



MOTORIZED TROLLEY

OPERATION MANUAL

&

PART LIST

SERIES:

- ADVANTAGE AMT-100
- ADVANTAGE AMT-200
- ADVANTAGE AMT-300
- ADVANTAGE AMT-500

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.

ACE WORLD COMPANIES



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" MOTORIZED TROLLEY.



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I. FOREWORD

This manual contains important information to help you properly install, operate and maintain the ACE motor driven trolley for maximum performance, economy and safety.

Please study its contents thoroughly before putting the trolley into operation. By practicing correct operation procedures and by carrying out the recommended preventative maintenance suggestions, you will be assured of dependable service.

In order to help us to supply correct spare parts quickly, please always specify:

1). Trolley Model

2). Serial Number

3). Part Number

We trust that you will find this "ACE" trolley satisfies your requirements.

If you have any question or concerns with this or any other AWC product don't hesitate to call

Ace World Companies

800-431-4223

II. OPERATING AND SAFETY PROCEDURES

The following are operating and safety procedures for safe operation of the ACE motor driven trolley. Taking precedence over and specific rules listed here, however is the most importance rule of all. A few minutes spent reading these rules can make an operator aware of dangerous practices to avoid and precautions to take for his own safety and others.

1. Immediately after installation, operate trolley with safe working load over the entire length of runway or monorail system to be sure that all adjustments and operations are satisfactory.
2. Rail stops must be installed for all trolleys operating on open end beams. These stops must be positioned such that impact forces are absorbed by trolley side frames only.
3. When preparing to lift a load, be sure that the attachments to the hook are firmly seated in hook saddle. Avoid off center loading on the point of hook.
4. When lifting, raise the load only enough to clear the floor or support and check to be sure that the attachments to hook and load are firmly seated. Continue lift only after you are assured the load is free of all obstructions.
5. When applying a load, it should be directly under the trolley. Avoid off center loading of any kind.
6. Take up a slack load chain carefully and start lifting load slowly to avoid shock and jerking of hoist load chain. If there is any evidence of overloading, immediately lower the load and remove the excess load.
7. Do not allow the load to swing or twist while hoisting.
8. Anticipate the stopping point and allow trolley to coast to smooth stop. Reversing or plugging to stop trolley causes overheating of motor and swaying of load.
9. Do not load trolley beyond the rated capacity. Overload can cause immediate failure of load carrying parts of cause damage resulting in future failure at less than rated capacity.

10. Do not use this or any other overhead materials handling equipment for lifting or transporting people.
11. Stand clear of all loads and avoid moving a load over the heads of other people. Warn people of your intention to move a load in their area.
12. Do not leave the load suspended in the air unattached.
13. Do not wrap the load chain around the load and hook into itself as a choker chain.

Doing this will result in the follow:

- (a) Operation of the upper limit switch is bypassed and the load could hit the hoist.
- (b) The loss of the swivel effect of the hook which could mean twisted chain and a jammed lift wheel.
- (c) The chain could be damaged at the hook.

14. Permit only qualified personnel to operate the unit.

III. GENERAL INFORMATION

The Black Bear motorized trolleys are designed for use with the Black Bear Electric Chain Hoists.

The trolleys are available in the following capacities: 1-Ton, 2-Ton, 3-Ton, 5-Ton, 7.5-Ton, and 10-Ton. These trolleys are similar except for the size of the load carrying members.

The trolleys have rugged steel side plates with anti-drop fins, steel wheel axles, steel suspension bolts, construction steel load plate seated in middle of two suspension bolts for top hook of hoist to hook on. The hot forged travelling wheels machine to suit both I-beam and flat beam.

Hardened steel gears are attached to two trackwheels and driven by a hardened steel pinion.

The pinion is driven by planetary gear reducer in high quality grease. A weather proof motor drive and gear reducer.

The electric housing contains a reversing contactor and a terminal boards. The transformer will be an option depending on the user's need. The 3-phase motor is always equipped with a magnetic brake over the end of driven motor. Above the housing bottom, there three holes, one for cord from hoist, another for control cord from hoist, the third one for trolley motor cord, it will serve as an option for equipped with the Push-Bottom-Station cord for the trolley. In addition, there are two option holes on each side of the housing, motor power cord on the right, and an optional hole for the power cord to trolley on the left. All five holes are equipped with cable gland for IP-54 protection optionally. Please refer to Illust: 5 on page 13.

IV. INSTALLATION

1. UNPACKING INFORMATION

After removing the trolley from the shipping carton/crate, carefully inspect the external condition of the cord, electric housing, gear reducer, motor and brake (3-phase model) for damage that may have occurred during shipment and handling. Check to make sure all parts are furnished. i.e. trolley side frame with electric housing, side frame with reducing gear motor, position tube, spacer washer, stay-bolts, nuts and load plate for hoist top hook. Also, before attempting to install the trolley, make sure that the power supply indicated on the labels attached to the motor housing is the same as the power supply on which the unit is to operate. Generally, the hoist and trolley are packed separately. Except when the order indicates the requirement of 4-way control for the hoist with trolley (YSS series), then the hoist will be packed with trolley together in one wooden crate.



