



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

Ace Advantage Top Running WR Hoists

OPERATION MANUAL

&

PARTS LIST

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

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.



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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 and 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 :



Phone: 817.237.7700
Fax: 817.237.2777

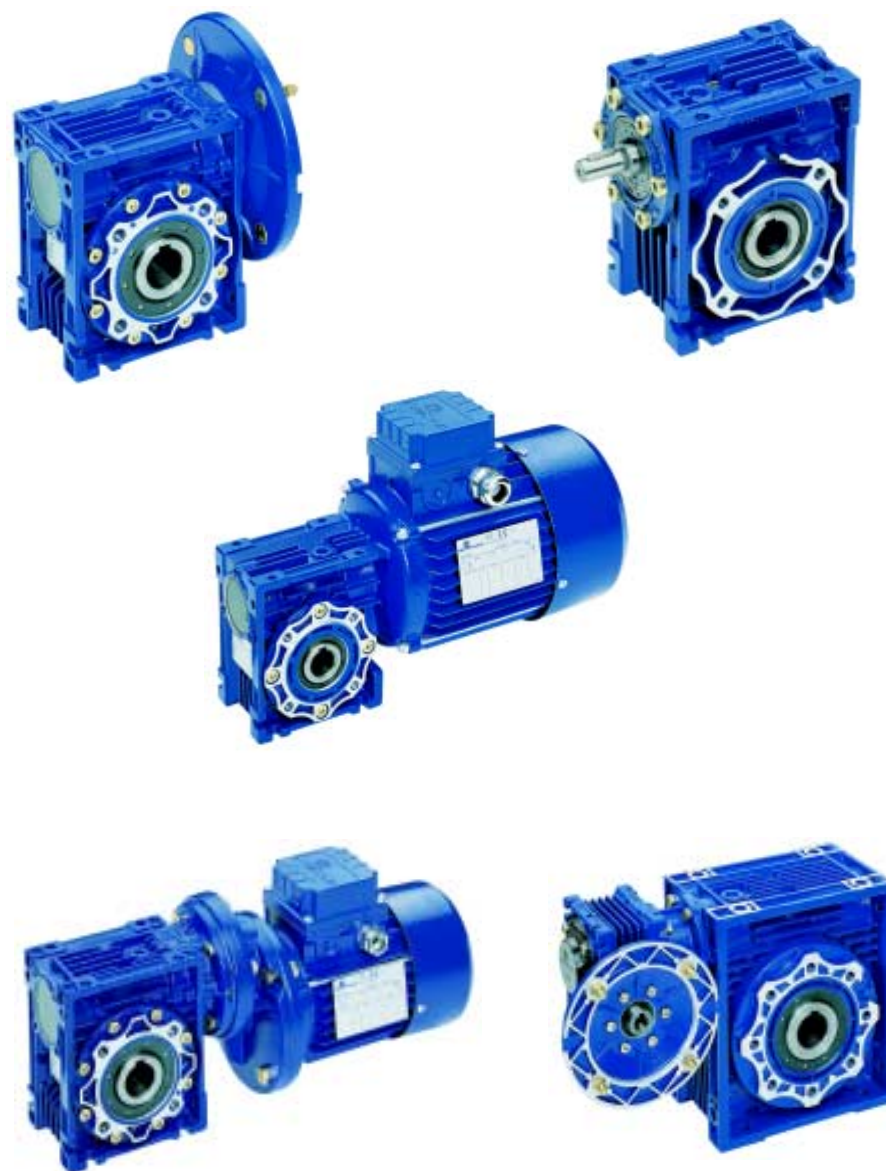
www.aceworldcompanies.com

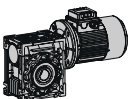
10200 Jacksboro Highway
Fort Worth, Texas 76135



**MAINTENANCE AND OPERATING
INSTRUCTIONS FOR WORM GEAR
REDUCERS AND GEARMOTORS
SERIES:**

**NMRV - MCV - NRV
NMRV+NMRV
PC+NMRV**





Warehouse storage

When moving the unit, care should be taken to protect external parts from breakage or damage due to accidental knocks or falls.

If the unit is to be stored in a hostile atmosphere or for a long period of time (2/4 months), it is important to apply protective and waterproofing products to avoid deterioration of shafts and rubber parts.

Before starting up the unit, carry out the following checks:

Check the data shown on the name plate of the reduction unit and/or the electric motor;

Check for any leaks of lubricant

If possible, remove any traces of dirt from the shaft and from the areas around the oil seal.

If the oil seal is not immersed in the lubricant inside the assembly during particularly long storage periods (4/6 months) it is recommended that it should be replaced as the rubber might stick to the shaft or even have lost the elasticity it needs to work.

Installation

Particular care must be taken when installing drives, as this is often the source of damage and down time. Careful choice of the type of drive and mounting position can often avoid the need for protection of sensitive areas, particularly underneath the unit from oil leaks, however limited they may be.

- The machine must be firmly fastened in place in order to prevent any vibrations.
- Whenever possible, protect the reduction unit from direct sunlight and bad weather, especially when it is mounted on its vertical axis.
- Make sure the air intake on the fan side is unobstructed in order to ensure that the motor is correctly cooled.
- In the case of temperatures of $< -5\text{ }^{\circ}\text{C}$ or $> +40\text{ }^{\circ}\text{C}$, contact Technical Assistance.
- If the motor is to be started very often under load, the use of a heat probe inserted into the motor is recommended.
- The various machine members (pulleys, gear wheels, couplings, etc.) must be mounted on the shafts using special threaded holes or other systems that ensure correct operation without risk of causing damage to the bearings or the external parts of the assemblies (fig.1).
- Lubricate the surfaces that come into contact in order to prevent oxidation or seizure.

Installation

Example of a pulley mounted correctly on the slow shaft of a reduction unit

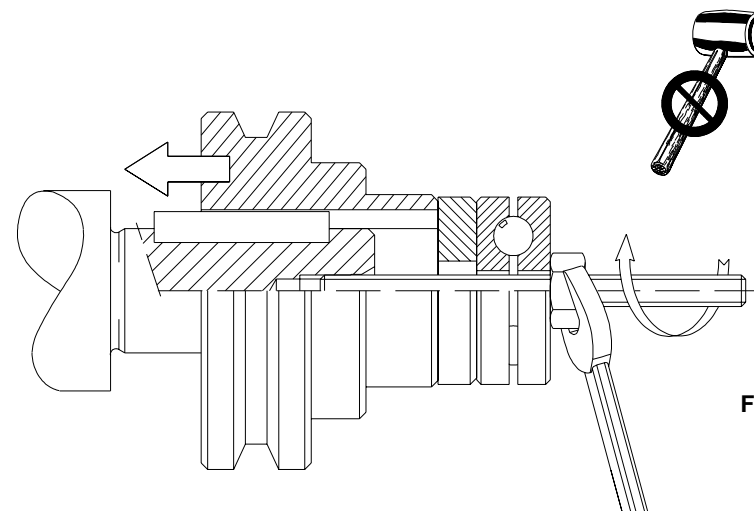


Fig. 1

Correct and incorrect examples of pulleys mounted on the main shaft of a reduction unit.

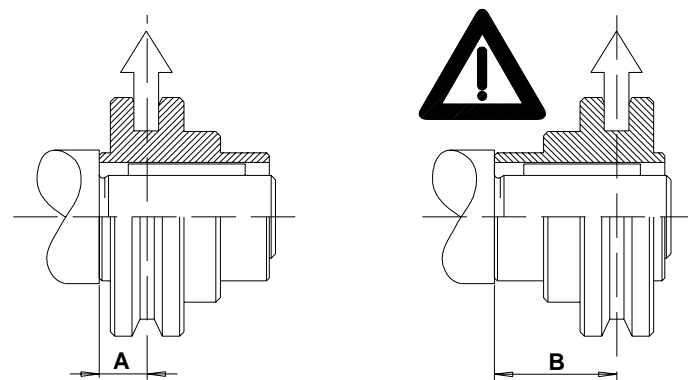
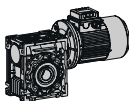


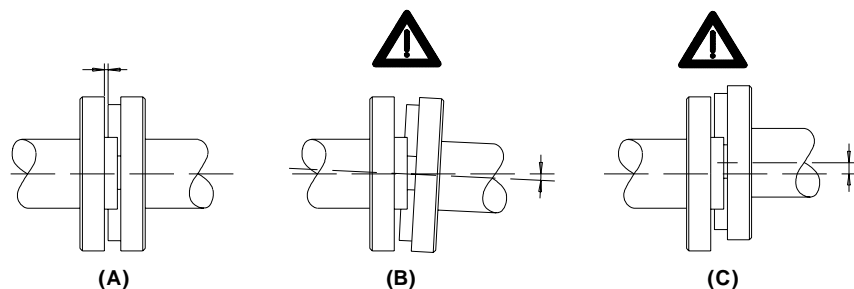
Fig. 2



Installation

Correct and incorrect examples of coupling connections

Fig. 3



The pulley must be mounted on the main shaft as close as possible to the shoulder so that it does not cause excessive radial load on the bearings (fig. 2). Great care must be taken when connecting the couplings to ensure that they are well aligned, so as not to cause excessive radial load on the bearings (fig.3). When it is applied, paint must never be used on rubber parts: oil seal, etc. It must never be applied to any breather holes in plugs if they are mounted on the unit. In the case of assemblies with oil plugs, remove the closed cap used for transport and fit it with the breather plug that is supplied with the reduction unit. When the assembly is supplied without a motor, the following precautions must be followed in order to ensure that connections are properly made

Mounting the motor on the pam B5/B14 flange

Check that the tolerance of the motor shaft and the motor flange comply with at least one 'normal' class of quality. Carefully clean off any trace of dirt or paint from the shaft, the centering diameter and the face of the flange. Carry out mounting operations making sure not to use force. If this is not possible, check the tolerance of the motor key and ensure that it is correctly fitted. Apply assembly grease to the shaft in order to prevent oxidation or seizure caused by contact.

Good quality motors should be used in order to ensure that the unit works correctly, without vibrations or noise.

Before mounting the unit on the machine, check that the principal shaft of the reduction unit rotates in the right direction.

Use the oil window, if present, to check that the lubricant reaches the correct level required for the mounting position used.

Starting up

The unit should be started up gradually: do not immediately apply the maximum load the machine is able to take; look for and correct any malfunction that may be caused by incorrect mounting.

Running-in is not essential for the reduction unit to run properly since modern construction techniques for the gears and castings, the extreme cleanliness of the internal parts, and the excellent qualities of the lubricants used, ensure that the internal parts receive a high degree of protection even during the first moments.

Servicing

The high degree of finish of the internal parts ensures that the unit will work correctly with only a minimum amount of servicing

Generally speaking, the following rules should be followed: periodically check that the exterior of the assembly is clean, especially in the cooling areas; periodically check to see if there are any leaks, especially in the areas around the oil seals.

Assemblies that are lubricated for life and thus do not have any oil plugs do not require any special maintenance except as stated above.

For other assemblies, low maintenance is required with an oil change at 8/10,000 hours of use. The change of oil naturally depends on the type of environment and use to which the unit is put.

Apart from the normal maintenance rules given above, make sure the breather hole in the plug is clean and, using the oil window, periodically check that there is sufficient lubricant.

Should it be necessary to top up with lubricant, use the same type that is already in the reducer or one that is compatible with it.

In case of doubtful incompatibility between lubricants, we recommend you empty out the oil from the gearbox completely and, before refilling with new oil, wash out the unit to remove any residue.

When changing the oil, follow the previous instructions.

Troubleshooting

If any problems should arise when starting the unit or during its first few hours of operation, contact the after sales service unit of Motovario.

The table shows a series of problems with a description of possible remedies.

It should be kept in mind however that the information given is for reference only, as all the drives manufactured by Motovario are thoroughly tested and checked before they leave the factory.

Please note that tampering with the assembly without prior authorization from Motovario immediately invalidates the warranty and often makes it impossible to ascertain the causes of a defect or malfunction.

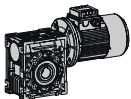


Troubleshooting

Troubleshooting

PROBLEMS	CAUSES	ACTION (1)	ACTION (2)
<i>The motor does not start.</i>	Problems with power supply. Defective motor. Wrong size of motor.	Check power supply.	Replace electric motor.
<i>Current absorbed by the motor is greater than shown on the data plate.</i>	Wrong size of motor.	Check the application.	Replace the electric motor and, if necessary, the reduction unit.
<i>Temperature of the motor housing is very high.</i>	Defective motor. Wrong size of motor. Incorrect mounting of motor	Check the application.	Replace the electric motor and, if necessary, the reduction unit.
<i>Temperature of the reduction unit housing is very high.</i>	Wrong size of reduction unit. Mounting position does not comply with the order. Incorrect mounting of motor	Check the application.	Correct the working conditions: mounting position and/or lubricant level.
<i>Incorrect rotation speed of the main reducer unit shaft.</i>	Incorrect reduction ratio. Incorrect polarity of motor.	Check reduction ratio. Check polarity of motor.	Replace reduction unit and/or electric motor.
<i>Oil leak from oil seal.</i>	Defective oil seal. Oil seal damaged during shipment. Defective motor shaft.	Replace the oil seal. Repair motor shaft (if possible).	Replace the part or return the assembly to Motovario.
<i>Oil leak from joint.</i>	Flat gasket or O-ring damaged.	Replace damaged gasket or O-ring.	Return the assembly to Motovario.
<i>The main shaft rotates the wrong way.</i>	Incorrect connection of the electric motor.	Swap two phases of the motor supply.	
<i>Intermittent noise from the gears.</i>	Dents in the gear wheels.	No practical problem if the noise has no effect on the application.	Return the assembly to Motovario if there is significant noise when loaded.

PROBLEMS	CAUSES	ACTION (1)	ACTION (2)
<i>Intermittent noise from the gears.</i>	Dirt inside the gearbox.	No practical problem if the noise has no effect on the application.	Return the assembly to Motovario if there is significant noise when loaded.
<i>Noise (whine) from the drive assembly.</i>	Bearings incorrectly adjusted. Gears with mesh errors. Insufficient lubricant.	Check correct quantity of lubricant.	Return the assembly to Motovario.
<i>Electric motor vibrates.</i>	Misalignment of the assembly coupling.	Check geometric tolerance of flange on electric motor. Check tolerance and geometry of key on motor shaft.	Replace electric motor.



Critical applications

The performance given in the catalogue correspond to mounting position B3 or similar, ie. when the first stage is not entirely immersed in oil. For other mounting positions and/or particular input speeds, refer to the tables below that highlight different critical situations for each size of reduction unit.

It is also necessary to take due consideration of and carefully assess the following applications by calling our Technical Service.

- As a speed increasing.
- Use in services that could be hazardous for people if the reduction unit fails.
- Applications with especially high inertia.
- Use as a lifting winch.
- Applications with high dynamic strain on the case of the reduction unit.
- In places with T° under -5°C or over 40°C.
- Use in chemically aggressive environments.
- Use in a salty environment.
- Mounting positions not envisaged in the catalogue.
- Use in radioactive environment.
- Use in environments with pressures other than atmospheric pressure
- Avoid applications where even partial immersion of the reduction unit is required.

NMRV - MCV	025	030	040	050	063	075	090	105	110	130	150
V5: 1500 < n1 < 3000	-	-	-	-	-	B	B	B	B	B	B
n1 > 3000	B	B	B	B	B	A	A	A	A	A	A
V6	B	B	B	B	B	B	B	B	B	B	B

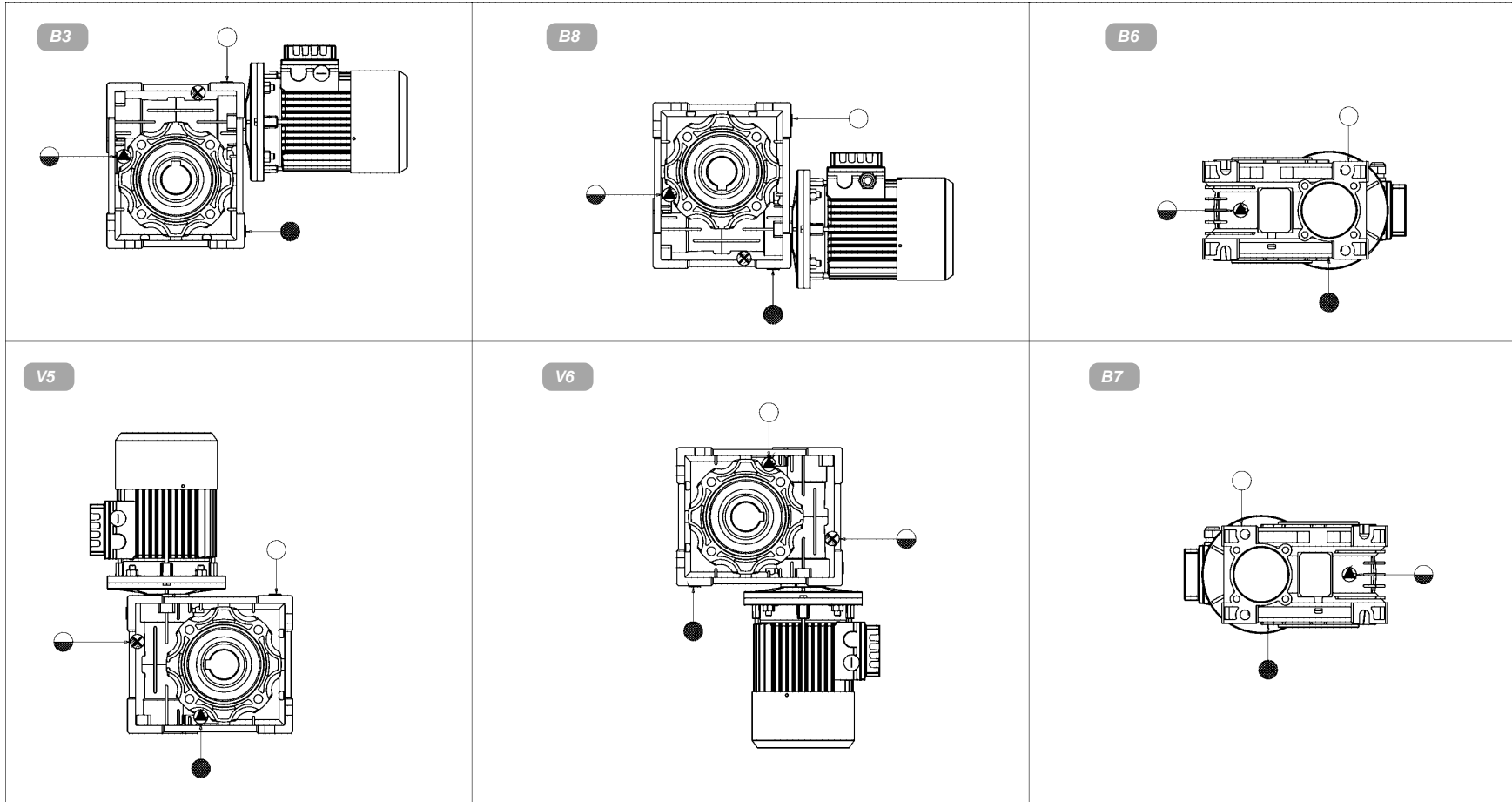
A - Application not recommended

B - Check the application and/or call our technical service



Mounting position

025 ÷ 150



- Oil fill / breather plug
- ◐ Oil level plug
- Oil drain plug



Lubrication

T°C ISO VG...	NMRV 025 ÷ 105 PC 063 ÷ 090	NMRV 110 ÷ 150	
	Synthetic oil	Mineral oil	
	(-25) ÷ (+50) ISO VG320	(-5) ÷ (+40) ISO VG460	(-15) ÷ (+25) ISO VG220
AGIP	TELIUM VSF320	BLASIA 460	BLASIA 220
SHELL	TIVELA OIL SC320	OMALA OIL460	OMALA OIL220
ESSO	S220	SPARTAN EP460	SPARTAN EP220
MOBIL	GLYGOYLE 30	MOBILGEAR 634	MOBILGEAR 630
CASTROL	ALPHASYN PG320	ALPHA MAX 460	ALPHA MAX 220
BP	ENERGOL SG-XP320	ENERGOL GR-XP460	ENERGOL GR-XP220

Lubrication (NMRV - MCV - NRV)

- Size 025 - 030 - 040 - 050 - 063 - 075 - 090 - 105 gear reducers come pre-filled with IP TELIUM VSF, a synthetic gear oil suitable for permanent lubrication. They can be mounted in any position. Only sizes 075 and 090 should not be installed in mounting positions V5 and V6 without prior consultation with our Technical Advise Service to determine optimal lubrication conditions.
- Size 110 and 130 gear reducers come pre-filled with IP MELLANA OIL 220, a mineral based gear oil.
- Always specify mounting position if different from B3 when ordering size 110 and 130 gear reducers.
- Size 110 and 130 gear reducers have oil filler, drain, and level plugs. After installation, replace the closed cap fitted for transport with the breather plug prior to operating the unit.
- The synthetic oil used by MOTOVARIO can operate in all ambient temperatures between -25°C and +50°C.

NMRV	025	030	040	050	063	075	090	105	110	130	150
B3									3	4,5	7
B8									2,2	3,3	5,1
B6-B7	0,02	0,04	0,08	0,15	0,3	0,55	1	1,6	2,5	3,5	5,4
V5									3	4,5	7
V6									2,2	3,3	5,1

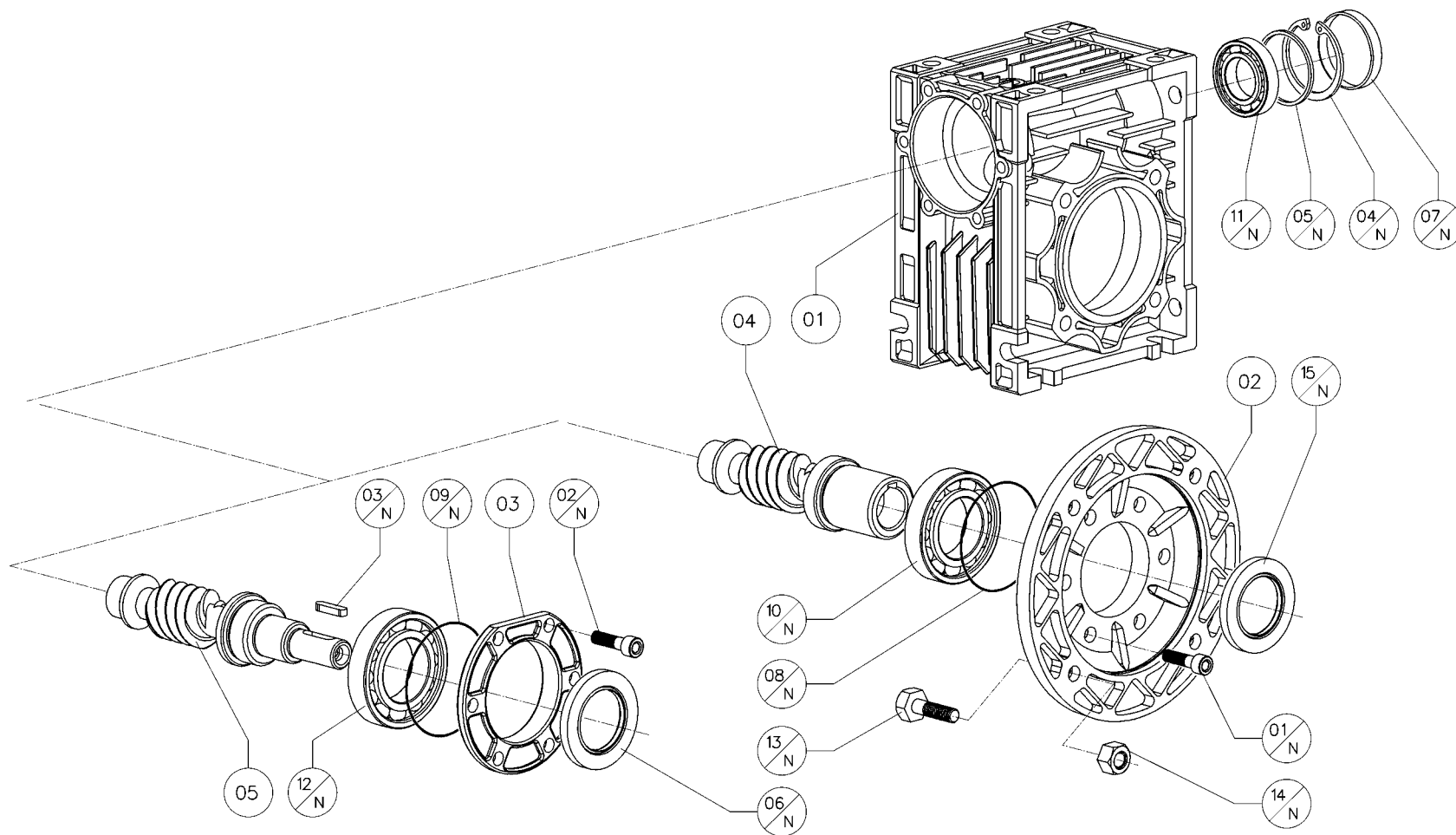
Quantity of oil in litres.

