

LODESTAR[®]

BGV-D8+ Supplement to Manual #00000999
.25 Tonne to 1.3 Tonne
250 kg to 1300 kg

ENTERTAINMENT



Columbus McKinnon Corporation
CM Entertainment
140 John James Audubon Parkway
Amherst, New York 14228-1197
1-800-888-0985
1-716-689-5400
www.CM-ET.com

LODESTAR D8+

According to VPLT.SR2.0, D8 Plus chain hoists are used to lift loads during set-up and have the special characteristic of being able to hold loads at rest above people, without using a secondary component. The Lodestar D8+ has a minimum of 10:1 design factor, double brakes, and a clutch outside of the load path (when power is disconnected), per the requirements of the German Code of Practice, VPLT.SR2.0.

This literature is a D8+ manual supplement for Lodestar E/T Manual, 00000999. Please refer to manual 00000999 for any information that is not found in this supplement, including installation, operation and troubleshooting.

STANDARDS

ASME B30.16; ASME HST-1; BS 7905-1; BS 7906-1; CWA 15902-1:2009; DIN 568-3; EC Machine Directive 2006/42 EC; Low Voltage Directive 73/23/EEC; EC EMC Directive 89/336/EEC; EN349:1993; EN 12100-1:2003; EN 12100-2:2003; EN ISO 13857:2008; EN 14492-2:2007; EN 60204-1:2006; EN 60204-32:1998; EN 55011:2009; EN 55014:2006; FEM 9.511,9.671,9.811,9.683,9.941,9.755; VPLT.SR2.0 (D8 Plus)

SPECIFICATIONS

Entertainment-Lodestar Electric Chain Hoists, BGV-D8+
Single Speed 230/460-3-60 or 220/380-3-50 or 220/415-3-50

Model	Load Capacity	FEM Class	Starts/hr	Duty	Lifting Speed 50Hz units		Lifting Speed 60Hz units		Weight With Rigid Suspension and 10'(3m) lift		Chain Falls	Chain Size	Chain Minimum Breaking Strength		Chain Weight Per Length of Lift	
	kg				ft/min	m/min	ft/min	m/min	lb	kg		mm x mm	lbf	kN	lb/ft	kg/m
F	250	2m	240	40%	13.3	4.1	16	4.9	79.0	35.8	1	6.35 x 18.91	10200	45.4	0.585	0.871
JJ	500	2m	240	40%	53.3	16.3	64	19.5	142	64.4	1	7.92 x 21.80	18000	80.1	0.94	1.40
L	650	2m	240	40%	13.3	4.1	16	4.9	135	61.2	1	7.92 x 21.80	18000	80.1	0.94	1.40
LL	500	2m	240	40%	26.7	8.1	32	9.8	142	64.4	1	7.92 x 21.80	18000	80.1	0.94	1.40
R	1300	2m	240	40%	6.7	2.0	8	2.4	158	71.7	2	7.92 x 21.80	18000	80.1	1.88	2.80
RR	1000	2m	240	40%	13.3	4.1	16	4.9	166	75.3	2	7.92 x 21.80	18000	80.1	1.88	2.80

Model	Motor Current 230/460-3-60	Motor Current 230/380-3-50	Motor Current 230/415-3-50	Rated Motor Speed		Motor Power 50Hz		Motor Power 60Hz		Shortest Distance Between Hooks		Sound Emission @ 1m	IP Rating	207V Brake Current
	A	A	A	rpm @ 50Hz	rpm @ 60Hz	HP	KW	HP	KW	in	mm	dBA		
F	1.55/78	2.3/7.8	2.3/88	1425	1725	0.21	0.155	0.25	0.186	14.8	375.9	68	54	0.225
JJ	5.74/2.87	6.32/2.67	6.32/2.79	1425	1725	0.83	0.62	1.00	0.75	16.9	429.3	68	54	0.324
L	2.5/1.25	3.4/1.4	3.4/1.44	1425	1725	0.54	0.404	0.65	0.485	16.9	429.3	68	54	0.324
LL	4.0/2.0	5.41/1.91	5.41/2.28	1425	1725	0.83	0.62	1.00	0.75	16.9	429.3	68	54	0.324
R	2.5/1.25	3.4/1.4	3.4/1.44	1425	1725	0.54	0.404	0.65	0.485	22.7	576.6	68	54	0.324
RR	4.0/2.0	5.41/1.91	5.41/2.28	1425	1725	0.83	0.62	1.00	0.75	22.7	576.6	68	54	0.324

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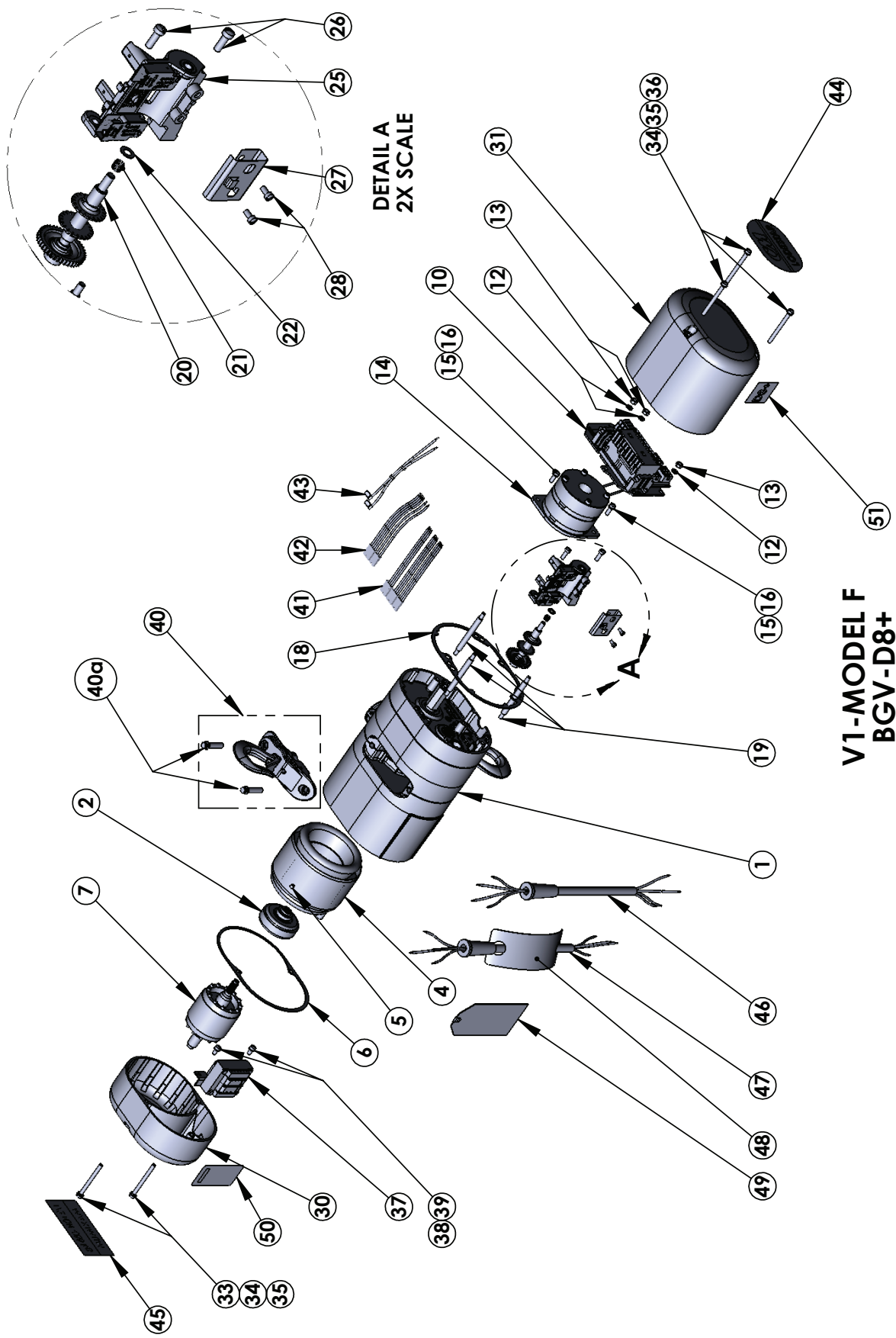
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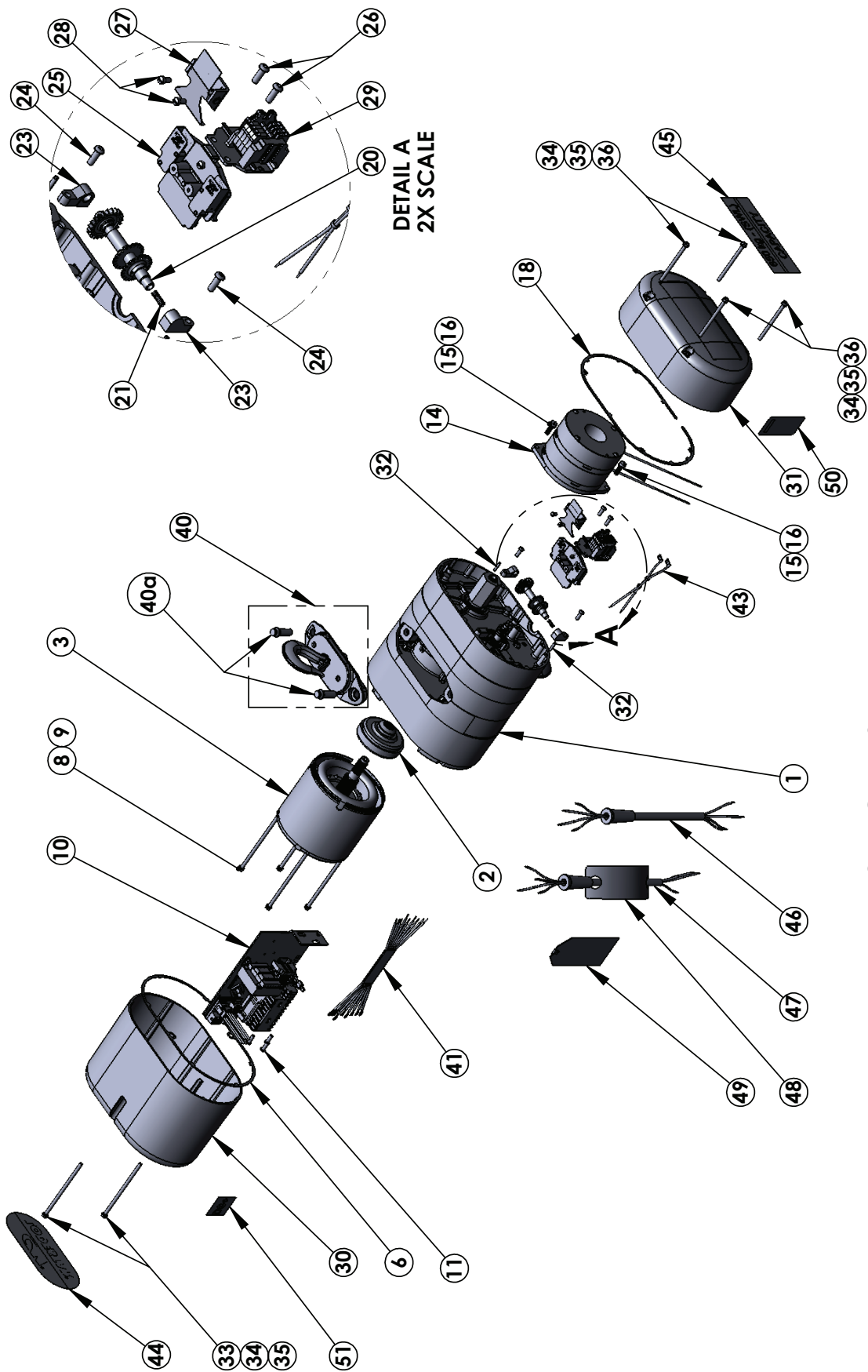
ENTERTAINMENT LODESTAR, BGV-D8+