WARNING

For all trolley suspended hoist rail stops must be installed at each end of the rail. Failure to install rail stops will allow the hoist and trolley to fall off the end of the rail and thus cause an accident that may result in injury and/or property damage. The stops must be positioned as to not exert impact force on the hoist frame or trolley wheels. They must contact the ends of the trolley side frames.

2. TROLLEY TO BEAM

It is recommended that the trolley be mounted on the beam prior to attaching the hoist to the trolley. Before attempting to mount the trolley on the beam, measure the actual width of the beam flange on which the trolley is to operate. Using this measurement determine the arrangement of spacer washers between the two trolley side frames. First loosely assemble the side frames, position tubes, spacer washers and nuts on the stay bolts.

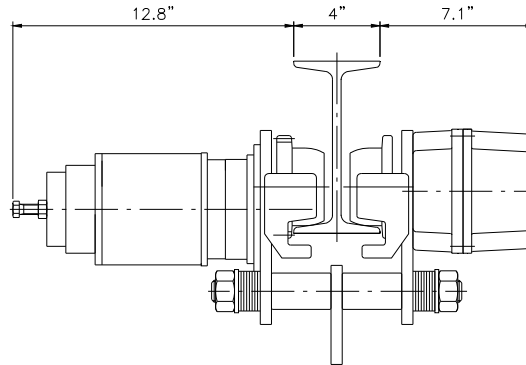
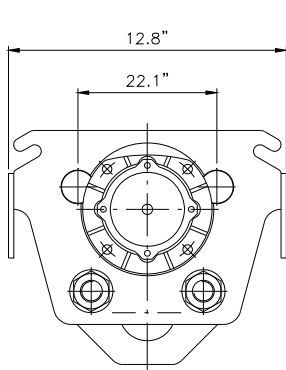


WARNING

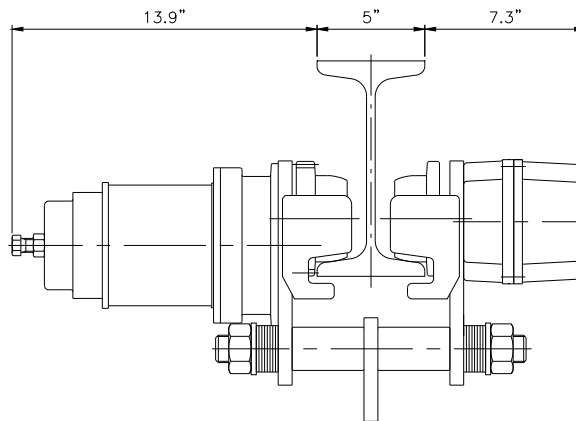
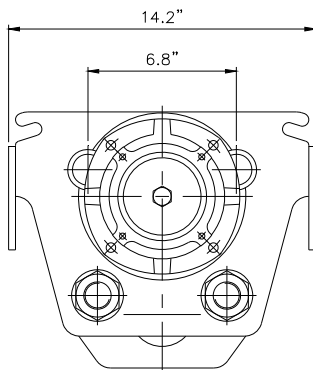
The trolley and beam should be inspected periodically to assure their continued operations. Operating a malfunctioning trolley and/or operation the trolley on a beam with an excessively worn flange may allow the trolley to fall from the beam causing an accident that may result in injury and/or property damage.

Due to the variations in beam flange widths, it is suggested that the beam flange width be measured to determine the exact distribution of spacer washers. The distance between trackwheel flanges should be 3-5 mm greater than the beam flange width for straight runway beams, and 5-7 mm greater than the beam flange width if runway includes sharp curves. Now install the trolley on the beam by sliding one side frame out far enough to allow the trackwheels to clear beam flange. Lift the trolley up so that the trackwheels are riding on the beam and draw the side frames together and tighten the nuts snugly.

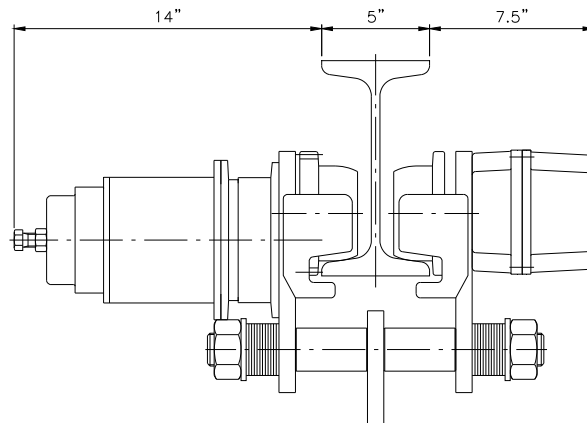
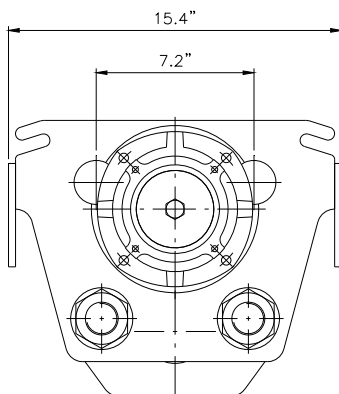
Model	ADVANTAGE AMT-200
S.W.L.	4400 lbs
Trolley Speed	79 ft/min
Trolley Power	0.3Hp x 4P
Power Supply	3Phase 60Hz 230/460V-110V 4P



