



10200 Jacksboro Hwy  
Fort Worth, Texas 76135  
For Parts or Information  
Phone: (817) 237-7700  
Fax: (817) 237-2777

Ace Advantage Monorail WR Hoists

# OPERATION MANUAL

&

# PARTS LIST

<u>Model.</u>	<u>Part No.</u>	<u>Cap.</u>
□ ADVANTAGE-3S:	8WA-A3-S:	3Ton
□ ADVANTAGE-5S:	8WA-A5-S:	5Ton
□ ADVANTAGE-7S:	8WA-A7-S:	7.5Ton
□ ADVANTAGE-10S:	8WA-A10-S:	10Ton

# ACE WORLD COMPANIES

## 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 "ACE" ELECTRIC WIRE ROPE HOIST.*



# CONTENTS

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Safety – Important .....	1
1.Foreword.....	4
1.2.Main Hoist Layout.....	5
2.Main Specification.....	6
2.1 Specification.....	6
2.2 Mechanical Classification (Grade) and Life.....	7
2.3 Safety Device.....	8
3.Safety Rules.....	11
4.Installation.....	12
4.1 Unpacking Information.....	12
4.2 Voltage.....	13
4.3 Installation.....	13
5.Operation.....	15
6.Maintenance and Inspection.....	16
6.1 Maintenance.....	16
6.2 Inspection.....	16
7.Troubleshooting.....	18
7.1 Wiring Diagrams.....	19
7.2 Troubleshooting and Remedial Action.....	25
8.Wire rope reeving.....	26
9.Parts List.....	27
10. Adjust the air gap as follows .....	47

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# 1. FOREWORD

This manual contains important information to help you properly install, operate and maintain the ACE electric wire rope hoist for maximum performance, economy and safety. Please study its contents thoroughly before putting the electric wire rope 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 " ACE " electric wire rope hoist will give you many years of satisfactory service.

Should you have any queries, please contact :



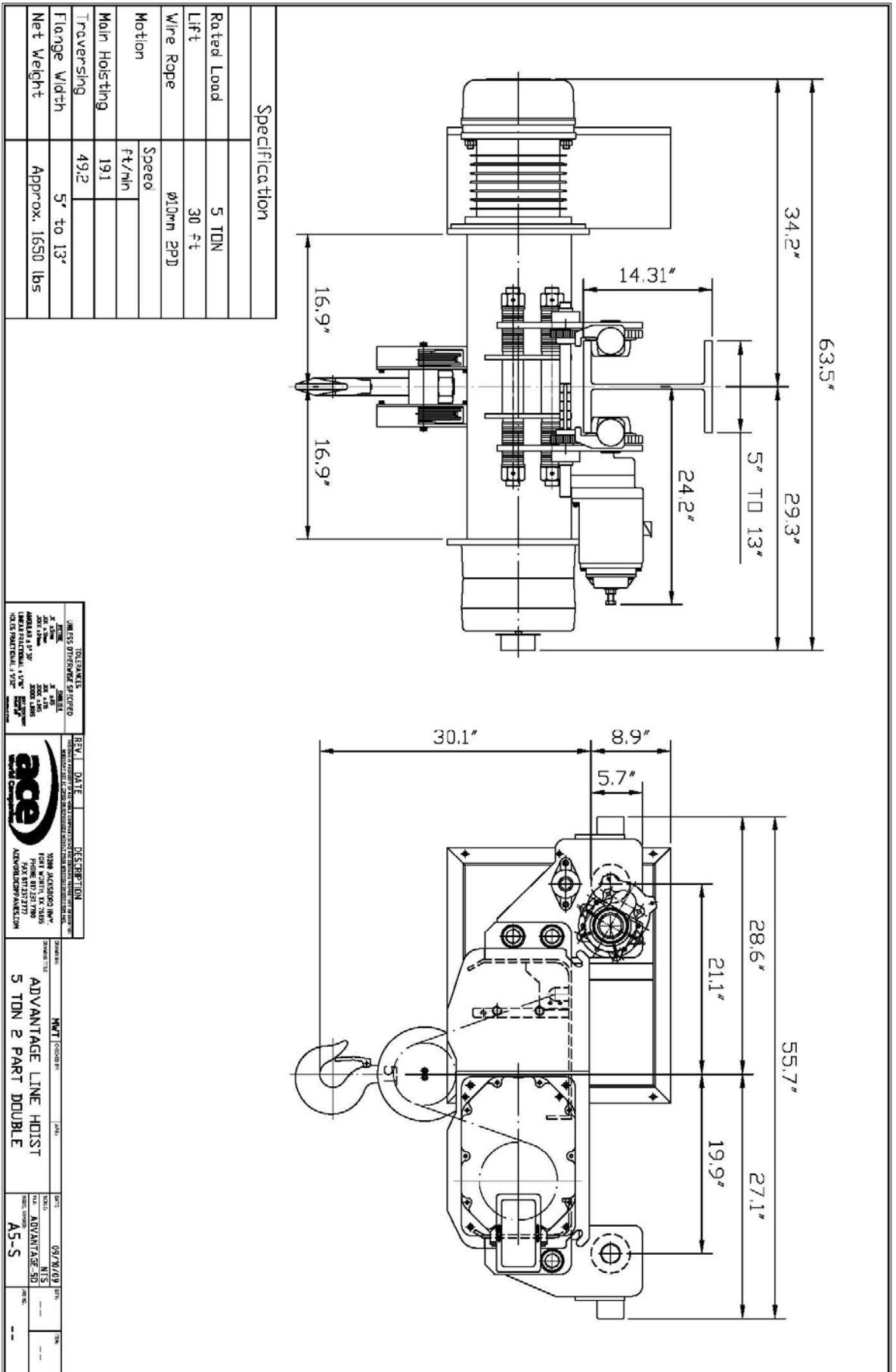
[www.aceworldcompanies.com](http://www.aceworldcompanies.com)

10200 Jacksboro Hwy Fort Worth, TX 76135

Phone: 817.237.7700

Fax: 817.237.2777

# Advantage Monorail Hoist Layout



## 2. MAIN SPECIFICATIONS

### 2.1 Specifications

The following specifications are common to all ACE electric wire rope hoists.

**Table 2-1 Specifications**

Item		Detail
Hoist Lift		30 ft
Trolley Speed	3Ton	49 ft/min, vfd
	5Ton	49 ft/min, vfd
	7.5Ton	52 ft/min, vfd
	10Ton	52 ft/min, vfd
Hoist Speed	3Ton	22 ft/min, vfd
	5Ton	19 ft/min, vfd
	7.5Ton	16 ft/min, vfd
	10Ton	16 ft/min, vfd
Working temperature range(°F)		23 to 105 degrees
Protection	Hoist	IP 40
Electric power supply		Three Phase, 460V-110V, 60 Hz
Noise Level (dB)	Variable speed hoist	81 db
Wire Rope diameter	WLL (working load limit)	Nominal diameter (mm)
	3MT (6600 lbs)	φ10 19×7(195kg/mm <sup>2</sup> )
	5MT(11000 lbs)	φ10 19×7(195kg/mm <sup>2</sup> )
	7.5MT (16500 lbs)	φ12 19×7(195kg/mm <sup>2</sup> )
	10MT (22000 lbs)	φ14 19×7(195kg/mm <sup>2</sup> )

Remarks: (1) Contact an authorized ACE 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.

## 2.2 Mechanical Classification (Grade) and Life

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

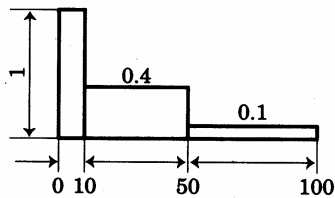
ACE electric wire rope hoists have been designed according to FEM regulations (FEM 9.511).

Details are provided in Table 2-2.

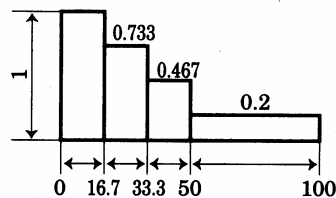
Average daily operating time and total operating time are determined by load distribution.

**Table 2-2 Mechanical classification**

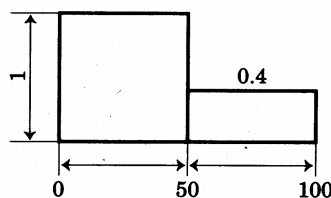
Load Spectrum (Load distribution)	Definitions	Cubic mean value	Average daily operating time (h)	Total operating time (h)
1 (light)	Mechanisms or parts thereof, usually subject to very small loads and in exceptional cases only to maximum loads.	$k \leq 0.50$	2-4	6300
2 (medium)	Mechanisms or parts thereof, usually subject to small loads but rather often to maximum loads.	$0.50 < k \leq 0.63$	1-2	3200
3 (heavy)	Mechanisms or parts thereof, usually subject to medium loads but frequently to maximum loads.	$0.63 < k \leq 0.80$	0.5-1	1600
4 (very heavy)	Mechanisms or parts thereof, usually subject to maximum or almost maximum loads.	$0.80 < k \leq 1.00$	0.25-0.5	800



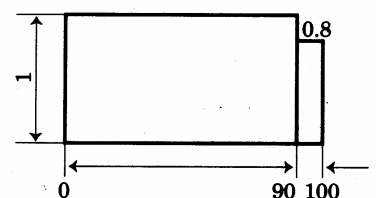
% operating time  
Load spectrum 1



% operating time  
Load spectrum 2



% operating time  
Load spectrum 3



% operating time  
Load spectrum 4

## 2.3 Safety Devices

### (1) Motor brake

"DC Electro-Magnetic Brake" is of a unique design in its field. It features simultaneous motor braking upon removing 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

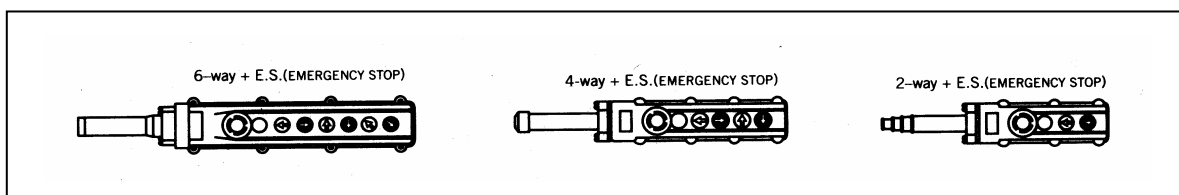
The hook is drop - forged from high tensile steel and heat treated for strength and toughness. The button hook is capable of 360°swivel and fitted with safety latch to ensure safe lifting.

### (4) Limit Switches

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

### (5) 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. (Illust. 1)



Illust. 1




### 3. SAFETY RULES



**DANGER**

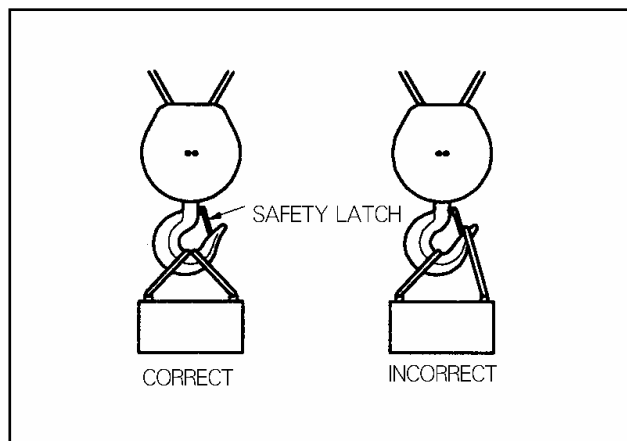
*Do not use the hoist in explosive atmosphere.*



**DANGER**

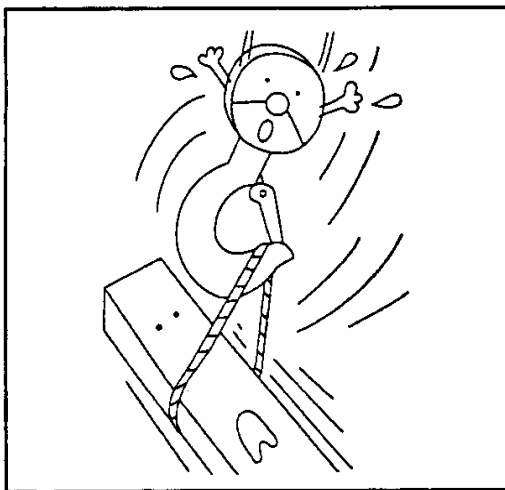
*The hoist herein is not designed for, and should not be used for, lifting, supporting, or transporting personnel. Any modifications to upgrade, re-rate, or otherwise alter the hoist equipment must be authorized by either the original manufacturer or a qualified professional engineer.*

- (1) Only the trained personnel are allowed to operate the hoist.
- (2)
- (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 (Illust. 2) and that a safety latch has been fitted.
  - (c) the object to be hoisted is well secured for direct lifting (a proper lifting frame or apparatus is strongly recommended for direct lifting.)