Item No.	Description			V2-Large Frame					
		Model F	QTY	Component Part Numbers					
				Model JJ	Model L	Model R	Model LL	Model RR	QTY
1	Gear Box Sub-Assy See Supplement Page 6-9	00001030B	1	00001033B	00001031B	00001031B	00001032B	00001032B	1
2	Clutch Assembly	00000240	1	00000243	00000288	00000288	00000242	00000242	1
3	3/4 Motor - 230/460V-3ø	-		00000450	00000440	00000440	00000450	00000450	
	3/4 Motor - 230/460V-3ø Direct Control	-		00000408	00000402	00000402	00000408	00000408	
4	Stator - 230/460-3ø	00000461	1	-					-
5	Stator Pin	983541	1	-					-
6	Motor Cover Gasket	27847	1	35845					1
7	Rotor Assembly 3ø	00000260	1	-					-
8	Lockwasher	-	-	982226					4
9	Motor Mounting Screw	-	-	87336	87377	87377	87336	87336	4
10	Contactor Plate Assembly	See Supplement Page 10-11	1	See Supplement Page 12-13					1
11	Contactor Plate Mounting Screw	-	-	983656					3
12	Lockwasher	982226	3	-					-
13	Contactor Plate Mounting Nut	982514	3	-					-
14	DC Brake Assembly See Supplement Page 14	25560	1	25577					1
15	Lockwasher		2	945851					2
16	Brake Mounting Screw	982708	2	982709					2
17	-Empty-	-	-	-					-
18	Back Frame Cover Gasket	27848	1	00000236					1
19	Contactor Plate Mounting Stud	27856	3	-					-
20	Limit Switch Shaft S/A	00000521	1	00000525	00000524	00000524	00000525	00000525	1*
21	Limit Switch Shaft Spring	28712	1	35703					1*
22	Washer	987878	1	-					-
23	Limit Switch Bearing	-	-	35751					2*
24	Limit Switch Bearing Screws	-	-	983656					2*
25	Limit Switch Bracket S/A	00000520	1	36827					1*
26	Limit Switch Bracket Screws	982708	2	983656					2*
27	Limit Switch Spring Guide	52737	1	52500					1*
28	Limit Switch Guide Mounting Screw	983614	2	983614					2*
29	Terminal Strip S/A	-	-	00000380					1*
30	Motor Cover	27059	1	36025B					1
31	Back Frame Cover	28009B	1	36008B					1
32	Backframe Cover Pins	-	-	983784					4
33	Motor Cover Screw	987397	2	987553					2
34	Washer	982251	5	982251					6
35	Screw Retaining Clip	10409702	5	10409702					6
36	Back Frame Cover Screw	87325	3	968752					4
37	Transformer 24V Secondary	00000586	1	Transformer is included with the Contactor Plate Assembly					-
	Transformer 48V Secondary	00000587							
	Transformer 120V Secondary	00000588							
	38	Lockwasher	982226	2					
39	Transformer Mounting Screw	982688	2						
40	Upper Suspension Assembly	See Manual 00000999, Page 37	1	See Manual 00000999, Page 37					1
40a	Suspension Bolt	987554	2	36849					2
41	Harness-Three Phase	00000208		00000747					
	Harness-Direct Control	00000748		00000745					
42	Harness-V1 (3ø Only)	00000749	1*	-					-
43	-Empty-	-	-	-					-
44	Series Label	00000792	1	00000793					1
45	Capacity Label	00000213	1	00000214	00000783	00000784	00000214	00000215	1
46	Control Cord-Three Phase	00000743		00000744					-
47	Power Cord-Three Phase	00000741		00000742					
	Power Cord-Direct Control	27637		00000740					
48	Warning Tag	81704	1	81704					1
49	Instruction Tag	28271	1	28271					1
	Instruction Tag-Direct Control	00000771		00000771					
50	Warning Label	00000209	1	00000209					1
51	"D8+" Label	00000210	1	00000210					1
52**	D8+ Warning Label	00000211	1	00000211					1
53**	RoHS Label	00000782	1	00000782					1
54**	Label, Electrical Information	24846	1	24846					1
55**	Chain Label	928894	1	928894					1
56**	Warning Label, Electrical Hazard	24842	2	24842					2
57**	CE Label	40219	1	40219					1

