\\ {\rm CO-2004}\\ {\rm CO-2005}\\ {\rm CO-2005}\\ {\rm CO-2005}\\ {\rm CO-2006}\\ {\rm CO-2007}\\ {\rm CO-20$	$\begin{array}{c} 600\\ 600\\ 600\\ 600\\ 600\\ 250\\ 500\\ 250\\ 500\\ 250\\ 500\\ 250\\ 500\\ 250\\ 500\\ 250\\ 500\\ 250\\ 500\\ 250\\ 500\\ 220/250\\ 500\\ 220/250\\ 500\\ 220/250\\ 500\\ 220/250\\ 500\\ 220/250\\ 500\\ 220/250\\ 500\\ 220/250\\ 500\\ 220/250\\ 500\\ 220/250\\ 500\\ 220/250\\ 500\\ 220/250\\ 500\\ 220/250\\ 500\\ 500\\ 220/250\\ 500\\ 500\\ 220/250\\ 500\\ 500\\ 500\\ 500\\ 500\\ 500\\ 500\\ $	$\begin{array}{c} 2\\ 2\\ 2\\ 2\\ 2\\ 2\\ 2\\ 2\\ 2\\ 2\\ 2\\ 2\\ 10\\ 10\\ 6\\ 6\\ 10\\ 10\\ 6\\ 6\\ 10\\ 10\\ 6\\ 6\\ 10\\ 10\\ 6\\ 6\\ 10\\ 3\\ 3\\ 3\\ 3\\ 3\\ 3\\ 3\\ 3\\ 3\\ 3\\ 3\\ 3\\ 3\\$	$\begin{array}{c} \ddagger 112124 \\ \blacksquare 100516 \\ \ddagger 108041 \\ \P 61175 \\ 108043 \\ \ddagger 108041 \\ \P 61175 \\ 100610 \\ 100611 \\ 100611 \\ 1004741 \\ 100610 \\ 100611 \\ 100614 \\ 100615 \\ 100610 \\ 100610 \\ 127039 \\ 50512 \\ \end{array}$	$\begin{array}{c} 112124\\ \P 100516\\ 108041\\ \P 61175\\ 108045\\ 108041\\ \P 61175\\ 100610\\ 100611\\ 104740\\ 104741\\ 100610\\ 100611\\ 100614\\ 100615\\ 100610\\ 100610\\ 100610\\ 100613\\ 100613\\ 100613\\ 100613\\ 100610\\ 100614\\ 100615\\ 100610\\ 100610\\ 100614\\ 100615\\ 100610\\ 100610\\ 100610\\ 100610\\ 100614\\ 100615\\ 100610\\ 10060\\ 1000\\ $	100453 100454 47886 15604 \$666679 \$66680 50418 113128 111881 117488 123437 123438 100461 * 38580 † 50226	$\begin{array}{c} 112125\\ 100517\\ 108042\\ 61182\\ 108046\\ 108042\\ 61182\\ 100613\\ 100612\\ 100613\\ 104742\\ 104743\\ 100612\\ 100613\\ 104752\\ 100616\\ 100617\\ 100612\\ 100613\\ 100616\\ 100617\\ 100612\\ 100455\\ 100456\\ 47887\\ 15627\\ 127041\\ 50516\\ 66681\\ 66682\\ 14755\\ 113133\\ 111882\\ 17238\\ 123439\\ 123440\\ 100462\\ 19213\\ 50228\\ \end{array}$	$\begin{array}{c} 112125\\ 100517\\ 108042\\ 61182\\ 108042\\ 61182\\ 100612\\ 100613\\ 104743\\ 100612\\ 100613\\ 104743\\ 100612\\ 100613\\ 104752\\ 100616\\ 100617\\ 100612\\ 100613\\ 100616\\ 100617\\ 100612\\ 100458\\ 47888\\ 15628\\ 127042\\ 50516\\ 66683\\ 66684\\ 14756\\ 113133\\ 111883\\ 17239\\ 123441\\ 123441\\ 123442\\ 100463\\ 19214\\ 50229. \end{array}$	$\begin{array}{c} 108034\\ 59138\\ 108034\\ 59138\\ 108034\\ 59138\\ 55853\\ 100459\\ 100460\\ 45174\\ 14763\\ 127043\\ 50520\\ 14763\\ 14763\\ 13731\\ 137$

* 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

			IMENCIONE IN INCHES			
Motor	Voltage	Cat. No.		DIMENSIONS IN INCHES		
			Length	Width	Thickness	
NUUD 01/	000/050/500	100970	0	11/	5/	
NWP-2 $\frac{1}{2}$	220/250/500	100370	. 2		7/8	
LWP-5	200	00081	18/		78	
CB-14 * CD 14	125	122808	1 %	1 %4	/8	
* CB-14 CD-14	250/500	01971	1 %	13/	78 5/	
CD-14 * CD 15	250/500	51071	1 74	1 74	78 5/	
WD 20	200/000	16086	174	1 3/	1/8	
WP 50	500	16212	274	27/2	1/2	
+ CF 800	110/250	15380	21/2	21/8	3/	
+ GE-800	500	17086	$2\frac{\tau}{2}$		1/2	
GE-1000	500	14764	21/4	13%	1/2	
GE-1000	500	50396	21/4	234	1/2	
t GE-1200	250	36071	21/2	21/4	7/8	
t GE-1200	500	17086	$2\frac{7}{16}$	21/4	1/2	
GE-51	250	36062	21/4	2	1	
* GE-51	250	58964	21/4	2	1	
GE-51	5 00	36063	21/4	2	5/8	
GE-52	250	36064	$2\frac{1}{4}$	114	1	
* GE-52	250	58965	$2\frac{1}{4}$	1 1/4	1	
GE-52	500	15698	21/4	114	1/2	
GE-52	500	50395	21/4	21/2	1/2	
GE-53	220/250	52563	21/4	$\frac{1}{1}$	3/	
* GE-53	220/250	08900 59546	21/4	1 1/2	24 5/	
GE-33 CF 54	500	11247	274	3	78	
GE-04 GE 55	500	50534	274	134	9	
GE-57	250	36066	21/	134	11/8	
* GE-57	250	58967	21/4	1 34	11/8	
GE-57	500	18167	21/4	134	5/8	
° GE-58	250	36067	21/4	13/8	11/4	
∆* GE-58	250	58968	$2\frac{1}{4}$	1 3/8	. 7/8	
°* GE-58	250	58969	$2\frac{1}{4}$	13/8	114	
GE-58	500	50396	$2\frac{1}{4}$	234	1/2	
GE-58	500	14764	21/4	1 0/8	1/2	
* GE-59	250	122859	21/4	1 4	1 /4	
GE-60	250	04481 50205	21/4	1/4	1/8	
GE-00 CE 60	500	15608	274		1/2	
GE-61	250	36069	214	24	7%	
GE-61	500	36070	21/4	$\overline{2}$	5/8	
GE-66	500	24843	21/4	31/4	9 16	
GE-67	500	55856	21/4	338	1/2	
GE-69	500	36321	2	21/4	5/8	
GE-70	500	34070	$2\frac{1}{4}$	178	1/2	
GE-71	250/500	122860	$2\frac{1}{4}$	178	3/8	
GE-77	. 250	52281	21/4	14	18	
GE-77	500	50395	2 1/4		2/2 9	
GE-79 CE-90	250/500	24070	21/8	1 1/4	16	
GE-80 GE 91	500	11347	214	3	3%	
GE-81 GE-87	500	42911	21/4	2	1/2	
GE-88	500	34070	21/4	17/8	1/2	
GE-90	500	42912	21/4	17/8	$\frac{7}{16}$	
GE-95	250	100233	11/2	11/4	7 16	
GE-96	250	100373	11/2	11/2	<u>11</u> 16	
GE-96	500	100374	11/2	11/2	716	
* GE-97	250	100375	21/4	1 3/4	1	
GE-97	500	100376	21/4	1 3/4	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	21/4	21/2	1/2
GE-204	600	59987	21/		72
CF 205	600	100662	2/4	21/	16
CE 210	600	100003	274	474	/8
GE-210 CE 916	000	09009	24	1%	1/2
GE-210	600	61176	21/4	3	1/2
GE-218	600	107579	21/4	3	2/8
GE-219	600	61176	$2\frac{1}{4}$	3	1/2
HM-701	250	100608	1 3/4	2	1
HM-701	500	100609	134	2	$\frac{9}{16}$
HM-702	250	104591	2	11/4	11/8
HM-702	500	104592	2	21/2	11
HM-703	250	100608	13/	2	1 10
HM-703	500	100609	134	2	9
HM-704	500	104592	2	21/2	$\frac{16}{11}$
HM-708	250	100371	21/	272	16 5/
HM 700	250	100275	274	174	1 78
HM 700	500	100375	274	1 74	1
HM-709	500	100370	21/4	1%	16
HM-710	250	100608	1 %	2	1
HM-710	500	100609	1%4	2	$\frac{9}{16}$
HM-711	250	100375	21/4	134	1
HM-711	500	100376	$2\frac{1}{4}$	1 3/4	$\frac{9}{16}$
HM-713	250	100608	13/4	2	1
CO-2001	220/250	36062	$2\frac{1}{4}$	2	1
CO-2001	220/250	58964	21/4	2	1
CO-2001	500	36063	21/4	2	5/8
CO-2002	220/250	36064	21/4	11/4	1
CO-2002	220/250	58965	21/	11/	1
CO-2002	500	15698	21/	114	1/2
CO-2002	500	50395	214	21%	1/2
CO-2003	220/250	36065	2/4	13/	11/
CO-2003	500	50534	2	1 /4	1 /4
CO 2003	220/250	26067	21/	174	116
CO-2004	220/250	50007	274	1 2/8	1 74
CO-2004	220/250	58908	21/4	1 %8	11/8
CO-2004	220/250	58909	21/4	1%	1 1/4
CO-2004	500	50396	21/4	2%4	1/2
CO-2004	500	14764	21/4	1%	1/2
CO-2005	110/125/250	15389	$2\frac{1}{2}$	21/4	3/4
CO-2005	500 -	17086	$2\frac{7}{16}$	$2\frac{1}{4}$	1/2
CO-2006	220/250	114002	$2\frac{1}{2}$	17/8	1
CO-2006	500	114003	$2\frac{1}{2}$	17/8	
CO-2007	220/250	36066	21/4	134	11/8
CO-2007	220/250	58967	21/4	134	11%
	,	0000.	-/4	- / 4	- 10

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

 \triangle 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

	COMMUTATOR END		PINION END		
Motor	Cat. No.	Туре	Cat. No.	Type	Material
NUUD 01/	99/217	0.14	99610	C 114	C
NWP-21/2	33017	Split	33018	Split	Gun metal
CP 14	51046	Split	51047	Split	Bross
CB 15	30760	Split	30761	Split	Brass
WP-30 & 50	15453	Split	15996	Split	Brass
GE-800	17096	Solid	17095	Snlit	C. L & 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 D
GE-53	52529	Solid	52530 14299	Solid	Brass & Bab.
GE-54 GE 54	14081	Solid	14084	Split	Bross
GE-55	50510	Solid	50511	Solid	Brass & Bab
GE-57	50223	Solid	50224	Solid	C. L. & 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 CE 77	122865	Solid	122800	Solid	Brass & Bab.
GE-11 GE 70	38092	Solid	38093	Solid	Bross
GE-19 GE-80	38604	Solid	38695	Solit	Brass & Bah
GE-80 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	01902 50991	Split	Brass & Dab.
GE-204 GE 205	09820 40720	Solid	40740	Solid	Brass & Bab.
GE-205 GE-210	49709	Solid	50824	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 HM 711	100606	Solid	100607	Solid	Brass & Dab.
HM 712	100602	Solid	100607	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 CO-2007	122862	Solid	122863	Solid	C. I. & Bab.
0-2007	00223	Solid	00224	Diloc	C. 1. & Bab.


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.

		P. La Lon	Diameter	Thickness	Outside	RAD	IUS	Length	
Cat. No.	Motor	Bore	of Flange	of Flange	Diameter of Shell	A	В	Overall	Material
$\begin{array}{c} 33604\\ 33604\\ *\ 50655\\ +\ 50656\\ *\ 51942\\ +\ 51943\\ *\ 51944\\ +\ 51945\\ *\ 59437\\ +\ 59437\\ +\ 59438\\ *\ 51942\\ +\ 51943\\ 15451\\ 16666\\ 17240\\ 17556\\ 104459\\ 17229\\ 33751\\ 14722\\ 14725\\ 14748\\ 14721\\ 14724\\ 14723\\ 14726\\ 33605\\ 33425\\ 18012\\ 33424\\ 14722\\ 14725\\ 14748\\ 14721\\ 14724\\ 14723\\ 14726\\ 147$	NWP-2 $\frac{1}{2}$ LWP-5 CB-14-A & H CB-14-A & H CB-14-A & H CB-14-A & H CB-14-A & H CB-14-T CB-14-T CB-15-G CB-15-G CB-15-G WP-30 & 50 GE-800-B GE-800-B GE-800-B GE-800-B GE-800-B GE-800-B GE-800-B GE-1000-A GE-52-A GE-52-A GE-52-A GE-52-A GE-52-A	233/4/4 2233/4 2233/2 2233/2 23/	of Flange 334 334 334 334 334 334 412 412 334 412 334 412 334 6558 5558 5558 5558 666	or Flange 1/4 - 3-7 - 3	of Shell 1,1,2,2,8,8,8,8,8,8,8,8,8,8,8,8,8,8,8,8,	A 32 32 32 32 32	В	$\begin{array}{c} 4 \frac{1}{4} \\ 4 \frac{1}{4} \\ 4 \frac{1}{32} \\ $	Gun metal Brass Brass Brass Brass Brass Brass Brass Brass Brass Brass Brass Brass Brass Brass Mall. I. & Bab. Brass Mall. I. & Bab. Brass Mall. I. & Bab. Brass

* Commutator end. † Pinion end.

Cat. No.	Motor	Bore	Diameter of Flange	Thickness of Flange	Outside Diameter of Shell	RAD A	ius B	Length Overall	Material
14707	ODELA	98/	C	3/	=1/			0	D
14720	GE-94-A	0/8	0	24	51/			8	Brass
14748	GE-54-A	3/8	0	24	51/			8	Mall. I. & Bab.
14721	GE-54-A	3%4	0	4	0 1/4			8	Mall. I. & Bab.
14724	GE-54-A	3%4	0	24	0 1/4			8	Brass
14723	GE-54-A	4	0	2/4	0 1/4			8	Mall. I. & Bab.
14726	GE-54-A	4	0	2/4	514			8	Brass
33605	GE-54-A	4 4	0	24	0 1/4			8	Brass
33420	GE-54-A	4 1/2	0	74	0 1/4 C	1/		8	Brass
50507	GE-55-A	4 1/2	8	78	0	18		10%4	Brass
50508	GE-55-A	0 F1/	0	78	C I	1/8	- 1	10%	Brass
22496	CE EE U	01/4	10.5	78	79	18	1.000	10%4	Drass
00420	CE 55 U	614	1016	78	79	74 17		10%	Drass
49000	CE == H	6 602	1016	78	79	74		10%	Drass
50999	CE 57 A	23/	63/	5/8	51/	74		10%	Drass
50222	CE 57 A	074	63/	78	51/		1	9	Bross
50221	CE 57 A	414	63/	- 78	51/			9	Bross
50210	GE-57-A	41/2	634	5/0	514	1/		g	Brass
33497	GE-57-H	5	71/2	5%	64	/4		9	Brass
60502	GE-57-H	51/	71/2	5/0	6			9	Brass
33428	GE-57-H	51/	8	5%	6	1/2		9	Brass
14722	GE-58-A	33%	6	3/1	51/	12	ALC: NOT	8	Mall, I. & Bab
14725	GE-58-A	33/8	6	3/4	51/4		1.5	8	Brass
14721	GE-58-A	33/4	6	3/4	51/4			8	Mall. I. & Bab.
14724	GE-58-A	334	6	3/4	51/4			8	Brass
14723	GE-58-A	4	6	3/4	51/4			8	Mall. I. & Bab.
14726	GE-58-A	4	6	3/4	51/4			8	Brass
33605	GE-58-A	41/4	6	3/4	$5\frac{1}{4}$			8	Brass
61867	GE-58-A	110-мм	6	3/4	$5\frac{1}{4}$		14 B	8	Brass
33429	GE-59-A	4	6	1/8	51/4	7		71/4	C. I. & Bab.
100052	GE-59-A	41/4	1	18	51/4	16		71/4	Brass
14722	GE-60-A	3%	6	24	51/4			8	Mall. I. & Bab.
14725	GE-60-A	3%	0 C	3/4	0 ⁴ 51/			8	Brass Mall L & Dab
14748	CE 60 A	078	6	24 3/	51/			0	Mall. I. & Dab.
14724	GE 60 A	33/	6	34	51/			8	Broce
52267	GE-60-A	100-MM	6	3/	514			8	Mall I & Bab
14723	GE-60-A	4	6	3/	51			8	Mall, I. & Bab.
14726	GE-60-A	4	6	3/4	51/4			8	Brass
52266	GE-60-A	105-мм	6	3/4	51/4			8	Mall. I. & Bab.
52528	GE-61-A	4	6	1/2	4 7/8			7	Brass
33606	GE-61-A	41/4	6	1/2	4 1/8			7	Brass
33430	GE-61-A	41/2	63/4	1/2	5			7	Brass
33606	GE-61-B	41/4	6	1/2	41/8			7	Brass
24567	GE-66-A	5	8%4	32	0	16		103/4	Lumen
24508	GE-00-A	0	8%4	32	6	16		10%	Brass
24009	CE 66 A	51/	0/4	32	6	16		103/	Broce
33600	GE-66-A	51/	83/	3227	6	16	14	1034	Brass
43335	GE-66-A	6	03/4	32	71/	5	1/4	1034	Brass
33464	GE-66-B	51/	93/	32	71/	16 3	/4	1034	Brass
24571	GE-66-B	6	934	27	71/4	3		103/	Lumen
24572	GE-66-B	6	93/4	27	71/4	3	1.000	10 3/4	Brass
33610	GE-66-B	6	934	27	71/4	3/4		1034	Brass
33465	GE-66-B	61/4	934	27	71/4	3 16		1034	Brass
24573	GE-66-B	61/2	93/4	27	71/4	316	1.5	103/4	Lumen
24574	GE-66-B	$6\frac{1}{2}$	93/4	27	71/4	3 16		103/4	Brass
104460	GE-66-B	$6\frac{17}{32}$	93/4	32	71/4	-	1/4	107/8	Brass
100062	GE-66-C	51/2	93/4	32	71/4	16	1/4	103/4	Mall. I. & Bab.
100062	GE-66-E	51/2	934	32	14	16	1/4	103/4	Mall. I. & Bab.
46220	GE-66-H	61/2	93/4	32	F14	16	1/4	103/4	Lumen
55841	GE-67-A	3%	* 6	24.	01/2 51/2			8	Mall. I. & Bab.
55020	GE-67-A	3%	* 0	24	0 1/2 5 1/			8	Mall. I. & Bab.
00839 55090	GE-07-A GE 67 A	4	*6	2/4 3/.	51/2			8	Mall I & Rab
55849	GE-07-A	4 1/4	*6	3/	51/2		130.3.4	8	Brass
00042	GE-07-A	4 /2	0	74	072	-		0	DIASS

* Diameter of flange next frame $6\frac{1}{2}$ in.

a suit sint			Diamatan	Thislesses	Outside	RAD	IUS	Tarrath	
Cat. No.	Motor	Bore	of Flange	of Flange	Diameter of Shell	А	B	Overall	Material
					or onen				
60345	GE-67-A	43/	63/	3/	51/2			8	Brass
27927	GE-69-B	61/2	101	25	71/2	3/0	1/4	1114	Brass
33434	GE-69-B	61/2	1012	27	71/2	7%	1/	$11\frac{9}{10}$	Brass
43336	GE-69-C	7	11	27	81/2	9	3/8	$11\frac{9}{16}$	Brass & Bab.
33435	GE-70-A	4	8	23	534	5	1/4	9	Lumen
46632	GE-70-A	$4\frac{1}{4}$	8	23	534	5	1/4	9	Lumen
33436	GE-70-A	$4\frac{1}{2}$	8	23 32	$5\frac{3}{4}$	516	1/4	9	Lumen
33437	GE-70-A	5	8	23 32	$5\frac{3}{4}$	516	1/4	9	Lumen
47853	GE-70-A	5	8	23 32	53/4	5 16	1/4	9	Brass
122864	GE-71-A	5	83/4	32	6			103/4	Brass
38648	GE-77-A	3%	6	2/4	51/4			7	C. I. & Bab.
38050	GE-77-A	4	0	15	0 1/4 1 3/	3	1/	17	C. I. & Bab.
41007	GE-79-A GE 80 A	27	8	3223	53/	16	78	á	Moll I & Rob
22640	GE-80-A	334	8	3 2 2 3	53/	16	14	9	Moll I & Bab
43316	GE-80-A	33/	8	3 2 2 3	53/	16 <u>5</u>	14	g	Brass
38696	GE-80-A	4	8	23	534	5	1/	9	Mall, I. & Bab.
43317	GE-80-A	4	8	23	534	5	1/4	9	Brass
38697	GE-80-A	$4\frac{1}{4}$	8	23	534	$\frac{5}{16}$	1/4	9	Mall. I. & Bab.
43318	GE-80-A	$4\frac{1}{4}$	8	23	53/4	$\frac{5}{16}$	1/4	9	Brass
38698	GE-80-A	$4\frac{1}{2}$	8	23	$5\frac{3}{4}$	$\frac{5}{16}$	1/4	9	Mall. I. & Bab.
43319	GE-80-A	$4\frac{1}{2}$	8	32	534	16	1/4	9	Brass
42995	GE-80-A	41/2	8	²³ 32 23	534	16	1/4	9	Mall. I. & Bab.
59813	GE-80-A	$4\frac{16}{16}$	8	32	5%4 53/	16	14	9	Brass
43320	GE-80-A	4%4	8	32	53	16	1/4	9	Bross
38099	GE-80-A GF-80-B	4	8	32 23	61/2	16	74	9	Mall I & Bab
45270	GE-80-B	41/2	8	32	61%	16	3%	9	Mall, I. & Bab.
45271	GE-80-B	5	8	23	61/8	5	3/8	9	Mall. I. & Bab.
45495	GE-80-C	4	8	23	61/8	10	3/8	9	Mall. I. & Bab.
46144	GE-80-C	$4\frac{1}{2}$	8	23	61/8		3/8	9	Mall. I. & Bab.
38554	GE-80-C	5	8	23	$6\frac{1}{8}$		3/8	9	Mall. I. & Bab.
46587	GE-81-A	3 3/4	63/4	32	$5\frac{1}{4}$	- 16	16	$7\frac{31}{32}$	Mall. I. & Bab.
41059	GE-81-A	4	6%4	3223	51/4 51/	16	16	731	Mall, I. & Bab.
102706	GE-81-A	4 4	63/	32	0 1/4 5 1/	16	16	731	Brass
102707	GE-81-A GE 91 A	4 72	*6	32 23	51/	16	16	731	Brass
100051	GE-81-B	334	63/	32	514	16	16	731 731	Mall, I. & Bab.
42996	GE-87-A	4	8	3/4	61/	5	16	1034	Mall. I. & Bab.
42997	GE-87-A	41/4	8	3/4	61/4	5	3/8	1034	Mall. I. & Bab.
42998	GE-87-A	41/2	8	3/4	61/4	5 16	3/8	1034	Mall. I. & Bab.
42999	GE-87-A	5	8	3/4	$6\frac{1}{4}$	5 16	3/8	103/4	Mall. I. & Bab.
45421	GE-87-A	5	8	3/4	614	16	3/8	$10\frac{3}{4}$	Brass
45420	GE-87-A ·	514	8	24	614	16	2/8	10%	Brass
45412	GE-87-A	51/2	8	3/4	61/	16	2/8	10%	Brass
114730	GE-87-B	4 /2	0	3/	61/	16	3/2	10%	Brass
47800	GE-87-D GE 97 B	516	8	34	61/	16	3/0	1034	Brass
100916	GE-88-A	4	9	27	61/2	16	3/0	9	Mall, I. & Bab.
100053	GE-88-A	41/2	9	27	61/8	5/8	3/8	9	Mall. I. & Bab.
100057	GE-88-A	5	9	27 32	61/8	5/8	3/8	9	Mall. I. & Bab.
104461	GE-88-A	5	9	27 32	61/8	5/8	3/8	9	Brass
100916	GE-88-B	4	9	27 32	$6\frac{1}{8}$	5/8	3/8	9	Mall. I. & Bab.
100053	GE-88-B	$4\frac{1}{2}$	9	32	61/8	5/8	3/8	9	Mall. I. & Bab.
100057	GE-88-B	5	9	32	61/8	2/8	3/8	9	Mall. 1. & Bab.
104461	GE-88-B	5.	9	32	0 1/8	5/8	2/8	9	Brass Mall I & Dab
100916	GE-88-C	4	0	32	61/2	/8 5/	/8	. 9	Mall I & Bab.
100053	GE-88-C	4 1/2	9	3227	61/2	/8 5/0	3/2	9	Mall I & Bab
104461	GE-88-C	5	9	32	61%	5%	3/0	9	Brass
100916	GE-88-D	4	9	327	61/2	5/2	3/2	9	Mall. I. & Bab.
100053	GE-88-D	41/2	9	27	61/8	5/8	3/8	9	Mall. I. & Bab.
100057	GE-88-D	5	9	27	61/8	5/8	3/8	9	Mall. I. & Bab.
104461	GE-88-D	5	9	27	61/8	5/8	3/8	9	Brass
42994	GE-90-A	$3\frac{7}{16}$	8	23	534	16	1/4	9	Mall. I. & Bab.
38649	GE-90-A	33/4	8	32	53/4	16	1/4	9	Mail. 1. & Bab.

* Diameter of flange next frame 63/4 in.

Cat. No.	Motor	Bore	Diameter	Thickness	Outside Diameter	RAD	IUS	Length	Material
			of Flange	of Flange	of Shell	A	В	Overall	
20000	CE 00 A	4	0	23	= 3/	5	1/	0	M 11 T 0 D 1
38090	GE-90-A GE-00. A	4	8	3223	0%4 53/	16	1/4	9	Mall. I. & Bab. Mall I. & Bab.
38608	GE-90-A	41/2	8	32 23	534	16	1/4	9	Mall I & Bab.
42995	GE-90-A	41/2	8	32	534	$\frac{16}{7}$	14	9	Mall I & Bab
38699	GE-90-A	5	8	23	534	16 5 16	14	9	Brass
45270	GE-90-B	41/2	8	23	61/8	5	3/8	9	Mall. I. & Bab.
45271	GE-90-B	5	8	23	$6\frac{1}{8}$	<u>5</u> 16	3/8	9	Mall. I. & Bab.
64853	GE-95-A	$2\frac{3}{4}$	41/4	3/8	$3\frac{1}{2}$, ,	$4\frac{1}{2}$	Brass
60522	GE-96-A	$3\frac{1}{2}$	51/4	$\frac{11}{32}$	4			$6\frac{1}{4}$	Brass
60522	GE-96-B	$3\frac{1}{2}$	51/4	32	4			$6\frac{1}{4}$	Brass
60523	GE-97-A CE 07 P	5	8	32	534	28	3/8	91/8	Brass
00523	GE-97-B CF 202 A	Ð	8	32	5%4	2/8	3/8	91/8	Brass Mall I & Dab
50425	GE-202-A GE-202-A	4 41/	8	32 23	61/2	16	3/8	9	Mall I & Bab.
45270	GE-202-A	41/2	8	32	61/2	16	36	9	Mall I & Bab
47856	GE-202-A	5	8	23	61%	9	3%	9	Mall. I. & Bab.
114737	GE-204-A	41/2	9	7/8	7	1/2	3/8	103/4	Mall. I. & Bab.
62562	GE-204-A	5	9	7/8	7	1/2	3/8	1034	Mall. I. & Bab.
62352	GE-204-A	$5\frac{1}{2}$	9	7/8	7	1/2	3/8	$10\frac{3}{4}$	Mall. I. & Bab.
59814	GE-204-A	6	9	7/8	7	1/2	3/8	1034	Brass
47857	GE-205-A	5	* 83/4	32	7	1/2	3/8	1034	Mall. I. & Bab.
60582	GE-205-A	51/4	* 8%	32	7	1/2	3/8	10%	Brass Mall I & Dal
100662	GE-203-A GE 205 A	$5\frac{5}{2}$	* 93/	32	7	1/2	3/8	10%	Mall. 1. & Bab.
47858	GE-205-A	6	* 834	32	7	1/2	3/0	1034	Brass
† 102708	GE-205-B	6	91/2	27	7	1/2	3/2	1034	Brass
π 112140	GE-205-B	6	91/2	2	7	1/4	3/8	$11\frac{29}{32}$	Brass
114738	GE-205-B	41/2	91/2	27	7	1/2	3/8	10 3/4	Mall. I. & Bab.
47857	GE-205-B	5	* 83/4	32	7	1/2	3/8	1034	Mall. I. & Bab.
60582	GE-205-B	514	* 83/4	32	7	1/2	3/8	1034	Brass
100063	GE-205-B	51/2	* 8%	32	7	1/2	28	10%	Mall. I. & Bab.
47858	GE-205-B	6	* 83/	32	7	72	3/8	10%	Brass
104462	GE-205-B	6	91/2	32	7	1/2	36	1034	Brass & Bah
† 107614	GE-205-B	ě	91/2	21	7	1/2	3%	10,9	Brass
π 107615	GE-205-B	6	912	$2\frac{19}{32}$	7	1/4	3/8	121/2	Brass
114742	GE-205-D	$6\frac{1}{2}$	91/2	27 32	71/2	1/2	3/8	1034	Brass
59816	GE-210-A	$4\frac{1}{2}$	8	3/4	$5\frac{1}{2}$	7 16	<u>5</u> 16	9	Brass
59816	GE-210-B	4 1/2	8	3/4	$5\frac{1}{2}$	16	16	9	Brass
114/39	GE-210-B	4 1/2	8	24	5/2	2/8	16	9	Brass Mall L & Dal
100054	GE-210-C	4 /2	10	24	61/2	5%	16	9/2	Mall. I. & Dab. Moll I. & Bob
100050	GE-210-C	5	10	34	61/2	5/8	16	972	Mall I & Bab.
100064	GE-210-C	51/2	10	3/	61/2	5%	16	91/2	Brass
114740	GE-214-A	51/2	10	27	634	5/8	3/8	1034	Brass
114741	GE-214-A	51/2	10	27	634	5/8	3/8	1034	Mall. I. & Bab.
104463	GE-214-A	51/2	10	27	63/4	5/8	3/8	103/4	{ Damascus
107616	GE-216-A	4	9	27	61%	5%	3/0	Q	Mall I & Bab
114304	GE-216-A	41/2	9	27	61/8	5/8	3/8	9	Mall. I. & Bab.
60947	GE-216-A	5	9	27	61/8	5/8	3/8	9	Mall. I. & Bab.
100059	GE-216-A	5	9	27 32	61/8	5/8	3/8	9	Brass
100060	GE-216-C	5	8	27	$6\frac{1}{8}$	5/8	3/8	9	Brass
100055	GE-218-B	41/2	9	32	6	2/8	3/8	9	Mall. I. & Bab.
100061	GE-218-B	5	9	32	61/	5/8	3/8	9	Mall I & Pab
100910	GE-219-A	41/2	9	32	61/2	5/8	3/8	9	Mall I & Bab.
100057	GE-219-A	5	9	27	61/2	5%	3/0	9	Mall. I. & Bab.
100916	GE-219-B	4	9	27	61/8	5/8	3/8	9	Mall. I. & Bab.
100053	GE-219-B	$4\frac{1}{2}$	9	27 32	$6\frac{1}{8}$	5/8	3/8	9	Mall. I. & Bab.
100057	GE-219-B	5	9	27 32	61/8	5/8	3/8	9	Mall. I. & Bab.
41057	HM-701-A & B	4	6	32	434	16	1/8	7	Brass
33000	HM-702-A & B	4 1/4	0	1/2	4 1/8			1	Brass

* Diameter of flange next frame $9\frac{1}{2}$ in. † Commutator end. π Pinion end.

