



# ELECTRIC CHAIN HOIST



## OPERATION MANUAL

&

## PARTS LIST

### SERIES:

YSS(D)-200

YST(D)-200

YSS(D)-250

YST(D)-250

YSS(D)-300

YST(D)-300

YSS(D)-500

YST(D)-500

YSS(D)-750

YSS(D)-1000

CHENG DAY MACHINERY WORKS CO., LTD.

# **SAFETY-IMPORTANT**

**The use of any hoist and trolley presents some risk of personal injury or property damage.**

**That risk is greatly increased if proper instructions and warnings are not followed. Before using this hoist, each user should become thoroughly familiar with all warnings, instructions and recommendations herein.**



***THIS SYMBOL POINTS OUT IMPORTANT SAFETY INSTRUCTIONS WHICH IF NOT FOLLOWED COULD ENDANGER THE PERSONAL SAFETY AND/OR PROPERTY OF YOURSELF AND OTHERS. READ AND FOLLOW ALL INSTRUCTIONS IN THIS MANUAL AND ANY PROVIDED WITH THE EQUIPMENT BEFORE ATTEMPTING TO OPERATE YOUR "BLACK BEAR" ELECTRIC CHAIN HOIST.***



# CONTENTS

---

Safety – Important .....	1
1.Foreword.....	3
2.Main Specification.....	4
2.1 Specification.....	4
2.2 Mechanical Classification (Grade) and Life.....	5
2.3 Safety Device.....	6
2.4 Main Specification and Dimensions of Hook Suspension Type Hoist.....	7
2.5 Optional Trolley Accessory.....	8
3.Safety Rules.....	10
4.Installation.....	13
4.1 Unpacking Information.....	13
4.2 Voltage.....	13
4.3 Installation.....	13
5.Operation.....	16
6.Maintenance and Inspection.....	16
6.1 Maintenance.....	16
6.2 Inspection.....	17
7.Troubleshooting.....	21
7.1 Wiring Diagrams.....	21
7.2 Troubleshooting and Remedial Action.....	28
8.Drawings and Parts Lists.....	29
9.Declaration Of Conformity.....	57

---

# 1. FOREWORD

This manual contains important information to help you properly install, operate and maintain the Black Bear electric chain hoist for maximum performance, economy and safety.

Please study its contents thoroughly before putting the electric chain hoist into operation. By practicing correct operation, procedures and by carrying out the preventative maintenance recommendations, you will be assured of dependable service. In order to help us to supply correct spare parts quickly, please always specify,

(1) Hoist Model

(2) Serial Number

(3) Part Number, plus the description.

We trust that you will find this “Black Bear” electric chain hoist will give you many years of satisfactory service.

Should you have any queries, please contact:



(Please ask for a company's stamp from your local agent.)

## 2. MAIN SPECIFICATION

### 2.1 Specification

The following specifications are common to all Black Bear electric chain hoists.

**Table 2-1 Specifications**

Item	Detail		
Working temperature range( )	-20 to +40		
Working humidity range (%)	85 or less		
Protection(Optional)	Hoist	IP 42	
	Push button	IP 20	
Electric power supply	Three Phase, 200~600V, 50/60 Hz		
Noise Level (dB)	Single speed hoist	81	
	Dual Speed hoist	81	
Chain size	WLL (working load limit) (t)	Nominal diameter (mm)	Pitch (mm)
	2T(YSS), 3T	10.0	30
	2.5T,5T, 7.5T, 10T	11.2	34

Remarks : (1) Contact an authorized Black Bear dealer for information on using the hoist outside the working temperature or humidity range.

(2) Intended use: This hoist has been designed for vertically lifting and lowering load under normal atmospheric conditions of work place.

(3) Noise levels were measured at a distance of 1m horizontally from the hoists during normal operation.

(4) Push button protection grade IP 65 available.

## 2.2 Mechanical Classification (Grade) and Life

Safety and life for electric chain hoists are guaranteed only when the said equipment is operated in accordance with the prescribed grade.

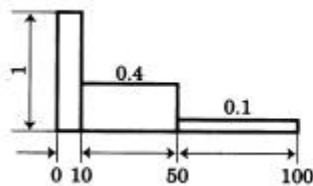
Black Bear electric chain hoists have been designed for grade 1Am in the FEM regulations (FEM 9.511).

Details are provided in Table 2-2.

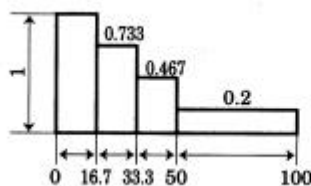
Average daily operating time and total operating time are determined by load distribution.

**Table 2-2 Mechanical classifications**

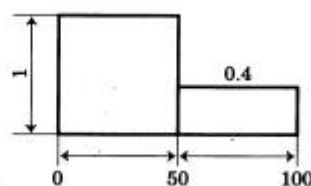
Load Spectrum (Load distribution)	Definitions	Cubic mean value	Average daily operating time (h)			
1 (light)	Mechanisms or parts thereof, usually subject to very small loads and in exceptional cases only to maximum loads.	k 0.50	2	2-4	4-8	8-16
2 (medium)	Mechanisms or parts thereof, usually subject to small loads but rather often to maximum loads.	$0.50 < k$ 0.63	1	1-2	2-4	4-8
3 (heavy)	Mechanisms or parts thereof, usually subject to medium loads but frequently to maximum loads.	$0.63 < k$ 0.80	0.5	0.5-1	1-2	2-4
4 (very heavy)	Mechanisms or parts thereof, usually subject to maximum or almost maximum loads.	$0.80 < k$ 1.00	0.25	0.25-0.5	0.5-1	1-2
Mechanical Classifications due to DIN 15020 or FEM 9.511			1Bm	1Am	2m	3m



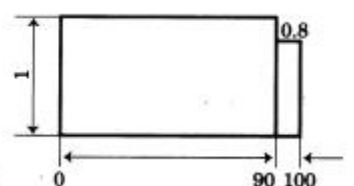
% operating time  
Load spectrum 1



% operating time  
Load spectrum 2



% operating time  
Load spectrum 3



% operating time  
Load spectrum 4

## 2.3 Safety Devices

### (1) Motor brake

"Electro-Magnetic Brake" is of a unique design in its field. It features simultaneous motor braking upon switching off power even under full load condition.

### (2) Mechanical load brake

The mechanical load brake can hold a full capacity load independent of motor brake.

This brake assures that load does not accelerate while being lowered.

### (3) Hook and hook latch

The hook is drop - forged from high tensile steel and heat treated for strength and toughness. The bottom hook is capable of 360° swivel and fitted with safety latch to ensure safe lifting.

### (4) Phase error relay

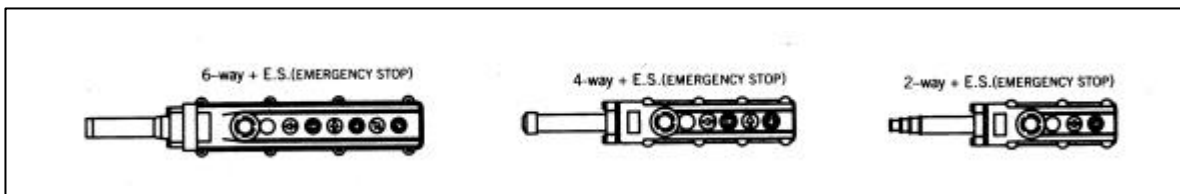
The phase error relay circuit has been exclusively developed to prevent motor from running when the phases are incorrectly connected.

### (5) Limit Switches

Upper and lower limit switches are fitted for switching off power automatically in case of over lifting or over lowering.

### (6) Emergency stop device (optional)

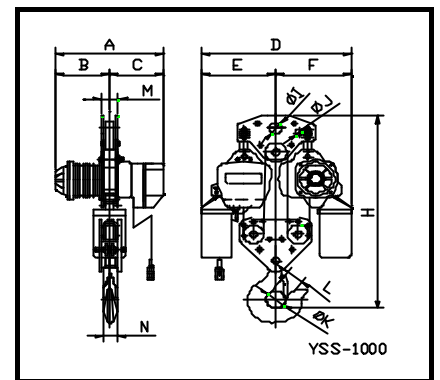
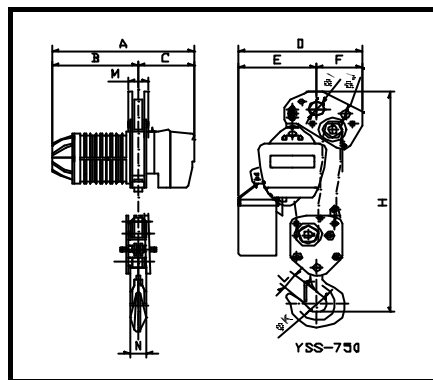
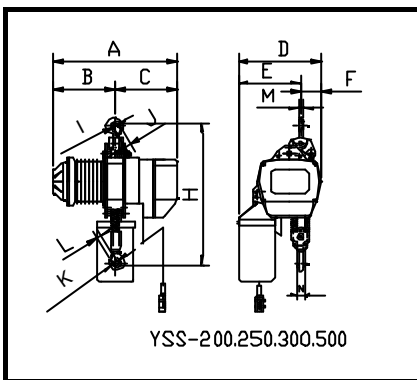
This button is used to stop the hoist in an emergency situation. It is a red, mushroom type button, located in the uppermost position on the pendant. When pressed, power to the equipment is switched off and the button locks automatically. Turning it to the right will release the lock and to enable re-starting. (Illus. 1)



Illus. 1

## 2.4 Main Specification and Dimensions of Hook Suspension Type Hoist:

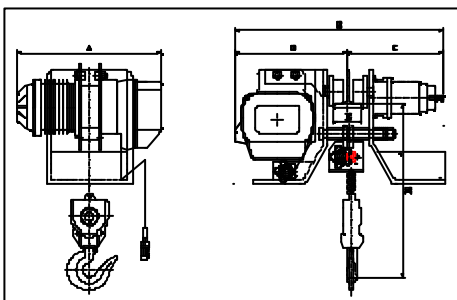
<b>Capacity (ton)</b>			2	2.5	3	5	7.5	10	
<b>Lift Height</b>			3 (6) etc.						
<b>Load Chain (mm)</b>			10	11.2	10	11.2			
<b>Single Speed (m/min)</b>	<b>50HZ</b>	<b>YSS</b>	6.6	5.2	4.3	2.6	1.8	2.6	
	<b>60HZ</b>	<b>YSS</b>	7.9	6.4	5.2	3.2	2.1	3.2	
<b>Dual Speed (m/min)</b>	<b>50HZ</b>	<b>YSS</b>	6.6/2.2	5.2/1.7	4.3/1.4	2.6/0.9	1.8/0.6	2.6/0.9	
	<b>60HZ</b>	<b>YSS</b>	7.9/2.6	6.4/2.0	5.2/1.7	3.2/1.0	2.1/0.7	3.2/1.0	
<b>N.W./G.W. (kg)</b>			125/155	130/160	140/170	153/183	195/230	410/470	
<b>MOTOR POWER (kw)</b>			3.7						3.7x2
<b>POWER SUPPLY</b>			3 PHASE, 220V-660V, 50HZ 60HZ						
<b>E.D. Rating (%)</b>			40						
<b>Local Chain Fall Number</b>			1		2	3	4		



### Dimension(mm)

Capacity (ton)	Type	H	A	B	C	D	E	F	I	J	K	L	M	N		
2	YSS-200	835	640	SD650	326	SD336	314	448	278	170	52	43	52	43	34	34
2.5	YSS-250	880	640	SD650	326	SD336	314	448	278	170	52	43	52	43	34	34
3	YSS-300	960	640	SD650	326	SD336	314	448	340	108	52	43	52	43	34	34
5	YSS-500	1030	640	SD650	326	SD336	314	448	356	92	62	45	62	45	45	45
7.5	YSS-750	1050	640	SD650	326	SD336	314	587	388	199	72	40	75	57	84	48
10	YSS-1000	1270	640	SD650	326	SD336	314	970	485	485	72	40	100	68	92	60

### 2.4.1 Low Headroom type (YST series)



Capacity (Ton)	Model	Dimensions (mm)					Lift speed (m/min.)		Trolley speed (m/min.)		Flange Width E(mm)	Weight (kg)
		H	A	B	C	D	50HZ	60HZ	50HZ	60HZ		
2	YST-200	660	640	925	423	502	6.7	7.9	20	24	125~175	335
	YSTD-200						6.7/2.2	7.9/2.6	20/7	24/8		
2.5	YST-250	676	640	925	423	502	5.2	6.4	20	24	125~175	340
	YSTD-250						5.2/1.7	6.4/2.1	20/7	24/8		
3	YST-300	725	640	925	423	502	4.3	5.2	20	24	125~175	350
	YSTD-300						4.3/1.4	5.2/1.7	20/7	24/8		
5	YST-500	765	640	925	423	502	2.6	3.2	20	24	125~175	365
	YSTD-500						2.6/0.9	3.2/1.0	20/7	24/8		

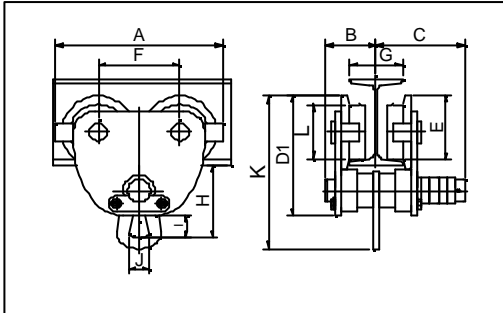


## 2.4.2 Standard Lifting Height and Tools

Standard Lifting Height: 3 Meters With Chain Container  
One Tool Sets

## 2.5 Optional Trolley Accessory

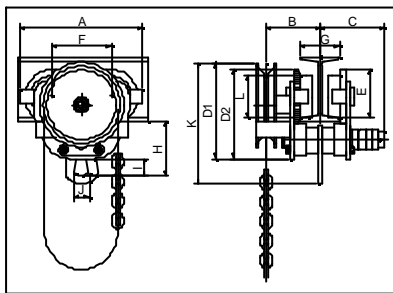
### Plain Trolley



**Dimensions (mm)PT**

Capacity (ton)	Model	A	B	C	D1	E	F	Flange Width G	H	I	J	K	L	N.W (kg)	Min Radius of Curve
2	PT-200	273	87	141	214	109	135	100-150	159	55	61	290	98	16.7	1.6m
3	PT-300	296	90	143	251	128	150	100-150	175	78	60	379	115	26.4	2.0m
5	PT-500	296	102	157	251	128	150	125-175	178	84	60	385	115	26.7	2.2m
7.5	PT-750	368	170	170	292	135	184	152-203	240	108	76	440	120	70.6	1.8m
10	PT1000	382	170	170	319	149	190	152-203	229	90	76	449	140	75.7	1.8m

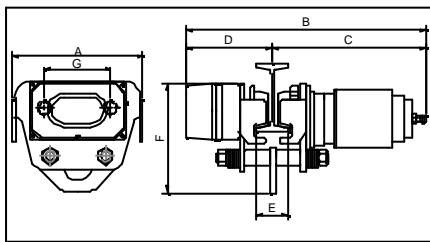
### Gear Trolley



**Dimensions (mm)GT**

Capacity (ton)	Model	A	B	C	D1	D2	E	F	Flange Width G	H	I	J	K	L	N.W. (kg)	Min Radius of Curve
2	GT-200	273	119	141	223	214	109	135	100-150	159	55	61	300	98	22.1	1.6m
3	GT-300	296	122	143	234	251	128	150	100-150	175	78	60	362	115	31.1	2.0m
5	GT-500	296	135	157	234	251	128	150	125-175	178	84	60	368	115	31.4	2.2m
7.5	GT-750	368	191	170	280	292	135	184	152-203	240	108	76	428	120	73.5	1.8m
10	GT-1000	382	191	170	301	319	149	190	152-203	229	90	76	431	140	85.9	1.8m

### Monorail Motorized Trolley

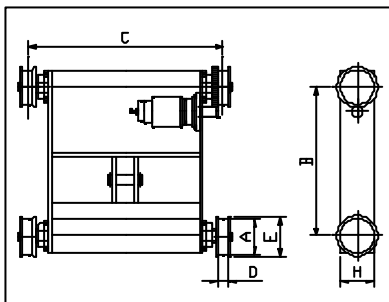


**Dimensions / Specifications (mm)**

Capacity (ton)	Model	A	B	C	D	F	G	Flange width E	Speed (m/min)		Motor (kw)	Pole (P)	N.W. (kg)	Min Radius Of Curve
									50HZ	60HZ				
2	MT-200	323	567	358	209	272	161	100-150	20	24,16	0.25	4, 6	45	1.5m
	20/7								24/8	0.25/0.08				
3	MT-300	359	662	417	245	297	172	125-175	20	24,16	0.6	4, 6	65	1.8m
	20/7								24/8	0.6/0.2				
5	MT-500	389	673	422	251	320	183	125-175	20	24,16	0.6	4, 6	89	2m
	20/7								24/8	0.6/0.2				
7.5	MT-750	400	736	465	271	530	228.3	150-200	13	16	0.9	6	155	3m
	13/6.5								16/8	0.9/0.45				
10	MT-1000	536	821	550	271	565	277.3	150-200	14	17	1.5	6	218	3.5m
	14/7								17/8.5	1.5/0.75				

MT-200~500 50HZ with motor of 4P  
60HZ with motor of 4,6P

### Motor Saddle Trolley



**Dimensions / Specifications (mm)**

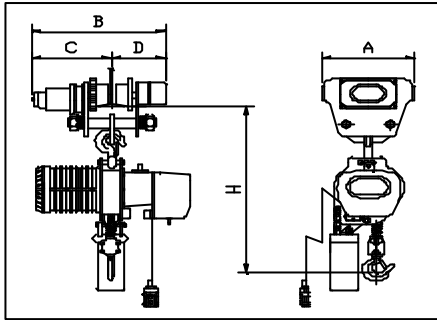
Capacity (ton)	Model	Speed (m/min)		A	B	C	D	E	H	Motor (kw)	Pole (P)	N.W. (kg)
		50HZ	60HZ									
2	MST-200	20	19	120	580	700	40	147	136	0.25	4	94
	MSTD-200	20/6.7	19/6.3							0.28/0.08	4/12	
3	MST-300	18	22	150	650	850	45	178	164	0.6	6	182
	MSTD-300	18/9	22/11							0.6/0.3	6/12	
5	MST-500	18	22	150	650	850	50	178	164	0.6	6	182
	MSTD-500	18/9	22/11							0.6/0.3	6/12	
7.5	MST-750	19	23	160	800	1000	50	189	225	0.9	4	306
	MSTD-750	19/6.3	23/7.7							0.9/0.3	4/12	
10	MST-1000	21	20	215	900	1200	50	246	318	0.9-2pcs	4	504
	MSTD-1000	21/7	20/6.7							0.9/0.3-2pcs	4/12	

MST-200, 1000 - 50HZ with pinion of M3.5 x15T,  
- 60HZ with pinion of M3.5 x12T,

MST-300, MST-500 60HZ/50HZ with pinion of M3.5 x20T

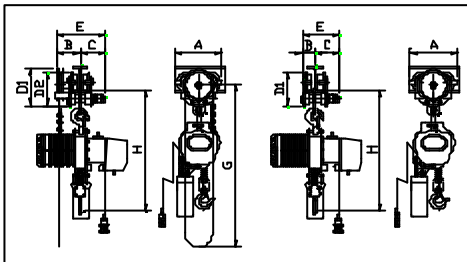
MST-750 60HZ/50HZ with pinion of M3.5 x15T

2.5.1:  
**Specification of hoist with motorized trolley.**



Dimensions/Specifications (mm)							
Capacity (ton)	Model	H	A	B	C	D	Adjustable Span(mm)
2	MT-200	995	323	567	358	209	100-150
3	MT-300	1120	359	662	417	245	125-175
5	MT-500	1200	389	673	422	251	125-175
7.5	MT-750	1300	400	736	465	271	150-200
10	MT-1000	1415	536	821	550	271	150-200

2.5.2:  
**Specification of hoist with GT/PT type trolley.**



Dimensions/Specifications (mm)										
Capacity (ton)	Model	H	A	B	C	D1	D2	E	G	Adjustable Span(mm)
2	GT-200	983	273	136.5	141	223	214	277.5	3279	100-150
	PT-200	983	273	87	141	214	-	228	-	100-150
3	GT-300	1138	296	139.5	143	234	251	282.5	3353	100-150
	PT-300	1138	296	90	143	251	-	233	-	100-150
5	GT-500	1210	296	152.5	157	234	251	309.5	3356	125-175
	PT-500	1210	296	102	157	251	-	259	-	125-175

### 3. SAFETY RULES



**DANGER**

*The hoist herein is not designed for, and should not be used for, lifting, supporting, or transporting personnel. Any modifications to upgrade, re-rate, or otherwise alter the hoist equipment must be authorized by either the original manufacturer or a qualified professional engineer.*

(1) Only the trained personnel are allowed to operate the hoist.