* Not required for Direct Control units

** Not shown in exploded views



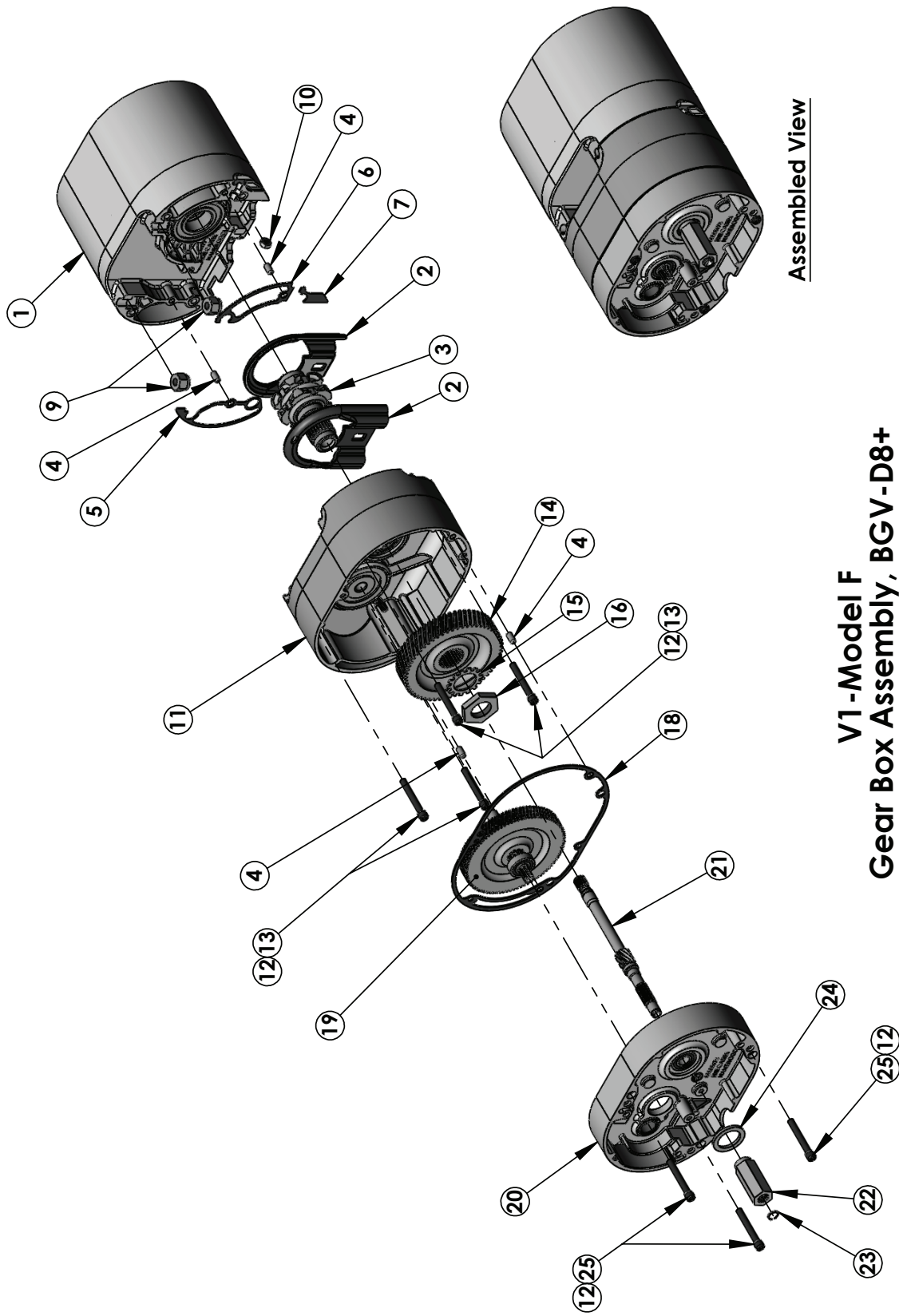


**V2-MODELS JJ, L, R, LL, & RR
BGV-D8+**

GEARBOX ASSEMBLIES

Entertainment Lodestar, BGV-D8+ V1-Small Frame Gearbox Assemblies

Item No.	Description	V1-Small Frame	
		Model F	QTY
-	Gearbox Sub-Assembly	00001030B	-
1	Motor Housing Sub-Assy	00000504B	1
2	Chain Guide	00000232	2
3	Lift-Wheel	00000500	1
4	Dowel Pin	82354	4
5	Gasket-Motor Housing Wireway	00000189	1
6	Gasket Motor Housing	00000190	1
7	Gasket Motor Housing	00000191	1
8	Suspension Anchor	-	-
9	Suspension Nut	927755	2
10	Loose End Nut	82638	1
11	Gear Housing Sub-Assy	00000502B	1
12	Lockwasher	940802	7
13	Gear Housing Screw	28830	4
14	Lift-Wheel Gear	00000161 (59Teeth)	1
15	Lock Washer	00000199	1
16	Lift-Wheel Nut	00000198	1
17	Alignment Bushing	-	-
18	Gear Housing Gasket	00000188	1
19	Intermediate Shaft Sub-Assy	00000155 (88Teeth/8 Teeth)	1
20	Backframe Sub-Assy	00000505B	1
21	Drive Shaft	00000200 (10 Tooth Pinion)	1
22	Hex Driver	25553	1
23	Retaining Ring	27766	1
24	Bearing Spacer	27710	1
25	Back-Frame Screw	982699	3

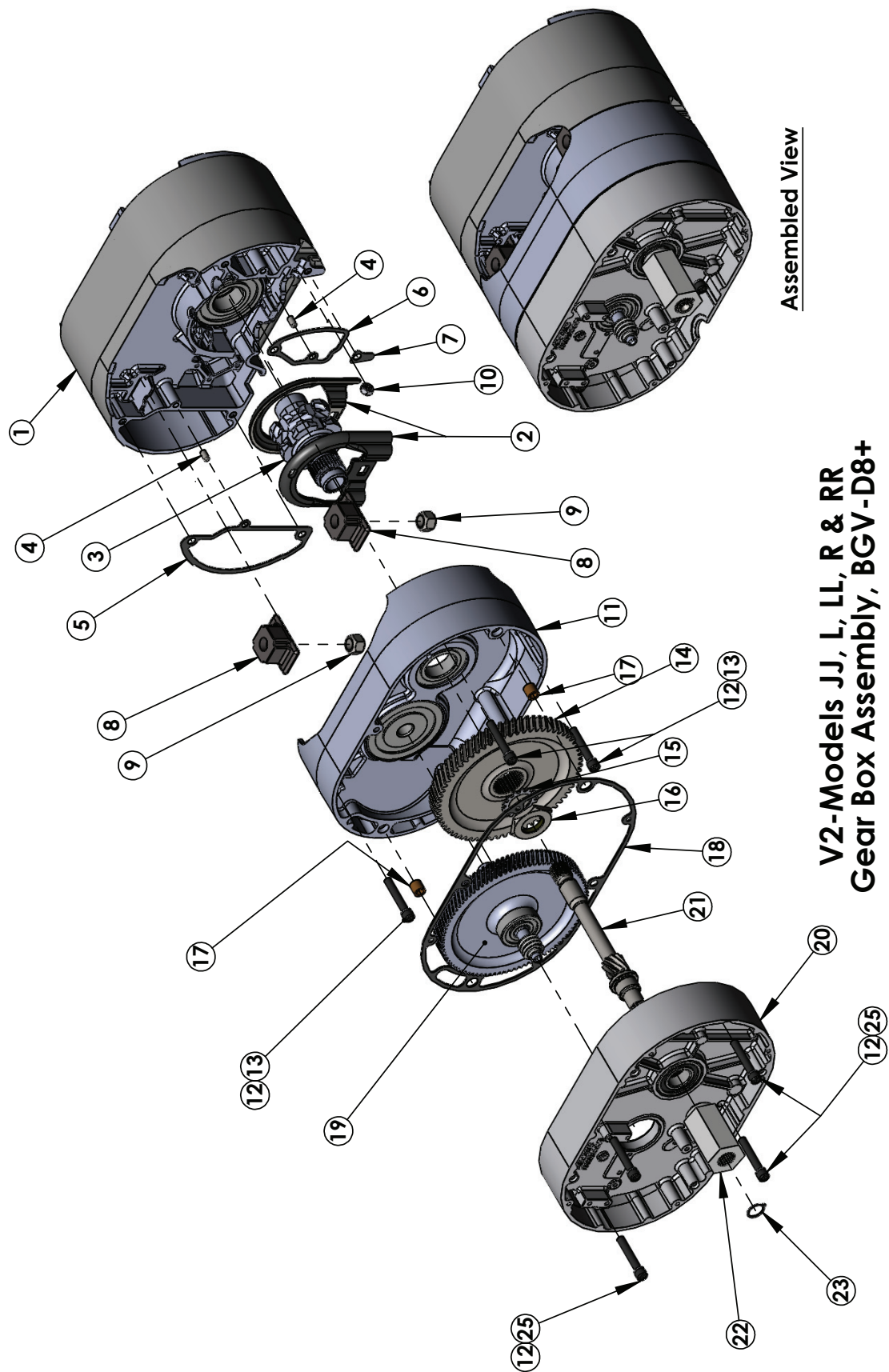


Assembled View

V1-Model F Gear Box Assembly, BGV-D8+

**Entertainment Lodestar, BGV-D8+
V2-Large Frame Gearbox Assemblies**

Item No.	Description	V2-Large Frame Component Part Numbers					QTY
		Model JJ	Model L	Model R	Model LL	Model RR	
-	Gearbox Sub-Assembly	00001033B	00001031B	00001031B	00001032B	00001032B	-
1	Motor Housing Sub-Assy			00000509B			1
2	Chain Guide			00000235			2
3	Lift-Wheel			00000501			1
4	Dowel Pin			82354			2
5	Gasket-Motor Housing Wireway			00000193			1
6	Gasket Motor Housing			00000194			1
7	Gasket Motor Housing			00000549			1
8	Suspension Anchor			35066			2
9	Suspension Nut			935791			2
10	Loose End Nut			82639			1
11	Gear Housing Sub-Assy			00000507B			1
12	Lockwasher			940830			8
13	Gear Housing Screw			982682			4
14	Lift-Wheel Gear	00000162 (42 Teeth)		00000163 (66 Teeth)			1
15	Lock Washer			986276			1
16	Lift-Wheel Nut			35773			1
17	Alignment Bushing			35768			2
18	Gear Housing Gasket			00000192			1
19	Intermediate Shaft Sub-Assy	00000170 (47 Teeth/10 Teeth)	00000171 (92 Teeth/8Teeth)	00000171 (92 Teeth/8Teeth)	00000146 (47 Teeth/8 Teeth)	00000146 (47 Teeth/8 Teeth)	1
20	Backframe Sub-Assy			00000510B			1
21	Drive Shaft	00000201 (10 Tooth Pinion)	00000202 (10 Tooth Pinion)	00000202 (10 Tooth Pinion)	00000201 (10 Tooth Pinion)	00000201 (10 Tooth Pinion)	1
22	Hex Driver			25566			1
23	Retaining Ring			35766			1
24	Bearing Spacer			-			-
25	Back-Frame Screw			982682			4