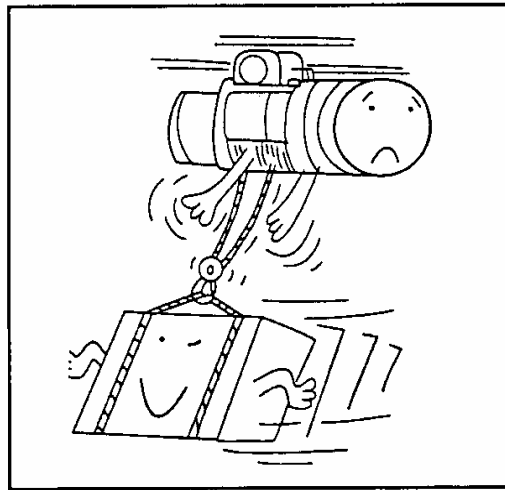


Illust. 2

- (4) Firm and steady button operation is required, avoid jogging.
- (5) 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 vertically static after completion of operation, never leave them at any position, which may allow them 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 Side load, back load, or tip load a hook. (Illust. 3)
- (10) Never wrap around and hook back the wire rope as a sling to lift a load. (Illust. 4)



Illust. 3



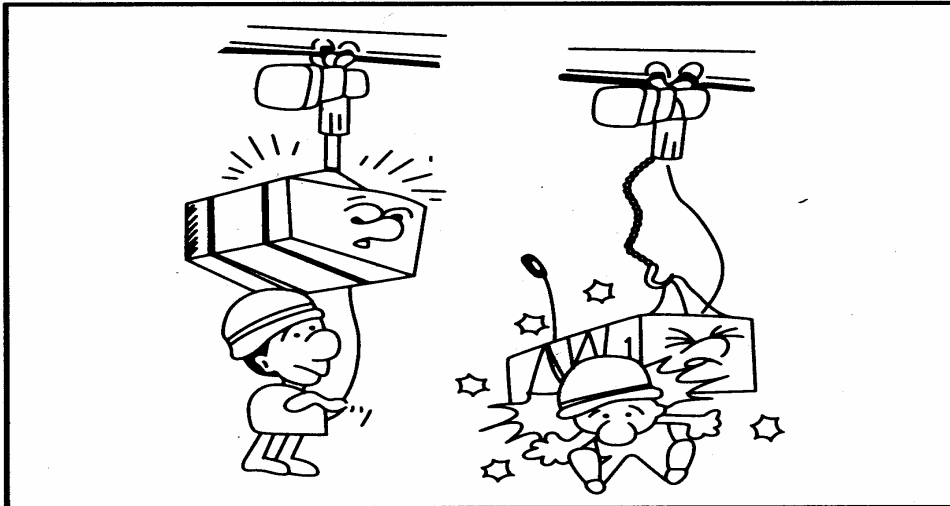
Illust. 4

(11)

 **WARNING**

*Do not use the Hoist's wire rope as a welding electrode.*

(12)



Illust. 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 wire rope is twisted.

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

## 4. INSTALLATION

### 4.1 Unpacking Information

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

## 4.2 Voltage: 460V-3Phase-60Hz



### 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.*

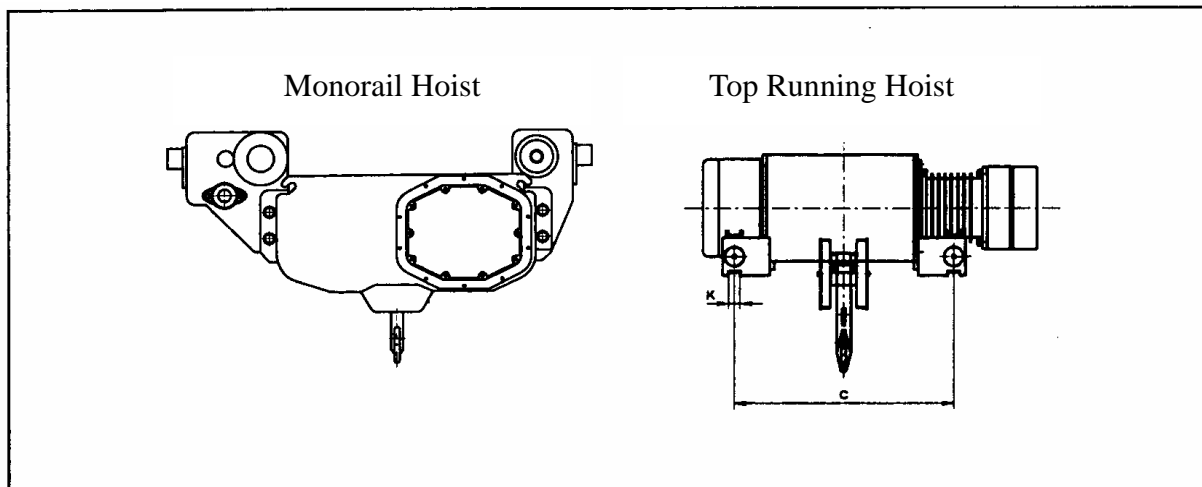
## 4.3 Installation



### WARNING

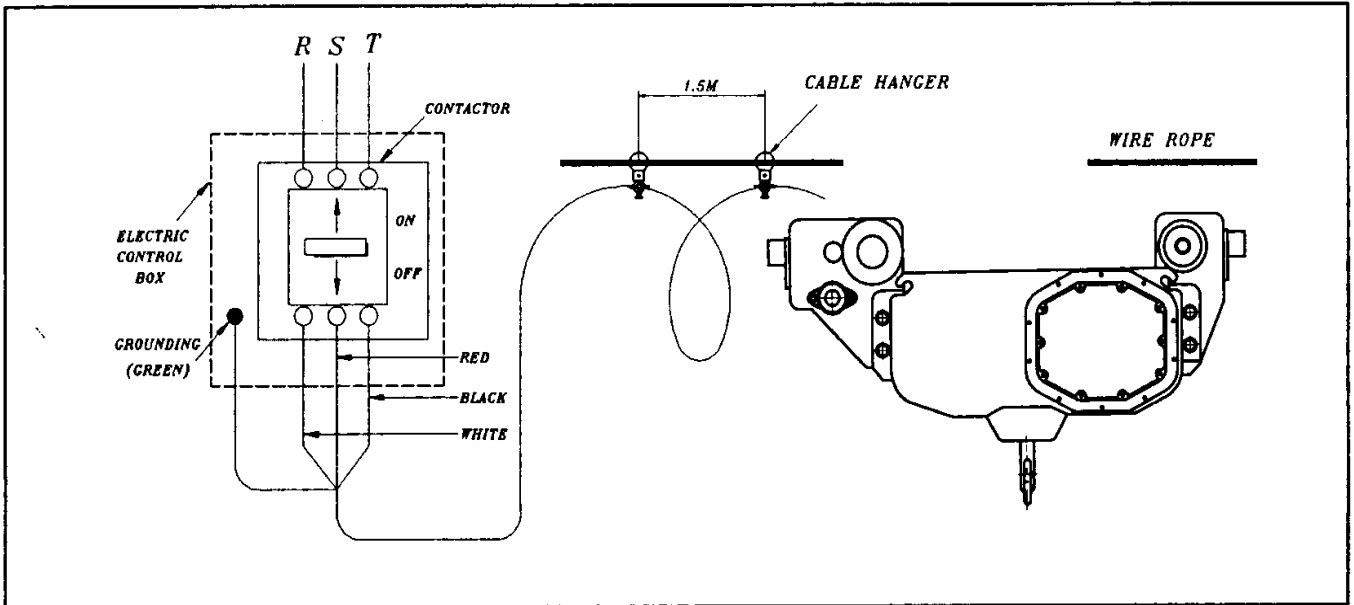
*Connection to power supply before installation procedures having been completed is strictly prohibited.*

- (1) Prior to installation ,for the Top Running hoist, check dimension “C” & “K” to insure dimension is compatible to the rail size or the gauge between the rails; for the monorail hoist-please insure trolley adjustment equal to beam’s width. (Please refer to illustration 6)





Illust. 6



- (2) Connect power supply to hoist and operate the up push button switch. If the hoist goes down, release the button, go to power source and change (switch) any two wires. Do not modify or change any wires in the push button station.



illust. 7

### (3) Operation Test

- (A) push  switch button to lower bottom hook until the drum has only 3 wraps left on the drum.
- (B) push  switch button to check if the rope winds into the drum grooves.
- (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, verify 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 either of the above checks, check the wiring and automatic locking function of the emergency stop device.

- (D) Check to insure upper limit stop works properly by raising the lower block to a point just below engagement. Then carefully jog "UP" into engagement.

When engaged, the "UP" button should be inoperative.

## 5. 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.*

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

- (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 careful use of the trolley controls.



### **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. MAINTENANCE AND INSPECTION



### WARNING

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

### 6.1 Maintenance

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

**Note: We recommend using lubricant oil equivalent to ISO VG460 as table of following annual inspection.**

- (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) The condition of wire rope and winding evenly over the drum.
- (h) Wire rope in of the bottom block's sheave.

- (2) Monthly inspection

- (a) Wire rope:

- a- 1: Any single strand of wire breaking, or stretching of strands more than 10% should replace wire rope.
- a- 2: Any distorted, deform , stretched, or rusting of wire rope should replace wire rope.
- a- 3: Wire rope fasteners being deformed or loose should be replaced.

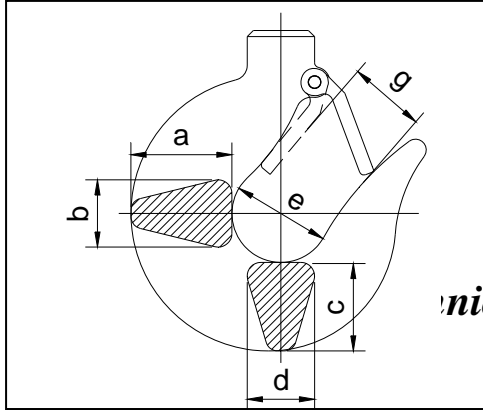


Rope Dia. (m/m)d	Model Being Used	Construction	Specified Breaking Load(lb)
φ10	ADVANTAGE-3D ADVANTAGE-5D	19×7 (195kg/mm <sup>2</sup> )	15580
φ12	ADVANTAGE-7D		22436
φ14	ADVANTAGE-10D		29700

(b) Load hook:

Check hook with care. If hook shows crack deformation or wear in excess of 10% of its original size, it should be replaced (Ref. following table)


***A qualified electrician should perform this inspection.***



Capacity ( T )	a	b	c	d	e	g	Allowable Stress(lb)
3	57	38	52	38	60	45	7000
5	75	48	68	48	75	56	7000
7.5	85	60	77	60	85	62	7000


***Electrician should perform this inspection.***

(c) Limit Switches


WARNING

Check correct operation of the limit switches to prevent the drum from over winding.

(3) Annual inspection


WARNING

(a) Check gearing for any excessive wear or damage.  
(b) Replace gearbox lubricant completely.