(2)

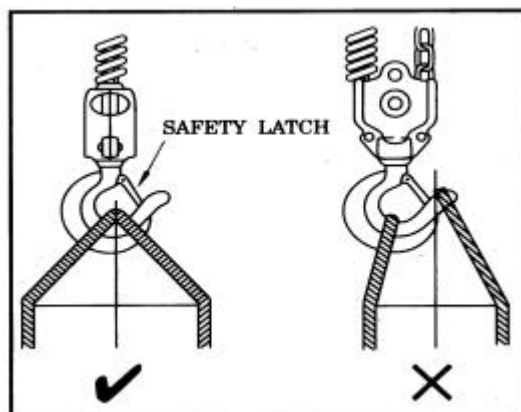


**DANGER**

*Do not use the hoist in explosive atmosphere.*

(3) Prior to each lifting operation, it is essential to make sure that:

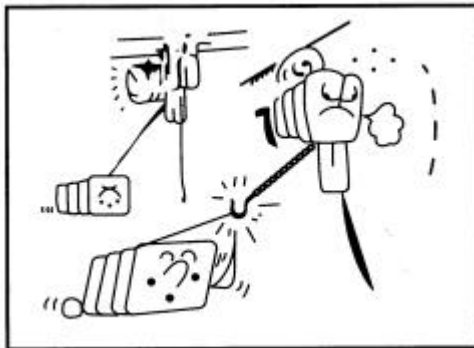
- (a) the correct lifting sling is being used.
- (b) the lifting sling is located in the hook as shown below (Illus. 2) and that a safety latch has been fitted.



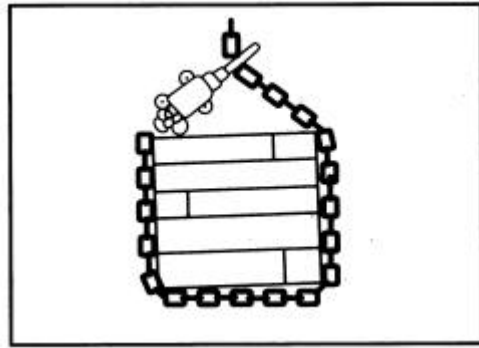
Illus. 2

- (c) the object to be hoisted is well secured for direct lifting (a proper lifting frame or apparatus is strongly recommended for direct lifting.)

- (4) Firm and steady button operation is required, never push the button switch intermittently.
- (5) Always avoid excessive inching operation.
- (6) Always make sure the hoist motor completely stops before reversing.
- (7) Always leave the pendant button switch cable and bottom hook load chain vertically static after completion of operation, never leave them at any position, which may allow them to swing or slip.
- (8) Sling must be applied to load evenly and centrally to ensure correct balance.  
Never lift any object which is insecure or out of balance.
- (9) Never use hoist to end or side pull a load. (Illus. 3)
- (10) Never wrap around and hook back the load chain as a sling to lift a load. (Illus. 4)



Illus. 3



Illus. 4

(11)



**WARNING**

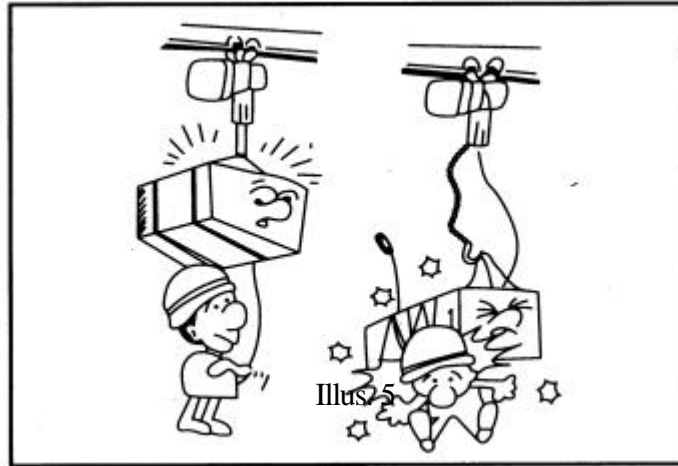
*Do not use the hoist chain as a welding electrode.*

(12)



**DANGER**

*Never stand under a raised load (Illus. 5)*



(13) Lifting must always be personally attended, never leave a raised load unattended.

(14) Over-capacity-load lifting is hazardous and should not be undertaken.

(15) Never lift a load when the load chain is twisted.

(16) Regularly inspect and check the condition of load chain. Do not operate with damaged chain.

## 4. INSTALLATION

### 4.1 Unpacking Information

After removing the hoist from its packing box, carefully inspect the external condition of the electrical cables, contactor, gearbox and motor casing for damage.

Check and ensure that these items are present.

Each hoist is supplied as standard with the following accessories:

1. Chain bucket	1 set
2. Power cable	3 meters
3. Push button control switch	1 piece

Table 4-1

### 4.2 Voltage



#### CAUTION

*If power supply deviates from standard by more than  $\pm 10\%$  abnormal operation or damage to the motor may result. It is imperative to ensure correct voltage supply before commencing operation.*

### 4.3 Installation



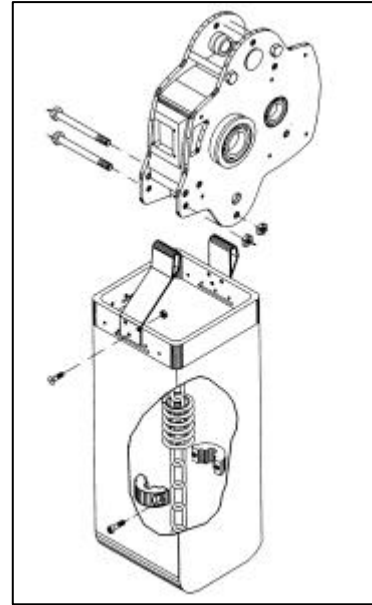
#### WARNING

*Connection to power supply before installation procedures having been completed is strictly prohibited.*

- (1) Prior to installation check and ensure that the top hook assembly is securely attached to the hoist by means of the connecting pin (page 35, item 13)

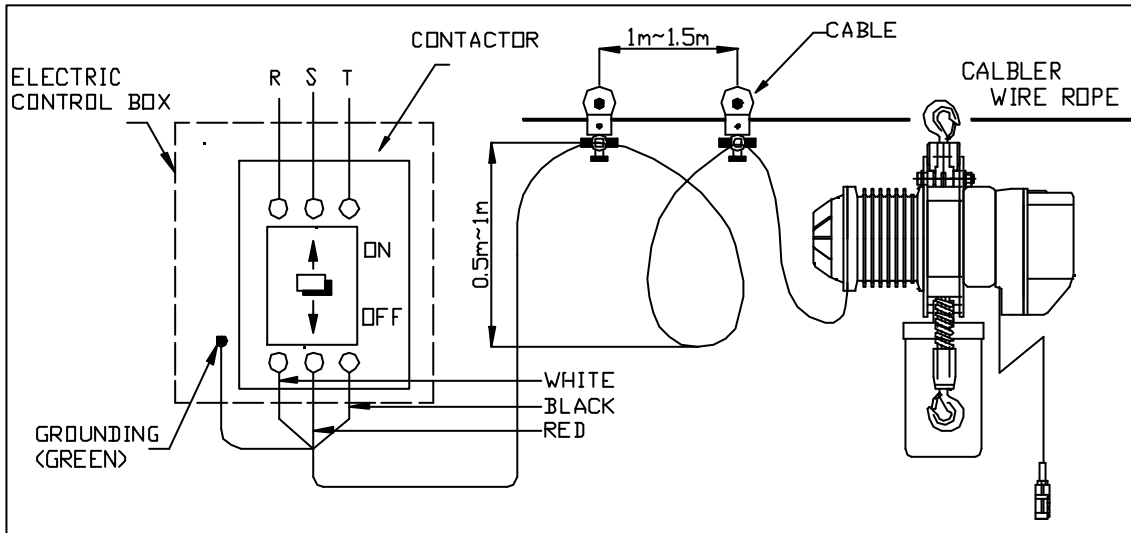
NOTE: If the hoist is to be suspended from an electric trolley, assembly may be eased by firstly removing the top hook, just attaching hoist top hook to the trolley load plate.

- (2) Assemble chain bucket.







Illus. 6


- (3) Connect power supply to hoist and operate the push button switch. This operation must be carried out by a trained person .



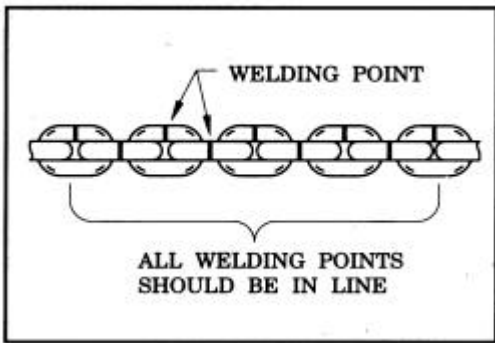
Illus. 7

(4) Operation Test

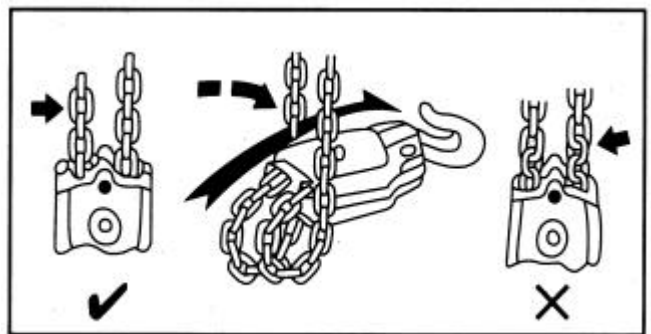
- (A) Firmly push  switch button to lower load chain until the limit spring touches the limit switch. Power should be cut off automatically.
- (B) Firmly push  switch button to check the collection of load chain into chain bucket.
- (C) Check the emergency stop device function (if fitted):
- While holding down either  or  button on the push button switch, push the emergency stop button. Check that the hook stops when the emergency stop button is pushed. Also, check the hoist does not move in response to the push button switch. Finally, check that the emergency stop device pops out when turned to the right and that operation can be resumed thereafter. If the equipment fails to pass another above checks, check the wiring and automatic locking function of the emergency stop device.
- (D) Check load chain lubrication (It has been lubricated at our works, but the lubricant may dry out during transportation). Any readily available lubricant is recommended. It is further advisable to keep a small amount of lubricant in chain bucket to allow chain in oil bath.
- (E) Check chain position. Weld joints on links must face the same direction (Illus. 8), correct chain operation can only be achieved when all joints are vertically in line.

 **CAUTION**

*The bottom hook on multi-fall hoist must never be rotated as shown below (Illus. 9).*



Illus. 8



Illus. 9



## 5. OPERATION

After running test and checks have been completed, the hoist will be ready for normal operation.



### WARNING

*Since dealing with heavy loads may involve unexpected danger, all of the "SAFETY RULES" (Ref 3.) must be followed and the operator must be aware of the following points while using the hoist.*

- (1) The operator must have a clear and unobstructed view of the entire working area before operating the hoist.
- (2) The operator must check that the entire working area is safe and secure before operating the hoist.
- (3) When using the hoist with a motorized trolley, the operator must take care to prevent excessive load swinging by sympathetic use of the trolley controls.

## 6. MAINTENANCE AND INSPECTION



### DANGER

*Do not perform maintenance on the hoist while it is carrying a load except monthly checking for the brake or limit switch.*



### DANGER

*Before performing maintenance do not forget to affix tags to the power source and the push button switch reading: "DANGER", "EQUIPMENT BEING REPAIRED".*

### 6.1 Maintenance

- (1) Check the level of gear box lubricant after first 500 hours of operation, thereafter every 3 months and lubricant accordingly.

**NOTE: WE RECOMMEND USING A LUBRICANT OIL EQUIVALENT TO ISO VG460.**

- (2) Always keep the hoist unit dry and never misuse it in a manner likely to reduce its durability.

(3) When it is necessary to keep the unit outdoors, a protective covering should be fitted.

## 6.2 Inspection

(1) Daily inspection: Before starting daily operation, check the following

- (a) Correct power supply.
- (b) "Up", "Down" and "Emergency stop" (where fitted) test runs under no load.
- (c) Correct motor performance.
- (d) No abnormal or excessive noise.
- (e) No malfunction of the bottom hook safety latch.
- (f) Proper function of moving/turning parts, limit switches and brake.
- (g) Well lubricated load chain.

(2) Monthly inspection

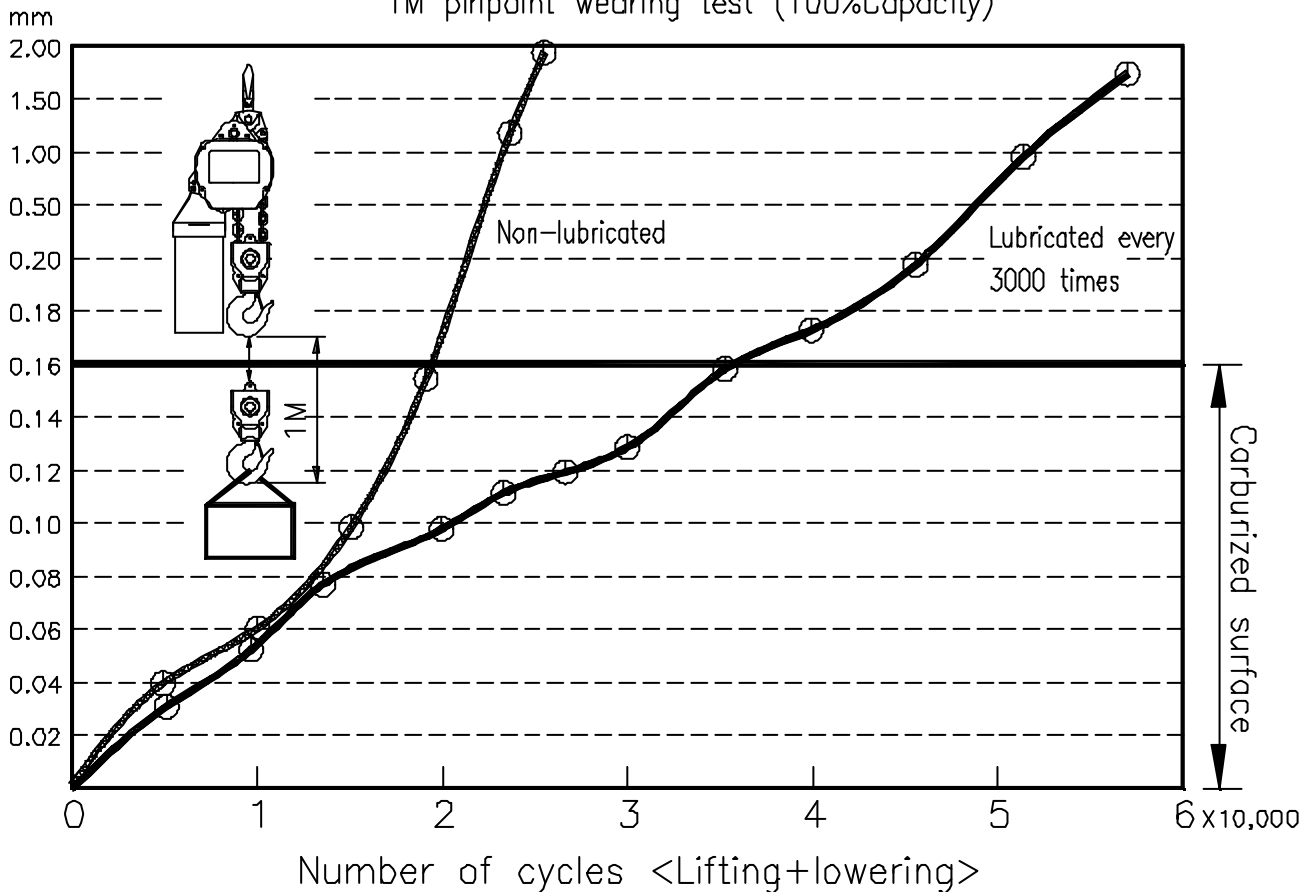
(a) Load chain:

Chain Wearing Test

Load Spectrum	Cubic mean Value	Using times	
		Non-lubricated	Lubricated
1 (Light)	50%	75000	175000
2 (Medium)	63%	55500	129500
3 (Heavy)	85%	30000	70000
4 (Vary heavy)	100%	15000	35000

Above testing data under lifting height 1M

1M pinpoint wearing test (100%Capacity)

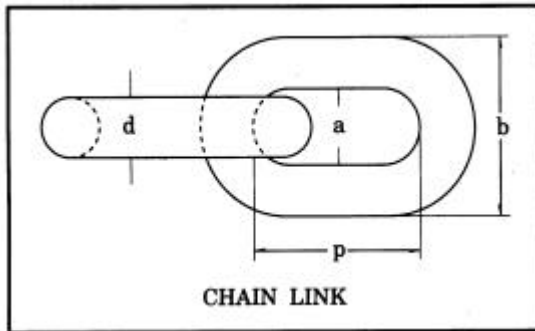




# WARNING

***Always use the hoist manufacture's recommended parts when repairing a hoist.***

Distorted, elongated or worn chain link will not sit properly on the load sprocket wheel and may cause chain breakage and/or damage to the hoist unit. To ensure safe and efficient operation, the chain links must be checked for their pitch (inside length), inside width and outside width monthly according to following table.

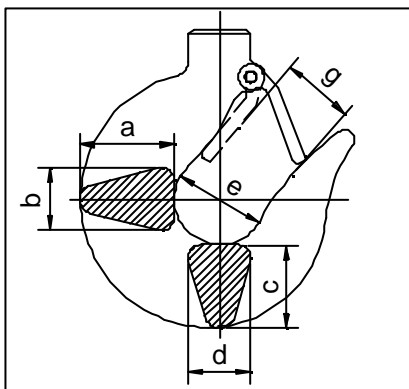


Dia-Meter (m/m) (d)	Load (ton)	Inside Length (m/m) (p)	Inside Width (m/m) (a)	Outside Width (m/m) (b)
10.0	2,3T	30	12.5	33.2
11.2	2.5,5 7.5,10T	34	14	37.2

Table 6-2-a

(b) Load hook:

Check hook with care. If hook shows crack deformation or wear in excess of 5% of its original size, it should be replaced (Ref. following table)



Capacity	T	Dimensions					
	B	a	b	c	d	e	g
2,3 Ton	T	55	34	48	34	52	43
	B						
5 Ton	T	67	45	60	45	62	45
	B						
7.5 Ton	T	75	48	68	48	75	57
	B						
10 Ton	T	100	65	95	60	100	68
	B						

T: Top hook      B: Bottom hook

Table 6-2-b

(c) Limit Switches:


WARNING

A qualified electrician should perform this inspection.