12 2 3 3 4			Diamotor	Thicknoss	Outside	RAD	IUS	Longth	
Cat. No.	Motor	Bore	of Flange	of Flange	Diameter of Shell	A	B	Overall	Material
60522	HM-703-A & B	31/2	51/4	11	4			61/4	Brass
33606	HM-704-A & B	41/	6	1/2	4 7/8			7	Brass
104579	HM-708-A & B	4	6	7/0	514	. 3/0		71/	Mall I & Bab.
52528	HM-709-A	4	6	1/2	47%	10		7	Brass
33606	HM-709-C	41/	6	1/2	47%			7	Brass
60522	HM-710-B	31/2	514	11	4			61/	Brass
33606	HM-711-C	41/	6	1/2	47%			7	Brass
41057	HM-713-B	4	6	15	434	3	1/0	7	Brass
33424	CO-2001	5	8	19	534	16	10	11	Brass
14722	CO-2002	33%	6	3/	51			8	Mall, I. & Bab.
14725	CO-2002	33%	6	3/	514			8	Brass
14748	CO-2002	35%	ő	3/4	514			8	Mall, I. & Bab.
14721	CO-2002	334	ő	3/4	514			8	Mall, I. & Bab.
14722	CO-2002	334	6	3/	51/			8	Brass
14723	CO-2002	4	ő	3/1	51			8	Mall, I. & Bab.
14726	CO-2002	4	ő	3/1	514			8	Brass
33605	CO-2002	41/4	6	3/	514			8	Brass
33425	CO-2002	41/2	6	3/4	51/4			8	Brass
50507	CO-2003	41/2	8	7/8	6	1/8		103/4	Brass
50508	CO-2003	5	8	7/8	6	1/8		1034	Brass
50509	CO-2003	51/4	8	7/8	6	3/8	E.C. T.U.	1034	Brass
33426	CO-2003	6	$10\frac{5}{16}$	7/8	$7\frac{9}{16}$	1/4	1000	1034	Brass
49036	CO-2003	61/2	$10\frac{5}{16}$	7/8	$7\frac{9}{16}$	1/4		1034	Brass
14722	CO-2004	33/8	6	. 3/4	51/4		170.00	8	Mall. I. & Bab.
14725	CO-2004	33/8	6	3/4	51/4		they're	8	Brass
14721	CO-2004	33/4	6	3/4	51/4		-	8	Mall. I. & Bab.
14724	CO-2004	33/4	6	3/4	51/4			8	Brass
14723	CO-2004	4	6	3/4	51/4			8	Mall. I. & Bab.
14726	CO-2004	4	6	3/4	51/4		312.	8	Brass
33605	CO-2004	41/4	6	3/4	514		1990	8	Brass
17240	CO-2005	33/8	5	5/8	43/8		14.525	63/4	C. I. & Bab.
17556	CO-2005	33/8	5	5/8	43/8			63/4	Brass
104459	CO-2005	$3\frac{1}{2}$	55/8	5/8	4 7/8			63/4	Mall. I. & Bab.
17229	CO-2005	334	5	5/8	43/8			63/4	Brass
33751	CO-2005	4	55/8	5/8	4 1/8			63/4	Brass
122861	CO-2006	3.442	7	5/8	$6\frac{1}{2}$			9	C. I. & Bab.
50222	CO-2007	33/4	63/4	5/8	51/4			9	Brass
50221	CO-2007	4	63/4	5/8	51/4			9	Brass
50220	CO-2007	41/4	63/4	5/8	51/4		1	9	Brass
50219	CO-2007	$4\frac{1}{2}$	63/4	5/8	51/4	1/4		9	Brass
33427	CO-2007	5	$7\frac{1}{2}$	5/8	6			9	Brass
60502	CO-2007	51/4	71/2	5/8	6			9	Brass
33428	CO-2007	51/4	8	5/8	6	1/2		9	Brass
						1.12.		1. 1. 1. M. 1.	



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

	and a second				the second s				
No. of Teeth	Hub Diameter in In.	Axle Diameter in In.	No.	Axle Diameter in In.	No.				
58	41⁄4	23/4	S.G2085						
]	LWP-5-4 PITC	H-3 IN. FACE						
60		23/4-3	S.G2097						
CB-14 AND -15-4 PITCH-3 IN. FACE									
66	41⁄2	23/4-3	S.G2086						
	WP-30	AND -50-3 PI	$TCH \rightarrow 4 1/2 IN.$	FACE					
67	5	33/8-33/4	S.G2001						
	GE	-800-3 PITCH	-4 1/2 IN. FAC	CE					
64 67 67	5 5 6	$\begin{array}{r} 3\frac{3}{8}-3\frac{3}{4}\\ 3\frac{3}{8}-4\\ 4 & -4\frac{1}{2} \end{array}$	S.G1001 S.G2001 S.G2005	$4 -4\frac{1}{2}$	S.G3004				
	GE-	-1000—3 PITCH	-4 1/2 IN. FA	CE					
67 67 69 69 69	$ \begin{array}{c} 6\\ 6^{34}\\ 6\\ 6^{34}\\ 6^{34}\\ 6^{34} \end{array} $	$\begin{array}{r} 3\frac{3}{8} - 4\frac{1}{2} \\ 4\frac{1}{4} - 5 \\ 3\frac{3}{4} - 4\frac{1}{4} \\ 4 \\ - 4\frac{1}{2} \\ 4\frac{3}{4} - 5 \end{array}$	S.G2005 S.G2011 S.G2006 S.G2012 S.G2013	$3\frac{1}{4}-4\frac{1}{2}$ -5 $3\frac{3}{4}-4\frac{1}{4}$ 4 $4\frac{1}{4}-5$	S.G3004 S.G3010 S.G3005 S.G3011 S.G3012				

	G	E-1200—3 PIT(SP	CH—5 IN. FACE LIT	SO	LID .					
No. of Teeth	Hub Diameter in In.	Axle Diameter in In.	No.	Axle Diameter in In.	No.					
60	6	33/4-41/2	S.G1058							
States and	A STATE OF THE STATE OF	GE-51—3 PITC	H—5 IN. FACE	10-20 ·						
Use same gears as for GE-57										
	GI	E-52—3 PITCH-	$-4 \ 1/2 \ IN. FAC$	E	1					
67 67	6 6 ³ ⁄ ₄	$3\frac{3}{8}-4\frac{1}{2}$ $4\frac{1}{4}-5$	S.G2005 S.G2011	$ \begin{array}{c} 3\frac{1}{4} - 4\frac{1}{2} \\ 4 & -5 \end{array} $	S.G3004 S.G3010					
GE-53—3 PITCH—4 1/2 IN. FACE										
69 69	$\begin{array}{c} 6\\ 6\frac{3}{4}\end{array}$	$\begin{array}{rrr} 4 & -4\frac{1}{2} \\ 4 & -4\frac{1}{2} \end{array}$	S.G2046 S.G1038	$\begin{array}{rrr} 4 & -4\frac{1}{2} \\ 4 & -4\frac{1}{2} \end{array}$	S.G3048 S.G3050					
	GE-54—3 PITCH—4 1/2 IN. FACE									
64 64 67 67	$ \begin{array}{c} 6 \\ 6 \\ 6 \\ 6 \\ 6 \\ 3 \\ 4 \end{array} $	$3\frac{1}{2}-4\frac{1}{2}$ $3\frac{1}{2}-4\frac{1}{2}$ $3\frac{3}{8}-4\frac{1}{2}$ $4\frac{1}{4}-5$	S.G2003 S.G2009 S.G2005 S.G2011	$\begin{array}{r} 3\frac{1}{2}-4\frac{1}{2}\\ 3\frac{1}{2}-4\frac{1}{2}\\ 3\frac{1}{4}-4\frac{1}{2}\\ 4 & -5 \end{array}$	S.G3002 S.G3008 S.G3004 S.G3010					
	GE-	55—2 1/2 PITC GE-57—3 PITCI	CH (On Application H—5 IN. FACE	(no						
57 59 63 65 65 66 69 69 69 69 69 70 71 71	634 634 8 8 8 8 8 634 712 634 8 634 8 8 634 8 8 8 8	$ \begin{array}{r} 3\frac{3}{4}-5\\3\frac{1}{2}-5\\5-6\\4\frac{1}{4}-5\\5\frac{1}{4}-6\\4-5\\3\frac{3}{8}-4\frac{3}{4}\\4-5\frac{1}{2}\\4-5\\4-5\frac{1}{2}\\4-5\\4-4\frac{3}{4}\\5-6\end{array} $	S.G2014 S.G2015 S.G2024 S.G2027 S.G2028 S.G2018 S.G2019 S.G2020 S.G2031 S.G2031 S.G1059 S.G2033 S.G2034	$\begin{array}{rrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrr$	S.G3013 S.G3014 S.G3023 S.G3026 S.G3027 S.G3017 S.G3018 S.G3019 S.G3031 S.G3031 S.G3032 S.G3034 S.G3035					
	GE	C-58-3 PITCH-	-4 1/2 IN. FAC	Е						
69	6	$4 -4\frac{1}{2}$	S.G2046	· 4 -4 ¹ / ₂	S.G3048					
GE-59—3 PITCH—4 IN. FACE										
69	6	31/2-41/2	S.G2048	31/2-41/2	S.G3051					
	GE	C-60—3 PITCH-	-4 1/2 IN. FAC	E						
65 67	6 6	$3\frac{3}{4}-4\frac{1}{2}$ $3\frac{3}{4}-4\frac{1}{4}$	S.G2044 S.G2045	$3\frac{3}{4}-4\frac{1}{2}$ $3\frac{3}{4}-4\frac{1}{4}$	S.G3046 S.G3047					

GE-61-3 PITCH-3 1/2 IN. FACE

414	18	SPI	LIT	SOLID		
No. of Teeth	Hub Diameter in In.	Axle Diameter in In.	No.	Axle Diameter in In.	No.	
81	6	4 -4 1/2	S.G2049	4 -41/2	S.G3052	

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

$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$\begin{array}{rrrr} 4 & -4 \frac{3}{4} \\ 5 & -5 \frac{3}{4} \\ 3 \frac{3}{4} - 4 \frac{3}{4} \\ 5 & -5 \frac{3}{4} \\ 4 \frac{1}{2} - 5 \frac{1}{2} \\ 4 & -5 \\ 5 \frac{1}{4} - 6 \end{array}$	S.G2037 S.G2038 S.G2039 S.G2040 S.G2032 S.G2041 S.G2042	$\begin{array}{rrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrr$	$\begin{array}{c} {\rm S.G3039} \\ {\rm S.G3040} \\ {\rm S.G3041} \\ {\rm S.G3042} \\ {\rm S.G3033} \\ {\rm S.G3043} \\ {\rm S.G3044} \end{array}$
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GE-71-3 PITCH-4 1/4 IN. FACE

81	83/4	5	S.G1060						
		GE-77—3 PITCH-							
67	6	31⁄2-4	S.G2069 3 ¹ / ₂ -4 ¹ / ₂	S.G3073					
and the second	GE-79—3 PITCH—3 IN. FACE								
69	6	31/2-41/2	S.G2070	-					
-				March Color					

GE-80—3 PITCH—5 IN. FACE

Use same gears as for GE-70

GE-81-3 PITCH-4 1/2 IN. FACE

$\begin{array}{c} 64\\ 64\\ 67\\ 67\end{array}$		$3\frac{1}{2}-4\frac{1}{2}$ $3\frac{1}{2}-4\frac{1}{2}$ $3\frac{3}{8}-4\frac{1}{2}$ $4\frac{1}{4}-5$	S.G2003 S.G2009 S.G2005 S.G2011	$\begin{array}{r} 3\frac{1}{2}-4\frac{1}{2}\\ 3\frac{1}{2}-4\frac{1}{2}\\ 3\frac{1}{4}-4\frac{1}{2}\\ 4\end{array}$	S.G3002 S.G3008 S.G3004 S.G3010
	G	E-87—3 PITC	H—5 IN. FACE		
69 69 71 71	8 8 8 8	$\begin{array}{r} 4 & -5\frac{1}{2} \\ 5\frac{1}{4} -5\frac{1}{2} \\ 4 & -4\frac{3}{4} \\ 5 & -6 \end{array}$	S.G2031 S.G2031 S.G2033 S.G2034	$\begin{array}{rrrr} 4 & -4 \frac{3}{4} \\ 5 & -5 \frac{1}{2} \\ 4 & -4 \frac{3}{4} \\ 5 & -6 \end{array}$	S.G3031 S.G3032 S.G3034 S.G3035

GE-88-3 PITCH-5 IN. FACE

Use same gears as for GE-216

GE-90-3 PITCH-5 IN. FACE

		SPI	LIT	SOLID					
No. of Teeth	Hub Diameter in In.	Axle Diameter in In.	No.	Axle Diameter in In.	No.				
70 71 71	8 8 8	$\begin{array}{r} 4\frac{1}{2} - 5\frac{1}{2} \\ 4 & -4\frac{3}{4} \\ 5 & -6 \end{array}$	S.G2032 S.G2033 S.G2034	$\begin{array}{r} 4\frac{1}{2}-5\frac{1}{2}\\ 4&-4\frac{3}{4}\\ 5&-6\end{array}$	S.G3033 S.G3034 S.G3035				
		GE-95-4 PITCI	H-2 IN. FACE						
58	41⁄4	23/4-3	S.G2071						
GE-96-4 PITCH-5 IN. FACE									
66	51/4	31⁄2-4	S.G2072						
		GE-97—3 PITCI	H-3 IN. FACE						
72	8	41/2-51/2	S.G2073	41/2-51/2	S.G3074				
	• (3E-202—3 PITC	H—5 IN. FACE						
		Use same gears	as for GE-90						
	GE	-204—2 1/2 PIT	CH-5 IN. FAC	CE					
58 60	9 9	$5\frac{1}{2}-6\frac{1}{2}$ 5 $-5\frac{1}{2}$	S.G2076 S.G2077	$ \begin{array}{r} 6\frac{1}{2}-7\\6&-7\end{array} $	S.G3077 S.G3078				
	GE	-205—2 1/2 PI7	CH-5 IN. FA	CE					
55 57 57 57 57 58	$ \begin{array}{r} 8\frac{3}{4}\\ 8\frac{3}{4}\\ 8\frac{3}{4}\\ 9\frac{1}{2}\\ 8\frac{3}{4}\\ 9\frac{1}{2}\\ 8\frac{3}{4}\\ \end{array} $	$5\frac{1}{2}-6$ $5\frac{1}{4}-5\frac{3}{4}$ 6 -7 $6\frac{1}{2}-7\frac{1}{2}$ 6 $-6\frac{1}{2}$	S.G2054 S.G2093 S.G2056 S.G2094 S.G2057	$\begin{array}{c} 5\frac{1}{2}-6\frac{1}{2}\\ 5\frac{1}{4}-6\frac{1}{4}\\ 6\frac{1}{2}-7\\ 6\frac{1}{2}-7\frac{1}{2}\\ 6&-6\frac{1}{2}\end{array}$	S.G3058 S.G3095 S.G3060 S.G3096 S.G3061				
	(E-210-3 PITC	H-5 IN. FACE	1	1. 5.2085				
$67 \\ 69 \\ 69 \\ 69 \\ 69 \\ 71 \\ 71 \\ 71$		$\begin{array}{r} 4\frac{1}{2}-5\frac{1}{2}\\ 4\frac{1}{2}-5\frac{1}{2}\\ 5\frac{3}{4}-6\\ 4\\ -5\\ 5\frac{1}{4}-6\end{array}$	S.G2031 S.G2083 S.G2091 S.G2084 S.G2092	$5 -64 \frac{1}{2} -4 \frac{3}{4}4 \frac{1}{2} -5 \frac{1}{2}5 \frac{3}{4} -64 \frac{1}{2} -5 \frac{1}{2}$	S.G3088 S.G3031 S.G3086 S.G3089 S.G3090				
		GE-216-3 PIT	CH-5 IN. FAC	E					
67 69 69 71 71	9 9 9 9 9	$5 -6 4 -5 5 \frac{1}{4}-64 -55 \frac{1}{4}-6$	S.G2078 S.G2079 S.G2080 S.G2081 S.G2082	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	S.G3079 S.G3080 S.G3081 S.G3082 S.G3083				
	GE	-218-3 PITCH	-4 1/2 IN. FA	CE					
71 71	9 9	$4\frac{1}{2}-5\frac{1}{2}$ $5\frac{3}{4}-6$	S.G2087 S.G2088						
		T ata a DIMO	TT F IN DACE						

GE-219-3 PITCH-5 IN. FACE

Use same gears as for GE-216

GENERAL ELECTRIC COMPANY

GE.	ARS FOR LOC	OMOTIVE, C	RANE AND	HOIST MOTO	ORS
	H	IM-701—3 PITC SP	CH—3 IN. FACE	SO	LID
No. of Teeth	Hub Diameter in In.	Axle Diameter in In.	No.	Axle Diameter in In.	No.
69	6	31⁄2-41⁄2	S.G2070		
	HM	I-702—3 PITCH		CE	
81	6	4 -41/2	S.G2049	$4 -4\frac{1}{2}$	S.G3052
	F	IM-703—4 PITC	CH-3 IN. FACE	2	
73	51⁄4	3 -31/2	S.G2098		
	HM	I-704—3 PITCH		CE	
81	6	4 -41/2	S.G2049	4 -4 1/2	S.G3052
	HM	1-708—3 PITCH	1-3 1/2 IN. FA	CE	
69	6	31⁄2-41⁄2	S.G2048	31/2-41/2	S.G305
	HM	1-709—3 PITCH	-4 1/2 IN. FA	CE	
72	6	41/4-41/2	S.G2099		
	E	IM-710-4 PITC	CH-3 IN. FACE	2	
73	51/4	$3 -3\frac{1}{2}$	S.G2098		
	HM	1-711—3 PITCH	1-4 1/2 IN. FA	CE	(·
72	6	41/4-41/2	S.G2099		
	I	IM-713—3 PITC	CH-3 IN. FACE	2	
69	6	31⁄2-41⁄2	S.G2070		
	C	0-2001—3 PITO	CH-5 IN. FACE	C	
	CO	Use same gears	s as for GE-57 I-4 1/2 IN. FA	CE	
	$ \begin{array}{c} 6\\ 6\\ 6\\ 6\\ 3/4\\ 6\\ 6\\ 3/4\\ 6\\ 6\\ 3/4\\ 6\\ 6\\ 3/4 \end{array} $	$\begin{array}{c} 2\frac{3}{4} - 3\frac{1}{2} \\ 3\frac{3}{4} - 4\frac{1}{4} \\ 3\frac{3}{4} - 4\frac{1}{4} \\ 4\frac{1}{4} - 4\frac{1}{2} \\ 3\frac{3}{8} - 4 \\ 4\frac{1}{4} - 4\frac{1}{2} \\ 3\frac{3}{4} - 4\frac{1}{4} \\ 3\frac{1}{2} - 4\frac{1}{2} \\ 3\frac{3}{8} - 4\frac{1}{2} \\ 3\frac{3}{8} - 4\frac{1}{2} \\ 3\frac{3}{8} - 4\frac{1}{2} \\ 4\frac{1}{4} - 5 \\ 41$	S.G1061 S.G1062 S.G2002 S.G2007 S.G1063 S.G2008 S.G2004 S.G2010 S.G2010 S.G2005 S.G2011	$3\frac{3}{4}-4$ $4\frac{1}{4}-4\frac{1}{2}$ $4\frac{1}{4}-4\frac{1}{2}$ $3\frac{1}{4}-4\frac{1}{2}$ $3\frac{1}{2}-4\frac{1}{2}$ $3\frac{1}{2}-4\frac{1}{2}$ $3\frac{1}{4}-4\frac{1}{2}$	S.G3000 S.G3000 S.G3000 S.G3000 S.G3000 S.G3004 S.G3004

CO-2003-2 1/2 PITCH (On Application)

CO-2004-3 PITCH-4 1/2 IN. FACE

SPLIT

SOLID

S.G.-3004

4 -4 1/2

No. of Teeth	Hub Diameter in In.	Axle Diameter in In.	No.	Axle Diameter in In.	No.				
		$\begin{array}{r} 3\frac{3}{8}-4\\ 3\frac{3}{8}-4\\ 3\frac{3}{4}-4\frac{1}{4}\\ 4\\ -4\frac{1}{2}\\ 4\\ -4\frac{1}{2}\end{array}$	S.G1064 S.G1065 S.G2045 S.G2047 S.G2046	$\begin{array}{rrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrr$	S.G3047 S.G3049 S.G3048 S.G3050				
CO-2005-3 PITCH-4 1/2 IN. FACE									
$61 \\ 61 \\ 61 \\ 64 \\ 65$	$5 \\ 6 \\ 6 \\ 5 \\ 6 \\ 5 \\ 6$	$\begin{array}{c} 3 \frac{1}{4} - 3 \frac{3}{4} \\ 2 \frac{3}{4} - 3 \frac{1}{2} \\ 3 \frac{3}{4} - 4 \frac{1}{4} \\ 3 \frac{3}{8} - 3 \frac{3}{4} \\ 3 \frac{3}{4} - 4 \frac{1}{4} \end{array}$	S.G1066 S.G1061 S.G1062 S.G1001 S.G2004	3¾-4¼	S.G3003				

CO-2006-3 PITCH

S.G.-2001 S.G.-2005

33/8-4 41/2

65656

67 67

Use same gears as for GE-57

CO-2007-3 PITCH

Use same gears as for GE-57

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PINIONS FOR LOCOMOTIVE, CRANE AND HOIST MOTORS

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

	NWP 2	2 1/2—4 J	PITCH	LWP-5-4 PITCH				
No. of Teeth	Cat. No.	Face	Bore in In.	No. of Teeth	Cat. No.	Face	Bore in In.	
14	18488	21⁄4	1 ¹ / ₂ straight	14	18490	3	1½ straight	
(CB-14 AN	D -15-4	PITCH		WP-30 AI	ND -50-	3 PITCH	
14	18572	3	1.8093	14 14	18537 15677	$\begin{array}{c} 4 \frac{1}{2} \\ 4 \frac{1}{2} \end{array}$	$2\frac{3}{16}$ straight $2\frac{1}{4}$ straight	
	GE-8	800—3 PI	ТСН		GE-1	000—3 P	ІТСН	
14 14 14	$18537 \\ 15677 \\ 19351$	$\begin{array}{c} 4\frac{1}{2} \\ 4\frac{1}{2} \\ 4\frac{1}{2} \\ 4\frac{1}{2} \end{array}$	$2\frac{3}{16}$ straight $2\frac{1}{4}$ straight $2\frac{5}{16}$ counterbored	15 15 17	$28485 \\ 18494 \\ 18502$	$\begin{array}{c} 4\frac{1}{2} \\ 4\frac{1}{2} \\ 4\frac{1}{2} \\ 4\frac{1}{2} \end{array}$	25/8 23/4 23/4	
	GE-12	200—3 PI	ТСН		GE-	51—3 PI7	ГСН	
17	18043	5	23/4		Sa	me as GE-	57	
	GE-	52—3 PII	СН		GE-	53—3 PI7	ГСН	
14	19351	41/2	$2\frac{5}{16}$ counterbored	15	18469	4 1/2	$2\frac{3}{4}$ counterbored	
	GE-	54—3 PI7	СН		GE-	55-2 1/2	PITCH	
14 17	$19351 \\ 18501$	$4\frac{1}{2}$ $4\frac{1}{2}$	$2\frac{5}{16}$ counterbored $2\frac{5}{16}$ counterbored	17 18	$18548 \\ 18554$	$5\frac{1}{4}$ $5\frac{1}{4}$	$3\frac{1}{2}$ $3\frac{1}{2}$	
	GE-	57—3 PIT	CH		GE-	58—3 PI2	ГСН	
16 17 22	$18541 \\ 18938 \\ 18544$	5 5 5	3 3 3	15 15	$ 18494 \\ 18555 $	$4\frac{1}{2}$ $4\frac{1}{2}$	$2\frac{3}{4}$ $2\frac{3}{4}$ counterbored	
	GE-	59—3 PIT	CH .	GE-60—3 PITCH				
15	18990	4	2¾ counterbored	14 16	$19351 \\ 18580$	$4\frac{1}{2}$ $4\frac{1}{2}$	$2\frac{5}{16}$ counterbored $2\frac{5}{16}$ counterbored	
	GE-	61—3 PIT	CH		GE-	66-2 1/2	PITCH	
14	18561	31⁄2	2 ³ ⁄ ₄ counterbored	17 22	$28431 \\ 49895$	5 5	$3\frac{1}{2}$ $3\frac{1}{2}$	
	GE-	66—3 PIT	СН	2	GE-	67—3 PIT	ГСН	
19 19	18995 28434	5 5	3 ¹ / ₄ 3 ⁷ / ₈		San	ne as GE-10	000	
	GE-	69-2 1/2	PITCH	1	GE-	70—3 PI	ГСН	
18 18 19	$28345 \\ 49945 \\ 28378$	$5\frac{1}{4}$ $5\frac{1}{4}$ $5\frac{1}{4}$ $5\frac{1}{4}$	3 1/2 3 3/4 3 1/2	15 16 17 19	28387 28456 28350 28395	5 5 5 5	284 284 294 294 284	

I	PINION	S FOR I	LOCOMOTIVE,	CRANE	AND H	OIST M	IOTORS	
12-11-	GE-2	71—3 PIT	СН		GE-	77—3 PI	СН	
No. of Teeth	Cat. No.	Face	Bore in In.	No. of Teeth	Cat. No.	Face	Bore in In.	
16	18996	41⁄4	3	14	18561	31⁄2	$2\frac{3}{4}$ counterbored	
	GE-	79—3 PIT	СН		GE-	80—3 PI7	ГСН	
14	28416	3	$2\frac{3}{4}$ counterbored		Sa	me as GE-7	70	
	GE-8	31—3 PIT	СН		GE-	87—3 PI	ГСН	
14 17	$19351 \\ 18501$	$4\frac{1}{2}$ $4\frac{1}{2}$	$2\frac{5}{16}$ counterbored $2\frac{5}{16}$ counterbored	16 18	$28441 \\ 28457$	5 5	$3\frac{1}{8}$ $3\frac{1}{8}$	
1-Marile	GE-8	88—3 PIT	CH		GE-	90—3 PI	ГСН	
	San	ne as GE-21	6		Sa	me as GE-7	0	
	GE-9	95—4 PII	СН		GE-	96—4 PI	ГСН	
14	28471	2	1 ³ / ₄ counterbored	14	28472	3	$2\frac{1}{8}$ counterbored	
	GE-97—3 PITCH GE-202—3 PITCH							
15	28464	28464 4 ¹ / ₂ 3 Same as GE-70					70	
	GE-204	-2 1/2 I	PITCH	GE-205-2 1/2 PITCH				
17 19	$28487 \\ 49802$	5 5	3½ counterbored 3½ counterbored	$ \begin{array}{r} 16 \\ 17 \\ 19 \end{array} $	$28483 \\ 28487 \\ 49802$	5 5 5	3½ counterbored 3½ counterbored 3½ counterbored	
	GE-2	10—3 PI	ГСН		GE-2	216—3 PI	тсн	
$\begin{array}{c}16\\18\\20\end{array}$	$28491 \\ 49897 \\ 49913$	5 5 5	$3\frac{1}{4}$ $3\frac{1}{4}$ $3\frac{1}{4}$	15 17 19	49813 49812 49854	5 5 5	3 3 3	
	GE-2	18-3 PI	ГСН		GE-2	219—3 PI	ТСН	
16	49873	41/2	31/4	2-15	Sar	me as GE-2	16	
	HM-	701—3 PI	тсн	Ter Int	HM-	702—3 PI	ТСН	
. 14	28416	3	23⁄4	14	18561	$3\frac{1}{2}$	$2\frac{3}{4}$ counterbored	
	HM-7	703—4 PI	тсн		HM-	704—3 PI	тсн	
16	49881	3	21⁄8	14	18561	31⁄2	$2\frac{3}{4}$ counterbored	
	HM-	708—3 PI	тсн		HM-	709—3 PI	тсн	
16	49929	31/2	23/4	15	28464	41/2	3	

GENERAL ELECTRIC COMPANY

]	PINION:	S FOR	LOCOMOTIVE,	CRANE	AND H	OIST	MOTORS
		10 1 11				/11 0 .	
No. of Teeth	Cat. No.	Face	Bore in In.	No. of Teeth	Cat. No.	Face	Bore in In.
16	49881	3	21/8	15	28464	41⁄2	3
	HM-	713—3 PI	тсн				
14	28416	3	2¾ in.				
	CO-20	ТСН	CO-2002—3 PITCH				
16 19 21 28 35	$18541 \\18556 \\18546 \\18542 \\18584$	5 5 5 5 5 5	3 3 3 3 3 3 3 3	14 16 18 19 20	$19351 \\18580 \\18932 \\18571 \\18560$	$\begin{array}{c} 4\frac{1}{2} \\ 4\frac{1}{2} \end{array}$	$\begin{array}{c} 2\frac{5}{16} \text{ counterbored} \\ 2\frac{5}{16} \text{ counterbored} \\ 2\frac{5}{16} \\ 2\frac{5}{16} \\ 2\frac{5}{16} \\ 2\frac{5}{16} \\ 2\frac{5}{16} \end{array}$
	CO-200	3—2 1/2	PITCH	CO-2004—3 PITCH			
17 19 21	18548 18981 18558	$5\frac{1}{4}$ $5\frac{1}{4}$ $5\frac{1}{4}$ $5\frac{1}{4}$	3 ¹ / ₂ 3 ¹ / ₂ 3 ¹ / ₂ 3 ¹ / ₂	$15 \\ 17 \\ 21 \\ 23$	18494 18502 18508 18512	$\begin{array}{r} 4\frac{1}{2} \\ 4\frac{1}{2} \\ 4\frac{1}{2} \\ 4\frac{1}{2} \\ 4\frac{1}{2} \\ 4\frac{1}{2} \end{array}$	$2\frac{3}{4}$ $2\frac{3}{4}$ $2\frac{3}{4}$ $2\frac{3}{4}$ $2\frac{3}{4}$
	CO-20	005—3 PI	птсн		CO-2	2006—3	PITCH
14 16 17 20	19351 18580 18501 18560	$\begin{array}{c} 4\frac{1}{2} \\ 4\frac{1}{2} \\ 4\frac{1}{2} \\ 4\frac{1}{2} \\ 4\frac{1}{2} \\ 4\frac{1}{2} \end{array}$	$\begin{array}{c} 2\frac{5}{16} \text{ counterbored} \\ 2\frac{5}{16} \text{ counterbored} \\ 2\frac{5}{16} \text{ counterbored} \\ 2\frac{5}{16} \text{ counterbored} \end{array}$	$ \begin{array}{r} 16 \\ 17 \\ 22 \\ 28 \end{array} $	$18541 \\ 18938 \\ 18544 \\ 18542$	5 5 5 5	3 3 3 3

CO-2007—3 PITCH

Same as CO-2001

120



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
Motor NWP-2 ^{1/2} LWP-5 CB-14 CB-15 WP-30 WP-50 * GE-800 GE-800 GE-1000 GE-1000 GE-1000 GE-1000 GE-1000 * GE-1200 GE-51 GE-51 GE-51 GE-52 GE-52 GE-52 GE-53 GE-53	Form A A, H & T G B B A A A A A B A B A A B A A A A A A	Cat. No. 100090 50696 51985 51985 16514 17459 17140 55869 21693 14795 21687 21690 18017 38621 38622 38624 17986 24997 52586 52585	or DL No. DE-104 DE-72 DE-73 DE-73 DE-73 DE-73 DE-44 DE-44 DE-13 DE-120 DE-6 DE-119 DE-121 DE-57 DE-33 DE-39 DE-63 DE-39 DE-63 DE-149 DE-149 DE-35	Gear Teeth 58 60 66 66 67 67 67 62 62 62 62 67 67 70 62 69 69 69 69 69 69 69 69 69 69 69 69 69	Pinion Teeth 20 14 14 14 14 17 18 18 24 24 24 20 20 20 18 22 20 20 18 22 22 22 20 20 20 20 17	Pitch 4 4 4 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	Diam. of Gear 41/4 41/2 41/2 5 5 6 6 6 8 4 6 3/4 6 3/4 6 8/4 6 8/4 6 6 8/4 6 6
GE-54 GE-54 GE-55 GE-55 GE-57 GE-57 GE-57 GE-57 GE-57 GE-57	A A A H A A H H H	$\begin{array}{c} 17986\\ 24997\\ 50566\\ 39532\\ 38614\\ 50249\\ 38623\\ 39529\\ 38631\\ \end{array}$	DE-19 DE-149 DE-148 DE-194 DE-3 DE-1 DE-52 DE-180 DE-176		20 20 20 22 33 23 28 21 21	$ \begin{array}{c} 3\\ 3\\ 2\frac{1}{2}\\ 2\frac{1}{2}\\ 3\\ 3\\ 3\\ 3\\ 3\\ 3\\ 3\\ 3\\ 3\\ 3\\ 3\\ 3\\ 3\\$	$ \begin{array}{c} 6\\ 6^{3}4\\ 8\\ 10^{1}4\\ 6^{3}4\\ 6^{3}4\\ 8\\ 8\\ 8\\ 8\\ 8\\ 8 \end{array} $

* With dust guard.