Oil volume of gearbox

Ton	3	5	7.5
Gear Box NO.	UC	UD	UEA
U.S. gal	2.64	2.64	6.6
Liter	10	10	25

Gear Oil No : COSMO # W460

NOTE: 1 ( U.S. gal ) = 3.78537 Liter

Recommended oils according to DIN 51354

ISO-VGDIN 51519 viscosity At	Approximate viscosity of the VG Categories	ARAL	BP	ESSO	MOBIL OIL
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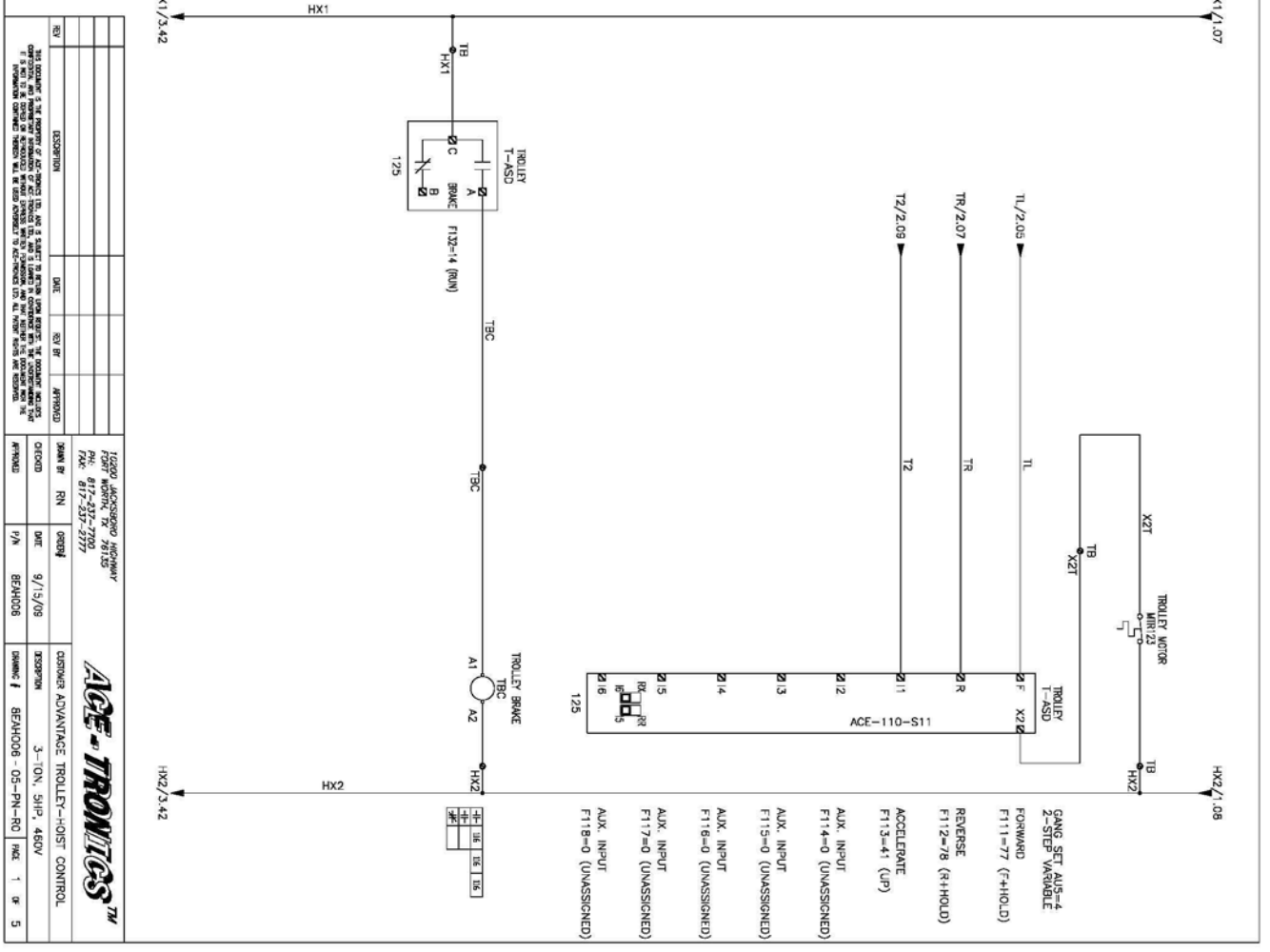
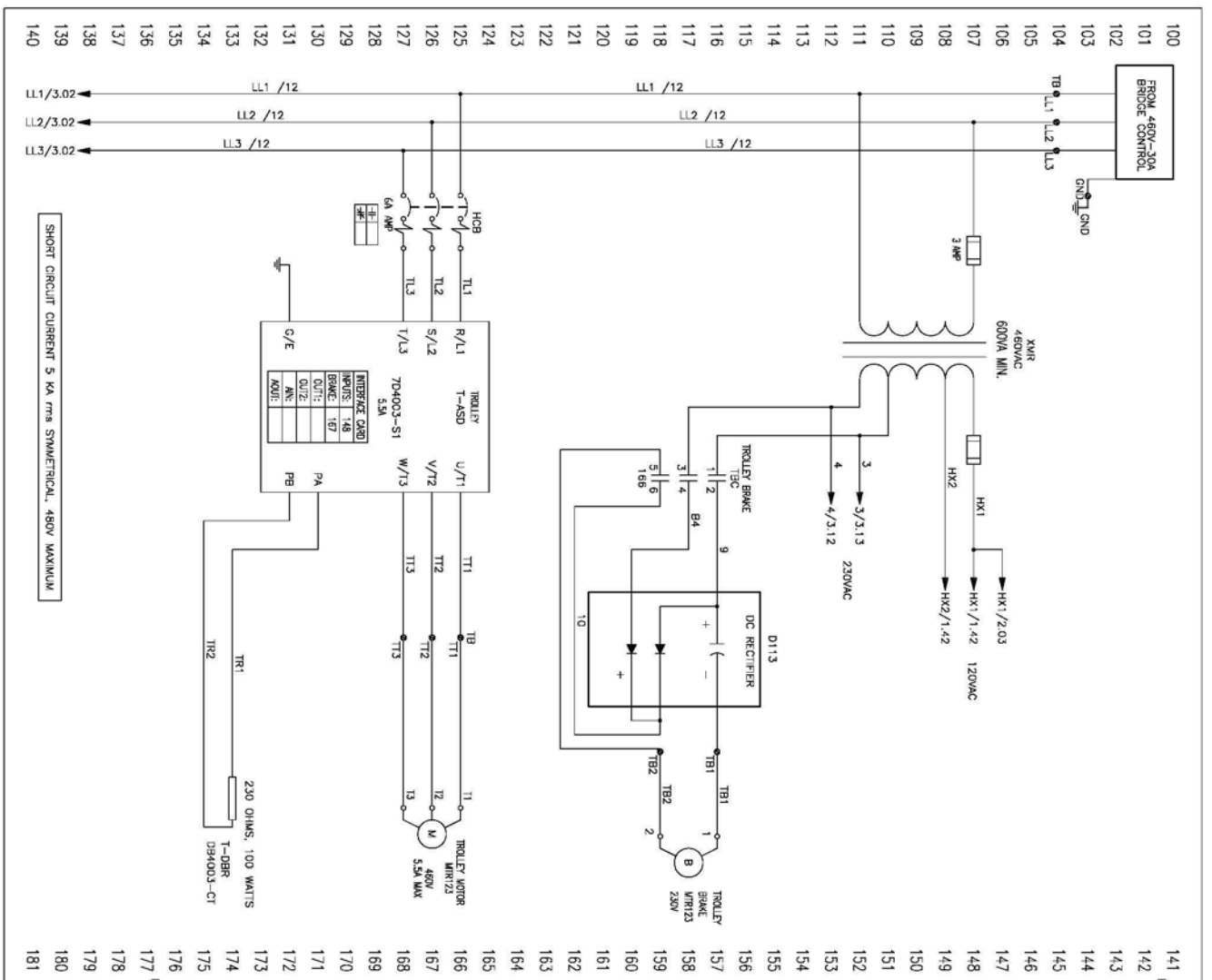
40°C mm <sup>2</sup> /s(cST)	50°C mm <sup>2</sup> /s(cST)				
VG460	251	Aral Degol BG 460-BMB 460	BP Energol GR-XP 460	Spartan EP-460	Mobilgear 634

ISO-VGDIN 51519 Viscosity At 40°C mm <sup>2</sup> /s(cST)	Approximate viscosity of the VG Categories 50°C mm <sup>2</sup> /s(cST)	SHELL	TEXACO	I..P.	AGIP
VG460	251	Omala oil 460	Meropa 460	Mellana 460	Blasia 460

- (c) Check brake lining and ratchet pawl for emergency braking 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.

## 7. TROUBLESHOOTING

### 7.1 Wiring Diagrams



NO.	DESCRIPTION	DATE	REV. BY	APPROVED
178				
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 15000 JACKSON RD. WILSONVILLE, OR 97150  
 TEL: 503-261-7700 FAX: 503-261-7700