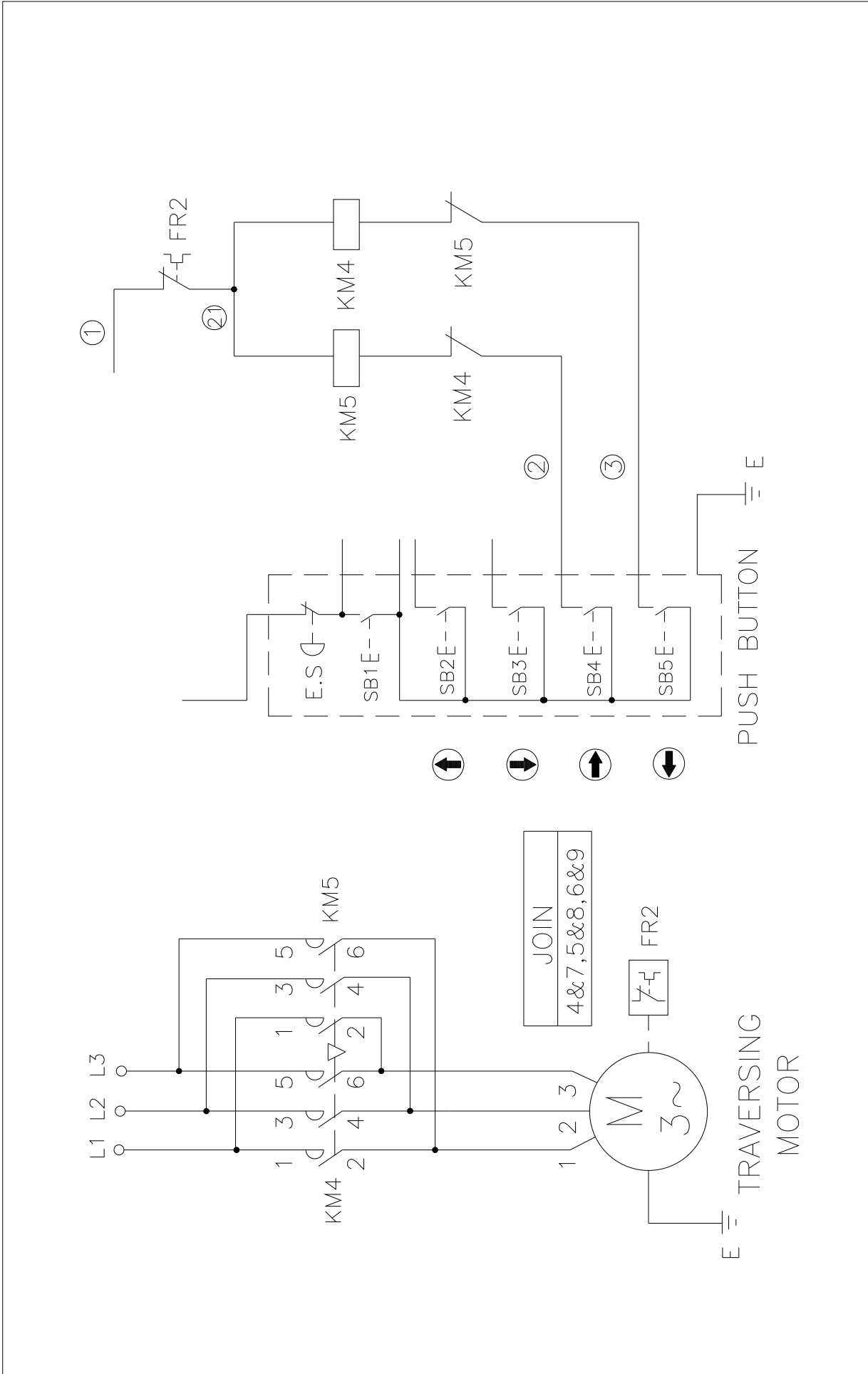
Model	ADVANTAGE AMT-300
S.W.L.	6600 lbs
Trolley Speed	79 ft/min
Trolley Power	0.8Hp x 4P
Power Supply	3Phase 60Hz 230/460V-110V
Flange Width	5" ~ 7"



Model	ADVANTAGE AMT-500
S.W.L.	11000 lbs
Trolley Speed	79 ft/min
Trolley Power	0.8Hp x 4P
Power Supply	3Phase 60Hz 230/460V-110V
Flange Width	5" ~ 7"



4. WIRING DIAGRAMS



5. TEST RUNNING

After trolley to beam, hoist hook to trolley and wiring connection completed, operate the trolley forward and backward over a short distance. Then you can operate the trolley over the entire length of runway or monorail system to be sure that all adjustment and operations are satisfactory.

V. INSPECTION

To maintain continuous and satisfactory operation, a regular periodic inspection procedure must be initiated so that worn or damaged parts can be replaced before they become unsafe. The frequency of inspection must be determined by the individual application.