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	А	49558	DE-62	69	22	3	6
GE-60	Ā	52376	DE-8	67	21	2 .	6
CF 60	D	29610	DF 91	67	10	0	e e
* CE e1		20201	DE-21 DE 99	07	10	0	0
- GE-01	A & B	39381	DE-23	81	23	3	0
GE-66	A	24856	DE-114	72	23	3	83/4
GE-66	A	49568	DE-179	61	38	3	13
* GE-66	A	24854	DE-107	71	23	3	13
GE-66	В	24860	DE-125	76	29	3	93/4
GE-66	В	24858	DE-116	66	38	3	93/
GE-67	Ā	55869	DE-13	62	24	3	6
GE-67	Δ	21603	DE-120	62	24	. 3	63/
CE 67	A	14705	DE	67	24	0	674
CE 67	A	14790	DE-0 DE 110	07	20	0	0
GE-07	A	21087	DE-119	07	20	ð	0%
GE-07	A	01800	DE-14	70	18	3	0
GE-67	A	21690	DE-121	70	18	3	6%
GE-69	В	39535	DL-37902	64	22	$2\frac{1}{2}$	$10\frac{1}{2}$
GE-69	В	49580	DE-161	63	22	$2\frac{1}{2}$	13
GE-69	C	43414	• DL-37931	60	33	$2\frac{1}{2}$	14
GE-70	A	35773	DL-37908	71	23	3	8
GE-71	А	49590	DE-214	81	19	3	85%
GE-77	Ā	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	Č	45482	DL-37938	71	23	3	8
GE-81	Ă	42972	DL-37939	67	21	3	6
GE 81	A	46504	DL 37068	67	21	2	63/
CE 07	A	40054	DL 97097	71	. 90	0	074
CE 07	D	42970	DL-07927	67	20	0	0
GE-01	D A ^Q C	42970	DL-37940	07	20	0	0
GE-88	ACC	05139	DL-37997	71	20	0	9
GE-88	B&D	00141	DL-37999	11	23	3	9
GE-90	A	39530	DL-37909	11	23	3	8
GE-90	В	45480	DL-37945	71	27	3	8
GE-95	A	65961	DL-37962	58	19	4	41/4
GE-96	A & B	49606	DL-37959	66	20	4	$5\frac{1}{4}$
GE-97	A	49607	DL-37958	72	22	3	8
GE-97	В	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	21/2	9
- GE-205	A & B	48722	DL-37954	58	24	21/2	83/1
GE-205	В	69098	DL-96147	50	30	21/2	83/
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 37070	71	20	. 3	8
CF 919	L A	65149	DL 90191	71	20	0	0
GE 210	A & D	65141	DL-09101	71	40	0	9
GE-219	ACB	00141	DL-37999	11	20	. 9	9

* With dust guard.

Motor	Form	Cat. No.	DE or DL No.	Max. Gear Teeth	Max. Pinion Teeth	Pitch	Fin. Hub Diam. of Gear
$\begin{array}{c} HM701\\ HM702\\ HM703\\ HM703\\ HM708\\ HM709\\ HM710\\ HM710\\ HM711\\ HM713\\ CO-2001\\ CO-2002\\ CO-2002\\ CO-2002\\ CO-2002\\ *CO-2002\\ CO-2002\\ *CO-2003\\ CO-2004\\ *CO-2005\\ CO-2005\\ CO-2005\\ CO-2007\\ CO-2007$	A & B A & B A & B A & B A & B A & C B C B	$\begin{array}{c} 65137\\ 65140\\ 65270\\ 65140\\ 103579\\ 65136\\ 65270\\ 65136\\ 65270\\ 65136\\ 65137\\ 38622\\ 38624\\ 17986\\ 29178\\ 24997\\ 38632\\ 50440\\ 17459\\ 17140\\ 38614\\ 50249\\ 38623\\ 39529\\ 38631\\ \end{array}$	$\begin{array}{c} \mathrm{DL}\text{-}37995\\ \mathrm{DL}\text{-}37998\\ \mathrm{DL}\text{-}95114\\ \mathrm{DL}\text{-}37998\\ \mathrm{DL}\text{-}104116\\ \mathrm{DL}\text{-}37994\\ \mathrm{DL}\text{-}95114\\ \mathrm{DL}\text{-}37994\\ \mathrm{DL}\text{-}37995\\ \mathrm{DE}\text{-}39\\ \mathrm{DE}\text{-}63\\ \mathrm{DE}\text{-}19\\ \mathrm{DE}\text{-}140\\ \mathrm{DE}\text{-}140\\ \mathrm{DE}\text{-}149\\ \mathrm{DE}\text{-}191\\ \mathrm{DE}\text{-}2\\ \mathrm{DE}\text{-}141\\ \mathrm{DE}\text{-}44\\ \mathrm{DE}\text{-}3\\ \mathrm{DE}\text{-}1\\ \mathrm{DE}\text{-}52\\ \mathrm{DE}\text{-}180\\ \mathrm{DE}\text{-}176\\ \end{array}$	$\begin{array}{c} 69\\ 81\\ 73\\ 81\\ 69\\ 72\\ 73\\ 72\\ 69\\ 69\\ 69\\ 69\\ 67\\ 67\\ 67\\ 67\\ 67\\ 66\\ 69\\ 67\\ 67\\ 66\\ 69\\ 67\\ 67\\ 61\\ 69\\ 65\\ 69\\ 71\\ \end{array}$	$\begin{array}{c} 22\\ 23\\ 30\\ 23\\ 20\\ 19\\ 30\\ 19\\ 22\\ 22\\ 22\\ 22\\ 20\\ 20\\ 20\\ 20\\ 20\\ 20$	3 3 3 4 3 3 4 3 3 3 3 3 3 3 3 3 3 3 3 3	$ \begin{array}{c} 6 \\ 6 \\ 1 \\ 4 \\ 5 \\ 1 \\ 4 \\ 6 \\ 6 \\ 5 \\ 1 \\ 4 \\ 6 \\ 6 \\ 3 \\ 4 \\ 8 \\ 6 \\ 6 \\ 3 \\ 4 \\ 8 \\ 8 \\ 8 \\ 8 \\ 8 \\ 8 \\ 8 \\ 8 \\ 8 \\ 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.





SETS OF FINGERS SINGLE FINGERS Reversing Cat. No. Controller Operating Cat. No. Number in Set Cat. No. Number in Set Operating Reversing C-205 & C-205-A TYPE K CONTROLLERS K-2 & K-2-A K-6 & K-6-A K-6-B K-6-G 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 & K-12-A K-13 & K-13-A K-13-C K-13-E K-15 & K-15-A K-27 & K-27-A K-27-C K-28 & K-28-A K-28-B K-28-C K-28-L $\triangle 111077$ K-34-E K-35-C △111077 K-35-E △111077

△Includes removable finger tip Cat. No. 111079.

‡ Includes removable finger tip Cat. No. 111080.

TYPE C CONTROLLERS

MINE AND INDUSTRIAL HAULAGE SUPPLIES

CONTACT FINGERS FOR LOCOMOTIVE, CRANE AND HOIST CONTROLLERS TYPE R CONTROLLERS

		SINGLE I	SETS OF FINGERS			
Controller	Op	erating	Rev	versing	Cat	. No.
	Cat. No.	Number in Set	Cat. No.	Number in Set	Operating	Reversing
R-6 & R-6-A R-6-B R-6-C	$110046 \\ 110046 \\ 110046$	22 22 22	37749	24	$38426 \\ 38426 \\ 38426$	38084
R-9 & R-9-A R-11 & R-11-A R-11-B	$110046 \\ 37949 \\ 37949$	23 9 9	37930 37930	4	38429 38430 38430	38431
R-12 & R-12-A R-13 & R-13-A	37949 110046	9 14	37930	8	38430 38031	38097
R-14 & R-14-A R-14-C P 14 F	$37946 \\ 37946 \\ 27046$	8 *	37969 37969 27060	8 8	38432 38432 28432	38433 38433
R-14-E R-15 & R-15-A	37949	18	37909 37971 (37930)	8	38432	38435
R-16 & R-16-A	37949	16	$\left\{\begin{array}{c} 37929 \\ 37930 \end{array}\right\}$	8	38437	38094
R-16-D	37949	10	$\left. \begin{array}{c} 37929 \\ 37930 \end{array} \right\}$	8 8 l	38437	38094
R-17 & R-17-A	37949	9	\ 37929 37930	4 ∫ 4	38430	38431
R-17-F R-19 & R-19-A R-19-B	$37949 \\ 37949 \\ 37949 \\ 37949$	9 9 9	37930 37930 37930	4 8 8	$38430 \\ 38430 \\ 38430$	$38431 \\ 38097 \\ 38097$
R-19-C R-19-D P 10 F	$37949 \\ 37949 \\ 27040$	999	37930 37930 27030	8 8 .	38430 38430 28430	38097 38097 28007
R-19-12 R-21 & R-21-A R-22 & R-22-A	110046 37949	9 14 8	37930	8	$38031 \\ 38439$	38442
R-22-C R-22-E R-22 F	37949 37949 37040	8 8	37973 37973 27072	8 8	38439 38439 28430	$38442 \\ 3844$
R-27 & R-27-A R-27-B	110046 110046	14 14 14		0	38031 38031	00112
R-27-D R-27-J R-27-M	110046 110046 110046	14 14 14			38031 38031 38031	
R-28 & R-28-A R-28-F	37902 37902	11 11 11			38053 38053	
R-28-G R-28-N	37902 37902	11 11			38053 38053	
R-28-P R-28-V	37902 37902	11	(37047)		38053	
R-29 & R-29-A R-32 & R-32-A	37949 110046	9 14	{ 37950 }	8	38430 38031	108466
R-32-B R-32-G	110046 110046	· 14 · 14			$38031 \\ 38031$	
R-37 & R-37-A	37949 ‡ 56766 27040		37973	9	38446	38447
R-37-B {	\$7949 \$56766 \$37949		37973 37973	9	38446	38447
R-37-C		2 8	37929 37973		38446	38448
R-37-E	$ \begin{array}{r} $56766 \\ $37949 \end{array} $	2 8	37929 37973		38446	38447
R-37-F		$ \begin{array}{c} 2 \\ 8 \\ 0 \end{array} $	37973	9	38446	38447
R-38 & R-38-A		$\left[\begin{array}{c}2\\8\\2\end{array}\right]$	37969	9	38449	43228
R-38-B	37946 156766	8 2	$37950 \\ 37969$	$\left. \begin{array}{c} 1\\ 9 \end{array} \right\}$	38449	43197
R-52 & R-52-A R-53 & R-53-A	$110046 \\ 37976$	21 8			$38083 \\ 38454$	

‡ Auxiliary finger.

CONTACT FINGERS FOR LOCOMOTIVE, CRANE AND HOIST CONTROLLERS TYPE R CONTROLLERS—(Concluded)

$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$			SINGLE F	INGERS		SETS OF	FINGERS
Cat. No. Number in Set Ocat. No. Number in Set Operating Revensing R-35-0 37976 8 38454 38454 38454 R-35-0 37976 8 38454 38454 38454 R-35-0 37976 8 38454 38454 38454 R-55 & R-55-A 22063 6 37749 10 38456 38456 R-60 & R-60-A 220302 6 37749 10 38456 37940 R-60 & R-60-A 27908 8 37749 10 38450 37940 R-65 & R-65-A 44112 0 38461 38462 38461 38461 R-60 & A 37902 17 38471 38461 38461 38461 R-75 & R 37989 7 38461 38461 38461 R-75 & R 37989 7 38471 38471 38471 R-75 - A 37989 7 38471 38471 38471 <	Controller	Oper	ating	Reve	ersing	Cat.	No.
		Cat. No.	Number in Set	Cat. No.	Number in Set	Operating	Reversing
R.35-C 37076 8 38454 R.35-D 37076 8 38454 R.35-D 37076 8 38454 R.35-C 37076 8 37980 20 38454 R.35-C 37076 8 37749 10 38458 R.55 & R.56-A 39962 6 37749 10 38459 37940 R.60 & R.60-A 29362 6 37749 10 38459 37940 R.65 & R.65-A 29062 6 37749 10 38461 37940 R.66 & R.60-A 29062 6 37749 10 38462 37940 R.66 & R.60-A 37002 17 38441 38465 38465 38465 R.70-B 37064 28 38461 38461 38461 38461 38471	R-53-B	37976	8			38454	
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	R-53-C	37976	8			38454	
	R-53-D R-53-G	37976	8			38454	
	DEE & DEE A	29362	18 1	27020	20	00450	00457
	K-55 & K-55-A	29363	6 }	31980	20	38450	38497
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	R-56 & R-56-A	34411	6			38458	1
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	R-60-B	29363	8	37749	10	38459	37940
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	R-60-C	29362	6	37749	10	38450	37040
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $		29363	8	01110	10	00100	01040
	R-65 & R-65-A	37968			3.12.1	38462	
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	R-69 & R-69-A	37902	17			38464	The second second
	R-69-B	37902	17			38464	1. 1. 1. 1. 1. 1.
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	R-70 & R-70-A R-70-B	37954	28			38400 38465	
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.H 37989 7 38471 R.75.H 37989 7 38471 R.75.H 37989 7 38471 R.76.A.2 37989 7 38471 R.76.A.2 37989 7 38471 R.76.A.2 37989 7 38471 R.76.A.5 37989 7 38471 R.76.A.2 37989 7 38471 R.76.A.5 37989 7 38471 R.76.A.5 37989 7 38471 R.76.A.5 37989 7 38478 R.76.A.5 37989 7 38478 R.82.B 129362 6 37973 9 126916 38447 R.84.C 37906 2 37973 9 126916 38447 R.86.B 110046 7 37973 <td>R-75 & R-75-A</td> <td>37989</td> <td>7</td> <td></td> <td>A SULLA LASS</td> <td>38471</td> <td></td>	R-75 & R-75-A	37989	7		A SULLA LASS	38471	
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	R-75-A-2	37989	7		Haloff Contest	38471	
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	R-75-A-5 R-75-B	37989	7			38471	
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	R-75-C-5	37989	7			38471	
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	R-75-E-2	37989	7		3.711 D.A.16	38471	
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	R-75-H P 76 & P 76 A	37989	77			38471	
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	R-76-A-2	37989	7		the lost	38471	
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	R-76-A-5	37989	7		132-12-033	38471	
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	R-76-B-2	37989	7			38471	
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	R-77 & R-77-A	29363	8	37749	20	38459	38472
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	R-82 & R-82-A	∫ 29362	18	27080	20	28156	28457
R-84 C 37934 32 38478 R-84-C 37954 32 38478 R-86 & R-86-A 110046 7 37973 9 126916 38447 R-86 & R-86-B 110046 7 37973 9 126916 38447 R-86-B 110046 7 37973 9 126916 38447 R-86-C 110046 7 37973 9 126916 38447 R-86-C 110046 7 37973 9 126916 38447 R-86-D 37906 2 37973 9 126916 38447 R-86-E 37906 2 126932 9 126916 126933 R-86-F 110046 7 126932 9 126916 126933 R-91 & 29362 6 37749 16 38482 38029 R-98 & R-98-A 61879 7 61880 24 61881 R-109 & R-109-A 61880 24 61881 61881 R-109-B 4111548 14 61844 9	R-82-B	29363	6 5	01900	20	00470	OTUI
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	R-84-C	37954	32		NITES SHO	38478	
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	R-84-D	37954	32			38478	
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	R-86 & R-86-A	110046	7 }	37973	9	126916	38447
R-86-B $\begin{pmatrix} 10046 \\ 37906 \\ 2 \\ 37906 \\ 2 \\ 37906 \\ 2 \\ 37906 \\ 2 \\ 37973 \\ 9 \\ 126916 \\ 38447 \\ 9 \\ 126916 \\ 38447 \\ 9 \\ 126916 \\ 38447 \\ 38447 \\ 9 \\ 126916 \\ 38447 \\ 38447 \\ 38447 \\ 9 \\ 126916 \\ 38447 \\ 38447 \\ 9 \\ 126916 \\ 38447 \\ 38447 \\ 9 \\ 126916 \\ 38447 \\ 38447 \\ 9 \\ 126916 \\ 38447 \\ 384$		110046					
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	R-86-B	37906	2	37973	9	126916	38447
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	R-86-C {	110046	7 }	37973	9	126916	38447
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$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	R-86-D	37906	2	37973	9	126916	38447
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	R-86-E	110046		126932	9	126916	126933
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$		37906				LUCI CON	
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	R-86-F	37906		126932 .	9	126916	126933
$ \left\{ \begin{array}{cccccccccccccccccccccccccccccccccccc$	R-91 & R-91-A	29362	6 }	37749	16	38482	38029
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $		29363					
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	R-98 & R-98-A	61880	24			61881	
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	R-99 & R-99-A	61879	7		1	61881	
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	R-109 & R-109-A	61880 ∧111548		61844	9	111549	68987
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	R-109-B	△111548	14	61844	9	111549	68987
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	R-109-C	△111548	14	61844	9	111549	68987
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	R-109-D R-112 & R-112-A	A111548 A111548	14	61844 61845	18	111549	68987
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	R-113 & R-113-A	△111548	26	61845	17	111551	68989
	R-114 & R-114-A	△111548	26	61845	18	111551	68988
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	R-115 & R-115-A R-121 & R-191-A	61841	32			68984 38499	
R-121-C 37902 17 38464 R-122 & R-122-A 121442 9 126191 R-128 & R-128-A 37902 11 38053	R-121-B	37902	16		1.	38422	
K-122 & R-122-A 121442 9 126191 R-128 & R-128-A 37902 11 38053	R-121-C	37902	17			38464	
	R-122 & R-122-A R-128 & R-128-A	121442	9		1.5.32	126191 38053	

△Includes removable finger tip Cat. No. 111079.

CONTACT FINGERS FOR LOCOMOTIVE, CRANE AND HOIST CONTROLLERS TYPE T CONTROLLERS

		SINGLE F	INGERS		SETS OF	FINGERS
Controller	Op	erating	Re	versing	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-1-0	37906	12	None		69033	
T-1- R	37906	12	None		69033	
TTT & TTTA	37913	6	24402	16	38501	38506
1-/ & 1-/-A	34401	11 ∫	01102	10	00001	00000
T-10 & T-10-A	36773	15	None	A Provide State of the second	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	6	None		38056	
1-20 & 1-20-A	37906	8 5	Ronc	- 1970 - 188 - 189 PAU	00000	1990 - P. P. P. P. P.
T 90 P	110046	6	None	Conte De Maria	38056	
1-20-D	37906	8 5	rione		00000	
T 20 C	110046	6	None		38056	
1-20-0	37906	8)	rtone		00000	
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	00700
T-28 & T-28-A	110046	56	38009	18	38519	38520
T-29 & T-29-A	110046	56	None		38519	00504
T-33 & T-33-A	38013	22	38015	8	38523	38524
T-34 & T-34-A	37902	14	None		38525	THE MARKED
T-34-E	37906	14	None		69037	
T-34-F	37906	14	None		69037	
T-34-G	37906	14	None	Cherry ALLEBORT	69037	
T-34-L	37906	14	None		09037	
T-36 & T-36-A	37922	28	None		09038	
T-40 & T-40-A	61918	10	None		61010	
T-40-C	61918	10	None		60042	
T-42 & T-42-A	37922	58	None		60043	
T-42-C	37922	54	None		60044	1.2 0.00
T-42-D	37922	54	None		60044	
Т-42-Е	37922	04	None		60051	
1-52 & 1-52-A	69029	28	None		09001	

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







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



Cat. No. Description .			
30444	Complete set of segments with screws	Cat. No.	Description
17733 17624	and pins	39445 17733	Complete set of segments, with screws Screw for segments

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



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

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	
17733	Screw for segments	
17624	Pin for segments	





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

TYPE K CONTROLLERS

OPERATING CYLINDERS

K-34-E Controller





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



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

CAT. NO. Controller Large Segment Small Segment Screw for Segment K-2 & K-2-A K-6 & K-6-A K-6-B K-6-G 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 & K-12-A K-13 & K-13-A K-13-C K-13-E K-15 & K-15-A K-27 & K-27-A K-27-C $\triangle 30951$ K-28 & K-28-A 33789 $17733 \\ 17773 \\ 1777$ K-28-B K-28-C K-28-L K-34-E †66903 K-35-C \$66902 †66903 K-35-E

REVERSE SEGMENTS FOR K CONTROLLERS

 $\triangle U$ -shaped segment.

†Large size segment.

‡Medium size segment.

TYPE R CONTROLLERS

OPERATING CYLINDERS

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



Cat. No.	Description	Ċat. No.	
39478	Complete set of segments, with screws	39479	Complete
17733	Screw for segments	17733	Screw for

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R-9 and R-9-A Controllers

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

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TYPE R CONTROLLERS

OPERATING CYLINDERS

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

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	and the second second	
20190	Complete act of comparison its	Cat. No.	Description
17733 17734	Screw for segments	39481 17733	Complete set of segments Screw for segments .



, with screws

1	3	4		

TYPE R CONTROLLERS



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



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Cat. No.	Description	Cat. No.	Description
39482	Complete set of segments, with screws	39483	Complete set of segments, with screws
17733	Screw for segments	17733	Screw for segments

R-15 and R-15-A Controllers

GENERAL ELECTRIC COMPANY

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





aler.

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
Cat. No.	Description	39485	Complete set of segments, with screws
39484 17733	Complete set of segments, with screws Screw for segments	17733 17624	and pins

MINE AND INDUSTRIAL HAULAGE SUPPLIES

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			
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			

TYPE R CONTROLLERS

OPERATING CYLINDERS

R-52 and R-52-A Controllers



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

TYPE R CONTROLLERS

OPERATING CYLINDERS

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





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GENERAL ELECTRIC COMPANY

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 R-56 and R-56-A Controllers



		Cat. No.	Description			
Cat. No.	Description	107983	Complete set of segments, with screws			
37690 17733	Complete set of segments, with screws Screw for segments	17733 107984	and pins			

TYPE R CONTROLLERS

R-65 and R-65-A Controllers

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

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



OPERATING CYLINDERS R-60, R-60-A, R-60-B, R-60-C, R-77 and

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TYPE R CONTROLLERS

OPERATING CYLINDERS

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

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Cat. No.	Description					
121556	Complete set of seg	gme	nts,	with	scre	ews
	and pins	•	•		•	- •
17733	Screw for segments					
89585	Pin for segments		•			

Cat. No.	Descri	ption	1.1			
121560	Complete set of segments, with screws					
	and pins					
17733	Screw for segments			· · · · ·		
40484	Screw for segments			12. 1.		
89585	Pin for segments	• •		·		

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R-70, R-70-A and R-70-B 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 R-76, R-76-A, R-76-A-2, R-76-A-5 and R-76-B-2 Controllers



Cat. No.	Description	
40982	Complete set of segments, with screw	vs
40484	Screw for segments	:
$\begin{array}{c} 41032\\ 41033\end{array}$	Screw for segments Pin for segments	:

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

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TYPE R CONTROLLERS

OPERATING CYLINDERS

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



		Cat. No.	Description
at. No.	Description		
49356 17733	Complete set of segments, with screws Screw for segments	38532 17733 41033	Complete set of segments, with screw and pins



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

TYPE R CONTROLLERS

OPERATING CYLINDERS

R-91 and R-91-A Controllers

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



TYPE R CONTROLLERS

Cat. No.

OPERATING CYLINDERS

R-109, R-109-A, R-109-B, R-109-C and R-109-D Controllers R-112 and R-112-A Controllers



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

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	17733				
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105683	Complete set of	segments,	with	burning
17733	tips and screw Screw for segme	rs nts	:	• •

Description

TYPE R CONTROLLERS

OPERATING CYLINDERS

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

R-115 and R-115-A Controllers





Cat. No.	Description	Cat. No.	Description
105684 17733	Complete set of segments, with burning tips and screws Screw for segments	$\frac{121565}{17733}$	Complete set of segments, with screws Screw for segments

TYPE R CONTROLLERS

OPERATING CYLINDERS

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

R-121-C Controller



0	e	BT.		
Ca	t	NO	D.	

Description

105689	Complete set of segments,	with	screws
105690	Complete set of segments,	with	 screws
17733	and pins for R-121-B . 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.



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

TYPE R CONTROLLERS

OPERATING CYLINDERS

R-122 and R-122-A Controllers



Cat. No.	Description
$\begin{array}{c} 121569 \\ 40484 \\ 41033 \end{array}$	Complete set of segments, with screws and pins

TYPE R CONTROLLERS-REVERSE SEGMENTS

Controller	CAT. NO.			
Controller	Large Segment	Small Segment	Screw for Segment	
D 6 & D 6 A	10060	10061	9650	
D & B	No reverse orlinder	19901	9000	
D & C	No reverse cylinder			
DO& DOA	No reverse cylinder			
R-9 & R-9-A D 11 & D 11 A	No reverse cynnder	14609	10104	
R-11 & R-11-A	14095	14092	10194	
K-11-B	14093	14092	10194	
R-12 & R-12-A	14093	14092	10194	
R-13 & R-13-A	No reverse cynnder	14600	10104	
R-14 & R-14-A	14093	14092	10194	
R-14-C	14093	14092	10194	
K-14-E	14093	14092	10194	
R-15 & R-15-A	19247	19246	10143	
R-16 & R-16-A	21442	21441	10194	
R-10-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	and the second sec		
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		37728	13848	
	1 37727)			
	A CONTRACTOR OF A CONTRACT			

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

TYPE R CONTROLLERS-REVERSE SEGMENTS

	CAT. NO.			
Controller	Large Segment	Small Segment	Screw for Segment	
Controller R-60-B R-60-C R-65 & R-65-A R-69 & R-69-A R-69-B R-70 & R-70-A R-70-B R-75 & R-75-A R-75-B R-75-H R-75-A-2 R-75-A-2 R-75-A-2 R-76-A-2 R-76-A-2 R-76-A-2 R-76-A-2 R-76-A-5 R-76-B-2 R-77-K R-76-A-2 R-77-K R-76-A-2 R-77-K R-76-A-2 R-77-K R-76-A-2 R-77-K R-76-A-2 R-77-K R-76-A-2 R-77-A R-82 & R-82-A R-84 & R-84-A R-84-C R-86-D R-86-C R-86-D R-86-F R-91 & R-91-A R-99 & R-99-A	Large Segment $\begin{cases} \triangle 37726 \\ \dagger 37727 \end{cases}$ No reverse cylinder No reverse cylinder	CAT. NO. Small Segment 37728	Screw for Segment 13848	
R-99 & R-99-A R-109 & R-109-A R-109-B R-109-C R-109-D	No reverse cylinder See page 158 See page 158 See page 158 See page 158			
R-112 & R-112-A R-113 & R-113-A R-114 & R-114-A R-115 & R-115-A R-121 & R-121-A R-121-B R-121-C R-122 & R-122-A R-128 & R-128-A	See page 159 See page 159 See page 159 No reverse cylinder No reverse cylinder No reverse cylinder No reverse cylinder No reverse cylinder No reverse cylinder			

 \triangle Four-screw segment. † Large segment, two-screw.

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GENERAL ELECTRIC COMPANY

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				
$39489 \\ 469 \\ 4024 \\ 29382 \\ 29383$	Complete set of segments, Screw for segments (brass) Copper rivet for segments Pin for segments	with	screw	7S • •	



Cat. No.	Description		
121961	Complete set of segments, with screw		
12 1 1 2 2 2	and pins		
469	Screw for segments		
121962	Screw for segments		
4024	Screw for segments		
29383	Pin for segments		
29382	Rivet for segments		

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

TYPE R CONTROLLERS

REVERSING CYLINDERS

R-55 and R-55-A Controllers



R-77 and	l R-77-A	Controllers
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Cat. No.	Description	Cat. No.	Description
37691 9650 29612	Complete set of segments, with screws and rivets	37759 13848 19733	Complete set of segments, with con- nectors, pins and screws

TYPE R CONTROLLERS

REVERSING CYLINDERS

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



Cat. No.	Description	
104906	Complete set of segments, with con-	
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	
1	and rivets	
10437	Screw for segments	
38595	Copper rivet	

TYPE R CONTROLLERS

REVERSING CYLINDERS

R-91-A Controller



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



Cat. No.	Description	
111745	Complete set of seg- ments, with connec- tion strips, insulation plate, screws, rivets	
10437 60992 29383	Screw for segments . Rivet for segments . Pin for segments .	

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

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



108009	Complete set of seg-
	ments, with connec-
	tion strips, screws
	and rivets
1424	Screw for segments .
108010	Rivet for segments .

GENERAL ELECTRIC COMPANY

CYLINDER SEGMENTS FOR LOCOMOTIVE, CRANE AND HOIST CONTROLLERS TYPE R CONTROLLERS REVERSING CYLINDERS

R-112 and R-112-A Controllers

R-113 and R-113-A Controllers



108016	Complete set of seg-
	ments, with connec-
	tion strips, screws and
-	rivets
1424	Screw for segments .
108010	Rivet for segments .





Cat. No. Description

.08031	Complete set of	f seg-
	ments, with c	onnec-
	tion strips, screv	ws and
	rivets	
1424	Screw for segment	ts .
08010	Rivet for segment	s.
	the second s	

TYPE T CONTROLLERS

0 0 34202

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 OPERATING AND REVERSE CYLINDERS

34202 0 0

T-7 and T-7-A Controllers

OPERATING

REVERSE

17733



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.

Cat. No.	Description	Cat. No.	Description
* 34404	Complete set of segments, with screws and pins	34405	Complete set of operating cylinder seg-
121079	Complete set of segments, with con-	34406	complete set of reversing cylinder seg-
17733	Screw for segments	17700	ments, with screws
* 88982	Grounding screw for segments	17733	Screw for segments
41033	Pin for segments	SUTT WELL	
120891	Connection strip		

* For use with controllers having round shaft.

† For use with controllers having hexagonal shaft.



TYPE T CONTROLLERS

OPERATING CYLINDERS



T-11 and T-11-A Controllers



Cat. No.	Description	Description Cat. No.	
34403	Complete set of segments, with screws	88473	Complete set of segments, with screws
17733	Screw for segments	17733	Screw for segments

MINE AND INDUSTRIAL HAULAGE SUPPLIES

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						

GENERAL ELECTRIC COMPANY

CYLINDER SEGMENTS FOR LOCOMOTIVE, CRANE AND HOIST CONTROLLERS

TYPE T CONTROLLERS

OPERATING CYLINDERS

T-26 and T-26-A Controllers

T-27 and T-27-A Controllers



Cat. No.	Description	Cat. No.	Description
88623	Complete set of segments, with screws	118973	Complete set of segments, with screws
17733	Screw for segments	17733	Screw for segments

TYPE T CONTROLLERS

OPERATING CYLINDERS

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

T-33 and T-33-A Controllers



Cat. No.	Description	Cat. No.	Desc
88626	Complete set of segments, with screws	$107979 \\ 17733$	Complete set of s
17733	Screw for segments		Screw for segments



cription

egments, with screws 3 .

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							
†121080	and pins Complete set of segments, with con-							
17733	nection strips, screws and pins							
* 88982	Grounding screw for segments							
41033	Pin for segments							
T120891	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 17733 Complete set of segments, with screws Screw for segments . . .

TYPE T CONTROLLERS

OPERATING CYLINDERS

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

T-42 and T-42-A Controllers



Cat. No.	Description	1	
60446	Complete set of segments, with screws	Cat. No.	Description
$\begin{array}{c} 40484\\ 41033\end{array}$	and pins	105699 17733	Complete set of segments, with screws Screw for segments

GENERAL ELECTRIC COMPANY

CYLINDER SEGMENTS FOR LOCOMOTIVE, CRANE AND HOIST CONTROLLERS

TYPE T CONTROLLERS

OPERATING CYLINDERS

T-42-C Controller

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



0 0 1773 0 A 0 0 0 e A 105694 θ 1590 00 -24 00 10.56.98 0 0 0 θ 0 0 0

Description

 $105702 \\ 17733$

Cat. No.

Complete set of segments, with screws Screw for segments

TYPE T CONTROLLERS

OPERATING CYLINDERS

T-52 and T-52-A Controllers



Cat. No.