CUSTOMER ADVANTAGE TROLLEY-HOIST CONTROL  
 3-10N, SHP, 480V  
 BEHAVIOR 05-PN-RO

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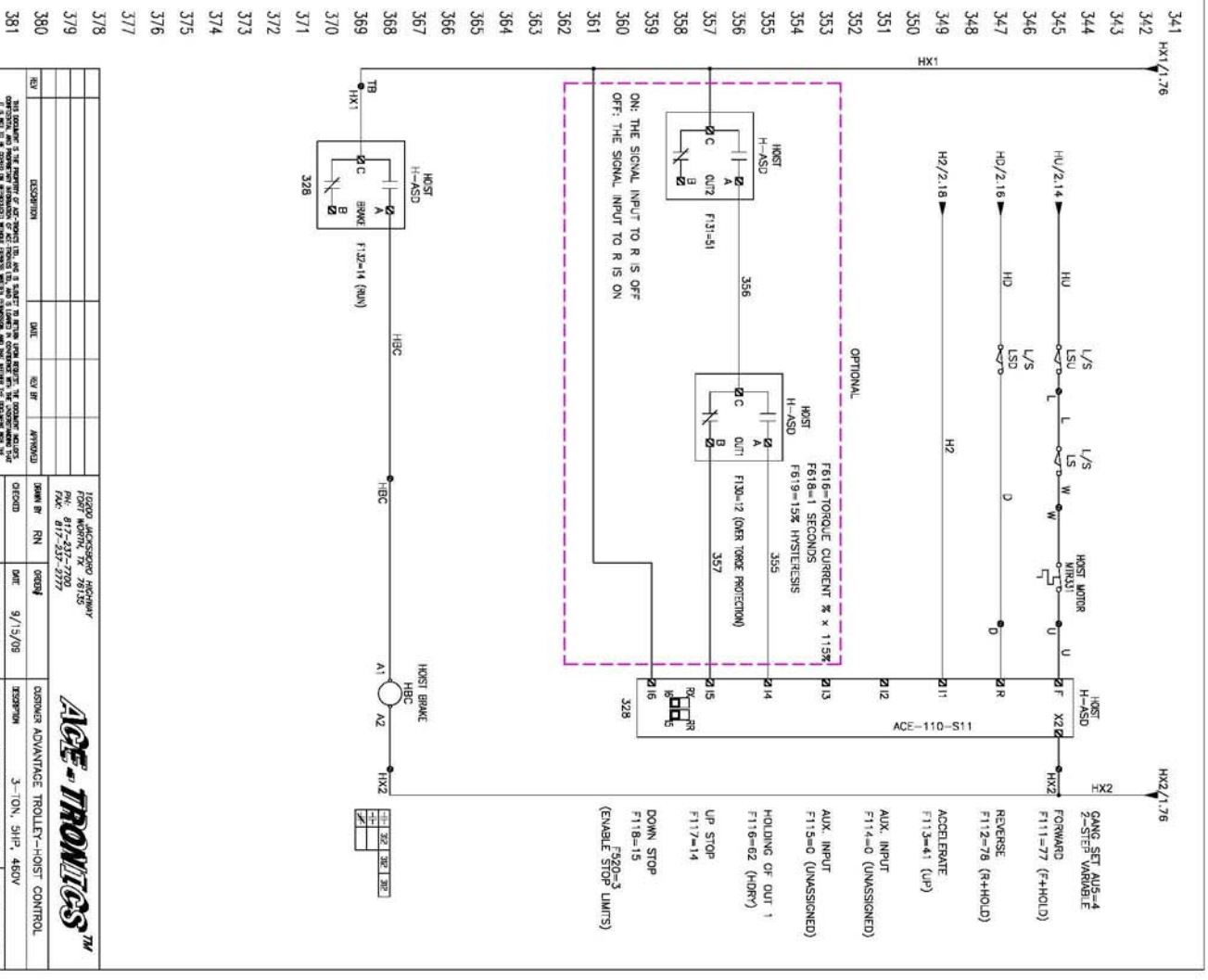
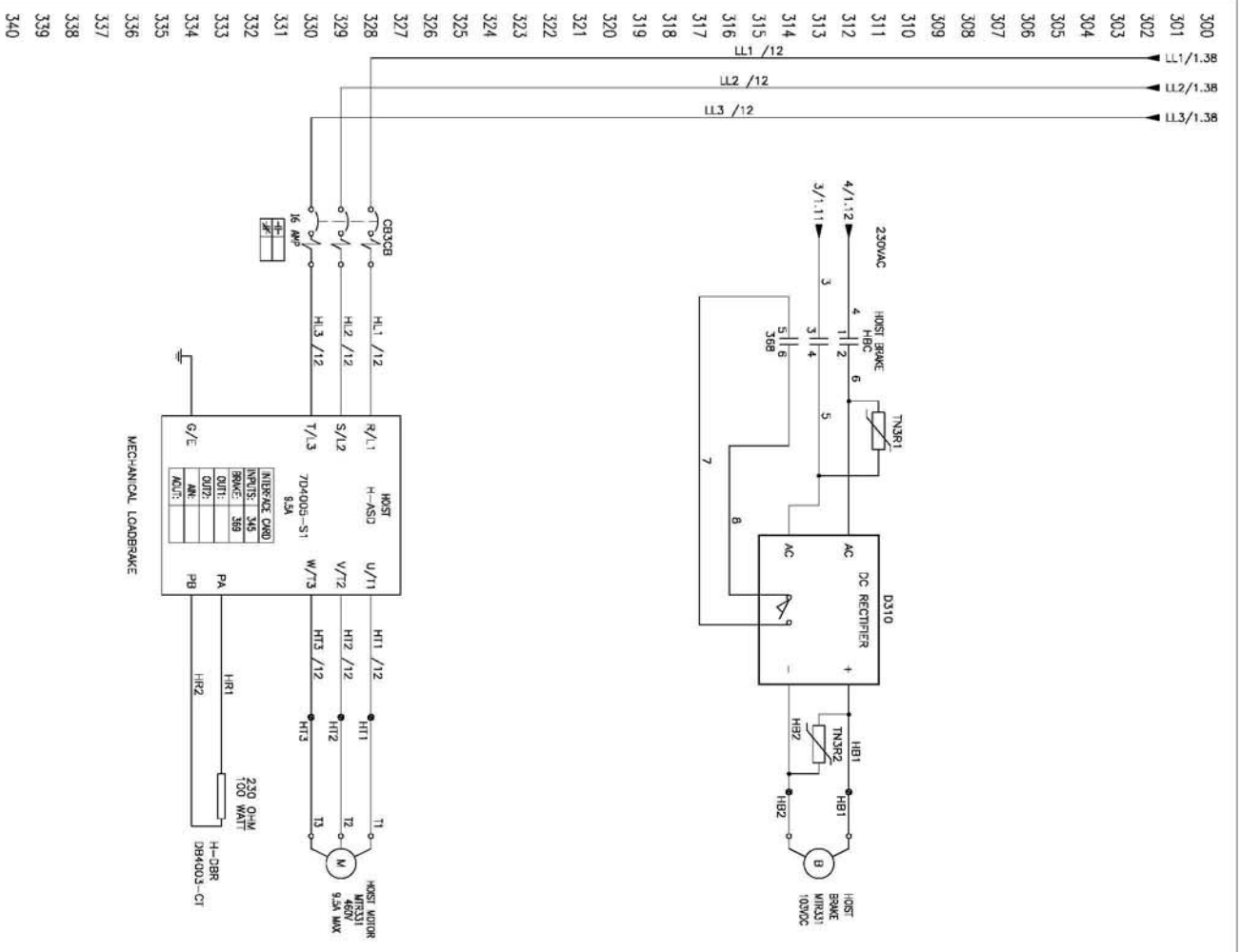
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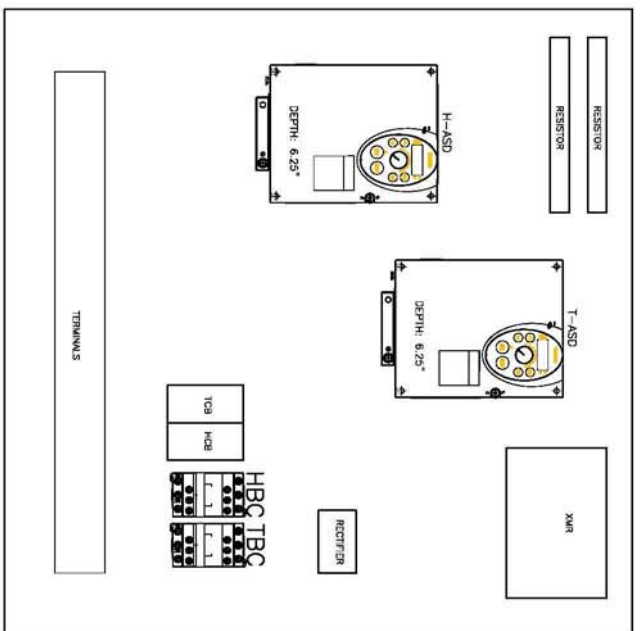
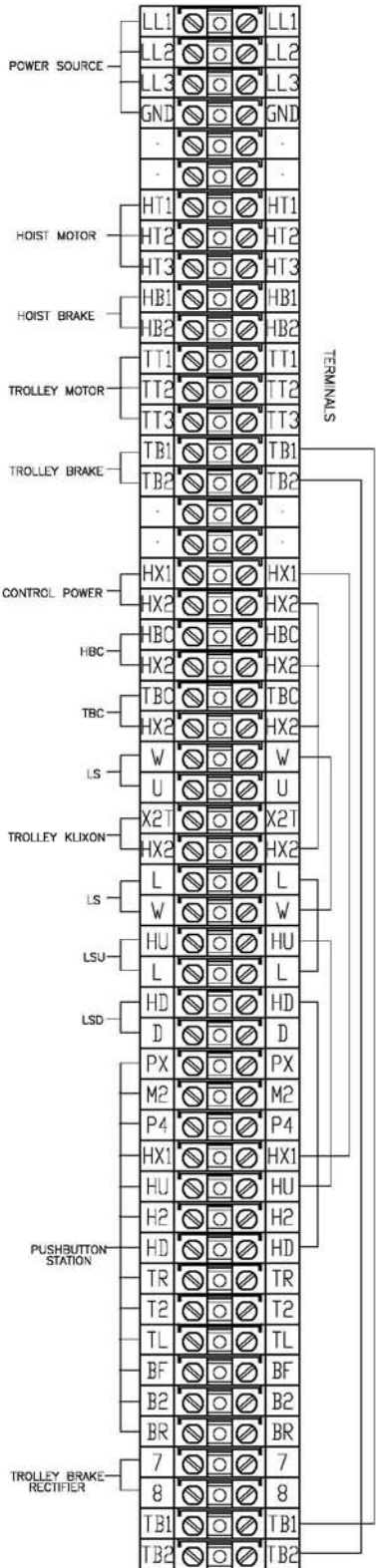
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 FORT WORTH, TX 76103  
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**ACE-TRONICS™**  
 CUSTOMER ADVANTAGE TROLLER-HOIST CONTROL

3-TON, 5HP, 460V  
 BEHAVIOR - OS-PN-RQ PAGES 3 OF 5

Device ID	Qty	Part No.	Description	Ref.
D113	1	8PC593-00	DC RECTIFIER, (HOIST BRAKE)	1.16
D310	1	8PC144-00	DC RECTIFIER, (TROLLEY BRAKE)	3.11
ENCL	1	8PC008-00	ENCLOSURE, 25"X25"X9"	
H-ASD	1	7D0025-00	120V Interface Card	
H-ASD	1	7D4005-S1	VFD Ace Ts11, 5HP, 460V, 9.5A	3.28
HBC	1	8PC103-00	CONTACTOR, 3POLE, 1NO/1NC AUX	3.68
HCB	1	8PC009-00	CIRCUIT BREAKER 16A	1.25
H-DBR	1	700874-OP	Resistor, Dd4003-C1 Not Enclosed	3.33
T-ASD	1	7D0025-00	120V Interface Card	1.25
T-ASD	1	7D4003-S1	VFD ACE TS11, 460V, 3HP, 5.5A	1.25
TBC	1	8PC103-00	CONTACTOR, 3POLE, 1NO/1NC AUX	1.66
TCB	1	8PC009-00	CIRCUIT BREAKER 6A	3.28
T-DBR	1	700874-OP	Resistor, Dd4003-C1 Not Enclosed	1.33
TN3R1	1	8PC166-00	VARISTOR	3.11
TN3R2	1	8PC166-00	VARISTOR	3.13
XMR	1	8PC0011	TRANSFORMER, 460V, 600VA	1.07
XMR	1		FUSE, 3A, GGC	1.07
XMR	1		FUSE, A, GGC	1.08



REV	DESCRIPTION	DATE	REV BY	APPROVED	DRAWN BY	FN	QNSD	DATE	9/15/08	DESIGNER	3--TON, 5HP, 460V	BEHND08	DATE	4	OF	5
	SEE NOTE 1. THE REMOVAL OF ANY PARTS FROM THIS UNIT IS SUBJECT TO THE TERMS AND CONDITIONS OF THE WARRANTY CONTRACT. THE WARRANTY CONTRACT IS AVAILABLE ON THE COMPANY WEBSITE AT WWW.AGE-TRONICS.COM. THE WARRANTY CONTRACT IS SUBJECT TO THE TERMS AND CONDITIONS OF THE WARRANTY CONTRACT. THE WARRANTY CONTRACT IS SUBJECT TO THE TERMS AND CONDITIONS OF THE WARRANTY CONTRACT. THE WARRANTY CONTRACT IS SUBJECT TO THE TERMS AND CONDITIONS OF THE WARRANTY CONTRACT.															

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 PH: 817-237-7700  
 FAX: 817-237-2177

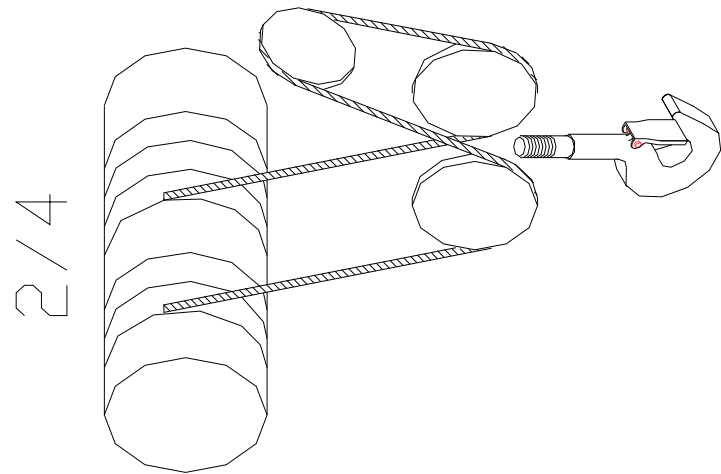
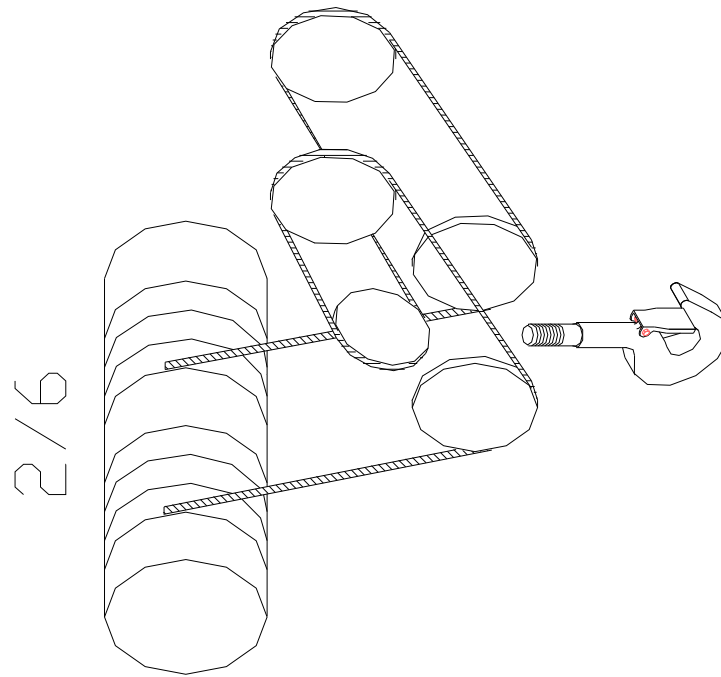
ORDER ADVANTAGE TROLLEY--HOIST CONTROL