Check correct operation of the limit switches. Clean thoroughly and apply a thin lubrication to ensure correct operation.

(3) Annual inspection


WARNING

Your dealer should be asked to perform this inspection.

- (a) Check gearing for any excessive wear or damage.
- (b) Replace gearbox lubricant completely.
- (c) Check brake lining and ratchet pawl for any wear or damage.
- (d) Check operation of pawl spring.
- (e) After reassembly of above check, lifting a load several times to ensure good performance of the hoist before starting duty operation.

### 190 BUCKET SPECIFICATIONS

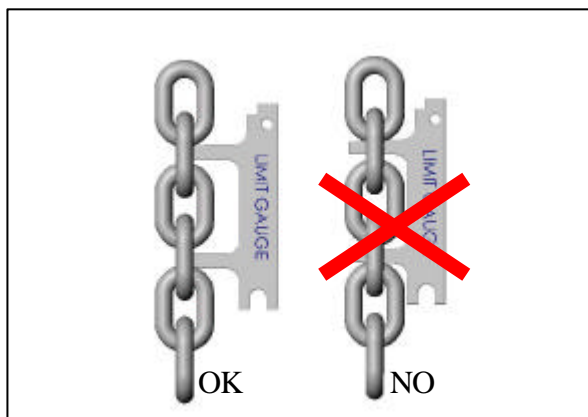
Key No.	Bucket No.	Chain Size	Chain length (M)	Bucket Size (mm)	Material
200781	6	10	< 8.8	190 × 190 × 310L	canvas
200782	7	10	8.8 - 20.8	190 × 190 × 440L	canvas
200783	8	10	21 - 30.8	190 × 190 × 560L	canvas
200784	8-1	10	21- 26.8 M	340 × 210 × 495 × t2	steel
200785	9	10	27 - 38.8 M	400 × 210 × 605 × t2	steel
200786	10	10	39 - 47.8 M	400 × 210 × 695 × t2	steel
200781	6	11.2	< 8.8	190 × 190 × 310L	canvas
200782	7	11.2	8.8 - 18.8	190 × 190 × 440L	canvas
200783	8	11.2	19 - 27.8	190 × 190 × 560L	canvas
200784	8-1	11.2	< 19M	340 × 210 × 495 × t2	steel
200785	9	11.2	19.8 - 31 M	400 × 210 × 605 × t2	steel
200786	10	11.2	32 - 40.8 M	400 × 210 × 695 × t2	steel

## Chain Gauge – Wear and Stretch Measuring

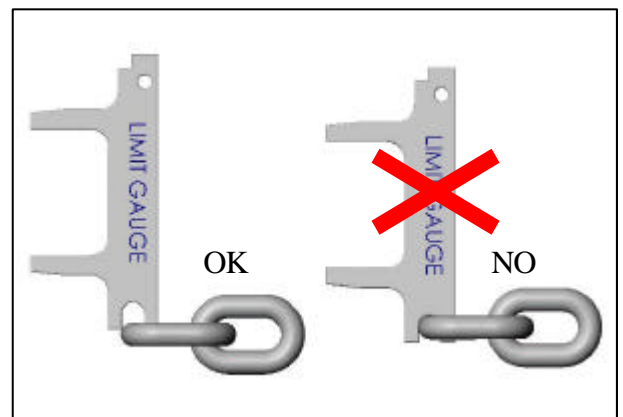
- (1) The chain gauge is useful and convenience for measuring.
- (2) Please use a chain gauge to measure the chain pitch and diameter, such as illustrations (1) and (2).
- (3) Every chain ring must be measured , and the chain must be replaced when one of chain rings is wear or stretch.
- (4) It will be a cutting-out possibility if you use a chain fall either wear or stretch during operation.
- (5) Do not replace a chain fall by yourself and do please contact specific either service centers or contractors to help you out.
- (6) The chain fall must be replaced whole instead of a partial part.
- (7) The load sheave, regulator, and chain compressing wheel must be replaced the same time as you do a second time replacement.

### Remark

- (1) Chain must be perfect condition without any defects and attachments.



Chain pitch measure



Diameter measure

# 7. TROUBLESHOOTING

## 7.1 Wiring Diagrams

(1) C10011: dual voltage 220V/380V +220V/440V +230V/460V motor lead wiring diagram.-----22

(2) A50143: single speed wiring diagram 230V/110V(with Emergency Stop).-----22

(3) A50005: single speed wiring diagram 380V/48V-----23

(4) A50059: single speed wiring diagram 380V/48V with electronic over load limit-----23

(5) A60003: dual speed wiring diagram 380V/48V -----24

(6) A60051: dual speed wiring diagram 380V/48Vwith electronic over load limit.-----24

(7) A50131: 10Tons, single speed wiring diagram 380V/48V.-----25

(8) A70008: single speed wiring diagram 230V/110V + 4P -----26

(9) A70007: UP/DN dual speed wiring diagram 460V/110V +4P-----27

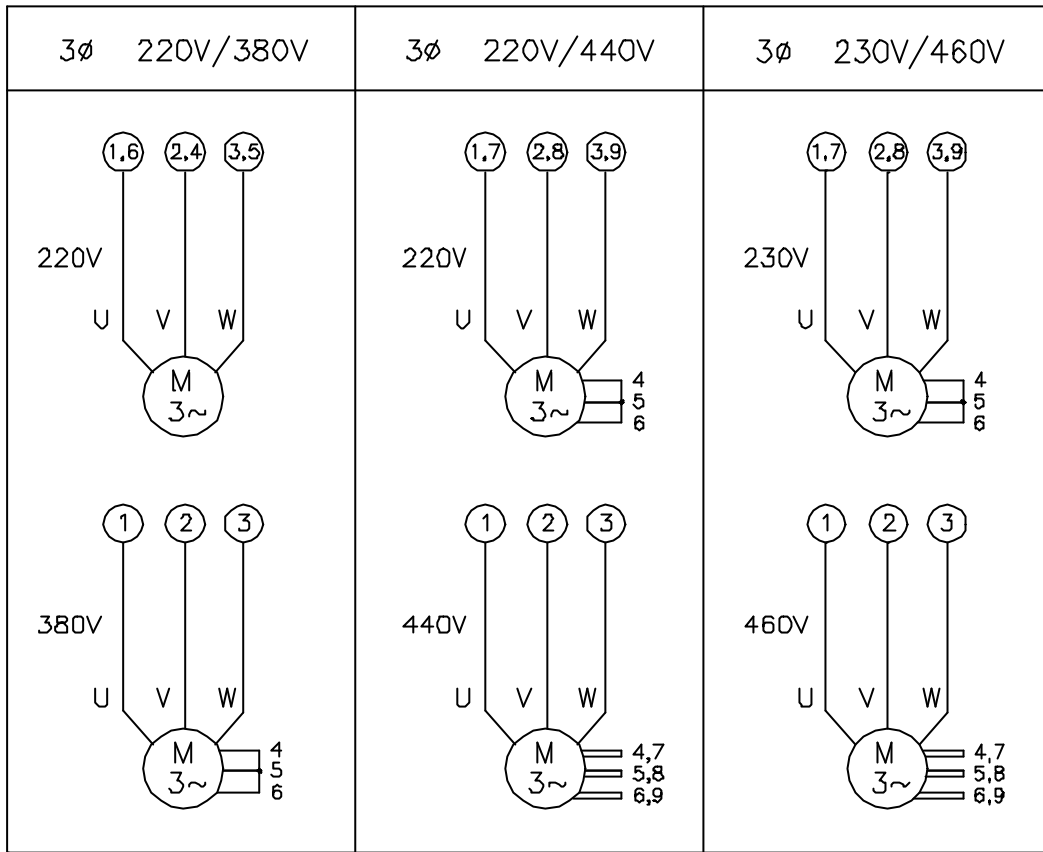
The above models are available in the following specification:

- (a) 3-Phase
- (b) 50 or 60 Hertz
- (c) Single and dual voltage

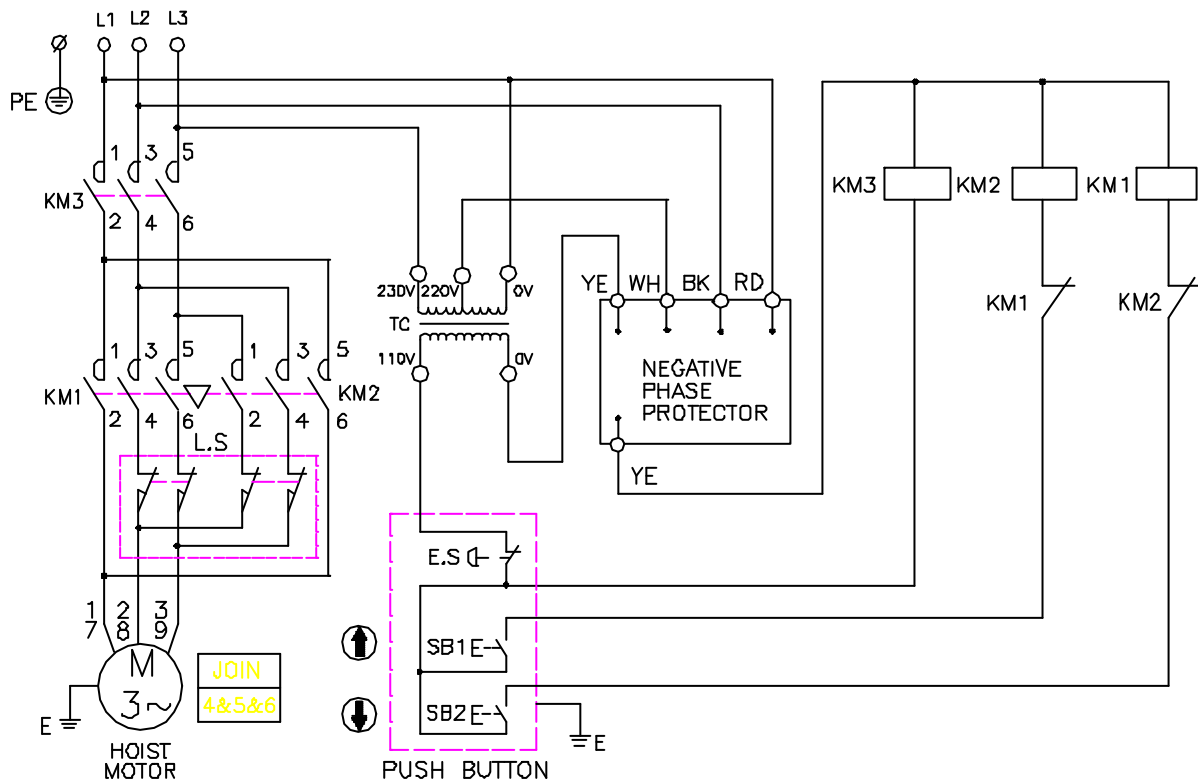
Voltage Hertz	Dual Voltage	Single Voltage
50 Hz	220V/380V 220V/440V 230V/460V	220 to 600
60 Hz		