The following list gives an inspection procedure for normal usage under normal conditions. When the unit is subjected to heavy usage or duty, moist or other adverse atmospheric conditions, shorter time periods must be assigned. Inspection must be made of all parts for unusual wear, corrosion or damage in addition to those specifically mentioned in the succeeding list.

It is suggested that the unit be inspected monthly for wear damage and corrosion effects to all parts with particular attention to the following:

1. Tightness of all fasteners.
2. Contactor and control station for burnt or pitted contacts and loose or corroded terminals.
3. Cables and leads for broken wires, loose or corroded terminals and damaged insulation.
4. Terminal board for loose or corroded connections.
5. Trackwheels for wear of tread, flange and bearings.
6. Gear portion of trackwheel and pinion for wear.
7. Check the wear of top hook to load plate in trolley. If type "E" & "A" rigid hook are used, check the condition of those parts.
8. Collector or power supply system for damage, wear corrosion and proper operation.
9. 3-phase trolley is usually equipped with motor brake. Check the wear of brake lining and adjusting the gap between lining and drum to assure brake efficiency.

VI. MAINTENANCE

The following three steps are recommended for maintenance:

1. Once a month lubricate track wheel gear and pinion with grease or graphite grease.
2. Motor reducing gearbox uses planetary gear lubricated with cosmo No. 3 grease (Equivalent to: Shell Unedo 3, Exxon Eastan 3, Mobil Cup Grease 3) for good maintenance. It is highly recommended that the motor gearbox grease should be changed after 100 hours of operation, then every 6 months or 2500 hours of normal service. Whichever comes first, the grease needs to be changed as well.
3. The motor brake should be changed & be checked periodically for wear of brake lining and disc. The gap between brake lining & disc can be adjusted by the brake adjusting hex. bolts over the end of motor. (Please refer to the parts list on page 17 No.28, brake adjusting hex. bolt.)

VII. TROUBLE SHOOTING

Please refer to table 1 on page 12.

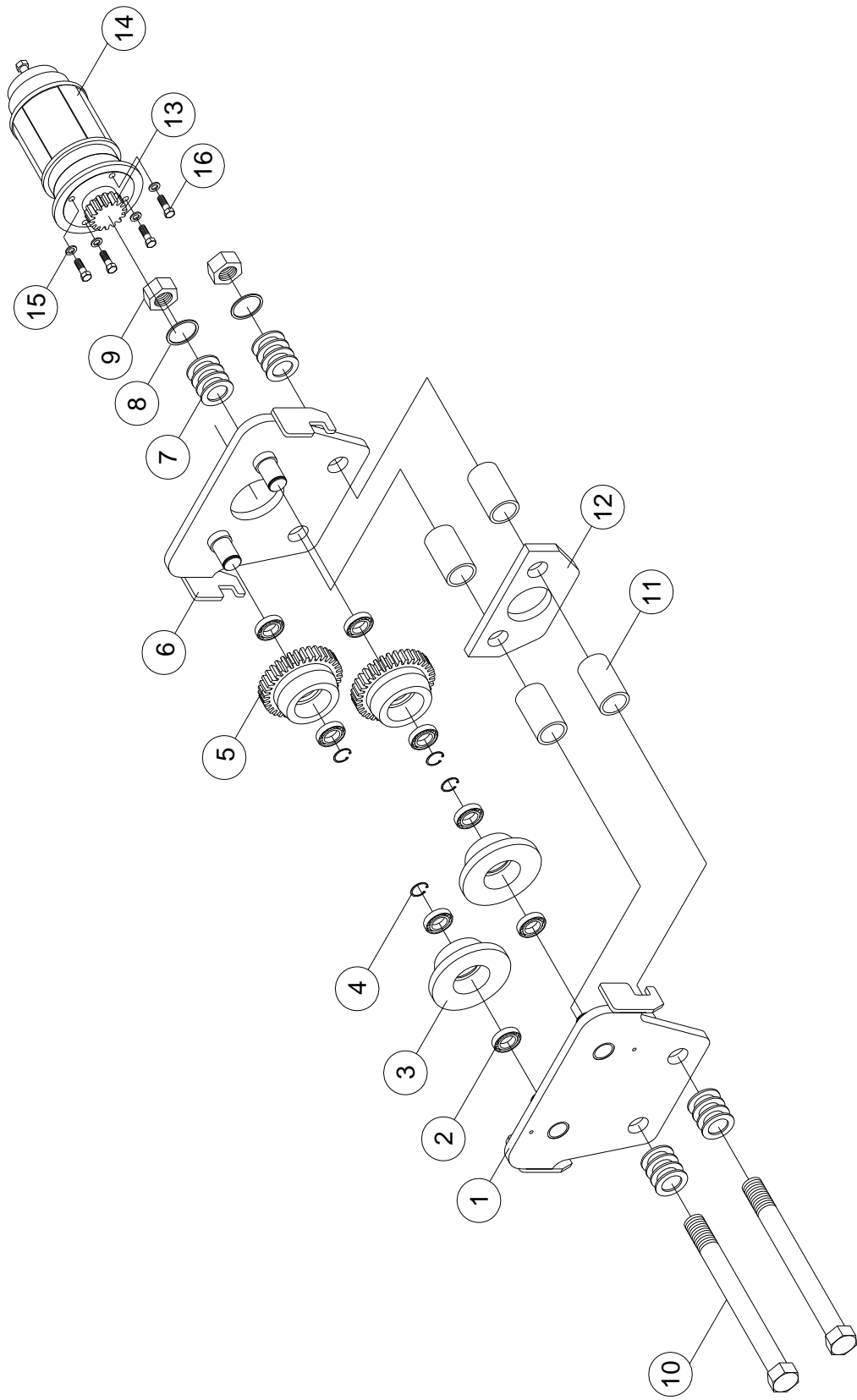
VIII. PARTS LIST (BOM)