## 7.2 Troubleshooting and Remedial action

SITUATION	CAUSE	REMEDY
Hoist will not operate	(1) Blown power fuse or tripped power circuit breaker (2) Blown control circuit fuse (3) Broken/disconnected power or control circuit wire (4) Low supply voltage (5) Motor hums but does not rotate (6) Emergency stop button release pushed (if fitted) (7) Faulty contactor	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 the hoist operation.	(1) Wire rope dry (2) Twisting & bending of wire rope due to frequently side pull. (3) Worn or deteriorated oil packing	Lubricate Replace new wire rope.  Replace new wire rope.
Electric shock	(1) Poor ground connection (2) Accumulated foreign matter/ moisture on electrical parts	Provide correct ground 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. Wire rope reeving



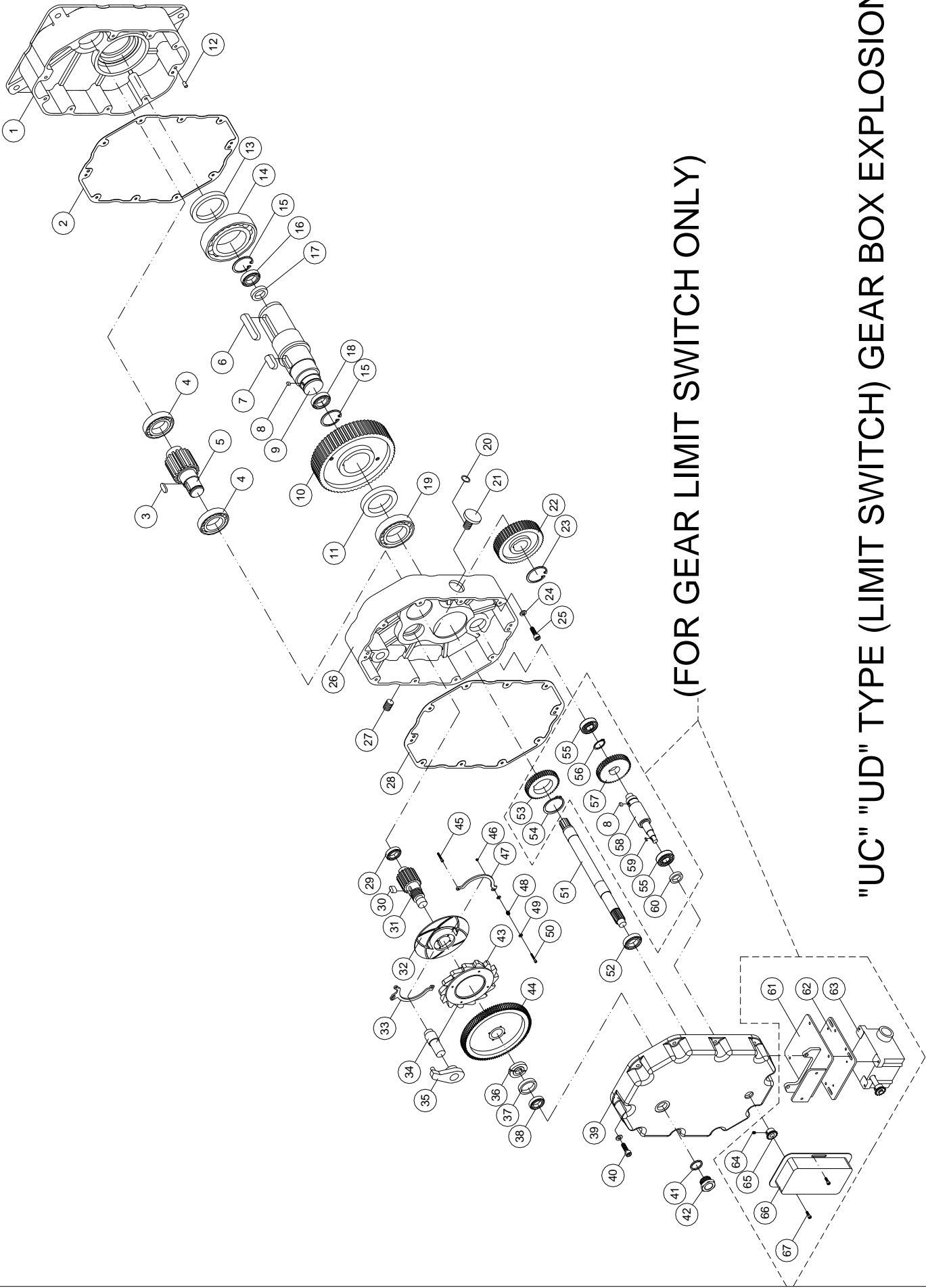


## 9. DRAWINGS AND PARTS LIST

(1)“UC” ”UD” TYPE GEAR BOX EXPLOSION DRAWING .....	22
(2)“UC” ”UD” TYPE GEAR BOX BILL OF MATERIAL .....	23
(3)“UEA” TYPE GEAR BOX EXPLOSION DRAWING .....	26
(4)“UEA” TYPE GEAR BOX BILL OF MATERIAL .....	27
(5)MOTOR EXPLOSION DRAWING .....	29
(6)MOTOR BILL OF MATERIAL .....	30
(7)BOTTOM BLOCK EXPLOSION DRAWING .....	32
(8)BOTTOM BLOCK BILL OF MATERIAL .....	33
(9)MOTORIZED TROLLEY EXPLOSION DRAWING .....	34
(10) MOTORIZED TROLLEY BILL OF MATERIAL .....	35
(11) TROLLEY FRAME EXPLOSION DRAWING .....	37
(12) TROLLEY FRAME BILL OF MATERIAL .....	38
(13) LIMIT SWITCH EXPLOSION DRAWING .....	39
(14) LIMIT SWITCH BILL OF MATERIAL .....	39
(15) ELECTRIC EXPLOSION DRAWING .....	40
(16) ELECTRIC BILL OF MATERIAL .....	40

"UC" "UD" TYPE (LIMIT SWITCH) GEAR BOX EXPLOSION

(FOR GEAR LIMIT SWITCH ONLY)



## GEAR BOX ASSEMBLY B.O.M

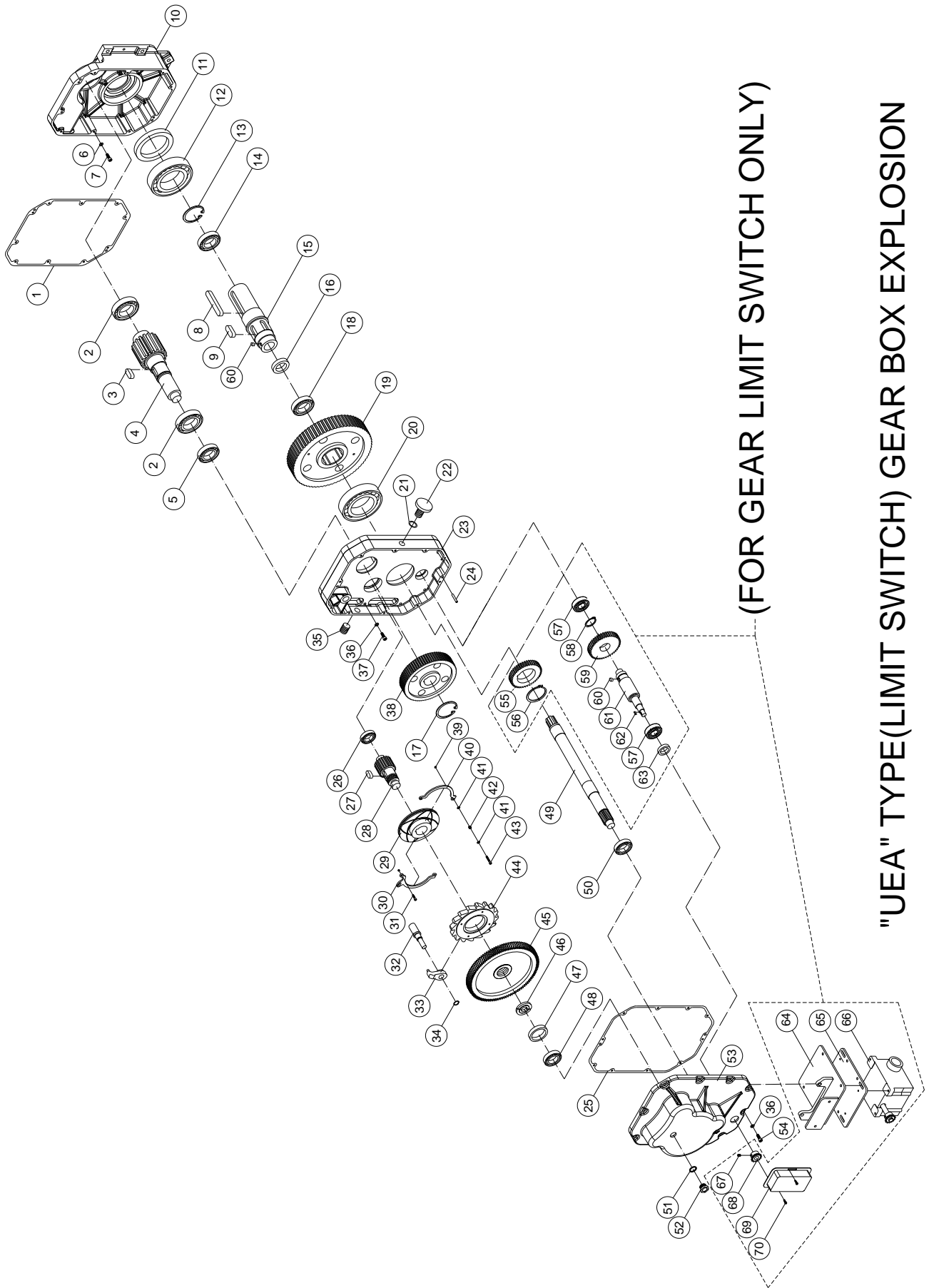
NO.	PART NUMBER	DESCRIPTION	Q'TY	
			UC TYPE	UD TYPE
01		Gear Case Base	1	1
02		Gasket (A) <t0.8×320×450L>	1	1
03		Key <t12×8×30L>	1	1
04		Bearing <6209>	2	2
05		Drum Pinion Gear <M3.5×18T>	1	
		Drum Pinion Gear <M3.5×17T>		1
06		Key <t20×12×90L>	1	1
07		Key <t20×12×45L>	1	1
08		Key <t6×6×10L>	2	2
09		Transmission Shaft	1	1
10		Drum Gear <M3.5×62T>	1	
		Drum Gear <M3.5×63T>		1
11		Sleeve <ø82×ø70×9L>	1	1
12		Pin <ø8×15L>	4	4
13		Oil Seal <ø80×ø105×12t>	1	1
14		Bearing <6216 Z>	1	1
15		Retaining Ring <R-55>	2	2
16		Bearing <6006 2RS>	1	1
17		Oil Seal <ø30×ø45×8t>	1	1
18		Needle Bearing <30/20>	1	1
19		Bearing <6014>	1	1
20		O Ring <ø20×ø26×3>	1	1
21		Lubricant Filling Plug	1	1
22		Load Brake Gear <M2.5×51T>	1	
		Load Brake Gear <M2.5×52T>		1
23		Retaining Ring <S-40>	1	1
24		Spring Washer <M8>	20	20
25		Hex. Recess Bolt <M8×1.25×40L>	10	10
26		Gear Case B	1	1
27		Drain Plug <3/8"PT>	1	1
28		Gasket (B) <t0.8×328×458L>	1	1
29		Bearing <6305>	1	1
30		Key <t8×8×16L>	1	1