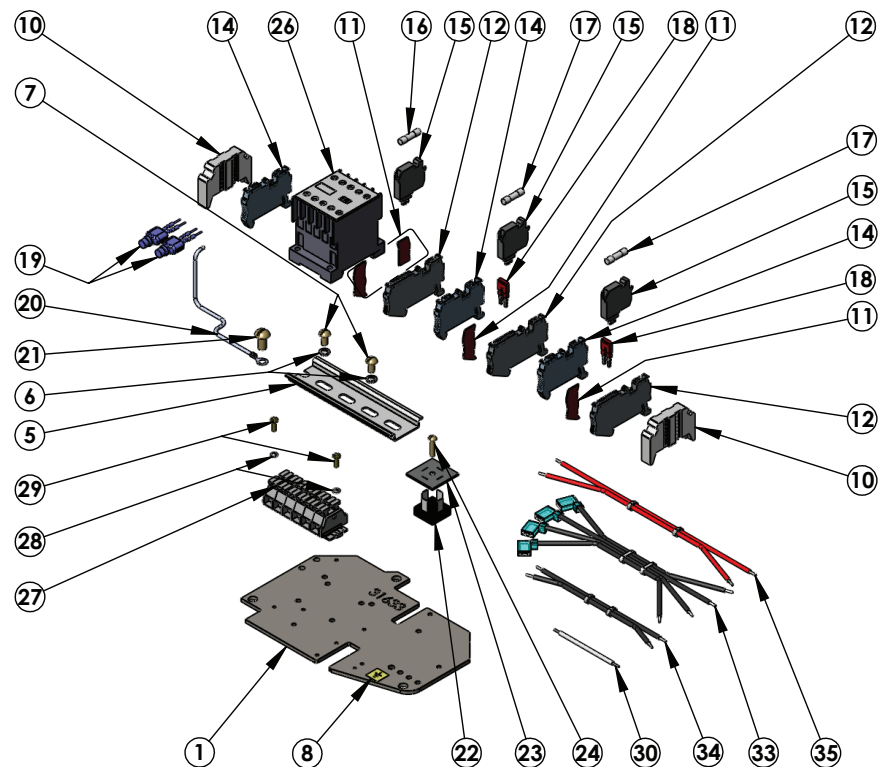
Assembled View

V2-Models JJ, L, LL, R & RR Gear Box Assembly, BGV-D8+

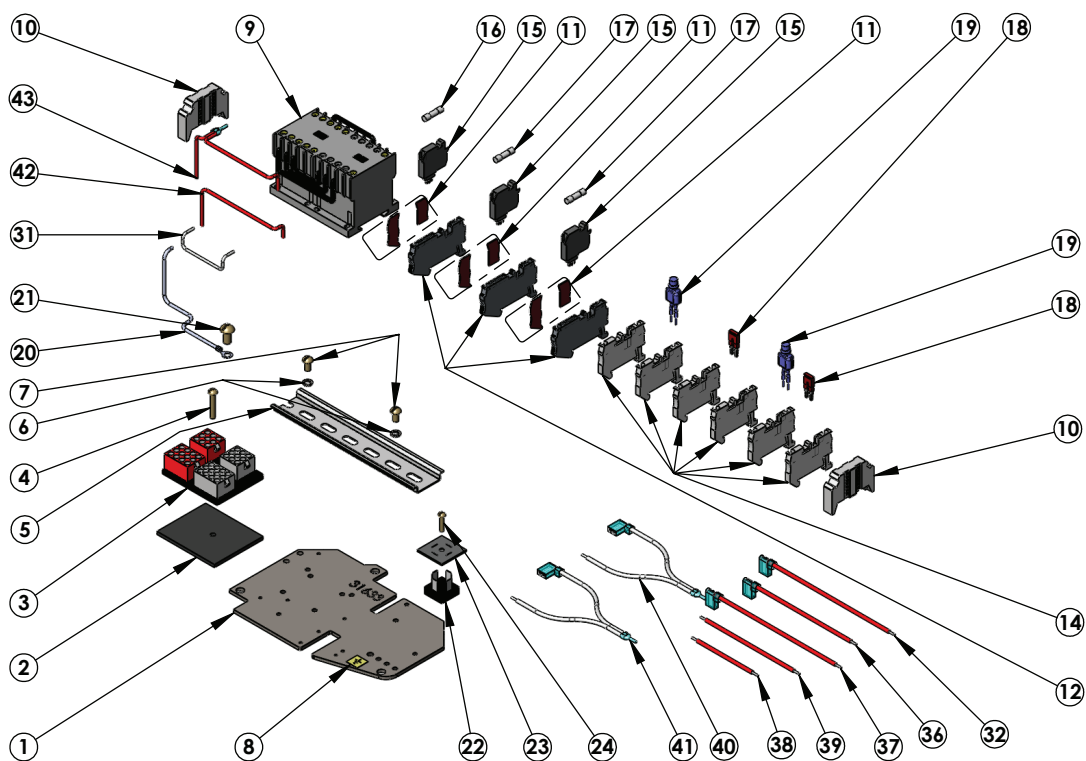
CONTACTOR PLATE ASSEMBLIES

Entertainment Lodestar BGV-D8+ V1-Model F Contactor Plate Assemblies

Item No.	Part Number	Description	Low Voltage Control (LVC)			Direct Control
			00000542	00000543	00000544	00000333
-	-	Contactor Plate Assembly	QTY.	QTY.	QTY.	QTY.
1	31633	Contactor Plate	1			1
2	27685	Voltage Change Board Insulator	1			
3	27672	Voltage Change Board	1			-
4	987862	Machine Screw	1			-
5	29009	Din-Rail 4.50 Long	-			1
	29010	Din-Rail 6.50" Long	1			-
6	987873	Lockwasher	2			2
7	982686	Machine Screw	2			2
8	20940	Ground Label	1			1
9	28860	Reversing Contactor -24V	1	-	-	-
	24797	Reversing Contactor -48V	-	1	-	
	24799	Reversing Contactor -110V	-	-	1	
10	29015	Terminal Strip End Clamp	2			2
11	00000398	Terminal Strip Cover Segment	3			3
12	29018	Fusible Terminal Strip	3			3
13	-	-Empty-	-			-
14	29014	Terminal Strip	6			3
15	29019	Fusible Terminal Strip Cartridge	3			3
16	00000393	Fuse-5Mm X 20Mm-500Ma	1			1
17	00000394	Fuse-5Mm X 20Mm-1A	2			2
18	29047	Terminal Strip Bridge	2			2
19	00000535	Surge Suppressor	2			2
20	27189	Jumper-G/Y-#16 Awg	1			1
21	987827	Machine Screw	1			1
22	70246	Rectifier	1			1
23	70274	Rectifier Insulator	1			1
24	957854	Machine Screw	1			1
25	-	Rectifier Nut	-			-
26	28904	Non-Reversing Contactor-110V	-			1
27	27700	6-Pole Terminal Strip	-			1
28	987929	Lockwasher	-			2
29	982718	Machine Screw	-			2
30	51845	Jumper	-			1
31	51847	Contactor Jumper	1			-
32	00000205	B6 Jumper	1			-
33	00000326	Rectifier Harness	-			1
34	00000327	'H5/H6' Jumper Harness	-			1
35	00000331	'R1/R2' Jumper Harness	-			1
36	00000375	B7 Jumper	1			-
37	00000376	B5 Jumper	1			-
38	00000537	B8 Jumper	1			-
39	00000538	B9 Jumper	1			-
40	00000540	'B1/B3' Jumper Harness	1			-
41	00000541	'B2/B4' Jumper Harness	1			-
42	00000750	Jumper Wire	1			-
43	00000751	Jumper Wire	1			-