 $114900 \\ 17733$

Description

Complete set of segments, with screws

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

			C	AT. NO.		
Controller	Arc Deflector Complete	Wide Strip	Narrow Strip	Division Plate	Insulating Bushing for Screw Fastening Deflector to Pole Piece	Misc.
C-205-A	123724		1	22776	13635	s 123725
		ТҮРЕ К (CONTROLLE	RS		
K-2, K-2-A	17611	17612	17613	14994	13635	
K-6, K-6-A, K-6-B	27539	56793	56794	B 51737 C 27540	13635	
K-6-G	27539	56793	56794	A 56795 B 51737 C 27540	13635	
$\left. \begin{array}{c} {\rm K-8, \ K-8-A, \ K-9, \ K-9-A, } \\ {\rm K-10, \ K-10-A} \end{array} \right\}$	14991	14992	14993	D 14994 C 56756	13635	STIL.
K-11, K-11-A, K-11-D	19873	14992	14993	D 14994	13635	Е 19874
K-12, K-12-A	19876	14992	14993	14994		Е 19877
K-13, K-13-A, K-13-C, K-13-E	19924	19925	19926	19928	13635	
K-15, K-15-A	*123726 §123727	$\frac{19925}{123728}$	$19926 \\ 37936$	19928 19928	13635 13635	a dikis
K-27, K-27-A, K-27-C	27486	27487	27488	$\left\{ \begin{array}{c} D & 14994 \\ C & 56756 \end{array} \right\}$	13635	
K-28, K-28-A, K-28-B, K-28-C, K-28-L	33761	н 33766	I 33767	A 33764 B 33765	13635	ј 33762
K-34-E	110073	110075	110076	110077	S. M. Martin	J 110074
K-35-C, K-35-E	110078	{к 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.

к-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

				CAT. NO.		
Controller	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 R-9, R-9-A	$22749 \\ 24320$	$\begin{array}{r} 22725\\ 24321\end{array}$	$\begin{array}{c} 22726\\ 24322 \end{array}$	19928 19636	13635 13635	
R-11, R-11-A, R-11-B,	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	$\left\{\begin{array}{cc} A & 14994 \\ B & 56756 \end{array}\right\}$	19630	
$\left. \begin{array}{c} \text{R-16, R-16-A, R-16-C,} \\ \text{R-16-D} \end{array} \right\}$	21433	21434	21435	14994	19630	
$\left. \begin{array}{c} R-17, R-17-A, R-17-F, \\ R-19, R-19-A, R-19-B, \\ R-19-C, R-19-D, R-19-E \end{array} \right\}$	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	
$\left. \begin{array}{c} \text{R-27, R-27-A, R-27-B,} \\ \text{R-27-D, R-27-M} \end{array} \right\}$	56722	c 56723	d 56724	$\begin{bmatrix} c & 110095 \\ D & 19636 \end{bmatrix}$	19893	
R-27-J	114311	c 56723	D 56724	$\left\{ \begin{array}{c} C & 110095 \\ D & 19636 \end{array} \right\}$	19839	
R-28, R-28-A, R-28-P	56856	1 Towns		$\left\{\begin{array}{cc} A & 56858 \\ B & 56870 \end{array}\right\}$	13635	Е 56857
R-28-F, R-28-N	56890	en kilson		$\left\{\begin{array}{c} A & 56858 \\ B & 56870 \end{array}\right\}$	13635	Е 56857
R-28-G, R-28-V	56856			$\left\{ \begin{array}{c} A & 56858 \\ B & 56870 \end{array} \right\}$	13635	Е 56857
R-29, R-29-A	17642	17643	17644	14994	13635	
$\left. \begin{array}{c} \text{R-32, R-32-A, R-32-B,} \\ \text{R-32-G} \end{array} \right\}$	56722	c 56723	D 56724	$\left\{ \begin{array}{c} c \ 110095 \\ D \ 19636 \end{array} \right\}$	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	$\left\{\begin{array}{cc} A & 14994 \\ B & 56756 \end{array}\right\}$	13635	
R-52, R-52-A	124596	124597	124598	19636	13635	and the set
R-53, R-53-A, R-53-B, R-53-C, R-53-D, R-53-G	49071	17 - 1 - 1	12 C 1		49072	
R-55, R-55-A	29335	29332	29333	$\left\{\begin{array}{cc} c \ 104839 \\ D \ 19895 \end{array}\right\}$	13635	
R-56-A R-60-A, R-60-B, R-60-C R-65-A R-69, R-69-A, R-69-B, R-70, R-70-A, R-70-B, R-75-A, R-75-A-2, D 75-A, R-75-A-2,	$\begin{array}{c} 110096\\ 37713\\ 110099\\ 110529\\ 124600 \end{array}$	110097 37714 110507	110098 37715 110508	19895 19895 19895 110509 19745 19745 19745	13635 13635 13635 13635 19893 19893	E 110530 E 124601
R-75-A-3, 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	07710	07714	07515	41002	10625	
	37713	37714	37715	19895 (c 104839)	13035	
R-82, R-82-A, R-82-B	29335	29332	29333	{D 19895 }	13635	1
R-84-D	110510	and the last		19745	19893	Е 110511
R-86, R-86-A, R-86-B, R-86-C, R-86-D, R-86-E, R-86-F	38528	38529	38530	$\left\{\begin{array}{ll}G & 14994\\ F & 56756\end{array}\right\}$	13635	1
R-91, R-91-A	124602	124603	124604	19895	13635	
A-Intermediate and lowe	r end.	D-Small		F-	Upper and lower e	ends.

B-Upper end. c-Large.

E-Back plate.

G-Intermediate.

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ARC DEFLECTORS AND PARTS

FOR

Locomotive, Crane and Hoist Controllers

TYPE R CONTROLLERS—(Continued)

	CAT. NO.						
Controller	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 R-109, R-109-A, R-109-B, R-109-C, R-109-D R-112, R-112-A R-113, R-113-A, R-114, R-114-A R-121, R-121-A R-121-B, R-121-C R-122-A R-128-A	{н 110512 1 410513 110516 110521 110525 124605 110529 110531 124654 56856	110518 110523 110527	110519 110524 110528	$\left\{\begin{array}{c} 33765\\ 33765\\ 110520\\ 110520\\ 19745\\ 9745\\ c\ 19745\\ c\ 19745\\ b\ 110532\\ 124658\\ 124658\\ 124656\\ A\ 56858\\ B\ 56870\end{array}\right\}$	13635 13635 19893 19893 19893 19893	E 110514 E 110515 E 110517 E 110522 E 110526 E 124606 E 110530 E 110530 E 124655 E 56857	
	1	D 1 1		- T (1 1	1		

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

		CAT. NO.			CAT. NO.		
Controller	Arc Deflector Complete	Division Plate	Back Plate	Controller	Arc Deflector Complete	Division Plate	Back Plate
$\left. \left. \begin{array}{c} \text{T-1, T-1-A, T-1-G, T-1-H} \\ \text{T-1-K, T-1-L, T-1-N,} \\ \text{T-1-P, T-1-Q, T-1-R} \end{array} \right\} \\ \text{T-7, T-7-A} \\ \text{T-10, T-10-A} \\ \text{T-10-J, T-10-N, T-10-P} \\ \text{T-11, T-11-A} \\ \text{T-20, T-20-A} \\ \text{T-20-B} \\ \text{T-20-C} \\ \text{T-20, T-21-A} \\ \text{T-26, T-26-A} \\ \text{T-27, T-27-A} \\ \text{T-28, T-28-A} \\ \text{T-29, T-29-A} \\ \text{T-33, T-33-A} \\ \end{array} \right.$	None None None None	110533 110533 124663 110534 110534 110534 None None None 110535 110534 110535 110534 110536 110536 110536 110538 *110538		$\left. \begin{array}{c} \text{T-34, T-34-A, T-34-E,} \\ \text{T-34-F, T-34-G,} \\ \text{T-36, T-36-A} \\ \text{T-40, T-40-A} \\ \text{T-40, T-40-A} \\ \text{T-42, T-42-A} \\ \text{T-42-C} \\ \text{T-42-D} \\ \text{T-42-E} \\ \text{T-52, T-52-A} \end{array} \right\}$	110542 110542	110541 110536 110544 110536 110536 110536 110536 110536 104999	110543 110543

* Upper end. † Lower end.

1 Intermediate with bushings. § Intermediate without bushings.

MINE AND INDUSTRIAL HAULAGE SUPPLIES

HANDLES FOR LOCOMOTIVE, CRANE AND HOIST CONTROLLERS





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

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

0	OPERATIN	NG HANDLES	REVERSING HANDLES				
Controller	Cat. No.	Material	Cat. No.	Material			
C-205-A	27345	Brass	11314	Brass			
	ТҮРЕ	K CONTROLLER	S				
K2- K-2-A	* 16921	Brass	<i>{</i> * 16922	Brass			
	* 51450	Brace	35594	Mal. iron			
	° 34400	· Mal. iron					
K-6, K-6-A	△11299	Brass	* 17778	Brass			
	† 23911	Brass					
K-6-B	56518	Brass	None	D			
K-6-G Vo Vo A	* 16091	Brass	* 17779	Brass			
K-9, K-9-A	* 16921	Brass	* 17778	Brass			
11 0, 11 0 11	* 16921	Brass	11110	Diaso			
	° 30365	Mal. iron	(* 17770	Brocc			
K-10, K-10-A	$\pi 56779$	Brass }	10 33694	Mal iron			
	△35312	Brass	(+ 00024	Mai. Hom			
VII VII A	△14430	Brass J	* 17770	Danaa			
K-II, K-II-A	* 16921	Brass	* 17778	Brass			
K-12 K-12-A	* 16021	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	* 51450	Brass	* 1///8	Brass			
K-28, K-28-A	∧ 32431	Brass	1///0	Diass			
IZ OO D	* 51459	Brass	* 17778	Brass			
К-28-В	$\triangle 32431$	Brass					
K-28-C	* 51459	Brass	* 17778	Brass			
1 20 0	$\triangle 32431$	Brass	* 19990	D			
K-28-L	⁺ 51459	Brass	+ 17778	Brass			
K-34-E	61868	Mal. iron	60916	Steel, D.F.			
	01000		00010	accord accord			
K-35-C	* 51459	Brass	60916	Steel, D.F.			
K-35-E	* 51459	Brass	60916	Steel, D.F.			

TYPE C CONTROLLERS

* Similar mal. iron handles shown on page 177. ° Special malleable iron handle.

ASpecial. † Special handle with flat knob. ‡ Includes brass bushing and galvanized iron cap.

s For $1\frac{3}{4}$ shaft extension. π Special handwheel.

HANDLES FOR LOCOMOTIVE, CRANE AND HOIST CONTROLLERS TYPE R CONTROLLERS

	OPERATIN	NG HANDLES	REVERSIN	G HANDLES
Controller	Cat. No.	Material	Cat. No.	Material
R-6 R-6-A	38671	Mal iron	17670	Brook
R-6-B	56520	Mal. iron	None	Diass
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-10, R-10-A	* 16921	Brass	* 16922	Brass
R-10-C D 16 D	* 16921	Brass	* 160922	Brass
R-10-D R-17 R-17-A	* 16021	Brass	* 160922	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
K-22-E D 99 F	+ 10921 Nono	Brass	* 160922	Brass
K-22-F	80502	Mal iron	10922	Diass
R-27. R-27-A	B 17799	Brass	None	
	π 11478	Brass		
D 97 D	89592	Mal. iron	Nono	
K-27-D	в 17799	Brass	INORE	
R-27-D {	89592	Mal. iron	None	
Dozt	B 17799	Brass	NI	THE REAL PROPERTY OF
R-21-J	A51403 20502	Brass Mal inon	Ivone	
R-27-M {	D 17700	Bross	None	
}	89588	Mal iron		
D 00 D 00 I	B 14417	Brass		
R-28, R-28-A	×29187	Brass	None	
	π 11479	Brass		17.21.20.21.24.25
+R-28-F	None		None	
R-28-G	89588	Mal. iron	None	
DOON	B 14417	Brass	Nome	
R-28-N	80588	Mal iron	None	
R-28-P {	B 14417	Brass	None	
D co V	89588	Mal. iron	NT	
R-28-V {	в 14417		None	
R-29, R-29-A	* 16921	Brass	* 16922	Brass
R-32, R-32-A	89592	Mal. iron	None	
	в 17799	Brass		
R-32-B	89592 p 17700	Mal. iron	None	
	B 17799 80509	Mal iron		
R-32-G {	B 17799	Brass	None	
	* 10001	Diaso	f ×56752	Brass
K-37, K-37-A	* 16921	Brass	36699	Brass
R-37-B	* 16921	Brass	$\times 56752$	Brass

Similar handles of malleable iron are shown on page 177.
Brass special.
Operating wheel, rope drive.
AMarine handle.
X Hand wheel.
I No headle furnished.

+No handle furnished.

10

HANDLES FOR LOCOMOTIVE, CRANE AND HOIST CONTROLLERS TYPE R CONTROLLERS

0 + 11-	OPERATING HANDLES		REVERSING HANDLES					
Controller	Cat. No.	Material	Cat. No.	Material				
D 97 C	* 16001	Dress	NE07E0	D				
R-37-C	* 10921	Drass	X 307 32	Brass				
R-37-D	* 10921	Brass	X 30752	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					
	23912	Mal. iron	None					
R-53, R-53-A	$\pi 61897$	Mal. iron						
	$\pi 100129$	Brass						
R-53-B	∆33440	Brass	None					
R-53-C	∆33440	Brass	None	CONTRACTOR IN CONTRACTOR				
R-53-D	23912	Mal. iron	None					
R-53-G	23912	Mal. iron	None	Render Die Bally 10				
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	STREET, STREET				
R-70. R-70-A	17799	Brass	None					
R-70-B	17799	Brass	None	ALCOLUMN AND ALCOLUMN				
DET DET A	36536	Mal. iron	27					
R-75, R-75-A	×36319	Cast iron	None	A second second second				
T FF & O	36536	Mal. iron		• 0.				
R-75-A-2	×36319	Cast iron	None					
	36536	Mal. iron		A CONTRACTOR OF				
R-75-A-5	×36319	Cast iron	None	The second second second				
	36536	Mal. iron						
R-75-B {	×36319	Cast iron	None					
	36536	Mal. iron						
R-75-C-5 {	×36319	Cast iron	None					
	36536	Mal iron						
R-75-E-2 {	×36319	Cast iron	None					
	36536	Mal. iron						
R-75-H {	×36319	Cast iron	None					
	36536	Mal iron						
R-76, R-76-A {	×36319	Cast iron	None					
D = 0 + 0	36536	Mal. iron						
R-76-A-2 {	×36319	Cast iron	None					
	36536	Mal. iron						
R-76-A-5 {	×36319	Cast iron	None					
D = 0 D 0	36536	Mal. iron						
R-76-B-2	×36319	Cast iron	None					
R-77. R-77-A	* 16921	Brass	32330	Brass				
R-82, R-82-A	* 16921	Brass	* 17778	Brass				
Dee D	* 16921	Brass	* 17778	Brass				
R-82-B {	=42421	Brass		Diass				
R-84, R-84-A	17799	Brass	None					
R-84-C	17799	Brass	None					
R-84-D	17799	Brass	None					
		11400	(36699	Brass				
R-86, R-86-A	* 16921	Brass	×56752	Brass				
			36699	Brass				
R-86-B	* 16921	Brass	×56752	Brass				
			36699	Brass				
R-86-C	* 16921	Brass	×56752	Brass				
			36699	Brass				
R-86-D	* 16921	Brass	×56752	Brass				
			1 100102					

* 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 OP		G HANDLES	REVERSIN	G HANDLES
Controner	Cat. No.	Material	Cat. No.	Material
R-86-E	* 16921	Brass	$\begin{cases} 36699 \\ \times 56752 \end{cases}$	Brass Brass
R-86-F	* 16921	Brass	36699	Brass
R-91, R-91-A R-98, R-98-A R-99, R-99-A	* 16921 17799 33941	Brass Brass Mal. iron	32330 None	Brass Brass
R-109, R-109-A {	60917 = 110053	Mal. iron	51529	Brass
R-109-B	=110053	Brass	51529	
R-109-C	107644 = 110053	Mal. iron Brass	51529	
R-109-D	60917	Mal. iron	51529	
R-112, R-112-A R-113, R-113-A R-114, R-114-A R-115, R-115-A R-121, R-121-A R-121-B R-121-C R-122, R-122-A	60917 60917 17799 17799 17799 17799 17799 23912 89588	Mal. iron Mal. iron Brass Brass Brass Brass Mal. iron	51529 51529 51529 None None None None	Brass Brass Brass
R-128, R-128-A	в 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

0 1 1	OPERATIN	G HANDLES	REVERSING	HANDLES
Controller	Cat. No.	Material	Cat. No.	Material
	00500	Mal iron		
	D 14417	Broce		
T-1, T-1-A	a 11479	Brass	None	
	∧ 22076	Brass		
	89588	Maliron		
T-1-G	B 14417	Brass	None	
1-1-0	$\pi 11479$	Brass		
	89588	Mal. iron		
Т-1-Н	в 14417	Brass	None	
	π 11479	Brass		
	89588	Mal. iron		
TIV	в 14417	Brass	None	
1-1-K	$\pi 11479$	Brass	INOILE	
	$\bigtriangleup 22976$	Brass		
T-1-L	π 11479	Brass	None	
T-1-P	$\pi 11479$	Brass	None	
Т-7, Т-7-А	51444	Brass	None	
	89592	Mal. iron		
T-10, T-10-A	B 17799	Brass	None	
	+22975	Brass		
T 10 I	L X33939	Brass J		
1-10-J	89092 p 17700	Broom	None	
T 11 T 11 A	B 17799 35506	Brass	None	
T 20 T 20 A	35330	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	90588	Mal iron	4	
T-34-E	} 00000	Brass	None	
T-34-F) в 14417	Didoc		
T-36, T-36-A	29123	Mal. iron	None	
T-40, T-40-A	29700	Mal. iron	None	
T-40-C	$\pi 49240$	Brass	None	
1-42, 1-42-A	29123	Mal. iron	None	
1-42-C T 49 D	29123	Mal. from	None	
1-42-D T 49 F	29120	Mal iron	None	
T 59 T.59 A	17700	Brass	None	
1-02, 1-02-A	11100	Diass	110110	
			the second se	

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	Interchangeable With	Malleable Iron	Interchangeable with		
Handle	Brass Handle	Handle	Brass Handle		
Cat. No.	Cat. No.	Cat. No.	Cat. No.		
$30365 \\ 34400$	30365 16921 34400 51459				

BRASS BUSHINGS FOR MALLEABLE IRON CONTROLLER HANDLES

* Brass Bushing Cat. No.	For Use with Mall. Iron Controller Handle Cat. No.			
85050	20265			
00902	30303			
05953	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	Cat. No.	Description
Cat. No. 3800 19751 19752 19753 19756 19754 19755 19757 3923 3801 3802 3803 3804 3805	Description Form D Mining Trolley, complete, with pole, harp, wheel, contact blocks and protection cap tion cap Wood pole, plain (specify length) Pole head, with screws Harp Wheel axle pin Harp swivel screw Washer for swivel screw Cotter for wheel axle pin Trolley wheel Trolley base, complete Bottom nut for base Pole socket Pole socket axle pin	Cat. No. 3807 19757 3808 3809 3810 3811 3812 3813 3814 3815 3816 13687 9887 3817 19760	Description Pin for pole socket hook Cotter for pole socket hook pin Chain, with rings Plunger Cross head for plunger Cap screw for cross head Stop nut for plunger Compression spring Movable cable contact block, complete Stationary, controller cable contact block complete Soft rubber bushing for No. 3816 Cap screw for No. 3816 Brass clips for cable
$16064 \\ 9689 \\ 3806$	Cotter for socket axle pin	$3818 \\ 10430 \\ 5250$	Bracket for cable

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



Cat. No.			Dese	eriptic	on						
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	 1.1									
104922	Hinge fork										
104923	Hinge pin with cotters .										
104924	Gear pin with cotters .							1			
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										2.
104932	Upper bar										

UNION STANDARD TROLLEYS FORM N

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 $1\frac{1}{2}$ 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
0010	t Steel trolley poles (give length of pole)
	Pabaie basis for Cat. No. 3001
2000	Stand on foot with terminal hinding acrows
3902	Stand of 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 voke (2 required)
3909	Pole socket, complete, with legs and pole clamp
2010	Pole socket asle pin with cotter (2 required)
2011	Pole societ alamp
0911	Delt and anti for cale along (4 required)
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 have takes Form 40-A wheel
0010	t Steel trolley noise (give length of noise)
	Behair have for Cat No 2022
26070	Stand or foot with terminal hinding screws
26080	Switzal
20080	
20081	Nite for some guide (2 required)
96099	Side and with with the (4 negatived)
20082	Margare Fod with hut (4 fequiled)
20083	Upper end yoke
20084	Lower end yoke
20085	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 $1\frac{1}{2}$ 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	f Standard fow speed) takes Form 40-A wheel
	Pable base for Cat No 303/
3053	Stand or foot with terminal hinding 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 of foot
20100	Cap screw for stand or foot
3909	Frad value
9908	

‡ 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 $1\frac{1}{2}$ 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 120400	Trolley base (double), without poles
3018	Form 6 trolley have (standard low speed) takes Form 40-A wheel
0010	f Steel trolley note
	Rebain barts for Cat No. 26101
26102	Stand or foot
26102	Switzel nin for stand or foot
26103	Bross highing for swirel bin
26105	Swipel or frame with brass hishing
26106	Bross bushing for swivel
26107	In the societ complete
26108	Upper pole socket, clamp (large)
26100	Upper pole socket clamp (small)
26110	Upper pole socket elamping holt and nut
26111	Lower pole socket complete
26111	Lower pole socket, complete
26112	Lower pole socket that and nut
20110	Lower pole socket body
20114	
20110	Nut for anning guide
96116	
20110	
20117	Cide and with with
20118	Side rod, with huts
20119	Source and the second
20098	
20120	
20121	Prese weeker for grindlich in the state of t
20122	
the second s	

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.



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



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.

GENERAL ELECTRIC COMPANY

MAGNETIC BLOWOUT SWITCHES TYPE MS-2 FORM A

Cat. No.	Description						
30421	MS-2 Form A Magnetic Blowout Switch, complete						
	REPAIR PARTS						
49357 49397 49398	BOX CASTING Cover for box casting, with arc chute cover						
$\begin{array}{r} 48312 \\ 49375 \\ 49399 \\ 49377 \end{array}$	Screw fastening cover to box casting and arc chute in position (14-24, 1 ³ / ₄ in. r.h. blued) Bushing for leads for box casting . ARC CHUTE body						
49401 49378 23261	Terminal block, lower Contact spring for No. 49377 Binding screw for Nos. 49377, 49401 and screw fastening contact spring in position (8-32, ¼ in. r.h. blued)						
$1657 \\ 49379 \\ 49380 \\ 49381$	Screw fastening Nos. 49377, 49401 to arc chutes (8-32, 3% in. f.h.) Handle lever, with copper contact Copper contact with rivets Handle with stud. collar and guard						
49382 49383 49400 49385	Handle guard						
49386 49387 10110 40388	Spring coster for fulcrum pin $(\frac{3}{2}$ in. by $\frac{3}{4}$ in. by 0.034 in.) Spring coster for fulcrum pin $(\frac{3}{4}$ in. by $\frac{3}{4}$ in. by $\frac{1}{2}$ in.)						
49388 49389 49390 49391	Insulation bushing for No. 49388						
49392 49393 35829	Screw fastening Nos. 49390, 49391 to arc chute (0-32, $\frac{1}{2}$ in. r.n.)						

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





MINE AND INDUSTRIAL HAULAGE SUPPLIES

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, ½ in. f.h.)
49461	Terminal block, right-hand
111786	Terminal block, left-hand
23691	Binding screw for terminal blocks (8-32, ½ in. r.h. blued)
58736	Screw fastening terminal blocks to box $(8-32, \frac{5}{16} \text{ in. f.h.})$
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, 3% 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	Uperating lever with handle, stud and guard
100440	
111701	Beging port for contact arm
111791	Bearing serve for contact arm and operating lever $(10-22, 141)$ in sp ⁴)
111793	Secondary operating lever with bin 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 34 in. by 0.0625 in.)
49479	Knob holding cover in position
111797	Stud for No. 49479 (14-24, 1% 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.

Image: Series Image: Series Enclose With Cover Removed

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

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 $(\frac{5}{16}$ in18, $\frac{5}{8}$ in. r.h. blued)						
58667	Bushing for leads for box casting						
58668	ARC CHUTE, complete						
58669	Front plate						
58670	Back plate						
59679	Side plate with pins, fight-hand						
58673	Bottom plate						
44077	Screw fastening bottom plate to back and side plates (10-32, 76 in f h)						
49419	Screw fastering are chute to box casting $(14-24, 24)$ 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, 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, 34 in.						
9000	I.n. Diued)						
2028	Torminal nost						
58678	Nut for terminal block stud and terminal poet (1/in -13 3 in thick her brass cham both sides)						
58679	Lock washer for No. 58678 (H in by 1 in by 0 in ph brz)						
58681	Nut for terminal post (¹ / ₆ in -13, bey brass cham, one side)						
58682	Contact lever with catch plate						
58683	Catch plate						
58684	Screw fastening No. 58683 to lever (6-32, 3% in. f.h. blued)						
58685	CONTACT FINGERS, complete, with springs and laminated connections						
58686	Contact finger, with rivets						
58087	Laminated connections with washers and rivers						
00000	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 ($\frac{3}{2}$ in. by 1 /8 in. by 0.10 in. ph. brz.)						
58695	Retaining washer for handle lever ($\frac{1}{16}$ in. by 1^{4} in. by $\frac{1}{16}$ in. thick, countersumk noie)						
58606	Compression spring for ontact and handle levers (314 turns 0 001 in the 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 ($\frac{13}{22}$ in. by $\frac{3}{4}$ in. by 0.060 in. brass)						
48135	Small washer for No. 58699 (24 in. by 5% in. by 0.060 in. brass)						
3884	Nut for No. 58699 ($\frac{1}{6}$ in. -18 , $\frac{1}{4}$ in. thick, hex. brass cham. both sides)						
4030	Spring cotter for No. 58699 ($\frac{1}{52}$ in. by % in.)						
58700	PLOWOIT COLLACT AND CALCH LEVELS						
58702	Bushing for blowout call core						
58703	Fiber sleeve for bushing (½ in, by 1 in, by 3/ 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 $(\frac{5}{16}$ in18, $\frac{5}{8}$ in. f.h.)						
56743	Screw fastening pole piece to arc chute (14-24, ½ in. f.h.)						
58706	Insulation between blowout coil and arc chute						

MAGNETIC BLOWOUT SWITCHES TYPE MS-13 15 AMPERES-600 VOLTS



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% 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 / ₄ in, r.h. blued)
119567	Short screw fastening Nos. 119565, 119566 to box (No. 4, 14 in, r.h. blued)
119568	Washer for No. 10259 ($\frac{5}{29}$ in, by $\frac{5}{29}$ in, by 0.034 in.)
119569	Nut for No. 10259 (6-32, 1/4 in, thick, # 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 / ₄ 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 ($\frac{3}{8}$ in16, $\frac{3}{16}$ in. thick, $\frac{11}{16}$ in. across flats hex. brass cham. both sides)
21392	Washer for No. 100443 ($\frac{13}{23}$ in. by $\frac{3}{4}$ in. by 0.0625 in.)
49386	Spring washer for No. 100443
110774	Spring cotter for No. 100443 ($\frac{32}{32}$ in. by $\frac{5}{8}$ 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 ($\frac{13}{64}$ in. by $\frac{13}{32}$ in. by 0.044 in.)
44072	Nut for No. 119573 (10-32, $\frac{5}{32}$ in. thick, $\frac{3}{8}$ in. across flats hex. cham. one side)

GENERAL ELECTRIC COMPANY

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, 1/2 in. r.h. brass)
111121	Positive lock washer for No. 5089 ($\frac{1}{64}$ in. by $\frac{23}{64}$ in. by $\frac{3}{64}$ in. thick)
100448	Insulation for blowout coil
22013	Screw fastening pole piece in position $(14-24, \frac{7}{8} \text{ in. f.h. brass})$
100449	Bushing for No. 22013 ($\frac{1}{4}$ in. by $\frac{1}{2}$ in. by $\frac{1}{16}$ 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
100494	Washer for No. 100422 ($\frac{3}{2}$ in by $\frac{3}{2}$ in by 0.034 in)
100404	Prost court for witch how
100455	Profit cover for switch box
100430	Back cover for switch box
26870	Screw fastening No. 100433 to box (10-24, % in. r.n. blued)
4011	Screw fastening No. 100436 to box (No. 6, % in. I.h.)
100437	Terminal block, upper
100438	Terminal block with connection pin, lower
14434	Binding screw for terminal blocks (8–32, 3/8 in. r.h. blued)
1193	Screw fastening terminal blocks to switch box $(8-32, \frac{1}{2} \text{ in. f.h.})$
100439	Handle lever with handle, stud, guard and contact
100440	Handle
100441	Handle guard
100442	Copper contact with rivers
100443	Bearing post for handle lever
17359	Nut for hearing post ($\frac{3}{6}$ in -16 $\frac{3}{2}$ in thick $\frac{11}{6}$ in across flats hex, brass cham, both sides)
50709	Washer for bearing post (21 in by 56 in by 0.034 in)
10206	Compare the bearing post (24 m. by 78 m. by 0.004 m.)
49300	Spring washer for bearing post
100303	Spring cotter for bearing post (32 in. by % in. copper plated)
100444	Spring for handle lever
100445	Pole piece with blowout coil cores
100446	Washer for blowout coil cores (% in. by 1% 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, 34 in. f.h. brass)
100449	Bushing for No. 49388 ($\frac{1}{4}$ in. by $\frac{1}{2}$ in. by $\frac{7}{16}$ in. long fiber)

MAGNETIC BLOWOUT SWITCHES TYPE MS-40, FORMS A AND F





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.

GENERAL ELECTRIC COMPANY

MAGNETIC BLOWOUT SWITCHES

TYPE MS-40, FORMS A AND F

COMBINED SWITCH AND FUSE CUTOUT

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

REPAIR PARTS

49370 49371 49372 49373	Spring catch, with tip and rivets
49374	Hinge pin for cover (4 in, by 2 ⁵ / ₂ in.)
3839	Spring cotter for No. 49374 $(\frac{5}{54}$ in. by $\frac{3}{8}$ in.)
49375	Bushing for leads for box casting
49376	ARC CHUTE BODY
25726	Long screw fastening No. 49376 to box casting (10–24, 1 /4 in. f.h. brass)
1397	Short screw lastening No. 49376 to box casting (10-24, 94 in. I.A. brass)
49377	Contact spring
23261	Binding screw for terminal block and screw fastening contact spring to block (8-32, 1/4 in.
10101	r.h. blued)
1657	Screw fastening No. 49377 to arc chute (8-32, 3% 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 coll, complete, for the MS-40-F switch only
49000	Spring washer for handle lever
49387	Washer for fullorium pin $(\frac{13}{2} \text{ in } \text{ by } 3/\text{ in } \text{ by } 0.034 \text{ in })$
10110	Spring cotter for fulcrum pin ($\frac{3}{2}$ in, by $\frac{1}{2}$ in, b)
49388	Screw fastening pole piece in position (14-24, ³ / ₄ 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 $(6-32, \frac{1}{2})$ in r.f.)
49393	Nut for No. 49392 (6–32, sq. brass)
35829	Washer for No. 49392 ($\frac{1}{32}$ in. by $\frac{1}{16}$ in. by 0.030 in. brass)
49394	Fuse clip with terminal plate, upper
25	Screw fastening fuse cline in position (10-32 1/ in f.h.)
10195	Connection screw for fuse clips $(10-32, \frac{1}{2}, \text{in, r.h. brass})$
33795	Washer for No. 10195 (11 in, by 13 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.	$\left\{ \begin{array}{c} 42398\\ 29177\\ 37800\\ 37801 \end{array} \right.$	$5 \\ 10 \\ 15 \\ 20$
MS-40-F	35 amp.	$\left\{\begin{array}{c}37802\\37803\end{array}\right.$	30 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.)

1	Cat. No.	. No. Dimensions of Base		acity of Enclose	d Cutout	
	119178 119179 119180	6½ in. by 11½ in. 7 in. by 13½ in. 8¾ in. by 14 in.	Two	200 amps. 400 amps. 400 amps.		
		Cat. No. 35125				
Cat. No.		Cat. No. 35125 Description				

GENERAL ELECTRIC COMPANY

FUSE BOXES AND FUSES FOR LOCOMOTIVES FUSES



FUSES FOR 600 VOLT CUTOUT CAT. NO. 21474

Length over terminals, $7\frac{7}{8}$ in. Length over ferrules, $5\frac{7}{8}$ in.

Diameter of tube, $1\frac{1}{4}$ in. Width of terminals, $\frac{3}{4}$ in. Thickness of terminals, $\frac{1}{8}$ 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^{11}_{16} in. Diameter of tube, 1^{3}_{4} in.

Length over ferrules, $6\frac{1}{16}$ in. Width of terminals, $1\frac{1}{8}$ 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, $11\frac{3}{4}$ in. Diameter of tube, $2\frac{1}{2}$ in.

Length over ferrules, 75% in. Width of terminals, 15% in. Thickness of terminals, 14 in.