## GEAR BOX ASSEMBLY B.O.M

NO.	PART NUMBER	DESCRIPTION	Q'TY	
			UC TYPE	UD TYPE
31		Load Brake Gear Shaft <M2.5×18T>	1	
		Load Brake Gear Shaft <M2.5×17T>		1
32		Friction Plate	1	1
33		Pawl Actuator(A)	1	1
34		Pawl Pin <ø30×81L>	1	1
35		Pawl	1	1
36		Intermediate Gear Spacer	2	2
37		End Spacer<ø50×ø60×9.5L>	1	1
38		Bearing <6205>	1	1
39		Gear Case Cover	1	1
40		Hex. Recess Bolt <M8×1.25×30L>	10	10
41		O Ring <ø28×ø35×3.5>	1	1
42		Sight Glass < M30×1.5P >	1	1
43		Ratchet Lining Ass'y	1	1
44		Intermediate Gear <M1.75×108T>	1	1
45		Hexagon Headed Bolt <M6×1.0×35>	1	1
46		Nut System <M6×1.0>	3	3
47		Pawl Actuator Ring(B)	1	1
48		Compress Spring	1	1
49		Flat Washer	5	5
50		Hex. Recess Bolt <M6×1.0×60>	1	1
51		Motor Shaft Pinion <M1.75×12T>	1	1
52		Bearing <6204>	1	1
53		Motor Shaft Pinion <M2.0×45T>	1	1
54		Retaining Ring <S-55>	1	1
55		Bearing <6204>	2	2
56		Retaining Ring <S-30>	1	1
57		Connecting Rod Gear <M2.0×45T>	1	1

## GEAR BOX ASSEMBLY B.O.M

NO.	PART NUMBER	DESCRIPTION	Q'TY	
			UC TYPE	UD TYPE
58		Connecting Rod <ø35×171>	1	1
59		Key <t3×3×10L>	2	2
60		Oil Seal <ø20×ø35×8t>	1	1
61		Limit Pedestal Ass' y	1	1
62		Limit Pedestal <t5×150×170L>	1	1
63		Limit Switch<Customer Supply>	1	1
64		Screw <M5×0.8×8L>	2	2
65		Chain Wheel <1/4"×15.7L>	1	1
66		Limit Frame <t2×45×205L>	1	1
67		Hex. Recess Bolt <M6×1.0×12L>	2	2
		Chain Connection <1/4">	1	1
		Chain <1/4">	0.327M	0.327M



(FOR GEAR LIMIT SWITCH ONLY)

"UEA" TYPE(LIMIT SWITCH) GEAR BOX EXPLOSION

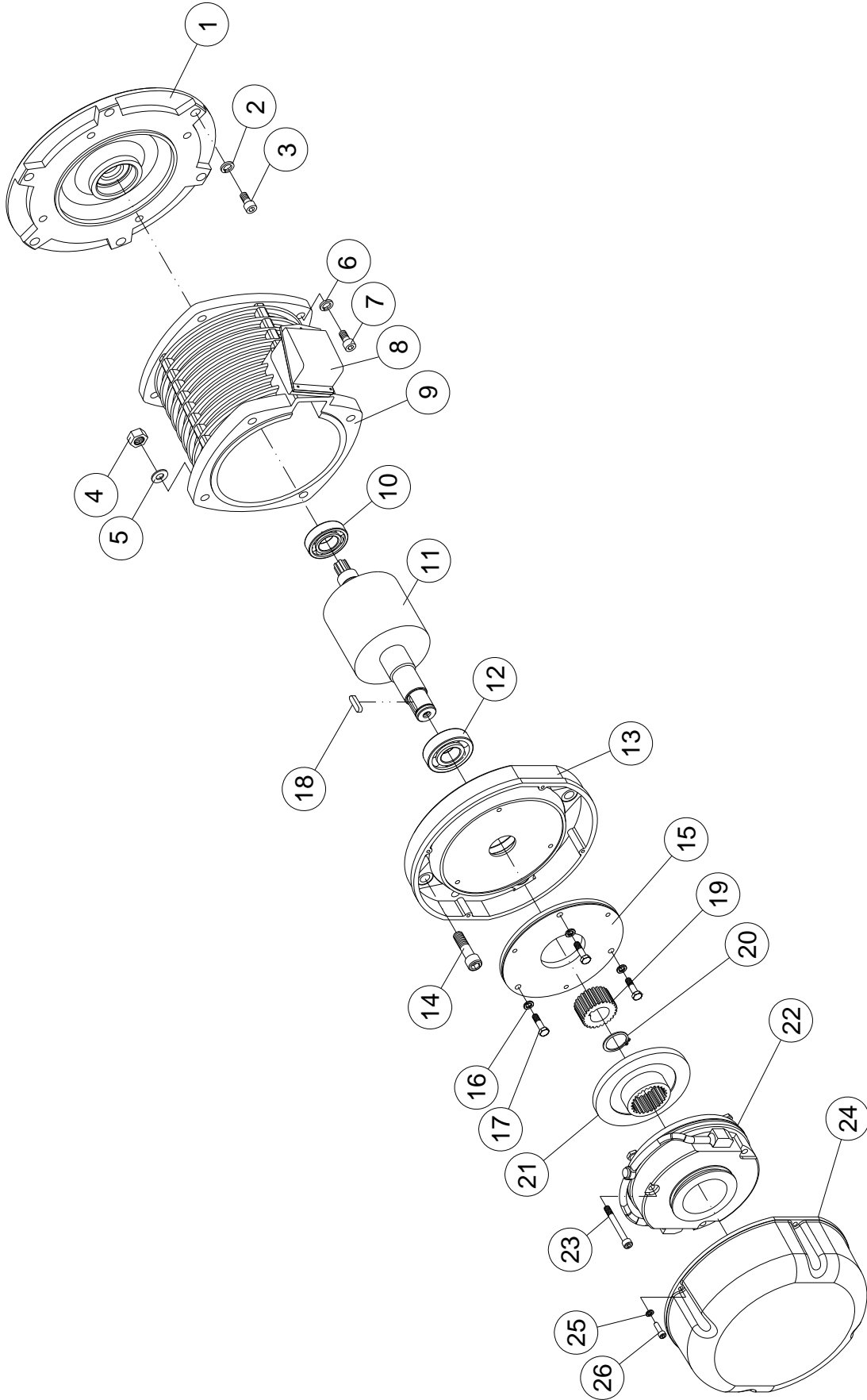
## GEAR BOX ASSEMBLY B.O.M

NO.	PART NUMBER	DESCRIPTION	Q'TY
			UEA TYPE
01		Gasket(A) <t0.8×430×587L>	1
02		Bearing <6213>	2
03		Key <t18×11×40>	1
04		Drum Pinion Gear <M4.5×19T>	1
05		Bearing <6209>	1
06		Spring Washer <M14>	10
07		Hex. Recess Bolt <M14×2.0×50L>	10
08		Key <t25×14×150L>	1
09		Key <t25×14×70>	4
10		Gear Case Base	1
11		Oil Seal <ø100×ø125×13t>	1
12		Bearing <6220Z>	1
13		Retaining Ring <R-62>	1
14		Bearing <6007 2RS>	1
15		Drum Shaft	1
16		Oil Seal <ø35×ø55×11t>	1
17		Retaining Ring <S-60>	1
18		Bearing <6007 Z>	1
19		Drum Gear <M4.5×82T>	1
20		Bearing <6218>	1
21		O Ring <ø20×ø26×3>	1
22		Lubricant Filling Plug	1
23		Gear Case B	1
24		Pin <ø12×ø8.5×14L>	4
25		Gasket (B) <t0.8×430×587L>	1
26		Bearing <6308>	1
27		Key <t16×10×30L>	1
28		Load Brake Gear Shaft <M3×21T>	1
29		Friction Plate	1
30		Pawl Actuator (A)	1
31		Hexagon Headed Bolt<M6×1.0×35L>	1
32		Pawl Pin <ø35×140.5L>	1
33		Pawl	1
34		Retaining Ring <S-25>	1
35		Drain Plug <PT 3/4" >	1
36		Spring Washer <M12>	20

## GEAR BOX ASSEMBLY B.O.M

NO.	PART NUMBER	DESCRIPTION	Q'TY
			UEA TYPE
37		Hex. Recess Bolt <M12×1.75×65L>	10
38		Load Brake Gear <M3×87T>	1
39		Nut System <M6×1.0>	3
40		Pawl Actuator(B)	1
41		Flat Washer<M6>	5
42		Compress Spring<ø1.0-ø10.5×ø8.5×25L>	1
43		Hex. Recess Bolt <M6×1.0×60>	1
44		Ratchet Lining Ass'y	1
45		Intermediate Gear <M2×120T>	1
46		Intermediate Gear Spacer	2
47		End Spacer<ø75×ø90×9.5L>	1
48		Bearing <6208>	1
49		Motor Shaft Pinion <M2×14T	1
50		Bearing <6305>	1
51		O Ring <ø28×ø35×3.5>	1
52		Sight Glass < M30×1.5P >	1
53		Gear Case Cover	1
54		Hex. Recess Bolt <M12×1.75×25L>	10
55		Motor Shaft Pinion <M2.0×60T>	1
56		Retaining Ring <S-80>	1
57		Bearing <6305>	2
58		Retaining Ring <S-35>	1
59		Connecting Rod Gear <M2.0×60T>	1
60		Key <t6×6×15L>	2
61		Connecting Rod <ø35×115L>	1
62		Key <t3×3×10L>	1
63		Oil Seal <ø25×ø40×8t>	1
64		Limit Pedestal Ass' y	1
65		Limit Pedestal <t5×115×114L>	1
66		Limit Switch<Customer Supply>	1
67		Screw <M5×0.8×8L>	2
68		Chain Wheel <1/4"×15.7L>	1
69		Limit Frame <t2×45×220L>	1
70		Hex. Recess Bolt <M6×1.0×12L>	2
		Chain Connection <1/4">	1
		Chain <1/4">	0.362M





# MOTOR EXPLOSION <DC BRAKE>

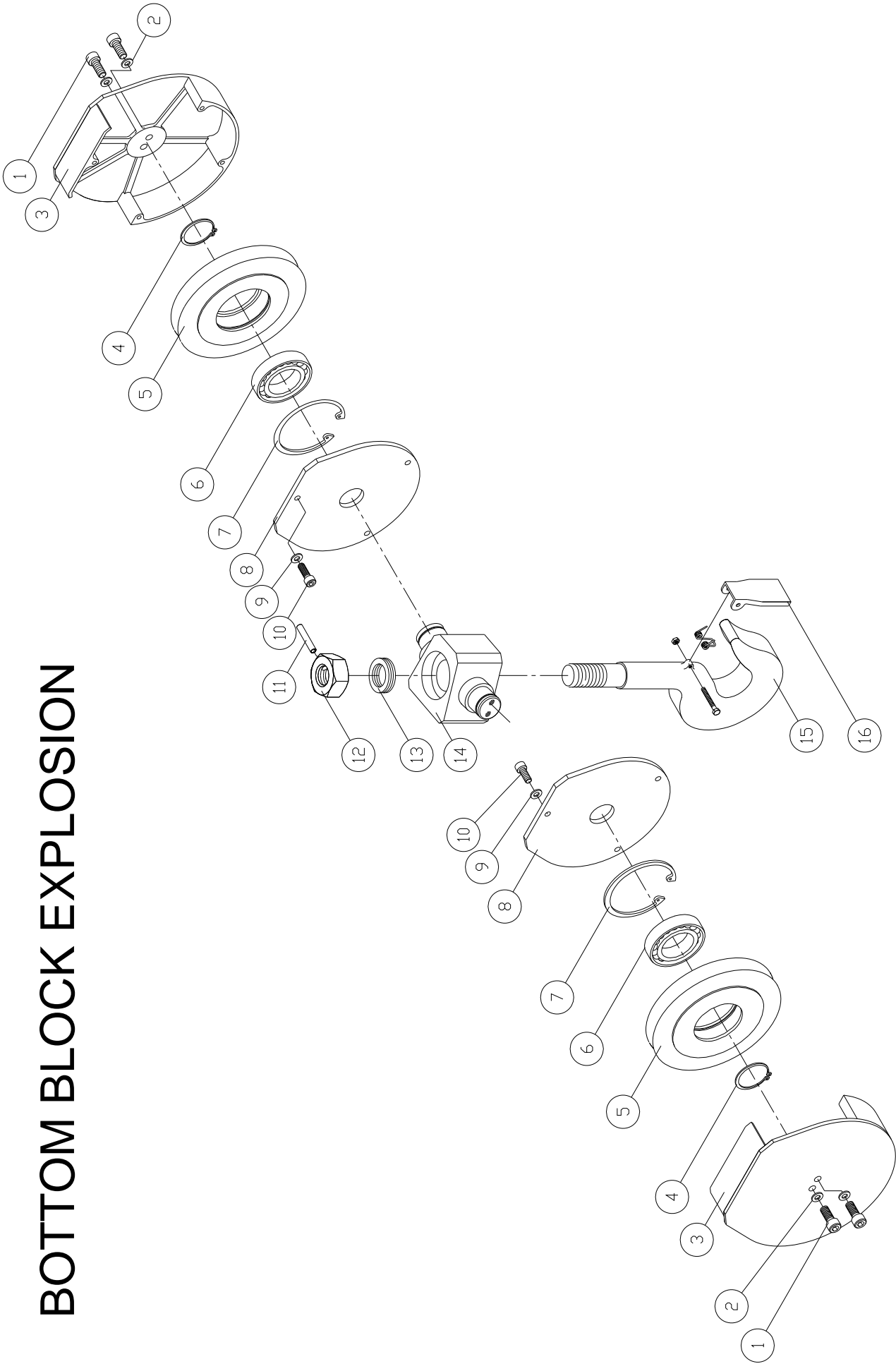
## MOTOR ASSEMBLY B.O.M.