- | | |
|-------------------------------------|-----------|
| 1. Trolley Explosion..... | P.13~P.15 |
| 2. Electric Explosion..... | P16 |
| 3. Reducing Gear Motor, 0.25KW..... | P.17~P.18 |
| 4. Reducing Gear Motor, 0.6KW..... | P.19~P.20 |

Table 1. Troubleshooting and Remedial Action

IF	CAUSE MAY BE	REMEDY
1. Trolley does not operate in either direction.	a) Power failure at trolley b) Phase error (Single phasing) c) Turn on control circuit d) Wrong voltage or frequency e) Low voltage f) Excessive load	Main line or branch circuit switch power on, branch line fuse blown or circuit breaker tripped. Power off, replace or reset. Check for grounded or connect supply lines or current collectors. Power on, grounded or connected one line of supply system, collectors, trolley wiring, reversing contactor, motor leads or windings. Check for electrical continuity. Power on or shorted windings in transformer or reversing contactor coil, loosen connection or broken wire in circuit, mechanical binding in contactor, control station switch contacts not making. Check continuity and repair or replace defective parts. The voltage and frequency must be the same as shown on trolley control box. Control power supply deviates from standard not to exceed $\pm 10\%$ to prevent abnormal operation or damage to the motor. Prevent frequently loading rated load of trolley.
2. Trolley operates in one direction only.	a) Turn on control circuit	As item 1. c)
3. Trolley operates sluggishly	a) Excessive load b) Low Voltage c) Worn or dirty rail	As item 1. f) As item 1. e) Clean rails, inspect for worn spots.
4. Motor overheats	a) Excessive load b) Low voltage c) Extreme external heating d) Frequent starting or reversing e) Phase error	As item 1. f) As item 1. e) Above an ambient temperature of 40°C., the frequency of trolley operation must be limited to avoid overheating of motor. Special provision should be made to ventilate the space or shield the trolley from heat radiation. Excessive inching, jogging or plugging should be avoided since this type of operation will drastically shorten the life of motor and contactor. As item 1. e)

TON BODY PARTS



BODY PARTS B.O.M.

NO.	PARTS CODE	DESCRIPTION	Q'TY REQ'D EACH UNIT			
			AMT -100	AMT -200	AMT -300	AMT -500
1	202961	Electric Frame	1			
	202962			1		
	202963				1	
	202964					1
2	407835	Bearing <6204 Z>	8			
	407830	Bearing <6205 Z>		8		
	407824	Bearing <6206 Z>			8	
	407808	Bearing <6207 Z>				8
3	203131	Plain Wheel<ø105×40L>	2			
	203132	Plain Wheel<ø119×49L>		2		
	203133	Plain Wheel<ø133×54L>			2	
	203134	Plain Wheel<ø143.5×59L>				2
4	400191	Retaining Ring<S-20>	4			
	400192	Retaining Ring<S-25>		4		
	400193	Retaining Ring<S-30>			4	
	400194	Retaining Ring<S-35>				4
5	203111	Gear Wheel<M3.5×28T×47L>	2			
	203112	Gear Wheel<M3.5×32T×56L>		2		
	203113	Gear Wheel<M3.5×36T×59L>			2	
	203114	Gear Wheel<M3.5×39T×67L>				2
6	202931	Motor Frame	1			
	202932			1		
	202933				1	
	202934					1
7	203221	Spacer Washer<ø40×ø24×1/8">	32			