Table 7-1

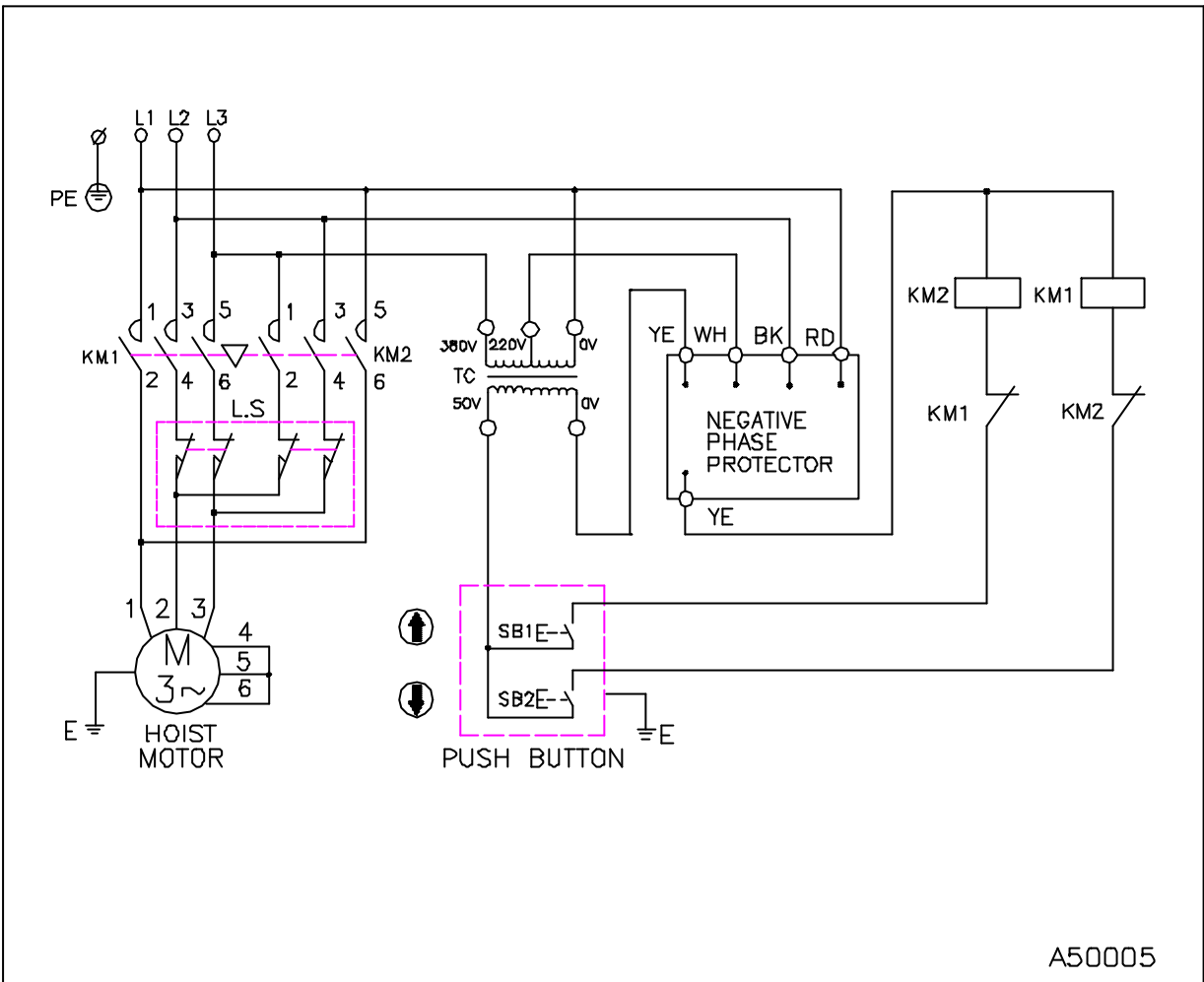
DUAL VOLTAGE CONNECTION OF MOTOR LEADS



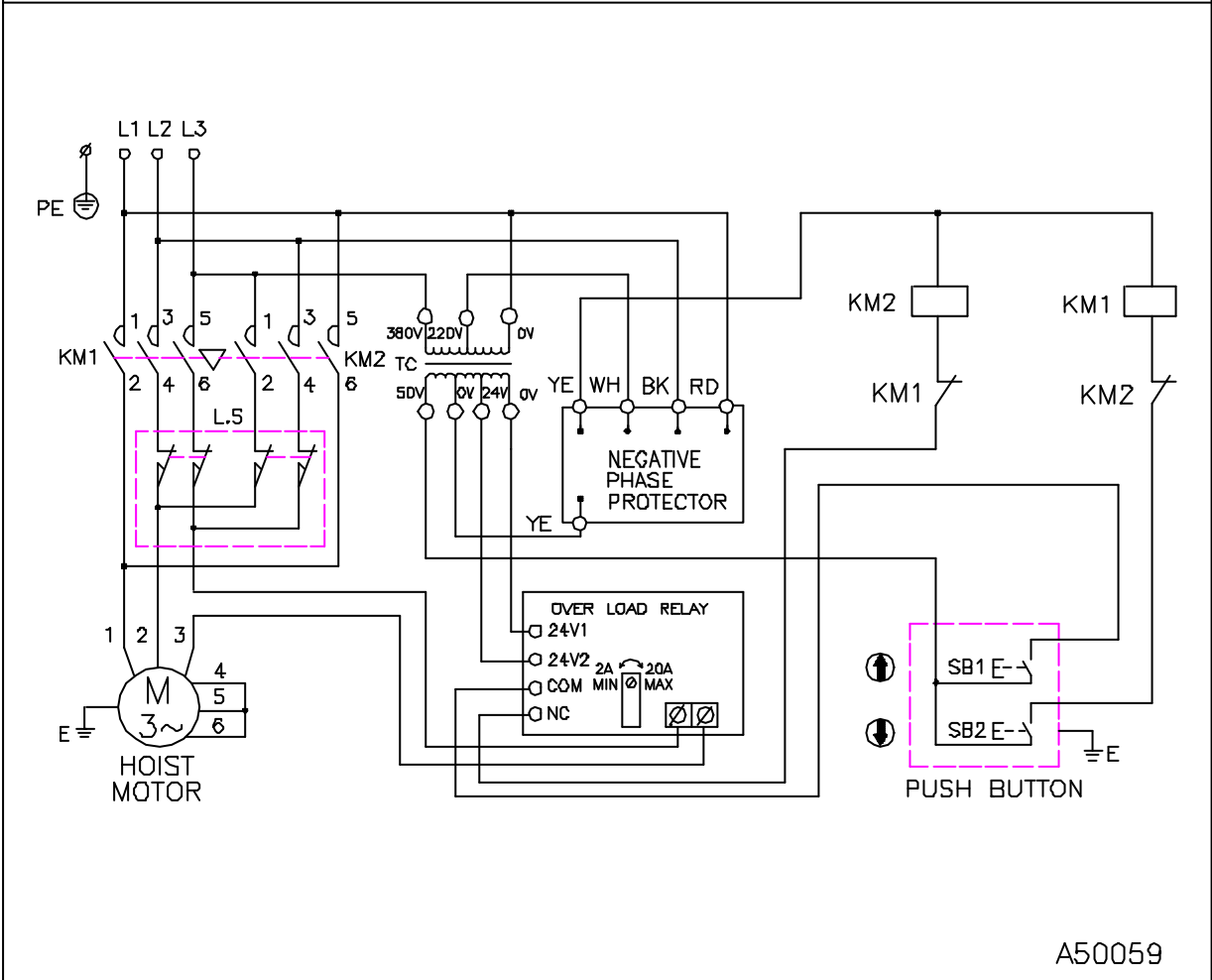
C10011



A50143

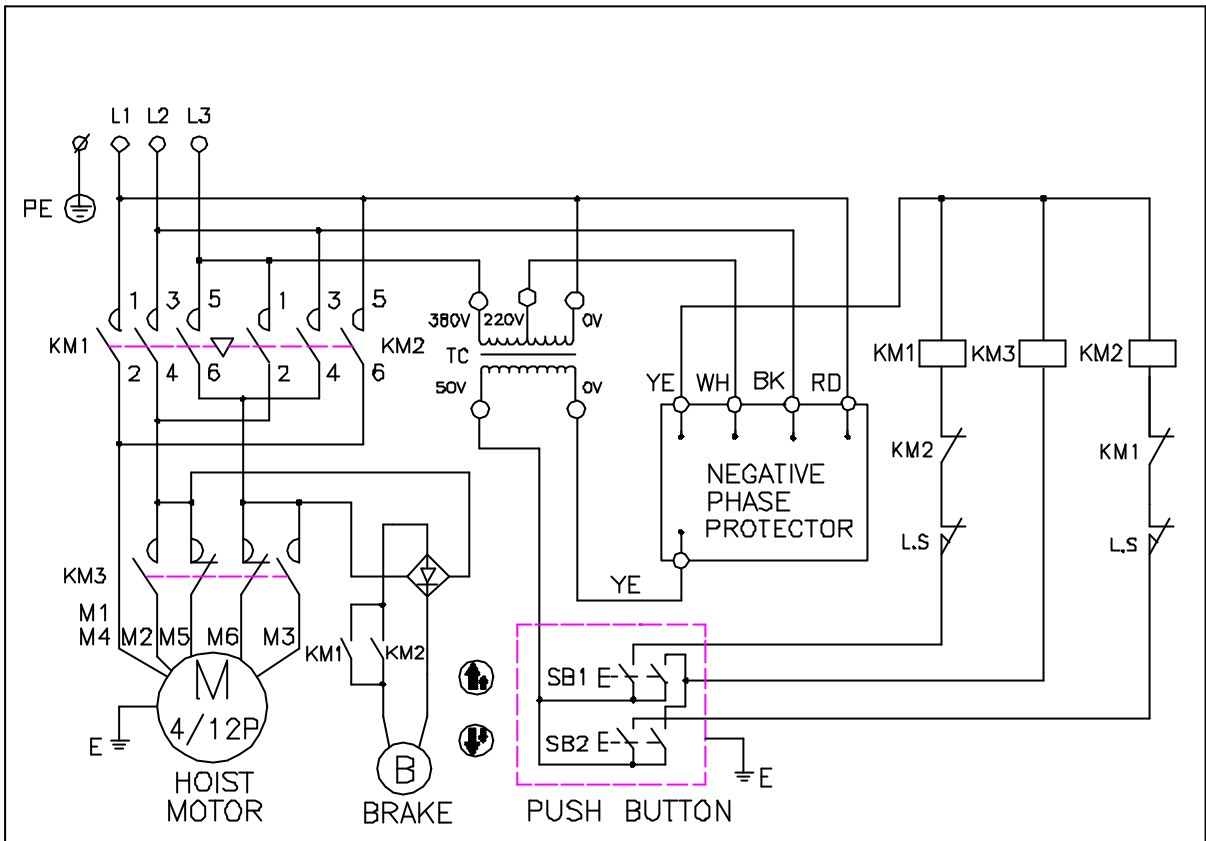


A50005

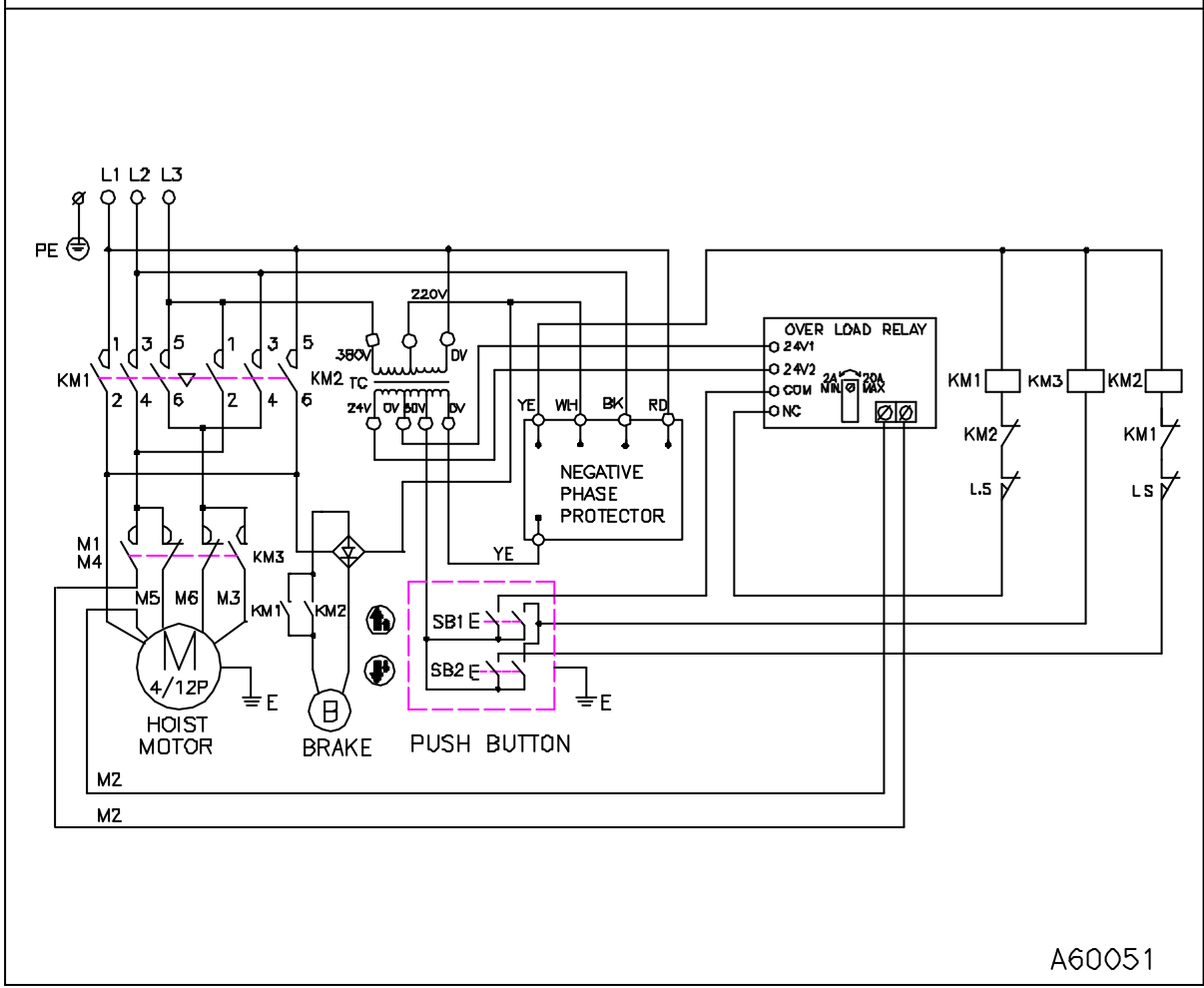


A50059

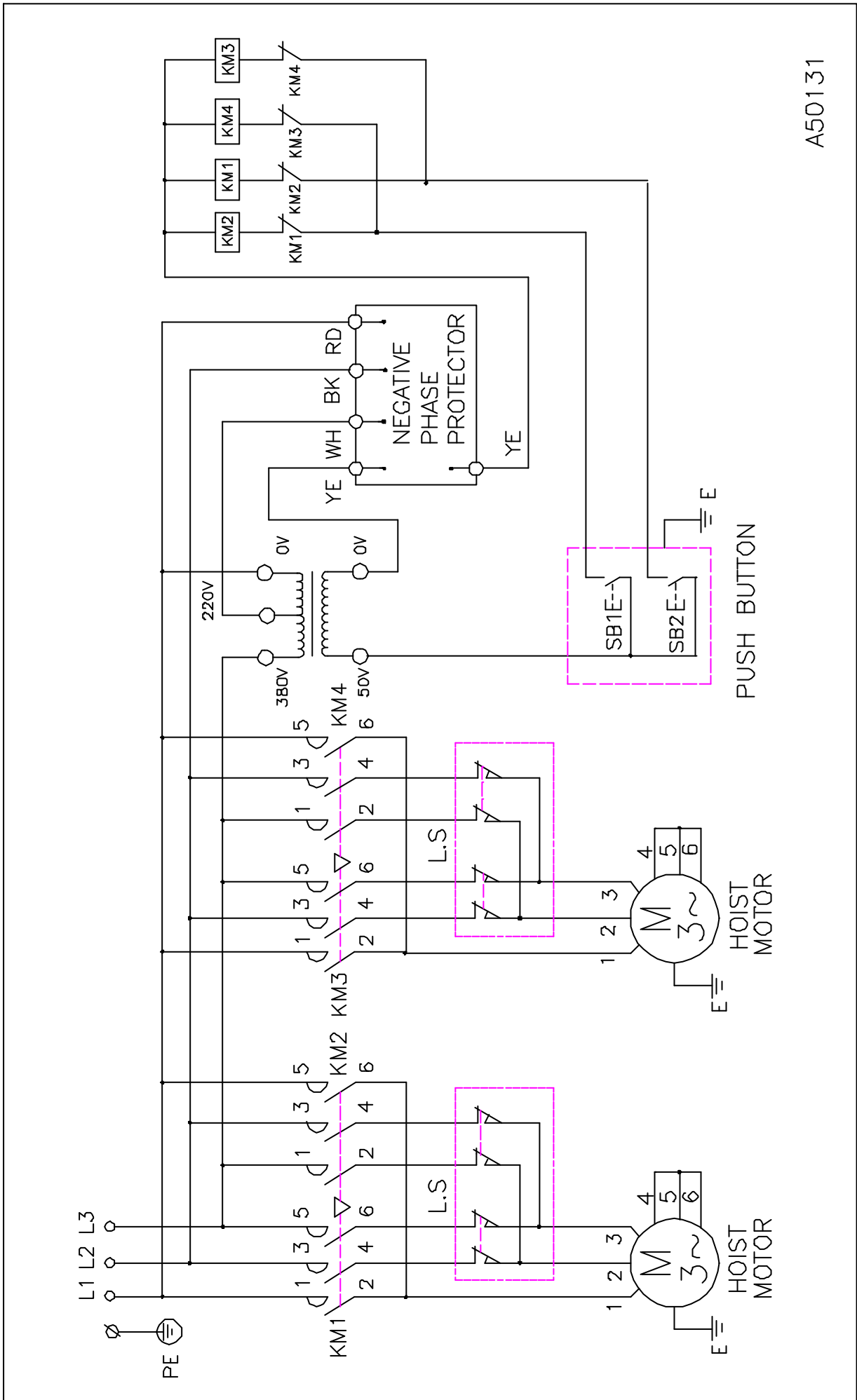




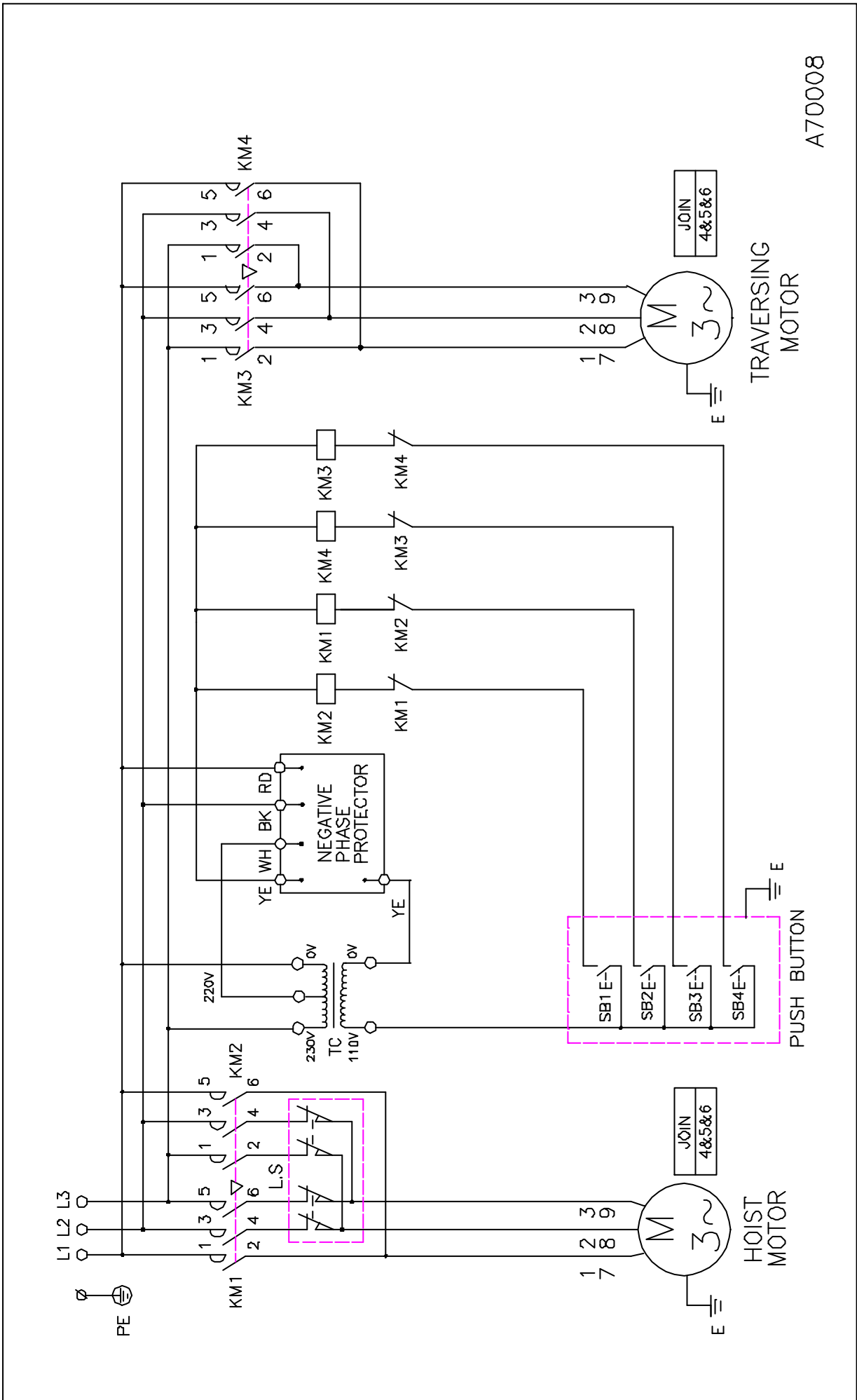
A60003



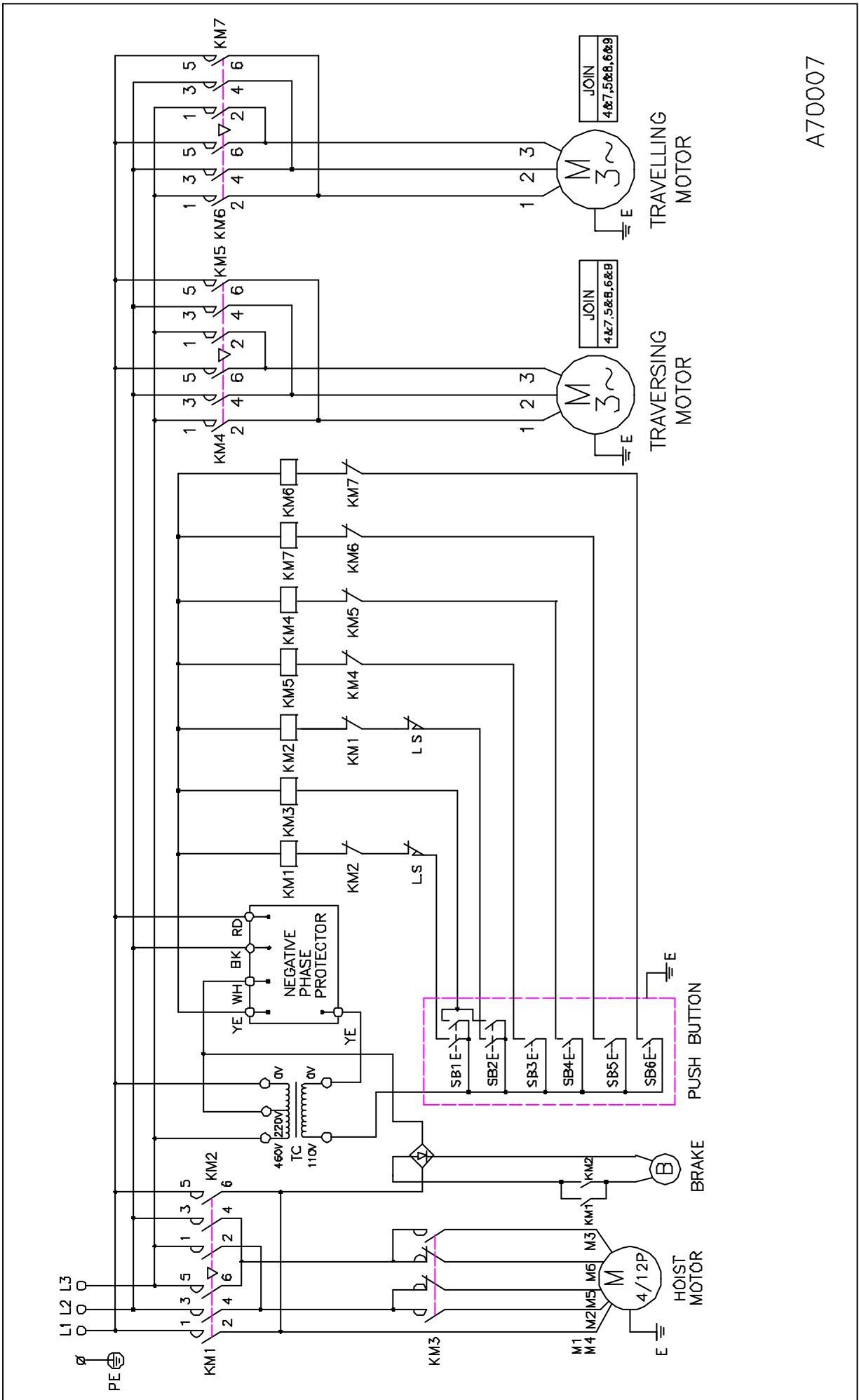
A60051



A50131



A70008



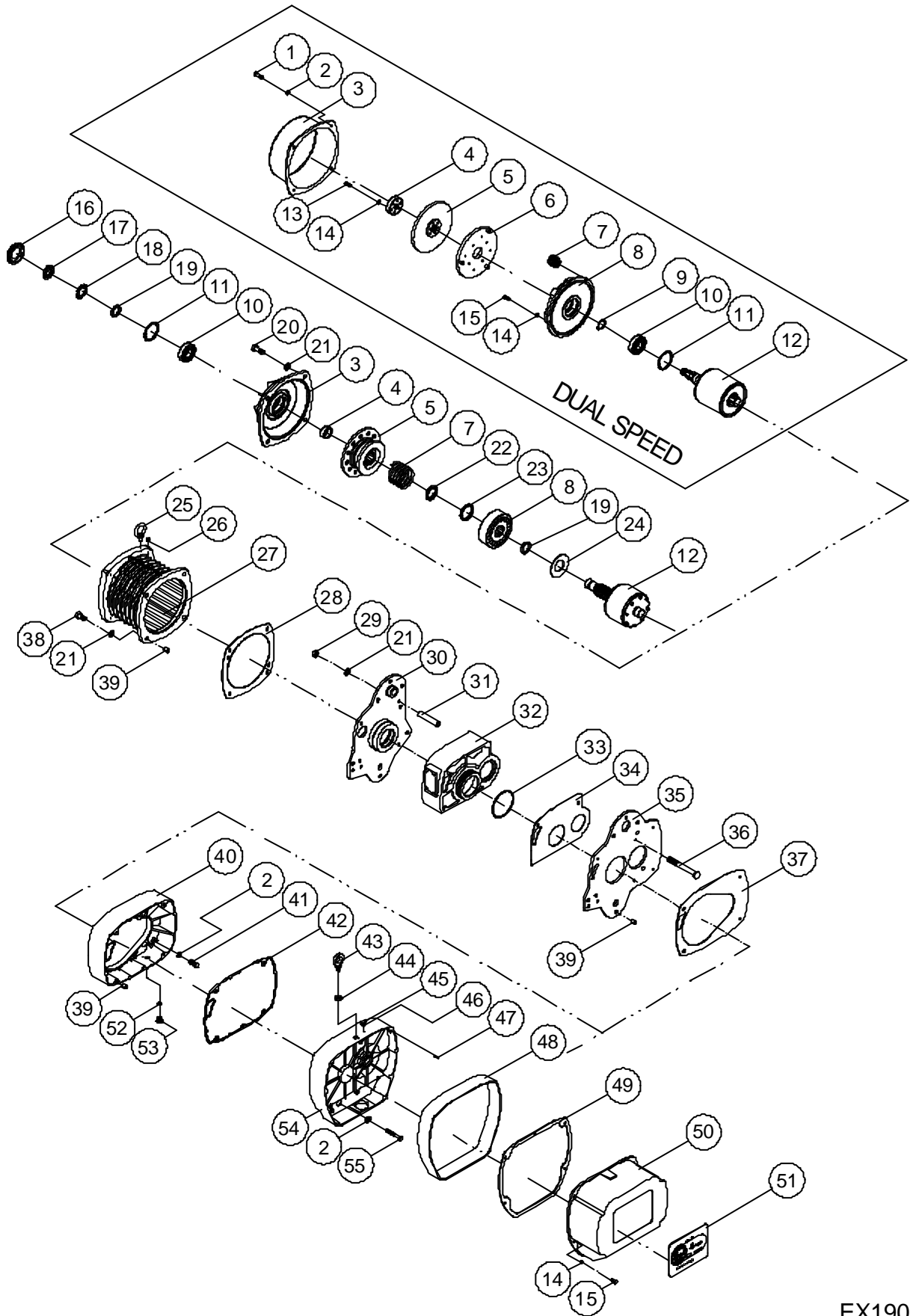
## 7.2 Troubleshooting and Remedial action