NO.	PART NUMBER	DESCRIPTION	Q'TY		
			3T	5T	7.5T
01		Flange	1		
				1	
					1
02		Spring Washer <M14>	6	6	6
03		Hex. Recess Bolt<M14×2.0×45L>	6	6	6
04		Nut <M14×2.0>	4		
		Nut <M18×2.5>		4	4
05		Spring Washer <M14>	4		
		Spring Washer <M18>		4	4
06		Spring Washer <M12>	4	4	4
07		Hex. Recess Bolt<M12×1.75×40L>	4		
		Hex. Recess Bolt<M12×1.75×30L>		4	4
08		Motor Component <Cable Box>	1		
				1	1
09		Motor Stator Ass'y	1		
				1	
					1
10		Bearing <6206>	1		
		Bearing <6307 2RU>		1	1
11		Motor Rotor	1		
				1	
					1
12		Bearing<6208 2RU>	1		
		Bearing<6309 2RU >		1	1
13		Rear Bracket	1		
				1	1
14		Hex. Recess Bolt<M14×2.0×60L>	4		
		Hex. Recess Bolt<M18×2.5×60L>		4	4
15		Flange	1		
				1	1

## MOTOR ASSEMBLY B.O.M.

NO.	PART NUMBER	DESCRIPTION	Q'TY		
			3T	5T	7.5T
16		Spring Washer<M8>	3	4	4
17		Hexagonal Bolt <M 8×1.25×25L>	3	4	4
18		Key<t10×8×30L>	1		
		Key<t12×8×35L>		1	1
19		Disk Hub	1		
				1	1
20		Retaining Ring	1		
				1	1
21		Brake Rotor	1		
				1	1
22		Brake Coil Assembly (BFK458-16E DC103V)	1		
		Brake Coil Assembly (BFK458-18E DC103V)		1	1
23		Hex. Recess Bolt <M8×1.25×70L>	3		
		Hex. Recess Bolt <M8×1.25×80L>		6	6
24		Brake End Cover	1		
				1	1
25		Spring Washer <M6>	4	4	4
26		Hex. Recess Bolt <M6×1.0×20L>	4	4	4

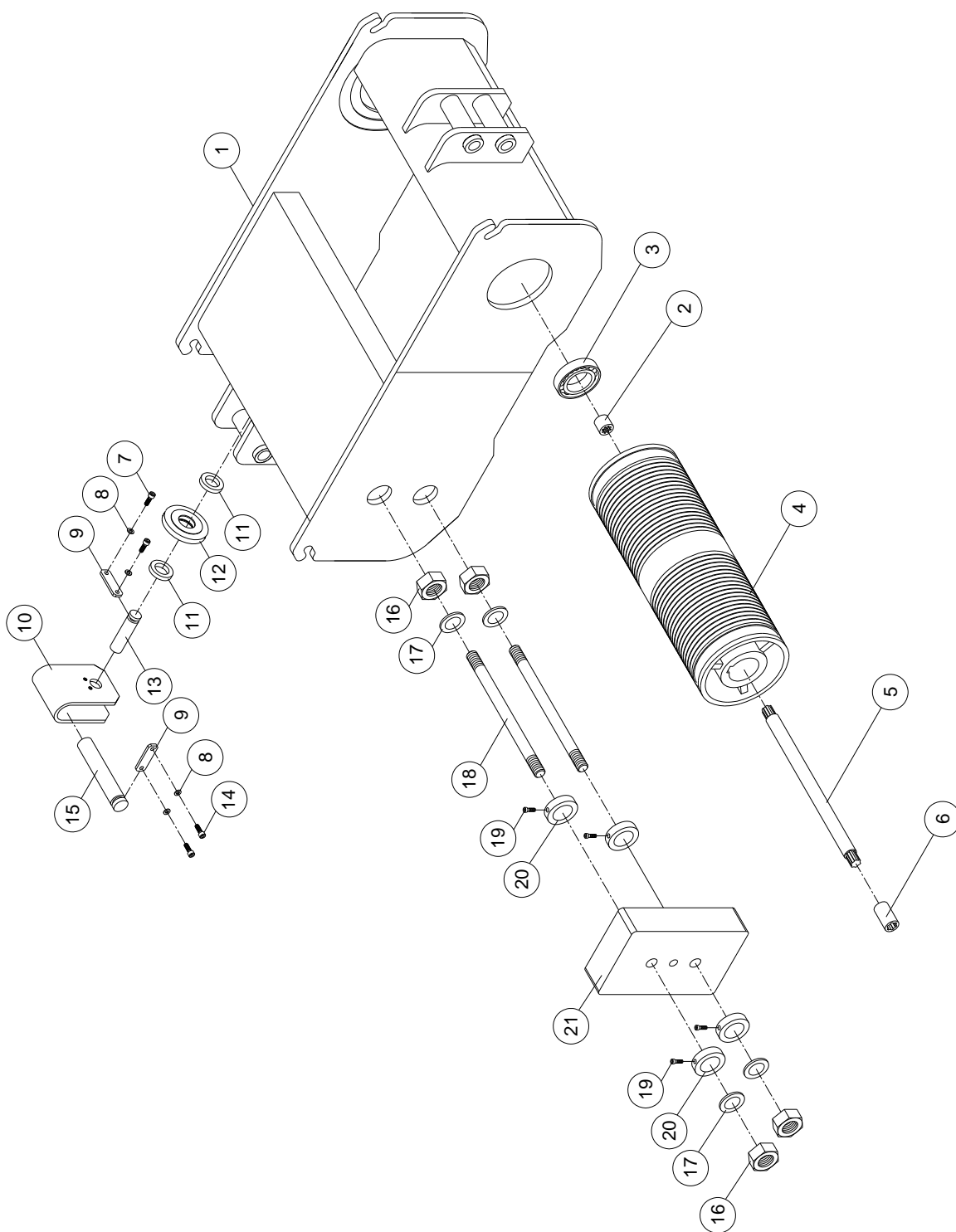
# BOTTOM BLOCK EXPLOSION



## BOTTOM BLOCK B.O.M

NO.	PART NUMBER	DESCRIPTION	Q'TY		
			3T	5T	7.5T
01		Hex. Recess Bolt <M10×1.5×20L>	4	4	4
02		Spring Washer <M10>	4	4	4
03		Bottom Hook Side Cover Ass'y	2		
				2	
					2
04		Retaining Ring <S-40>	2		
		Retaining Ring <S-45>		2	
		Retaining Ring <S-50>			2
05		Sheave <ø210×ø80 t36>	2		
		Sheave <ø210×ø100 t36>		2	
		Sheave <ø242×ø100 t40>			2
06		Bearing <6308ZZ>	2		
		Bearing <6309ZZ>		2	
		Bearing <6310ZZ>			2
07		Retaining Ring <R-90>	2		
		Retaining Ring <R-100>		2	
		Retaining Ring <R-110>			2
08		Bottom Hook Side Cover	2		
				2	
					2
09		Spring Washer <M8>	6	8	8
10		Hex. Recess Bolt <M8×1.25×20L>	6	8	8
11		Spring Pin <ø8×55L>	1		
		Spring pin <ø8×70L>		1	1
12		Nut <1 3/8" ×6UNC>	1		
		Nut <1 3/4" ×5UNC>		1	
		Nut <M52×5.0>			1
13		Thrust Bearing <51207>	1		
		Thrust Bearing <51209>		1	
		Thrust Bearing <51211>			1
14		Bearing Housing <t62×100×191L>	1		
		Bearing Housin <t82×122×205L>		1	
		Bearing Housin <t82×110×228L>			1
15		Bottom Hook	1		
				1	
					1
16		Safety Latch Ass'y	1		
				1	
					1