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

SNAP SWITCHES



Cat. No. 107629

Cat. No.	Description			
107628	Combined switch and cutout, 10 amp., 600 volt, moulded compound, non-			
105000	indicating, without fuse	50		
107629	Combined switch and cutout, 20 amp., 250 volt, moulded compound, non-	50		
	indicating, without luse	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

DIMENSIONS

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 $\frac{1}{4}$ 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.



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

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
$\begin{array}{c} 105660 \\ 105661 \\ 105662 \\ 105663 \\ 105664 \end{array}$	OVERLOAD AND BLOWOUT COIL, wound complete, with terminals, for No. 104787Overload and blowout coil, wound, complete with terminals, for No. 104788Overload and blowout coil, wound, complete with terminals, for No. 104789Overload and blowout coil, complete, for No. 104790Overload and blowout coil, complete, for No. 104791Overload and blowout coil, complete, for No. 104791
	ARC CHUTE
105669	ARC CHUTE, complete
	TERMINAL BLOCKS
$\begin{array}{c} 105633\\ 105634\\ 105635\\ 105635\\ 105636\end{array}$	TERMINAL BLOCK, right-hand, with stud and bushing, for Nos. 104787, 104788, 104789, 104790 Terminal block, right-hand, with stud and bushing, for No. 104791 Terminal block, left-hand, with copper contact and bushing, for Nos. 104787, 104788, 104789, 104790 Terminal block, left-hand, with copper contact and bushing, for Nos. 104791
	CONTACTS
$\begin{array}{c} 105628 \\ 105629 \\ 105639 \end{array}$	Laminated contact brush
	LEVERS
$\begin{array}{c} 105625 \\ 105647 \\ 105650 \end{array}$	Contact lever with catch plate
	SPRINGS
$\begin{array}{c} 105627\\ 105643\\ 105649\\ 105652\\ 105656\end{array}$	Tension spring for contact lever
	CALIBRATING SCREW
$105644 \\ 88038$	Calibrating screw (10-24, 2½ in. brass oxidized finish)

TYPE MR CIRCUIT BREAKERS



FRONT CONNECTED, 650 VOLTS

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

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

Type MR Circuit Breaker

REPAIR PARTS

WOODEN BOXES

Cat. No.	Description ,
29303 29302	Wooden box, complete, for Cat. Nos. 23854, 23855
	BLOWOUT SPOOLS
32798 32799 32800 32801	Blowout spool, wound, complete, with connection block, for Cat. No. 23853 Blowout spool, wound, complete, with connection block, for Cat. No. 23854 Blowout spool, wound, complete, with connection block, for Cat. No. 23855 Blowout spool, wound, complete, with connection block, for Cat. No. 23856
	CHUTES
32819 32820 32821	Fiber chute, complete, for Cat. No. 23853Fiber chute, complete, for Cat. Nos. 23854, 23855Fiber chute, complete, for Cat. No. 23856
	CONTACT BASES
$\begin{array}{c} 32839\\ 32840\\ 32841\\ 32842\\ 32843\\ 32843\\ 32843\\ 32853\\ 32854\\ 32854\\ 32855\\ \end{array}$	Contact base, complete, with finger and spring, for Cat. No. 23853 (right-hand) Contact base, complete, with finger and spring, for Cat. Nos. 23854, 23855 (right-hand) Contact base, complete, with finger and spring, for Cat. No. 23856 (right-hand) Contact base, complete, with finger and spring, for Cat. No. 23853 (left-hand) Contact base, complete, with finger and spring, for Cat. Nos. 23854, 23855 (left-hand) Contact base, complete, with finger and spring, for Cat. Nos. 23856 (left-hand) Contact base, complete, with finger and spring, for Cat. Nos. 23856 (left-hand) Contact finger, complete, with spring and reinforcing strips, for Cat. Nos. 23853 Double contact finger, complete, with spring and reinforcing strips, for Cat. Nos. 23854, 238 Double contact finger, complete, with spring and reinforcing strips, for Cat. Nos. 23854, 2385
	ARCING TIPS
32858 32859 32860	Arcing tip, with stud and pin fastening Cat. Nos. 32839, 32842 in position Arcing tip, with stud fastening Cat. Nos. 32840, 32843 in position Arcing tip, with stud fastening Cat. Nos. 32841, 32844 in position

MINE AND INDUSTRIAL HAULAGE SUPPLIES

TYPE MR CIRCUIT BREAKERS

REPAIR PARTS

CONTACT SUPPORTS

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

MAIN AND TENSION SPRINGS

32896	Main spring, for Cat. No. 23853 (1½ turns, 0.102 in. ph. brz. wire)
22001	Main spring for Cat. No. 23856, 116 turns 0.182 in ph brz wire)
22020	Tension spring, for Car, handle and contact support for Cat. No. 23853 (111/2 turns 0.045 in ph
52699	brz. wire)
32900	Tension spring, for handle and contact support, for Cat. Nos. 23854, 23855 (11 ¹ / ₂ 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	•		2.		•	•	•	•
32912	Locking lever, for Cat. No. 23856	•							

CALIBRATING SPRINGS

32933	Calibrating spring, with holder (161/2 turns, 0.045 in. oxidized steel wire, 1/2 in. outside diam.,
32934	closed), for Cat. No. 23853
	closed), for Cat. Nos. 23854, 23855
32935	Calibrating spring, with holder (16 turns, 0.089 in. oxidized steel wire, 32 in. outside diam., closed), for Cat. No. 23856

CALIBRATING RODS

32936
32937
32938

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

.

TYPE MQ CIRCUIT BREAKERS



0 . N	Ampere	CALIBRATION		0. 1. 11. 11.	Superseded	
Cat. No.	Capacity	Min.	Max.	Style Handle	by	
* 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.

MQ Circuit Breaker

REPAIR PARTS

Cat. No.	Description
$3886 \\ 11067$	Arcing tip, with studs, for Nos. 14395, 14396 . </td
$11097 \\ 32778 \\ 32432$	Blowout spool, wound, complete, with connection block, for No. 14395 Blowout spool, wound, complete, with connection block, for No. 14396
3881 11066 11098 32781 3872 3997 11099 32782 3967 11090 32784	Conducting strip, for Nos. 14395, 14396 Conducting strip, for No. 14390 Connection block, for Nos. 11097, 32778 Connection block, for Nos. 32432 Contact base, complete, with finger and conducting strip, for Nos. 14395, 14396 (left-hand) Contact base, complete, with finger and conducting strip, for Nos. 14395, 14396 (right-hand) Contact base, complete, with finger and conducting strip, for Nos. 14395, 14396 (right-hand) Contact base, complete, with finger and conducting strip, for Nos. 14395, 14396 (right-hand) Contact base, complete, with finger and conducting strip, for Nos. 14390 Contact segment, for Nos. 14396, 14396 Contact segment, for Nos. 14390 Calibrating spring, with holder (22 turns, 0.073 in. steel wire, oxidized finish) for Nos. 14395, 14396, 14390
$3880 \\ 11065$	Double contact finger, complete, with spring and reinforcing strips, for Nos. 14395, 14396 . Double contact finger, complete, with spring and reinforcing strips, for No. 14390
$3858 \\ 3979 \\ 3968 \\ 11092$	Fiber chute, complete, for Nos. 14395, 14396
$\begin{array}{r} 3971 \\ 11078 \\ 11080 \\ 14516 \end{array}$	Handle, complete, with fulcrum, contact head and contact segment, for Nos. 14395, 14396 Handle, complete, with fulcrum, contact head and contact segment, for No. 14390 Handle, with stud and ferrule, for No. 14390
3969 11093	Spring for handle, for Nos. 14395, 14396 (2¼ turns, 0.028 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.		CALIBI	RATION	14		
Front Connected on ½ Inch Base	Ampere Capacity	Min.	Max.	Style of Handle	Superseded by	
23207	500	100	800	Locking	MR-13	

REPAIR PARTS

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

GENERAL ELECTRIC COMPANY

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, 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

Cat. N



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.

Form E Mine Headlight

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.



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 feeder: or the bonding of each joint should have a cross section of half that value.

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 Poil		RATIO OF RE	SISTANCE OF STEEL	TO RESISTANCE OF	COPPER	
in Lb. per Yard	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

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.



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.

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.



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 studes 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.

	Diam		LENGTHS BETWEEN TERMINAL CENTERS AND LIST PRICES PER 100 BONDS														
Conductor	Terminal in In.	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	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				
00	5/8 3/	45.00	44.00	43.30	49.80	56.90	53.00	54.60	56.30	58.00	59.70 65.20	61.40	63.10 68.60				
000	3/4 7/0	54.20 56.20	56.60 58.60	59.00	61.40 63.40	63.80 65.80	66.20 68.20	68.60 70.60	71.10 73.10	73.60	76.10	78.60	81.10 83.10				
0000	3/4 7/8	56.50 59.00	59.00 61.50	61.50 64.00		66.50 69.00	69.50 72.00	72.50 75.00	75.60 78.10	78.70 81.20	81.80 84.30	84.90 87.40	88.00 90.50				

LIST PRICES OF FORMS A, B AND F 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

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



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

LIST PRICES OF FORMS D AND E BONDS

onductor				1	LENGTHS B	ETWEEN T	ERMINAL C	ENTERS A	ND LIST PR	ICES PER]	100 bonds			
Conducto	Diameter Trimmed in In.	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 00 00 000 000 0000 0000	1/2/8/8/4/4/8/4/8	\$62.10 64.60 68.50 74.00 88.90 90.90 98.50 101.00	\$65.10 67.60 72.10 77.60 93.50 95.50 103.90 106.40	\$68.10 70.60 75.70 81.20 98.10 100.10 109.30 111.80	\$71.10 73.60 79.30 84.80 102.70 104.70 114.70 117.20	\$74.10 76.60 82.90 88.40 107.30 109.30 120.10 122.60	\$77.10 79.60 86.50 92.00 111.90 113.90 125.50 128.00	\$80.10 82.60 90.10 95.60 116.50 118.50 130.90 133.40	\$83.10 85.60 93.70 99.20 121.10 123.10 136.30 138.80	\$86.10 88.60 97.30 102.80 125.70 127.70 141.70 144.20	\$89.10 91.60 101.00 106.50 130.30 132.30 147.10 149.60	\$92.10 94.60 104.60 110.10 134.90 136.90 152.50 155.00	\$95.10 97.60 108.20 113.70 139.50 141.50 157.90 160.40	1.50 1.50 1.80 2.30 2.30 2.70 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 $1\frac{1}{2}$ 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 $1\frac{1}{2}$ inches longer than distance between bond holes. Bonds are furnished in any length or section and either straight or formed ready for installation.





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 0 00 000 000 000 0000 0000	1/27/85/55/85/4/4/7/85/4/4/7/85/4/4/7/85/4/4/7/85/4/4/7/85/4/4/7/85/4/4/7/85/4/4/8	35.55 36.80 39.65 42.40 51.35 52.35 57.35 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 PF Dian	NCES PER 100 T neter of Stud in	ERMINALS Inches	
	1/2	5/8	8/4	7⁄8	1
0 and 00	\$20.00	\$25.00	\$30.00 37.50	\$35.00 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.

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		-											6						13
00																		1001	15
000					- 1					· ·						•	•		$\frac{32}{17}$
0000	•	•							•	•	•	 •	•	•		•	•	•	32
0000	•	•			•	•	•				•			•		•	•	•	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 $\frac{1}{2}$ in. in diameter, and spaced $\frac{1}{4}$ 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 $\frac{1}{16}$ in. long, exclusive of the conical end, the straight wall of the hole should be $\frac{1}{22}$ 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 $\frac{1}{2}$ 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.



GENERAL ELECTRIC COMPANY

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 crossbonding. 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
$\begin{array}{c} 17225 \\ 17224 \\ 17315 \\ 17553 \end{array}$	3/6 19 32 34 3/4 3/4	$ \begin{array}{r} \frac{1}{39} \\ \frac{9}{9} \\ \frac{1}{23} \\ \frac{23}{32} \\ \frac{23}{32} \\ \frac{23}{32} \end{array} $	$\begin{array}{c} 4\\0\\00\\000\\0000\end{array}$	$20 \\ 40 \\ 90 \\ 70$

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.	DIMEN	SIONS			
Round Feed Sleeve	Hex. Feed Sleeve	Length of Handle in In.	Length of Sleeve in In.	Feed in In.	Weight in Lb.	Socket Accommodates
$\begin{array}{c} 103273\\ 103274\\ 103275\\ 103276\\ 103277\end{array}$	103278 103279 103280	$10 \\ 12 \\ 15 \\ 17 \\ 20$	$7\frac{3}{4}\\8\frac{1}{2}\\9\frac{1}{2}\\10\frac{1}{4}\\11\frac{1}{4}$	$2 \\ 2 \frac{1}{8} \\ 3 \\ 3 \frac{3}{8} \\ 3 \frac{3}{4} $	5793/4 12153/4	No. 1 sq. taper shank drill $\frac{1}{8}$ in. to $1\frac{1}{2}$ in. dia. No. 1 sq. taper shank drill $\frac{1}{8}$ in. to $1\frac{1}{2}$ in. dia. No. 1 sq. taper shank drill $\frac{1}{8}$ in. to $1\frac{1}{2}$ in. dia. No. 2 sq. taper shank drill $\frac{1}{8}$ in. to 2 in. dia. No. 2 sq. taper shank drill $\frac{1}{8}$ in. to 2 in. dia.

HAND RATCHET DRILLS WITH ROUND TAPER SOCKET

CAT. NO.	Length	Length	Feed	Weight	TAKES MOI TAPER SH	RSE ROUND ANK DRILL	Socket Accommodates
Feed Sleeve	Handle in In.	Sleeve in In.	in In.	in Lb.	Min. in In.	Max. in In.	
103281 103282	10 12	73/4 81/2	$1\frac{3}{8}$ $1\frac{1}{2}$	5 6½	$\frac{1}{16}$ $\frac{39}{64}$	19 32 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	$\frac{1}{16}$ in. to $\frac{19}{32}$ 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 $1\frac{1}{2}$ in. long, tapered $\frac{5}{8}$ in. to $\frac{3}{8}$ in.

Cat. No.	Diameter in In.	Length Overall in In.	Length Twist in In.
$\begin{array}{c} 126213\\ 103310\\ 103312\\ 103314\\ 103317\\ 103318\\ 103322 \end{array}$	11 32 1/2 9 16 5/8 23 32 32 3/4 7/8 -	$5 \\ 6 \frac{1}{2} \\ 7 \frac{1}{2} $	$2\frac{3}{4}$ $4\frac{3}{6}$ $4\frac{3}{6}$ $4\frac{3}{6}$ $4\frac{3}{6}$ $4\frac{3}{6}$ $4\frac{3}{6}$ $5\frac{1}{4}$

SQUARE TAPER SHANK DRILLS (No. 2 SHANK)

FOR USE WITH HAND RATCHET DRILLS

Shank $1\frac{3}{4}$ in. long, tapered $\frac{3}{4}$ in. to $\frac{1}{2}$ in.

Cat. No.	Diameter in In.	Length Overall in In.	Length Twist in In.
$\begin{array}{c} 126214\\ 103329\\ 103331\\ 10333\\ 103336\\ 103336\\ 103337\\ 103341 \end{array}$	11 32 1/2 9 16 5/5 23 32 3/4 7/8	$56 \frac{1}{2}6 \frac{1}{2}6 \frac{1}{2}6 \frac{1}{2}6 \frac{1}{2}7 \frac{1}{2}$	$2\frac{1}{2}$ 4 4 4 4 4 4 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.
$\begin{array}{c} 126215\\ 103348\\ 103350\\ 103352\\ 103355\\ 103355\\ 103356\\ 103360\\ \end{array}$	$ \frac{1}{32} \frac{1}{2} \frac{9}{16} \frac{9}{16} \frac{1}{5} \frac{1}{5} \frac{2}{32} \frac{3}{22} \frac{3}{2} \frac{3}{4} \frac{7}{8} $	$ \begin{array}{r} 6\frac{1}{2} \\ 7\frac{3}{4} \\ 8\frac{1}{4} \\ 8\frac{3}{4} \\ 9\frac{1}{2} \\ 9\frac{3}{4} \\ 10\frac{1}{2} \end{array} $	$ \begin{array}{r} 3 \frac{3}{8} \\ 4 \frac{1}{2} \\ 5 \\ 5 1 5 \\ 5 1 8 \\ 5 7 8 \\ 6 1 8 \\ 6 7 8 \\ 7 7 7 7 7 $

RAIL BONDS FLAT DRILLS WITH STANDARD OR MORSE SQUARE TAPER SHANK

No. 1



	The second s
CAT. NO.	
No. 1 Shank	Diameter in In.
103292 103293 103294 103295	1/2 5/8 3/4 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 $\frac{1}{2}$ 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





Cat. No.	Description	Cat. No.	Description
$\begin{array}{c} 103388\\ 103389\\ 103390\\ 103391\\ 103392\\ 103393\\ 103394\\ 103395\\ 103396\\ 103396\\ 103397\\ 103398\\ 103399\\ 103399\\ 103400\\ 103401\\ \end{array}$	Ratchet wheel	$\begin{array}{c} 103402\\ 103403\\ 103404\\ 103405\\ 103405\\ 103406\\ 103407\\ 103408\\ 103409\\ 103410\\ 103411\\ 103412\\ 103413\\ 103414\\ \end{array}$	Bottom frame \dots

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
$\begin{array}{r} 103417\\ \cdot 103418\\ 103419\\ 103420\\ 103421\\ 103422\\ 103423\\ 103423\\ 103424\\ 103425 \end{array}$	Ratchet wheel	$\begin{array}{c} 103426\\ 103427\\ 103428\\ 103429\\ 103430\\ 103431\\ 103432\\ 103432\\ 103433 \end{array}$	Vertical shaft

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.
$\begin{array}{c} 126218 \\ 103434 \\ 103436 \\ 103438 \end{array}$	$ \begin{array}{r} & 11 \\ & 32 \\ & 1/2 \\ & 9 \\ & 16 \\ & 5/8 \\ \end{array} $	$103441 \\ 103442 \\ 103446$	23 34 7/8

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 $\frac{1}{2}$ 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 1/2 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 103474	Milling cutter with handle .	1/2 1/2 1/4



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
$\frac{103475}{103476}$	Dulling punch	$\begin{array}{ccc} 3 & \text{oz.} \\ 2\frac{1}{2} & 1b. \end{array}$

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	$2\frac{1}{8}$	30
61040		7/8	$3\frac{3}{8}$	51

PARTS OF COMPRESSORS

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

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 stude 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.



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 $3\frac{1}{4}$ in.; height from ear seat to top of flange 2 in.

Cat. No.	Description	n	Approx. Weigh per 100
35687 35688	Form H mine roof suspension, japanned . Form H mine roof suspension, sherardized		$\begin{array}{c} 250\\ 250\end{array}$

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, $\frac{1}{8}$ 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 $1\frac{1}{4}$ in.; diameter of shell at top 3 in.; height of boss above shell $\frac{3}{4}$ in.

Cat. No.	Description	Approx. Weight per 100
$114735 \\ . 64561$	Form H3 mining suspension, japanned .	$\begin{array}{c} 150\\ 150\end{array}$

TROLLEY WIRE SUSPENSIONS FORM H MINE ROOF SUSPENSION WITH 4 IN. EXPANSION BOLT

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 $1\frac{1}{4}$ in. in diameter and at least 5 in. deep.

Cat. No.	Description	Approx. Weight per 100
68942	Form H mine roof suspension with expansion	250
68941	Form H mine roof suspension with expansion	300
	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 $1\frac{3}{8}$ 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



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 $1\frac{1}{2}$ 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,	975
34136	Form H mine roof suspension with lag screw, sherardized	275

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 $1\frac{1}{4}$ in. in diameter and at least 5 in. deep.

Cat. No.	Description	Approx. Weight per 100		
116063	Form H3 mine roof suspension with expansion	950		
116062	Form H3 mine roof suspension with expansion	250		
110002	bolt, sherardized	250		

Mine Roof Suspension

G.E.CO.

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.

Cat. No.	Description	Approx. Weight per 100
116067	Form H3 mine roof suspension with roof	270
116066	Form H3 mine roof suspension with roof wedges, sherardized .	370

Mine Roof Suspension

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.

Cat. No.	Description	Approx. Weight per 100
116069	Form H3 mine roof suspension with lag	175
116068	Form H3 mine roof suspension with lag screw, sherardized	175



Mine Roof Suspension

TROLLEY WIRE SUSPENSIONS FORM H MINE SUSPENSION AND COMBINATION CLAMP



Combination Mine Suspension-Form H





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 $1\frac{1}{4}$ in. standard pipe fastened vertically in the mine roof or a $1\frac{1}{2}$ 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 $2\frac{1}{16}$ 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 314 in. in diameter. Height of combination clamp is $4\frac{1}{4}$ inches.

Cat. No.	Description				
$\begin{array}{c} 125330\\ 125331\\ 125334\\ 125335\\ 125336\\ 125336\\ 125337\\ 125338\\ 125339\\ 125340\\ 125340\\ 125341\\ 119828\\ 119828\\ 119820\\ \end{array}$	Form H combination mine suspension, sherardized . Form H combination mine suspension, japanned . Form H combination mine suspension with lag screw, sherardized . Form H combination mine suspension with roof wedges, sherardized . Form H combination mine suspension with roof wedges, sherardized . Form H combination mine suspension with roof wedges, japanned . Form H combination mine suspension with 4 in. expansion bolts, sherardized . Form H combination mine suspension with 4 in. expansion bolts, sherardized . Form H combination mine suspension with 6 in. expansion bolts, sherardized . Form H combination mine suspension with 6 in. expansion bolts, japanned . Form H combination mine suspension with 6 in. expansion bolts, japanned .	$\begin{array}{r} 300\\ 300\\ 325\\ 325\\ 420\\ 420\\ 400\\ 400\\ 410\\ 410\\ 225\\ 225\\ 325\\ 325\\ 325\\ 325\\ 325\\ 325$			

EXTENSION SUPPORT

These parts are useful in making up trolley supports of varying lengths by using $\frac{3}{4}$ 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 $\frac{5}{8}$ in. square head stud for screwing on the suspension.

Cat. No.	tt. No. Description			
$\begin{array}{c} 125328 \\ 125329 \\ 125332 \\ 125333 \\ 125333 \end{array}$	Expansion case ³ / ₄ in. pipe, sherardized Expansion case ³ / ₄ in. pipe, japanned . Pipe clamp ³ / ₄ in. pipe, sherardized . Pipe clamp ³ / ₄ in. pipe, japanned .	$250 \\ 250 \\ 200 \\ 200$		





MINE AND INDUSTRIAL HAULAGE SUPPLIES

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_{16}^{5} 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_{16}^{5} in.

t. No.	Description	Approx. Weight per 100
7681	Form D mine roof suspension	510
7995	Form D mine roof suspen-	510
1000	sion with roof wedges,	
	sherardized	510
8938	Form D mine root suspen-	
	iananned	400
8937	Form D mine roof suspen-	100
	sion with expansion bolt,	
	sherardized	490
.6387	Form D mine roof suspen-	
0.004	sion body only, japanned	285
9704	Form D mine roof suspen-	00.
	sion 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.

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.

-							-
	Cat. No.	Fig. No.	Length in Inches	Finish	Suspensions Used with	Approx. Weight per 100	1
	116079	1	4	Japanned	Forms H and H3	100	旧
	66334	1	4	Sherardized	Forms H and H3	100	75
	116081	2	4	Japanned	Form D	105	1 Second
	68397	2	4	Sherardized	Form D	105	
	116082	3	4	Tapanned	Forms H and H3	105	
	100409	3	4	Sherardized	Forms H and H3	105	1000
	116080	1	6	Tapanned	Forms H and H3	110	1000
-10	66336	1	6	Sherardized	Forms H and H3	110	G.E.C.
G.E.CO	116071	2	6	Tapanned	Form D	115	
	116070	2	6	Sherardized	Form D	115	0
	116083	- 3	6	Iapanned	Forms H and H3	115	
-	100410	3	6	Sherardized	Forms H and H3	115	
Fig. 1	100110			Shorarabea	i ormo ir und iro	110	Fig. 2
Expansion							Expansi



Mining Suspension With Expansion Bolt

GENERAL ELECTRIC COMPANY

TROLLEY WIRE 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 $1\frac{3}{8}$ 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
$114862 \\ 35690 \\ 114683 \\ 35691 \\ 35689 \\ 41069$	Upper roof wedge, japanned Upper roof wedge, sherardized Lower roof wedge, japanned Lower roof wedge, sherardized Roof bolt (% in11, 5 in. special) sherardized Roof bolt (% in11, 5 in. special) with nut, sherardized	$45 \\ 45 \\ 35 \\ 35 \\ 40 \\ 45$



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
$34137 \\ 36310$	Wooden plug (3 in. x $1\frac{1}{2}$ in.)	• •	•	•	•	•	•	$\begin{array}{c} 10\\ 25 \end{array}$



and H3 Suspensions

FORM H 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.

Ceiling Suspension

Distance between centers of screw slots 41/4 in.; thickness of slotted ears 3/8 in.; diameter of shell 31/4 in.

Cat. No.	Description					
$\begin{array}{c} 19044\\ 27370\end{array}$	Form H ceiling suspension, japanned Form H ceiling suspension, sherardized 	$\begin{array}{c} 230\\ 230\end{array}$				

FORM H3 CEILING SUSPENSION



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 $\frac{1}{4}$ 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 $1\frac{1}{4}$ in.; $\frac{1}{2}$ in. screws are required for the supporting arms.

Cat. No.	Description				Approx. Weight per 100
$\begin{array}{c} 116061 \\ 64560 \\ 116078 \\ 105705 \end{array}$	Form H3 ceiling suspension, with arms at bottom, japanned Form H3 ceiling suspension with arms at bottom, sherardized Form H3 ceiling suspension with arms at top, japanned Form H3 ceiling suspension with arms at top, sherardized	• • •	• • • •	 	$150 \\ 150 \\ 150 \\ 150 \\ 150 $

MINE AND INDUSTRIAL HAULAGE SUPPLIES

TROLLEY WIRE SUSPENSIONS FORM H CEILING SUSPENSION



TROLLEY WIRE SUSPENSIONS FORM D CEILING SUSPENSION (CAP AND CONE) Height above ear seat $2\frac{7}{16}$ in.; diameter of screw holes 9 in. Approx. Weight per 100 Cat. No. Description 17570 Form D ceiling suspension, japanned 350 G.E.CO. Form D ceiling suspension, sherardized Form D ceiling body only, japanned Form D ceiling body only, sherardized 37991 350 15819 250 250 39703 **Ceiling Suspension**

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% in.; diameter of screw holes % in.

Cat. No.	Description					per 100
16396	Form G ceiling suspension, japanned .					225
25998	Form G ceiling suspension, sherardized	•	•	•	. 1	225
17524	Body only for Cat. No. 16396	•				10
20991	Con only for Cat. No. 25998	1			•	60
25999	Cap only for Cat. No. 25998	:		:		60

Approx.

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.

Cat. No.DescriptionApprox.
Weight
per 10038688Form G socket ceiling suspension, japanned..38690Form G socket ceiling suspension, sherardized..38689Body only for Cat. No. 38688...38691Body only for Cat. No. 38690...

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.



Socket Ceiling Suspension





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Ceiling Suspension

GENERAL ELECTRIC COMPANY



The Form H bracket suspension consists of the standard $3\frac{1}{4}$ 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 $5\frac{1}{8}$ in.; for $1\frac{1}{2}$ in. pipe the height is $4\frac{7}{8}$ in.; diameter of shell $3\frac{1}{4}$ in. All metal parts including stud have sherardized finish.

Cat. No.	Description		Approx. Weight per 100
25992 25993 25994 25996 25997	Bracket suspension complete, for 2 in. pipe Bracket suspension complete, for $1\frac{1}{2}$ in. pipe Bracket suspension, without clamp	• • • • •	$540 \\ 530 \\ 275 \\ 265 \\ 255$

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 $3\frac{1}{2}$ in.; for $1\frac{1}{2}$ in. pipe the height is $3\frac{1}{4}$ in. All metal parts including studs have sherardized finish.

Cat. No.	Description			Approx. Weight per 100
38005 38008 39706 39707	Bracket suspension, for 2 in. pipe Bracket suspension, for 1½ in. pipe Bracket body, for 2 in. pipe Bracket body, for 1½ in. pipe .	• • • •		400 375 305 280

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.

GENERAL ELECTRIC COMPANY

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 $6\frac{1}{2}$ in.; for $1\frac{1}{2}$ in. pipe the height is $6\frac{1}{4}$ in. All metal parts including stud have sherardized finish.

Cat. No.	Description									
$\begin{array}{c} 25989 \\ 25990 \\ 25991 \\ 25995 \\ 25996 \\ 25997 \end{array}$	Bracket suspension, for 2 in. pipe	$\begin{array}{cccc} & 480 \\ & 460 \\ & 75 \\ & 40 \\ & 275 \\ & 255 \end{array}$								

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 stude of corresponding diameter.

The bodies are listed separately in the tables of complete suspensions.

All studs and lock washers have sherardized finish.



STRAIGHT LINE

Overall length $6\frac{1}{2}$ in.; height above ear seat $2\frac{1}{8}$ in.; arm yokes accommodate $\frac{3}{8}$ in. span wire. Stud and body have sherardized finish.



Length between centers of eyes 9 $\frac{1}{4}$ in.; diameter of pull off eye $\frac{1}{16}$ in.; thickness of arms at eyes $\frac{1}{2}$ in. Stud and body have sherardized finish.

Cat. No.	and the second s					Desci	riptior	1							Approx. Weight per 100
37986 39702	Double curve suspension Double curve body	•	•	•	· · ·	• •	•	•	•	 :	:	••	•	•	295 200

G.E.CO.

Strain Suspension

STRAIN

Overall length $7\frac{1}{2}$ in.; diameter of pull off eyes $\frac{7}{16}$ in.; arm yokes accommodate $\frac{3}{8}$ in. span wire. Stud and body have sherardized finish.

Cat. No.	Approx. Weight per 100	
37997 39705	Strain suspension	. 245 . 150

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 $6\frac{1}{2}$ 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



Overall length 13¼ in.; distance between centers of studs 6½ in.; arm yokes accommodate ¾ in. span wire. Studs and body have sherardized finish.

Cat. No.		Sin	Descr	iption						Approx. Weight per 100
38010 39708	Straight line suspension Straight line body .		•			•	•	•	•	470 280

SINGLE CURVE



Single Curve Suspension

Length between center line of outer stud and center of pull off eye $11\frac{1}{8}$ in.; distance between centers of studs $6\frac{1}{2}$ in.; diameter of pull off eye $\frac{9}{16}$ in.; thickness of pull off arm at eye $\frac{1}{2}$ in. Studs and body have sherardized finish.

Cat. No.	Description	Approx. Weight per 100
$38014 \\ 39709$.	Single curve suspension	500 310



Length between centers of pull off eyes 1534 in.; distance between centers of studs 61/2 in.; diameter of pull off eyes 16 in.; thickness of pull off arms at eye 1/2 in. Studs and body have sherardized finish.

Cat. No.				Descr	iption						Approx. Weight per 100
39927 39710	Double curve suspension Double curve body	•	•			•	•	•	•	•	565 375

FORM H SUSPENSIONS FOR SURFACE CONSTRUCTION (ROUND TOP)

STRAIGHT LINE, FORM H

These are made in two sizes $3\frac{1}{4}$ in. and $3\frac{1}{2}$ in. in diameter. The $3\frac{1}{2}$ 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.

Overall length 61/2 in.; arm yokes



Straight Line Suspension-Form H

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 5% 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 61/2 in., fits 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



Length between center line of stud and center of pull off eye $4\frac{1}{2}$ in.; height above center of pull off eye $3\frac{1}{2}$ in.; diameter of pull off eye $\frac{1}{16}$ in.; thickness of pull off arm at eye $\frac{1}{2}$ in.; diameter of shell $3\frac{1}{2}$ in. All metal parts including stud have sherardized finish.



Single Curve Suspension

Suspension Body

Cat. No.	Description			3			Approx. Weight per 100
$68953 \\ 68961 \\ 128424$	Single curve suspension, 3½ in. shell Single curve suspension body, for Cat. No. 68953 Removable arm, for Cat. No. 68953		1		 • • •	•	$310 \\ 255 \\ 55$

GENERAL ELECTRIC COMPANY

TROLLEY WIRE SUSPENSIONS DOUBLE CURVE

Length between centers of pull off eyes 9 in.; height above center of pull off eyes $3\frac{1}{2}$ in.; diameter of shell $3\frac{1}{2}$ in.; diameter of pull off eyes $\frac{1}{16}$ in.; thickness of pull off arms at eyes $\frac{1}{2}$ in. All metal parts including stud have sherardized finish.