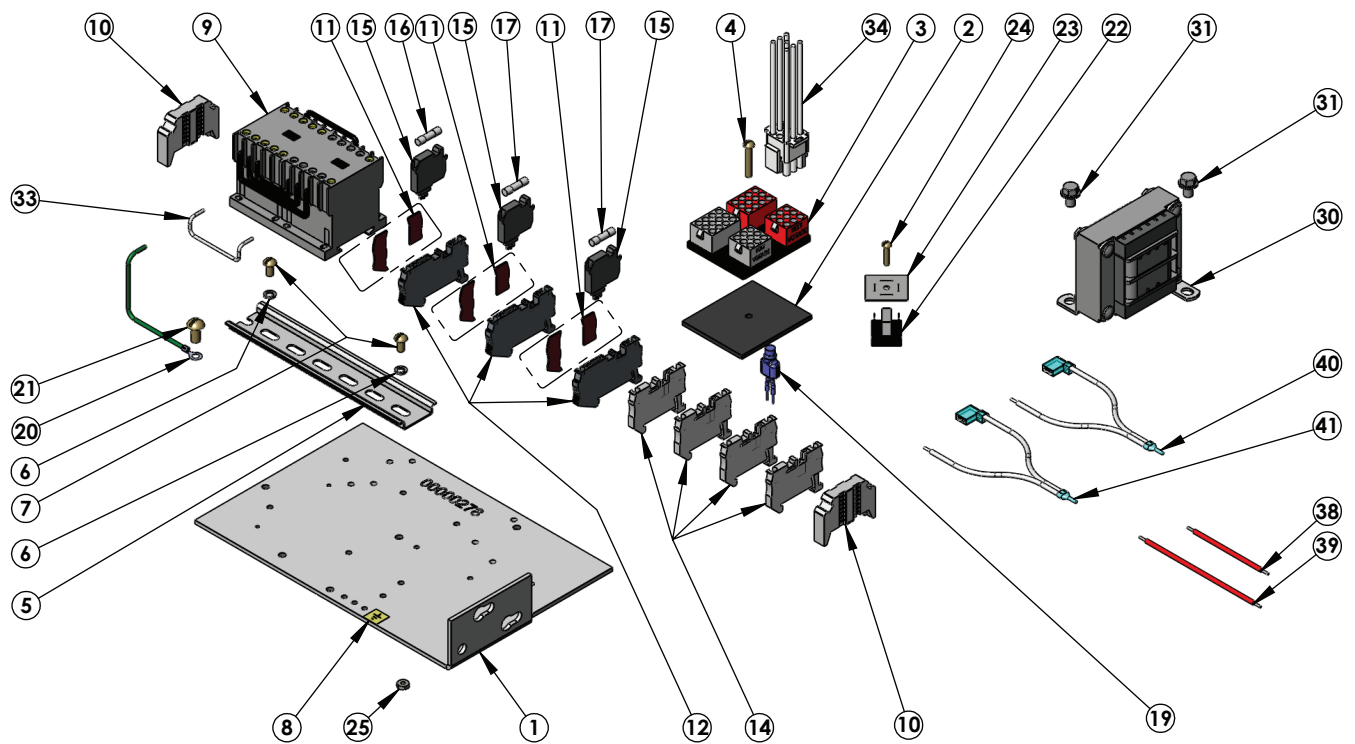
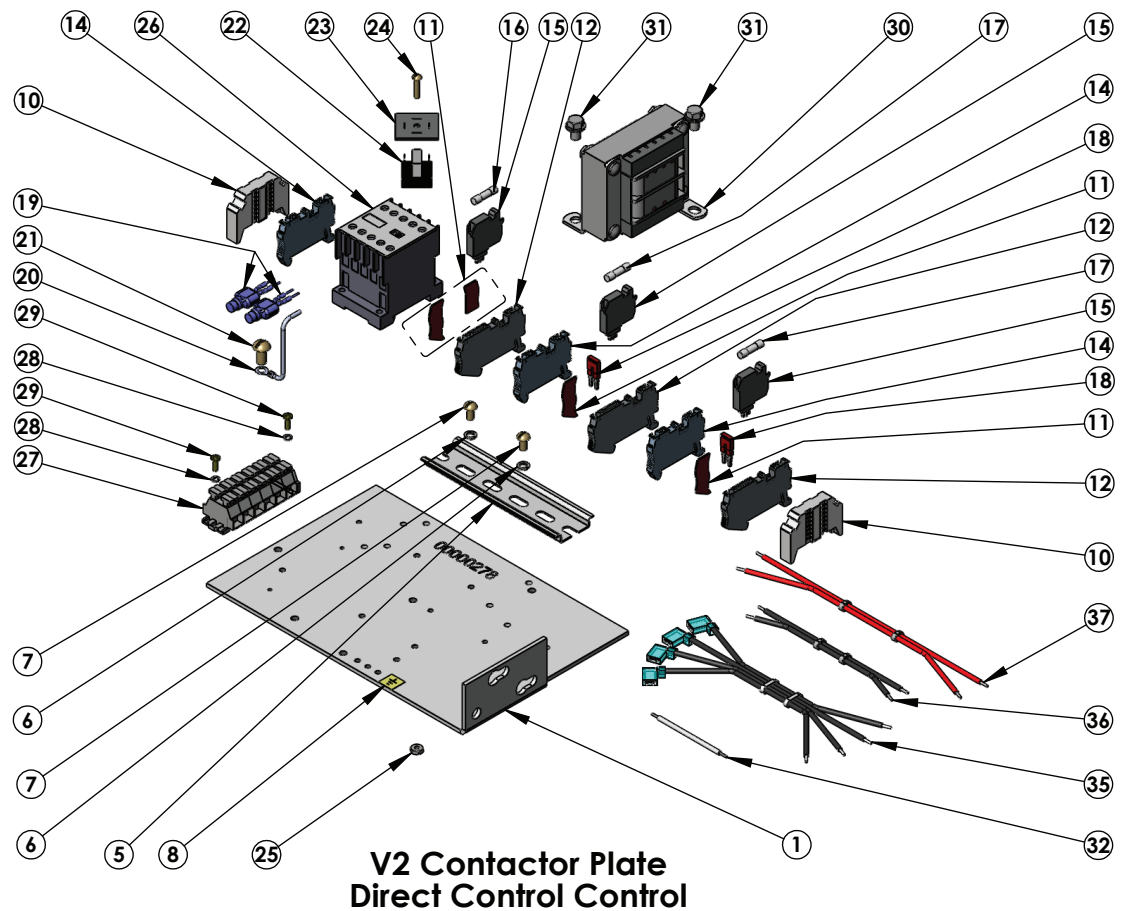
**V1 Contactor Plate
Direct Control Control**



**V1 Contactor Plate
Low Voltage Control**

Entertainment Lodestar BGV-D8+
V2-Models JJ, L, LL, R, & RR
Contactor Plate Assemblies

Item No.	Part Number	Description	Low Voltage Control			Direct Control
			00000372	00000373	00000374	00000324
-	-	Contactor Plate Assembly	QTY.	QTY.	QTY.	QTY.
1	00000278	Contactor Plate		1		1
2	27685	Voltage Change Board Insulator		1		-
3	27672	Voltage Change Board		1		-
4	987862	Machine Screw		1		-
5	29312	Din-Rail 5.00 Long		-		1
	29010	Din-Rail 6.50" Long		1		-
6	987873	Lockwasher		2		2
7	982686	Machine Screw		2		2
8	20940	Ground Label		1		1
9	28860	Reversing Contactor -24V	1	-	-	-
	24797	Reversing Contactor -48V	-	1	-	
	24799	Reversing Contactor -110V	-	-	1	
10	29015	Terminal Strip End Clamp		2		2
11	00000398	Terminal Strip Cover Segment		3		3
12	29018	Fusible Terminal Strip		3		3
13	-	-Empty-		-		-
14	29014	Terminal Strip		4		3
15	29019	Fusible Terminal Strip Cartridge		3		3
16	00000393	Fuse-5Mm X 20Mm-500Ma		1		1
17	00000394	Fuse-5Mm X 20Mm-1A		2		2
18	29047	Terminal Strip Bridge		-		2
19	00000535	Surge Suppressor		1		2
20	27189	Jumper-G/Y-#16 Awg		1		1
21	987827	Machine Screw		1		1
22	70246	Rectifier		1		1
23	70274	Rectifier Insulator		1		1
24	957854	Machine Screw		1		1
25	982470	Rectifier Nut		1		1
26	28904	Non-Reversing Contactor-110V		-		1
27	27700	6-Pole Terminal Strip		-		1
28	987929	Lockwasher		-		2
29	982718	Machine Screw		-		2
30	00000594	Transformer 24V Secondary	1	-	-	-
	00000595	Transformer 48V Secondary	-	1	-	-
	00000596	Transformer 120V Secondary	-	-	1	1
31	25861	Hex Screw		2		2
32	51845	Jumper		-		1
33	51847	Jumper		1		-
34	00000204	Harness-Contactor/Transformer		1		-
35	00000326	Rectifier Harness		-		1
36	00000327	'H5/H6' Jumper Harness		-		1
37	00000328	'R4/R5' Jumper Harness		-		1
38	00000537	B8 Jumper		1		-
39	00000538	B9 Jumper		1		-
40	00000540	'B1/B3' Jumper Harness		1		-
41	00000541	'B2/B4' Jumper Harness		1		-



DC BRAKE ASSEMBLIES

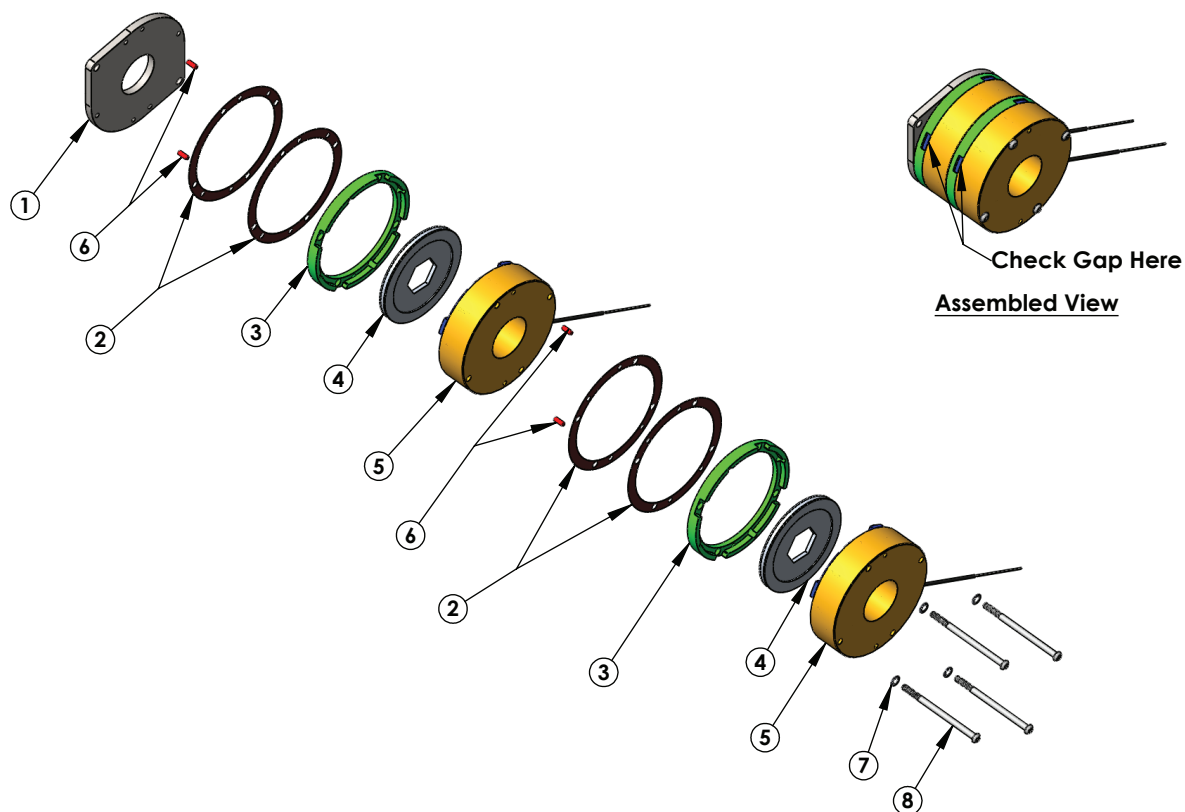
Entertainment Lodestar BGV-D8+ DC Brake Assemblies

Item No.	V1 Part Number	V2 Part Number	Description	Qty.
-	25560	25577	Double DC Brake Assembly	1
1	25530	25571	Base Plate Assembly	1
2	25534	25562	Brake Spacer Shim	4
3	25522	25563	Brake Spacer	2
4	25524	25556	Brake Disc	2
5	25550*	25573*	Field Housing Assembly	2
6	25533	25572	Dowel Pin	2
7	25537	25537	Lock Washer	4
8	25536	25576	Mounting Screw	4

* Field housing assembly (item 5) is voltage specific. Part number listed is for 220/230-3-50/60 or 415/460-3-50/60 volt units, with a resistance reading of ~1837Ω on the V1 and ~1280Ω on the V2 . Contact factory for alternate voltages.

Notes:

- 1 Brake gap in new state is .008 in. for the V1 and V2. Brake gap will increase as brake discs (item 4) wear. For every .004 in (0.1 mm) of gap increase, remove one of the brake spacer shims (item 3). There are 2 shims per brake. After all shims have been removed and the brake gap has increased to .012", replace the brake disc (item 4) and shims (item 2).
- 2 Torque mounting screws (item 8) to 7.9-8.3 ft*lb (10.7-11.3 N*m)



Double DC Brake

WIRING DIAGRAMS

Figure 1a. Typical Wiring Diagram

Wiring Diagrams shown are representative. Consult diagram in hoist or furnished with unit

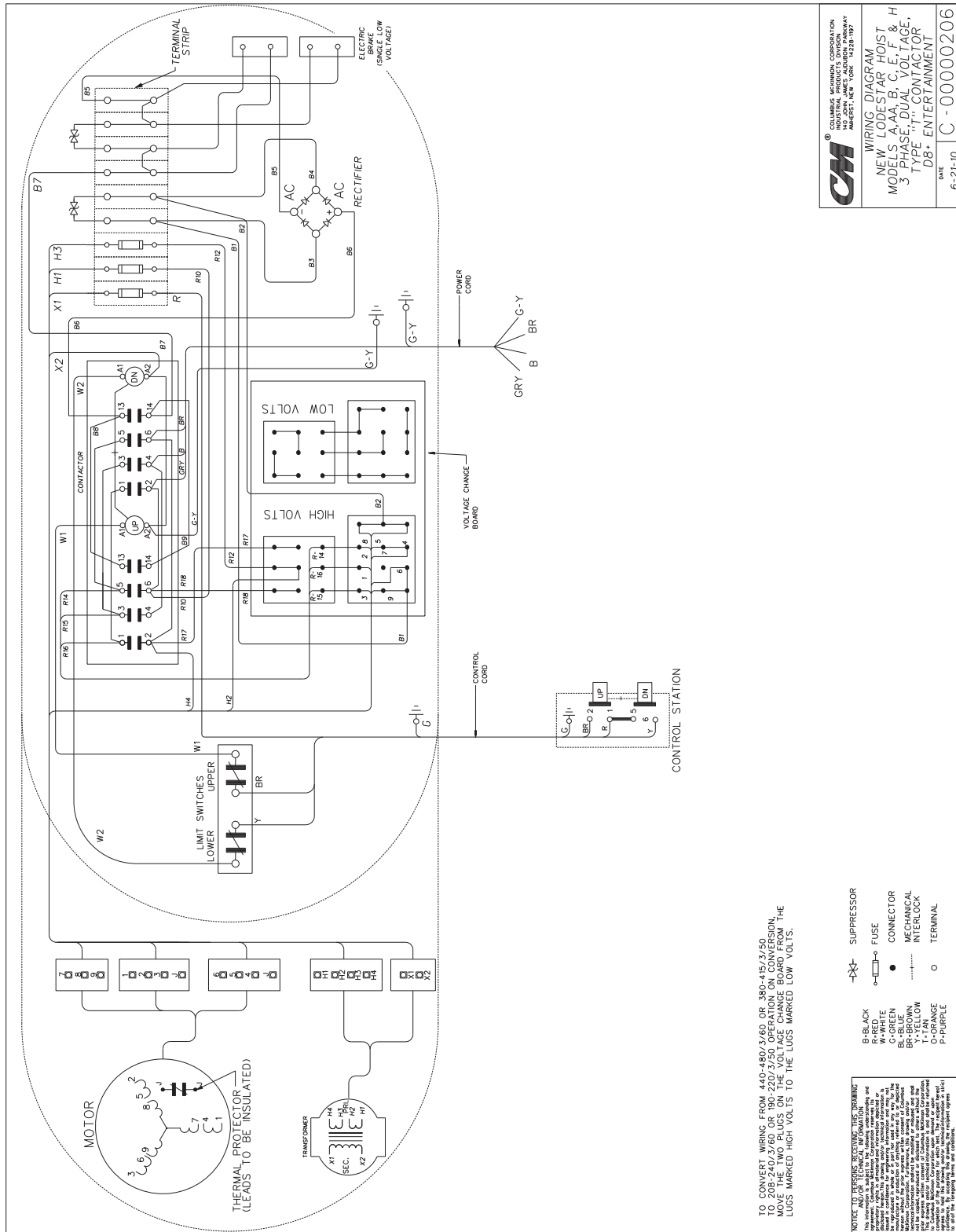


Figure 1b. Typical Wiring Diagram

Wiring Diagrams shown are representative. Consult diagram in hoist or furnished with unit

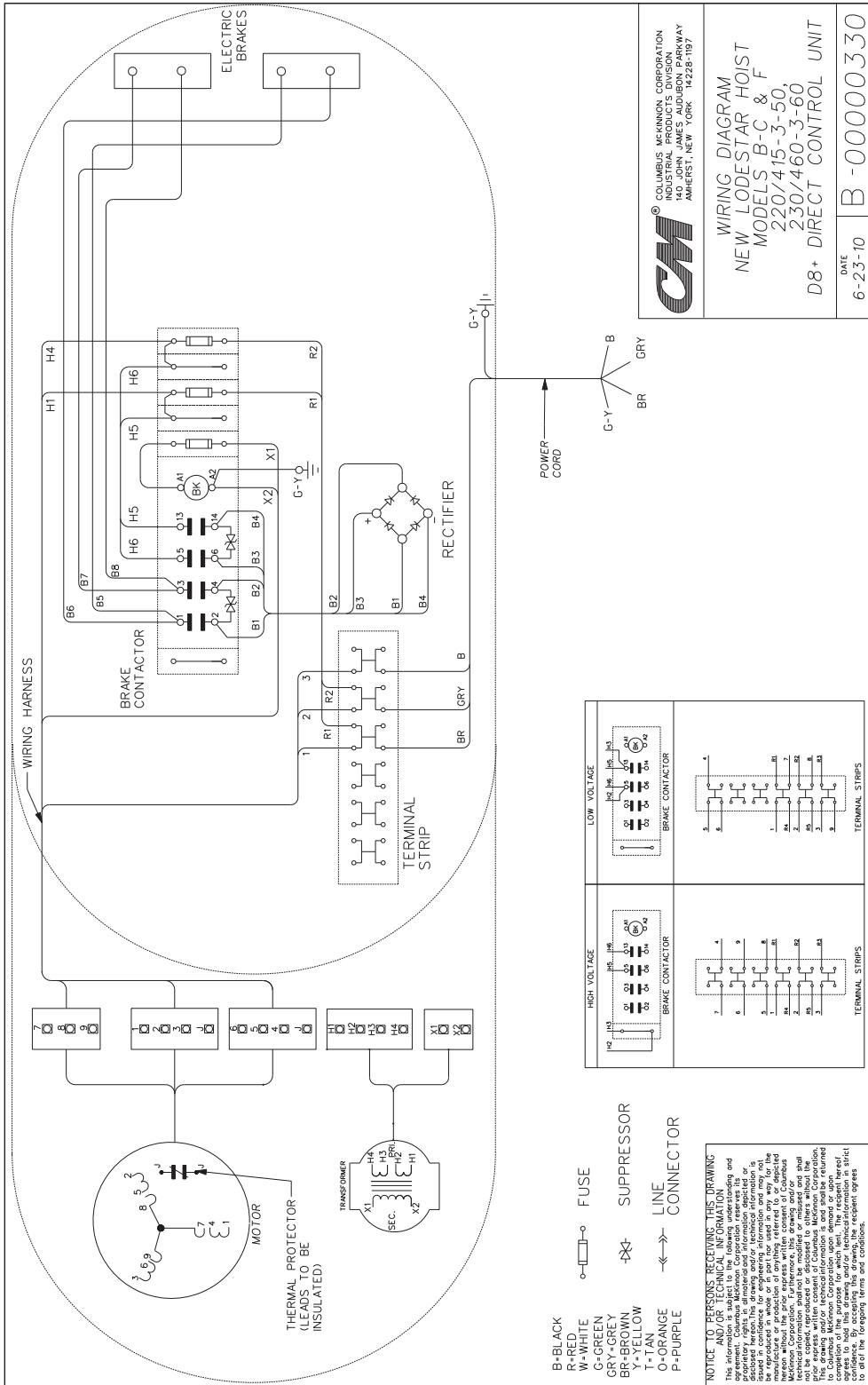


Figure 1c. Typical Wiring Diagram
Wiring Diagrams shown are representative. Consult diagram in hoist or furnished with unit

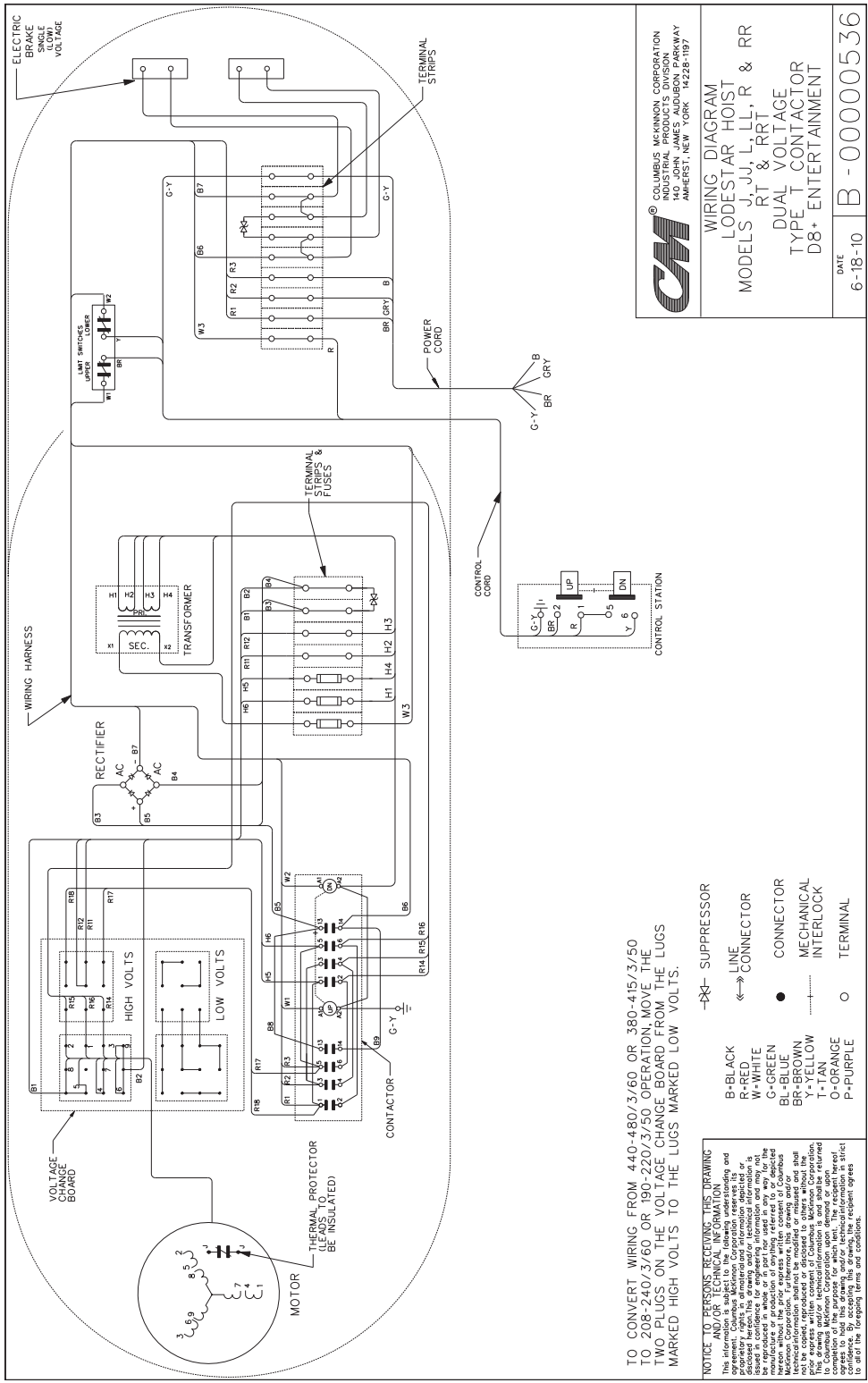
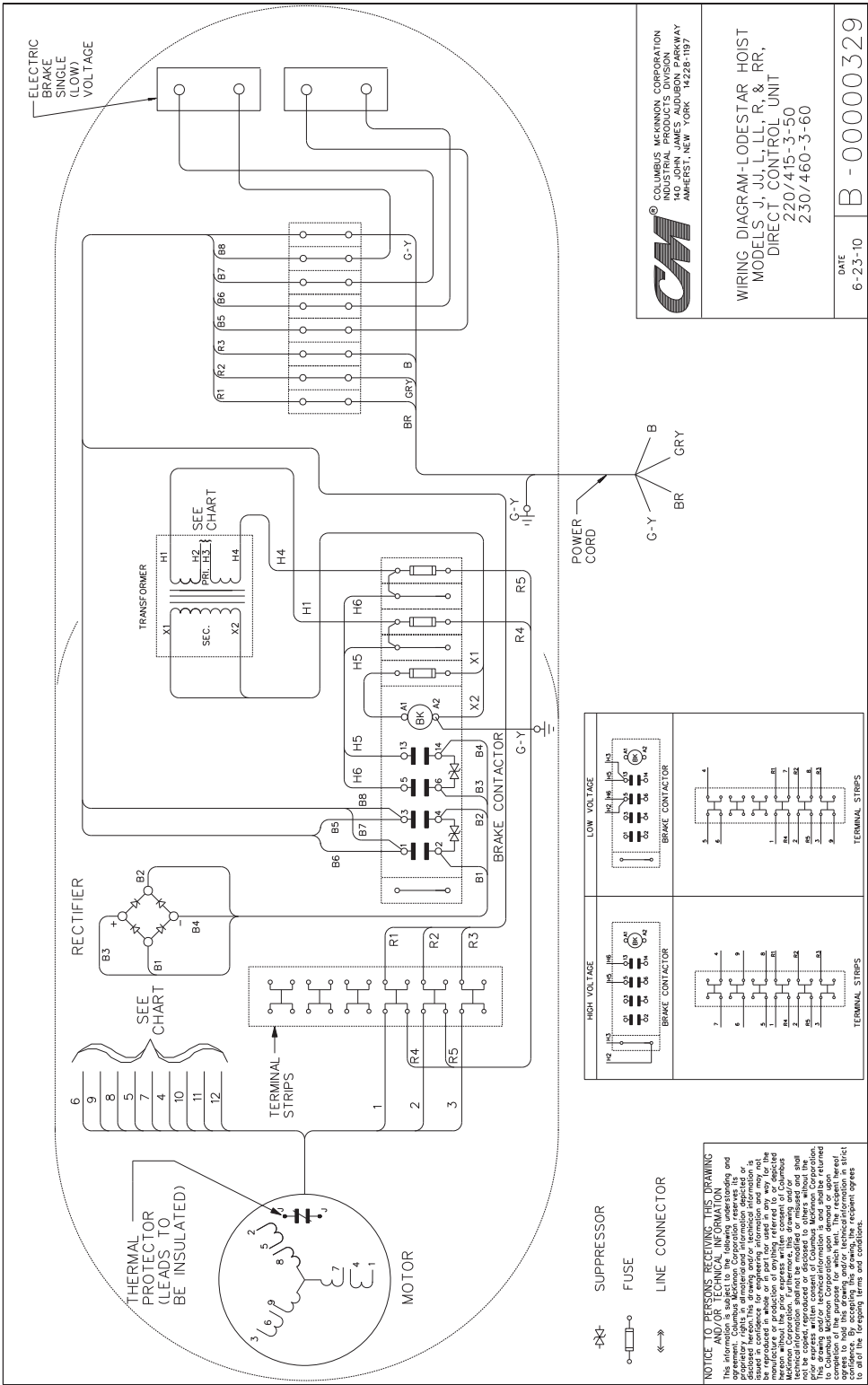


Figure 1d. Typical Wiring Diagram
Wiring Diagrams shown are representative. Consult diagram in hoist or furnished with unit



COLUMBUS MCKINNON CORPORATION
 INDUSTRIAL PRODUCTS DIVISION
 140 JOHN JAMES AUDUBON PARKWAY
 AMHERST, NEW YORK 14226-1197

WIRING DIAGRAM-LODESTAR HOIST
 MODELS J, J.L, LL, R & RR,
 DIRECT CONTROL UNIT
 220/415-3-50
 230/460-3-60

DATE
 6-23-10

B - 00000329

15051/ADOPED/7-8-10/DWP

LIMIT SWITCHES

Model	Max Length of Lift		Hook Travel per notch w/ 44TPI Limit Switch Shaft	
	m	ft	mm	in
F	32.0	105	26.9	1.06
JJ	76.2	250	59.7	2.35
L	38.7	127	30.5	1.2
LL	75.9	249	59.4	2.34
R	19.5	64	15.2	0.6
RR	37.8	124	29.7	1.17

RECOMMENDED SPARE PARTS

Part Description	V1 Model F	V2 Models JJ, L, LL, R & RR	Qty Required For Each Hoist
Limit Switch Kit	31631	31636	1
Brake Spacer Shims	25534	25562	4
Brake Friction Discs	25524	25556	2
Transformer	See Pages 3-4	See Pages 12-13	1
Contactors	See Pages 10-11	See Pages 12-13	1

NOTES

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

GENERAL INFORMATION

All Columbus McKinnon (CM™) Lodestar Electric Chain Hoists are thoroughly inspected and performance tested prior to shipment. If any properly maintained hoist develops a performance problem due to a material or workmanship defect, as verified by CM, repair or replacement of the unit will be made to the original purchaser without charge. This repair/replacement policy applies only to Lodestar Hoists installed, maintained and operated as outlined in this manual, and specifically excludes parts subject to normal wear, abuse, improper installation, improper or inadequate maintenance, hostile environmental effects and unauthorized repairs/modifications.

We reserve the right to change materials or design, if, in our opinion, such changes will improve our product. Abuse, repair by an unauthorized person, or use of non-CM replacement parts voids the guarantee and could lead to dangerous operation. For full Terms of Sale, see Sales Order Acknowledgement. Also, refer to the back cover for Limitations of Warranties, Remedies and Damages, and Indemnification and Safe Operation.

LIMITATIONS OF WARRANTIES, REMEDIES AND DAMAGES

THE WARRANTY STATED BELOW IS GIVEN IN PLACE OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, OR MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR OTHERWISE, NO PROMISE OR AFFIRMATION OF FACT MADE BY ANY AGENT OR REPRESENTATIVE OF SELLER SHALL CONSTITUTE A WARRANTY BY SELLER OR GIVE RISE TO ANY LIABILITY OR OBLIGATION.

Seller warrants that on the date of delivery to carrier the goods are free from defects in workmanship and materials.

SELLER'S SOLE OBLIGATION IN THE EVENT OF BREACH OF WARRANTY OR CONTRACT OR FOR NEGLIGENCE OR OTHERWISE WITH RESPECT TO GOODS SOLD SHALL BE EXCLUSIVELY LIMITED TO REPAIR OR REPLACEMENT, F.O.B. SELLER'S POINT OF SHIPMENT, OF ANY PARTS WHICH SELLER DETERMINES TO HAVE BEEN DEFECTIVE OR IF SELLER DETERMINES THAT SUCH REPAIR OR REPLACEMENT IS NOT FEASIBLE, TO A REFUND OF THE PURCHASE PRICE UPON RETURN OF THE GOODS TO THE SELLER.

Any action against Seller for breach of warranty, negligence, or otherwise, must be commenced within one year after such cause of action occurs.

NO CLAIM AGAINST SELLER FOR ANY DEFECT IN THE GOODS SHALL BE VALID OR ENFORCEABLE UNLESS BUYER'S WRITTEN NOTICE THEREOF IS RECEIVED BY SELLER WITHIN ONE YEAR FROM THE DATE OF SHIPMENT.

Seller shall not be liable for any damage, injury or loss arising out of the use of the goods if, prior to such damage, injury or loss, such goods are (1) damaged or misused following Seller's delivery to carrier; (2) not maintained, inspected, or used in compliance with applicable law and Seller's written instructions and recommendations; or (3) installed, repaired, altered or modified without compliance with such law, instructions or recommendations.

UNDER NO CIRCUMSTANCES SHALL SELLER BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES AS THOSE TERMS ARE DEFINED IN SECTION 2-715 OF UNIFORM COMMERCIAL CODE.

INDEMNIFICATION AND SAFE OPERATION

Buyer shall comply with and require its employees to comply with directions set forth in instructions and manuals furnished by Seller and shall use and require its employees to follow such instructions and manuals and to use reasonable care in the use and maintenance of the goods. Buyer shall not remove or permit anyone to remove any warning or instruction signs on the goods. In the event of personal injury or damage to property or business arising from the use of the goods, Buyer shall within 48 hours thereafter give Seller written notice of such injury or damage. Buyer shall cooperate with Seller in investigating any such injury or damage and in the defense of any claims arising therefrom.

If Buyer fails to comply with this section or if any injury or damage is caused, in whole or in part, by Buyer's failure to comply with applicable federal or state safety requirements, Buyer shall indemnify and hold Seller harmless against any claims, loss or expense for injury or damage arising from the use of the goods.

WARNING

Alterations or modifications of equipment and use of non-factory repair parts can lead to dangerous operation and injury.

TO AVOID INJURY

- Do not alter or modify equipment.
- Do use only CM replacement parts.