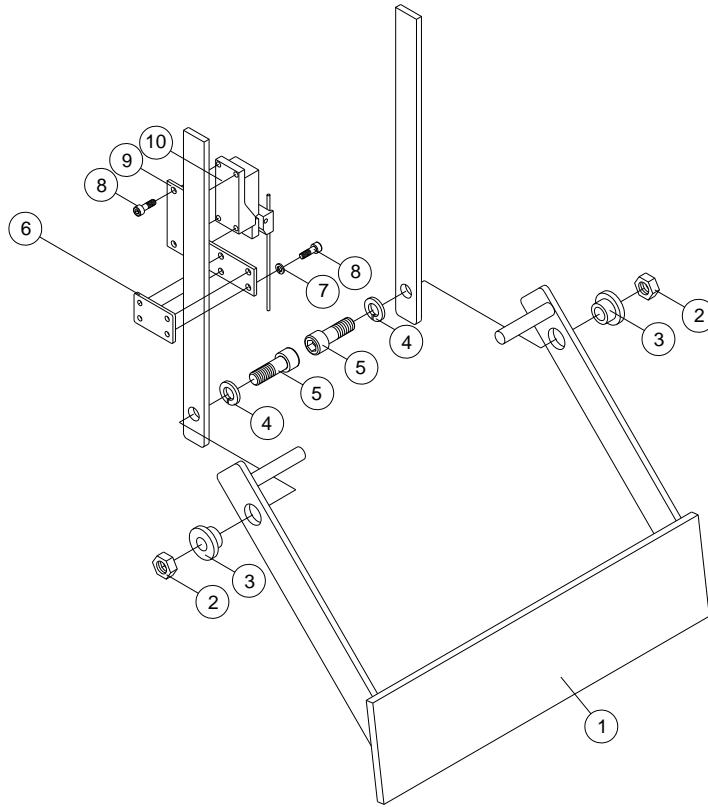
# TROLLEY FRAME ASSEMBLY



# TROLLEY FRAME ASSEMBLY B.O.M

NO.	PART NUMBER	DESCRIPTION	Q'TY		
			3T	5T	7.5T
01		Hoist Frame	1		
				1	
					1
02		Coupling(A) < $\phi 34 \times \phi 21 \times 61L$ >	1	1	
		Coupling(B) < $\phi 34 \times \phi 21 \times 73L$ >			1
03		Bearing <6212ZZ>	1	1	
		Bearing <6220 ZZ>	1		1
04		Drum < $\phi 218 \times \phi 194 \times 855$ >	1	1	
		Drum < $\phi 271 \times \phi 243 \times 912L$ >	1		1
05		Drum Shaft < $\phi 30 \times 697L$ >	1		
		Drum Shaft < $\phi 30 \times 670L$ >		1	
		Drum Shaft < $\phi 35 \times 955L$ >			1
06		Coupling(A) < $\phi 34 \times \phi 21 \times 61L$ >	1		
		Drum Coupling(B) < $\phi 34 \times \phi 21 \times 73L$ >		1	
		Coupling < $\phi 48 \times \phi 28 \times 62L$ >			1
07		Hex. Recess Bolt <M8 $\times$ 1.25 $\times$ 20L>	2	2	2
08		Spring Washer <M8>	4	4	4
09		Keeper < $\phi 8.5$ P28 t6.0 $\times$ 25 $\times$ 50L>	2	2	2
10		Link Equalizer <t8 $\times$ 120 $\times$ 170>	1	1	
		Link Equalizer <t8 $\times$ 140 $\times$ 230L>			1
11		Washer < $\phi 40 \times \phi 29 \times 3L$ >	2	2	
		Washer < $\phi 45 \times \phi 36 \times 3L$ >			2
12		Equalizer Sheave < $\phi 152 \times \phi 28$ t40>	1	1	
		Equalizer Sheave < $\phi 210 \times \phi 35$ t50>			1
13		Sheave Axle < $\phi 28 \times 109L$ >	1	1	
		Sheave Axle < $\phi 35 \times 119L$ >			1
14		Hex. Recess Bolt <M8 $\times$ 1.25 $\times$ 20L>	2	2	
		Hex. Recess Bolt <M8 $\times$ 1.25 $\times$ 25L>			2
15		Load Axle < $\phi 35 \times 200L$ >	1		
		Load Axle < $\phi 35 \times 220L$ >			
16		Nut<1" $\times$ 8UNC>	4	4	
		Nut<1 1/2" $\times$ 6UNC>			4
17		Spring Washer <1">	4	4	
		Spring Washer <1 1/2">			4
18		Mounting Bolts <1" $\times$ 8UNC $\times$ 380>	2	2	
		Mounting Bolts <1 1/2" $\times$ 6UNC $\times$ 560>			2
19		Hex. Recess Bolt <M8 $\times$ 1.25 $\times$ 20>	8	8	8
20		Spacer Tube < $\phi 42 \times \phi 26 \times 15L$ >	4	4	
		Spacer Tube < $\phi 60.5 \times \phi 39 \times 15L$ >			4
21		Counter Weight Block	1	1	
					1

# LIMIT SWITCH EXPLOSION

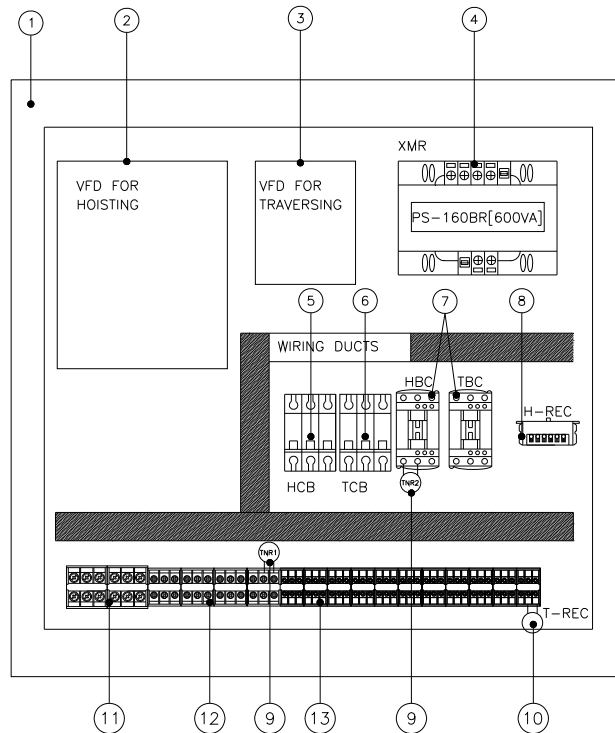


## LIMIT SWITCH ASSEMBLY B.O.M

NO.	PART NUMBER	DESCRIPTION	Q'TY	
			3T,5T	7.5T
01		Lever Arm	1	1
02		Nut <M12x1.75>	2	2
03		Tube <ø30x12.5x15L>	2	2
04		Spring Washer <M12>	2	2
05		Hex. Recess Bolt <M12x1.75x35L>	2	2
06		Limit Frame <t3.0x30x47L>	1	
		Limit Frame <t3.0x30x62L>		1
07		Spring Washer <M5>	2	2
08		Hex. Recess Bolt <M5x0.8x16L>	4	4
09		Limit Plate <t3.0x40x55L>	1	
		Limit Plate <t3.0x68x120L>		1
10		Limit Switch	1	1



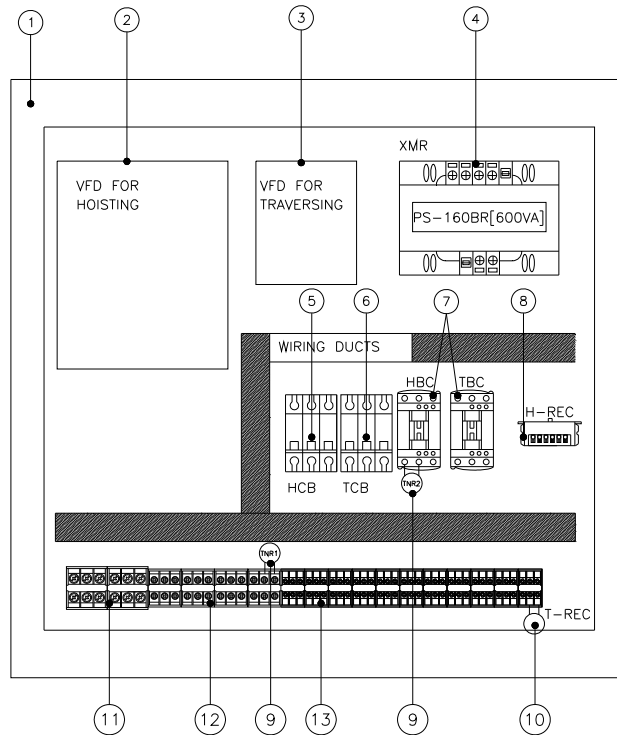
## ELECTRIC ASSEMBLY



## ELECTRIC ASSEMBLY B.O.M.

NO.	PART NUMBER	DESCRIPTION	Q'TY
			3T
01		Control Box <650×630×230>	1
02		VFD For Hoisting	1
03		VFD For Traversing	1
04		Transformer PS-160BR[600VA]+FUSE	1
05		No Fuse Breaker C60N 3P16A	1
06		No Fuse Breaker C60N 3P6A	1
07		Magnetic Contactor LC1-D09-F7	2
08		Rectifier BEG-561-255-030	1
09		Varistor 23G471	2
10		Rectifier	1
11		Terminal Blocks 3P 50A IN30BK-C	2
12		Terminal Blocks 3P 30A IN20BK-C	4
13		Terminal Blocks 3P 20A IN13SBK-C	11

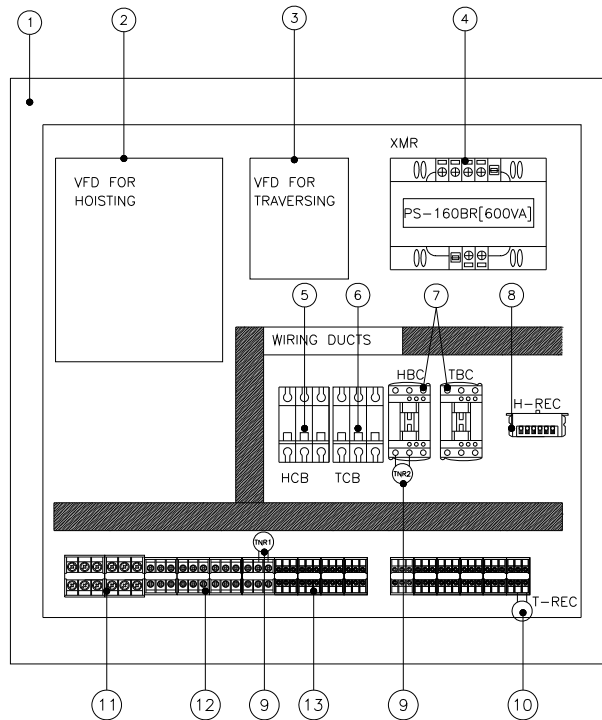
# ELECTRIC ASSEMBLY



## ELECTRIC ASSEMBLY B.O.M.

NO.	PART NUMBER	DESCRIPTION	Q'TY
			5T
01		Control Box <650×630×230>	1
02		VFD For Hoisting	1
03		VFD For Traversing	1
04		Transformer PS-160BR[600VA]+FUSE	1
05		No Fuse Breaker C60N 3P20A	1
06		No Fuse Breaker C60N 3P6A	1
07		Magnetic Contactor LC1-D09-F7	2
08		Rectifier BEG-561-255-030	1
09		Varistor 23G471	2
10		Rectifier	1
11		Terminal Blocks 3P 50A IN30BK-C	2
12		Terminal Blocks 3P 30A IN20BK-C	4
13		Terminal Blocks 3P 20A IN13SBK-C	11

# ELECTRIC ASSEMBLY

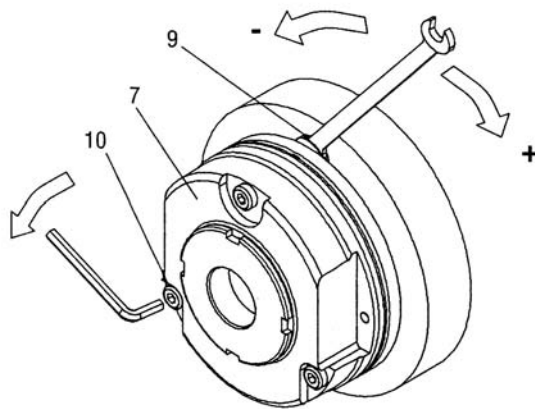


## ELECTRIC ASSEMBLY B.O.M.

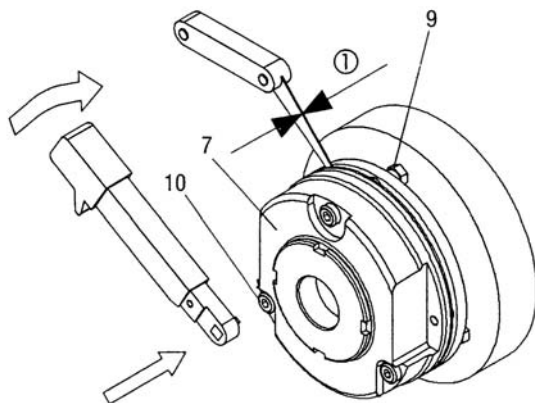
NO.	PART NUMBER	DESCRIPTION	Q'TY
			7.5
01		Control Box <650×630×230>	1
02		VFD For Hoisting	1
03		VFD For Traversing	1
04		Transformer PS-160BR[600VA]+FUSE	1
05		No Fuse Breaker	1
06		No Fuse Breaker	1
07		Magnetic Contactor LC1-D09-F7	2
08		Rectifier BEG-561-255-030	1
09		Varistor 23G471	2
10		Rectifier	1
11		Terminal Blocks 3P 50A IN30BK-C	2
12		Terminal Blocks 3P 30A IN20BK-C	4
13		Terminal Blocks 3P 20A IN13SBK-C	11

## 10. Adjust the air gap as follows:

1. Unbolt screws (10).
2. Slightly turn threaded sleeve (9) using a spanner.
  - If the air gap is too large, screw them into the stator (7).
  - If the air gap is too small, screw them out of the stator (7).
  - 1/6 turn change the width of the air gap by approx. 0.15mm.
3. Tighten the screws (10).
  - BFK458-12 torques is 9.5 Nm
  - BFK458-14~18 torques is 23 Nm
  - BFK458-20 torques is 46 Nm



4. Check air gap again using thickness gauge and if necessary, repeat the adjustment.
  - BFK458-12~16 air gap is 0.3mm
  - BFK458-18~20 air gap is 0.4mm
5. Recover the brake cover, and using the hoist continue.



Supply voltage selection table

AC voltage	Coil rated voltage
3φ 60Hz 460V	DC 103V