Double Curve Suspension

S. BERG

Suspension Body

Cat. No.	Description	Approx. Weight per 100
68957 66330 128424	Double curve suspension, 3½ in. shell	$395 \\ 285 \\ 55$

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 $1\frac{1}{4}$ 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 15% 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.

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

G.F.D.D

Cat. No. 17341

Cat. No.	Description	Approx. Weight per 100
$17207 \\ 113980 \\ 17341$	Insulated bolt, standard	90 90 95

STRAIGHT LINE



Straight Line Suspension

Overall length across arms 6 in.; height above ear seat 31/8 in.; arm yokes accommodate 3/8 in. span wire. All metal parts including studs have sherardized finish.

Cat. No.	· Description	Approx. Weight per 100
$\begin{array}{c} 25976 \\ 25977 \\ 25978 \end{array}$	Straight line suspension . </th <th>$245 \\ 120 \\ 35$</th>	$245 \\ 120 \\ 35$

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 $3\frac{1}{5}$ in.; diameter of pull off eye $\frac{1}{16}$ in.; thickness of pull off arm at eye $\frac{1}{2}$ in. All metal parts including stud have standard sherardized finish.

Cat. No.	Description	Approx. Weight per 100
25981 25982 25978	Single curve suspension	$270 \\ 145 \\ 35$

DOUBLE CURVE



Double Curve Suspension

Length between centers of pull off eyes 8 in.; height above ear seat $3\frac{1}{8}$ in.; diameter of pull off eyes $\frac{9}{16}$ in.; thickness of pull off arm at eye $\frac{1}{2}$ in. All metal parts including stud have sherardized finish.

Cat. No.	Description	Approx. Weight per 100
$\begin{array}{c} 25984 \\ 25985 \\ 25978 \end{array}$	Double curve suspension	$310 \\ 185 \\ 35$

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	114905 Form M mechanical ear for Nos. 00, 000 and 0000 wires, malleable iron, japanned	
110002	dized	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 1⁷/₁₆ in.; Thickness ¹/₈ in.; Height 2 in.; Boss tapped 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_{16}^{7} in. hub flanges and have 1_{56}^{5} -18 screws.

MINE AND INDUSTRIAL HAULAGE SUPPLIES

EARS FOR GROOVED WIRE FORM A SCREW CLAMP EARS 5 IN. PLAIN



Cat. No.	Description				Approx. Weight per 100
$19432 \\ 37804 \\ 27627$	For Nos. 00, 000 and 0600 wires, malleable iron, japanned . For Nos. 00, 000 and 0000 wires, malleable iron, sherardized For Nos. 00, 000 and 0000 wires, comp.	•••	 · · · · ·	•••••	66 66 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.



34123For Nos. 00, 000 and 0000 wires, malleable iron, japanned37805For Nos. 00, 000 and 0000 wires, malleable iron, sherardized34124For Nos. 00, 000 and 0000 wires, comp.	•	:	88 88 100
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10 IN. CURVE

The curve ears may also be advantageously employed in straight line construction, especially with Nos. 000 and 0000 wires.





Will accommodate feeder wire up to and including No. 0000.



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.



15 IN. FEEDER EARS



39891 39892 39894 39896	Form P, for No. 00 wire \dots	140 185 200
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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.



	SPLICING EARS—SOLDERED	
Designe	d for soldering in same manner as soldered splicing sleeves.	
	GIE ICD.	
	GIEICD.	
Cat. No.	Description	Approx. Weig per 100

GENERAL ELECTRIC COMPANY

EARS FOR ROUND WIRE FORM M MECHANICAL EARS



250



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 $\frac{5}{8}$ 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
110290	ardized	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.
MINE AND INDUSTRIAL HAULAGE SUPPLIES

EARS FOR ROUND WIRE FORM B CLAMPING EAR



Overall length 8 in.; height from center of trolley wire to top of hub 15% in.

Cat. No.	Description	Approx. Weight per 100
$\begin{array}{c} 16379 \\ 15901 \\ 15902 \\ 15903 \end{array}$	Clamping ear, Form B, for Nos. 0 and 00 wires, malleable iron sherardized Clamping sheath, for Cat. No. 16379, hard bronze Clamping block, for Cat. No. 16379, malleable iron, sherardized Clamping screw, for Cat. No. 16379, steel, sherardized	

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
$17338 \\ 17400$	6 in. automatic ear, for Nos. 0 and 00 wires, malleable iron, sherardized Adapter for No. 17338, comp.	$\begin{array}{c} 125\\ 50\end{array}$

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		ā			Approx. Weight per 100
$\begin{array}{c} 41047\\ 41048\\ 41443\\ 41049\\ 41050\\ 41444\end{array}$	For Nos. 0 and 00 wires, malleable iron, sherardized . For Nos. 0 and 00 wires, malleable iron, japanned . For Nos. 0 and 00 wires, comp	 		• • • • • •	• • • • • •	70 70 80 75 85 85

EARS FOR ROUND WIRE CLINCH

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_{16}^{7} 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.

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 12, for No. 0 wire	. 69
32577	9 in. Form 12, for No. 00 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 12, for No. 0 wire	. 75
32573	12 in. Form I2, for No. 00 wire	. 85
19424	15 in. Form I. for No. 0 wire	. 85
19425	15 in. Form I. for No. 00 wire	. 94
32568	15 in, Form I2, for No. 0 wire	. 88
32569	15 in, Form I2, for No. 00 wire	. 97
34113	15 in. Form 12, for No. 000 wire	124
34114	15 in, Form 12, for No. 0000 wire	. 140
$32569 \\ 34113 \\ 34114$	15 in. Form J2, for No. 00 wire 15 in. Form J2, for No. 000 wire 15 in. Form J2, for No. 0000 wire	

Form J





Form J2



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 $1\frac{1}{16}$ 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.		Descrij	ption					Approx. Weight per 100
$\begin{array}{c} 16034\\ 15157\\ 31666\\ 31668\\ 32562\\ 32564\\ 32563\\ 32565\\ 16394\\ 15022\\ 31665\\ 31667\\ 34111\\ 34112\\ \end{array}$	9 in. Form H, for No. 0 wire 9 in. Form H, for No. 00 wire 9 in. Form H2, for No. 0 wire 9 in. Form H2, for No. 00 wire 12 in. Form H, for No. 00 wire 12 in. Form H, for No. 00 wire 12 in. Form H2, for No. 00 wire 12 in. Form H2, for No. 00 wire 15 in. Form H, for No. 00 wire 15 in. Form H2, for No. 000 wire 15 in. Form H2, for No. 0000 wire			 	 		· · · · · · · · · · · · · · · · · · ·	 54 62 57 68 63 72 66 85 82 94 88 104 122 128

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 $1\frac{1}{16}$ 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.

	5.E.CD.	
Cat. No.	. Description	Approx. Weight per 100
$\begin{array}{c} 15120 \\ 15121 \\ 34115 \\ 34116 \\ 39896 \end{array}$	Form J, for No. 0 wire Form J, for No. 00 wire Form J2, for No. 000 wire Form J2, for No. 0000 wire Set serew for above feeder ears, 14–24, ½ in. long, square head	$95 \\ 100 \\ 145 \\ 155$

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.



$\begin{array}{c} 68446 \\ 60348 \\ 60349 \\ 60350 \end{array}$	Form J, for No. 0 wire Form J, for No. 00 wire Form J2, for No. 000 wire Form J2, for No. 0000 wire		• • • •	• • • •	•		• • • •							$ 100 \\ 110 \\ 150 \\ 190 $
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SINGLE END STRAIN



30459 30460 34121 34122	8 in., for No. 0 wire 8 in., for No. 00 wire 9 in., for No. 000 wire 9 in., for No. 0000 wire	• • • •	•	 •	•	· · · · · · ·	 •••••••••••••••••••••••••••••••••••••••	•	•	40 50 60 70

15 IN. SOLDERED SPLICING



15138	Form J, for No. 0 wire												125
12900	Form J, for No. 00 wire	•	•	•	•	•	•	•	•	•	÷	•	130
34120	Form J2, for No. 000 wire		:	:	:	:	:	1	:	:	:		250

EARS FOR FIG. 8 WIRE FORM M MECHANICAL EAR





This car 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
$114906 \\ 113053$	Form M mechanical ear for Nos. 00, 000 and 0000 wires, malleable iron, japanned Form M mechanical ear for Nos. 00, 000 and 0000 wires, malleable iron, sher-	60 60

FORM A SCREW CLAMP



5 IN. PLAIN



Cat. No.	Description	Approx. Weight per 100
115812 109898	For Nos. 00, 000 and 0000 wires, malleable iron, japanned	70 70

7 IN. PLAIN





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.
	(1 ¹ / ₄	1.66	0.140	2.2
Wrought iron pipe	11/2	1.90	0.145	2.6
	2	2.375	0.154	3.6
	11/4	1.66	0.095	1.5
'A" tubing	11/2	1.90	0.095	1.87
	2	2.375	0.107	2.50
	(1 ¹ ⁄ ₄	1.66	0.140	2.2
'C'' tubing	11/2	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	$1\frac{1}{2}$ in. "A" tubing	3250	40012	2 in. "A" tubing	3450
40010		3800	40013	2 in. "C" tubing	4000
40011		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.	at. No. Description		Description		Cat. No.	Description	Approx. Weight per 100	
$\begin{array}{c} 40015 \\ 40016 \\ 40017 \end{array}$	1½ in. "A" tubing 1½ in. "C" tubing 1½ in. "C" tubing	3300 3850 3950	40018 40019 40020	2 in. "A" tubing 2 in. "C" tubing 2 in. wrought iron pipe	$3500 \\ 4050 \\ 4150$			

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
$\begin{array}{c} 40021 \\ 40022 \\ 40023 \end{array}$	"A" tubing, arm $1\frac{1}{2}$ in., strut $1\frac{1}{4}$ in. "C" tubing, arm $1\frac{1}{2}$ in., strut $1\frac{1}{4}$ in. Wrought iron pipe, arm $1\frac{1}{2}$ in. strut $1\frac{1}{4}$ in.	4150 5000	$\begin{array}{r} 40024 \\ 40025 \\ 40026 \end{array}$	"A" tubing, arm 2 in., strut 1½ in. "C" tubing, arm 2 in., strut 1½ in. Wrought iron pipe, arm 2 in., strut 1½ in	5050 6250 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
$\begin{array}{r} 40027 \\ 40028 \\ 40029 \end{array}$	"A" tubing, arm $1\frac{1}{2}$ in., strut $1\frac{1}{4}$ in. "C" tubing, arm $1\frac{1}{2}$ in., strut $1\frac{1}{4}$ in. Wrought iron pipe, arm $1\frac{1}{2}$ in., strut $1\frac{1}{4}$ in.	$2850 \\ 3700 \\ 3800$	$\begin{array}{r} 40030 \\ 40031 \\ 40032 \end{array}$	"A" tubing, arm 2 in., strut 1½ in. "C" tubing, arm 2 in., strut 1½ in. Wrought iron pipe, arm 2 in., strut 1½ in.	3800 5000 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.	Description	per 100
$\begin{array}{c c}15026\\15037\end{array}$	Short bracket for $1\frac{1}{2}$ in. pipe, length $22\frac{9}{16}$ in., height $28\frac{1}{2}$ in., diameter of hole, $2\frac{1}{8}$ in. Long bracket for $1\frac{1}{2}$ in. pipe, length $30\frac{9}{16}$ in., height $28\frac{1}{2}$ in., diameter of hole, $2\frac{1}{8}$ in.	$\begin{array}{c} 2400\\ 3100 \end{array}$

Approx.

GENERAL ELECTRIC COMPANY

SPLICING SLEEVES

MECHANICAL

For use without solder. Made of brass with tempered steel wedges.



FOR ROUND AND GROOVED WIRE

Cat. No.	Description								Approx. Weigh per 100
64441 64442 64443 64444	For No. 0 round wire, 10 in. long For No. 00 round or grooved wire, 11 in. long For No. 000 round or grooved wire, 11 in. long For No. 0000 round or grooved wire, 12 in. long							· · · · · ·	$75 \\ 90 \\ 115 \\ 125$
	FOR FIG. 8 WIRE	2							
$\begin{array}{r} 42448 \\ 42449 \\ 42450 \end{array}$	10 in. long, for No. 00 Fig. 8 wire	•		•	:	•	•		115 125 140

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

5.E.CO.

Cat. No.	Description				Approx. Weight per 100
64431 64432 64433 64434 64435 64435 64436 64437 64438	For No. 0 round wire, 10 in. $x \frac{5}{6}$ in. For No. 0 round wire, 15 in. $x \frac{5}{6}$ in. For No. 00 round or grooved wire, 10 in. $x \frac{5}{6}$ in. For No. 00 round or grooved wire, 16 in. $x \frac{5}{6}$ in. For No. 000 round or grooved wire, 11 in. $x \frac{3}{4}$ in. For No. 000 round or grooved wire, 18 in. $x \frac{3}{4}$ in. For No. 0000 round or grooved wire, 18 in. $x \frac{3}{4}$ in. For No. 0000 round or grooved wire, 12 in. $x \frac{7}{6}$ in. For No. 0000 round or grooved wire, 20 in. $x \frac{7}{6}$ in.	 	• • • • • • •	 	 50 75 55 75 90 130 150 210
	PURE COPPER SLEEVES	-			
					1 200

88641	For No. 0 round wire, 15 in. $x \frac{5}{8}$ 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 1/8 in.				200

MINE AND INDUSTRIAL HAULAGE SUPPLIES

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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 25% 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. 2 % In. 2 In. 2 1/2 In. Test load 2500 lb. 4000 lb. 5000 v. 5000 v. Test voltage Average breaking load 5000 lb. 8000 lb. 15000 v. Average breakdown voltage . 12000 v.

				1					
DIMENSIONS OF E	YES IN IN.		· DIMENSIONS OF CLEVISES IN IN.						
	Inside Diameter	Outside Diameter		Spread	Diameter of Through Bolt				
Standard eye for 2 in, ins. Large eye for 2 in, ins. Standard eye for $2\frac{5}{6}$ in, ins. Large eye for $2\frac{5}{6}$ in, ins.	9 16 11 16 9 16 13 16	$1\frac{5}{16}\\1\frac{9}{16}\\1\frac{7}{16}\\1\frac{13}{16}$	Standard clevis for 2 in. ins. Standard clevis for 2% in. ins. Large clevis for 2% in. ins.	9 16 5/8 3/4	3/8 1/2 5/8				

DIMENSIONS

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
$\begin{array}{c} 64417\\ 64418\\ 64419\\ 64425\\ 64425\\ 64427\\ 64428\\ \end{array}$	With standard eye and clevis	4 329 4 339 4 39 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	$105 \\ 115 \\ 110 \\ 87 \\ 92 \\ 95$

2 5/8 IN. GIANT



Cat. No. 64426

Cat. No. 64420

Cat. No.	. De	script	ion					Distance Between Centers of Eyes or Clevis Bolt Holes in In.	Approx. Weight per 100
$\begin{array}{c} 64420\\ 64421\\ 64422\\ 64423\\ 64424\\ 64426\\ 64429\\ 64430\\ 100054\end{array}$	With standard eye and clevis With standard eye and large clevis With large eye and large clevis With 2 standard clevises With 2 large clevises With 2 standard eyes With large eye and standard eye With 2 large eyes	•	· · · ·	• • • • • • •	 	 	 •••••••••••••••••••••••••••••••••••••••	$\begin{array}{c} & 4\frac{7}{16} \\ 4\frac{7}{16} \\ 4\frac{5}{8} \\ 4\frac{5}{8} \\ 4\frac{7}{8} \\ 4\frac{7}{8} \\ 4\frac{3}{16} \\ 4\frac{3}{8} \end{array}$	$165 \\ 173 \\ 182 \\ 180 \\ 200 \\ 155 \\ 165 \\ 200$

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 I	YES IN IN.		DIMENSIONS OF CLEVISES IN IN.						
	Inside Diameter	Outside Diameter		Spread	Diameter of Through Bolt				
Eye for 2¼ in. insulator Eye for 2¾ in. insulator	$\frac{17}{32}$ $\frac{17}{32}$ $\frac{17}{32}$	$1\frac{1}{14} \\ 1\frac{1}{14}$	Clevis for $2\frac{1}{4}$ in. insulator . Clevis for $2\frac{3}{4}$ in. insulator .	$\frac{17}{32}$ $\frac{17}{32}$ $\frac{17}{32}$	$\frac{1}{2}$ $\frac{1}{2}$				



Cat. No. 27378

Cat. No. 27380

ENGINE A

Cat. No.	Description	Distance Between Centers of Eyes or Clevis Bolt Holes in In.	Approx. Weight per 100
$\begin{array}{c} 27378 \\ 16399 \\ 27380 \\ 17221 \end{array}$	2¼ in. insulator, with malleable iron eyes, sherardized2¼ in. insulator, with comp. eyes2¾ in. insulator, with malleable iron eyes, sherardized2¾ in. insulator, comp. eyes	$3\frac{9}{16}$ $3\frac{9}{16}$ 4 4	$85 \\ 85 \\ 125 \\ $





Cat. No. 27381

27379	$2\frac{1}{4}$ in, insulator, with malleable iron eve 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.		DIMENSION	S IN INCHES		Test Load	Average Breaking Load	Approx. Weight					
	A	В	C	D	in Lb.	in Lb.	per 100					
$\begin{array}{c} 16727\\ 37488\\ 61563\\ 37489\\ 36313\\ 48433 \end{array}$	$9\frac{1}{2}9\frac{1}{2}12202028\frac{1}{2}$	$5 \\ 5 \\ 5 \\ 15 \\ 15 \\ 24$	$ \begin{array}{c} 1\\ 1^{1}_{4}\\ 1^{3}_{4}\\ 1\\ 1^{1}_{4}\\ 1^{1}_{4}\\ 1^{1}_{4}\\ 1^{1}_{4} \end{array} $	$ \frac{9}{16} \frac{9}{34} \frac{9}{16} \frac{9}{16} \frac{9}{16} \frac{9}{16} \frac{9}{16} \frac{9}{16} \frac{16}{916} \frac{9}{16} \frac{9}{16} $	$3500 \\ 5000 \\ 7500 \\ 3500 \\ 5000 \\ 5000 \\ 5000 $	$7000 \\ 10000 \\ 15000 \\ 7000 \\ 10000 \\ 10000$	$ \begin{array}{r} 140 \\ 175 \\ 440 \\ 180 \\ 235 \\ 300 \\ \end{array} $					
WITH LARGE EYES												
$\begin{array}{c} 124863 \\ 114138 \\ 119272 \end{array}$	10 10 18	$5\\5\\12$	$ \begin{array}{c} 1 \\ 1 \\ \frac{1}{14} \\ 1 \\ \frac{3}{4} \end{array} $		3500 5000 7500	$7000 \\ 10000 \\ 15000$	$\begin{array}{r}150\\185\\600\end{array}$					

WITH EYE AND CLEVIS



Cat No	The state	DI	MENSIONS IN INC	HES	A Second Second	Test Load	Average	Approx.
Cat. No.	A	В	С	D	Е	in Lb.	in Lb.	per 100
$\begin{array}{r} 43229 \\ 43230 \\ 43231 \\ 43232 \end{array}$	$ \begin{array}{r} 934 \\ 934 \\ 2014 \\ 2014 \\ 2014 \\ \end{array} $	$5 \\ 5 \\ 15 \\ 15 \\ 15$	$ \begin{array}{c} 1 \\ 1^{1/4} \\ 1 \\ 1^{1/4} \end{array} $	$ \begin{array}{r} 9 \\ 16 \\ 16 \\ $	$ \begin{array}{r} \frac{17}{32} \\ \frac{17}{$	$3500 \\ 5000 \\ 3500 \\ 5000$	7000 10000 7000 10000	$160 \\ 185 \\ 225 \\ 295$

Clevis has $\frac{17}{32}$ in. bolt hole and $\frac{1}{2}$ in. bolt.

WITH EYE AND TAPPED BOSS-



Cat No		DIM	MENSIONS IN INCH	IES		Test Load	Average Preating Load	Approx. Weight
Cat. No.	A	В	С	D	Tap	in Lb.	in Lb.	per 100
$17030 \\ 100126$	$9\frac{1}{4}\\9\frac{1}{4}$	5 5	1 1 ¼	$\begin{array}{r} 9\\ \overline{16}\\ 9\\ \overline{16} \end{array}$	5/8-11 5/8-11	$\begin{array}{c} 3500\\ 5000 \end{array}$	7000 10000	110 190

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
$27382 \\ 17223 \\ 40802 \\ 40803$	 5% in. bolt, malleable iron, sherardized 5% in. bolt, comp. 34 in. bolt, malleable iron, sherardized 34 in. bolt, comp. 	$\begin{array}{c} 4000 \\ 2500 \\ 7000 \\ 4500 \end{array}$	$\begin{array}{c} 8000 \\ 5000 \\ 14000 \\ 9000 \end{array}$	$ \begin{array}{r} 11 \frac{3}{4} \\ 11 \frac{3}{4} \\ 12 \\ 12 \\ $	34 34 1 1	325 350 350 375

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
$\begin{array}{c} 27383 \\ 100293 \\ 114997 \\ 114998 \end{array}$	Forged turnbuckle, with ins. eye Forged turnbuckle, with ins. eye Forged turnbuckle, with ins. eye Forged turnbuckle, with ins. eye	$3000 \\ 4000 \\ 3000 \\ 4000$	6000 8000 6000 8000	$\begin{array}{c} 6 \\ 6\frac{3}{16} \\ 12 \\ 12\frac{3}{16} \end{array}$	1/2 5/8 1/2 5/8	$ 18\frac{3}{4} \\ 18\frac{3}{4} \\ 23\frac{3}{4} \\ 24 $	275 325 325 410

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 $\frac{3}{4}$ in. to $\frac{1}{8}$ 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.





20 Degree 3-Way Frog

Cat. No.	Description	Overall Length in In.	Overall Width in In.	Approx. Weight per 100
$\begin{array}{c} 29133\\ 29134\\ 29132\\ 29135\\ 46645\\ 46646\\ 46644\\ 46647\end{array}$	Right-hand frog, for Nos. 0 and 00 wires, comp.Left-hand frog, for Nos. 0 and 00 wires, comp.V frog, for Nos. 0 and 00 wires, comp.3-way frog, for Nos. 0 and 00 wires, comp.Right-hand frog, for Nos. 000 and 0000 wires, comp.Left-hand frog, for Nos. 000 and 0000 wires, comp.V frog, for Nos. 000 and 0000 wires, comp.3-way frog, for Nos. 000 and 0000 wires, comp.S-way frog, for Nos. 000 and 0000 wires, comp.13-way frog, for Nos. 000 and 0000 wires, comp.3-way frog, for Nos. 000 and 0000 wires, comp.	17 17 17 17 17 17 17 17	$\begin{array}{c} 6 \frac{1}{2} \\ 6 \frac{1}{2} \\ 6 \frac{1}{2} \\ 8 \frac{1}{2} \\ 6 \frac{1}{2} \\ 8 \frac{1}{2} \\ 6 \frac{1}{2} \\ 6 \frac{1}{2} \\ 8 \frac{1}{2} \\$	$710 \\ 710 \\ 725 \\ 1000 \\ 710 \\ 710 \\ 725 \\ 1000 \\$

All pull off eyes are $\frac{1}{2}$ in. in diameter.



Cat. No.	Description	Overall Length in In.	Overall Width in In.	Approx. Weight per_100
$29130 \\ 29131 \\ 29129 \\ 37487$	Right-hand frog, for Nos. 00, 000 and 0000 wires, compLeft-hand frog, for Nos. 00, 000 and 0000 wires, compV frog, for Nos. 00, 000 and 0000 wires, comp3-way frog, for Nos. 00, 000 and 0000 wires, comp	18 18 18 18 18	$5\frac{9}{16} \\ 5\frac{9}{16} \\ 5\frac{9}{16} \\ 7\frac{3}{8}$	875 875 890 1150

All pull off eyes are $\frac{1}{2}$ 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 WIR OUT 5 91852 B 6 Degree Right-hand Frog	ES	`	
7 8 3	Right-hand frog, for Nos. 00, 000 and 0000 wires, comp Left-hand frog, for Nos. 00, 000 and 0000 wires, comp	$\begin{array}{c} 21\frac{7}{8} \\ 21\frac{7}{8} \\ 21\frac{7}{8} \\ 21\frac{7}{8} \end{array}$	6 6 6	$1300 \\ 1300 \\ 1350$

2912 2912 2912

All pull off eyes are $\frac{1}{2}$ in. in diameter. Frogs similar to the above but for 1/0 wire will be furnished at the same price.



Frogs similar to the above but for 1/0 wire will be furnished at the same price.



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 mallcable 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
$\begin{array}{c} 110745\\ 60302\\ 110746\\ 60301\\ 110747\\ 60303\\ 110748\\ 60307\\ 110756\\ 65856\end{array}$	Right-hand frog, for Nos. 0 and 00 wires, malleable iron, sherardized . Right-hand frog, for Nos. 000 and 0000 wires, malleable iron, sherardized Left-hand frog, for Nos. 0 and 00 wires, malleable iron, sherardized . Left-hand frog, for Nos. 000 and 0000 wires, malleable iron, sherardized V frog, for Nos. 0 and 00 wires, malleable iron, sherardized . V frog, for Nos. 000 and 0000 wires, malleable iron, sherardized . 3-way frog, for Nos. 0 and 00 wires, malleable iron, sherardized . 3-way frog, for Nos. 000 and 0000 wires, malleable iron, sherardized . Bend tongue for all frogs for Nos. 0 and 00 wires, comp. End tongue for all frogs for Nos. 000 and 0000 wires, comp.	17 17 17 17 17 17 17 17	$\begin{array}{c} 6 \\ 1 \\ 2 \\ 6 \\ 1 \\ 2 \\ 6 \\ 1 \\ 2 \\ 6 \\ 1 \\ 2 \\ 6 \\ 1 \\ 2 \\ 6 \\ 1 \\ 2 \\ 7 \\ 3 \\ 8 \\ 7 \\ 3 \\ 8 \end{array}$	$710 \\ 710 \\ 710 \\ 710 \\ 725 \\ 725 \\ 1000 \\ 1000 \\ 50 \\ 50 \\ 50 $

All pull off eyes $\frac{1}{2}$ in. in diameter.



15 Degree Left-hand Frog

Cat. No.	Description	Overall Length in In.	Overall Width in In.	Approx. Weight per 100
$\begin{array}{c} 110749\\ 60228\\ 110750\\ 60226\\ 110751\\ 60229\\ 110752\\ 60234\\ 110756\\ 65856\end{array}$	Right-hand frog, for Nos. 0 and 00 wires, malleable iron, sherardized Right-hand frog, for Nos. 000 and 0000 wires, malleable iron, sherardized Left-hand frog, for Nos. 0 and 00 wires, malleable iron, sherardized Left-hand frog, for Nos. 000 and 0000 wires, malleable iron, sherardized V frog, for Nos. 0 and 00 wires, malleable iron, sherardized V frog, for Nos. 000 and 0000 wires, malleable iron, sherardized 3-way frog, for Nos. 0 and 00 wires, malleable iron, sherardized B	18 18 18 18 18 18 18 18 18	576 576 576 556 557 557 73%	$\begin{array}{r} 875\\ 875\\ 875\\ 875\\ 890\\ 890\\ 1150\\ 1150\\ 50\\ 50\\ 50\end{array}$

All pull off eyes are $\frac{1}{2}$ in. in diameter.

8 DEGREE FROGS FOR ROUND, GROOVED OR FIG. 8 WIRES



8 Degree Left-hand Frog

110755V frog, for Nos. 0 and 00 wires, malleable iron, sherardized. $21\frac{7}{8}$ 6135060133V frog, for Nos. 000 and 0000 wires, malleable iron, sherardized. $21\frac{7}{8}$ 61350110756End tongue for all frogs, for Nos. 0 and 00 wires, comp5065856End tongue for all frogs, for Nos. 000 and 0000 wires, comp50
--

All pull off eyes are $\frac{1}{2}$ 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	153/8	153/8	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 203% in.

Cat. No.	Description					
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	51/2	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.	211/4	53/8	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 351/2 in.; overall width 181/2 in.

Cat. No.	No. Description					
46184 100935	Right angle crossing, for Nos. 00, 000 and 0000 wires	1750				

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 161/2 in.

Cat. No.	No. Description							
19406 19407	Adjustable crossing for Nos. 0 and 00 wires .	•	1275 18					



Overall length 351/2 in.; maximum overall width 161/2 in.

26150 19407	Adjustable crossing, for Nos. 00, 000 and 0000 wires White fiber runway for Cat. No. 26150	•	•		:	· .	:	:	•	:	•	1400 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.

O O

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 Width in In.	Approx. Weight per 100
30615	35 deg. right-hand crossing, for Nos. 00, 000 and 0000 wires	39	91/2	1725
30613 30614	White fiber runway, for Cat. No. 30019	39	91/8	$25 \\ 1700 \\ 25$
30611 30612	20 deg. right-hand crossing, for Nos. 00, 000 and 0000 wires . White fiber runway, for Cat. No. 30611	461/2	63/4	1685 25
30609 30610	15 deg. right-hand crossing, for Nos. 00, 000 and 0000 wires	461/2	. 63/8	$1685 \\ 25$
46181 100919	8 deg. right-hand crossing, for Nos. 00, 000 and 0000 wires	56 1/2	5	$\frac{1675}{25}$

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 White fiber manyor for Oct. No. 100181		39	91⁄2	1725
100924 100180 100923	27 deg. left-hand crossing, for Nos. 00, 000 and 0000 wires White fiber runway for Cat. No. 100180	· · · · · ·	39	91⁄8	$1700 \\ 25$
$64167 \\ 100922$	20 deg. left-hand crossing, for Nos. 00, 000 and 0000 wires White fiber runway, for Cat. No. 64167		46 1/2	63/4	$1685 \\ 25$
$64166 \\ 100921$	15 deg. left-hand crossing, for Nos. 00, 000 and 0000 wires White fiber runway, for Cat. No. 64166	:	461/2	63/8	$\begin{array}{r}1685\\25\end{array}$
100179 100920	8 deg. left-hand crossing, for Nos. 00, 000 and 0000 wires White fiber runway, for Cat. No. 100179	: : :	561/2	5	$\begin{array}{c} 1675 \\ 25 \end{array}$

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 311/2 in.

Cat. No.	· Description									Approx. Weight per 100
$19410 \\ 19491 \\ 21456$	Section insulator, for Nos. 0 and 00 wires Section insulator, for Nos. 00, 000 and 0000 wires Wooden runway, for Cat. Nos. 19410 and 19491	• • • •	•	4.	•	•	•	•	· ·	$1010 \\ 975 \\ 15$



Overall length 311/2 in.

46740 60434	Section insulator, for Nos. 0 and 00 wires Section insulator, for Nos. 00, 000 and 0000 wires	$1060 \\ 1025 \\ 15$
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 301/2 in.; height 51/8 in.

Cat. No.	Description								
$34870 \\ 34871 \\ 34872$	Automatic section insulator, for Nos. 00, 000 and 0000 wires	$\begin{array}{r}1650\\12\\5\end{array}$							

Section insulators similar to the above, but for 1/0 wire will be furnished at the same price.



Cat. No. 40307 Section Switch SECTION SWITCHES

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.		WEIGHT EACH			
With Box	Without Box	Ampere Capacity	With Box	Without Box		
40305 40307 * 40321	40313 40315	$200 \\ 400 \\ 400$	$12 \\ 17\frac{1}{2} \\ 32$	5 8		
$ 40309 \\ 40311 $	40317 40319	600 1200	$\begin{array}{c} 22\\23\\46\end{array}$	11 28		



Cat. No. 40321 Section Switch and Fuse

* Has fuse block.

GENERAL ELECTRIC COMPANY 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 $1\frac{1}{2}$ in. pins and two $\frac{1}{2}$ in. lag screws. The telephone arms are bored for $1\frac{1}{4}$ in. pins and two $\frac{1}{2}$ 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.