SITUATION	CAUSE	REMEDY
Hoist will not operate	(1) Phase error relay operated due to incorrect phase connections (2) Blown power fuse or tripped power circuit breaker (3) Blown control circuit fuse (4) Broken/disconnected power or control circuit wire (5) Low supply voltage (6) Motor hums but does not rotate (7) Emergency stop button release pushed (if fitted) (8) Faulty contactor	Reverse any two phase connections  Check supply requirements and refuse/reset breaker to meet requirements  Check fuse for correct rating and replace Locate and repair/reconnect  Check if 10% reduction in voltage, have mains supply checked  Check phases to motor - insulate and repair  Check the cause as necessary  Operate manually if hoist runs then control circuit/coil is faulty - locate fault and repair. If hoist does not run then check main supply. If input supply is correct but there is a faulty output supply then replace the contactor
Hoist will not stop	Welded contacts in contactor	Replace contactor
Brake slips	Abrasion of motor brake	Replace
Abnormal sound. on load chain/ chain sprocket	(1) Chain dry (2) Worn chain sprocket	Lubricate  Replace load chain and chain sprocket
Electric shock	(1) Poor earth connection (2) Accumulated foreign matter/ moisture on electrical parts	Provide correct earth connection Remove foreign matter/dry electrical parts
Oil leak	(1) No oil plug (2) Loose fitting of oil plug (3) No plug packing (4) Worn or deteriorated oil packing	Attach the normal oil plug Fasten the plug tightly Attach normal packing Attach the new packing

## 8. Drawings and parts list

(1). VIII-1 Motor Assembly & Housing Drawing -----	30
(2). VIII-1 Motor Assembly & Housing B.O.M -----	31
(3). VIII-2A Hook Assembly 2,2.5,3,5 Tons Drawing -----	34
(4). VIII-2A Hook Assembly 2,2.5,3,5 Tons B.O.M -----	35
(5). VIII-2B Hook Assembly 7.5 Tons Drawing -----	37
(6). VIII-2B Hook Assembly 7.5 Tons B.O.M -----	38
(7). VIII-2C Hook Assembly 10 Tons Drawing -----	40
(8). VIII-2C Hook Assembly 10 Tons B.O.M -----	41
(9). VIII-3 Reducing Gear Box Drawing -----	43
(10). VIII-3 Reducing Gear Box B.O.M -----	44
(11). VIII-4 Load Chain Section Drawing -----	45
(12). VIII-4 Load Chain Section B.O.M -----	46
(13). VIII-5 Electric Parts Drawing (Standard Parts)-----	47
(14). VIII-5 Electric Parts B.O.M (Standard Parts)-----	48
(15). VIII-5-1 Electric Parts Drawing(USA)-----	50
(16). VIII-5-1 Electric Parts B.O.M(USA) -----	51
(17). VIII-6 Low Headroom Model's Drawing -----	53
(18). VIII-6 Low Headroom Model's B.O.M -----	54

# VIII-1 MOTOR ASS'Y & HOUSING



EX190E1

## VIII – 1 MOTOR ASSEMBLY & HOUSING

S : SINGLE SPEED    D : DUAL SPEED

KEY NO.	PARTS CODE	DESCRIPTION	Q' TY REQ' D EACH UNIT									
			2T		3T		2.5, 5T		7.5T		10T	
			S	D	S	D	S	D	S	D	S	D
1	400014	Hex. Recess Bolt <M8×1.25×30L>		4		4		4		4		8
2	400095	Spring Washer <M8>	11	15	11	15	11	15	11	15	22	30
3	100424	Motor End Cover	1		1		1		1		2	
	100425			1		1		1		1		2
4	100490	Spacer Ring	1		1		1		1		2	
	100495	Brake Gap Adjuster		1		1		1		1		2
5	100395	Brake Drum	1		1		1		1		2	
	100409	Revolving Brake Disc		1		1		1		1		2
6	100406	Brake Lining		1		1		1		1		2
7	400237	Brake Spring	1		1		1		1		2	
	400239			6		6		6		6		12
8	100414	Magnet Producer	1		1		1		1		2	
	100498	Magnet Coil Ass 'y		1		1		1		1		2
9	400193	Retaining Ring <S-30>		1		1		1		1		2
10	400141	Bearing <6206 ZZ>		1		1		1		1		2
11	400200	Retaining Ring <R-62>		1		1		1		1		2
12	100325	Motor Rotor	1		1		1		1		2	
	100324			1		1		1		1		2
13	400007	Hex. Recess Bolt <M6×1.0×20L>		3		3		3		3		6
14	400094	Spring Washer <M6>	4	15	4	15	4	15	4	15	8	30
15	400006	Hex. Recess Bolt <M6×1.0×16L>	4	12	4	12	4	12	4	12	8	24
16	400264	Rubber Cap	1		1		1		1		2	
17	400220	Castle Nut <AN06>	1		1		1		1		2	
18	400221	External Teeth Washer <AW06>	1		1		1		1		2	
19	100430	Bearing Stop Ring	2		2		2		2		4	
20	400023	Hex. Recess Bolt <M12×1.75×35L>	4		4		4		4		8	
21	400097	Spring Washer <M12>		12		12		12		12		24
22	100363	Motor Shaft Spacer	2		2		2		2		4	
23	100365	Motor Retaining Ring	1		1		1		1		2	
24	100410	Cone Spring	1		1		1		1		2	
25	400218	Eye Bolt <M10×1.5>		1		1		1		1		2
26	400585	Blot <M8×1.25×16L>		2		2		2		2		4
27	A	Motor Stator Ass 'y	1		1		1		1		2	
	B			1		1		1		1		2

#27Ref. Page33



# VIII – 1 MOTOR ASSEMBLY & HOUSING

S : SINGLE SPEED D : DUAL SPEED

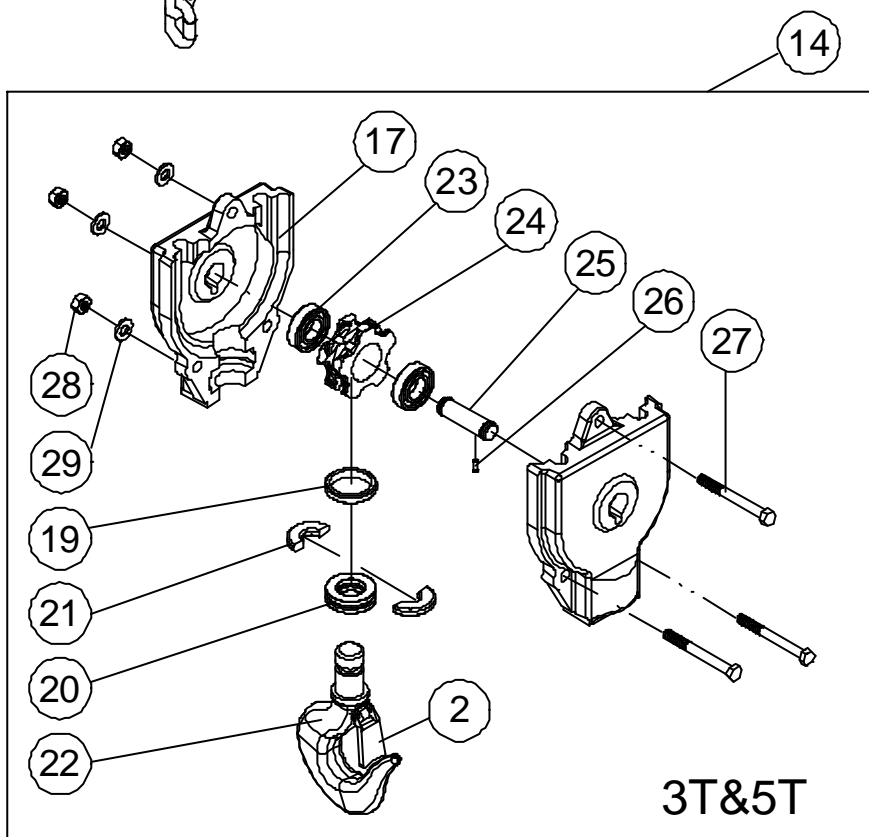
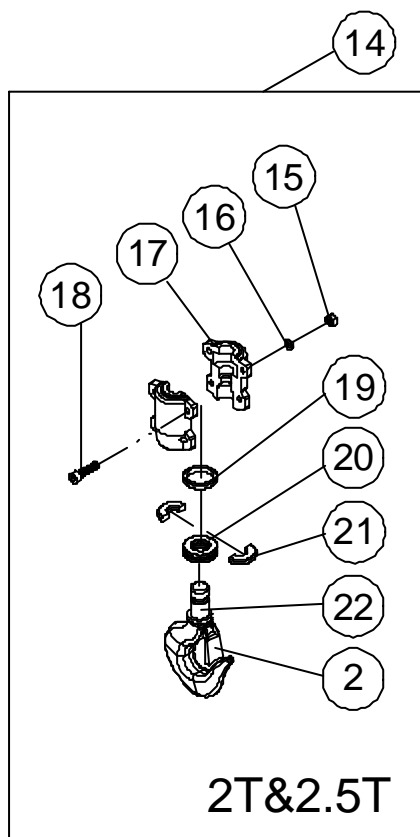
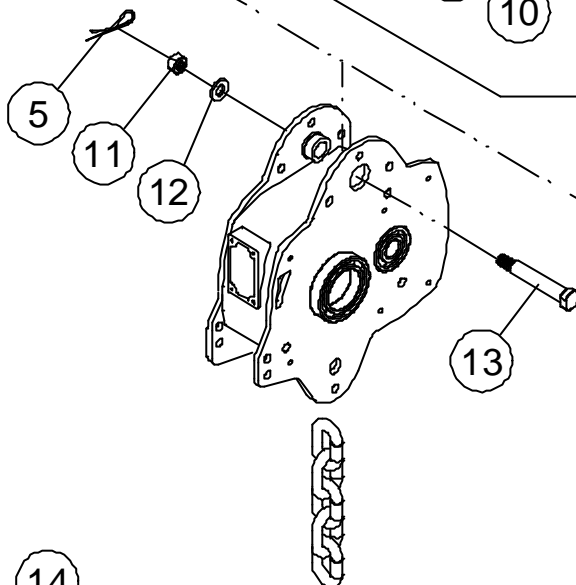
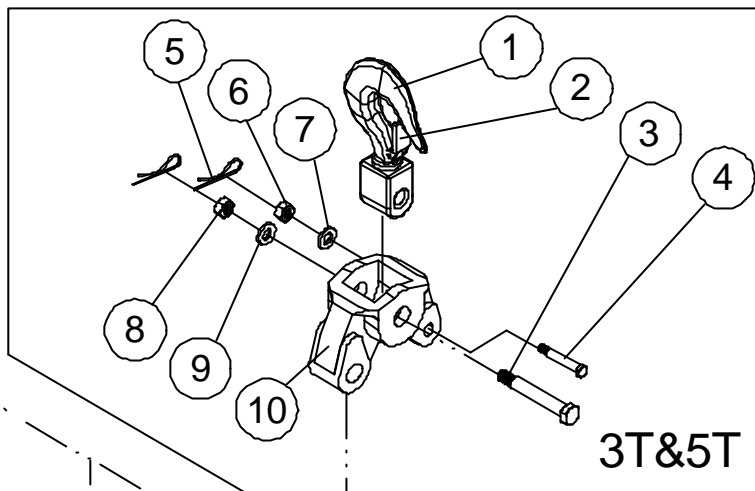
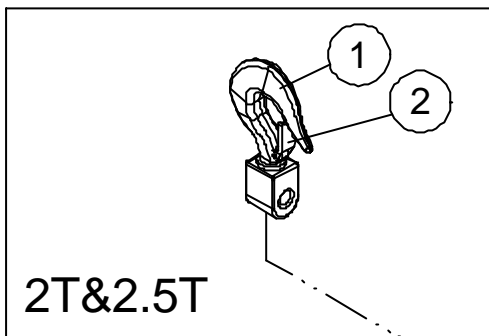
KEY NO.	PARTS CODE	DESCRIPTION	Q' TY REQ' D EACH UNIT									
			2T		3T		2.5, 5T		7.5T		10T	
			S	D	S	D	S	D	S	D	S	D
28	402507	Gasket 7#	1		1		1		1		2	
29	400084	Nut <M12×1.75>	4		4		4		4		8	
30	100339	Motor End Plate	1		1		1		1		2	
31	200308	Connecting Screws Sleeve	4		4		4		4		8	
32	200698	Load Sheave Housing	1		1		1		1		2	
33	404324	O-Ring <G-90>	1		1		1		1		2	
34	402506	Gasket 6#	1		1		1		1		2	
35	200066	Gear End Plate	1		1		1		1		2	
36	400032	Hex. Bolt <M12×1.75×120L>	4		4		4		4		8	
37	402510	Gasket 10#	1		1		1		1		2	
38	400021	Hex. Recess Bolt <M12×1.25×25L>	4		4		4		4		8	
39	400215	Spring Pin <ø12×14L>	4		4		4		4		8	
40	200245	Gear Box A	1		1		1		1		2	
41	400024	Oiltight Hex. Recess Bolt <M8×1.25×25L>	6		6		6		6		12	
42	402511	Gasket 11#	1		1		1		1		2	
43	400219	Eye Bolt <M16×2>	1		1		1		1		2	
44	400227	Gasket Ring	1		1		1		1		2	
45	400631	Wing Nut <M4×0.7>	1		1		1		1		2	
46	400050	Cross Headed Screw <M4×0.7×10L>	1		1		1		1		2	
47	400212	Spring Pin <ø5×16L>	1		1		1		1		2	
48	400267	Rubber Band	1		1		1		1		2	
49	402522	Gasket 22#	1		1		1		1		2	
50	300347	Electric Housing	1		1		1		1		2	
51		Name Plate	1		1		1		1		2	
52	400225	O-Ring <ø8×ø12×2>	1		1		1		1		2	
53	400600	Lubricant Drain Bolt	1		1		1		1		2	
54	200246	Gear Box B	1		1		1		1		2	
55	400460	Hex. Recess Bolt <M8×1.25×65L>	5		5		5		5		10	

# VIII – 1 MOTOR ASSEMBLY & HOUSING

S : SINGLE SPEED    D : DUAL SPEED

KEY NO.	PARTS CODE	DESCRIPTION	- HZ - V	
27	A	Motor Stator Ass 'y (S)	3    60HZ	220 / 380 V
				220 / 440 V
				230 /460V
				400 V
				600 V
			3    50HZ	220 / 380 V
				400 V
				415 V
				525 V
	B	Motor Stator Ass 'y (D)	3    60HZ	220 V
				230 V
				380 V
				460 V
				600 V
			3    50HZ	220 V
				380 V
				415 V
				525 V

# HOOK ASSEMBLY (2, 2.5, 3, 5T)



## VIII – 2A HOOK ASSEMBLY(2, 2.5, 3, 5T)

S : SINGLE SPEED D : DUAL SPEED

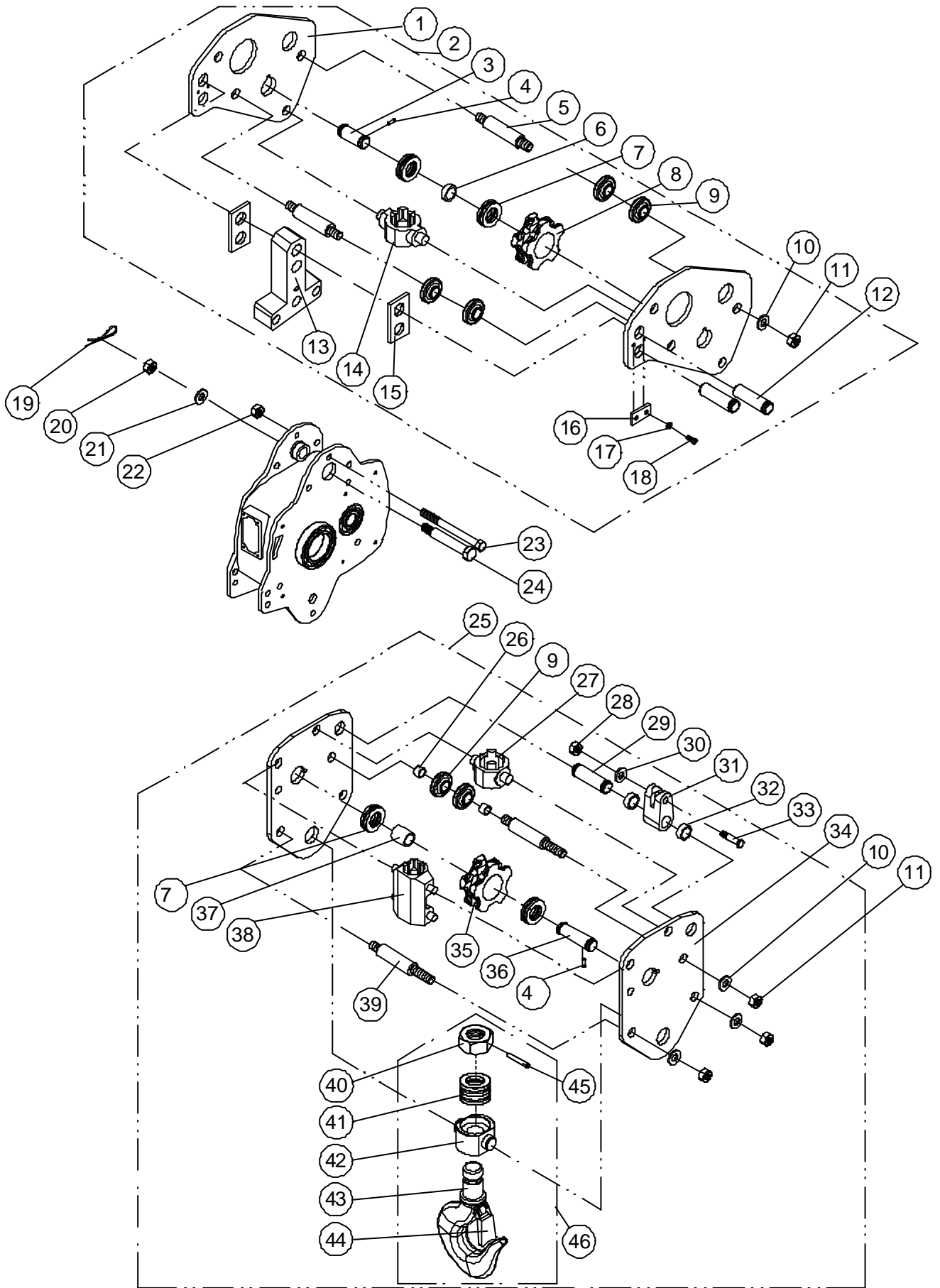
KEY NO.	PARTS CODE	DESCRIPTION	Q' TY REQ' D EACH UNIT							
			2T		2.5T		3T		5T	
			S	D	S	D	S	D	S	D
1	200012	Top Hook	1		1		1			
	200013								1	
2	400301	Safety Latch Ass'y	2		2		2		2	
3	200094	Top Hook Pin <ø25×107L>					1			
	200095	Top Hook Pin <ø34×134L>							1	
4	200177	Chain Connecting Pin <ø19×70L>					1			
	200178	Chain Connecting Pin <ø19×72L>							1	
5	400603	Cotter Pin <3/32"×1"L>	1		1		2		2	
6	400091	Lock Nut <M12×1.75>					1		1	
7	400097	Spring Washer <M12>					1		1	
8	400085	Nut <M16×1.5>					1			
	400086	Nut <M20×2.0>							1	
9	400099	Spring Washer <M20>							1	
10	200155	Hook Bracket					1			
	200156								1	
11	400085	Nut <M16×1.5>	1		1		1		1	
12	400098	Spring Washer <M16>	1		1		1		1	
13	200165	Rigid Hook Connecting Pin	1		1		1		1	
14	200759	Bottom Hook Ass 'y	1							
	200026				1					
	200025						1			
	200027								1	
15	400088	Lock Nut <M8×1.25>	4							
	400089	Lock Nut <M10×1.5>			4					
16	400095	Spring Washer <M8>	4							
	400096	Spring Washer <M10>			4					
17	200099	Bottom Hook Housing	1							
	200126				1					
	200100						1			
	200101								1	