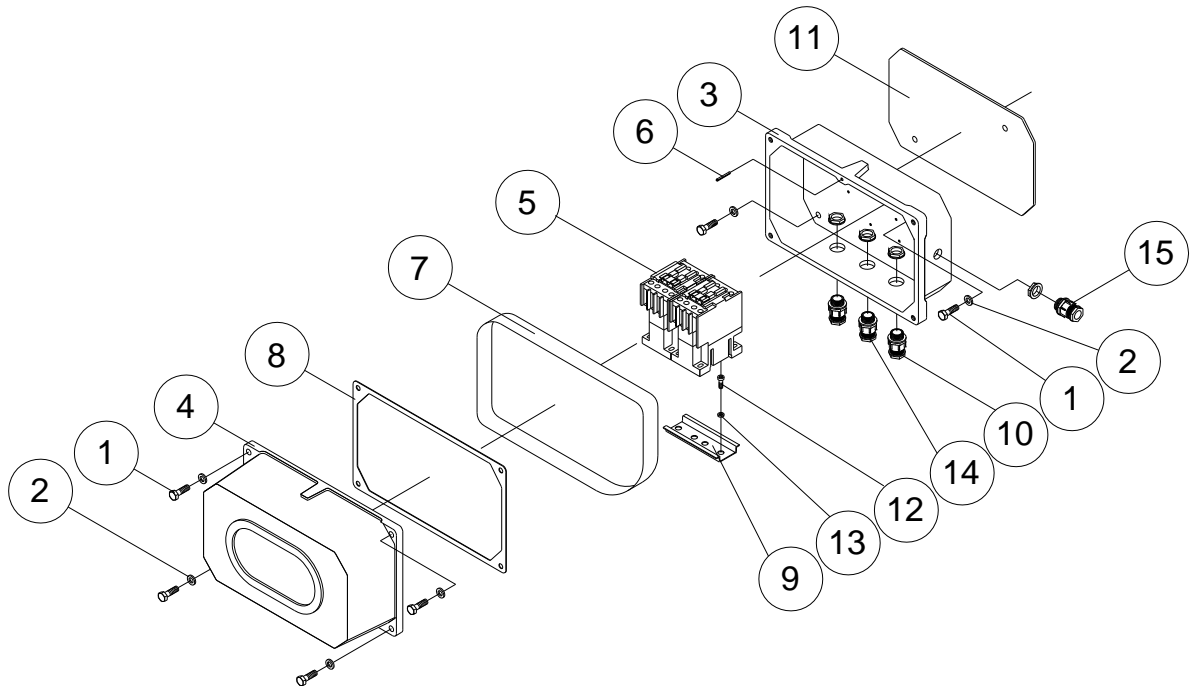
	203222	Spacer Washer<ø46×ø27×1/8">		32		
	203223	Spacer Washer<ø54×ø34×1/8">			32	
	203224	Spacer Washer<ø60×ø40×1/8">				32
8	400102	Spring Washer<7/8">	4			
	400103	Spring Washer<1">		4		
	400105	Spring Washer<1 1/4">			4	
	400106	Spring Washer<1 1/2">				4

BODY PARTS B.O.M.

NO.	PARTS CODE	DESCRIPTION	Q'TY REQ'D EACH UNIT			
			AMT -100	AMT -200	AMT -300	AMT -500
9	400070	Hex. Nut<7/8"×9UNC>	4			
	400071	Hex. Nut<1"×8UNC>		4		
	400072	Hex. Nut<1 1/4"×7UNC>			4	
	400073	Hex. Nut<1 1/2"×6UNC>				4
10	408366	Stay Bolt<7/8"×9UNC×265L>	2			
	408369	Stay Bolt<1"×8UNC×300L>		2		
	400063	Stay Bolt<1 1/4"×7UNC×360L>			2	
	400067	Stay Bolt<1 1/2"×6UNC×390L>				2
11	203151	Position Tube<ø34×ø24×56L>	4			
	203152	Position Tube<ø38×ø28×69L>		4		
	203153	Position Tube<ø50×ø40×83.5L>			4	4
12	203186	Load Bracket<t13×102×175L>	1			

	203187	Load Bracket<t13×115×180L>		1		
	203188	Load Bracket<t16×120×230L>			1	
	203189	Load Bracket<t19×135×260L>				1
13	201761	Transmission Pinion<0.25Kw-M3.5×16T>	1	1		
	201771	Transmission Pinion<0.6Kw-M3.5×16T>			1	1
14		Motor Ass'y-0.25Kw	1	1		
		Motor Ass'y-0.6Kw			1	1
15	400096	Spring Washer<M10>	4	4	4	4
16	400045	Hex. Headed Bolt<M10×1.5×20L>	4			
	400046	Hex. Headed Bolt<M10×1.5×25L>		4		
	400047	Hex. Headed Bolt<M10×1.5×30L>			4	4