					Approx Weigh	
Cat. No.	No. of Pins	Length in In.	Ends	Center	Sides	per 100
40179 40180 40181 40182	2 4 4 4	$36 \\ 48 \\ 60 \\ 72$	4 4 4 4 4	$28 \\ 16 \\ 18 \\ 24$	$\begin{array}{c}12\\17\\20\end{array}$	$100 \\ 140 \\ 170 \\ 210$
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.			De	escrip	tion										Approx. Weight per 100
40190	20 in. x $1\frac{7}{32}$ in. x $\frac{7}{32}$ in., plain .	•		•		•						•			160
40192	20 in. x 1_{32}^{7} in. x $\frac{3}{32}^{7}$ in., galvanized 24 in. x 1_{32}^{7} in. x $\frac{3}{32}^{7}$ in., plain	:	:	:	:	÷	:	:	:	:	:-	:	:		190
40193 40194	24 in. x $1_{\overline{32}}$ in. x $\frac{1}{32}$ in., galvanized 28 in. x $1_{\overline{32}}$ in. x $\frac{1}{32}$ in., plain .	:	:	:	•	:	:			:					$\begin{array}{c}190\\220\end{array}$
40195	28 in. x $1\frac{7}{32}$ in. x $\frac{7}{32}$ in., galvanized 20 in x 1 in x $\frac{3}{3}$ in plain	•	•	•	•	•	•	•		•	•				220
100018	20 in. x 1 in. x $\frac{1}{16}$ in., galvanized	:					1		:					:	110
100019 100020	24 in. x 1 in. x $\frac{1}{16}$ in., plain . 24 in. x 1 in. x $\frac{3}{16}$ in., galvanized	:		:	:	:		:			:	:	:	:	125 125
100021	28 in. x 1 in. x $\frac{3}{16}$ in., plain .	•	•	•	•	•	•	•		•		•	•	•	140
100022	20 m. x 1 m. x 16 m., gurvamzeu		•					1							140

MINE AND INDUSTRIAL HAULAGE SUPPLIES

BOLTS, NUTS AND WASHERS CROSS ARM BOLTS FOR FASTENING WOOD CROSS ARMS TO WOOD POLES

CAT. NO.		Longth in In	Diamatan in In	Approx, Weight		
Plain Galvanized		Plain Galvanized		Length in In.	Diameter in In.	per 100
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



The above catalogue numbers cover bolts with nuts and washers.

DROP FORGED STEEL EYE BOLTS

CAT	CAT. NO.		DIAMETE	Approx. Weight					
Plain	Galvanized	Length In In.	Stock	Eye	per 100				
40798	40780	6	1/2	<u>11</u> 16	60				
40799	40781	8	1/2	$\frac{11}{16}$	70				
64544	40782	10	1/2	<u>11</u> 16	80				
40230	40232	12	1/2	$\frac{11}{16}$	95				
64545	40783	14	1/2	$\frac{11}{16}$	105				
64546	40784	16	1/2	$\frac{11}{16}$	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.

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GENERAL ELECTRIC COMPANY

BOLTS, NUTS AND WASHERS DROP FORGED STEEL EYE BOLTS-(Concluded)

• CAT. NO.		Longth in In	DIAMETE	Approx Weight		
, Plain	Galvanized	Length in In.	Stock	Eye	per 100	
64551	40789	14	5/8	3/	170	
64552	48837	16	5/8	3/	190	
64553	40791	18	5/8	3/1	210	
64555	40793	10	3/4	. 1	210	
64556	40794	12	3/4	0.0001	235	
64557	40795	16	3/4	ī	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.	Cat. No. Description								
$19464 \\ 43683$	Fork bolt with porcelain insulator, 12 in. x $\frac{5}{8}$ in	$\begin{array}{c} 195\\ 360 \end{array}$							
(7)4		1							

The above catalogue numbers cover bolts with nut but no washer.

CARRIAGE BOLTS

Length of thread is about three times the diameter.

PRICE PER HUNI	DRED
----------------	------

Length	1.2.2.2.1.2.2.2.4.4.4	DI	AMETER	
in Inches	¼ In.	3% In.	½ In.	₱ In 5% In.
11/2	\$1.00	\$1.90		
13/4	1.04	1.98		
2	1.08	2.06		
$2\frac{1}{2}$	1.16	2.22	\$3.00	\$5.20
3	1.24	2.38	3.22	5.54
31/2	1.32	2.54	3.44	5.88
4	1.40	2.70	3.66	6.22
41/2	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		DIAM	ETER		Length		DIAM	ETER	
	1⁄4 In.	3% In.	½ In.	5% In.	in Inches	1/4 In.	3⁄8 In.	½ In.	5% In.
$ \begin{array}{c} 1\frac{1}{2}\\ 1\frac{3}{4}\\ 2\\ 2\frac{1}{2}\\ 3\\ 3\frac{1}{2}\\ 4\\ 4\frac{1}{2} \end{array} $	3.2 3.7 3.9 4.5 5.1 5.8 6.4 7	$\begin{array}{c} 8.9\\ 9\\ 10.3\\ 11.8\\ 13.2\\ 14.7\\ 16.2\\ 17.6\end{array}$	$17.4 \\18.6 \\20 \\22.6 \\25.1 \\27.7 \\30.3 \\32.9$	32 34 36.4 40.4 44.4 48.4 52.4 56.4	$5 \\ 6 \\ 7 \\ 8 \\ 9 \\ 10 \\ 11 \\ 12$	$7.6 \\ 8.9 \\ 10.2 \\ 11.4$	$19.1 \\ 22 \\ 24.9 \\ 27.8 \\ 30.8 \\ 33.7 \\ 34.8 \\ 37.5 \\$	$\begin{array}{c} 35.5 \\ 40.6 \\ 45.8 \\ 50.9 \\ 56.1 \\ 61.3 \\ 66.4 \\ 71.6 \end{array}$	$\begin{array}{c} 60.4\\ 68.4\\ 76.4\\ 84.4\\ 92.4\\ 101\\ 109\\ 117\end{array}$

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			
in Inches	1⁄4 In.	ι ^δ π In.	3% In.	7 In.	½ In.	9 In5% In.	3⁄4 In.
$ \begin{array}{r} 1 \frac{1}{2} \\ 2 \\ 2 \\ 2 \\ 2 \\ 2 \\ 2 \\ 2 \\ 2 \\ 2 \\ 2 \\ 2 \\ 2 \\ 2 \\ 2 \\ 2 \\ 2 \\ 3 \\ 4 \\ 4 \\ 5 \\ 5 \\ 5 \\ 6 \\ 6 \\ 7 \\ 7 \\ 5 \\ 6 \\ 6 \\ 6 \\ 7 \\ 12 \\ 13 \\ 14 \\ 15 \\ 16 \\ 17 \\ 18 \\ 10 \\ 10 \\ 17 \\ 18 \\ 10 \\ $	\$1.70 1.78 1.86 1.94 2.02 2.10 2.18 2.26 2.34 2.42 2.50 2.58 2.66 2.74 2.90 3.06 3.22 3.38	\$2.00 2.12 2.24 2.36 2.48 2.60 2.72 2.84 2.96 3.08 3.20 3.32 3.44 3.56 3.80 4.04 4.28 4.52	$\begin{array}{c} \$2.40\\ 2.56\\ 2.72\\ 2.88\\ 3.04\\ 3.20\\ 3.36\\ 3.52\\ 3.68\\ 3.84\\ 4.00\\ 4.16\\ 4.32\\ 4.48\\ 4.80\\ 5.12\\ 5.44\\ 5.76\\ 6.08\\ 6.40\\ 6.72\\ 7.04\\ \end{array}$	$\begin{array}{c} & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & $	$\begin{array}{c} \begin{array}{c} & & & \\ & $	$\begin{array}{c} \$5.20\\ 5.58\\ 5.96\\ 6.34\\ 6.72\\ 7.10\\ 7.48\\ 7.86\\ 8.24\\ 8.62\\ 9.00\\ 9.38\\ 9.76\\ 10.14\\ 10.90\\ 11.66\\ 12.42\\ 13.18\\ 13.94\\ 14.70\\ 15.46\\ 16.22\\ 16.98\\ 17.74\\ 18.50\\ \end{array}$	\$7.20 7.70 8.20 8.70 9.20 9.70 10.20 10.70 11.20 11.70 12.20 12.70 13.20 13.70 14.70 15.70 16.70 17.70 18.70 19.70 20.70 21.70 22.70 23.70 24.70
$\begin{array}{c} 19\\ 20 \end{array}$					$12.70 \\ 13.22$	$ 18.50 \\ 19.26 $.24.70 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	DIAMETER													
in Inches	1⁄4 In.	Te In.	3% In.	75 In.	½ In.	9 In.	5% In.	3⁄4 In.						
$ \begin{array}{r} 1 \frac{1}{2} \\ 2 \\ 2 \\ 2 \\ 3 \\ 3 \\ 4 \\ 4 \\ 4 \\ 5 \\ 5 \\ 5 \\ 5 \\ 6 \\ 6 \\ 7 \\ 7 \\ 7 \\ 8 \\ 9 \\ 10 \\ 11 \\ 12 \\ 13 \\ 14 \\ 15 \\ 16 \\ 17 \\ 18 \\ 19 \\ 20 \\ \end{array} $	$\begin{array}{c} 3.9 \text{ lb.} \\ 4.6 \\ 5.4 \\ 6.2 \\ 6.9 \\ 7.6 \\ 8.3 \\ 9 \\ 9.7 \\ 10.4 \\ 11.1 \\ 11.8 \\ 12.5 \\ 13.2 \end{array}$	6.2 lb. 7.2 8.2 9.3 10.4 11.5 12.6 13.7 14.8 15.9 17 18.1 19.2 20.3	$\begin{array}{c} 9.7 \ \text{lb.} \\ 11.3 \\ 12.9 \\ 14.5 \\ 16.1 \\ 17.7 \\ 19.2 \\ 20.7 \\ 22.2 \\ 23.7 \\ 25.2 \\ 26.7 \\ 28.2 \\ 29.7 \\ 33.1 \\ 36.5 \\ 40 \\ 43.5 \\ 47 \\ 50.5 \\ 54 \\ 57.5 \end{array}$	$\begin{array}{c} 14.7 \ 1b. \\ 16.5 \\ 18.5 \\ 20.5 \\ 22.6 \\ 24.7 \\ 26.8 \\ 28.9 \\ 31 \\ 33.1 \\ 35.2 \\ 37.3 \\ 39.4 \\ 41.5 \\ 45.7 \\ 49.9 \\ 54 \\ 58.3 \\ 62.5 \\ 66.7 \\ 70.9 \\ 75.1 \end{array}$	$\begin{array}{c} 20.4 \ 1b.\\ 22.4\\ 25\\ 27.8\\ 30.6\\ 33.4\\ 36.2\\ 39\\ 41.8\\ 44.6\\ 47.4\\ 50.2\\ 53.1\\ 56\\ 61.5\\ 67\\ 72.5\\ 78\\ 83.5\\ 89\\ 94.5\\ 100\\ 105.5\\ 111\\ 116.5\\ 122 \end{array}$	$\begin{array}{c} 26 & 1b.\\ 29\\ 32.2\\ 35.4\\ 38.7\\ 42\\ 45.3\\ 48.6\\ 51.9\\ 55.2\\ 58.5\\ 61.8\\ 65.1\\ 68.5\\ 75.2\\ 81.9\\ 88.7\\ 95.5\\ 102.3\\ 109.1\\ 116\\ 123\\ 130\\ 137\\ 144\\ 151 \end{array}$	$\begin{array}{c} 37 & 1b. \\ 39.9 \\ 44.1 \\ 48.3 \\ 52.5 \\ 56.7 \\ 60.9 \\ 65.1 \\ 69.2 \\ 73.4 \\ 77.6 \\ 81.8 \\ 86 \\ 90 \\ 98 \\ 106.3 \\ 114.6 \\ 122.9 \\ 131.2 \\ 139.5 \\ 148 \\ 156.5 \\ 165 \\ 173.5 \\ 182 \\ 190.5 \end{array}$	$\begin{array}{c} 58 & 1b. \\ 63.2 \\ 69 \\ 75.2 \\ 81.4 \\ 87.6 \\ 93.8 \\ 100 \\ 106 \\ 112 \\ 118.5 \\ 124.5 \\ 130.5 \\ 136.5 \\ 149 \\ 161 \\ 173 \\ 184.5 \\ 196.5 \\ 209 \\ 221 \\ 233 \\ 245 \\ 257.5 \\ 270 \\ 282 \end{array}$						

GENERAL ELECTRIC COMPANY

BOLTS, NUTS AND WASHERS ROUND PLATE WASHERS

DIMENSIONS	S IN INCHES	Thickness	Size of	Average	List Price
Outside Diam.	Diam. of Hole	Gauge	in Inches	in 100 Lb.	100 Lb.
3/4	5	No. 16	1/4	13900	\$12.20
 7/8	3/8	No. 16	$\frac{5}{16}$	11250	11.40
1	716	No. 14	3/8	6800	10.50
11/4	1/2	No. 14	7 16	4300	9.70
13/8	9	No. 12	1/2	2600	9.20
11/2	5/8	No. 12	9	2250	9.10
1 3/4	11	No. 10	5/8	1300	9.00
2	13	No. 10	3/4	1010	8.80
21/4	15	No. 9	7/8	860	8.80
21/2	116	No. 9	1	625	8.80

Prices on galvanized round plate washers quoted on application.

SQUARE PLATE WASHERS

NATIONAL LOCK WASHERS





Prices on galvanized square washers quoted on application.

GIMLET OR CONE POINT LAG SCREWS

PRICE PER HUNDRED

Length			DI	AMETER	A Contraction	
under Head in Inches	1/4 In. and 👫 In.	3% In.	To In.	½ In.	1€ In5% In.	¾ In.
2	\$2.45	\$2.96	\$3.47	\$4.11	\$6.00	
21/2	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
31/2	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
41/2	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
51/2	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
61/2	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
71/2	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				DIAMETER			
under Head in Inches	⁵ In.	3½ In.	75 In.	½ In.	9 In.	5% In.	3⁄4 In.
$2 \\ 2 \\ 3 \\ 3 \\ 4 \\ 4 \\ 4 \\ 5 \\ 5 \\ 5 \\ 5 \\ 6 \\ 7 \\ 8 \\ 9 \\ 10$	4.8 lb. 5.6 6.5 7.3 8.2 9 9.9 10.8 11.7	6.7 lb. 8.4 9.1 10.6 12 13 14 15 16	10.3 lb. 11.9 13.5 15.1 16.7 18.6 20.5 22.4 24.2 28	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	22.8 lb. 25.3 27.8 30.4 33 35.5 38 40.7 43.3 50 56.8 63.5 70.3	24 lb. 27.2 30.5 33.7 37 40.2 43.5 47 50.6 57.8 64.7 72 79.2	39 lb. 45 51 57 62 67 72 77 87 97 107 117

TURNBUCKLES DROP FORGED STEEL WITH TWO EYES



Cat. No. 40237

Plain	Galvanized	Description	Approx. Weight per 100
40236 40237 40238 40239	$\begin{array}{r} & 40240 \\ & 40241 \\ & 40242 \\ & 40243 \end{array}$	3% in. bolts, 4 in. opening . 1/2 in. bolts, 6 in. opening . 1/2 in. bolts, 9 in. opening . 5% in. bolts, 12 in. opening .	$75 \\ 160 \\ 190 \\ 395$

WITH EYE AND HOOK



Cat. No. 40245

40244 40245 40246	$\begin{array}{r} 40248 \\ 40249 \\ 40250 \end{array}$	3% in. bolts, 4 in. opening . ½ in. bolts, 6 in. opening . ½ in. bolts, 9 in. opening .		•	•	•			•	• • •		•	75 170 215
40247	40251	5% in. bolts, 12 in. opening	•	•	•	•	•	•	•	•	•	•	400

INSULATOR PINS ALL WOOD PINS



								DIMEN	SIONS		Approx.
Cat. No.	I	Descrip	tion	1			A	В	С	D	Weight per 100
$\begin{array}{c} 100023\\ 100024\\ 100025\\ 8749\\ 8750\\ 8751\\ 100026\\ 100027\\ 100028\\ 40252\\ \end{array}$	Oak pin, painted . Oak pin, unpainted . Locust pin, unpainted . Oak pin, painted . Oak pin, unpainted . Locust pin, unpainted . Oak pin, unpainted . Dak pin, unpainted . Locust pin, unpainted Locust pin, unpainted				insul	· · · · · · · · · · · · · · · · · · ·	$\begin{array}{c} 4\\ 4\\ 4\\ 4\\ 4\\ 1\\ 1\\ 4\\ 1\\ 4\\ 4\\ 1\\ 4\\ 4\\ 1\\ 4\\ 4\\ 1\\ 4\\ 4\\ 1\\ 4\\ 5\\ 3\\ 4\end{array}$	$\begin{array}{c} & 4 \\$	1 1 1 1 1 3% 1 3% 1 3% 1 3%	$1\frac{1}{4}\frac{1}{4}\frac{1}{4}\frac{1}{4}\frac{1}{4}\frac{1}{4}\frac{1}{2$	$\begin{array}{r} 45\\ 40\\ 35\\ 50\\ 45\\ 40\\ 55\\ 50\\ 45\\ 50\\ 45\\ 50\\ \end{array}$

WOOD SIDE BRACKETS



Cat. No.		Descripti	ion									Approx. Weight per 100
7798 8747 8841	Oak bracket, painted, 12 in. long Oak bracket, unpainted, 12 in. long Locust bracket, unpainted, 12 in. long	• • • • •	• • •	•	•	•	•	•	•	•	•	80 75 70

IRON BRACKETS





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			• • • •		• • • • •		• • • • •	•	•••••		$ \begin{array}{r} 85 \\ 290 \\ 710 \\ 800 \\ \end{array} $
---------------------------------	--	--	---------	--	-----------	--	-----------	---	-------	--	---

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.

Second C	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 $1\frac{3}{8}$ in. pin holes and is suitable for the heaviest loads in all locations excepting corners, for which standard corner insulators are used.

• •	Cat. No.	Description	Diameter Pin Hole in In.	Approx. Weight per 100
NO	46013	Insulator with top and side grooves for No. 0000 and smaller conductor	1	415
	46007	smaller conductor	1	445
C	46006	smaller conductor	13/8	410
	46005	smaller conductor	13/8	440
	46004	smaller conductor	13/8	520
Cat. No. 46012	10001	smaller conductor	13/8	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.	Description	Diameter Pin Hole in In.	Approx. Weight per 100
P	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
	46002	smaller conductor	13/8	385
	46000	and smaller conductor Insulator with top clips and side groove for 800,000 cm.	1 3/8	410
Cat. No. 46010	46001	Insulator with top clips and side groove for 1,500,000 cm. and smaller conductor	1 3/8	495 520

WEDGE TOP

WITH TOP AND SIDE BEARING

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 $1\frac{3}{8}$ 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	13/8	515
01108	1,500,000 cm. conductor	1 3/8	625

CORNER INSULATOR WITH SIDE BEARING ONLY

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	t. No.	Description	Diameter Pin Hole in In.	Approx. Weight per 100		
4 4 4	6014 6008 6009	For No. 0000 to 500,000 cm. conductor . For No. 0000 to 500,000 cm. conductor . For 600,000 to 1,500,000 cm. conductor .	· ·		1 1 3/8 1 3/8 1 3/8	390 385 440



Cat. No. 61110



Cat. No. 46008

PORCELAIN INSULATORS

PORCELAIN CLAMP INSULATORS

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

The General Electric Company's clamp insulators are strong enough to support

the heaviest cable, and can be furnished for cables from $\frac{16}{16}$ in. to $\frac{31}{2}$ in. in diameter.

Porcelain Clamp Insulator (Two Pieces)

10.000											
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 9215 9216 9221 9222 9228	$\frac{5}{16}$ in. hole $\frac{3}{8}$ in. hole $\frac{1}{2}$ in. hole $\frac{5}{6}$ in. hole $\frac{3}{4}$ in. hole $\frac{7}{6}$ in. hole	100 100 100 100 100 100	\$5.00 5.00 5.50 5.50 5.50 6.50	9229 9230 9236 9237 9238 9238 9243	1 in. hole $1\frac{1}{8}$ in. hole $1\frac{1}{4}$ in. hole $1\frac{3}{8}$ in. hole $1\frac{1}{2}$ in. hole $1\frac{3}{4}$ in. hole	100 100 100 100 100 100	\$6.50 6.50 11.00 11.00 11.00 18.00	9244 65247 64487 64934 64488 64936	2 in. hole $2\frac{1}{4}$ in. hole $2\frac{1}{2}$ in. hole $2\frac{3}{4}$ in. hole 3 in. hole $3\frac{1}{2}$ in. hole	100 100 100 100 100 100	\$18.00 21.00 21.00 21.00 25.00 25.00

TWO-PIECE CLAMP INSULATORS, WITHOUT CLAMP

CLAMPS, COMPLETE, FOR INSULATORS

Cat. No.	Description		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.

Q	Cat. No.	Description	Approx. Weight per 100
Feeder Tap Insulator	40207 40208 40209	For 1¼ in. pipe (1.66 in. outside diam.) mall. iron, galv. . For 1½ in. pipe (1.9 in. outside diam.) mall. iron, galv. . For 2 in. pipe (2.38 in. outside diam.) mall. iron, galv. .	160 180 200

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inserting the cable.

GENERAL ELECTRIC COMPANY

INSULATORS PORCELAIN INSULATORS



Cat. No. 9250 (No. $5\frac{1}{2}$) Height, $1\frac{1}{46}$ inches; diameter, 1 inch; hole, $\frac{1}{44}$ inch; groove, $\frac{4}{16}$ inch; standard package, 5000.



Cat. No. 9252 (No. $3\frac{1}{2}$) Height, 2 inches; diameter, 2 inches; hole, $\frac{1}{10}$ inch; groove, $\frac{6}{2}$ inch; standard package, 1000.



 $\begin{array}{c} \text{Cat. No. 9251 (No. 4\frac{1}{2})} \\ \text{Height, } 1\frac{7}{5} \text{ inches; diameter, } 1\frac{1}{2} \\ \text{inches; hole, } \frac{4}{5} \text{ inch; groove, } \frac{1}{76} \text{ inch; } \\ \text{standard package, } 2000. \end{array}$



 $\begin{array}{c} \textbf{Cat. No. 9255 (No. 24)} \\ Height, 1\frac{3}{24} \text{ inches; diameter, 2} \\ \text{inches; hole, } \frac{3}{76} \text{ inch; groove, } \frac{3}{26} \text{ inch;} \\ \text{standard package, 1000.} \end{array}$



Cat. No. 9257 (No. 0) Height, 214 inches; diameter, 3 inches; hole, 114 inches; groove 1 inch; standard package, 350.

ackage, 1000.	package, 5000.	standard package, 350.		
Cat. No.	Description	Cat. No.	Description	
9250 9251 9255	No. 5½ porcelain insulator No. 4½ porcelain insulator No. 24 porcelain insulator	9252 9249 9257	No. 3½ porcelain insulate No. 11 porcelain insulate No. 0 porcelain insulate	

Cat. No. 9249 (No. 11)

Height, 3/4 inch; diameter, 1 inch; hole, 1/4 inch; groove, 1/2 inch; standard

GLASS INSULATORS FOR TELEPHONE AND FEEDER WIRES



Cat. No. 9322



Cat. No. 40271



r

Cat. No. 9312

Cat. No.			DIMI		No.	Approx.			
	Description	Diameter	Height	Top Groove	Side Groove	Pin Hole	Working Voltage	per Barrel	Weight Each
9322 9312	Standard pony glass .	21/4	31/2		3/8	1		400	9 16
40271 Glass transposition	$2\frac{3}{4}$ $3\frac{7}{8}$	$3\frac{1}{2}$ $4\frac{1}{2}$		3/8 3/8	1 1		$\begin{array}{c} 300\\ 150 \end{array}$	$1\frac{3}{4}{1\frac{1}{2}}$	
INSULATORS GLASS INSULATORS FOR TELEPHONE AND FEEDER WIRES







Cat. No. 40278

Cat. No. 40275

Cat. No. 40276

Approx. Weight Each DIMENSIONS IN INCHES No. Cat. No. per Barrel Diameter Height Top Groove Side Groove Pin Hole $3\frac{1}{2}$ $3\frac{3}{4}$ $4\frac{1}{4}$ $2\frac{1}{8}$ 2 4 40275 $4\frac{1}{2}$ 110 7/8 1 $1\frac{1}{8}$ $1\frac{7}{8}$ $1\frac{5}{8}$ $\begin{array}{c}
 4 \\
 5 \frac{1}{2} \\
 4 \frac{1}{4}
 \end{array}$ 40276 125 1 1 $1\frac{3}{4}$ $1\frac{3}{4}$ $1\frac{1}{4}$ 50 75 * 40277 1 40278 13/8 25/8 4

* Similar in appearance to Cat. No. 40276.

PORCELAIN INSULATORS



Cat. No. 74815







Cat. No. 40274



NT. 40070

Cat.	No. 40273		Cat. No.	74817	1.1.1	Cat. No. 4	0219
C.A.N.		D	IMENSIONS IN INCH	IES		No.	Approx. Weight
Cat. No.	Diameter	Height	Top Groove	Side Groove	Pin Hole	Barrel	Each
74815	23/8	31/2		3/8	1	400	1 1/8 lb.
74816	$2\frac{3}{8}$	27/8		3/8	1	500	1/2 lb.
40274	33/4	3	1/2	3/8	1	200	1 1/4 lb.
40273	31/4	$3\frac{1}{2}$		5/8	1	200	1 4 lb.
74817	31/8	3 3/8	1000000	3/8	1	150	1 1/2 lb.
40279	33/4	3	11/4	5/8	1	200	1½ lb.







INSULATORS PORCELAIN INSULATORS FOR FEEDER WIRES





Cat. No. 40280



Cat. No. 74818

Cat. No. 40282

		DI	MENSIONS IN INCH	IES		No.	Approx.
Cat. No.	Diameter	Height	Top Groove	Side Groove	Pin Hole	per Barrel	Ŵêight Each
40282 40280 74818	$ \begin{array}{r} 41/4 \\ 31/2 \\ 31/8 \end{array} $	$\begin{array}{c} 4\frac{1}{4} \\ 4\frac{1}{2} \\ 3\frac{7}{8} \end{array}$	$1\frac{7}{8}$ $1\frac{1}{2}$ $1\frac{1}{8}$	1 1/2 7/8 5/8	13% 1 17%	$100 \\ 200 \\ 225$	$2\frac{3}{4}\\1\frac{1}{2}\\1\frac{1}{4}$

FOR WORKING VOLTAGES UP TO 11,000



Cat. No. 100156

Cat. No. 100158

Cat. No. 100157

		DIM	ENSIONS IN INC	CHES			No.	Approx.
Cat. No.	Diameter	Height	Top Groove	Side Groove	Pin Hole	Test Voltage	in Barrel	Weight Each
$\begin{array}{c} 100156 \\ 100158 \\ 100157 \end{array}$	$5\frac{3}{4}$ $6\frac{3}{4}$ $5\frac{3}{4}$	$4\frac{1}{2}$ 5 ³ / ₈ 5 ¹ / ₄	5 1 5 8	$\frac{\frac{1}{2}}{\frac{7}{16}}$	$ \begin{array}{r} 1 3 \\ 3 \\ 1 3 \\ 1 3 \\ 1 3 \\ 8 \\ 1 3 \\ 8 \\ 1 3 \\ 8 \end{array} $	50000 50000 50000	65 40 50	$3 \\ 4\frac{1}{4} \\ 4\frac{1}{2}$

INSULATORS PORCELAIN INSULATORS FOR WORKING VOLTAGES UP TO 22,000





Cat. No. 100161





Cat. No. 100160



Cat. No. 100159

- State	13.844.2	DIMI	ENSIONS IN INC	IES		()	No. in	Approx.
Cat. No.	Diameter	Height	Top Groove	Side Groove	Pin Hole	Voltage	Barrel or Crate	Ship. Weight Each
$100161 \\ 100159 \\ 100160$	$7\frac{1}{4} \\ 6\frac{3}{4} \\ 7\frac{1}{8}$	7 53⁄4 7	$1 \\ \frac{5}{8} \\ \frac{3}{4}$	5/8 1/2 1/2	$ \begin{array}{r} 1 \frac{3}{8} \\ 1 \frac{3}{8} \\ 1 \frac{3}{8} \end{array} $	70000 70000 70000	$20 \\ 35 \\ 26$	8 6 6

INSULATORS PORCELAIN INSULATORS FOR WORKING VOLTAGES UP TO 33,000



Cat. No. 100162

Cat. No. 100163

Cat. No. 100164

		DIM	ENSIONS IN INC	HES		Test	No. in	Approx.
Cat. No.	Diam.	Height	Top Groove	Side Groove	Pin Hole	Voltage	Barrel or Crate	Weight Each
$\begin{array}{c} 100162 \\ 100164 \\ 100163 \end{array}$		973/881/4	3/4 3/4 3/4	3/4 5/8 • 3/4	$ \begin{array}{r} 1 \frac{3}{8} \\ 1 \frac{3}{8} \\ 1 \frac{3}{8} \end{array} $	86000 85000 85000	$\begin{array}{c}15\\16\\15\end{array}$	$9\frac{3}{4}$ 10 $\frac{1}{3}$ 11



PORCELAIN STRAIN INSULATORS STANDARD PORCELAIN INSULATOR FOR SPAN AND ANCHOR WIRES

Cat Na		DIMENSIONS IN INCHES	
Cat. No.	Length	Width	Groove
110900	21/2	$2\frac{5}{16}$	1/2
110901	31/4	234	5/8



OVERHEAD LINE TOOLS TROLLEY WIRE HAULING CLAMP

60		-	Cat. No.	Descri	ption			
C.E.			16915 Trolley wire hauling clamp					
Cat.	No. 16915	TROLLEY TERMINAL CLAMP						
63	3	Cat. No.	<u> </u>	Description		Weight per 100		
Cat. No. 27	7437	27437	Termina iron, s	l clamp for dead ending trolley herardized	wires, malleable	355		
			Meren al	SCHAPER GUY WIRE CL	AMP			
-		108530	Three bo steel g	blt clamp for $\frac{3}{6}$ in., $\frac{7}{16}$ in., and $\frac{1}{2}$ in galvanized	.strand—forged	225		
				CROSBY CLIPS				
-	Cat. No.			Description		Weight per 100		
Cat. No. 49211	$\begin{array}{r} 49211 \\ 49212 \\ 49213 \end{array}$	Clip for Clip for Clip for	$\frac{1}{4}$ in. strand $\frac{3}{8}$ in. strand $\frac{7}{16}$ in. strand			30 37 80		
				FEEDER STRAIN CLAM	PS			
-		Cat. No.		Description				
O BE DO		$100077 \\ 100076 \\ 100075 \\ 100074$	For No. 00 For 250,000 For 400,000 For 700,000	00 cable—M.I. sherardized . 0-300,000 cm. cable—M.I. sherard 0-650,000 cm. cable M.I. sherardi 0-1,000,000 cm. cable—M.I. shera	ized zed rdized	· · · · · · · · · · · · · · · · · · ·		
				WIRE CABLE THIMBLE	S			
GERE		Cat	. No.	Diameter of Cable in In.	Approx. Wei per 100	ght		
C		88 88 88 88 88 88 88	3390 3389 3388 3387 3386 3385	1/4 5 16 3/8 16 1/2 5/8				

DISTRIBUTING RINGS

G.E.DD.	Cat. No.	Description
\bigcirc	100032 100033 100034	$2\frac{1}{2}$ in. x $\frac{1}{4}$ in. wrought iron ring

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ANCHOR RODS AND ANCHORS ANCHOR RODS—GALVANIZED



Cat. No. 48838

Cat. No.	Diameter in In.	Length in Ft.	Approx. Weight per 100
$100035 \\ 100036 \\ 100037 \\ 100038 \\ 100039 \\ 48838 \\ 100040 \\ 100041 \\ 1000041 \\ 1000041 \\ 1000041 \\ 1000041 \\ 1000041 \\ 1000041 \\ 1000041 \\ 1000041 \\ 1000041 \\ 1000041 \\ 1000041 \\ 1000041 \\ 1000041 \\ 1000041 \\ 1000041 \\ 1000041 \\ 10000000000$	121112111211121	5 6 7 8 5 6 7 8	$\begin{array}{r} 425\\ 500\\ 575\\ 650\\ 650\\ 750\\ 850\\ 950\end{array}$
$\begin{array}{c} 100042 \\ 100043 \\ 100044 \\ 100045 \\ 100046 \\ 100047 \\ 100048 \end{array}$	$ \begin{array}{r} 3 \\ 3 \\ 3 \\ 3 \\ 3 \\ 3 \\ 3 \\ 1 \\ 1 \\ 1 \end{array} $		$1100 \\ 1250 \\ 1400 \\ 1700 \\ 2500 \\ 2800 \\ 3100$

Above catalogue numbers cover anchor rods with nuts but without washers.

43538

 $\begin{array}{r}
 43539 \\
 43540
 \end{array}$

CABLE SPLICER



Cat. No.	Size of Cable	Cat. No.	Size of Cable
43508 43509	250,000 cm. 300,000 cm.	$\begin{array}{c} 43511\\ 43512\end{array}$	500,000 cm. 750,000 cm.
43510	400,000 cm.	43513	1,000,000 cm.

CABLE CONNECTOR



MISCELLANEOUS ILLUSTRATIONS OF TROLLEY LINE CONSTRUCTION



Method of Attaching Trolley Directly to Mine Roof



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

MINE AND INDUSTRIAL HAULAGE SUPPLIES

MISCELLANEOUS ILLUSTRATIONS OF TROLLEY LINE CONSTRUCTION



Under Braced Side Bracket Construction



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 $1\frac{1}{4}$ 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



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CONSTRUCTION NOTES





Fig. 6



mine, the same combination clamp shown in Fig. 5 may be used as in Fig. 9 and when so used fits standard $1\frac{1}{2}$ in. pipe.

Fig. 10 shows a suspension attached to a $1\frac{1}{4}$ 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.



	Radius of Curve in Ft. (R)	Chord in Ft. (C)	Middle Ordinate in Inches (O)	Distance Between Suspension Points (X)
	40 50	10	334	5
T	60	10	21/2	572 6
YH I	75	10	2	$\frac{61/2}{7}$
	100	10	$1\frac{1}{4}$ $1\frac{1}{2}$	71/2
9	200	10	3/4	10
State State	300	10	363/	15 20
	573	100	2834	26
Fig. 10			a care of	

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.

Formula for determining radius of curvature from the chord of the arc subtended, the middle ordinate and the track gauge.



Formula:

Radius (R) = OE =
$$\left(\frac{AC}{2}\right)^2 + BD^2$$

2 BD + $\frac{G}{2}$

Example:

If gauge (G) = 36 in. Chord (AC) = 20 ft. = 240 in. Middle ordinate (BD) = 20 in.

Then R =
$$\frac{\left(\frac{240}{2}\right)^2 + 20^2}{2 \times 20} + \frac{36}{2} = \frac{120^2 + 20^2}{40} + 18 = 388$$
 in. = $32\frac{1}{3}$ 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

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
$2\frac{1}{2}$ 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	
1 1/2	2100	4500	
2	2500	6000	
$2\frac{1}{2}$	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 = $\frac{\text{D.B.P. in lb. + speed in M.P.H.}}{375}$ 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.

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 $\frac{1}{8}$ inch of opening(up to 19 in. or about 105 deg.) corresponds to about $\frac{1}{2}$ 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 $\frac{1}{8}$ 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.
1/4	1	12	9	44	3	173/4	95	24
1/2	2	24	91/4	45	21	18	97	11
3/4	3	36	91/2	46	38	181/4	99	0
1	4	47	934	47	56	1812	100	51
11/4	5	58	10	49	15	1834	102	45
112	7	10	101/4	50	34	19	104	41
1 3/4	8	22	101/2	51	53	191/4	106	39
2	9	34	1034	53	13	191/2	108	41
$2\frac{1}{4}$	10	46	11	54	34	1934	110	46
$2\frac{1}{2}$	11	58	1114	55	55	20	112	53
$2\frac{3}{4}$	13	10	111/2	57	16	$20\frac{1}{4}$	115	5
3	14	22	1134	58	38	$20\frac{1}{2}$	117	20
$3\frac{1}{4}$	15	34	12	60	0	$20\frac{3}{4}$	119	40
$3\frac{1}{2}$	16	46	121/4	61	23	21	122	6
33/4	17	59	121/2	62	47	211/4	124	36
4	19	12	123/4	64	11	$21\frac{1}{2}$	127	14
41/4	20	24	13	65	35	21 3/4	129	59
$4\frac{1}{2}$	21	37	131/4	67	1	22	132	53
4 3/4	22	50	131/2	68	28	221/4	135	58
5	24	3	1334	69	55	$22\frac{1}{2}$	139	16
$5\frac{1}{4}$	25	16	14	71	22	223/4	142	51
$5\frac{1}{2}$	26	30	141/4	72	51	23	146	48
534	27	44	141/2	74	21	231/4	151	17
6	28	58	143/4	75	51	$23\frac{1}{2}$	156	34
$6\frac{1}{4}$	30	11	15	77	22	233/4	163	27
$6\frac{1}{2}$	31	26	151/4	78	54	24	180	0
63/4	32	40	151/2	80	27			
7	33	54	153/4	82	2	The second second		
$7\frac{1}{4}$	35	10	16	83	37			
$7\frac{1}{2}$	36	25	161/4	85	14	and the second sec		
$7\frac{3}{4}$	37	41	$16\frac{1}{2}$	86	52			
8	38	57	163/4	88	31			
81/4	40	13	17	90	12			
81/2	41	29	171/4	91	54			
831	42	46	171/2	93	38			

DECIMAL EQUIVALENTS OF EIGHTHS, SIXTEENTHS, THIRTY-SECONDS AND SIXTY-FOURTHS

Fractions Decimals	Fractions Decimals	Fractions Decimals	Fractions Decimals
$\frac{1}{64} = 0.015625$	$\frac{17}{64} = 0.265625$	$\frac{33}{64} = 0.515625$	$\frac{49}{64} = 0.765625$
$\frac{1}{32} = 0.03125$	$\frac{9}{32} = 0.28125$	$\frac{17}{32} = 0.53125$	$\frac{25}{32} = 0.78125$
$\frac{3}{64} = 0.046875$	$\frac{19}{64} = 0.296875$	$\frac{35}{64} = 0.546875$	$\frac{51}{64} = 0.796875$
$\frac{1}{16} = 0.0625$	$\frac{5}{16} = 0.3125$	$\frac{9}{16} = 0.5625$	$\frac{13}{16} = 0.8125$
$\frac{5}{64} = 0.078125$	$\frac{21}{64} = 0.328125$	$\frac{37}{64} = 0.578125$	$\frac{53}{64} = 0.828125$
$\frac{3}{32} = 0.09375$	$\frac{11}{32} = 0.34375$	$\frac{19}{32} = 0.59375$	$\frac{27}{32} = 0.84375$
$\frac{7}{64} = 0.109375$	$\frac{23}{64} = 0.359375$	$\frac{39}{64} = 0.609375$	$\frac{55}{64} = 0.859375$
$\frac{1}{8} = 0.125$	$\frac{3}{8} = 0.375$	$\frac{5}{8} = 0.625$ ·	$\frac{7}{8} = 0.875$
$\frac{9}{64} = 0.140625$	$\frac{25}{64} = 0.390625$	$\frac{41}{64} = 0.640625$	$\frac{57}{64} = 0.890625$
$\frac{5}{32} = 0.15625$	$\frac{13}{32} = 0.40625$	$\frac{21}{32} = 0.65625$	$\frac{29}{32} = 0.90625$
$\frac{11}{64} = 0.171875$	$\frac{27}{64} = 0.421875$	$\frac{43}{64} = 0.671875$	$\frac{59}{64} = 0.921875$
$\frac{3}{16} = 0.1875$	$\frac{7}{16} = 0.4375$	$\frac{11}{16} = 0.6875$	$\frac{15}{16} = 0.9375$
$\frac{13}{64} = 0.203125$	$\frac{29}{64} = 0.453125$	$\frac{45}{64} = 0.703125$	$\frac{61}{64} = 0.953125$
$\frac{7}{32} = 0.21875$	$\frac{15}{32} = 0.46875$	$\frac{23}{32} = 0.71875$	$\frac{31}{32} = 0.96875$
$\frac{15}{64} = 0.234375$	$\frac{31}{64} = 0.484375$	$\frac{47}{64} = 0.734375$	$\frac{63}{64} = 0.984375$
$\frac{1}{4} = 0.25$	$\frac{1}{2} = 0.5$	$\frac{3}{4} = 0.75$	

TABLE OF CIRCLES—1(TRAUTWINE)DIAMETER IN UNITS AND EIGHTHS, ETC.

Diameter	Circumference	Area	Diameter	Circumference	Area
1 64	.049087	.00019	$2\frac{15}{16}$	9.22843	6.7771
$\frac{1}{32}$.098175	.00077	3	9.42478	7.0686
64	.147262	.00173	$\frac{1}{16}$	9.62113	7.3662
16	.196350	.00307	1/8	9.81748	7.6699
32 1/0	392699	.00090		10.0138	1.9798
5	.490874	.01917	74 5	10.4065	8 6179
$\frac{3}{16}$.589049	.02761	3/8	10.6029	8.9462
$\frac{7}{32}$.687223	.03758	7 16	10.7992	9.2806
1/4	.785398	.04909	$\frac{1}{2}$	10.9956	9.6211
32	.883973	.00213	16	11.1919	9.9078
$\frac{16}{11}$	1.07992	.09281	11	11.5846	10.521
3/8	1.17810	.11045	3/4	11.7810	11.045
$\frac{13}{32}$	1.27627	.12962	13	11.9773	11.416
$\frac{7}{16}$	1.37445	.15033	7/8	12.1737	11.793
$\frac{32}{32}$	1.4/202	.17257	16	12.3700	12.177
72 17	1.66897	22166	4	12.5004	12.000
9 16	1.76715	.24850	16 1/8	12.9591	13.364
1 <u>9</u> 32	1.86532	.27688	3 16	13.1554	13.772
5/8	1.96350	.30680	1/4	13.3518	14.186
32	2.00107	.33824	16	13.5481	14.607
16	2.25802	.40574	78	13.9408	15 466
3/4	2.35619	.44179	10	14.1372	15.904
25 32	2.45437	.47937	916	14.3335	16.349
13 16 27	2.55254	.51849	5/8	14.5299	16.800
32	2.05072	.55914	16	14.7262	17.257
29	2.84707	.64504	74 13	15.1189	18.190
15 16	2.94524	.69029	16	15.3153	18.665
$\frac{31}{32}$	3.04342	.73708	15	15.5116	19.147
1	3.14159	.78540	5	15.7080	19.635
16 1/0	3 53429	.88004 99402	16	16 1007	20.129
3	3.73064	1.1075	$\frac{3}{16}$	16.2970	21.135
1/4	3.92699	1.2272	1/4	16.4934	21.648
16 2	4.12334	1.3530	5 16	16.6897	22.166
2/8 7	4.31909	1.4849	2/8 7	10.8801	22.691
16	4.71239	1.7671	16 1/2	17.2788	23.758
26	4.90874	1.9175	9 16	17.4751	24.301
5/8	5.10509	2.0739	5/8	17.6715	24.850
16	5.30144	2.2305	16	17.8078	25.400
74 13	5.69414	2.5802	74 13	18.2605	26.535
7/8	5.89049	2.7612	7/8	18.4569	27.109
15 16	6.08684	2.9483	$\frac{15}{16}$	18.6532	27.688
2	6.28319	3.1416	6	18.8496	28.274
16 1/0	6 67588	3 5466	78 1/	19.2425	29.405
3	6.87223	3.7583	3/8	20.0277	31.919
1/4	7.06858	3.9761	1/2	20.4204	33.183
5 16 3/	7.26493	4.2000	5/8	20.8131	34.472
78 7	7.40128	4.4301	/4 7/2	21.2058 21.5984	30.780
$\frac{16}{1/2}$	7.85398	4.9087	7 8	21.9911	38.485
916	8.05033	5.1572	1/8	22.3838	39.871
5/8	8.24668	5.4119	1/4	22.7765	41.282
16	8.44303	5.6727	3/8	23.1692	42.718
74 13	8.83573	6.2126	72 5/0	23.9546	45.664
7/8	9.03208	6.4918	3/4	24.3473	47.173

TABLE OF CIRCLES—1—(Concluded)

(TRAUTWINE)

DIAMETER IN UNITS AND EIGHTHS, ETC.

Diameter	Circumference	Area	Diameter	Circumference	Area
Diameter 7 $\frac{7}{5}$ 8 $\frac{1}{5}$ $\frac{1}{5}$ $\frac{1}{5}$ $\frac{1}{5}$ $\frac{3}{5}$ $\frac{3}{4}$ $\frac{1}{5}$ $\frac{5}{8}$ $\frac{3}{4}$ $\frac{1}{5}$ $\frac{5}{8}$ $\frac{3}{4}$ $\frac{1}{5}$ $\frac{1}{$	Circumference 24.7400 25.1327 25.5254 25.9181 26.3108 26.7035 27.0962 27.4889 27.8816 28.2743 28.6670 29.0597 29.4524 20.8451	Area 48.707 50.265 51.849 53.456 55.088 56.745 58.426 60.132 61.862 63.617 65.397 67.201 69.029 70.882	10 16 14 36 12 12 12 12 12 12 12 12 12 12	Circumterence 31.4159 31.8086 32.2013 32.5940 32.9867 33.3794 33.7721 34.1648 34.5575 34.9502 35.3429 35.7356 36.1283 26.5910	Area 78.540 80.516 82.516 84.541 86.590 88.664 90.763 92.886 95.033 97.205 99.402 101.62 103.87
72 5/8 3/4 7/8	$\begin{array}{c} 29.8431\\ 30.2378\\ 30.6305\\ 31.0232\end{array}$	$\begin{array}{c} 70.882 \\ 72.760 \\ 74.662 \\ 76.589 \end{array}$	12 8 8 34 78 12	36.9210 36.9137 37.3064 37.6991	$ \begin{array}{c} 100.14\\ 108.43\\ 110.75\\ 113.10 \end{array} $

TABLE OF CIRCLES-2

(TRAUTWINE)

DIAMETER IN UNITS AND TENTHS, ETC.

		'I			
0.1	0.314159	0.007854	3.8	11 93805	11 34115
0.2	0.628319	0.031416	3.9	12 25221	11 04501
0.3	0.942478	0.070686	4.0	12.20221	19 56697
0.4	1.956637	0.125664	4.1	19 99059	12.00007
0.5	1.570706	0.125004	4.1	12.00000	10.20204
0.0	1.070790	0.190300	4.2	10.19409	10.00442
0.0	1.004900	0.202140	4.0	13.30883	14.52201
0.7	2.199110	0.384840	4.4	13.82301	15.20531
0.8	2.010274	0.302035	4.0	14.13/17	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 91104
3.0	9 424778	7 06858	67	21 04867	35 25652
3.1	9 738937	7 54768	6.8	21.01001	36 31681
3.2	10.05310	8 04248	6.0	21.50285	37 30981
3.3	10.36726	8 55200	7.0	21.07035	38 48451
3.4	10.68149	0.07020	7.1	21.33110	20 50102
35	10.00142	0.69112	7.9	22.00001	09.09192
3.6	11 20072	10 17976	7.2	22.01947	40.71004
37	11.60376	10.75910	7.4	22.90000	41.80087
0.1	11.02009	10.70210	1.4	20.24/19	43.00840

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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. In.	Circumference-Feet	Area—Sq. Ft.	Diameter Ft. 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

TABLE OF CIRCLES—3—(Concluded)

(TRAUTWINE)

DIAMETER IN FEET AND INCHES

Diar Ft.	neter In.	Circumference—Feet	' Area—Sq. Ft.	Diameter Ft. In.	Circumference—Feet	Area—Sq. Ft.
5	$1 \\ 2 \\ 3$	15.96976 16.23156 16.49336	20.29491 20.96577 21.64754	8 7 8 9	26.96534 27.22714 27.48894	57.86312 58.99213 60.13205
	4 5 6	16.75516 17.01696 17.27876	$\begin{array}{c} 22.34021 \\ 23.04380 \\ 23.75829 \end{array}$	10 11 9 0	27.75074 28.01253 28.27433	61.28287 62.44461 63.61725
	7 8 9	$17.54056 \\ 17.80236 \\ 18.06416$	$\begin{array}{r} 24.48370 \\ 25.22001 \\ 25.96723 \end{array}$	1 2 3	$\begin{array}{c} 28.53613 \\ 28.79793 \\ 29.05973 \end{array}$	64.80080 65.99526 67.20063
6	10 11 0	$18.32596 \\18.58776 \\18.84956$	26.72535 27.49439 28.27433	4 5 6	$\begin{array}{c} 29.32153 \\ 29.58333 \\ 29.84513 \end{array}$	$\begin{array}{c} 68.41691 \\ 69.64409 \\ 70.88218 \end{array}$
1	$\begin{array}{c}1\\2\\3\end{array}$	$\begin{array}{r} 19.11136 \\ 19.37315 \\ 19.63495 \end{array}$	$\begin{array}{c} 29.06519 \\ 29.86695 \\ 30.67962 \end{array}$	7 8 9	$30.10693 \\ 30.36873 \\ 30.63053$	$72.13119 \\73.39110 \\74.66191$
	$\begin{array}{c} 4\\ 5\\ 6\end{array}$	$\begin{array}{c} 19.89675 \\ 20.15855 \\ 20.42035 \end{array}$	$31.50319 \\ 32.33768 \\ 33.18307$	$\begin{array}{c} 10\\11\\10&0\end{array}$	$30.89233 \\ 31.15413 \\ 31.41593$	$\begin{array}{c} 75.94364 \\ 77.23627 \\ 78.53982 \end{array}$
	7 8 9	$\begin{array}{c} 20.68215\\ 20.94395\\ 21.20575\end{array}$	$34.03937 \\ 34.90659 \\ 35.78470$	1 2 3	31.67773 31.93953 32.20132	$\begin{array}{c} 79.85427 \\ 81.17963 \\ 82.51589 \end{array}$
7	$\begin{array}{c}10\\11\\0\end{array}$	21.46755 21.72935 21.99115 22.99525	36.67373 37.57367 38.48451	$ \begin{array}{c} 4 \\ 5 \\ 6 \\ 7 \end{array} $	32.46312 32.72492 32.98672 22.94672	83.86307 85.22115 86.59015 87.97005
	$\frac{1}{2}$	$\begin{array}{c} 22.25295 \\ 22.51475 \\ 22.77655 \\ 22.02825 \end{array}$	$ \begin{array}{r} 39.40020 \\ 40.33892 \\ 41.28249 \\ 42.92607 \end{array} $	8 9	33.24852 33.51032 33.77212 24.02202	87.97005 89.36086 90.76258 02.17520
	$4\\5\\6\\7$	$\begin{array}{c} 23.03835 \\ 23.30015 \\ 23.56194 \\ 22.9274 \end{array}$	$\begin{array}{r} 42.23097 \\ 43.20235 \\ 44.17865 \\ 45.16595 \end{array}$	$ \begin{array}{c} 10\\ 11\\ 11\\ 0\\ 1 \end{array} $	34.03392 34.29572 34.55752 24.81029	$\begin{array}{r} 92.17520 \\ 93.59874 \\ 95.03318 \\ 06.47852 \end{array}$
	8. 9	$\begin{array}{c c} 23.82374 \\ 24.08554 \\ 24.34734 \\ 24.60914 \end{array}$	$\begin{array}{r} 43.10383 \\ 46.16396 \\ 47.17298 \\ 48.10200 \end{array}$	$\begin{array}{c} 1\\ 2\\ 3\\ 4\end{array}$	34.81932 35.08112 35.34292 35.60472	90.47853 97.93479 99.40196 100,8800
8	$\begin{array}{c}10\\11\\0\\1\end{array}$	$\begin{array}{r} 24.87094 \\ 25.13274 \\ 25.39454 \end{array}$	$\begin{array}{r} 40.13230\\ 49.22374\\ 50.26548\\ 51.31813\end{array}$	5 6 7	35.86652 36.12832 36.39011	$ 102.3690 \\ 103.8689 \\ 105.3797 $
	2 3 4	$\begin{array}{c} 25.65634 \\ 25.91814 \\ 26.17994 \end{array}$	52.38169 53.45616 54.54154		36.65191 36.91371 37.17551	$106.9014 \\ 108.4340 \\ 109.9776$
	5 6	$26.44174 \\ 26.70354$	$55.63782 \\ 56.74502$	$\begin{array}{c} 11\\12&0\end{array}$	$37.43731 \\ 37.69911$	$\frac{111.5320}{113.0973}$

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
1/1	20	0.185	0.049	0.027
5 16	18	0.240	0.077	0.045
3%	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
<u>9</u> 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
$1\frac{1}{8}$	7	0.940	0.994	0.694
11/4	7	1.065	1.227	0.893
1 3/8	6	1.160	1.485	1.057
$1\frac{1}{2}$	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	51/2	1.389	2.074	1.515
1 3/4	5	1.491	2.405	1.746
17/8	5	1.616	2.761	2.051
2	41/2	1.712	3.142	2.302
$2\frac{1}{4}$	41/2	1.962	3.976	3.023
$2\frac{1}{2}$	4	2.176	4.909	3.719
234	4	2.426	5.940	4.620
3	31/2	2.629	7.069	5.428
31/4	31/2	2.879	8.296	6.510
31/2	314	3,100	9.621	7.548
334	3	3.317	11.045	9.641
4	3	3,567	12.566	9,963
4 1/4	27/8	3.798	14.186	11.329
41/2	234	4.028	15.904	12.753
4 3/4	25%	4.256	17.721	14.226
5	21/2	4.480	19.635	15.763
$5\frac{1}{4}$	212	4.730	21.648	17.572
51/2	23%	4.953	23.758	19.267
534	23%	5,203	25.967	21.262
6	21/4	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

Then $X = 1\frac{1}{2}D + \frac{1}{8}$ in. $Y = \frac{1}{2}X$ Z = D Finished $1\frac{1}{2}D+\frac{1}{16}$ in. ' $D-\frac{1}{16}$ in. $D-\frac{1}{16}$ in.

STANDARD SIZES OF WELDED WROUGHT IRON PIPE

INSIDE DIAMETE	R IN INCHES	Thickness	Weight per	Threads per
* Nominal	Actual .	in Inches	Foot in Lb.	Inch of Screw
1/	0.970	0.069	0.94	97
78 17	0.270	0.008	0.49	27
74 37	0.004	0.000	0.42	10
18	0.494	0.091	0.00	18
*2 2	0.023	0.109	0.84	14
. 1/4	0.824	0.113	1.12	14
1	1.048	0.134	1.67	111/2
1 1/4	1.380	0.140	2.24	1112
1 1/2	1.611	0.145	2.68	$11\frac{1}{2}$
2	2.067	0.154	3.61	$11\frac{1}{2}$
$2\frac{1}{2}$	2.468	0.204	5.74	8
3	3.067	0.217	7.54	8
31/2	3.548	0.226	9.00	8
4	4.026	0.237	10.66	8
41/2	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
10	10.010	0.000	10.00	0

* 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
Õ	325	105625	0.082932	319	1684	4558	2818	0.519
1	289	83521	0.065733	353	1059	3743	2234	0.656
$\overline{2}$	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
					and the second second second			

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	Millimeter	Lb. per 1000 Ft.	Lb. per Mile
B.&S. Gauge 14 B.&S. 12 B.&S. 10 B.&S. 8 B.&S. 6 B.&S. 5 B.&S. 4 B.&S. 3 B.&S. 2 B.&S. 1 B.&S. 0 B.&S. 00 B.&S. 000 B.&S.	Wires in Strand 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	$\begin{array}{c} \text{of Wires}\\ \text{in In.}\\ \hline \\ 0.0243\\ 0.0306\\ 0.0386\\ 0.0485\\ 0.0613\\ 0.0688\\ 0.0773\\ 0.0868\\ 0.0773\\ 0.0868\\ 0.0974\\ 0.0664\\ 0.0746\\ 0.0838\\ 0.094\\ 0.052\end{array}$	of Bare Cable in In. 0.0729 0.0918 0.1158 0.1455 0.1839 0.2064 0.2319 0.2604 0.2922 0.3320 0.3750 0.4190 0.4700	Nealest 74 In. 5 64 37 1/8 64 15 15 15 15 15 15 15 15 15 15 15 15 15	Millimeter 1.9843 2.3812 3.1749 3.5718 4.7624 5.1592 5.9530 6.7467 7.5404 8.3342 9.5248 10.715 11.906	$\begin{array}{c} 1000 \text{ Ft.} \\ \hline \\ 1000 \text{ Ft.} \\ \hline \\ 13 \\ 20 \\ 32 \\ 51 \\ 81 \\ 103 \\ 129 \\ 164 \\ 206 \\ 259 \\ 328 \\ 414 \\ 520 \\ 259 \end{array}$	68 105 168 269 427 544 682 867 1089 1368 1733 2192 2745
$\begin{array}{c} 0000 \text{ B.\&S.}\\ 250,000 \text{ C.M.}\\ 300,000 \text{ C.M.}\\ 350,000 \text{ C.M.}\\ 400,000 \text{ C.M.}\\ 550,000 \text{ C.M.}\\ 550,000 \text{ C.M.}\\ 600,000 \text{ C.M.}\\ 650,000 \text{ C.M.}\\ 650,000 \text{ C.M.}\\ 700,000 \text{ C.M.}\\ 700,000 \text{ C.M.}\\ 750,000 \text{ C.M.}\\ 800,000 \text{ C.M.}\\ 900,000 \text{ C.M.}\\ 1,000,000 \text{ C.M.}\\ 1,250,000 \text{ C.M.}\\ 1,500,000 \text{ C.M.}\\ 1,500,000 \text{ C.M.}\\ 1,750,000 \text{ C.M.}\\ 1,750,000 \text{ C.M.}\\ 2,000,000 \text{ C.M.}\\ \end{array}$	$19 \\ 37 \\ 37 \\ 37 \\ 37 \\ 37 \\ 61 \\ 61 \\ 61 \\ 61 \\ 61 \\ 61 \\ 61 \\ 6$	$\begin{array}{c} 0.1056\\ 0.0823\\ 0.0906\\ 0.0974\\ 0.104\\ 0.111\\ 0.0906\\ 0.095\\ 0.0992\\ 0.1033\\ 0.1072\\ 0.111\\ 0.1146\\ 0.1216\\ 0.1281\\ 0.1173\\ 0.1284\\ 0.1173\\ 0.1255 \end{array}$	$\begin{array}{c} 0.5280\\ 0.5754\\ 0.6342\\ 0.6818\\ 0.7280\\ 0.7770\\ 0.8154\\ 0.8550\\ 0.8928\\ 0.9297\\ 0.9648\\ 0.9990\\ 1.0314\\ 1.0944\\ 1.1529\\ 1.2903\\ 1.4124\\ 1.5262\\ 1.6315 \end{array}$	197764490116074499299 19776449011607449929 19766449011607449929 19766490116074499412 1976649911000000000000000000000000000000000	$\begin{array}{c} 13.493\\ 14.684\\ 16.272\\ 17.462\\ 18.653\\ 19.843\\ 20.637\\ 21.828\\ 22.621\\ 23.415\\ 24.606\\ 25.3995\\ 26.590\\ 27.781\\ 29.368\\ 32.940\\ 36.115\\ 38.893\\ 41.671\\ \end{array}$	$\begin{array}{c} 658\\ 775\\ 843\\ 1087\\ 1242\\ 1415\\ 1554\\ 1709\\ 1864\\ 2020\\ 2177\\ 2333\\ 2487\\ 2813\\ 3110\\ 3888\\ 4660\\ 5435\\ 6212\\ \end{array}$	$\begin{array}{r} 3484\\ 4080\\ 4984\\ 5476\\ 6566\\ 7480\\ 8222\\ 9032\\ 9852\\ 10688\\ 11506\\ 12304\\ 13136\\ 14864\\ 16498\\ 20534\\ 24610\\ 28700\\ 32800\\ \end{array}$

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	1 70	21.7	4	-15.0
204	95.6	13/	58.3	70 60	21.1	3	-10.1
203	95.0	130	01.8 57.9	69	20.0	2	-10.7
202	94.4	100	56 7	67	20.0	0	-17.2 -17.8
201	03 3	133	56.1	66	18.9	-1	-18.3
100	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	50.0	00 55	10.0	-11	-23.9
189	81.2	122	00.0 40.4	50	12.8	-12 -12	-24.4
100	86.1	121	49.4	53	11.2	-14	-25.6
186	85.6	110	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	0.7	-23	-30.0
176	80.0	110	40.0	40	0.1	-24	-31.7
170	80.0	109	44.0	42	5.0	-20	-32.2
175	79.4	108	417	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	-30	-31.2
165	73.9	98	30.7	30	-0.0	-30	-38.3
104	13.3	97	00.1 25.6	20	-1.1	-38	-38.9
162	72.9	95	35.0	28	-2.2	-39	-39.4
161	717	.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	-0.7	-41	-43.9
153	67.2	86	30.0	19	-7.2	-48	-45.0
152	00.7	80	29.4	17	-8.3	-50	-45.6
150	00.1 65.6	04 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.

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	525 700 800 900	$977 \\ 1292 \\ 1472 \\ 1652$	Deep orange heat Clear orange heat White heat Bright white heat	$ \begin{array}{r} 1100 \\ 1200 \\ 1300 \\ 1400 \\ 1500 \end{array} $	$\begin{array}{r} 2021 \\ 2192 \\ 2372 \\ 2552 \\ 9722 \end{array}$
Clear cherry red heat	1000	1832	Dazzling white heat	to 1600	to 2912

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	$2.6 \\ 6.70 \\ 8.1 \\ 8.4 \\ 8.5$	$162 \\ 418 \\ 504 \\ 524 \\ 529 \\ 56$
Copper, cast, 8.6 to 8.8	8.7 8.9 2.72	542 555 170 100 107
Iron, cast, 0.9 to 7.4	7.13 7.21 7.48 7.77	$440 \\ 450 \\ 467 \\ 485$
Iron, large rolled bars, usually assumed at	7.69 .	480 485 709.6
Limestones and marbles, quarried in irregular fragments, one cubic yard solid, makes about 1.9 cubic yards perfectly loose; or about 13⁄4 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	11.00	.96
Mica, 2.75 to 3.1 Platinum, 21 to 22 Quartz, quarried, loose, one measure solid makes full 1 ³ / ₄ broken and piled Rosin Sand, of pure quartz: perfectly dried, and loose, usually 112 to 133 lb, per struck	$2.93 \\ 21.5 \\ 1.1$	$183 \\ 1342 \\ 94 \\ 68.6$
bushel Sandstones, quarried and piled, one measure solid makes about 134 piled Shales, quarried, in piles Steel, 7.7 to 7.9; the heaviest contains least carbon 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.	7.85	90 to 106 86 92 490
Sulphur	$2.0 \\ 7.35 \\ 1.0$	12545910762.355
or 0.5254 oz. troy; or 252.175 grains. The grain is the same in troy, avoirdu- pois and apothecary. Zinc or spelter, 6.8 to 7.2	7.00	437.5

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GENERAL ELECTRIC COMPANY

PRINCIPAL OFFICES, SCHENECTADY, N. Y.

SALES OFFICES (Address nearest office)

DOGTON MAND	
BUSION, MASS	84 State Street
Springfield, Mass	Massachusetts Mutual Building
Providence, R. I.	Union Trust Building
NEW YORK N V	30 Church Street
Popherton N V	Cronito Building
Nochester, N. I	Granite Duilding
Syracuse, N.Y	Post-Standard Building
Buffalo, N. Y	Ellicott Square Building
New Haven, Conn	Malley Building
PHILADELPHIA, PA.	Witherspoon Building
Baltimore Md	Electrical Building
Charlotte N C	Trust Building
Charlotte, W. U.	Charleston National Dan's Duilding
Charleston, w. va	Charleston National Dank Building
Erie, Pa	Marine National Bank Building
Pittsburg, Pa	Oliver Building
Richmond, Va	Mutual Building
ATLANTA. GA	Third National Bank Building
Birmingham, Ala.	Brown-Marx Building
Macon Ga	Grand Building
Now Orleans La	Maison-Blanche Building
CINCINNATI OIIIO	Descrident Den's Duilding
CINCINNAII, OHIO	Provident Bank Building
Columbus, Onio	Columbus Savings & Trust Building
Cleveland, Ohio	Citizens Building
Chattanooga, Tenn	James Building
Memphis, Tenn.	Randolph Building
Nashville, Tenn.	Stahlman Building
Indianapolis Ind	Traction Terminal Building
Louisville Kr	Paul Iones Building
CHICACO III	Monadnoals Building
CHICAGO, ILL.	Mainstie Duilding (Office of Calibities Ament)
Detroit, Mich	Majestic Building (Office of Soliciting Agent)
St. Louis, Mo	Wainwright Building
Kansas City, Mo	Dwight Building
Butte. Montana	Electric Building
Minneapolis, Minn.	410 Third Ave., North
Milwaukee Wis	Public Service Building
DENVED COLO	First National Bank Building
DENVER, COLO	Idaho Building
Boise, Idano	Idano building
Salt Lake City, Utah	Newnouse Building
SAN FRANCISCO, CAL	Rialto Building
Los Angeles, Cal	124 West Fourth Street
Portland. Ore	Electric Building
Seattle, Wash,	Colman Building
Spokane Wash	Paulsen Building
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For TEXAS and OKLAHOMA Business refer to

General Electric	Company	of	TEXAS	s,				When the second s
Dallas, Tex.								Lamar & Caruth Sts.
El Paso, Tex.							Chamber	of Commerce Building
Houston, Tex.								Chronicle Building
Oklahoma City	y, Okla.			•				Insurance Building

FOREIGN SALES OFFICES Schenectady, N. Y., Foreign Dept. New York, N. Y., 30 Church St. London, E. C., England, 83 Cannon St.

For all CANADIAN Business refer to Canadian General Electric Co., Ltd., Toronto, Ont.