## VIII – 2A HOOK ASSEMBLY(2, 2.5, 3, 5T)

S : SINGLE SPEED    D : DUAL SPEED

KEY NO.	PARTS CODE	DESCRIPTION	Q' TY REQ' D EACH UNIT							
			2T		2.5T		3T		5T	
			S	D	S	D	S	D	S	D
18	400015	Hex. Recess Bolt <M8×1.25×40L>	4							
	400018	Hex. Recess Bolt <M10×1.5×40L>			4					
19	200133	Bottom Hook Retaining Ring	1		1		1			
	200134						1			
20	400159	Thrust Bearing <51106>	1		1		1			
	400160	Thrust Bearing <51207>							1	
21	200129	Bottom Hook Half Spacer	2		2		2			
	200130							2		
22	200003	Bottom Hook	1		1		1			
	200004							1		
23	408052	Needle Bearing <TA 3020 Z>					2			
	400174	Needle Bearing <TA 4025 Z>							2	
24	200170	Bottom Hook Idle Wheel <ø40×42L>					1			
	200111	Bottom Hook Idle Wheel <ø50×51L>							1	
25	200813	Bottom Hook Idle Wheel Axle <ø30×71L>					1			
	200116	Bottom Hook Idle Wheel Axle <ø40×78L>							1	
26	400212	Spring Pin <ø5×16L>					1		1	
27	400018	Hex. Recess Bolt <M10×1.5×40L>					3			
	400019	Hex. Recess Bolt <M10×1.5×45L>							3	
28	400089	Lock Nut <M10×1.5>					3		3	
29	400096	Spring Washer <M10>					3		3	

# HOOK ASSEMBLY (7.5T)



## VIII – 2B HOOK ASSEMBLY (7.5 T)

S : SINGLE SPEED    D : DUAL SPEED

KEY NO.	PARTS CODE	DESCRIPTION	Q' TY REQ' D EACH UNIT	
			7.5T	
			S	D
1	200162	Side Plate	2	
2	200754	Suspended Frame Ass' y	1	
3	200119	Idle Wheel' s Axle <ø40×83L>	1	
4	400212	Spring Pin <ø5×16L>	2	
5	200148	Stay Bolt <ø25×124L>	3	
6	200125	Idle Wheel' s Inner Sleeve <ø49.5×ø40.5×5.5L>	1	
7	400174	Needle Bearing <TA 4025Z>	4	
8	200113	Idle Wheel <ø50×56L>	1	
9	400287	Rubber Chain Presser	6	
10	400099	Spring Washer <M20>	12	
11	400086	Nut <M20×2>	12	
12	200166	Side Plates Connecting Pin <ø25×97>	2	
13	200311	Rigid Hook <t45×140×197L>	1	
14	200315	Chain Guide(B)	1	
15	200174	Rigid Hook Spacer Plate <ø26.5 P44 t6×50×92L>	2	
16	200636	Connecting Pin' s Stopper <ø8.5 P28 t6.0×25×50L>	1	
17	400095	Spring Washer <M8>	4	
18	400012	Hex. Recess Bolt <M8×1.25×20L>	2	
19	400603	Cotter Pin <3/32"×1"L>	1	
20	400085	Nut <M16×1.5>	1	
21	400098	Spring Washer <M16>	1	
22	400089	Lock Nut <M10×1.5>	1	
23	400029	Hex. Recess Bolt <M10×1.5×120L>	1	
24	200165	Rigid Hook Connecting Pin <ø25×138L>	1	

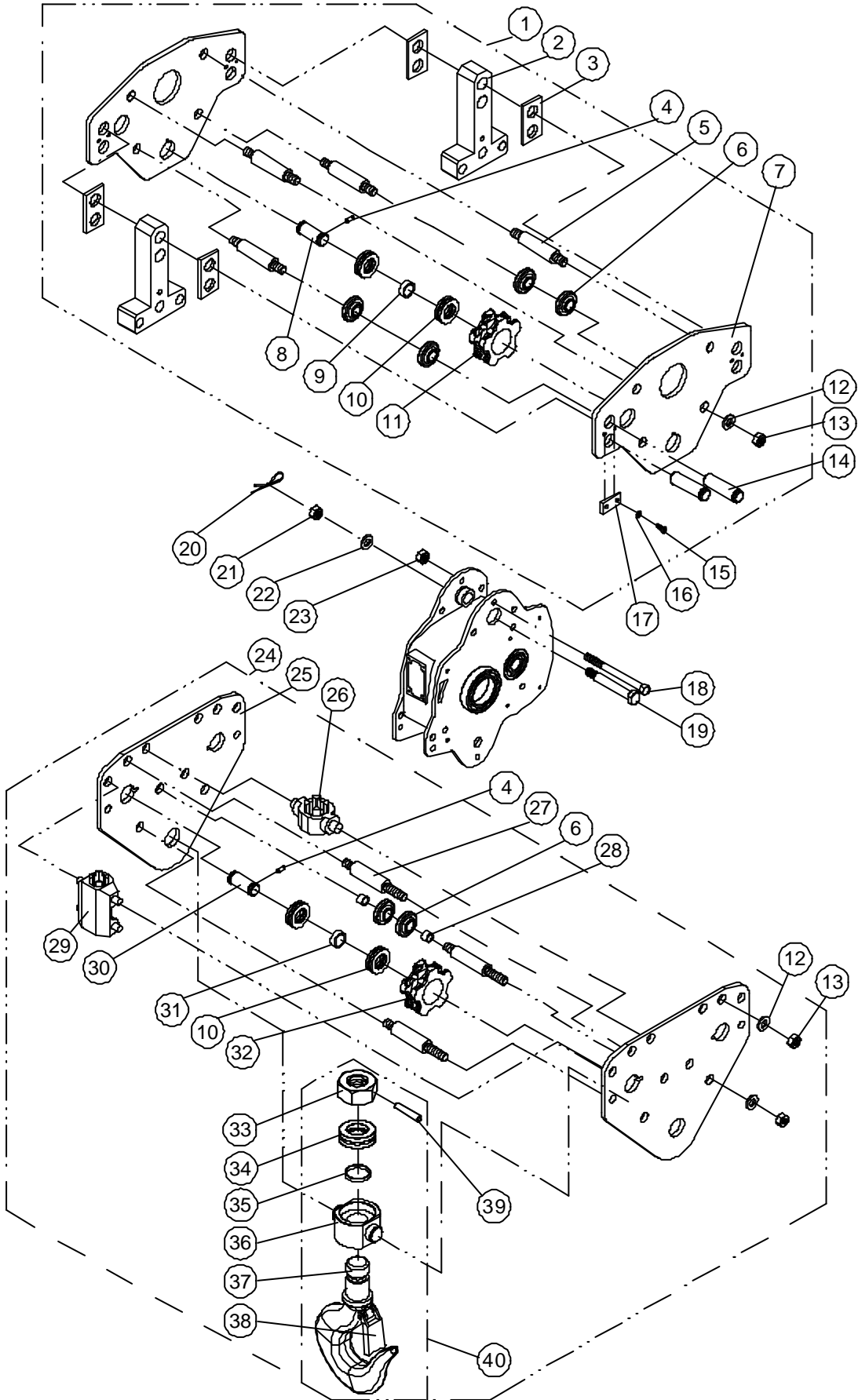
## VIII – 2B HOOK ASSEMBLY (7.5 T)

S : SINGLE SPEED D : DUAL SPEED

KEY NO.	PARTS CODE	DESCRIPTION	Q' TY REQ' D EACH UNIT	
			7.5T	
			S	D
25	200762	Bottom Hook Ass'y	1	
26	200145	Stay Bolt Sleeve <ø32×ø27×13L>	2	
27	200316	Chain Guide(C)	1	
28	400091	Lock Nut <M12×1.75>	1	
29	200187	Chain Limiter's Pin <ø32×108L>	1	
30	400097	Spring Washer <M12>	1	
31	200185	Chain's Limiter <t55×53×116L Pø32>	1	
32	200186	Chain's Limiter Sleeve <ø40×ø33×12L>	2	
33	200179	Chain's Connect Pin To Limiter <ø19×82L>	1	
34	200105	Bottom Hook Side Plate <ø11.2>	2	
35	200112	Bottom Hook Idle Wheel <ø50 ×82L>	1	
36	200117	Idle Wheel Axle <ø40 ×108L>	1	
37	200122	Idle Wheel Inner Sleeve <ø49.5×ø40.5×31L>	1	
38	200314	Chain Guide(A)	1	
39	200143	Side Plate Stay Bolt <ø25 ×149L >	3	
40	400644	Nut <1 3/4"×5UNC>	1	
41	400162	Thrust Bearing <51209>	2	
42	200135	Bearing Housing	1	
43	200078	Forged Hook	1	
44	400302	Safety Latch Ass'y	1	
45	400214	Spring Pin <ø8×70L>	1	
46	200765	Bottom Hook	1	



# HOOK ASSEMBLY (10T)



## VIII – 2C HOOK ASSEMBLY(10T)

S : SINGLE SPEED D : DUAL SPEED

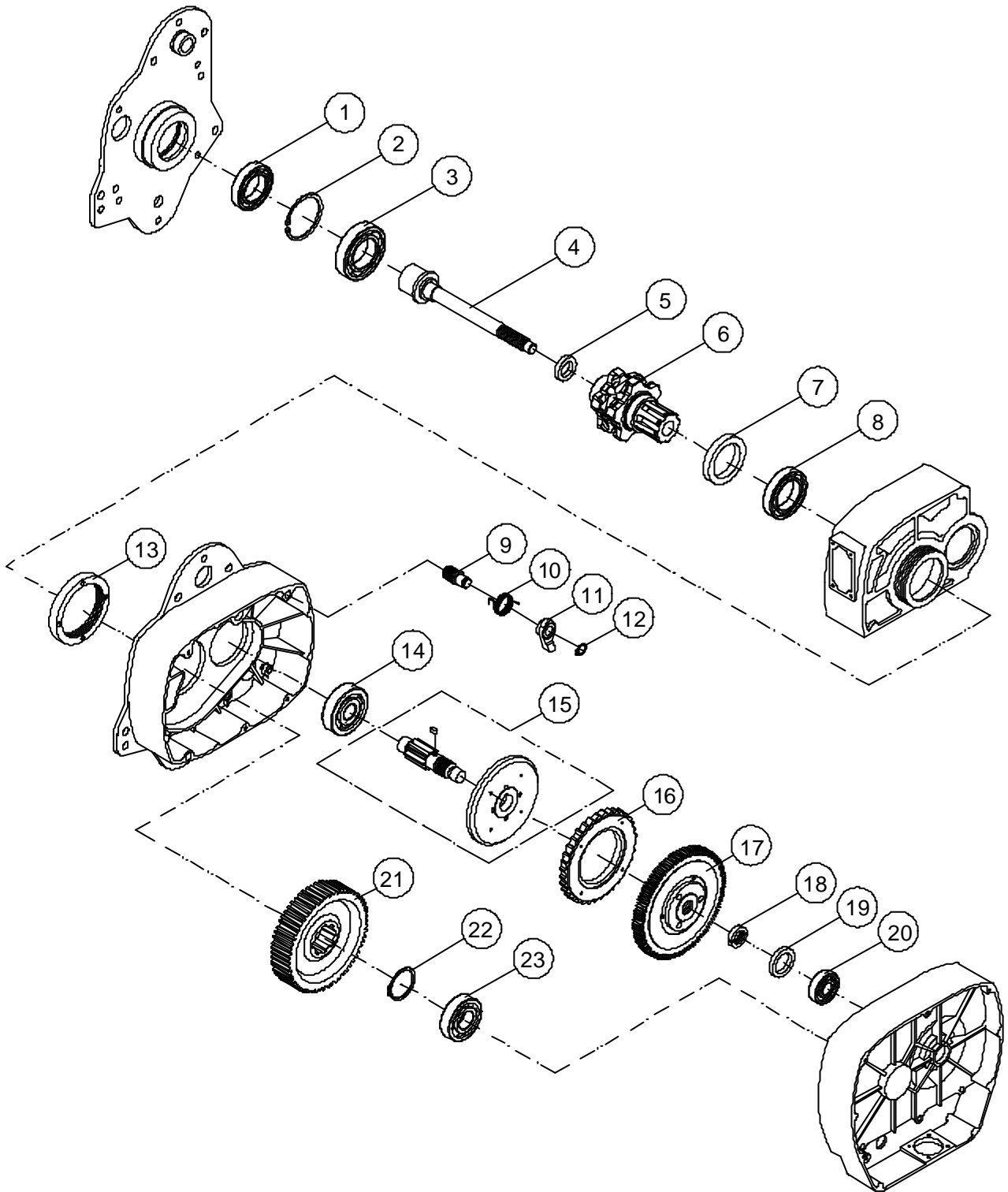
KEY NO.	PARTS CODE	DESCRIPTION	Q' TY REQ' D EACH UNIT	
			10T	
			S	D
1	200755	Top Hook Ass'y	1	
2	200312	Side Plate Connector <t45 x40 x23L>	2	
3	200174	Side Plate Connector Spacer<ø26.5 P44 t6 x50 x92L>	4	
4	400212	Spring Pin <ø5x16L>	3	
5	200149	Side Plate Stay Bolt <ø25 x39L>	4	
6	400287	Rubber Chain Guide Wheel	8	
7	200163	Side Plate	2	
8	200120	Idle Wheel Axle <ø40 x92L>	1	
9	200125	Idle Wheel Inner Sleeve <ø49.5 xø40.5 x5.5L >	1	
10	400174	Needle Bearing <TA 4025Z>	6	
11	200113	Idle Wheel <ø50 x6L >	1	
12	400099	Spring Washer <M20>	20	
13	400086	Nut <M20x2.0>	20	
14	200167	Side Plate Connecting Pin <ø25.5 x107L >	4	
15	400012	Hex. Recess Bolt <M8x1.25x20L>	4	
16	400095	Spring Washer <M8>	4	
17	200636	Connecting Pin Stopper Plate <ø8.5 P28 t6 x25 x50L >	2	
18	400029	Hex. Bolt <M10x1.5x120L>	2	
19	200165	Rigid Hook Connecting Pin <ø25 x38L>	2	
20	400603	Cotter Pin <3/32"x1"L>	2	
21	400085	Nut <M16x1.5>	2	
22	400098	Spring Washer <M16>	2	
23	400089	Lock Nut< <M10x1.5>	2	

## VIII – 2C HOOK ASSEMBLY(10T)

S : SINGLE SPEED    D : DUAL SPEED

KEY NO.	PARTS CODE	DESCRIPTION	Q' TY REQ' D EACH UNIT	
			10T	
			S	D
24	200763	Bottom Hook Ass' y	1	
25	200106	Bottom Hook Side Plate	2	
26	200316	Chain Guide(C)	2	
27	200144	Bottom Hook Stay Bolt <ø25 x169L>	6	
28	200145	Stay Bolt Spacer Sleeve <ø32 xø27 x13L>	4	
29	200314	Chain Guide(A)	2	
30	200118	Bottom Hook Idle Wheel Axle <ø40 x123L>	2	
31	200122	Idle Wheel Inner Sleeve <ø49.5 xø40.5 x11L>	2	
32	200112	Bottom Hook Idle Wheel	2	
33	400644	Nut <1 3/4"x5UNC>	1	
34	400163	Thrust Bearing <51309>	1	
35	200301	Thrust Bearing Protecting Ring <ø88 xø84 x12L>	1	
36	200136	Forged Hook Bearing Housing <ø62 x100 x122L>	1	
37	200092	Forged Hook	1	
38	400303	Safety Latch Ass'y	1	
39	400214	Spring Pin <ø8x70L>	1	
40	200766	Forged Hook Ass' y	1	