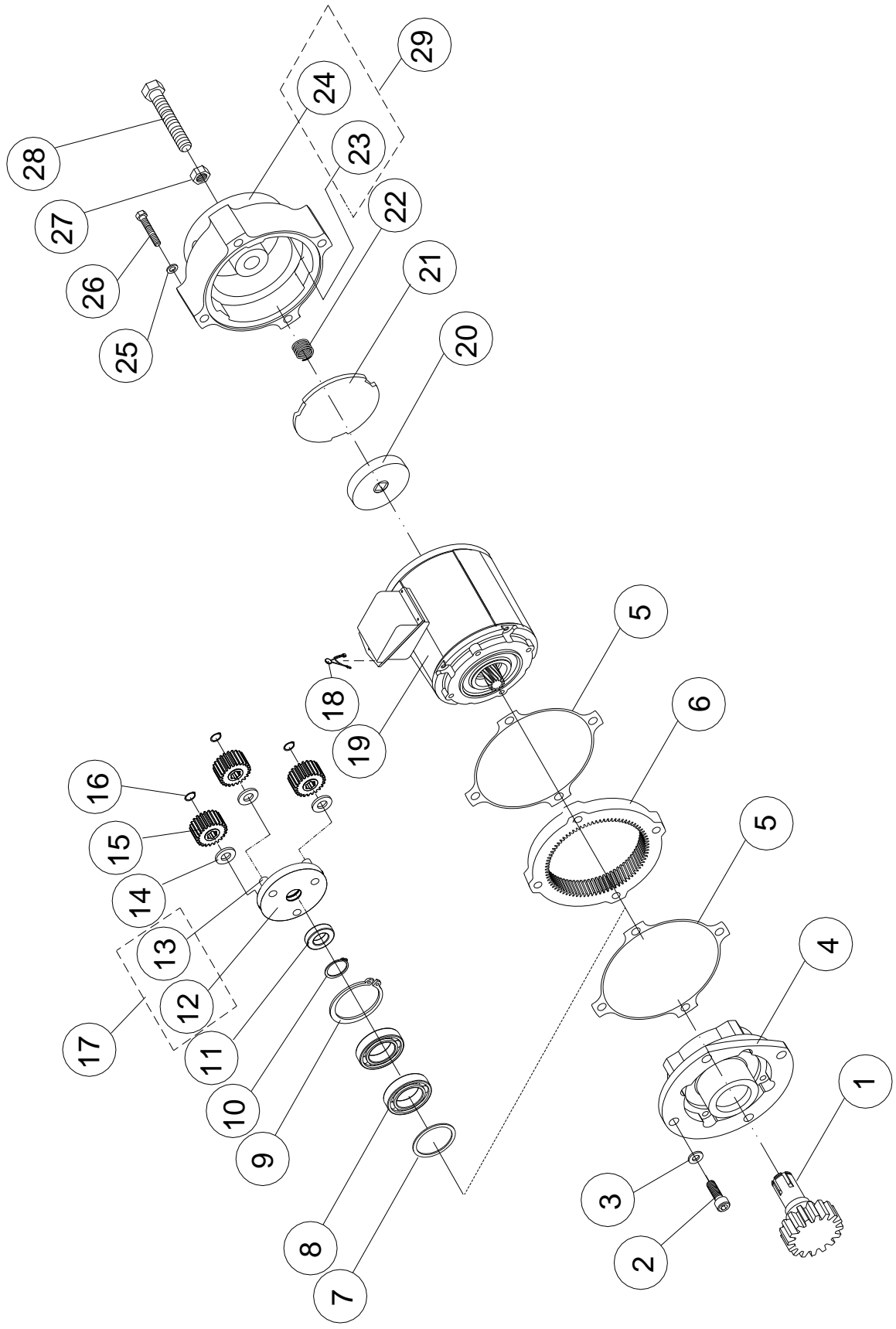
ELECTRIC EXPLOSION



ELECTRIC PARTS B.O.M.

NO.	PARTS CODE	DESCRIPTION	Q'TY REQ'D EACH UNIT
1	400006	Hex. Recess Bolt<M6x1.0x16L>	6
2	400094	Spring Washer<M6>	6
3	300398	Electric Housing	1
4	300394	Electric Housing Cover	1
5	301103	Contacto	2
6	400211	Spring Pin<ø3x14L>	1
7	400266	Rubber Band	1
8	402583	Gasket 68#	1
9	300079	Contacto Rail<2PC>	1
10	400222	Rubber Cap	2
11	402516	Gasket 16#	1
12	400052	Cross Headed Screw<M4x0.7x15L>	4
13	400092	Spring Washer<M4>	4
14	400222	Rubber Cap	1
15	400941	Rubber Cap	2