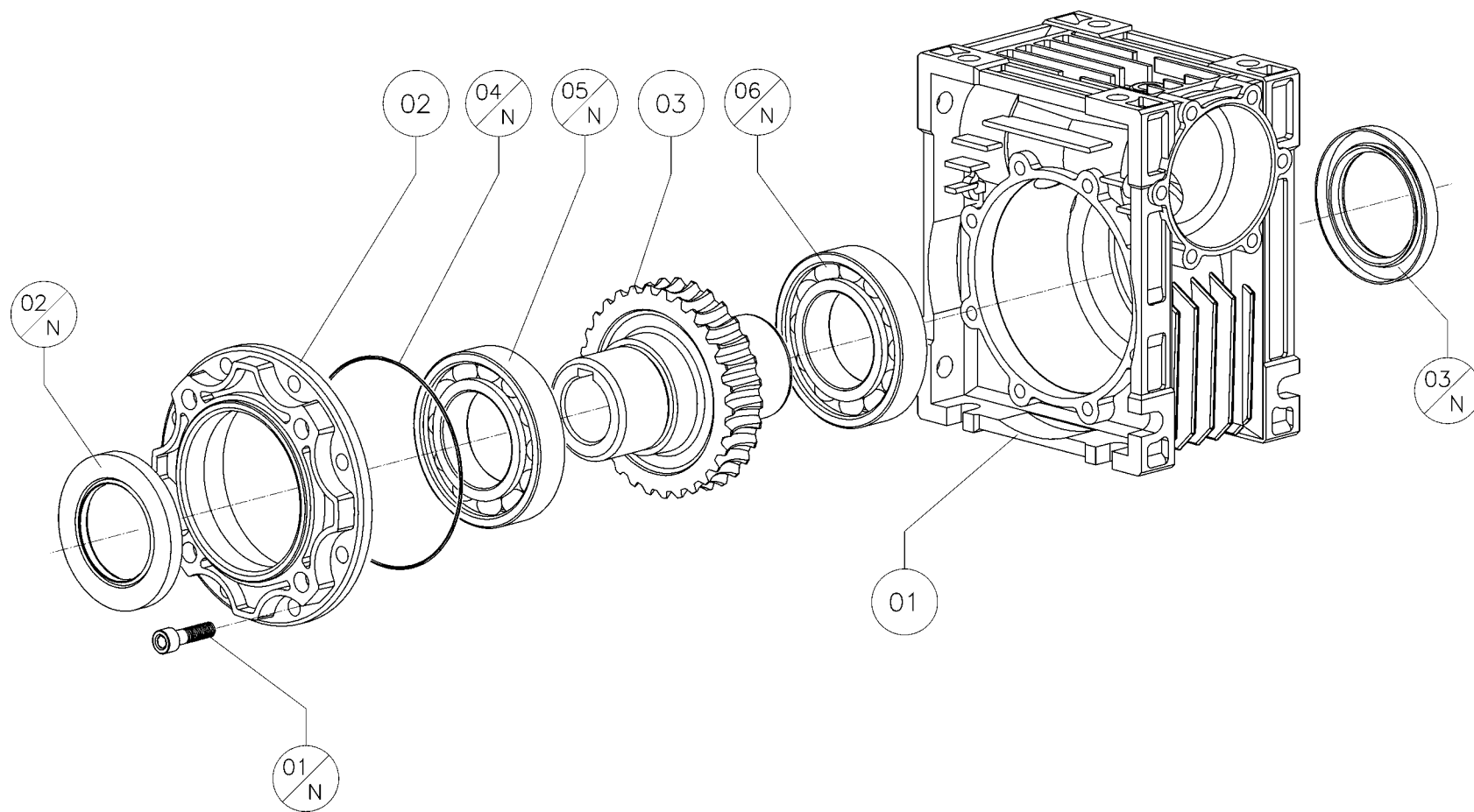
Lubrication (PC)

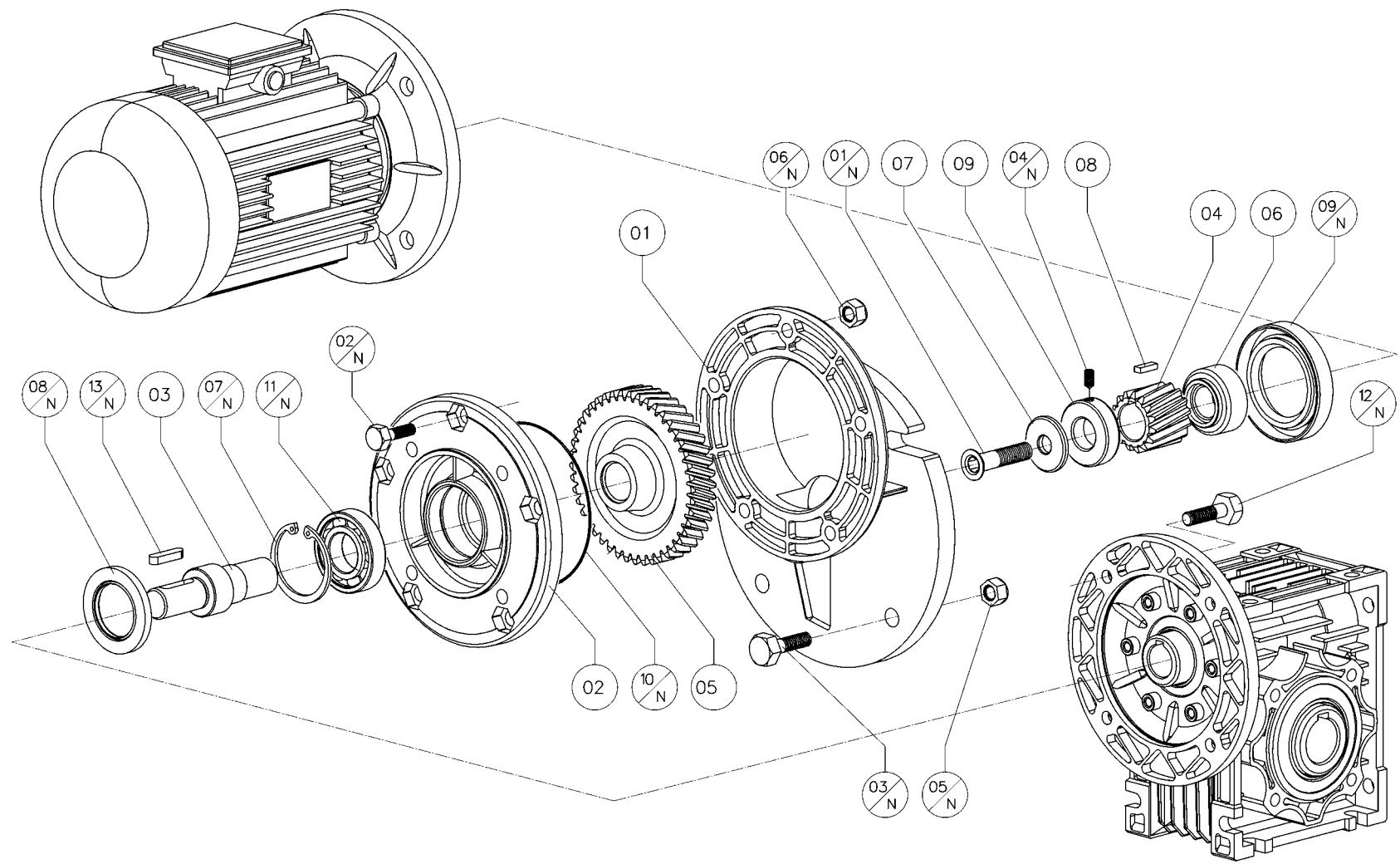
- The pre-stage helical modules are supplied complete with life-long lubricant, synthetic oil, AGIP TELIUM VSF, and can therefore be mounted in all of the positions.
- Lubrication is separate from that of the worm reduction unit.
- The synthetic lubricant adopted by Motovario can be used in places with temperatures from -25°C to + 50°C.

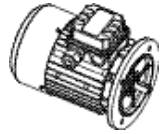
PC	063	071	080	090
B3 - B8				
B6 - B7	0,05	0,07	0,15	0,16
V5 - V6				

Quantity of oil in litres.









Connections

Terminal Board and Direction of Rotation

The connections on the terminal board and the direction of rotation conform to the requirements of the standard IEC34-8.

The direction of rotation is defined by observing the motor from the driven shaft side, not the fan side. The standard direction of rotation is clockwise. All standard motors are suitable for operation in both directions of rotation.

Connection diagrams are supplied inside the terminal board cover.

Three-phase asynchronous motors can operate counter-clockwise (opposite the standard direction) by switching the position of any two power supply leads. The motor warranty is immediately voided if the internal connections of the motor windings to the terminals on the terminal board are altered or changed in any way by the customer.

If the motor is designed for just one direction of rotation (see Backstop Device), this working direction is shown with an arrow on the fan cover.

Connections – Series T

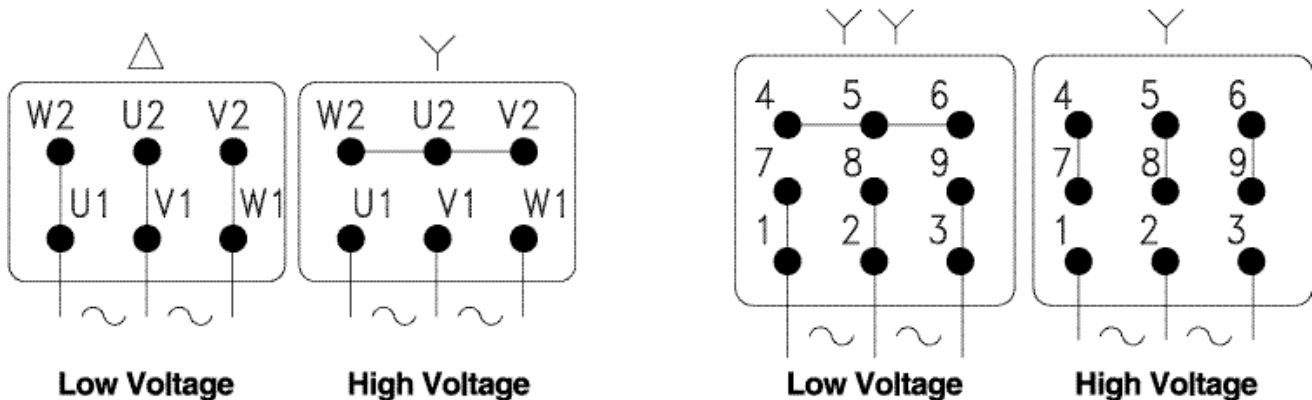
The technical data tables of this publication refer to standard three-phase asynchronous motors insulated in class F and in continuous service S1, supplied at the nominal voltage of 266/460V and nominal frequency 60Hz. The admitted tolerance for the voltage is $\pm 10\%$ in accordance with the publication IEC38.

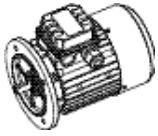
Connection diagrams are supplied inside the terminal board cover.

Conventional clockwise rotation is obtained by supplying power to the terminals U1-V1-W1. Counter-clockwise rotation is obtained by switching the position of any two power supply leads.

Special voltages are available by request (ex. motors 400/690V/50Hz for Δ /Y connections) and/or YY/Y with 9 leads (ex. 208-230/460V/60Hz for US market).

When starting the motor through the standard Δ /Y connection, please verify that the amount of torque needed to start the load is less than the starting torque value, typically about 1/3 of the nominal torque. If the starting torque value is less than the value needed to move the load, the motor will stall. In this instance, please use a higher power motor to ensure smooth operation of the application.





Brake Motors

Brake type MS

Operation

The MS brake is an AC electromagnetic, spring loaded brake that actuates when the power supply is off. When the brake is energized, the electromagnet releases pressure applied to the brake pads, allowing the motor to turn.

Power Supply

The brake is powered with 230/400V \pm 10% Vac 50Hz, 230/460 \pm 10% Vac 60Hz. Special voltages can be supplied by request. Power supply for TB-MS brake motor series can be internally connected to the motor power supply or independently supplied through a separate terminal board. Internally connected power to the brake is supplied as standard. Please specify when ordering if the power supply needs to be independent.

Independent brake power supply for motor sizes 63, 71 and 80 requires an oversize terminal box (please refer to dimension pages).

Specifications:

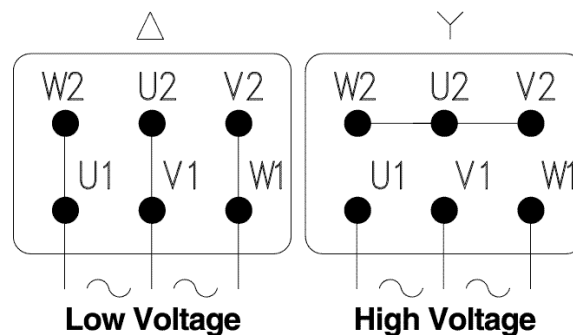
- Supply voltage 230/400V \pm 10% 50Hz, 230/460 \pm 10% Vac 60Hz
- Service S1, insulation class F
- Silent friction pads, with no asbestos, with double braking surface
- Steel brake disk attached with splined driving hub
- Steel driving hub with vibration-damping system
- Fixed braking torque in relation to the nominal motor torque (see M_B in the motor performance)

By Request:

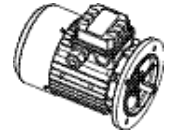
- Manual release lever with automatic return and removable hand lever. Useful for manual operation in case of voltage drop, power failure or during installation. Hand lever is parallel to the terminal box cover. Lever can be supplied in different positions depending on the application and by request. A small block can be supplied to keep the lever in release position during operation.
- Protection kit (cover + O-ring) can be supplied to prevent contamination from the surrounding environment and dust produced by friction pad wear.
- Drive shaft extension manufactured with hexagonal hole set (opposite of driven side) for manual rotation through right hexagonal key (6mm key IEC 63-90, 8mm IEC 100-112, 10mm key IEC 132, 12mm key IEC 160).
- Inox steel ring between motor shield and brake disk with anti-corrosion brake protection and treatments. For harsh environment applications (i.e. outdoor installations).
- Braking torque adjustable from 35% to 100% of M_{Bmax} through adjusting screws set into the brake body.
- Micro-switch to verify brake release and block.

Connections

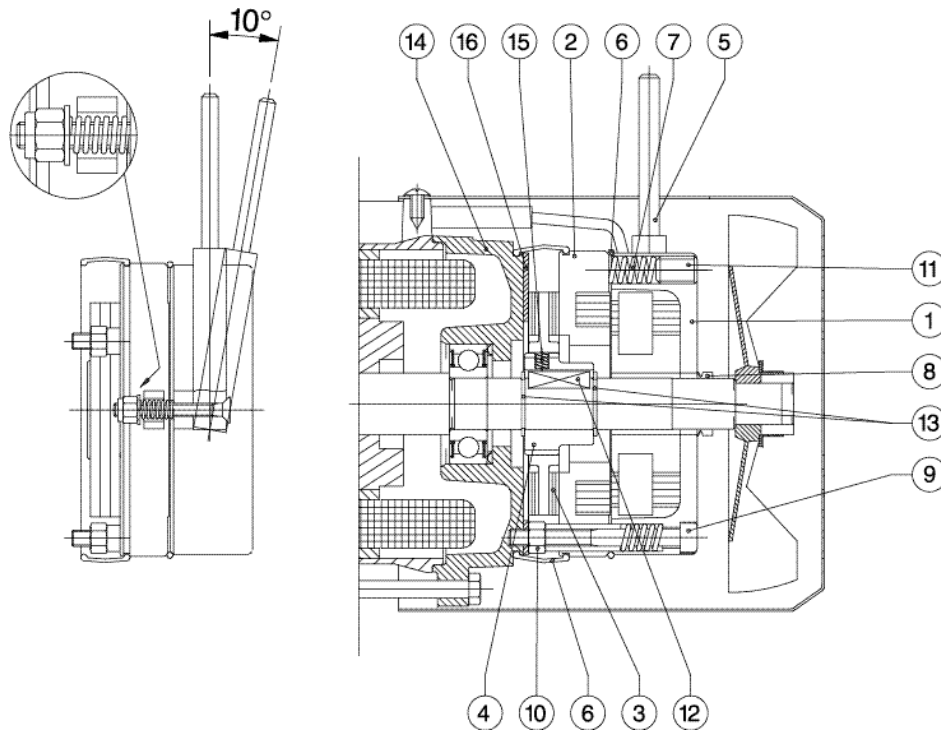
Alternate current brake



1. When the MS brake is directly connected to the motor power supply, supply cables of the brake are in parallel with those of the motor and set in the same terminal board. The brake coil is automatically energized and the brake is released when power is supplied to the motor.
When power to the motor is interrupted, the brake coil is automatically de-energized and the brake is set. During this phase, the braking response time t_2 must be added to delay R , generated by the inertia of the load and by the energy accumulated by the motor. R changes in every motor size. The value of R depends on the load characteristics and cannot be calculated prior to determining the application parameters.
2. When the MS brake has an independent power supply, power is supplied through a separate terminal board. Brake release time t_1 and brake response time t_2 depend only on the brake characteristics.
3. Please contact Motovario for standard t_1 and t_2 values.



Brake Motors



- | | | |
|----------------------------------|--------------------------------------------------------|---------------------------------------|
| 1. MAGNET BODY | 7. THRUST SPRINGS | 12. KEY |
| 2. MOBILE COIL | 8. V-RING (BY REQUEST- COMBINED WITH PROTECTION COVER) | 13. CIRCLIP |
| 3. BRAKE PADS | 9. FIXING SCREWS | 14. CAST IRON END SHIELD |
| 4. DRIVING HUB | 10. LOCKING NUTS | 15. VIBRATION DAMPING SPRING |
| 5. RELEASE LEVER (BY REQUEST) | 11. ADJUSTING SCREWS FOR BRAKING TORQUE (BY REQUEST) | 16. STAINLESS STEEL DISK (BY REQUEST) |
| 6. PROTECTION COVER (BY REQUEST) | | |

2. MAIN SPECIFICATIONS

2.1 Specifications

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

Table 2-1 Specifications

Item		Detail	
Trolley Gage		6 ft (Standard-Options available)	
Trolley Speed	3 Ton	80 ft/min, vfd	
	5 Ton	80 ft/min, vfd	
	7.5 Ton	80 ft/min, vfd	
	10 Ton	80 ft/min, vfd	
Hoist Speed	3 Ton	22 ft/min, vfd	
	5 Ton	19 ft/min, vfd	
	7.5 Ton	16 ft/min, vfd	
	10 Ton	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	
	WLL (working load limit)	Nominal diameter (mm)	
	107219-0135	3 MT (6600 lbs) – 30 ft Lift	10 mm, Compact 6, Super 220, 135' Length
Wire Rope	107219-0135	5 MT (11000 lbs) – 30 ft Lift	10 mm, Compact 6, Super 220, 135' Length
	201238-0135	7.5 MT (16500 lbs) – 30 ft Lift	12 mm, 35X7, Compact, 135' Length
	201699-0151	10 MT (22000 lbs) – 30 ft Lift	9/16", Compact 6, Super 220G, 151' Length
	201699-0190	10 MT (22000 lbs) – 40 ft Lift	9/16", Compact 6, Super 220G, 190' Length

- 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.

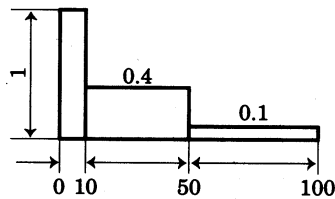
ACE electric wire rope hoists have been designed according to FEM regulations (FEM 9.511).

Details are provided in Table 2-2.

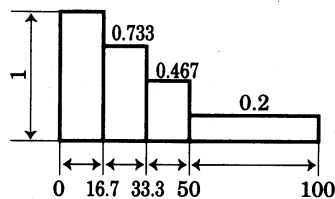
Average daily operating time and total operating time are determined by load distribution.

Table 2-2 Mechanical classification

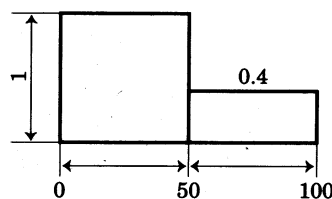
Load Spectrum (Load distribution)	Definitions	Cubic mean value	Average daily operating time (h)	Total operating time (h)
1 (light)	Mechanisms or parts thereof, usually subject to very small loads and in exceptional cases only to maximum loads.	$k \leq 0.50$	4-8	12500
2 (medium)	Mechanisms or parts thereof, usually subject to small loads but rather often to maximum loads.	$0.50 < k \leq 0.63$	2-4	6300
3 (heavy)	Mechanisms or parts thereof, usually subject to medium loads but frequently to maximum loads.	$0.63 < k \leq 0.80$	1-2	3200
4 (very heavy)	Mechanisms or parts thereof, usually subject to maximum or almost maximum loads.	$0.80 < k \leq 1.00$	0.5-1	1600



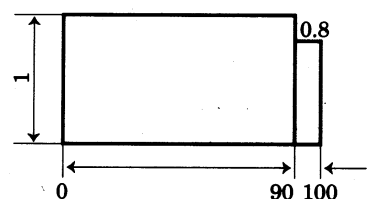
% operating time
Load spectrum 1



% 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. (Illustration 1)

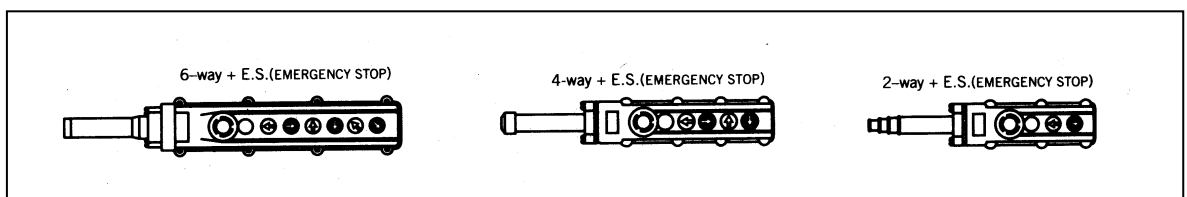


Illustration 1

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 (Illustration 2) and that a safety latch has been fitted.

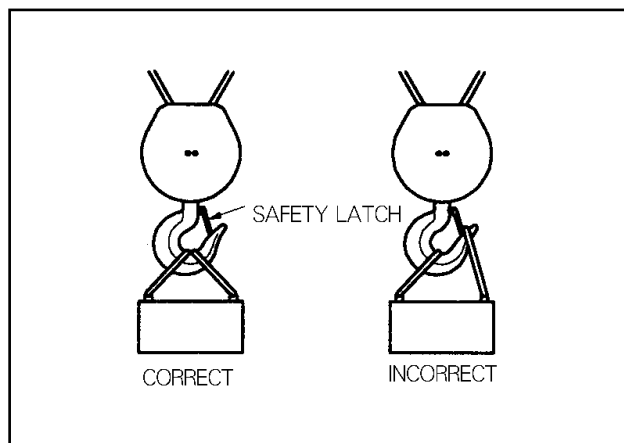


Illustration 2

(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; 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 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 Side load, back load, or tip load a hook. (Illustration 3)
- (10) Never wrap around and hook back the wire rope as a sling to lift a load. (Illustration 4)

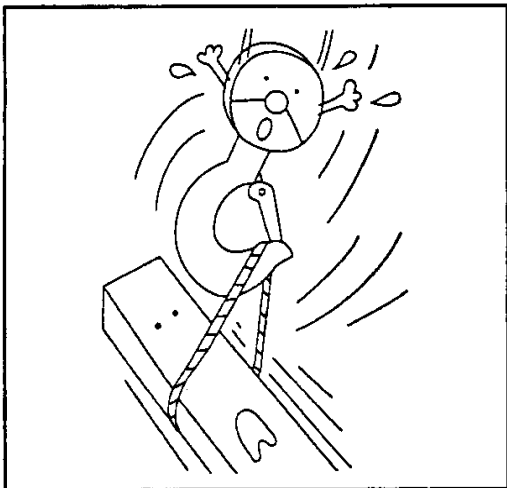


Illustration 3

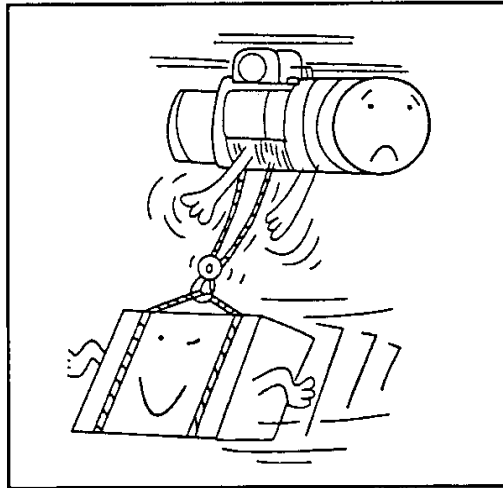



Illustration 4

(11)



WARNING

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

(12)

DANGER
Never stand under a raised load (Illustration 5)

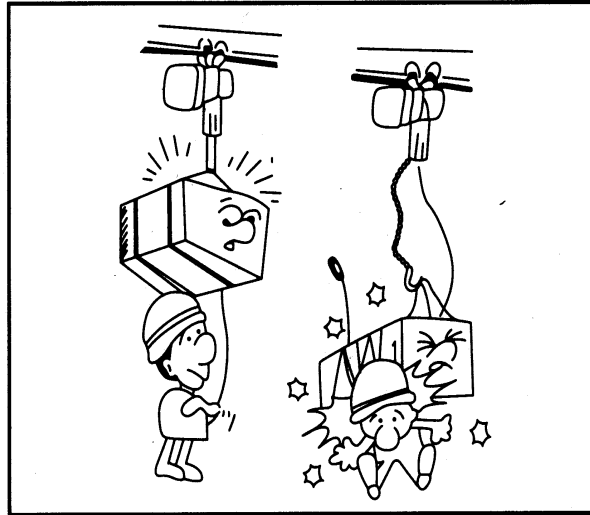


Illustration 5

- (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



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.

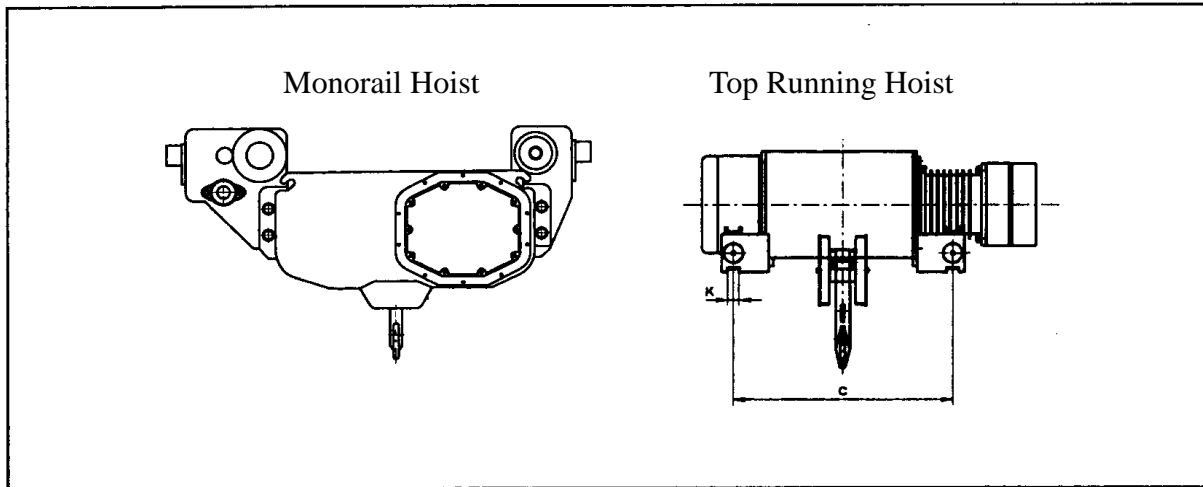
4.3 Installation



WARNING

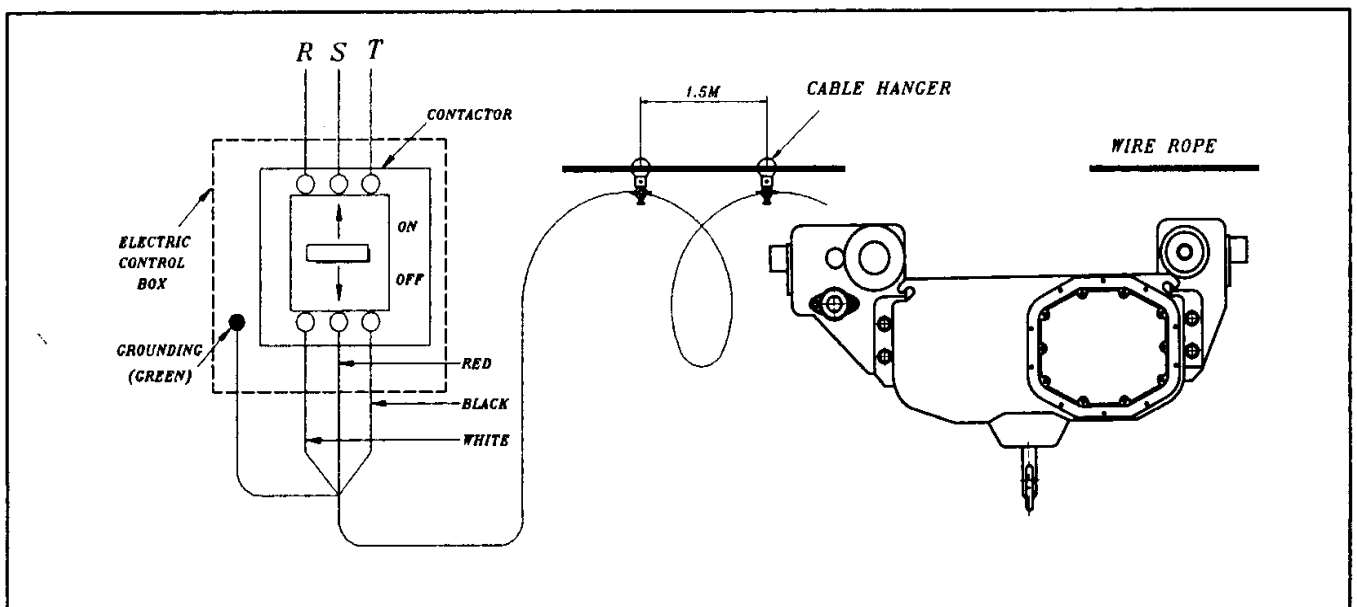
Connection to power supply before installation procedures having been completed is strictly prohibited.

- (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

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 careful 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 gearbox lubricant after first 500 hours of operation, thereafter every 3 months and lubricate 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



WARNING

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

(a) Wire rope:

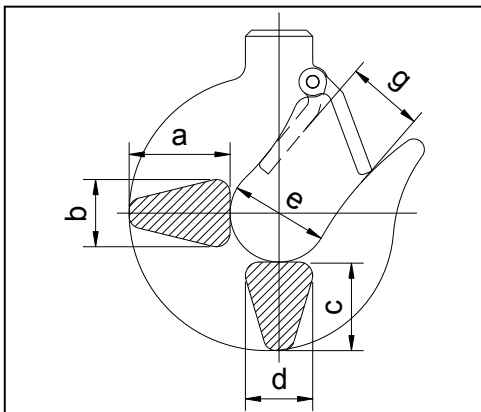
- a-1: Any single strain of wire breaking. Breaking of strains more than 10% should replace new wire rope.
- a-2: Any distorted, deform , itching and rusty of wire rope.
- a- 3: Wire rope fixing fasteners being deforming of loosing.



Rope Dia. (m/m)d	Model Being Used	Construction	Specified Breaking Load(lb)
§ 10	ADVANTAGE-3D ADVANTAGE-5D	19x7 (195kg/mm ²)	15580
§ 12	ADVANTAGE-7D		22436
§ 14	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)



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
10	100	67	95	62	100	65	7000

(c) Limit Switches


WARNING

A qualified electrician should perform this inspection.

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

(3) Annual inspection


WARNING

A qualified technician should perform this inspection.

(a) Check gearing for any excessive wear or damage.

(b) Replace gearbox lubricant completely.

Oil volume of gearbox

Ton	3	5	7.5	10
Gear Box NO.	UC	UD	UEA	UFA
U.S. gal	2.64	2.64	6.6	6.6
Liter	10	10	25	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 40°C mm ² /s(cST)	Approximate viscosity of the VG Categories 50°C mm ² /s(cST)	ARAL	BP	ESSO	MOBIL OIL
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 ² /s(cST)	Approximate viscosity of the VG Categories 50°C mm ² /s(cST)	SHELL	TEXACO	I.P.	AGIP
VG460	251	Omala oil 460	Meropa 460	Mellana 460	Blasia 460

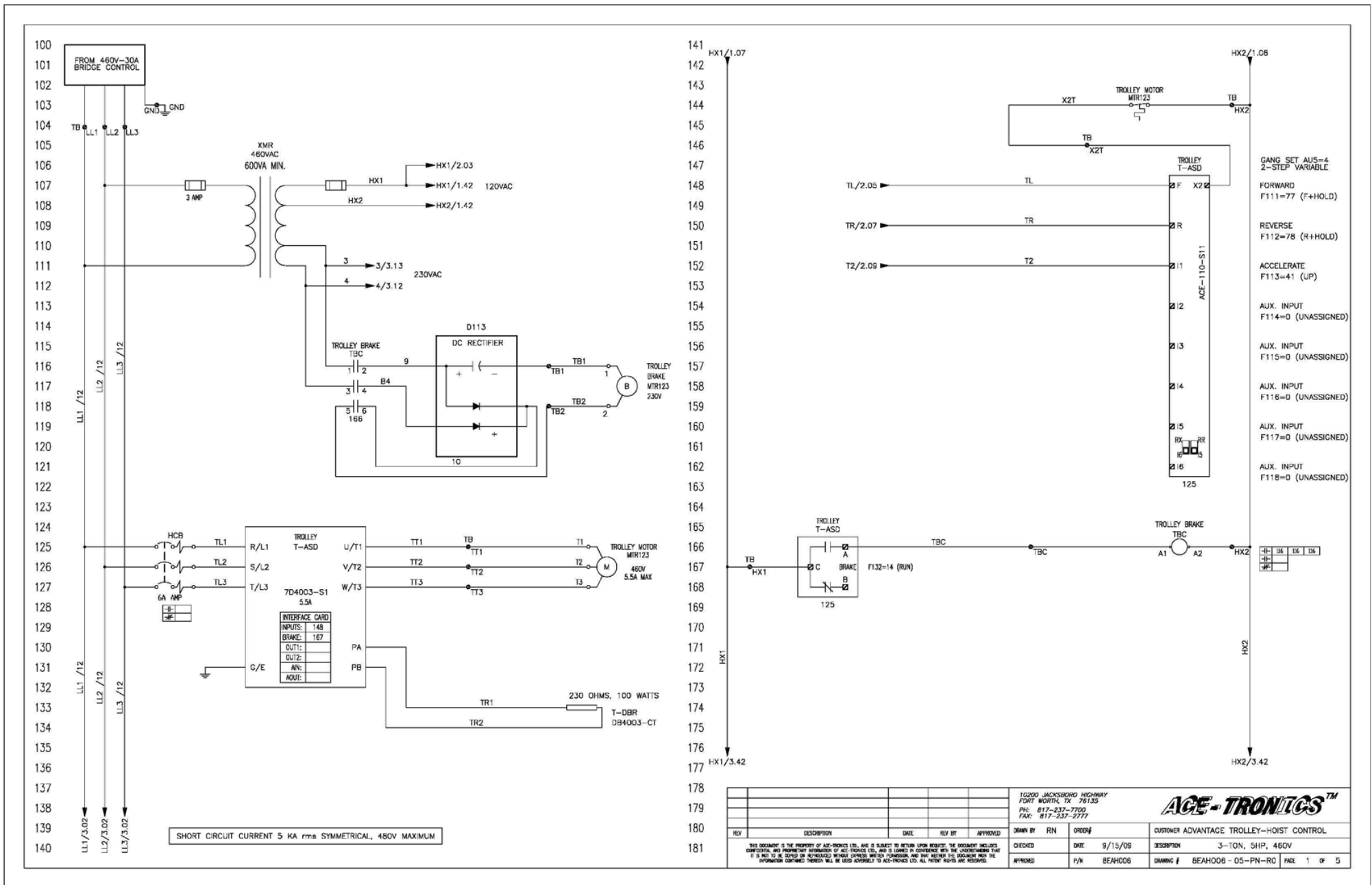
(c) Check brake lining and ratchet pawl for emergency braking any wear or damage.

(d) Check operation of pawl spring.

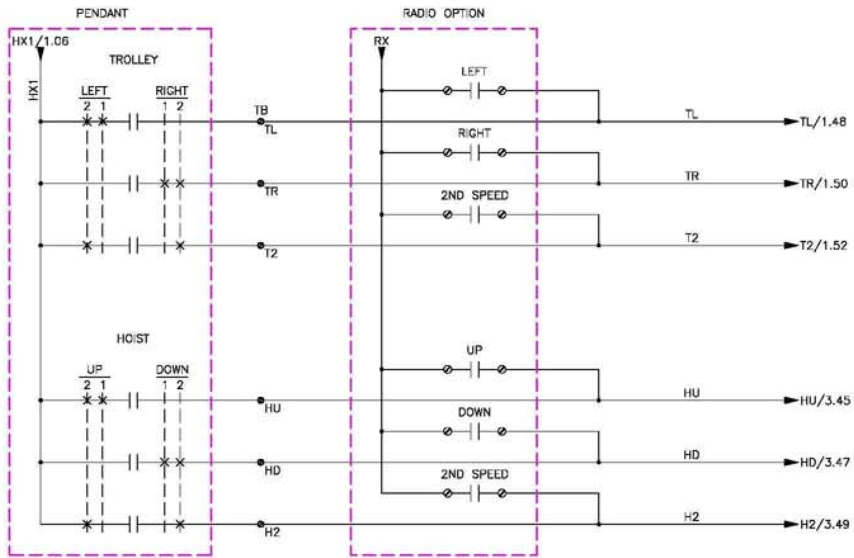
(e) After reassembly of above check, lifting a load several times to ensure good performance of the hoist before starting duty operation.

7. TROUBLESHOOTING

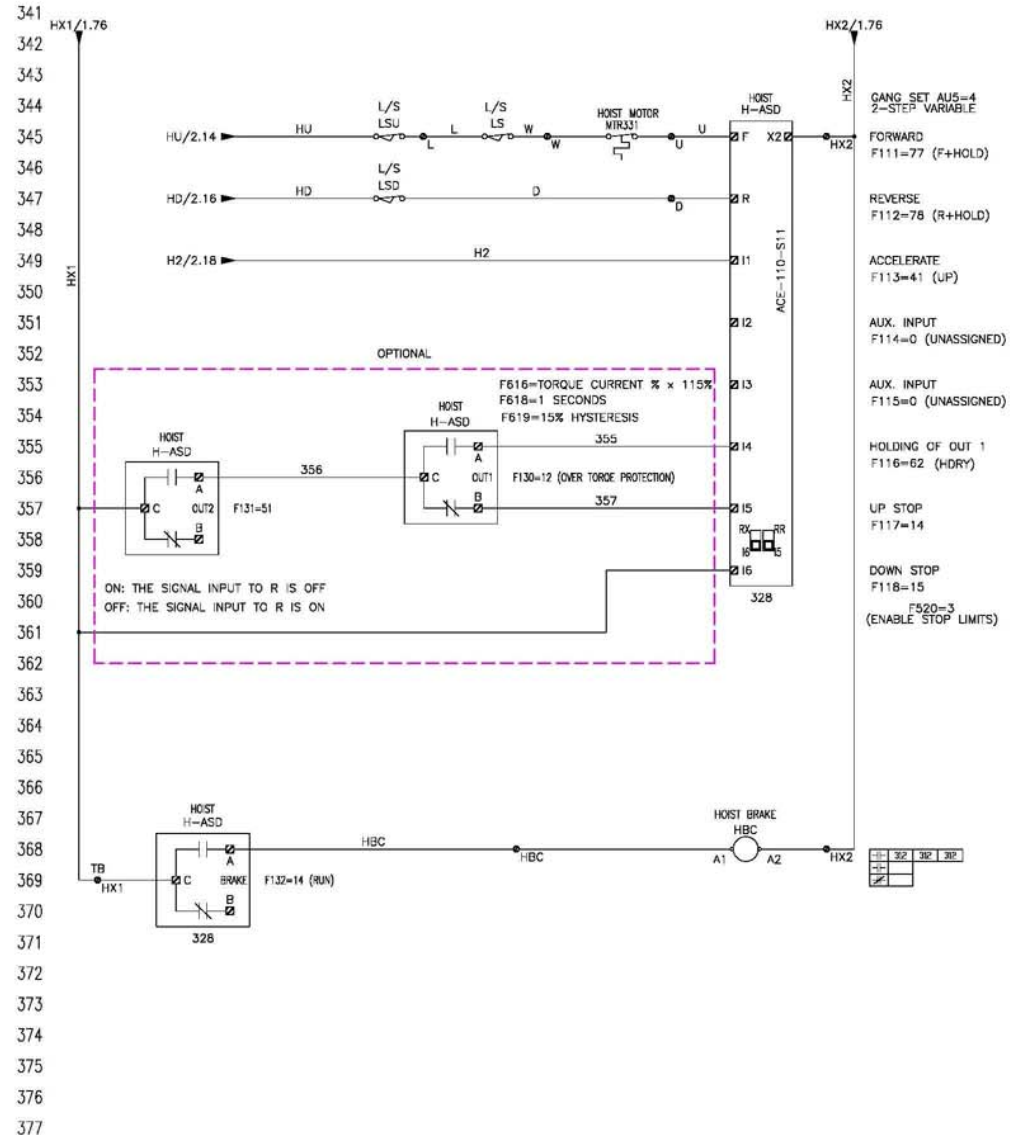
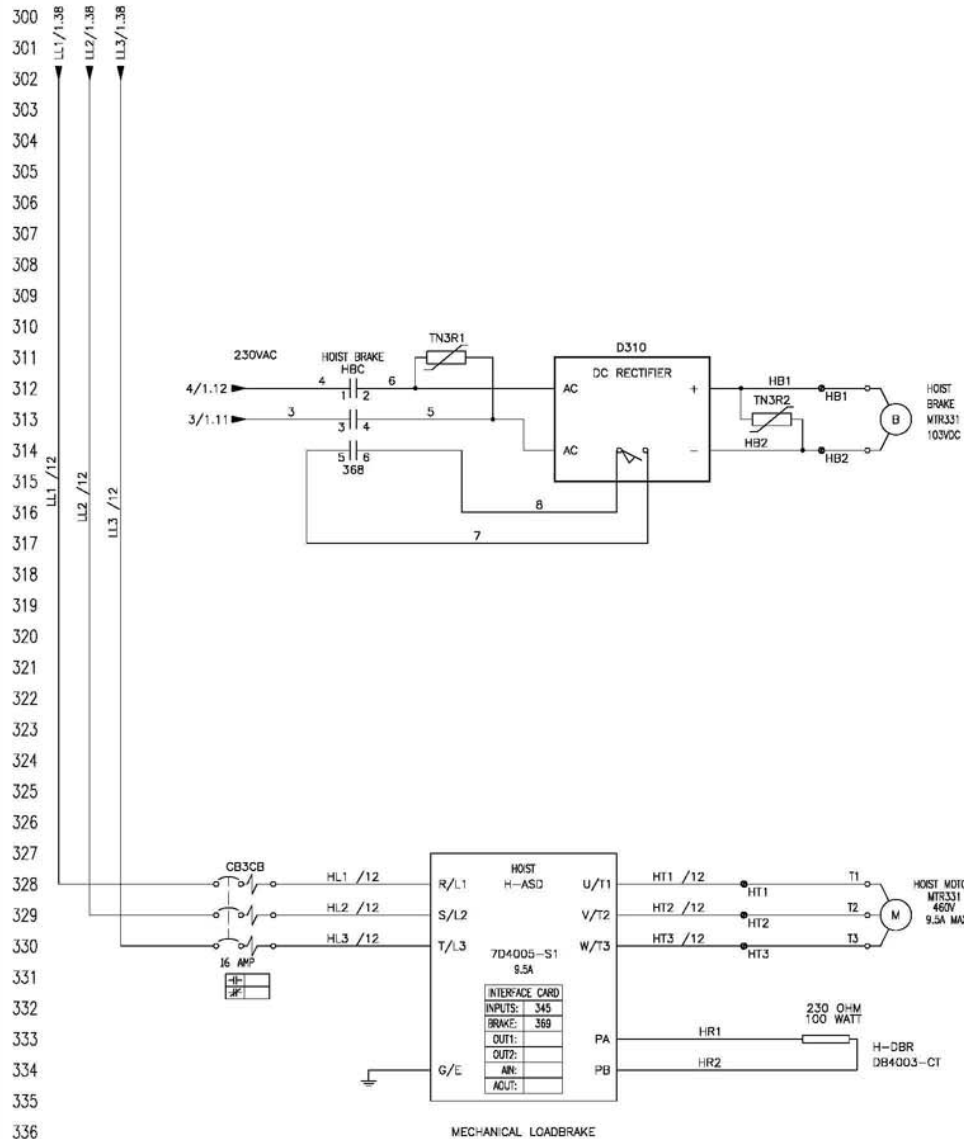
7.1 Wiring



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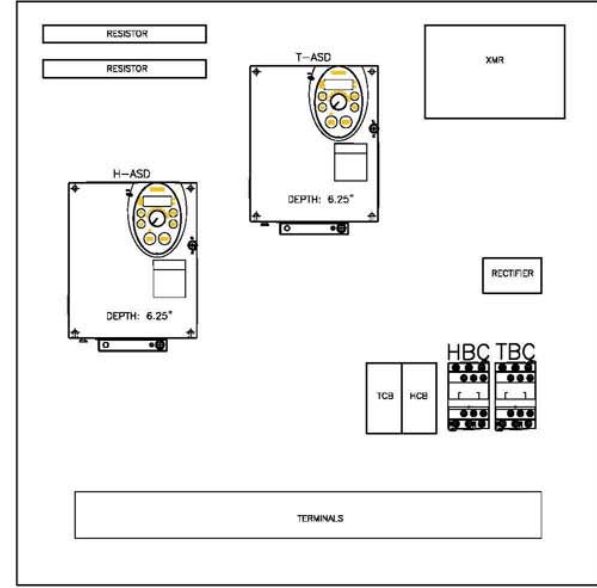


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REV	DESCRIPTION	DATE	REV BY	APPROVED	DRAWN BY	RN	ORDER#	CUSTOMER ADVANTAGE TROLLEY-HOIST CONTROL	
					CHECKED		DATE: 9/15/06	DESCRIPTION: 3-TON, 5HP, 460V	
					APPROVED	P/N	BEAH006	DRAWING #	BEAH006-05-PN-RC PAGE 2 OF 5

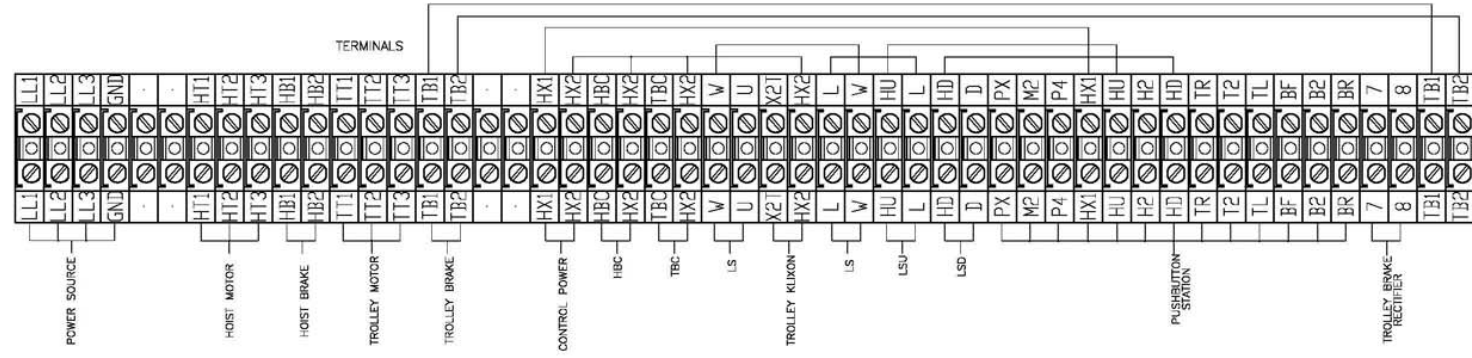


						10200 JACKSBORO HIGHWAY FORT WORTH, TX 76135 PH: 817-237-7700 FAX: 817-237-2777		ACE-TRONICS™	
						CUSTOMER ADVANTAGE TROLLEY-HOIST CONTROL		3-TON, 5HP, 460V	
REV	DESCRIPTION	DATE	REV BY	APPROVED	DRN BY	RN	ORDN	DRAWING # BEAH006 - 05-PN-RCL 3 OF 5	
					DATE	9/15/06			
THIS DOCUMENT IS THE PROPERTY OF ACE-TRONICS LTD. AND IS SUBJECT TO RETURN UPON REQUEST. THE DOCUMENT INCLUDES CONFIDENTIAL AND PROPRIETARY INFORMATION OF ACE-TRONICS LTD. AND IS LOANED IN CONFIDENCE WITH THE UNDERSTANDING THAT IT IS NOT TO BE COPIED OR REPRODUCED WITHOUT EXPRESS WRITTEN PERMISSION AND THAT NEITHER THE DOCUMENT NOR THE INFORMATION CONTAINED THEREIN WILL BE USED ADVERSELY TO ACE-TRONICS LTD. ALL PATENT RIGHTS ARE RESERVED.						APPROVED		P/N BEAH006	

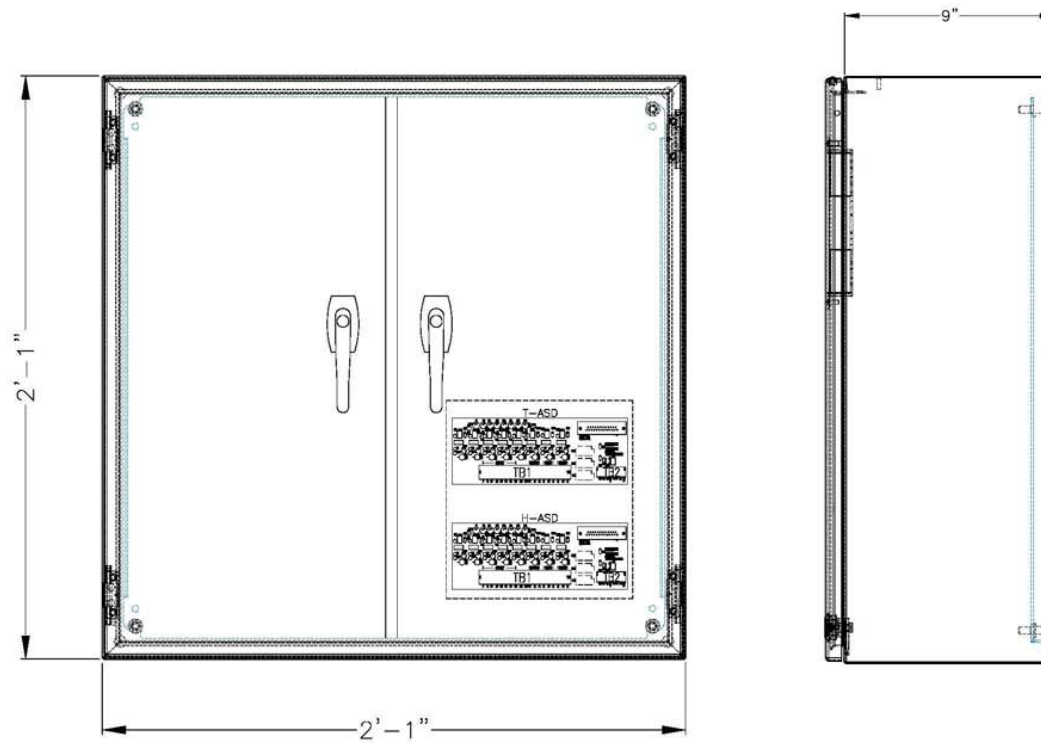
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D113	1	8PC593-00	DC RECTIFIER, (HOIST BRAKE)	1.16
D310	1	8PC144-00	DC RECTIFIER, (TROLLEY BRAKE)	3.11
ENCL	1	8PC008-00	ENCLOSURE, 25"X25"X9"	
H-ASD	1	7D0025-00	120v Interface Card	
H-ASD	1	7D4005-S1	VFD,Ace Ts11,5Hp ,460V,9.5A	3.28
HBC	1	8PC103-00	CONTACTOR, 3POLE, 1NO/1NC AUX.	3.68
HCB	1	8PC009-00	CIRCUIT BREAKER 16A	1.25
H-DBR	1	700874-OP	Resistor,Db4003-CI,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,Db4003-CI, 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



HOIST ENCLOSURE

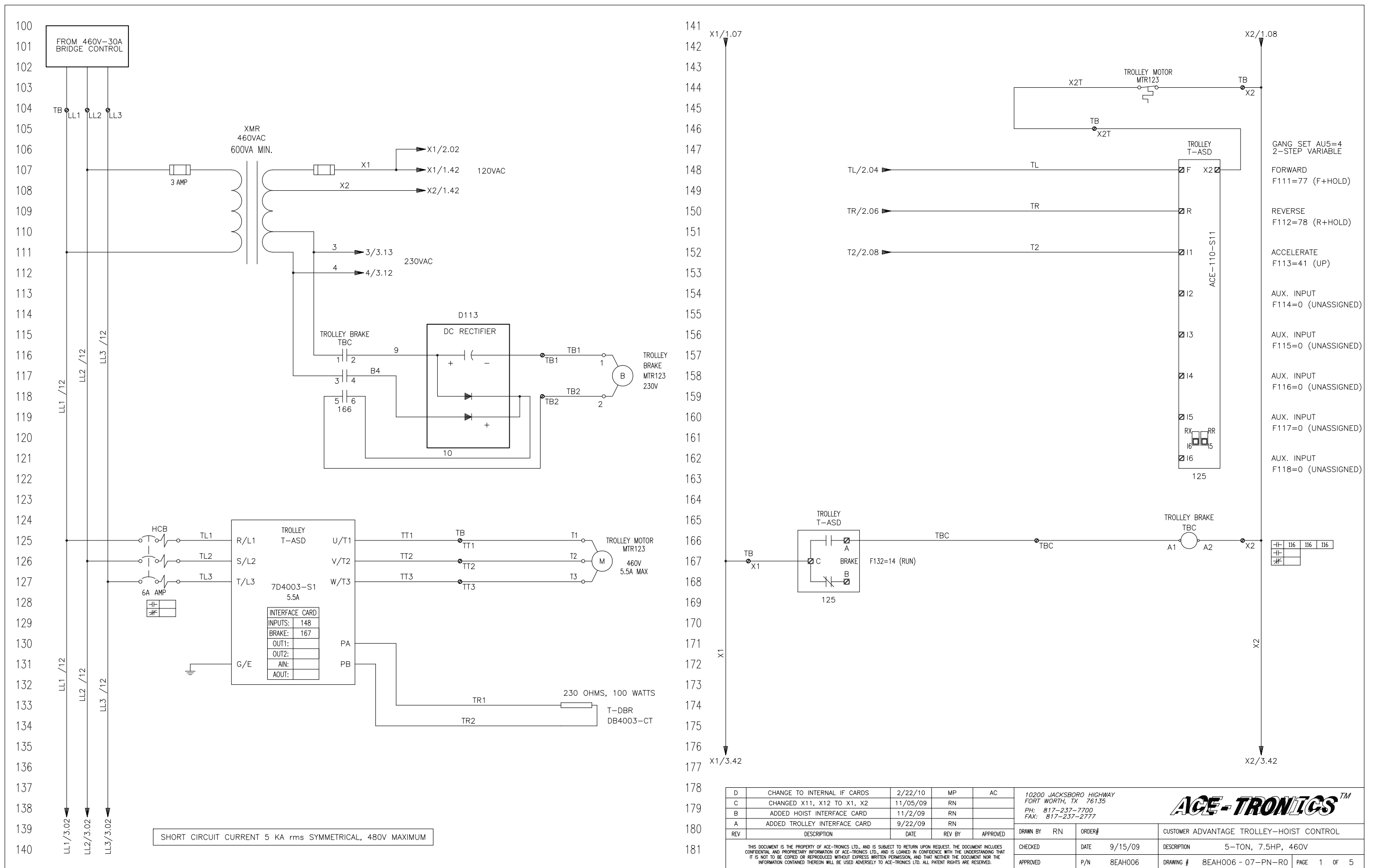


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					CHECKED		DATE 9/15/09	DESCRIPTION 3-TON, 5HP, 460V
					APPROVED	P/N	BEAHO06	DRAWING # BEAHO06 - 05-PN-RC PAGE 4 OF 5



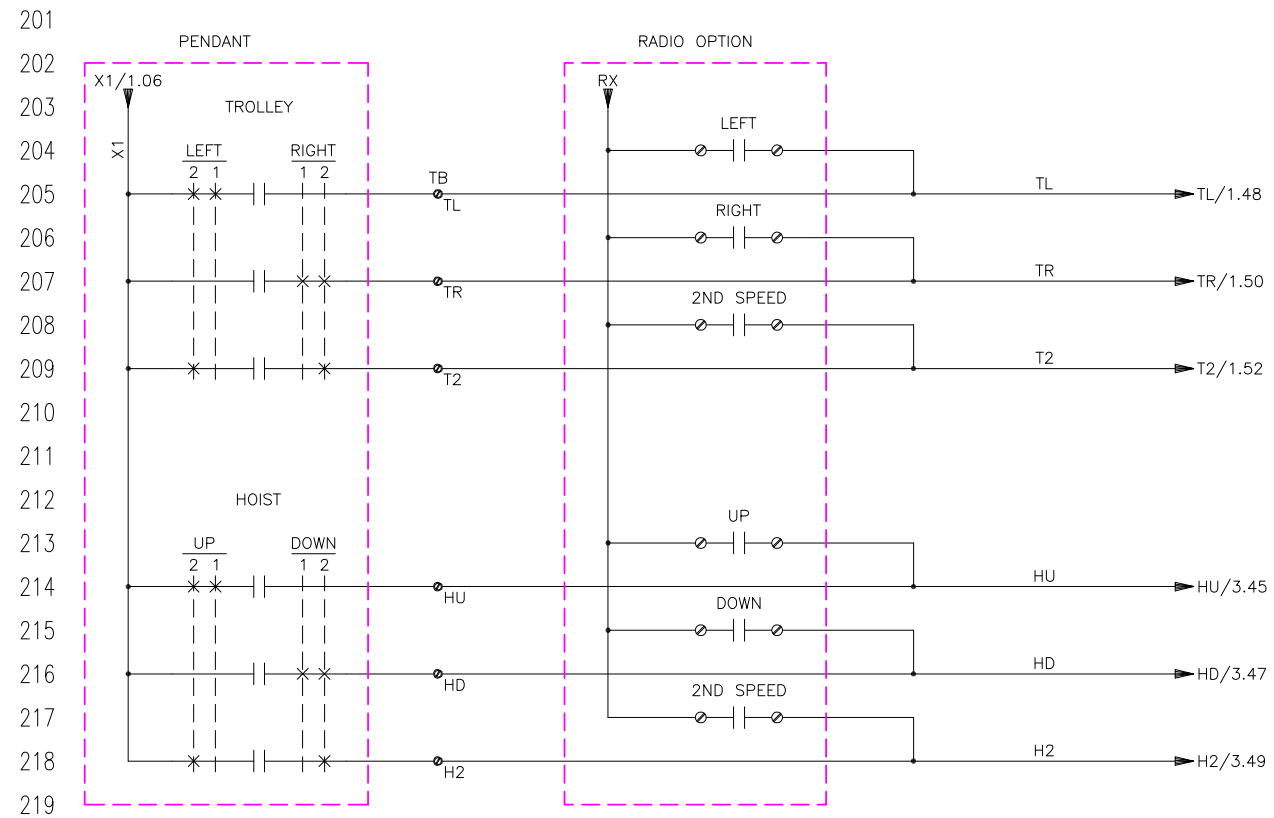
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REV	DESCRIPTION	DATE	REV BY	APPROVED	DRAWN BY	RN	CREEN	CUSTOMER ADVANTAGE TROLLEY-HOIST CONTROL	
<small>THIS DOCUMENT IS THE PROPERTY OF ACE-TRONICS LTD. AND IS SUBJECT TO RETURN UPON REQUEST. THE DOCUMENT INCLUDES CONFIDENTIAL AND PROPRIETARY INFORMATION OF ACE-TRONICS LTD. AND IS LOANED IN CONFORMANCE WITH THE UNDERSTANDING THAT IT IS NOT TO BE COPIED OR REPRODUCED WITHOUT EXPRESS WRITTEN PERMISSION AND THAT RETURN TO THE SOURCE FOR THE INFORMATION CONTAINED THEREIN WILL BE USED SOLELY TO ACE-TRONICS LTD. ALL PATENT RIGHTS ARE RESERVED.</small>					CHECKED	DATE	9/15/09	DESCRIPTION	3-TON, 5HP, 460V
					APPROVED	P/N	BEAHO06	DRAWING #	BEAHO06 - 05-PN-RC
							PAGE 5 OF 5		

7.2 Wiring



REV	DESCRIPTION	DATE	REV BY	APPROVED
D	CHANGE TO INTERNAL IF CARDS	2/22/10	MP	AC
C	CHANGED X11, X12 TO X1, X2	11/05/09	RN	
B	ADDED HOIST INTERFACE CARD	11/2/09	RN	
A	ADDED TROLLEY INTERFACE CARD	9/22/09	RN	

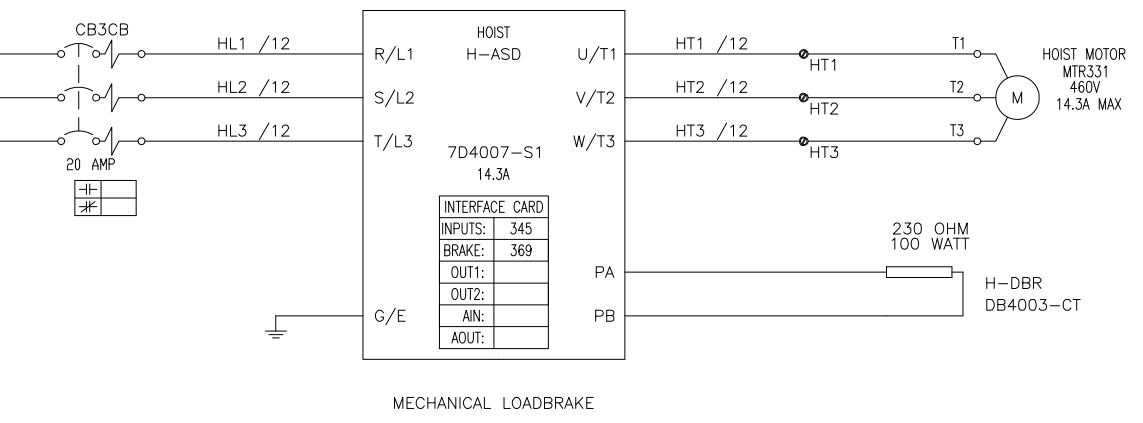
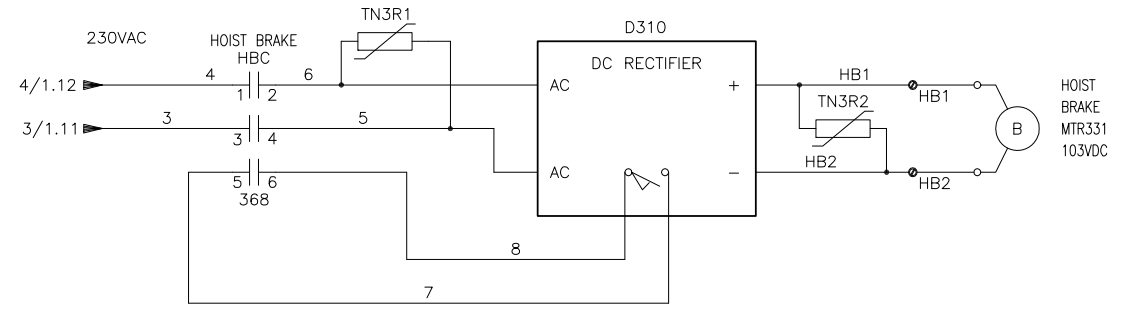
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DRAWN BY	RN	ORDER#	CUSTOMER ADVANTAGE TROLLEY-HOIST CONTROL
CHECKED	DATE	9/15/09	DESCRIPTION
APPROVED	P/N	8EAH006	DRAWING # 8EAH006-07-PN-RO
		PAGE 1 OF 5	



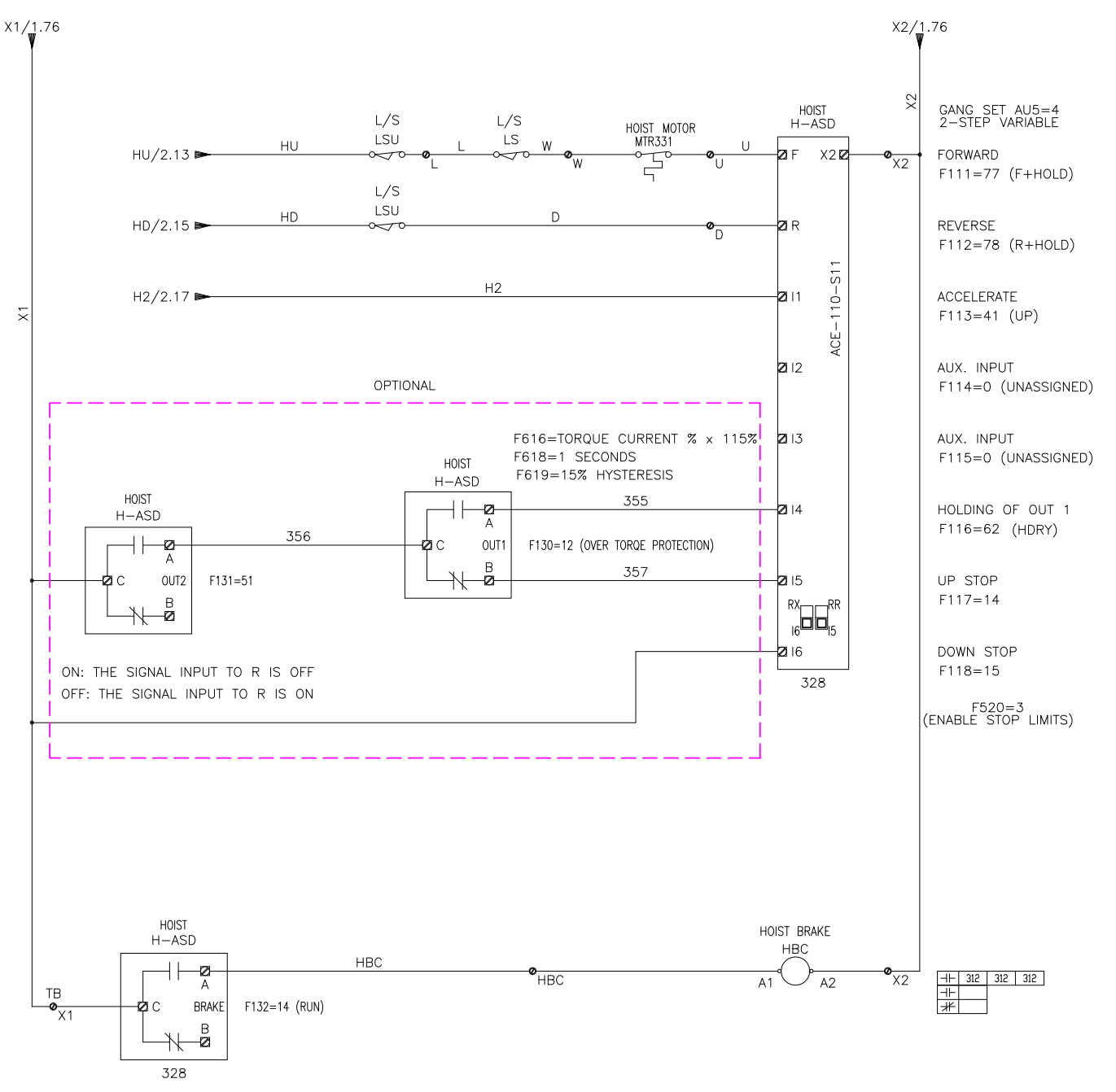
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D	CHANGE TO INTERNAL IF CARDS	2/22/10	MP	AC	10200 JACKSBORO HIGHWAY FORT WORTH, TX 76135 PH: 817-237-7700 FAX: 817-237-2777	ACE-TRONICS™
C	CHANGED X11, X12 TO X1, X2	11/05/09	RN			
B	ADDED HOIST INTERFACE CARD	11/2/09	RN			
A	ADDED TROLLEY INTERFACE CARD	9/22/09	RN			
REV	DESCRIPTION	DATE	REV BY	APPROVED	DRAWN BY RN ORDER# CHECKED DATE 9/15/09 APPROVED P/N 8EAH006	CUSTOMER ADVANTAGE TROLLEY-HOIST CONTROL DESCRIPTION 5-TON, 7.5HP, 460V DRAWING # 8EAH006 - 07-PN-RO PAGE 2 OF 5

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 302 LL3/1.38
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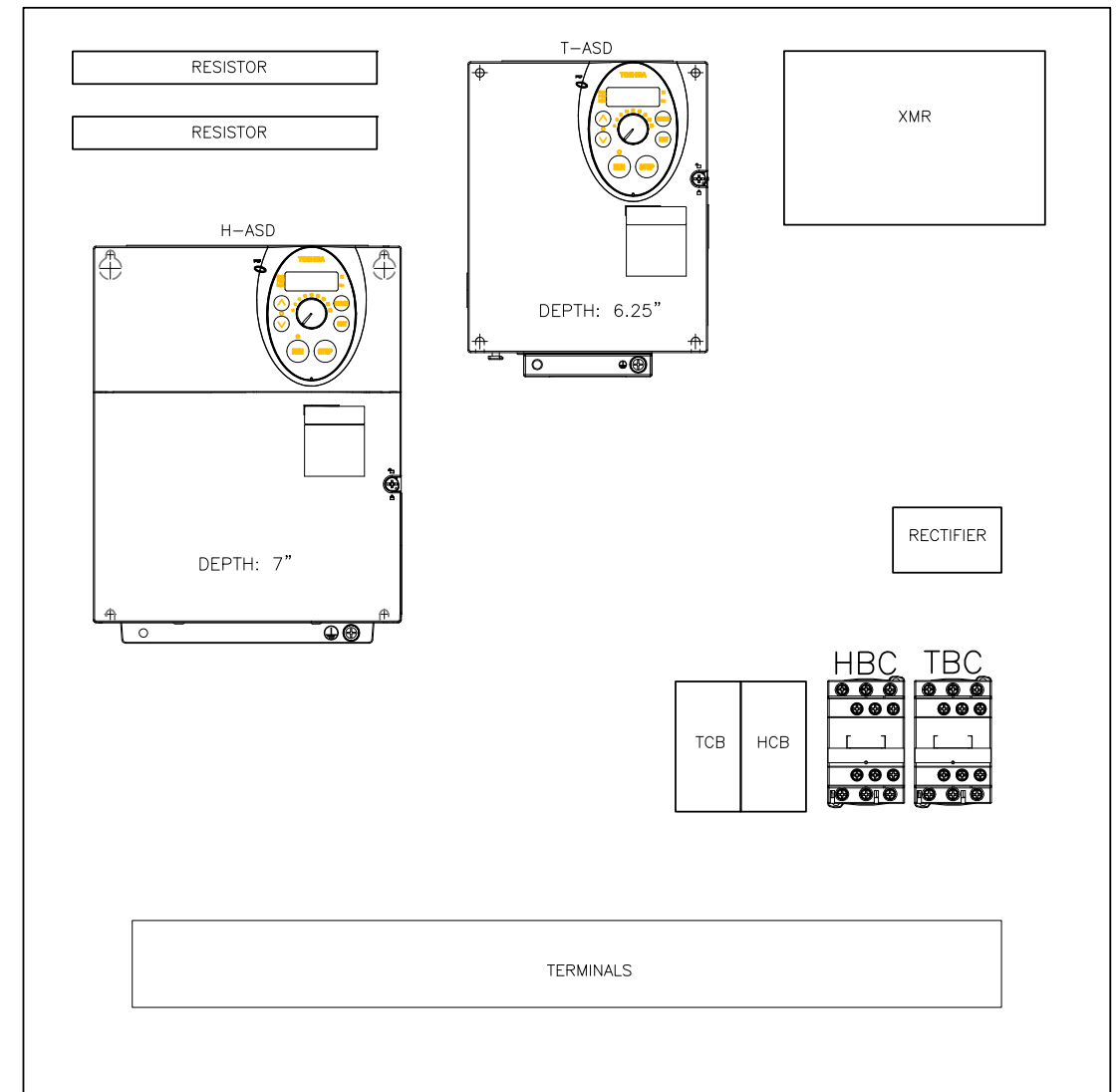


GANG SET AU5=4
 2-STEP VARIABLE
 FORWARD
 F111=77 (F+HOLD)
 REVERSE
 F112=78 (R+HOLD)
 ACCELERATE
 F113=41 (UP)
 AUX. INPUT
 F114=0 (UNASSIGNED)
 AUX. INPUT
 F115=0 (UNASSIGNED)
 HOLDING OF OUT 1
 F116=62 (HDRV)
 UP STOP
 F117=14
 DOWN STOP
 F118=15
 F520=3
 (ENABLE STOP LIMITS)

REV	DESCRIPTION	DATE	REV BY	APPROVED
D	CHANGE TO INTERNAL IF CARDS	2/22/10	MP	AC
C	CHANGED X11, X12 TO X1, X2	11/05/09	RN	
B	ADDED HOIST INTERFACE CARD	11/2/09	RN	
A	ADDED TROLLEY INTERFACE CARD	9/22/09	RN	

10200 JACKSBORO HIGHWAY FORT WORTH, TX 76135 PH: 817-237-7700 FAX: 817-237-2777		ACE-TRONICS™	
DRAWN BY	RN	ORDER#	CUSTOMER ADVANTAGE TROLLEY-HOIST CONTROL
CHECKED	DATE	9/15/09	DESCRIPTION 5-TON, 7.5HP, 460V
APPROVED	P/N	8EAH006	DRAWING # 8EAH006-07-PN-RO PAGE 3 OF 5

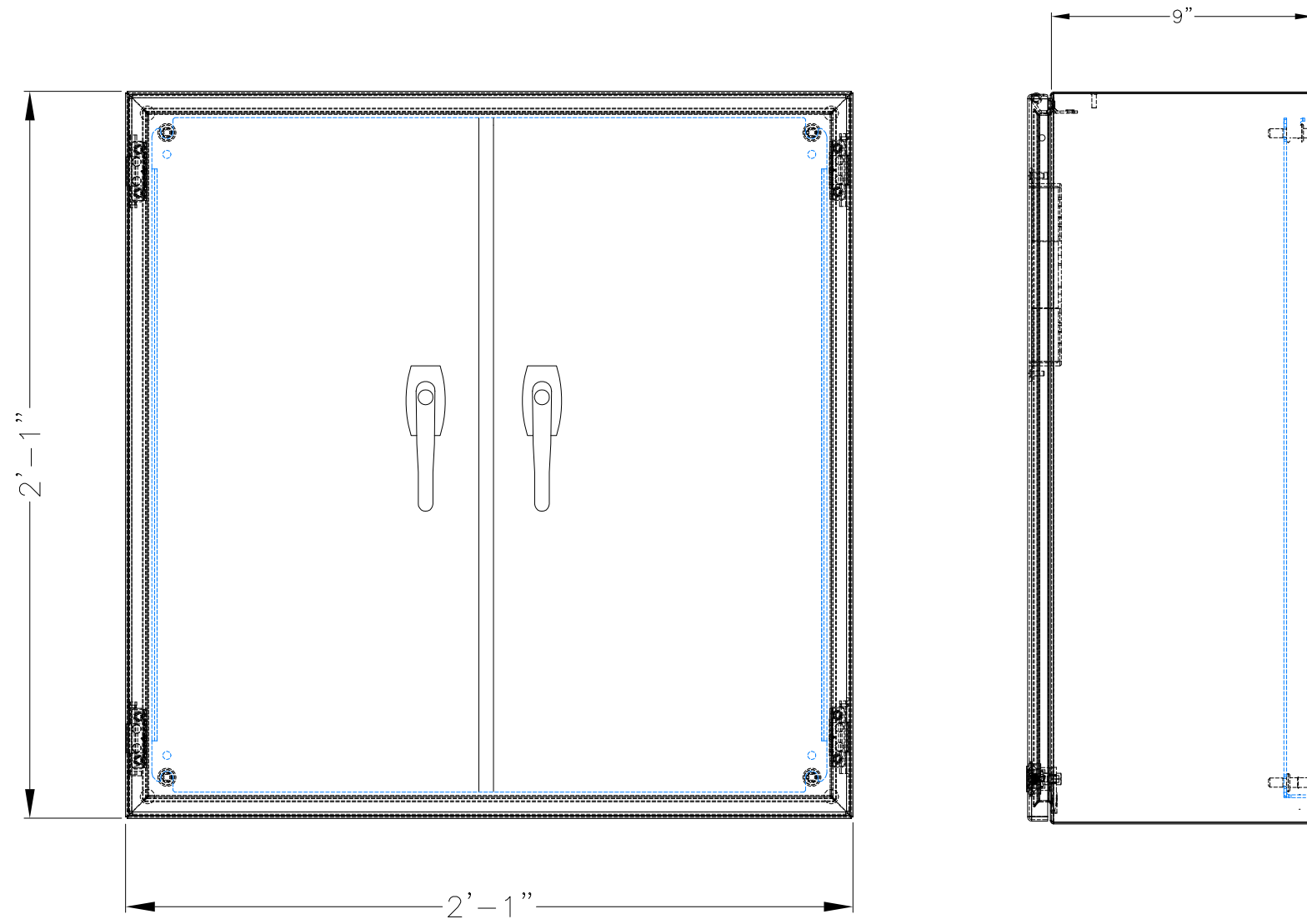
Device ID	Qty	Part No.	Description	Ref.
D113	1	8PC593-00	DC RECTIFIER, (HOIST BRAKE)	1.16
D310	1	8PC144-00	DC RECTIFIER, (TROLLEY BRAKE)	3.11
ENCL	1	8PC008-00	ENCLOSURE, 25"X25"X9"	
H-ASD		7D0038-00	120v Interface Card, Internal	
H-ASD	1	7D4007-S1	VFD,Ace Ts11,7.5Hp ,460V,14.5A	3.28
HBC	1	8PC103-00	CONTACTOR, 3POLE, 1NO/1NC AUX.	3.68
HCB	1	8PC009-00	CIRCUIT BREAKER 20A	1.25
H-DBR	1	700874-OP	Resistor,Db4003-Ct,Not Enclosed	3.33
T-ASD	1	7D0038-00	120v Interface Card, Internal	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,Db4003-Ct, 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



TERMINALS

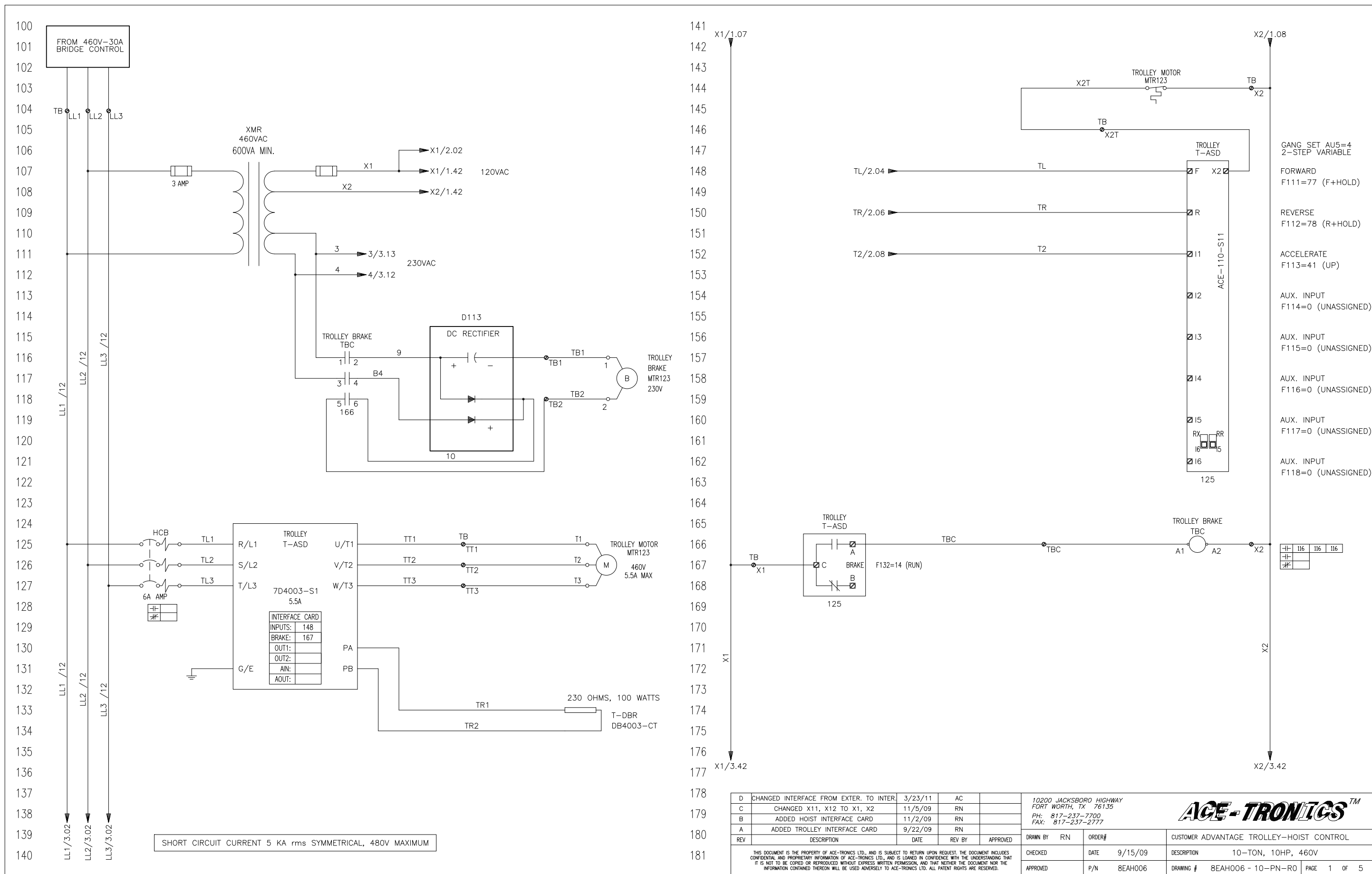
LL1	LL2	LL3	HT1	HT2	HT3	HB1	HB2	TT1	TT2	TT3	TB1	TB2					X1	X1	X2	HBC	X2	TBC	X2	U	X2T	X2	W	HU	L	HD	D	H2	TL	TR	T2
LL1	LL2	LL3	HT1	HT2	HT3	HB1	HB2	TT1	TT2	TT3	TB1	TB2					X1	X1	X2	HBC	X2	TBC	X2	U	X2T	X2	W	HU	L	HD	D	H2	TL	TR	T2

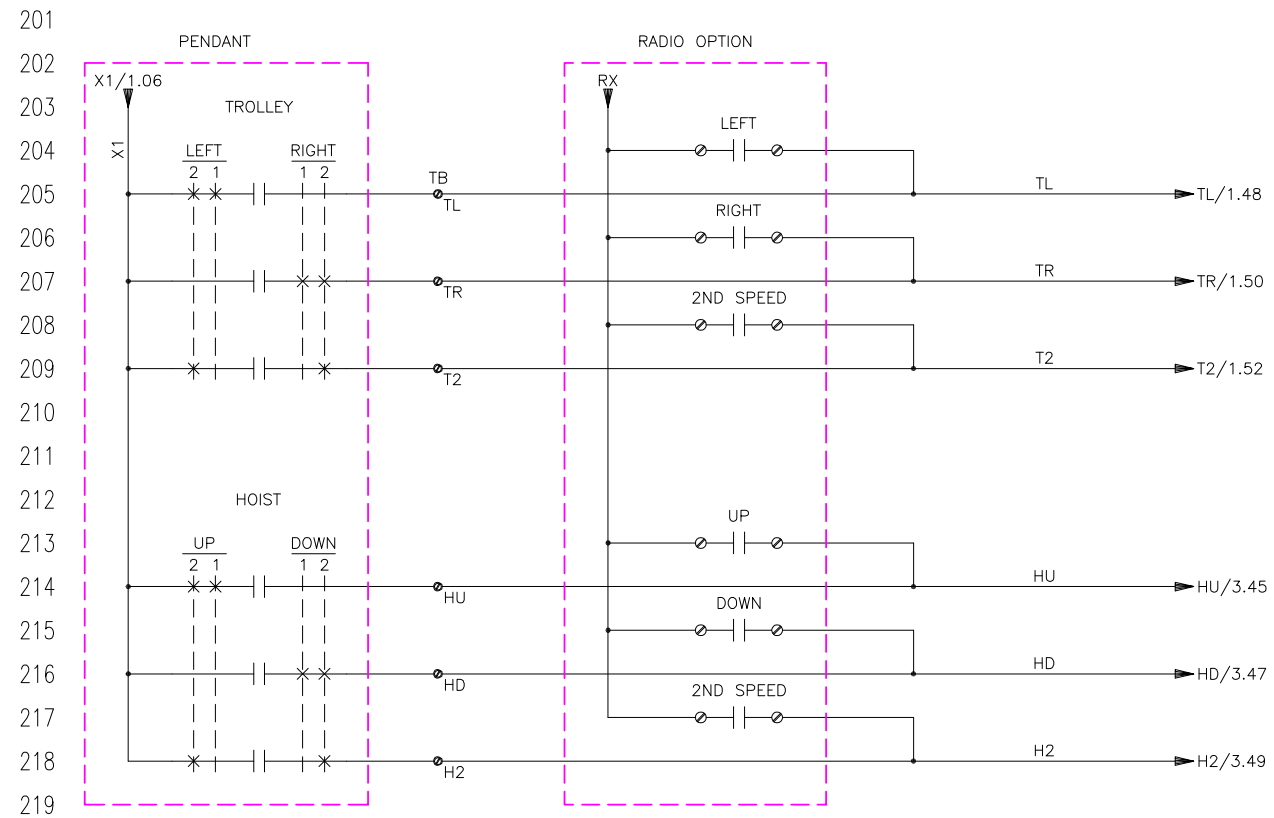
D	CHANGE TO INTERNAL IF CARDS	2/22/10	MP	AC	10200 JACKSBORO HIGHWAY FORT WORTH, TX 76135 PH: 817-237-7700 FAX: 817-237-2777	ACE-TRONICS™	
C	CHANGED X11, X12 TO X1, X2	11/05/09	RN				
B	ADDED HOIST INTERFACE CARD	11/2/09	RN				
A	ADDED TROLLEY INTERFACE CARD	9/22/09	RN				
REV	DESCRIPTION	DATE	REV BY	APPROVED	DRAWN BY RN	ORDER#	CUSTOMER ADVANTAGE TROLLEY-HOIST CONTROL
					CHECKED	DATE 9/15/09	DESCRIPTION 5-TON, 7.5HP, 460V
					APPROVED	P/N 8EAH006	DRAWING # 8EAH006 - 07-PN-RO PAGE 4 OF 5



D	CHANGE TO INTERNAL IF CARDS	2/22/10	MP	AC	10200 JACKSBORO HIGHWAY FORT WORTH, TX 76135 PH: 817-237-7700 FAX: 817-237-2777	ACE-TRONICS™ CUSTOMER ADVANTAGE TROLLEY-HOIST CONTROL	
C	CHANGED X11, X12 TO X1, X2	11/05/09	RN				
B	ADDED HOIST INTERFACE CARD	11/2/09	RN				
A	ADDED TROLLEY INTERFACE CARD	9/22/09	RN				
REV	DESCRIPTION	DATE	REV BY	APPROVED	DRAWN BY RN	ORDER#	
	<small>THIS DOCUMENT IS THE PROPERTY OF ACE-TRONICS LTD., AND IS SUBJECT TO RETURN UPON REQUEST. THE DOCUMENT INCLUDES CONFIDENTIAL AND PROPRIETARY INFORMATION OF ACE-TRONICS LTD., AND IS LOANED IN CONFIDENCE WITH THE UNDERSTANDING THAT IT IS NOT TO BE COPIED OR REPRODUCED WITHOUT EXPRESS WRITTEN PERMISSION, AND THAT NEITHER THE DOCUMENT NOR THE INFORMATION CONTAINED THEREON WILL BE USED ADVERSELY TO ACE-TRONICS LTD. ALL PATENT RIGHTS ARE RESERVED.</small>				CHECKED	DATE 9/15/09	DESCRIPTION 5-TON, 7.5HP, 460V
					APPROVED	P/N 8EAH006	DRAWING # 8EAH006 - 07-PN-RO PAGE 5 OF 5

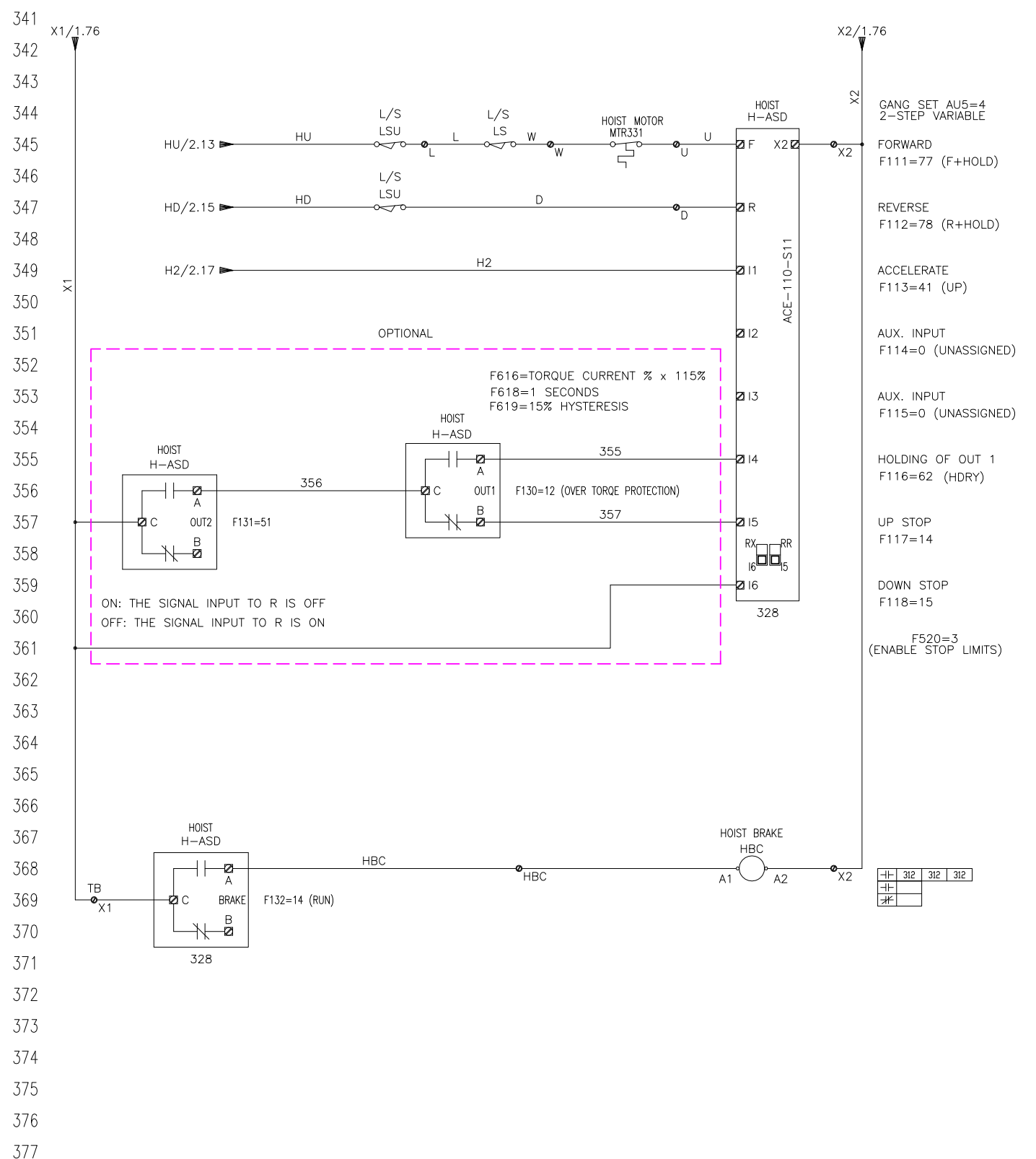
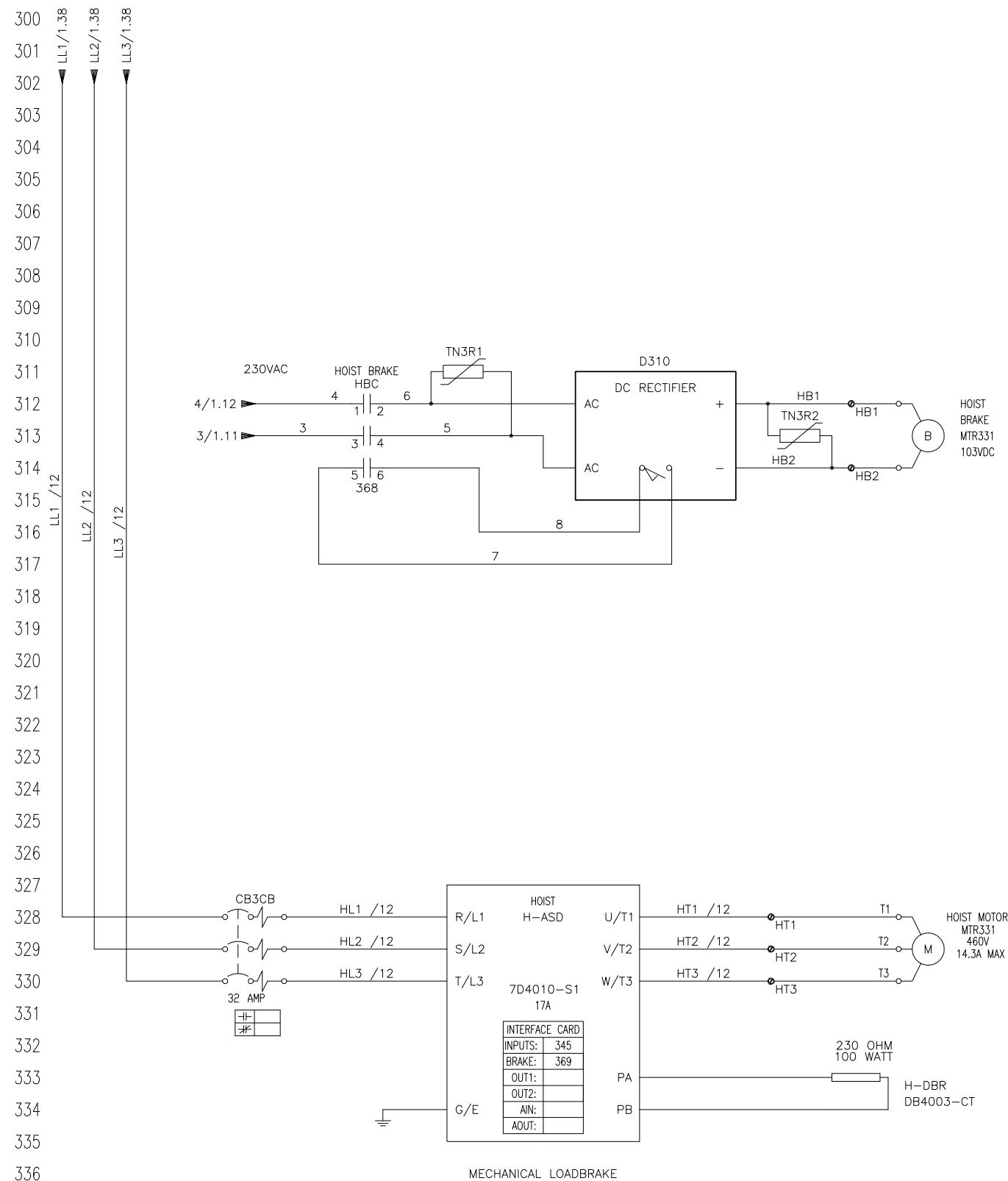
7.3 Wiring





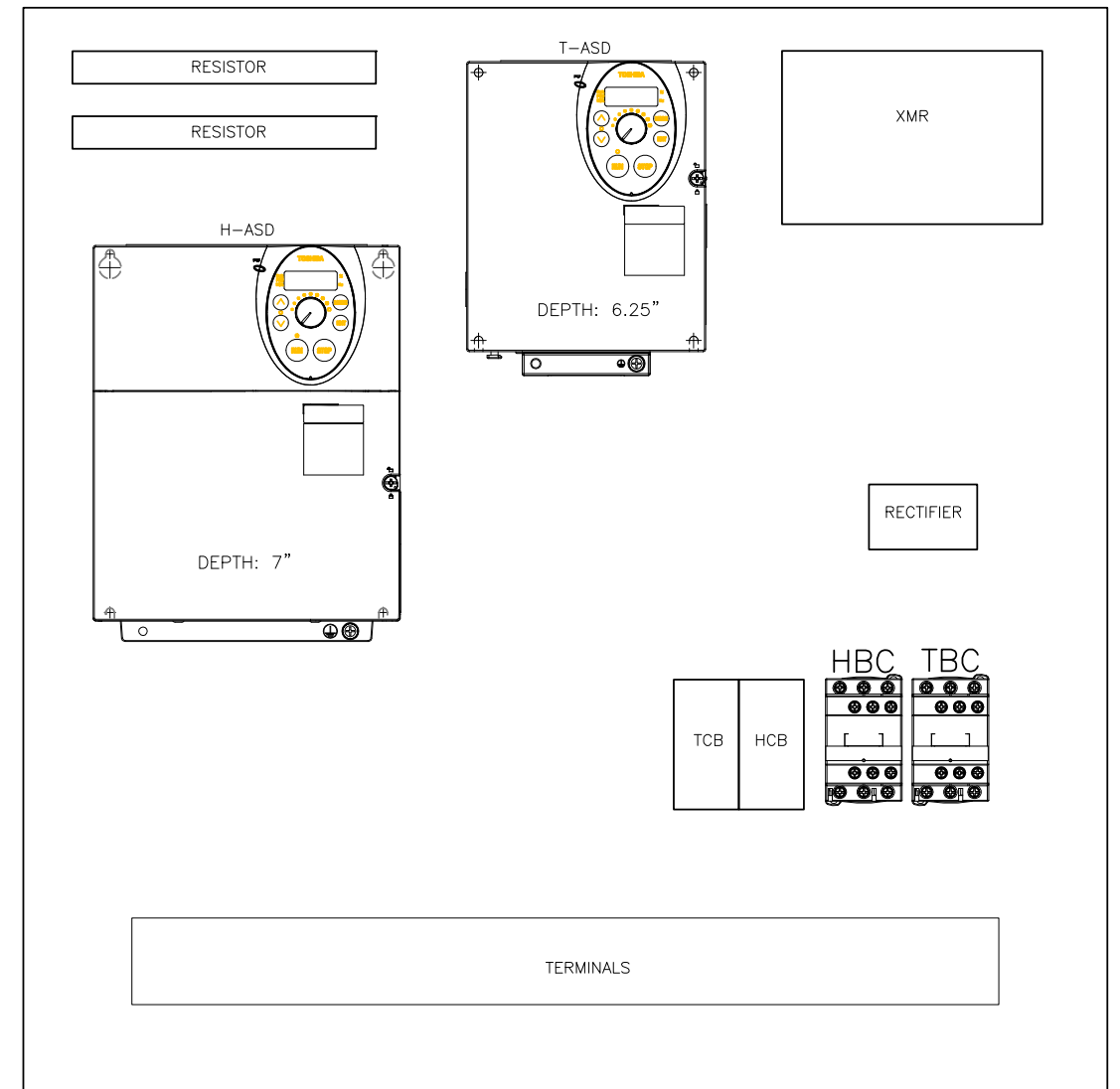
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D	CHANGED INTERFACE FROM EXTER. TO INTER.	3/23/11	AC		10200 JACKSBORO HIGHWAY FORT WORTH, TX 76135 PH: 817-237-7700 FAX: 817-237-2777	
C	CHANGED X11, X12 TO X1, X2	11/5/09	RN			
B	ADDED HOIST INTERFACE CARD	11/2/09	RN			
A	ADDED TROLLEY INTERFACE CARD	9/22/09	RN			
REV	DESCRIPTION	DATE	REV BY	APPROVED	DRAWN BY RN ORDER# CHECKED DATE 9/15/09 APPROVED P/N 8EAH006	CUSTOMER ADVANTAGE TROLLEY-HOIST CONTROL DESCRIPTION 10-TON, 10HP, 460V DRAWING # 8EAH006 - 10-PN-RO PAGE 2 OF 5
<small>THIS DOCUMENT IS THE PROPERTY OF ACE-TRONICS LTD., AND IS SUBJECT TO RETURN UPON REQUEST. THE DOCUMENT INCLUDES CONFIDENTIAL AND PROPRIETARY INFORMATION OF ACE-TRONICS LTD., AND IS LOANED IN CONFIDENCE WITH THE UNDERSTANDING THAT IT IS NOT TO BE COPIED OR REPRODUCED WITHOUT EXPRESS WRITTEN PERMISSION, AND THAT NEITHER THE DOCUMENT NOR THE INFORMATION CONTAINED THEREON WILL BE USED ADVERSELY TO ACE-TRONICS LTD. ALL PATENT RIGHTS ARE RESERVED.</small>						



D	CHANGED INTERFACE FROM EXTER. TO INTER.	3/23/11	AC		10200 JACKSBORO HIGHWAY FORT WORTH, TX 76135 PH: 817-237-7700 FAX: 817-237-2777	ACE-TRONICS™	
C	CHANGED X11, X12 TO X1, X2	11/5/09	RN				
B	ADDED HOIST INTERFACE CARD	11/2/09	RN				
A	ADDED TROLLEY INTERFACE CARD	9/22/09	RN				
REV	DESCRIPTION	DATE	REV BY	APPROVED	DRAWN BY RN	ORDER#	
					CHECKED	DATE 9/15/09	DESCRIPTION 10-TON, 10HP, 460V
					APPROVED	P/N 8EAH006	DRAWING # 8EAH006 - 10-PN-RO PAGE 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		7D0038-00	Interface Module,VFD S11,Internal 120V	
H-ASD	1	7D4010-S1	VFD,Ace Ts11,10Hp ,460V,17A	3.28
HBC	1	8PC103-00	CONTACTOR, 3POLE, 1NO/1NC AUX	3.68
HCB	1	8PC009-00	CIRCUIT BREAKER 32A	1.25
H-DBR	1	700874-OP	Resistor,Db4003-Ct,Not Enclosed	3.33
T-ASD	1	7D0038-00	Interface Module,VFD S11,Internal 120V	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,Db4003-Ct, 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

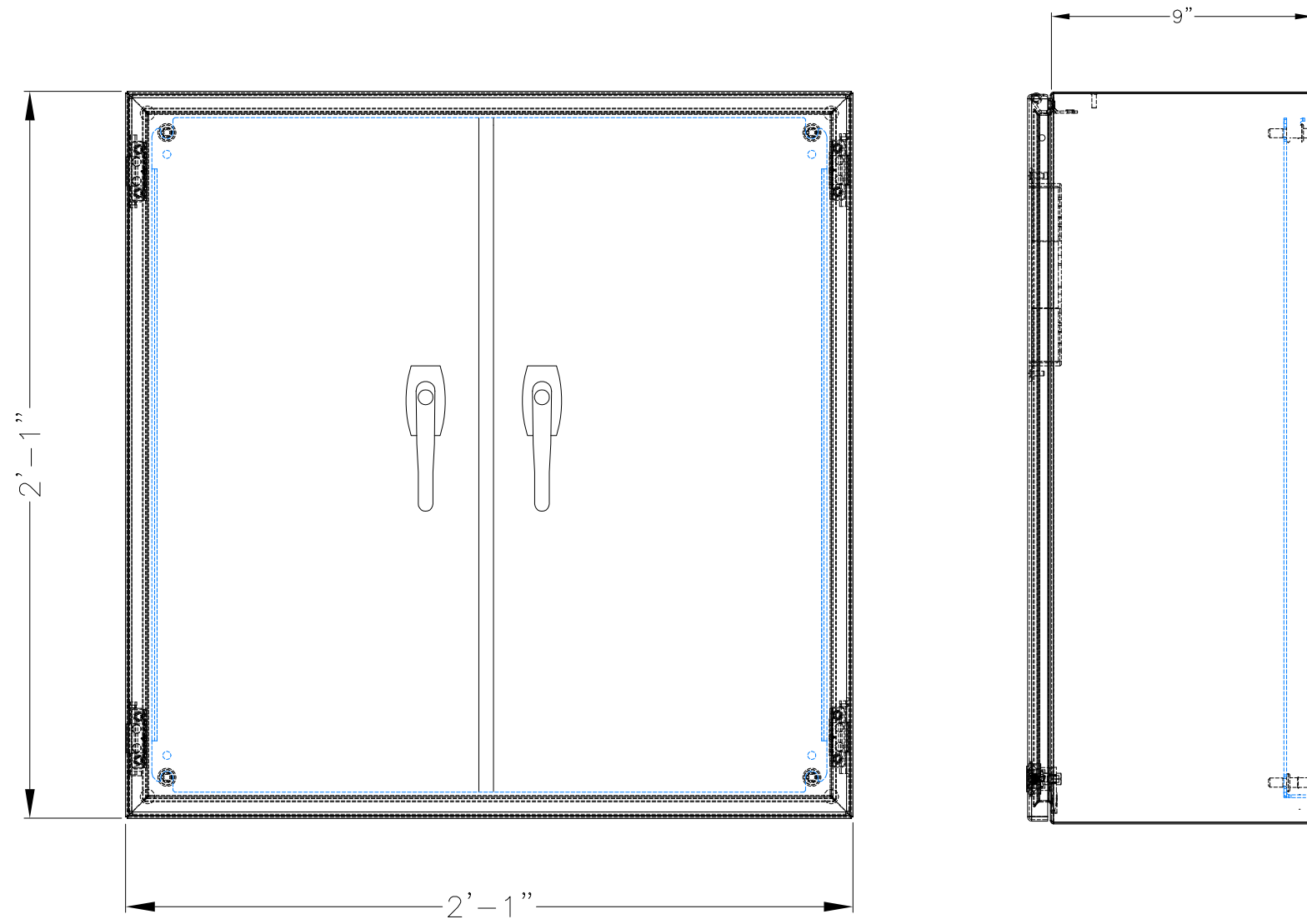


HOIST ENCLOSURE

TERMINALS

LL1	LL2	LL3	HT1	HT2	HT3	HB1	HB2	TT1	TT2	TT3	TB1	TB2					X1	X1	X2	HBC	X2	TBC	X2	U	X2T	X2	W	HU	L	HD	D	H2	TL	TR	T2		
○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
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LL1	LL2	LL3	HT1	HT2	HT3	HB1	HB2	TT1	TT2	TT3	TB1	TB2					X1	X1	X2	HBC	X2	TBC	X2	U	X2T	X2	W	HU	L	HD	D	H2	TL	TR	T2		

D	CHANGED INTERFACE FROM EXTER. TO INTER.	3/23/11	AC		10200 JACKSBORO HIGHWAY FORT WORTH, TX 76135 PH: 817-237-7700 FAX: 817-237-2777	ACE-TRONICS™	
C	CHANGED X11, X12 TO X1, X2	11/5/09	RN				
B	ADDED HOIST INTERFACE CARD	11/2/09	RN				
A	ADDED TROLLEY INTERFACE CARD	9/22/09	RN				
REV	DESCRIPTION	DATE	REV BY	APPROVED	DRAWN BY RN	ORDER#	CUSTOMER ADVANTAGE TROLLEY-HOIST CONTROL
					CHECKED	DATE 9/15/09	DESCRIPTION 10-TON, 10HP, 460V
					APPROVED	P/N 8EAH006	DRAWING # 8EAH006 - 10-PN-RO PAGE 4 OF 5

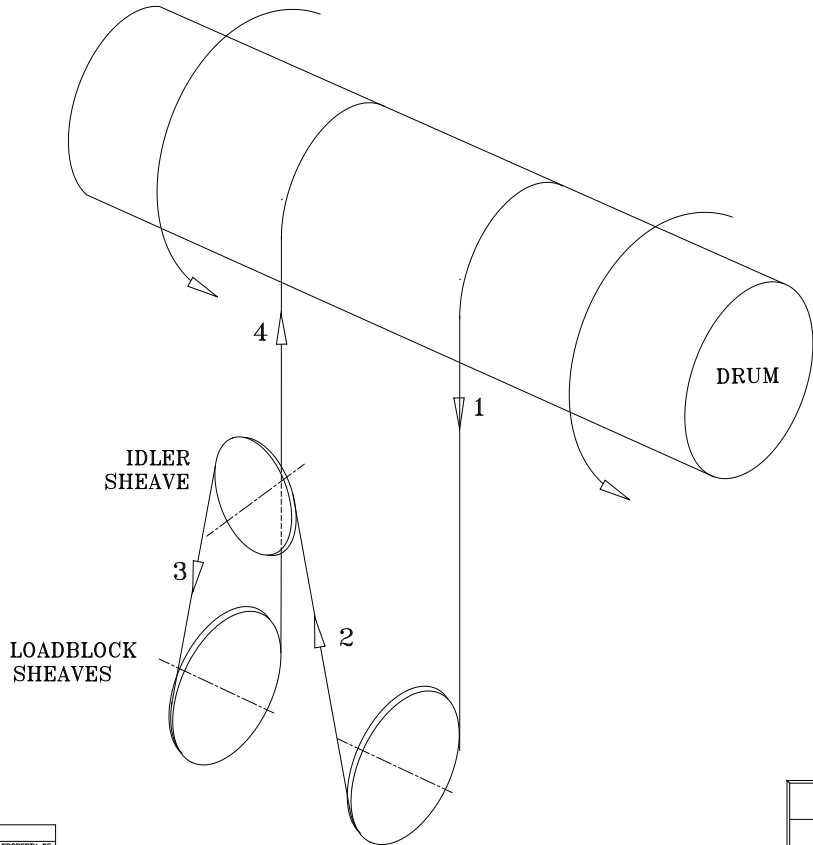


D	CHANGED INTERFACE CARD EXTER. TO INTER.	3/23/11	AC		10200 JACKSBORO HIGHWAY FORT WORTH, TX 76135 PH: 817-237-7700 FAX: 817-237-2777	ACE-TRONICS™	
C	CHANGED X11, X12 TO X1, X2	11/5/09	RN				
B	ADDED HOIST INTERFACE CARD	11/2/09	RN				
A	ADDED TROLLEY INTERFACE CARD	9/22/09	RN				
REV	DESCRIPTION	DATE	REV BY	APPROVED	DRAWN BY RN	ORDER#	CUSTOMER ADVANTAGE TROLLEY-HOIST CONTROL
<small>THIS DOCUMENT IS THE PROPERTY OF ACE-TRONICS LTD., AND IS SUBJECT TO RETURN UPON REQUEST. THE DOCUMENT INCLUDES CONFIDENTIAL AND PROPRIETARY INFORMATION OF ACE-TRONICS LTD., AND IS LOANED IN CONFIDENCE WITH THE UNDERSTANDING THAT IT IS NOT TO BE COPIED OR REPRODUCED WITHOUT EXPRESS WRITTEN PERMISSION, AND THAT NEITHER THE DOCUMENT NOR THE INFORMATION CONTAINED THEREON WILL BE USED ADVERSELY TO ACE-TRONICS LTD. ALL PATENT RIGHTS ARE RESERVED.</small>					CHECKED	DATE 9/15/09	DESCRIPTION 10-TON, 10HP, 460V
					APPROVED	P/N 8EAH006	DRAWING # 8EAH006 - 10-PN-RO PAGE 5 OF 5

7.6 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 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. Wire Rope Reeving



REV.	DATE	DESCRIPTION
THIS DOCUMENT AND THE INFORMATION CONTAINED HEREIN ARE PROPERTY OF ACE ENGINEERING. DUPLICATION OF THIS INFORMATION IS PROHIBITED.		

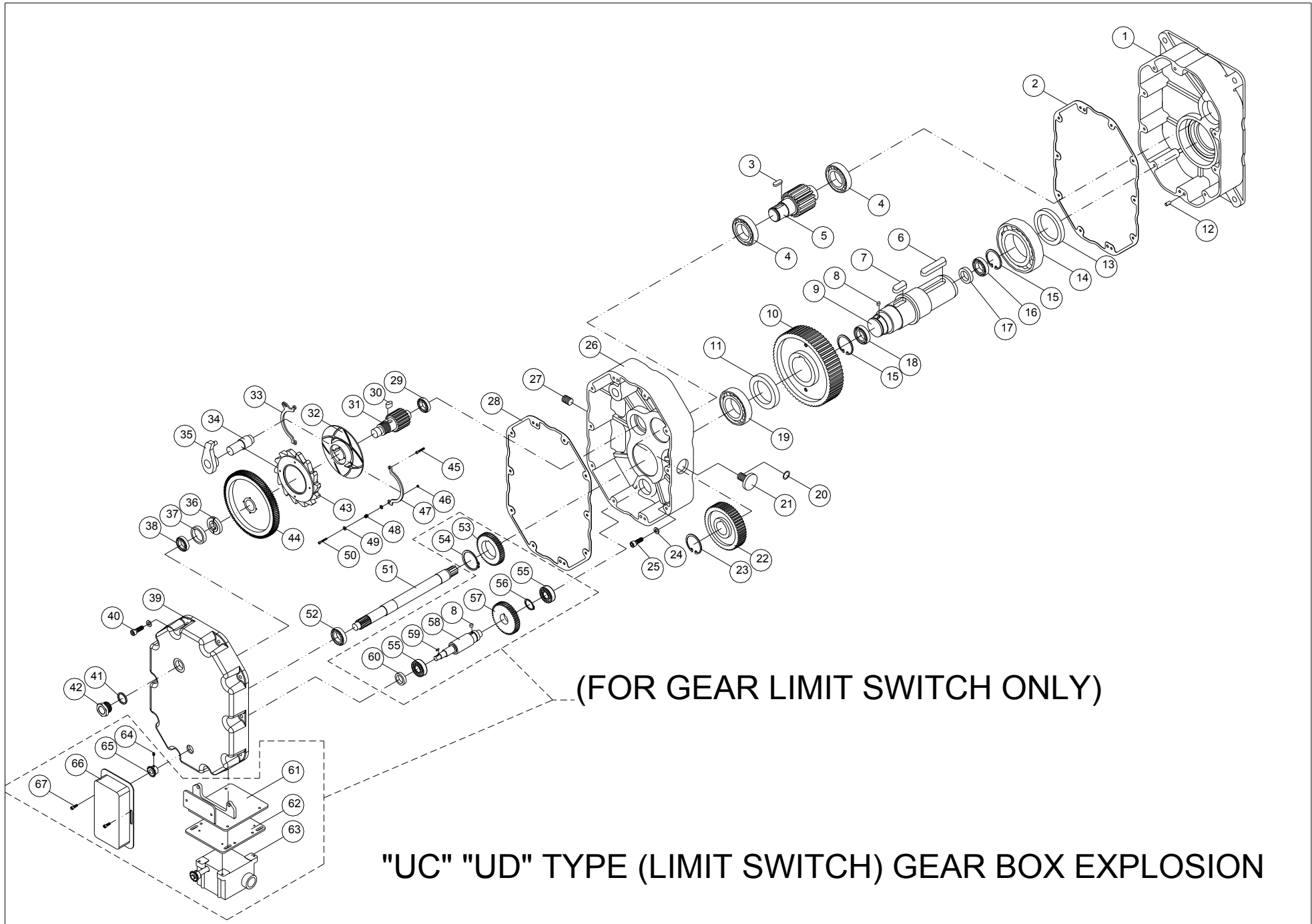


DRAWN BY: JB	CHECKED BY:	APPR: JB	DATE: 10/20/03	QTY:	REQ:
DRAWING TITLE: 2 PART DOUBLE REEVING LOWERING INSIDE		SCALE: NTS	FILE: REEV-2PD		
		PART NO.:	JOB NO.:		

TOLERANCES UNLESS OTHERWISE SPECIFIED	
METRIC	ENGLISH
.X ±.5mm	.X ±.05
.XX ±.10mm	.XX ±.015
.XXX ±.01mm	.XXX ±.005
	.XXXX ±.0005
ANGULAR ± 0° 30'	" HEAT TREATMENT
LINEAR FRACTIONAL ± 1/16"	Stock ±.14
HOLES FRACTIONAL ± 1/32"	Drill ±.05

9. PARTS LIST

- **“UC” “UD” Type Gear Box**
 - Explosion Drawing.....54
 - Parts List.....55
- **“UEA” “UFA” Type Gear Box**
 - Explosion Drawing.....58
 - Parts List.....59
- **Motor**
 - Explosion Drawing.....62
 - Parts List.....63
- **Bottom Block**
 - Explosion Drawing.....65
 - Parts List.....66
- **Motorized Trolley**
 - Explosion Drawing.....68
 - Parts List.....69
- **Trolley Frame**
 - Explosion Drawing.....71
 - Parts List.....72
- **Limit Switch**
 - Explosion Drawing.....74
 - Parts List.....74



GEAR BOX ASSEMBLY B.O.M

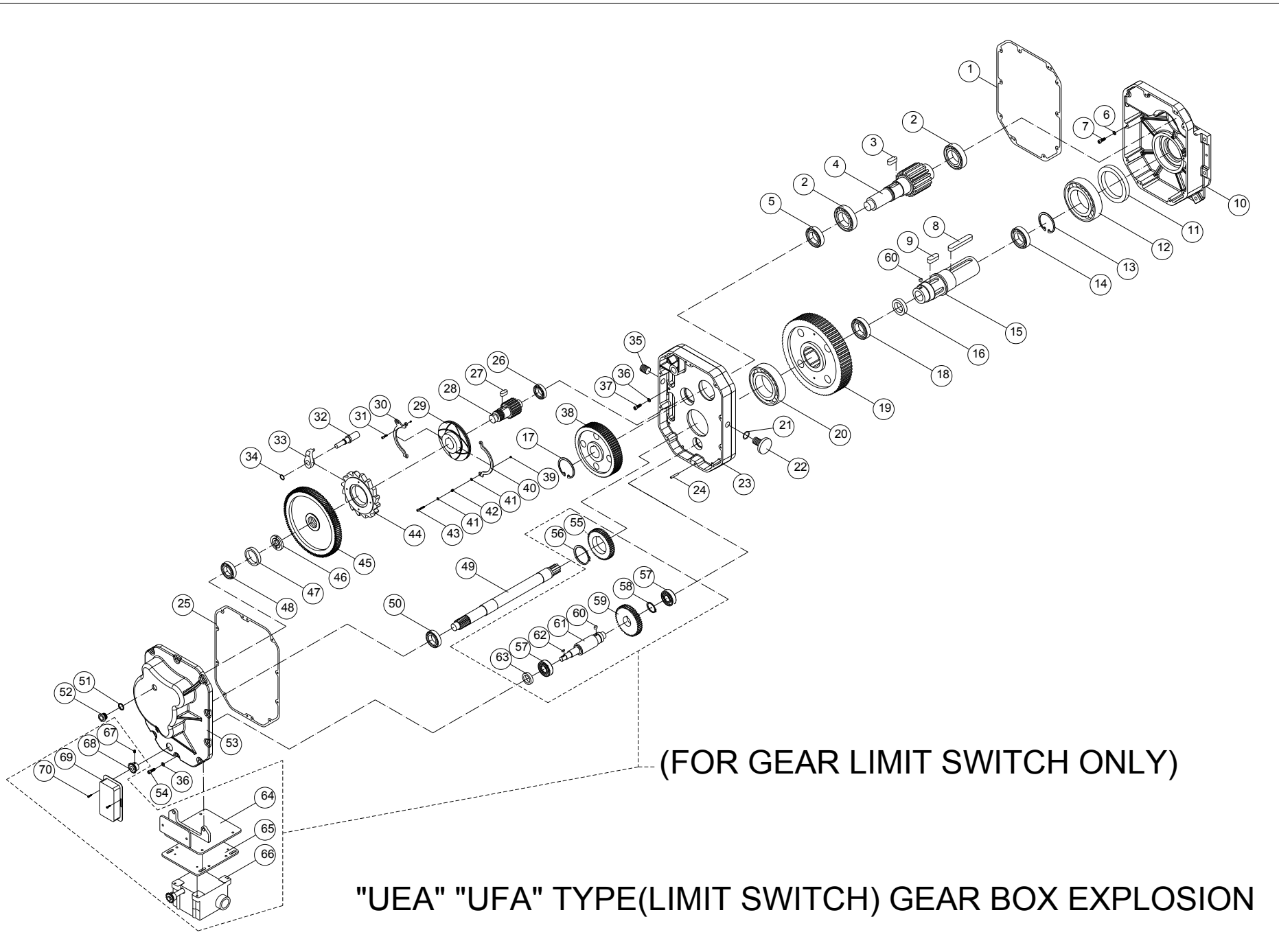
NO.	PART NUMBER	DESCRIPTION	Q'TY	
			UC TYPE	UD TYPE
01	269451	Gear Case Base	1	1
02	402551	Gasket (A) <t0.8×320×450L>	1	1
03	405908	Key <t12×8×30L>	1	1
04	407714	Bearing <6209>	2	2
05	268303	Drum Pinion Gear <M3.5×18T>	1	
	268304	Drum Pinion Gear <M3.5×17T>		1
06	405906	Key <t20×12×90L>	1	1
07	405907	Key <t20×12×45L>	1	1
08	400961	Key <t6×6×10L>	2	2
09	268812	Transmission Shaft	1	1
10	268403	Drum Gear <M3.5×62T>	1	
	268404	Drum Gear <M3.5×63T>		1
11	268502	Sleeve <ø82×ø70×9L>	1	1
12	407454	Pin <ø8×15L>	4	4
13	400933	Oil Seal <ø80×ø105×12t>	1	1
14	400790	Bearing <6216 Z>	1	1
15	400906	Retaining Ring <R-55>	2	2
16	405562	Bearing <6006 2RS>	1	1
17	400939	Oil Seal <ø30×ø45×8t>	1	1
18	400838	Needle Bearing <30/20>	1	1
19	407731	Bearing <6014>	1	1
20	404341	O Ring <ø20×ø26×3>	1	1
21	206856	Lubricant Filling Plug	1	1
22	268203	Load Brake Gear <M2.5×51T>	1	
	268204	Load Brake Gear <M2.5×52T>		1
23	400195	Retaining Ring <S-40>	1	1
24	400095	Spring Washer <M8>	20	20
25	400015	Hex. Recess Bolt <M8×1.25×40L>	10	10
26	267603	Gear Case B	1	1
27	400591	Drain Plug <3/8"PT>	1	1
28	402552	Gasket (B) <t0.8×328×458L>	1	1
29	407748	Bearing <6305>	1	1
30	405921	Key <t8×8×16L>	1	1

GEAR BOX ASSEMBLY B.O.M

NO.	PART NUMBER	DESCRIPTION	Q'TY	
			UC TYPE	UD TYPE
31	268103	Load Brake Gear Shaft <M2.5×18T>	1	
	268104	Load Brake Gear Shaft <M2.5×17T>		1
32	268902	Friction Plate	1	1
33	268982	Pawl Actuator(A)	1	1
34	269352	Pawl Pin <ø30×81L>	1	1
35	269402	Pawl	1	1
36	269302	Intermediate Gear Spacer	2	2
37	269252	End Spacer<ø50×ø60×9.5L>	1	1
38	407736	Bearing <6205>	1	1
39	A9000051160	Gear Case Cover	1	1
40	400014	Hex. Recess Bolt <M8×1.25×30L>	10	10
41	404418	O Ring <ø28×ø35×3.5>	1	1
42	201337	Sight Glass < M30×1.5P >	1	1
43	269102	Ratchet Lining Ass'y	1	1
44	A9000051102	Intermediate Gear <M1.75×108T>	1	1
45	400009	Hexagon Headed Bolt <M6×1.0×35>	1	1
46	406420	Nut System <M6×1.0>	3	3
47	268992	Pawl Actuator Ring(B)	1	1
48	400340	Compress Spring	1	1
49	400662	Flat Washer	5	5
50	405017	Hex. Recess Bolt <M6×1.0×60>	1	1
51	267903	Motor Shaft Pinion <M1.75×12T>	1	1
52	407734	Bearing <6204>	1	1
53	274701	Motor Shaft Pinion <M2.0×45T>	1	1
54	400909	Retaining Ring <S-55>	1	1
55	407734	Bearing <6204>	2	2
56	400193	Retaining Ring <S-30>	1	1
57	274801	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	A900051123	Connecting Rod <ø35×171>	1	1
59	405900	Key <t3×3×10L>	2	2
60	400186	Oil Seal <ø20×ø35×8t>	1	1
61	274951	Limit Pedestal Ass' y	1	1
62	275356	Limit Pedestal <t5×150×170L>	1	1
63	273623	Limit Switch<Customer Supply>	1	1
64	400205	Screw <M5×0.8×8L>	2	2
65	273621	Chain Wheel <1/4"×15.7L>	1	1
66	271951	Limit Frame <t2×45×205L>	1	1
67	400005	Hex. Recess Bolt <M6×1.0×12L>	2	2
	408421	Chain Connection <1/4">	1	1
	400561	Chain <1/4">	0.327M	0.327M



GEAR BOX ASSEMBLY B.O.M

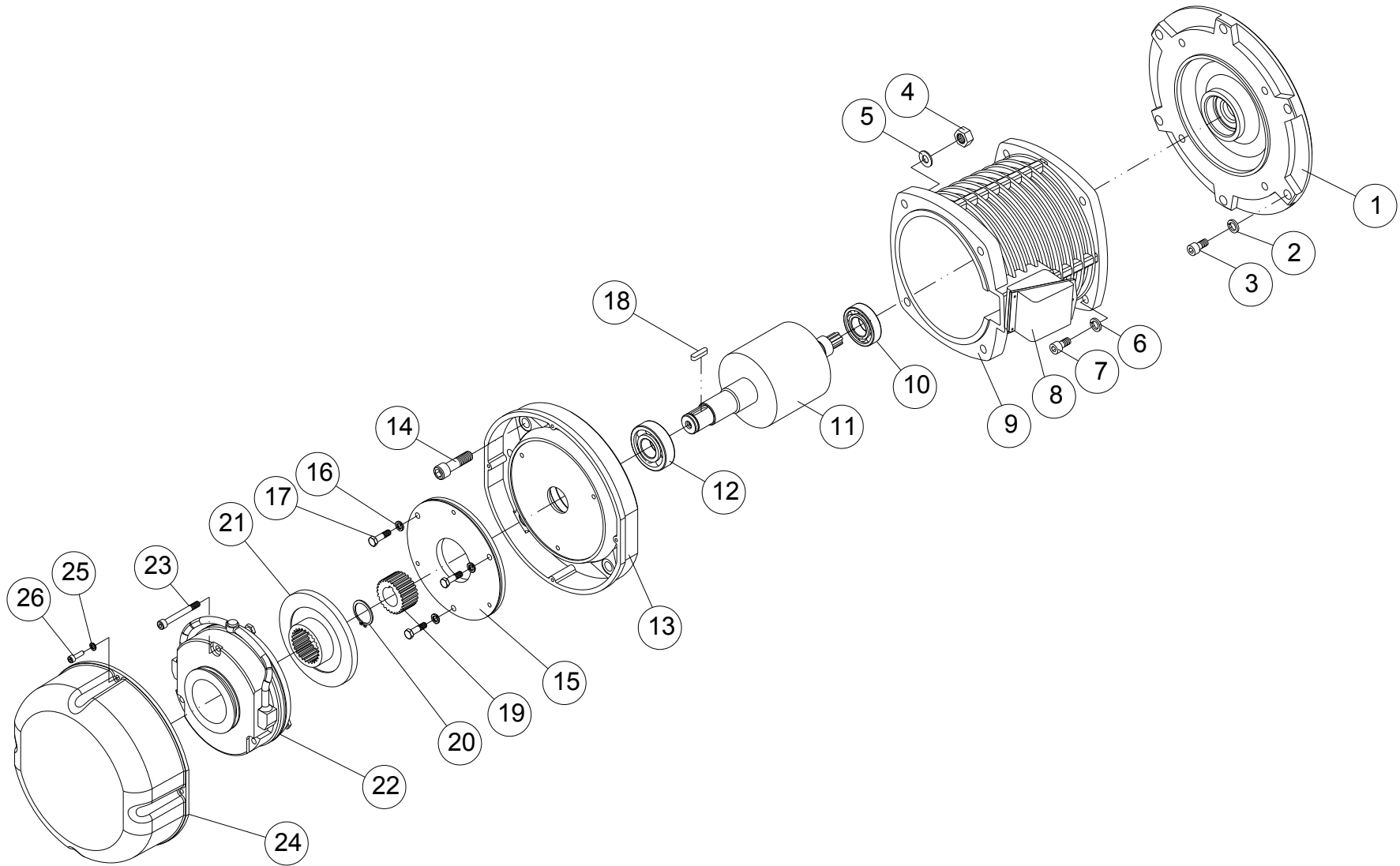
NO.	PART NUMBER	DESCRIPTION	Q'TY	
			UEA TYPE	UFA TYPE
01	402601	Gasket(A) <t0.8×430×587L>	1	
02	407741	Bearing <6213>	2	
03	405910	Key <t18×11×40>	1	
04	268016	Drum Pinion Gear <M4.5×19T>	1	
	268023	Drum Pinion Gear <M4.5×19T>		1
05	407714	Bearing <6209>	1	
06	400651	Spring Washer <M14>	10	
07	400442	Hex. Recess Bolt <M14×2.0×50L>	10	
08	400966	Key <t25×14×150L>	1	
09	405955	Key <t25×14×70>	4	
10	267613	Gear Case Base	1	
11	400929	Oil Seal <ø100×ø125×13t>	1	
12	400792	Bearing <6220Z>	1	
13	400200	Retaining Ring <R-62>	1	
14	405564	Bearing <6007 2RS>	1	
15	268018	Drum Shaft	1	
16	400177	Oil Seal <ø35×ø55×11t>	1	
17	400919	Retaining Ring <S-60>	1	
18	400109	Bearing <6007 Z>	1	
19	268017	Drum Gear <M4.5×82T>	1	
	268024	Drum Gear <M5×74T>		1
20	407744	Bearing <6218>	1	
21	404341	O Ring <ø20×ø26×3>	1	
22	206856	Lubricant Filling Plug	1	
23	267614	Gear Case B	1	
24	205327	Pin <ø12×ø8.5×14L>	4	
25	402602	Gasket (B) <t0.8×430×587L>	1	
26	407750	Bearing <6308>	1	
27	400996	Key <t16×10×30L>	1	
	9812004007	Key <t10×8×16 L >		4
28	268014	Load Brake Gear Shaft <M3×21T>	1	
	9812004104	Load Brake Gear Shaft <M3.25×19T>		1
29	268903	Friction Plate	1	
	9812004004			1
30	268981	Pawl Actuator (A)	1	

GEAR BOX ASSEMBLY B.O.M

NO.	PART NUMBER	DESCRIPTION	Q'TY	
			UEA TYPE	UFA TYPE
31	400009	Hexagon Headed Bolt<M6×1.0×35L>	1	
32	269351	Pawl Pin <ø35×140.5L>	1	
33	269401	Pawl	1	
34	400192	Retaining Ring <S-25>	1	
35	407203	Drain Plug <PT 3/4">	1	
36	400097	Spring Washer <M12>	20	
37	400448	Hex. Recess Bolt <M12×1.75×65L>	10	
38	268015	Load Brake Gear <M3×87T>	1	
	268022	Load Brake Gear <M3.25×80T>		1
39	406420	Nut System <M6×1.0>	3	
40	268991	Pawl Actuator(B)	1	
41	400662	Flat Washer<M6>	5	
42	400340	Compress Spring<ø1.0-ø10.5×ø8.5×25L>	1	
43	405017	Hex. Recess Bolt <M6×1.0×60>	1	
44	269103	Ratchet Lining Ass'y	1	
45	A9000051302	Intermediate Gear <M2×120T>	1	
	268139	Intermediate Gear <M2.25×107T>		1
46	269303	Intermediate Gear Spacer	2	
47	269253	End Spacer<ø75×ø90×9.5L>	1	
48	407759	Bearing <6208>	1	
49	268012	Motor Shaft Pinion <M2×14T>	1	
	268019	Motor Shaft Pinion <M2.25×12T>		1
50	407748	Bearing <6305>	1	
51	404418	O Ring <ø28×ø35×3.5>	1	
	404459	O Ring <ø28×ø34×3>		1
52	201337	Sight Glass < M30×1.5P >	1	
53	265659	Gear Case Cover	1	
54	400435	Hex. Recess Bolt <M12×1.75×25L>	10	
55	274702	Motor Shaft Pinion <M2.0×60T>	1	
56	400918	Retaining Ring <S-80>	1	
57	407748	Bearing <6305>	2	
58	400194	Retaining Ring <S-35>	1	
59	274802	Connecting Rod Gear <M2.0×60T>	1	
60	400963	Key <t6×6×15L>	2	
61	A9000051313	Connecting Rod <ø35×115L>	1	

GEAR BOX ASSEMBLY B.O.M

NO.	PART NUMBER	DESCRIPTION	Q'TY	
			UEA TYPE	UFA TYPE
62	405900	Key <t3×3×10L>	1	
63	400183	Oil Seal <ø25×ø40×8t>	1	
64	A9000051325	Limit Pedestal Ass' y	1	
	274958			1
65	267956	Limit Pedestal <t5×115×114L>	1	
	274957	Limit Pedestal <t3×91×115L>		1
66	273623	Limit Switch<Customer Supply>	1	
67	400205	Screw <M5×0.8×8L>	2	
68	273621	Chain Wheel <1/4"×15.7L>	1	
69	271951	Limit Frame <t2×45×220L>	1	
70	400005	Hex. Recess Bolt <M6×1.0×12L>	2	
	408421	Chain Connection <1/4">	1	
	400561	Chain <1/4">	0.362M	



MOTOR EXPLOSION <DC BRAKE>

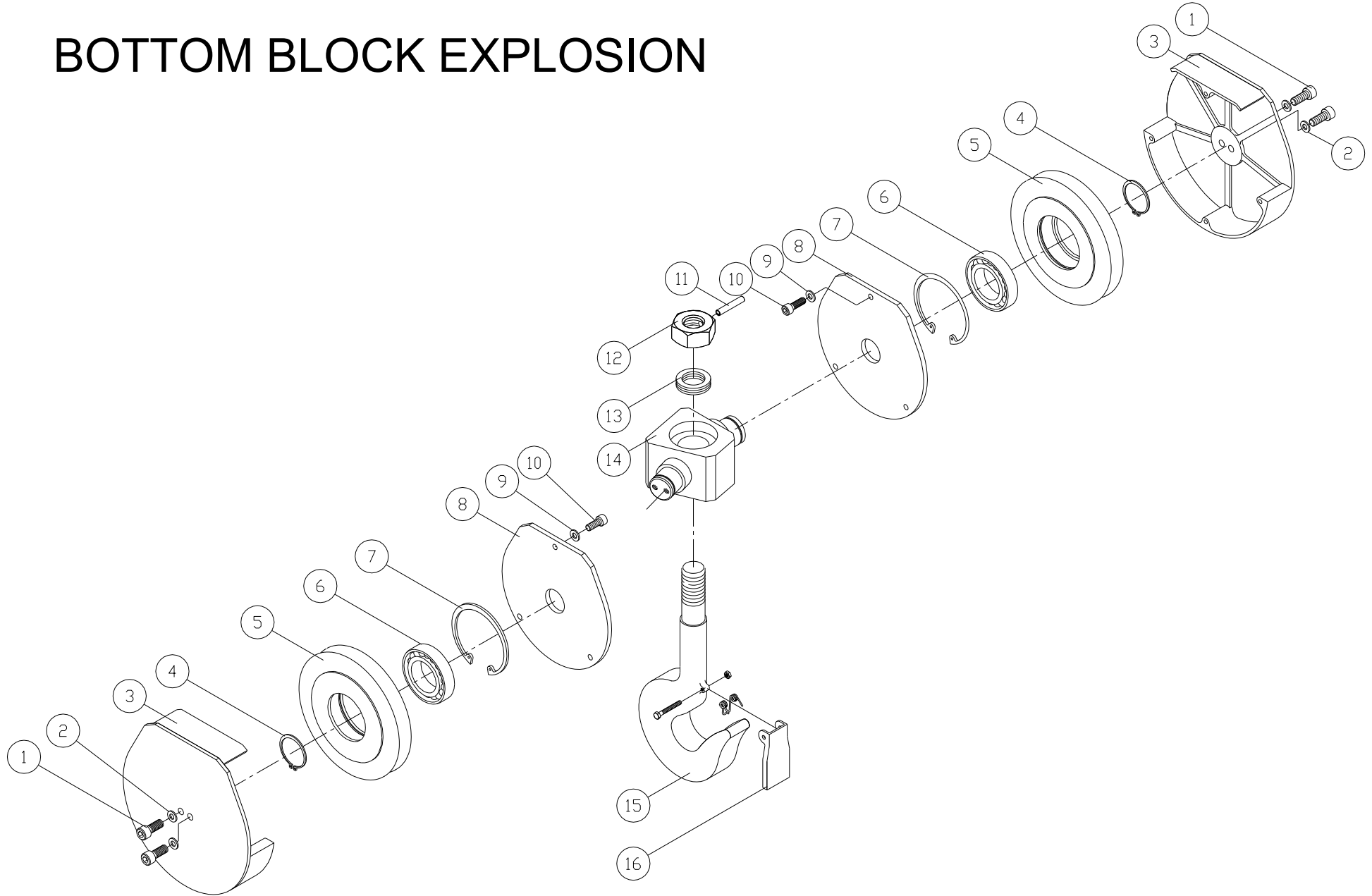
MOTOR ASSEMBLY B.O.M.

NO.	PART NUMBER	DESCRIPTION	Q'TY			
			3T	5T	7.5T	10T
01	105689	Flange	1			
	105623			1		
	105622				1	1
02	400651	Spring Washer <M14>	6	6	6	6
03	400441	Hex. Recess Bolt<M14x2.0x45L>	6	6	6	6
04	400637	Nut <M14x2.0>	4			
	400083	Nut <M18x2.5>		4	4	4
05	400651	Spring Washer <M14>	4			
	400100	Spring Washer <M18>		4	4	4
06	400097	Spring Washer <M12>	4	4	4	4
07	400451	Hex. Recess Bolt<M12x1.75x40L>	4			
	400022	Hex. Recess Bolt<M12x1.75x30L>		4	4	4
08	120179	Motor Component <Cable Box>	1			
	120170			1	1	1
09	108456	Motor Stator Ass'y	1			
	108458			1		
	108460				1	
	108462					1
10	400113	Bearing <6206>	1			
	400801	Bearing <6307 2RU>		1	1	1
11	105546	Motor Rotor	1			
	106000			1		
	106001				1	
	105484					1
12	405574	Bearing<6208 2RU>	1			
	400118	Bearing<6309 2RU >		1	1	1
13	100042	Rear Bracket	1			
	100050			1	1	1
14	400454	Hex. Recess Bolt<M14x2.0x60L>	4			
	408386	Hex. Recess Bolt<M18x2.5x60L>		4	4	4

MOTOR ASSEMBLY B.O.M.

NO.	PART NUMBER	DESCRIPTION	Q'TY			
			3T	5T	7.5T	10T
15	100124	Flange	1			
	108524			1	1	
	100125					1
16	400095	Spring Washer<M8>	3	4	4	3
17	404619	Hexagonal Bolt <M 8x1.25x25L>	3	4	4	3
18	405941	Key<t10x8x30L>	1			
	405942	Key<t12x8x35L>		1	1	1
19	100130	Disk Hub	1			
	100131			1	1	1
20	400194	Retaining Ring	1			
	400195			1	1	1
21	100137	Brake Rotor	1			
	100138			1	1	1
22	100152	Brake Coil Assembly (BFK458-16E DC103V)	1			
	100153	Brake Coil Assembly (BFK458-18E DC103V)		1	1	1
23	408384	Hex. Recess Bolt <M8x1.25x70L>	3			6
	408385	Hex. Recess Bolt <M8x1.25x80L>		6	6	
24	262137	Brake End Cover	1			
	262138			1	1	1
25	400094	Spring Washer <M6>	4	4	4	4
26	400007	Hex. Recess Bolt <M6x1.0x20L>	4	4	4	4

BOTTOM BLOCK EXPLOSION

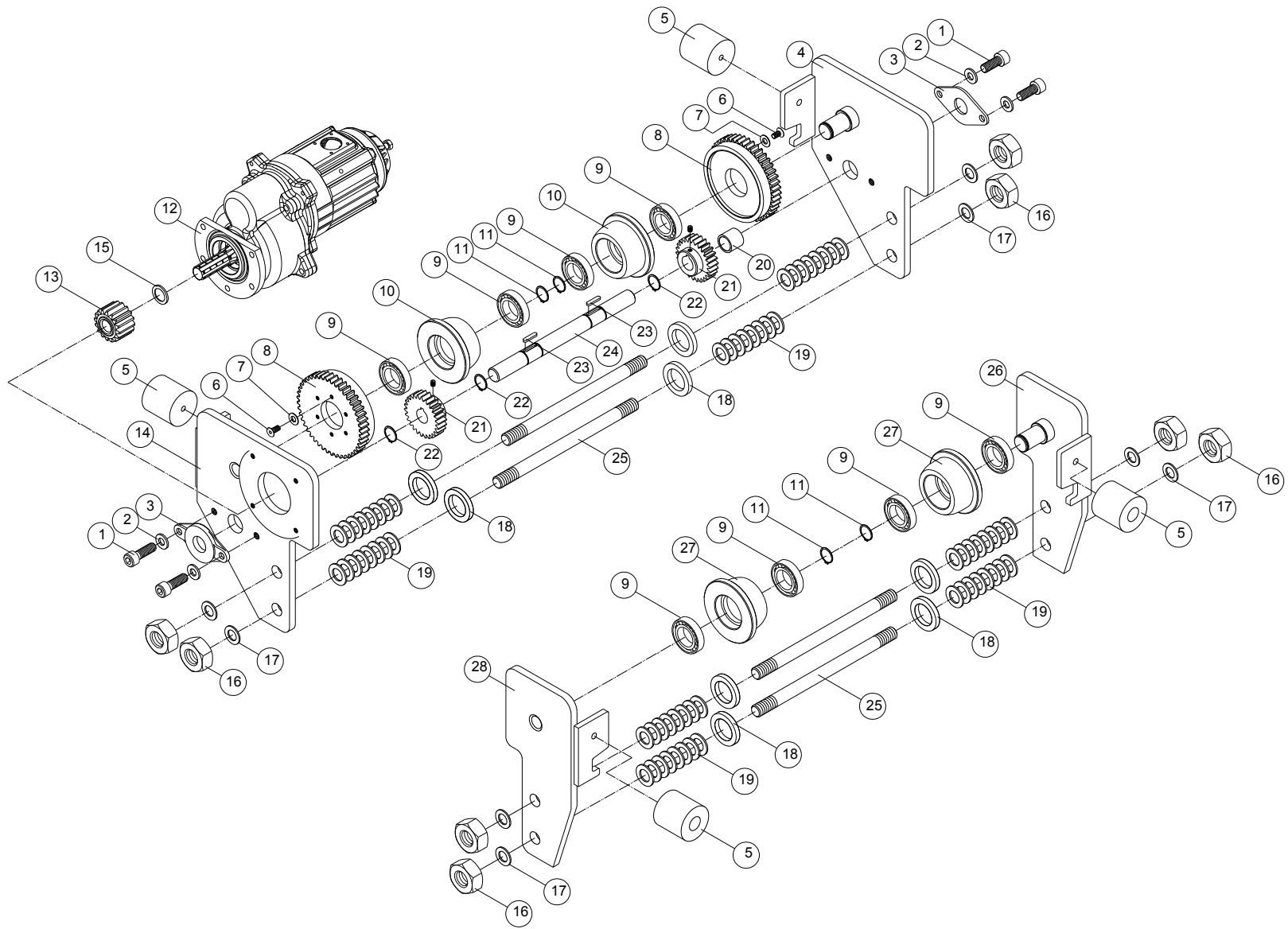


BOTTOM BLOCK B.O.M

NO.	PART NUMBER	DESCRIPTION	Q'TY			
			3T	5T	7.5T	10T
01	400446	Hex. Recess Bolt <M10×1.5×20L>	4	4	4	4
02	400096	Spring Washer <M10>	4	4	4	4
03	228325	Bottom Hook Side Cover Ass'y	2			
	228326			2		
	228327				2	
	228328					2
04	400195	Retaining Ring <S-40>	2			
	400196	Retaining Ring <S-45>		2		
	400197	Retaining Ring <S-50>			2	
	400909	Retaining Ring <S-55>				2
05	210824	Sheave <ø210×ø80 t36>	2			
	263603	Sheave <ø210×ø100 t36>		2		
	263601	Sheave <ø242×ø100 t40>			2	
	263602	Sheave <ø282×44L>				2
06	407819	Bearing <6308ZZ>	2			
	407820	Bearing <6309ZZ>		2		
	407821	Bearing <6310ZZ>			2	
	407822	Bearing <6311ZZ>				2
07	400914	Retaining Ring <R-90>	2			
	404151	Retaining Ring <R-100>		2		
	400916	Retaining Ring <R-110>			2	
	404152	Retaining Ring <R-120>				2
08	272202	Bottom Hook Side Cover	2			
	272205			2		
	272203				2	
	272204					2
09	400095	Spring Washer <M8>	6	8	8	8
10	400012	Hex. Recess Bolt <M8×1.25×20L>	6	8	8	8
11	400209	Spring Pin <ø8×55L>	1			1
	400214	Spring pin <ø8×70L>		1	1	

BOTTOM BLOCK B.O.M

NO.	PART NUMBER	DESCRIPTION	Q'TY			
			3T	5T	7.5T	10T
12	400074	Nut <1 3/8"×6UNC>	1			
	400644	Nut <1 3/4"×5UNC>		1		
	400636	Nut <M52×5.0>			1	
	202049	Nut <M64×6.0>				1
13	400160	Thrust Bearing <51207>	1			
	400162	Thrust Bearing <51209>		1		
	400161	Thrust Bearing <51211>			1	
	400164	Thrust Bearing <51313>				1
14	273802	Bearing Housing <t62×100×191L>	1			
	273803	Bearing Housing <t82×122×205L>		1		
	273804	Bearing Housing <t82×110×228L>			1	
	273805	Bearing Housing <t92×159×240L>				1
15	274004	Bottom Hook	1			
	274005			1		
	274001				1	
	274002					1
16	400301	Safety Latch Ass'y	1			
	400302			1		
	400303				1	1



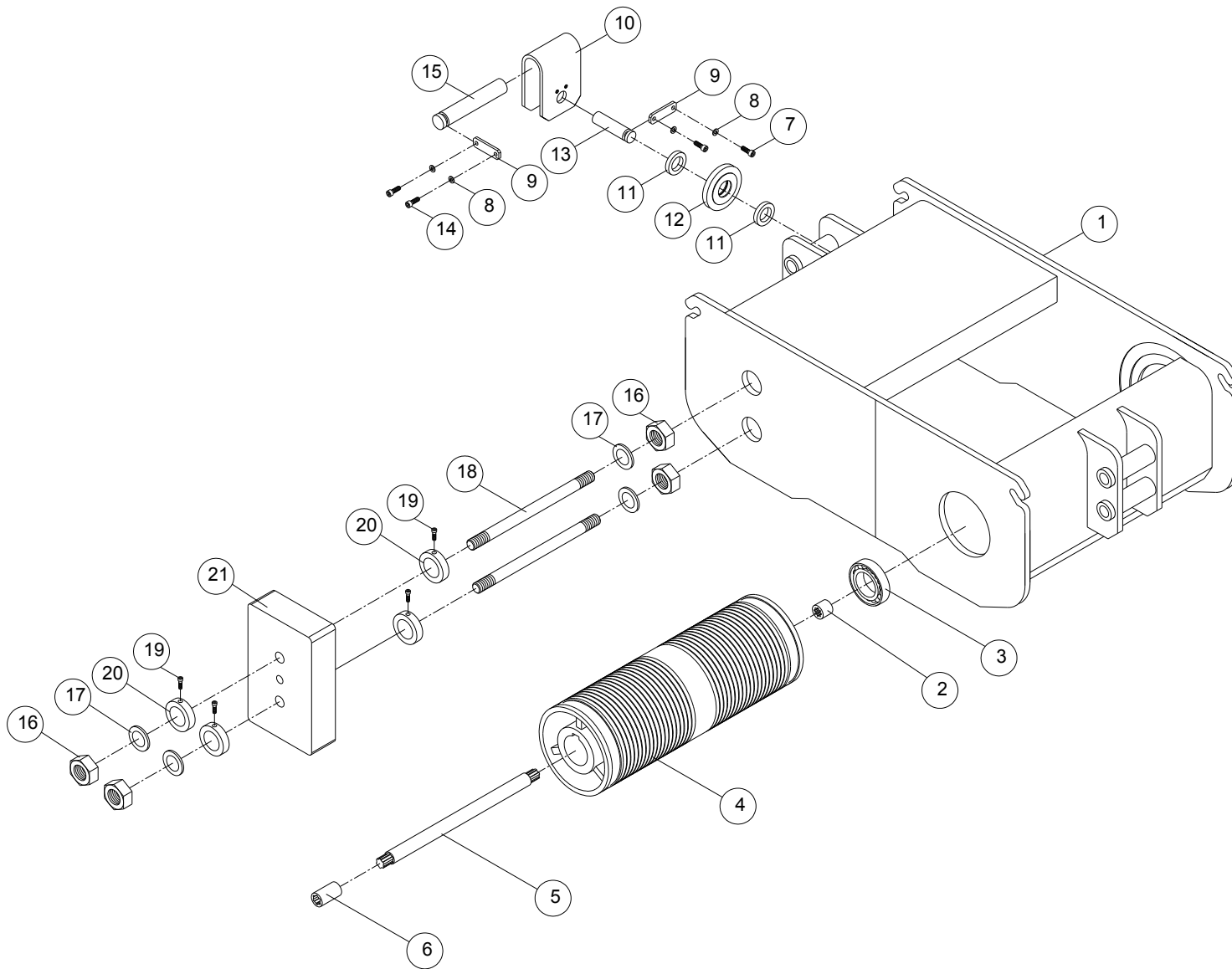
MOTORIZED TROLLEY EXPLOSION

MOTORIZED TROLLEY B.O.M

NO.	PART NUMBER	DESCRIPTION	Q'TY			
			3T	5T	7.5T	10T
01	400440	Hex. Recess Bolt <M14×2.0×35L>	4	4		4
	400441	Hex. Recess Bolt <M14×2.0×45L>			4	
02	400651	Spring Washer <M14>	4	4	4	4
03	400760	Bearing Housing <UCFL 206>	2	2		
	400761	Bearing Housing <UCFL 207>			2	2
04	264416	Drive Frame Ass'y(Right) <t16>	1	1		
	A9000051316	Drive Frame Ass'y(Right) <t22>			1	
	264418	Drive Frame Ass'y(Right) <t25>				1
05	400313	Bumper	4	4	4	4
06	400012	Hex. Recess Bolt <M8×1.25×20L>	12	12		
	400013	Hex. Recess Bolt <M8×1.25×25L>			12	12
07	400095	Spring Washer <M8>	12	12	12	12
08	202490	Gear(A) <M3.5×49T×21L>	2	2		
	202492	Gear(A) <M3.5×57T×28L>			2	
	274301	Gear(A) <M3.5×64T×28L>				2
09	405578	Bearing <6207 ZZ>	8	8		
	407818	Bearing <6307ZZ>			8	
	407819	Bearing <6308ZZ>				8
10	203531	Wheel(B) <ø143.5×59L>	2	2		
	203533	Wheel(B) <ø178.5×60L>			2	
	274503	Wheel(B) <ø203×60L>				2
11	400194	Retaining Ring <S-35>	4	4	4	4
12	135769	Reducing Gear Motor	1			
	135770			1		
	135771				1	
	135772					1
13	201756	Pinion <M3.5×18T 49L>	1	1		
	201680	Pinion <M3.5×26T 63L>			1	
	201679	Pinion <M3.5×23T 63L>				1
14	264415	Drive Frame Assembly Ass'y(Left) <t16>	1	1		
	A9000051314	Drive Frame Ass'y(Left) <t22>			1	
	264417	Drive Frame Ass'y(Left) <t25>				1
15	A9000051129	Spacer Sleeve <ø40×3.5>	1	1		

MOTORIZED TROLLEY B.O.M

NO.	PART NUMBER	DESCRIPTION	Q'TY			
			3T	5T	7.5T	10T
16	202012	Hex. Nut <1 1/2"×6UNC>	8	8		
	202018	Hex. Nut<2" ×4 1/2"UNC>			8	
	202010	Hex. Nut<1 3/4" ×5"UNC>				8
17	400106	Spring Washer <1 1/2">	8	8		
	400107	Spring Washer<2-4 1/2">			8	
	400104	Spring Washer<1 3/4">				8
18	A9000051327	Spacer Sleeve <ø47×ø70×40> Beam:12.29"			8	
19	269912	Spacer Sleeve <ø60×ø40×1/4">	152	152		
	269916	Spacer Sleeve<ø70×ø52×1/4">			168	
	269913	Spacer Sleeve<ø70×ø47×1/4">				168
20	264251	Pinion Shaft Tube <ø42×ø30×21L>	1	1		
	264252	Pinion Shaft Tube<ø48×ø35×31.5L>			1	1
21	202506	Motor Pinion <M3.5×23T×38L>	2	2		
	202507	Motor Pinion <M3.5×33T×43L>			2	2
22	400193	Retaining Ring <S-30>	3	3		
	400194	Retaining Ring <S-35>			3	3
23	400967	Key <t8×8×30L>	2	2		
	400978	Key <t10×10×40L>			2	2
24	269801	Pinion Shaft <ø30×550L>	1	1		
	269802	Pinion Shaft <ø35×650L>			1	1
	A9000051205	Pinion Shaft <ø30×550 >Beam:10.13"		1		
25	408305	Mounting Bolts <1 1/2"×6UNC×560L>	4	4		
	A9000051320	Mounting Bolts<2"×4 1/2UNC×680L>			4	
	408306	Mounting Bolts<1 3/4"×5UNC×680L>				4
26	264616	Plain Frame Ass'y (Right) <t16>	1	1		
	264614	Plain Frame Ass'y(Right)<t22>			1	
	264618	Plain Frame Ass'y(Right)<t25>				1
27	203517	Plain Wheel <ø143.5×59L>	2	2		
	203519	Plain Wheel<ø178.5×60L>			2	
	203522	Plain Wheel<ø203×60L>				2
28	264615	Plain Frame Ass'y(Left) <t16>	1	1		
	264613	Plain Frame Ass'y(Left)<t22>			1	
	264617	Plain Frame Ass'y(Left)<t25>				1



TROLLEY FRAME ASSEMBLY

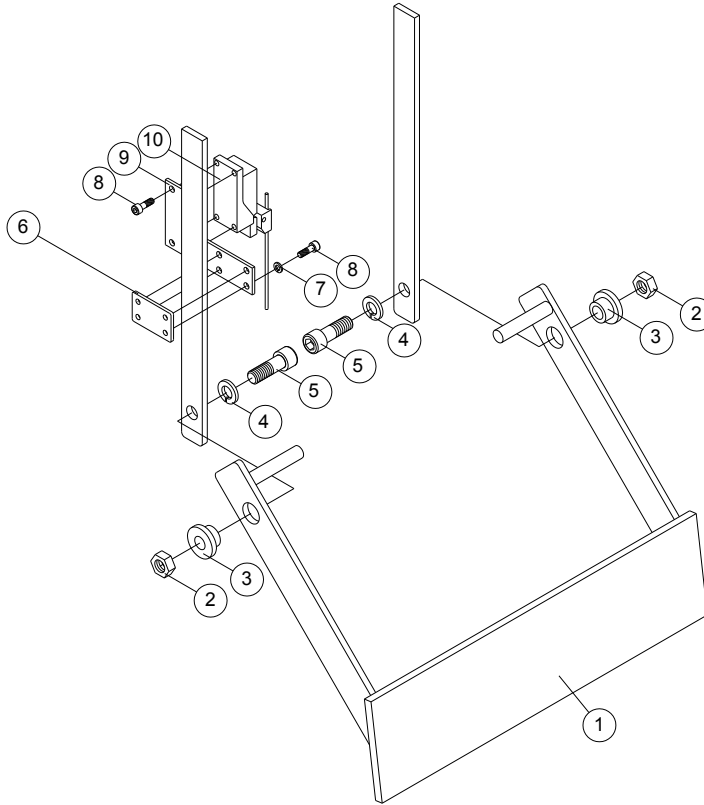
TROLLEY FRAME ASSEMBLY B.O.M

NO.	PART NUMBER	DESCRIPTION	Q'TY			
			3T	5T	7.5T	10T
01	A9000051107	Hoist Frame	1			
	A9000051202			1		
	A9000051307				1	
	266035					1
02	205466	Coupling(A) < $\phi 34 \times \phi 21 \times 61L$ >	1	1		
	205467	Coupling(B) < $\phi 34 \times \phi 21 \times 73L$ >			1	1
03	407838	Bearing <6212ZZ>	1	1		
	407814	Bearing <6220 ZZ>	1		1	1
04	A9000051117	Drum < $\phi 218 \times \phi 194 \times 855$ >	1	1		
	266872	Drum < $\phi 271 \times \phi 243 \times 912L$ >			1	
	266877	Drum < $\phi 296 \times \phi 261 \times 912$ >				1
05	263022	Drum Shaft < $\phi 30 \times 697L$ >	1			
	263027	Drum Shaft < $\phi 30 \times 670L$ >		1		
	263054	Drum Shaft < $\phi 35 \times 955L$ >			1	
	263054	Drum Shaft < $\phi 35 \times 955L$ >				1
06	205466	Coupling(A) < $\phi 34 \times \phi 21 \times 61L$ >	1			
	205467	Drum Coupling(B) < $\phi 34 \times \phi 21 \times 73L$ >		1		
	205468	Coupling < $\phi 48 \times \phi 28 \times 62L$ >			1	1
07	400012	Hex. Recess Bolt < $M8 \times 1.25 \times 20L$ >	2	2	2	2
08	400095	Spring Washer < $M8$ >	4	4	4	4
09	200636	Keeper < $\phi 8.5 P28 t6.0 \times 25 \times 50L$ >	2	2	2	2
10	270202	Link Equalizer < $t8 \times 120 \times 170$ >	1	1		
	270203	Link Equalizer < $t8 \times 140 \times 230L$ >			1	
	270203	Link Equalizer < $t8 \times 140 \times 230L$ >				1
11	205239	Washer < $\phi 40 \times \phi 29 \times 3L$ >	2	2		
	205238	Washer < $\phi 45 \times \phi 36 \times 3L$ >			2	2
12	205212	Equalizer Sheave < $\phi 152 \times \phi 28 t40$ >	1	1		
	205244	Equalizer Sheave < $\phi 210 \times \phi 35 t50$ >			1	1
13	205221	Sheave Axle < $\phi 28 \times 109L$ >	1	1		
	205222	Sheave Axle < $\phi 35 \times 119L$ >			1	1
14	400012	Hex. Recess Bolt < $M8 \times 1.25 \times 20L$ >	2	2		
	400013	Hex. Recess Bolt < $M8 \times 1.25 \times 25L$ >			2	2

TROLLEY FRAME ASSEMBLY B.O.M

NO.	PART NUMBER	DESCRIPTION	Q'TY			
			3T	5T	7.5T	10T
15	270502	Load Axle <ø35×200L>	1	1		
	270503	Load Axle <ø35×220L>			1	1
16	202009	Nut<1"× 8UNC>	4	4		
	202012	Nut<1 1/2"× 6UNC>			4	4
17	400103	Spring Washer <1">	4	4		
	400106	Spring Washer <1 1/2">			4	4
18	400403	Mounting Bolts <1"×8UNC×380>	2	2		
	408305	Mounting Bolts <1 1/2"×6UNC×560>			2	2
19	400012	Hex. Recess Bolt <M8×1.25×20>	8	8	8	8
20	263391	Spacer Tube < ø 42× ø26×15L>	4	4		
	263392	Spacer Tube < ø 60.5× ø39×15L>			4	4
21	202804	Counter Weight Block	1	1		
	263561				1	1

LIMIT SWITCH EXPLOSION

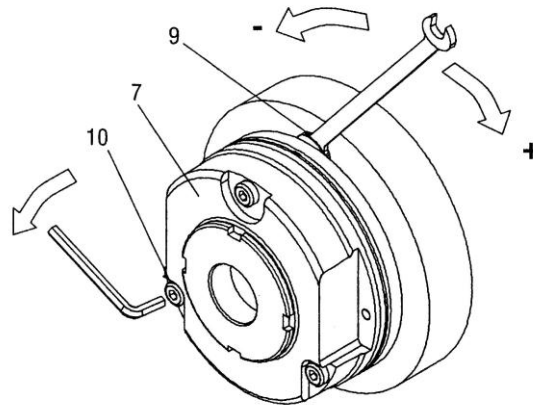


LIMIT SWITCH ASSEMBLY B.O.M

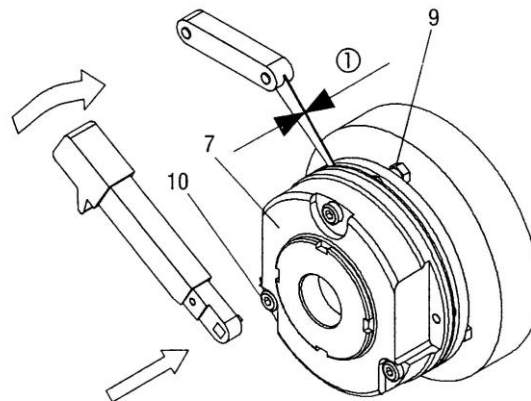
NO.	PART NUMBER	DESCRIPTION	Q'TY	
			3T;5T	7.5T;10T
01	204891	Lever Arm	1	
	204892			1
02	400084	Nut <M12×1.75>	2	2
03	205308	Tube <ø30×12.5×15L>	2	2
04	400097	Spring Washer <M12>	2	2
05	400023	Hex. Recess Bolt <M12×1.75×35L>	2	2
06	205314	Limit Frame <t3.0×30×47L>	1	
	273701	Limit Frame <t3.0×30×62L>		1
07	400093	Spring Washer <M5>	2	2
08	400003	Hex. Recess Bolt <M5×0.8×16L>	4	4
09	205313	Limit Plate <t3.0×40×55L>	1	
	273602	Limit Plate <t3.0×68×120L>		1
10	300353	Limit Switch	1	1

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
3 ϕ 60Hz 460V	DC 103V