# VIII-3 REDUCING GEAR BOX



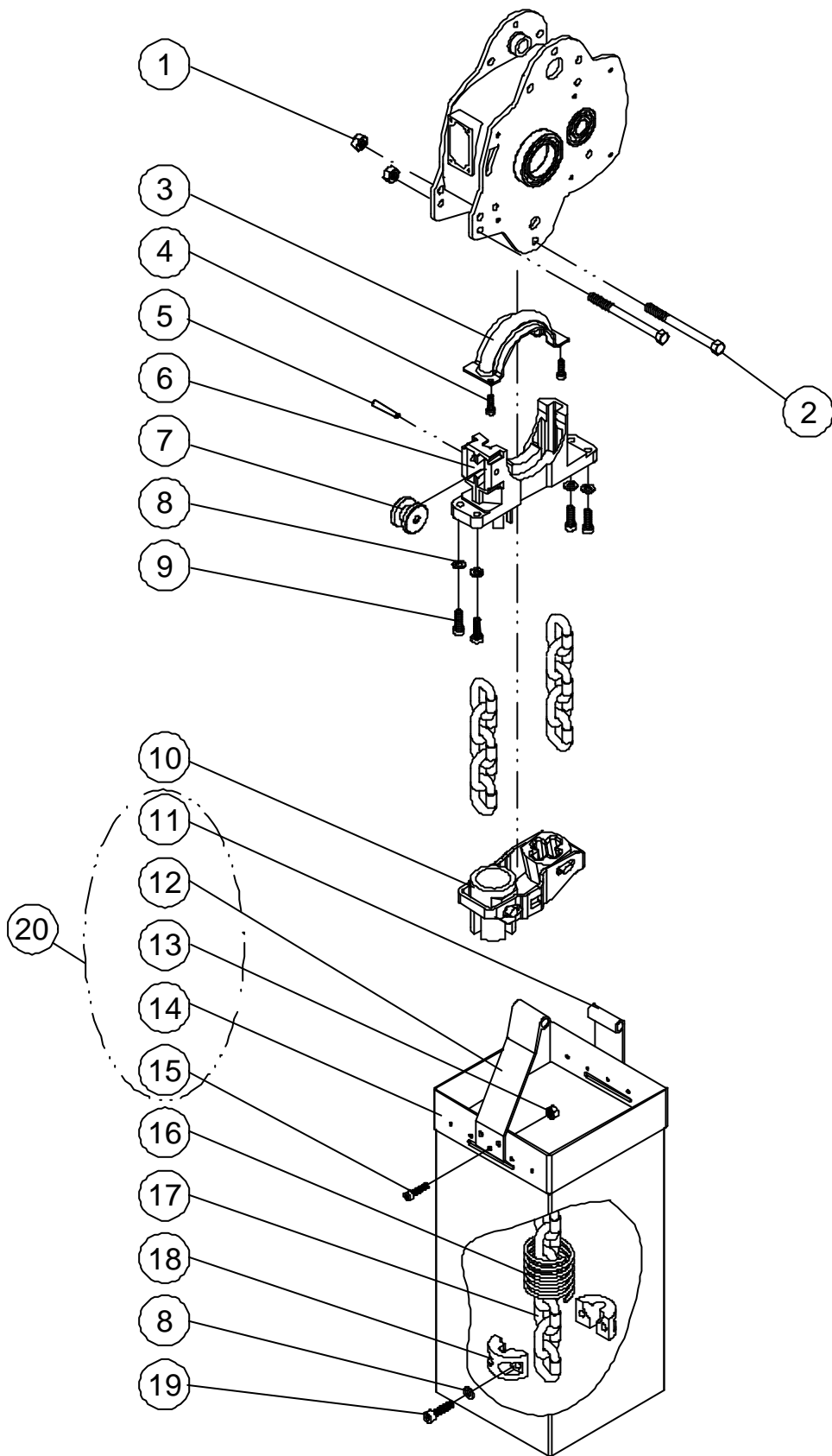
EX190E5

## VIII – 3 REDUCING GEAR BOX ASSEMBLY

S : SINGLE SPEED    D : DUAL SPEED

KEY NO.	PARTS CODE	DESCRIPTION	Q' TY REQ' D EACH UNIT									
			2T		3T		2.5, 5T		7.5T		10T	
			S	D	S	D	S	D	S	D	S	D
1	400140	Bearing <6009ZZ>	1		1		1		1		2	
2	400201	Retaining Ring <R-75>	1		1		1		1		2	
3	400797	Bearing <6210Z>	1		1		1		1		2	
4	200695	Front Motor Axle Ass'y	1		1		1		1		2	
5	400183	Oil Seal <ø25×ø40×8>	1		1		1		1		2	
6	200198	Load Sheave	1		1							
	200199						1		1		2	
7	400185	Oil Seal <ø58×ø80×12>	1		1		1		1		2	
8	407754	Bearing <6010>	1		1		1		1		2	
9	200286	Ratchet Pawl Shaft	1		1		1		1		2	
10	400241	Ratchet Spring	1		1		1		1		2	
11	200288	Ratchet Pawl	1		1		1		1		2	
12	400190	Retaining Ring <S-16>	1		1		1		1		2	
13	200699	Compress Retaining Sleeve	1		1		1		1		2	
14	407772	Bearing <6405>	1		1		1		1		2	
15	200733	3 <sup>rd</sup> Gear Ass'y	1									
	200734					1						
	200735						1		1		2	
16	200741	Ratchet Wheel Ass'y	1		1		1		1		2	
17	200665	2 <sup>nd</sup> Gear	1		1		1		1		2	
18	200274	Half Spacer	2		2		2		2		4	
19	200277	Bearing Spacer	1		1		1		1		2	
20	407746	Bearing <6304>	1		1		1		1		2	
21	200266	4 <sup>th</sup> Gear	1									
	200265					1						
	200267						1		1		2	
22	400197	Retaining Ring <S-50>	1		1		1		1		2	
23	407765	Bearing <6303>	1		1		1		1		2	

# LOAD CHAIN SECTION



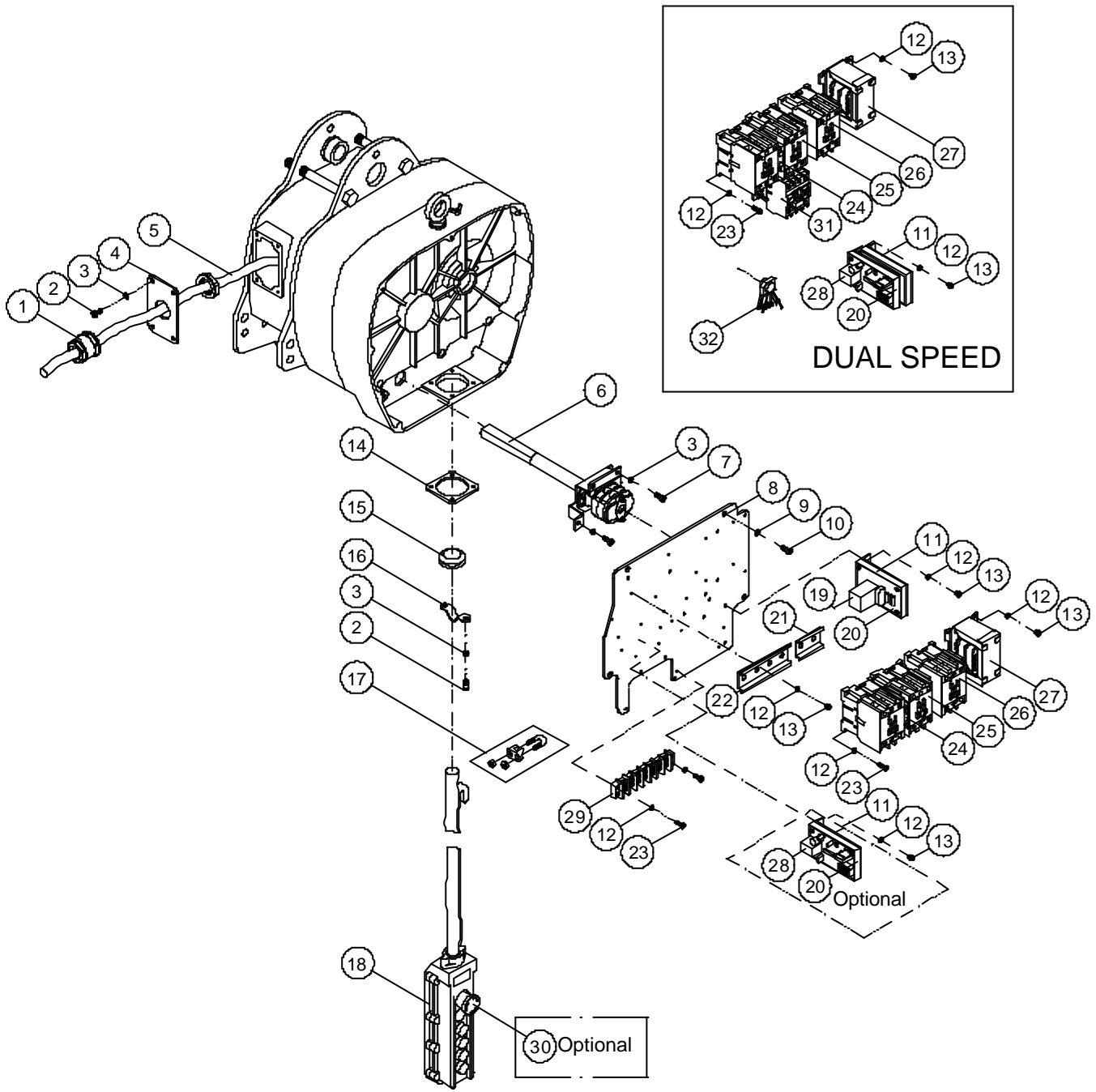
### III – 4 LOAD CHAIN SECTION ASSEMBLY

S : SINGLE SPEED D : DUAL SPEED

KEY NO.	PARTS CODE	DESCRIPTION	Q' TY REQ' D EACH UNIT											
			2T		3T		2.5T		5T		7.5T		10T	
			S	D	S	D	S	D	S	D	S	D	S	D
1	400089	Lock Nut <M10×1.5>	2		2		2		2		2		4	
2	400029	Hex. Bolt <M10×1.5×120L>	2		2		2		2		2		4	
3	200203	Chain Regulating Plate <t20×50×160L>	1		1		1		1		1		2	
4	400005	Hex. Recess Bolt <M6×1.0×12L>	2		2		2		2		2		4	
5	400273	Compressing Wheel Axle <M8×55L>	1		1		1		1		1		2	
6	200194	Chain Regulator <ø10>	1		1									
	200195	Chain Regulator <ø11.2>					1		1		1		2	
7	200191	Chain Regulating Wheel <ø10 ø39×25L>	1		1									
	200192	Chain Regulating Wheel <ø11.2 ø40×28L>					1		1		1		2	
8	400095	Spring Washer <M8>	6		6		6		6		6		12	
9	400013	Hex. Recess Bolt <M8×1.25×25L>	4		4		4		4		4		8	
10	200207	Chain Guide Ass' y	1		1		1		1		1		2	
11	200223	Bucket Arm(B) <t3.0×50×180L>	1		1		1		1		1		2	
12	200222	Bucket Arm(A) <t3.0×50×260L>	1		1		1		1		1		2	
13	400087	Lock Nut <M6×1.0>	6		6		6		6		6		12	
14	200218	Chain Bucket	1		1		1		1		1		2	
15	400055	Cross Headed Screw <M6×1.0×12L>	6		6		6		6		6		12	
16	400233	Limit Spring <ø10>	2		3									
	400234	Limit Spring <ø11.2>					2		3		3		4	
17	400543	Load Chain <ø10>	3M		3M									
	400544	Load Chain <ø11.2>					3M		3M		3M		3M	
18	200201	Chain Stopper <ø10>	2		4									
	200202	Chain Stopper <ø11.2>					2		4		4		4	
19	400014	Hex. Recess Bolt <M8×1.25×30L>	2		2		2		2		2		4	
20	200781	Chain Bucket 6#	1		1		1		1		1		2	

**No.20 Depends on the chain length that request by customers.  
(Parts No. Please refer to page19) .**

# VIII-5 ELECTRIC PARTS (Standard Parts)



EX190E7



## VIII – 5 ELECTRIC ASSEMBLY(Standard Parts)

S : SINGLE SPEED D : DUAL SPEED

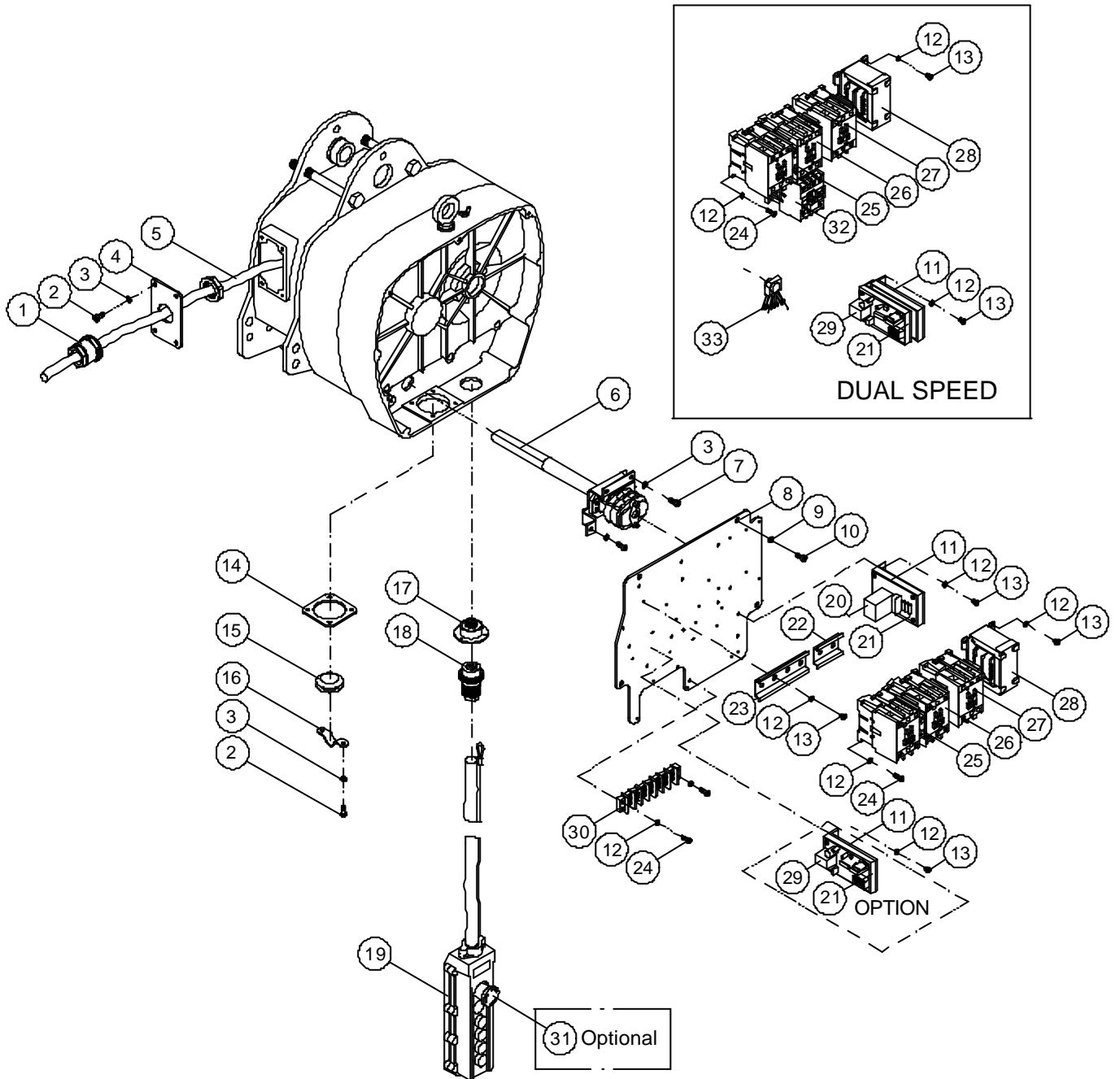
KEY NO.	PARTS CODE	DESCRIPTION	Q' TY REQ' D EACH UNIT									
			2T		3T		2.5, 5T		7.5T		10T	
			S	D	S	D	S	D	S	D	S	D
1	400222	Cable Gland(M20)	1		1		1		1		1	
	400941	Cable Gland(M25)									1	
2	400053	Cross Headed Screw<M5×0.8×12L>	4		4		4		4		8	
3	400093	Spring Washer<M5>	7		7		7		7		14	
4	300343	Power Cable Holding Plate	1		1		1		1		2	
	300360										1	
5		Power Cable Ass' y	1		1		1		1		2	
6	302606	Limit Switch Ass' y	1		1		1		1		2	
	302607			1		1		1		1		2
7	400620	Cross Headed Screw<M5×0.8×8L>	3		3		3		3		6	
8	300337	Electric Components Plate	1		1		1		1		2	
9	400094	Spring Washer<M6>	4		4		4		4		8	
10	400005	Hex. Recess Bolt<M6×1.0×12L>	4		4		4		4		8	
11	300340	P.E.R Holding Plate	2		2		2		2		2	
12	400092	Spring Washer<M4>	14		14		14		14		24	
13	400048	Cross Headed Screw<M4×0.7×6L>	13		13		13		13		22	
14	300332	Control Cable Holding Plate	1		1		1		1		2	
15	400271	Rubber Cap	1		1		1		1		2	
16	300342	Wire Holder Clamp	1		1		1		1		2	
17	400297	Wire Clip(3/16")	1		1		1		1		1	
18		Single Speed Pbs	1		1		1		1		1	
		Dual Speed Pbs		1		1		1		1		1
19		Phase Error Relay(P.E.R)	1		1		1		1		1	

## VIII – 5 ELECTRIC ASSEMBLY(Standard Parts)

S : SINGLE SPEED D : DUAL SPEED

KEY NO.	PARTS CODE	DESCRIPTION	Q' TY REQ' D EACH UNIT									
			2T		3T		2.5, 5T		7.5T		10T	
			S	D	S	D	S	D	S	D	S	D
20	300363	P.E.R/E.O Box	2	3	2	3	2	3	2	3	2	3
21	300078	Contactora Rail<1PC>	1		1		1		1		2	
22	300079	Contactora Rail<2PC>	1		1		1		1		1	
23	400052	Cross Headed Screw<M4×0.7×15L>	1		1		1		1		2	
24	300800	Contactora Interlock	1		1		1		1		2	
25		Magnetic Contactora	2		2		2		2		4	
26		Emergency Contactora	1		1		1		1		1	
27		Transformer	1		1		1		1		1	
28	300726	Electric Overload(E.O)	1	2	1	2	1	2	1	2	1	2
29	300228	Terminal Block	1		1		1		1		2	
	300230			1		1		1		1		2
30	300576	Emergency Stop	1		1		1		1		1	
31		Magnetic Contactora<for dual>		1		1		1		1		2
32	300143	Rectifier		1		1		1		1		2