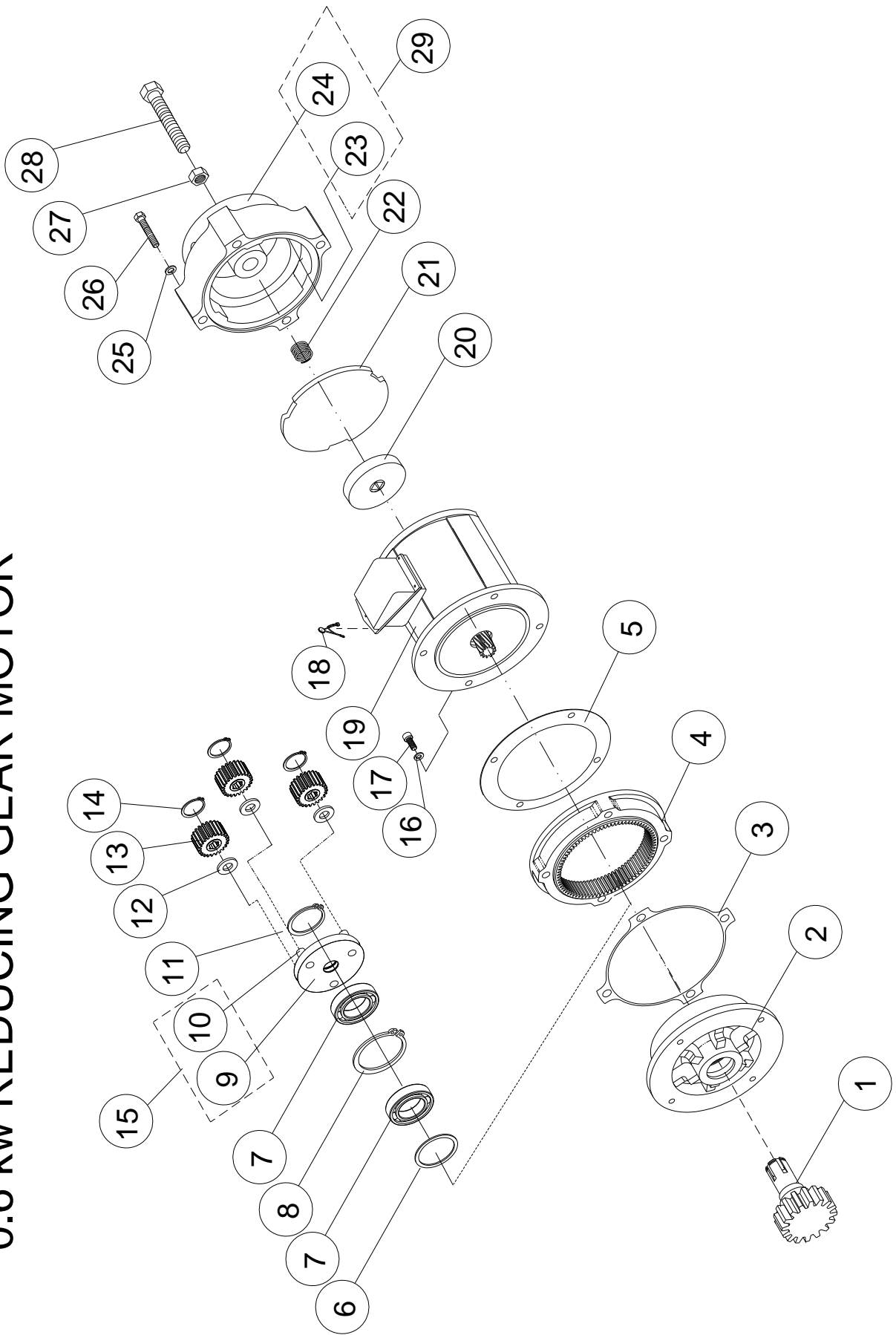
0.25 kW REDUCING GEAR MOTOR



0.25kw REDUCING GEAR MOTOR B.O.M.

NO.	PARTS CODE	DESCRIPTION	Q'TY REQ'D EACH UNIT
1	201761	Transmission Axle With Pinion	1
2	405017	Hex. Headed Bolt<M6x1x60L>	4
3	400094	Spring Washer<M6>	4
4	200320	Gear Box	1
5	402513	Gear Box Gasket 13#	2
6	200334	Inner Teeth Gear Sleeve	1
7	400182	Oil Seal<ø25xø40x6t>	1
8	400695	Bearing<6204 Z>	2
9	400198	Retaining Ring<R-47>	1
10	400191	Retaining Ring<S-20>	1
11	200347	Axle Sleeve<ø25xø20x6L>	1
12	200328	Reducing Gear Frame	1
13	200392	Planetary Gear Axle<ø13x26.5L>	3
14	400669	Flat Washer<ø21xø11x2>	3
15	200337	Planetary Gear	3
16	400188	Retaining Ring<S-10>	3
17	200391	Reducing Gear Frame Ass'y	1
18	300144	Rectifier	1
19	106511	Motor Ass'y	1
20	100480	Brake Lining	1
21	100407	Brake Disc	1
22	400239	Brake Spring	1
23	400243	Brake Coil	1
24	100396	Brake Drum	1
25	400094	Spring Washer<M6>	4
26	400007	Hex. Headed Bolt<M6x1x20L>	4
27	400084	Nut<M12x1.75>	1
28	400464	Hex. Headed Bolt<M12x1.75x35L>	1
29	100502	Brake Drum Ass'y	1

0.6 kW REDUCING GEAR MOTOR



0.6kw REDUCING GEAR MOTOR B.O.M.

NO.	PARTS CODE	DESCRIPTION	Q'TY REQ'D EACH UNIT
1	201771	Transmission Axle With Pinion	1
2	200319	Gear Box	1
3	402519	Gear Box Gasket B	1
4	200336	Inner Teeth Gear Sleeve	1
5	402517	Gear Box Gasket A	1
6	400939	Oil Seal<30x45x8>	1
7	400803	Bearing<6205Z>	2
8	400199	Retaining Ring<R-52>	1
9	200332	Reducing Gear Frame	1
10	200394	Planetary Gear Axle<ø15x29.5L>	3
11	400192	Retaining Ring<S-25>	1
12	400667	Flat Washer<ø20xø12x2>	3
13	200342	Planetary Gear	3
14	400189	Retaining<S-12>	3
15	200326	Reducing Gear Frame Ass'y	1
16	400095	Spring Washer<M8>	4
17	400426	Hex. Recess Bolt<M8x1.25x45L>	4
18	300144	Rectifier	1
19	106610	Motor Ass'y	1
20	100401	Brake Lining	1
21	100402	Brake Disc	1
22	400314	Brake Spring	1
23	400244	Brake Coil	1
24	100403	Brake Drum	1
25	400094	Spring Washer<M6>	4
26	400027	Hex. Headed Bolt<M6x1x45L>	4
27	400085	Nut<M16x1.5>	1
28	400468	Hex. Headed Bolt<M16x1.5x50L>	1
29	100501	Brake Drum Ass'y	1