# VIII-5-1 ELECTRIC PARTS <USA>



EX190E7-1

## VIII – 5 – 1 ELECTRIC ASSEMBLY <USA>

S : SINGLE SPEED D : DUAL SPEED

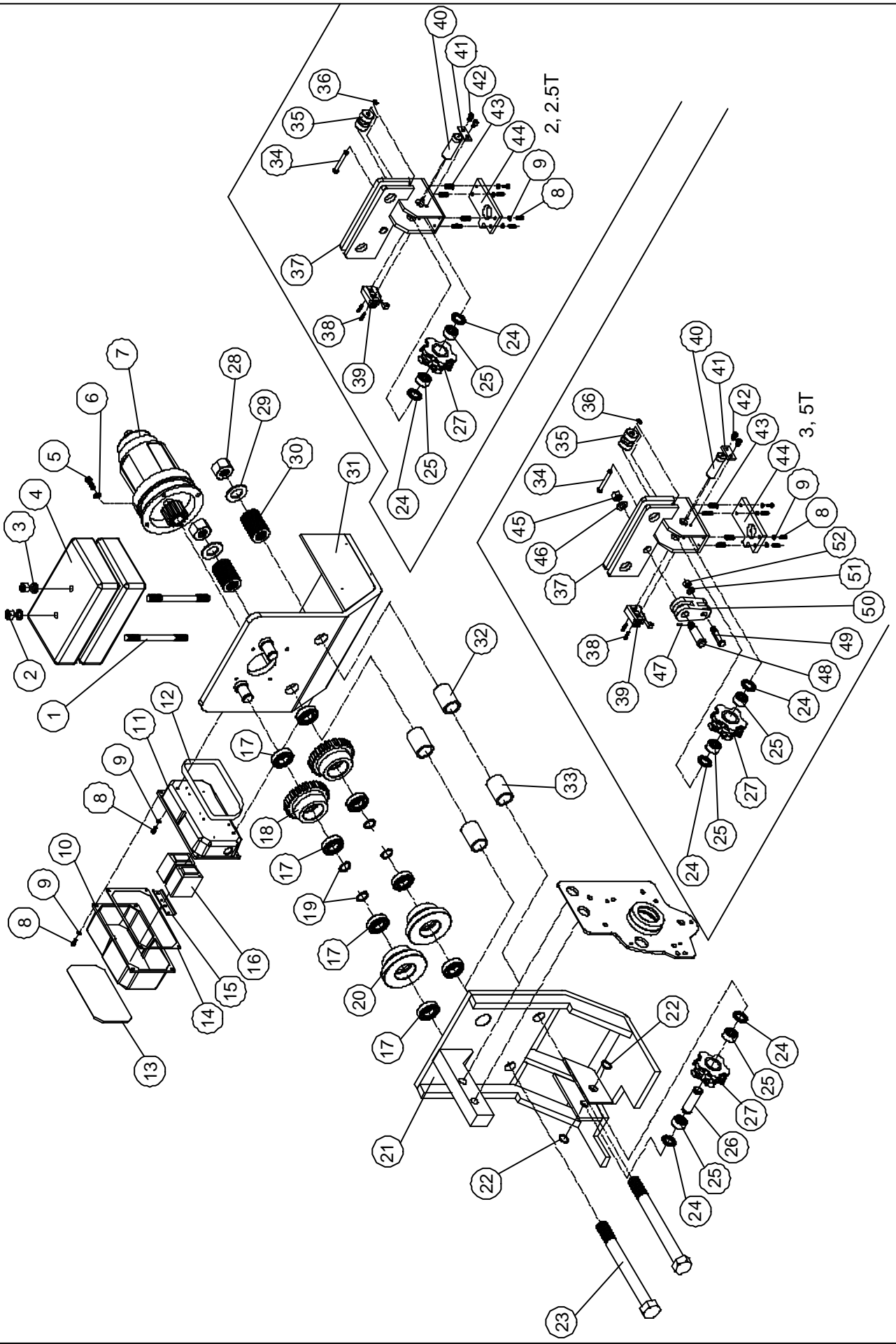
KEY NO.	PARTS CODE	DESCRIPTION	Q' TY REQ' D EACH UNIT									
			2T		3T		2.5, 5T		7.5T		10T	
			S	D	S	D	S	D	S	D	S	D
1	400222	Cable Gland(M20)	1		1		1		1		1	
	400941	Cable Gland(M25)									1	
2	400053	Cross Headed Screw<M5×0.8×12L>	4		4		4		4		8	
3	400093	Spring Washer<M5>	7		7		7		7		14	
4	300343	Power Cable Holding Plate	1		1		1		1		2	
	300360										1	
5		Power Cable Ass 'y	1		1		1		1		2	
6	302606	Limit Switch Ass 'y	1		1		1		1		2	
	302607			1		1		1		1		2
7	400620	Cross Headed Screw<M5×0.8×8L>	3		3		3		3		6	
8	300337	Electric Components Plate	1		1		1		1		2	
9	400094	Spring Washer<M6>	4		4		4		4		8	
10	400005	Hex. Recess Bolt<M6×1.0×12L>	4		4		4		4		8	
11	300340	P.E.R Holding Plate	2		2		2		2		2	
12	400092	Spring Washer<M4>	14		14		14		14		24	
13	400048	Cross Headed Screw<M4×0.7×6L>	13		13		13		13		22	
14	300332	Control Cable Holding Plate	1		1		1		1		2	
15	400271	Rubber Cap	1		1		1		1		2	
16	300342	Wire Holder Clamp	1		1		1		1		2	
17	300617	Male Receptacle	1		1		1		1		1	
	300619			1		1		1		1		1
18	300611	Female Receptacle	1		1		1		1		1	
	300613			1		1		1		1		1
19		Single Speed Pbs	1		1		1		1		1	
		Dual Speed Pbs		1		1		1		1		1

# VIII – 5 – 1 ELECTRIC ASSEMBLY <USA>

S : SINGLE SPEED D : DUAL SPEED

KEY NO.	PARTS CODE	DESCRIPTION	Q' TY REQ' D EACH UNIT									
			2T		3T		2.5, 5T		7.5T		10T	
			S	D	S	D	S	D	S	D	S	D
20	300203	Phase Error Relay(P.E.R)	1		1		1		1		1	
21	300363	P.E.R/E.O Box	2	3	2	3	2	3	2	3	2	3
22	300078	Contactor Rail <1PC>	1		1		1		1		2	
23	300079	Contactor Rail<2PC>	1		1		1		1		2	
24	400052	Cross Headed Screw<M4×0.7×15L>	1		1		1		1		2	
25	300800	Contactor Interlock	1		1		1		1		2	
26	301112	Magnetic Contactor	2		2		2		2		4	
27	301112	Emergency Contactor	1		1		1		1		1	
28	301059	Control Transformer	1		1		1		1		1	
29	300726	Electric Overload(E.O)	1	2	1	2	1	2	1	2	1	2
30	300228	Terminal Block	1		1		1		1		2	
	300230			1		1		1		1		2
31	300576	Emergency Stop	1		1		1		1		1	
32	300043	Magnetic Contactor(for dual)		1		1		1		1		2
33	300143	Rectifier		1		1		1		1		2

# LOW HEADROOM MODEL'S TROLLEY EXPLOSION



## VIII – 6 LOW HEADROOM MODEL'S TROLLEY

NO	PART NO	PART NAME	Q'TY REQ'D EACH UNIT			
			2T	2.5T	3T	5T
1	400399	Stay Bolt <7/8"×9UNC×220L>	2			
2	400070	Hex. Nut <7/8"×9UNC >	4			
3	203221	Spacer Washer <ø40×ø24×1/8">	4			
4	202804	Counter Weight Block <t75×200×320L>	2			
5	400046	Hex. Bolt <M10×1.5×25L>	4			
	400047	Hex. Bolt <M10×1.5×30L>			4	
6	400096	Spring Washer <M10>	4			
7	101295	Motor	1			
8	400006	Hex. Recess Bolt <M6×1.0×16L>	6			
9	400094	Spring Washer <M6>	6			
10	300349	Electric Components Casing Cover	1			
11	300305	Electric Components Casing Cover	1			
12	400266	Rubber Band	1			
13	402521	Electric Casing Gasket 21#	1			
14	402520	Electric Casing Gasket 20#	1			
15	300079	Contacto Rail <2PC>	1			
16	300051	Contacto	2			
17	407824	Bearing <6206Z>	8	8	8	
	407808	Bearing <6207Z>				8
18	203113	Gear Wheel <M3.5×36T×59L>	2	2	2	
	203114	Gear Wheel <M3.5×39T×67L>				2
19	400192	Retaining Ring <S-25>		4	4	
	400194	Retaining Ring <S-35>				4
20	203133	Plain Wheel <ø133×54L>	2	2	2	
	203134	Plain Wheel <ø143.5×59L>				2
21	202762	Hoist Mounting Side Plate Ass'y	1	1	1	
	202763					1
22	400193	Retaining Ring <S-30>	6	2	2	
	400195	Retaining Ring <S-40>				2
23	400493	Hex. Bolt <1 1/4"×13"L>	2	2	2	

400495	Hex. Bolt <1 1/2"×13"L>				2
--------	-------------------------	--	--	--	---

## VIII – 6 LOW HEADROOM MODEL'S TROLLEY.

NO	PART NO	PART NAME	Q'TY REQ'D EACH UNIT			
			2T	2.5T	3T	5T
24	400176	Needle Bearing <AXK/2AS 2542>	4		4	
	400169	Needle Bearing <AXK/2AS 4060>		4		4
25	408051	Needle Bearing <HK 25/20>	4		4	
	400174	Needle Bearing <TA 4025 Z>		4		4
26	202814	Sprocket Axle <ø25×88L>	1		1	
	202815	Sprocket Axle <ø40×99L>		1		1
27	200110	Sprocket <ø38×42L>	2		2	
	200111	Sprocket <ø50×51L>		2		2
28	400072	Hex. Nut <1 1/4"×7UNC>	2	2	2	
	400073	Hex. Nut <1 1/2"×6UNC>				2
29	400105	Spring Washer <1 1/4">	2	2	2	
	400106	Spring Washer <1 1/2">				2
30	203222	Spacer Washer <ø46×ø27×1/8"t>	16			
	203223	Spacer Washer <ø54×ø34×1/8"t>		32	32	
	203224	Spacer Washer <ø60×ø40×1/8"t>				32
31	202752	Trolley Motor End Side Plate Ass'y			1	
	202753					1
32	202798	Spacer Tube A <ø50×ø38×136L>	2			
	202796	Spacer Tube A <ø50×ø38×137L>		2		
	202806	Spacer Tube A <ø51×ø38×45L>			2	
	202807	Spacer Tube A <ø51×ø40×54L>				2
33	202799	Spacer Tube B <ø50×ø38×37L>	2			
	202797	Spacer Tube B <ø50×ø38×34L>		2		
	202809	Spacer Tube B <ø50×ø38×57L>			2	
	202807	Spacer Tube B <ø51×ø40×54L>				2
34	202844	Pressing Roller Axle <ø14×80L>	1		1	
	202845	Pressing Roller Axle <ø14×91L>		1		1
35	202842	Chain Pressing Roller <ø37×51L>	1		1	
	202843	Chain Pressing Roller <ø37×62L>		1		1
36	400188	Retaining Ring <S-10>			1	
37	202801	Load Plate Ass'y	2			
	202800			2		
	202821				2	



## VIII – 6 LOW HEADROOM MODEL'S TROLLEY

NO	PART NO	PART NAME	Q'TY REQ'D EACH UNIT			
			2T	2.5T	3T	5T
38	400617	Cross Head Screw <M4×0.7×25L>	2			
39	300534	Limit Switch	1			
40	202816	Load Sprocket Axle <ø26×80L>	1		1	
	202817	Load Sprocket Axle <ø40×91L>		1		1
41	200636	Key Plate <ø8.5 P28 t6.0×25×50L>	1			
42	400011	Hex. Recess Bolt <M8×1.25×12L>	2			
43	400340	Compressing Spring	4			
44	202840	Limit Plate	1			
	202841			1		
	202781				1	
	202782					1
45	400085	Nut <M16×1.5>			1	
	400086	Nut <M20×2.0>				1
46	400098	Spring Washer <M16>			1	
	400099	Spring Washer <M20>				1
47	400211	Spring Pin <ø3×14L>	1			
48	202848	Fixing Pin <ø25×99L>			1	
	202849	Fixing Pin <ø34×91L>				1
49	202812	Chain Fixer Pin <ø19×65L>			1	
	202813	Chain Fixer Pin <ø19×75L>				1
50	202846	Chain Fixer			1	
	202847					1
51	400097	Spring Washer <M12>			1	
52	400091	Lock Nut <M12×1.75>			1	





---

# DET NORSKE VERITAS

---

## CERTIFICATE OF CONFORMITY

---

*Application of:* Council Directive 98/37/EEC of 22 June 1998, issued as "Forskrift for Maskiner" by the Norwegian Directorate of Labour Inspection.

**Certificate no.: 99-OSL-SM-0293**

This is certify that the technical documentation for the product:

**Electrical Chain Hoist**

**Identification: Model BLACK BEAR, variants as listed in Annex I**

*Manufactured by*

**Cheng Day Machinery Works Co., Ltd.**

*at*

No. 173, Wen Chu Rd., Ta Chia, Taichung, Taiwan

**complies with the requirements applicable to it**

The manufacturer's Technical Construction File (TCF) has been reviewed and found to comply with the requirements in Annex V, section 3a. Further description of the product and the TCF are given in the Annex I to this certificate.

**Limitations:**

Any modifications made to the machine shall immediately be reported to Det Norske Veritas Region Norge AS in order to examine whether this Certificate remains valid.

*Bergen, 18. October, 1999*

for Det Norske Veritas Region Norge AS

Terje Lien  
Head of section

Replaces certificate no.

98-OSL-SM-0164

Valid from 1998-06-22

Gunnar Matre  
Project Engineer



*Any significant changes in design or construction of the product, or amendments to the Directive or Standards referenced above may render this receipt invalid. The product liability rests with the manufacturer or his representative in accordance with Council Directive 85/374/EEC.*



## EC TYPE-EXAMINATION

## ANNEX I

Annex to Certificate no.: 98-OSL-SM-0164

**Manufacturer** : Cheng Day Machinery Works Co., Ltd. /Black Bear  
**Machinery** : Electric Chain Hoist, Models: YSF-050,-100,-200, YSL-050,-100,-200,-300, YSH-050,-100,-200,-300, YSS-200,-250,-300,-500,-750,-1000, YSLD-050,-100,-200,-300, YSHD-050,-100,-200,-300, YSSD-200,-250,-300,-500,-750,-1000, YSFD-024, YB-100,-150,-200,-300,-500, PT-100,-200,-300,-500, GT-100,-200,-300,-500, MT-100,-200,-300,-500,-750,-1000, MST-100,-200,-300,-500,-750,-1000.

**Date of Examination** :**Place of Examination** :**Surveyor** : Dennis Lin

## 1 Description of the Machinery (Black Bear)

Model	Capacity (Ton)	Lifting Height (m)	Speed (m/min)	Motor Power (kW)	Power supply 50Hz	I-Beam size (mm)
YSF-050	0.5	3(6)ctc	6.7	1.5	1-Ph, 110V, 220V, 230V	-
YSF-100	1	3(6)ctc	4.7	1.5	-as above-	-
YSF-200	2	3(6)ctc	2.3	1.8	-as above-	-
YSL-050	1.5	3(6)ctc	6.7	1.5	3-Ph, 220V-600V	-
YSL-100	1	3(6)ctc	4.7	1.5	-as above-	-
YSL-200	2	3(6)ctc	2.3	1.8	-as above-	-
YSL-300	3	3(6)ctc	1.5	1.8	-as above-	-
YSH-050	0.5	3(6)ctc	9.2	1.8	-as above-	-
YSH-100	1	3(6)ctc	6.7	1.8	-as above-	-
YSH-200	2	3(6)ctc	3.3	1.8	-as above-	-
YSH-300	3	3(6)ctc	2.2	1.8	-as above-	-
YSS-200	2	3(6)ctc	6.6	3.7	-as above-	-
YSS-250	2.5	3(6)ctc	5.2	3.7	-as above-	-
YSS-300	3	3(6)ctc	4.3	3.7	-as above-	-
YSS-500	5	3(6)ctc	2.6	3.7	-as above-	-
YSS-750	7.5	3(6)ctc	1.8	3.7	-as above-	-
YSS-1000	10	3(6)ctc	2.6	3.7*2	-as above-	-
YSLD-050	0.5	3(6)ctc	6.7/2.2	1.8	-as above-	-
YSLD-100	1	3(6)ctc	4.7/1.6	1.8	-as above-	-
YSLD-200	2	3(6)ctc	2.3/0.8	1.8	-as above-	-
YSLD-300	3	3(6)ctc	1.5/0.5	1.8	-as above-	-
YSHD-050	0.5	3(6)ctc	6.7/2.2	1.8	-as above-	-
YSHD-100	1	3(6)ctc	6.7/2.2	1.8	-as above-	-

Det Norske Veritas Region Norge AS, Head office: Veritas v. 1, 1322 HØVIK, Norway  
 Form no.: 89/392-140a-a

Annex to Certificate no.: 98-OSL-SM-0164

holst/sertifik/Cheng Day1bb.anx Page 1/3



## EC TYPE-EXAMINATION PROGRAM

## ANNEX I

Model	Capacity (Ton)	Lifting Height (m)	Speed (m/min)	Motor Power (kW)	Power supply 50Hz	I-Beam size (mm)
YSHD-200	2	3(6)ctc	3.3/1.1	1.8	-as above-	-
YSHD-300	3	3(6)ctc	2.2/0.7	1.8	-as above-	-
YSSD-200	2	3(6)ctc	6.6/2.2	3.7	-as above-	-
YSSD-250	2.5	3(6)ctc	5.2/1.7	3.7	-as above-	-
YSSD-300	3	3(6)ctc	4.3/1.4	3.7	-as above-	-
YSSD-500	5	3(6)ctc	2.6/0.9	3.7	-as above-	-
YSSD-750	7.5	3(6)ctc	1.8/0.6	3.7	-as above-	-
YSSD-1000	10	3(6)ctc	2.6/0.9	3.7*2	-as above-	-
YSFD-024	0.24	3	13.5/3.4	0.6	1-Ph., 110V,220V	-
YB-100	1	2.5	-	-	-	-
YB-150	1.5	3	-	-	-	-
YB-200	2	3	-	-	-	-
YB-300	3	3	-	-	-	-
YB-500	5	3	-	-	-	-
PT-100	1	-	-	-	-	75-100
PT-200	2	-	-	-	-	100-125
PT-300	3	-	-	-	-	125-150
PT-500	5	-	-	-	-	150-175
GT-100	1	-	-	-	-	75-125
GT-200	2	-	-	-	-	100-150
GT-300	3	-	-	-	-	125-175
GT-500	5	-	-	-	-	125-175
MT-100	1	-	20	0.25	3-Ph., 110V- 600V	75-125
MT-200	2	-	20	0.25	-as above-	100-150
MT-300	3	-	20	0.6	-as above-	125-175
MT-500	5	-	20	0.6	-as above-	125-175
MT-750	7.5	-	13	0.9	-as above-	150-200
MT-1000	10	-	14	1.5	-as above-	150-200
MST-100	1	-	20	0.25	-as above-	-
MST-200	2	-	20	0.25	-as above-	-
MST-300	3	-	20	0.6	-as above-	-
MST-500	5	-	20	0.6	-as above-	-
MST-750	7.5	-	19	0.9	-as above-	-
MST-1000	10	-	21	0.9*2	-as above-	-

Further description of the [machinery] is given in DNV Region Norge file 412 10533 and TCF No. CEM-054-1.



**EC TYPE-EXAMINATION PROGRAM**

**ANNEX I**

**2 Conditions**

Before the above described machinery is placed on the market and/or put into service the manufacturer has to ensure that all other relevant EEC/EC Directives are complied with.

The examination has not considered optional accessories.

- oOo -



DECLARATION OF CONFORMITY



CHENG DAY MACHINERY WORKS CO., LTD.
173 WEN CHIU ROAD, TA CHIA CHEN,
TAICHUNG HSIEN, TAIWAN R.O.C.

We declare under our sole responsibility that the products:

Electric chain hoist : YSF-050,100,200
YSL/YSLD-050,100,200,300
YSH/YSHD-050,100,200,300
YSS/YSSD-200,250,300,500,750,1000

Electric chain hoist: YSFMT-050,100,200
YSLMT/YSLDMT-050,100,200,300
YSHMT/YSHDMT-050,100,200,300

With motorized trolley YSSMT/YSSDMT-200,300,500,750,1000
YLT/YLTD-050,100,200,300
YHT/YHTD-050,100,200,300
YST/YSTD-200,250,300,500

Working load limit : for all types from 240 kgs to 10,000 kgs.

To which this declaration relates is in conformity with the following Machinery Directive and Standard:

- Machinery Directive 89 / 392 / EEC 1989.
Low Voltage Directive 73 / 23 / EEC.
EMC Directive 89 / 336 / EEC.
EN 292-1 and EN 292-2 ( Safety of Machines )
EN 418 ( Emergency stop equipment, functional aspects )
EN 60204-1 ( Electrical equipment of machines )
FEM 9.511 ( Classification of mechanisms )
FEM 9.681 ( Selection of travel motors )
FEM 9.682 ( Selection of lifting motors )
FEM 1.001 ( Rules for the design of hoisting appliances )

We will keep the technical documents listed below at our Head Office Factory above mentioned for any concerned national authorities inspection purposes.

- Operation manual for the products.
-Overall drawings of the products.
-Description of methods adopted to meet the Machinery Directive.
-Other technical materials.

We declare moreover as required by the annex of Machine Directive 98 / 37 / EC:

-The Marking is placed on the machine

Hoist type / Trolley:.....

Capacity ( Ton ):.....Serial No:.....

CHENG DAY MACHINERY WORKS CO., LTD.

C.F. HUANG

C. F. HUANG
MANAGER
QUALITY ASSURANCE DEPT.

DATE: