



# MOTORIZED TROLLEY



## OPERATION MANUAL

&

## PART LIST

**SERIES:**

- |                          |                |
|--------------------------|----------------|
| <input type="checkbox"/> | <b>MT-100</b>  |
| <input type="checkbox"/> | <b>MT-200</b>  |
| <input type="checkbox"/> | <b>MT-300</b>  |
| <input type="checkbox"/> | <b>MT-500</b>  |
| <input type="checkbox"/> | <b>MT-750</b>  |
| <input type="checkbox"/> | <b>MT-1000</b> |

# **SAFETY-IMPORTANT**

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

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



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



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# I. FOREWORD

This manual contains important information to help you properly install, operate and maintain the Black Bear 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 and 3). Part Number**, as well as the description.

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

Should you have any queries, please contact:



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

## II. OPERATING AND SAFETY PROCEDURES

The following are operating and safety procedures for safe operation of the Black Bear 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 or 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 the 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.

### **3. HOIST TO TROLLEY**

There are four different ways of assembling the hoist to trolley:

(a) Hoist to trolley with top hook

(Please refer to Illust.:1)

(b) Hoist to trolley with "E" type rigid hook

(Please refer to Illust.:2)

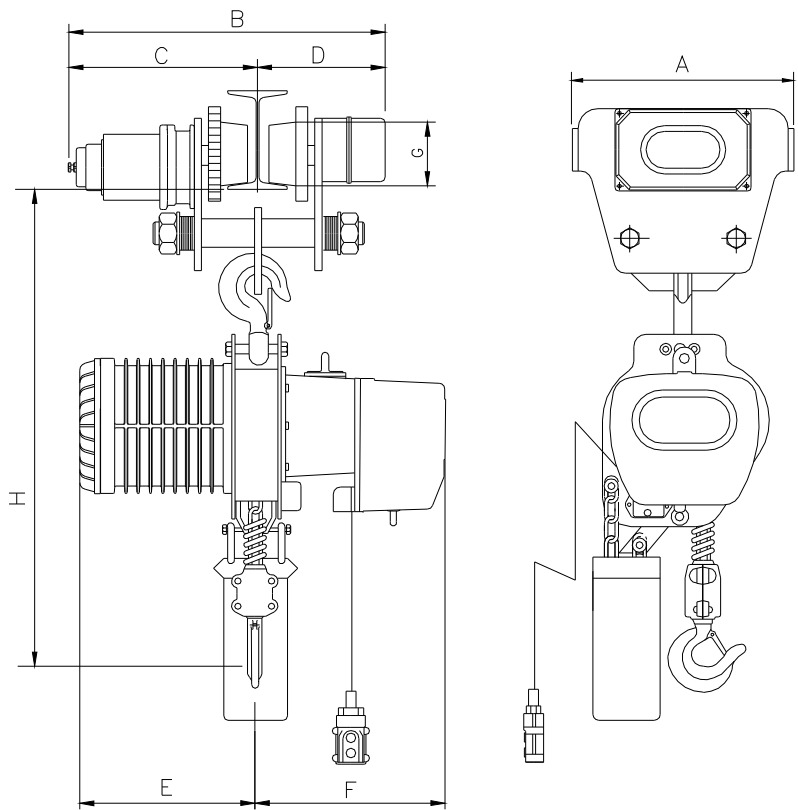
(c) Hoist to trolley with "A" type rigid hook

(Please refer to Illust.:3)

(d) Hoist to trolley of low headroom design

(Please refer to Illust.:4)

# HOIST TO TROLLEY WITH TOP HOOK

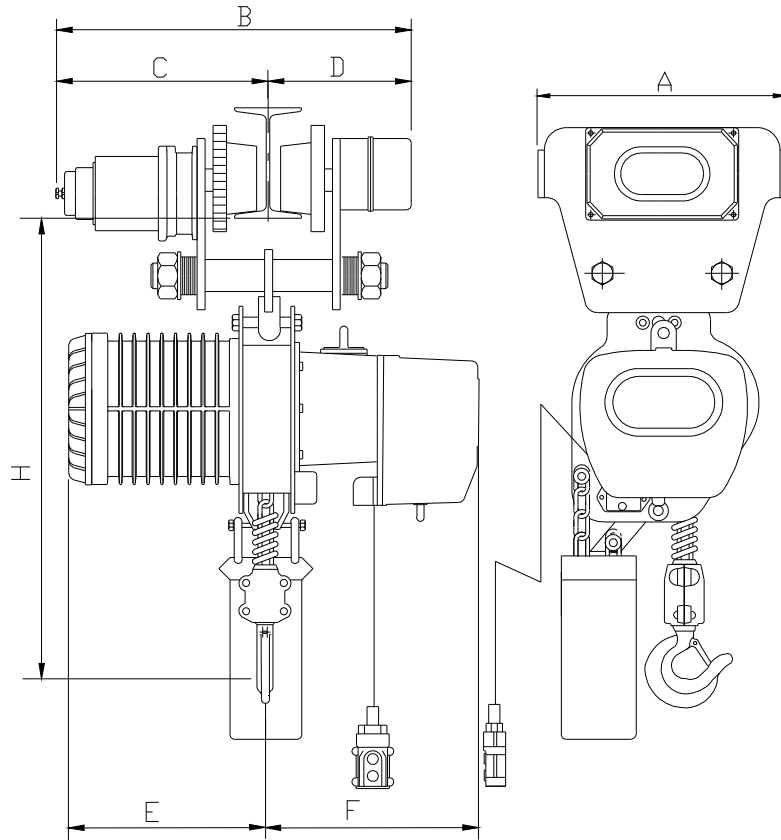


| CAPACITY (TON) | a   | b   | c  | d   | e   | f   | h  | k  |
|----------------|-----|-----|----|-----|-----|-----|----|----|
| 1              | 125 | 175 | 45 | 102 | ∅65 | ∅23 | 13 | 24 |
| 2              | 130 | 180 | 55 | 115 | ∅65 | ∅26 | 13 | 30 |
| 3              | 150 | 230 | 58 | 120 | ∅74 | ∅34 | 18 | 36 |
| 5              | 170 | 260 | 60 | 135 | ∅74 | ∅40 | 19 | 45 |

| CAPACITY (TON) | X   | Y   | Z    | QTY |
|----------------|-----|-----|------|-----|
| 1              | ∅24 | ∅34 | 56   | 4   |
| 2              | ∅28 | ∅38 | 69   | 4   |
| 3              | ∅40 | ∅52 | 83.5 | 4   |
| 5              | ∅40 | ∅52 | 82   | 4   |

| S.W.L. T | HOIST       | TROLLEY | A   | B   | C   | D   | H    | E   | F   | G    | TROLLEY (kW) | SPACER 1/8"t | BEAM (mm) | TURNING RADUS |
|----------|-------------|---------|-----|-----|-----|-----|------|-----|-----|------|--------------|--------------|-----------|---------------|
| 1        | YSL.H.E-100 | MT-100  | 295 | 541 | 345 | 196 | 705  | 245 | 260 | ∅78  | 0.25         | 32           | 75-125    | 1.3M          |
| 2        | YSL.H.E-200 | MT-200  | 323 | 567 | 358 | 209 | 935  | 245 | 260 | ∅90  | 0.25         | 32           | 100-150   | 1.5M          |
| 2        | YSS-200     | MT-200  | 323 | 567 | 358 | 209 | 995  | 326 | 314 | ∅90  | 0.25         | 32           | 100-150   | 1.5M          |
| 3        | YSS-300     | MT-300  | 340 | 649 | 385 | 264 | 1120 | 326 | 314 | ∅100 | 0.6          | 32           | 125-175   | 1.8M          |
| 5        | YSS-500     | MT-500  | 389 | 641 | 410 | 231 | 1200 | 326 | 314 | ∅110 | 0.6          | 32           | 125-175   | 2M            |

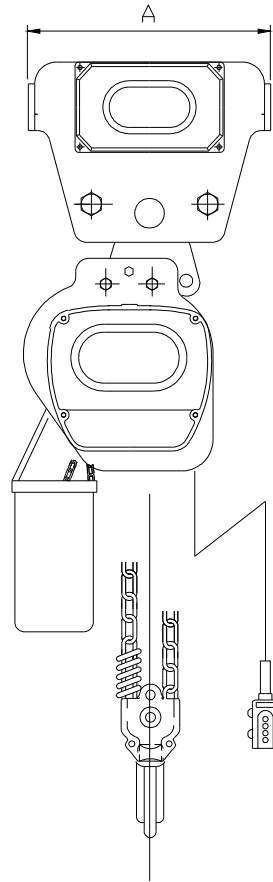
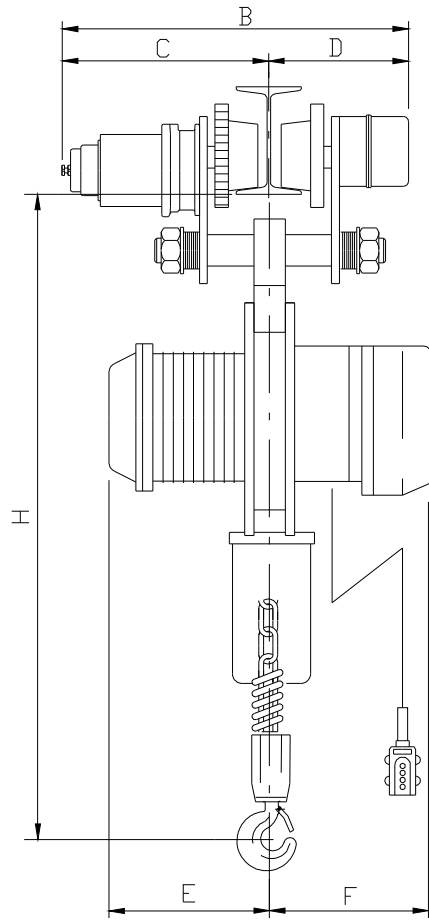
# HOIST TO TROLLEY WITH TYPE "E" RIGID HOOK



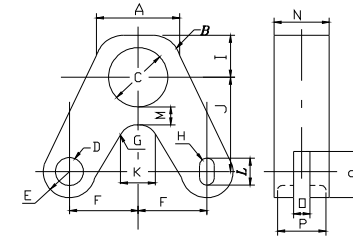
| CAPACITY<br>(TON) | a   | b   | c  | d  | e  | f   | h  | j    | k    | m   | n   |
|-------------------|-----|-----|----|----|----|-----|----|------|------|-----|-----|
| 1                 | 125 | 175 | 25 | 50 | 60 | 105 | 13 | 31.8 | 31.8 | ∅23 | ∅16 |
| 2                 | 130 | 180 | 30 | 60 | 65 | 115 | 13 | 36   | 46   | ∅27 | ∅16 |

| S.W.L.<br>T | HOIST       | TROLLEY | A   | B   | C   | D   | H   | E   | F   | TROLLEY<br>(kW) | SPACER<br>1/8"t | BEAM<br>(mm) | TURNING<br>RADUS |
|-------------|-------------|---------|-----|-----|-----|-----|-----|-----|-----|-----------------|-----------------|--------------|------------------|
| 1           | YSL.H.E-100 | MT-100  | 295 | 541 | 345 | 196 | 705 | 245 | 260 | 0.25            | 32              | 75-125       | 1.3M             |
| 2           | YSL.H.E-200 | MT-200  | 323 | 567 | 358 | 209 | 935 | 245 | 260 | 0.25            | 32              | 100-150      | 1.5M             |
| 2           | YSS-200     | MT-200  | 323 | 567 | 358 | 209 | 995 | 245 | 260 | 0.25            | 32              | 100-150      | 1.5M             |

# HOIST TO TROLLEY WITH TYPE "A" RIGID HOOK



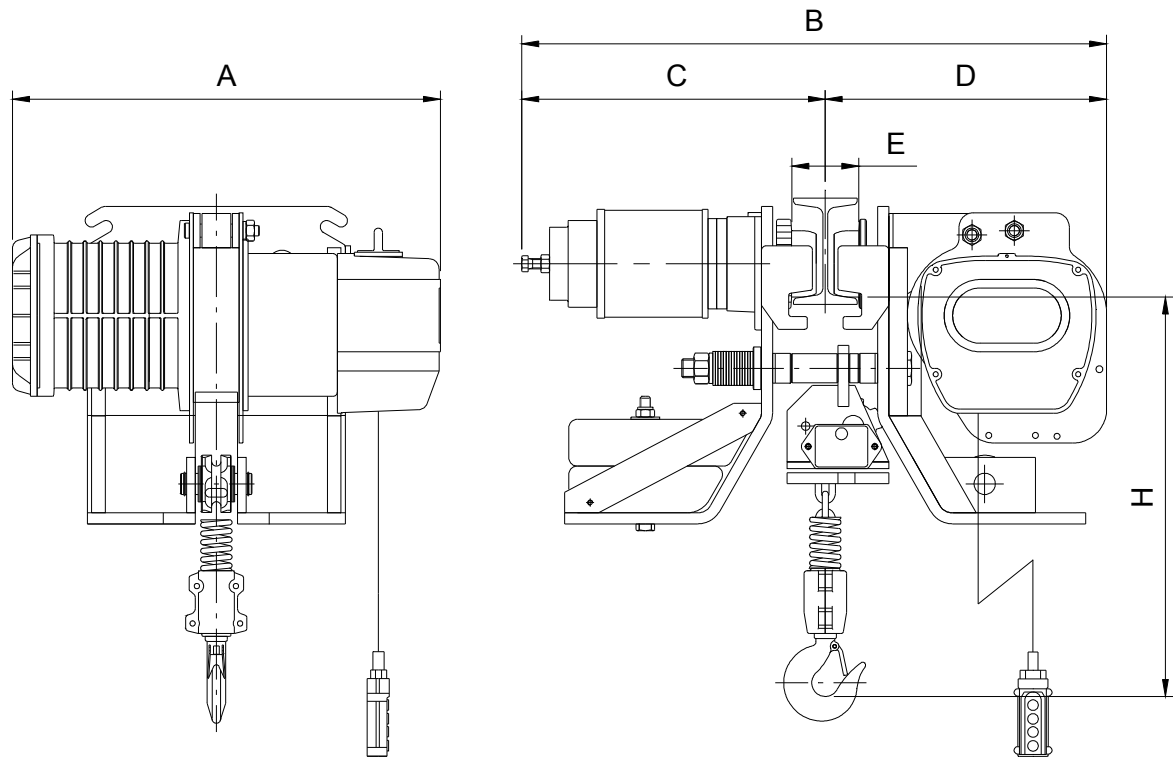
(TYPE "A" RIGID HOOK)



|   | 2TON | 3TON | 5TON |
|---|------|------|------|
| A | 48   | 45   | 75   |
| B | R10  | R18  | R30  |
| C | ∅40  | ∅51  | ∅51  |
| D | ∅16  | ∅22  | ∅22  |
| E | R19  | R25  | R25  |
| F | 60   | 55   | 60   |
| G | R12  | R12  | R25  |
| H | R4.5 | R7   | R7   |
| I | 34   | 54   | 58   |
| J | 67   | 95   | 95   |
| K | 28   | 32   | 48   |
| L | 14   | 16   | 19.5 |
| M | 10   | 18   | 23   |
| N | 41   | 45   | 45   |
| O | 10   | 14   | 14   |
| P | 25   | 35   | 37   |
| Q | 32   | 54   | 50   |

| S.W.L.<br>T | HOIST   | TROLLEY | A   | B   | C   | D   | H    | E   | F   | TROLLEY<br>(kW) | SPACER<br>1/8"t | BEAM<br>(mm) | TURNING<br>RADUS |
|-------------|---------|---------|-----|-----|-----|-----|------|-----|-----|-----------------|-----------------|--------------|------------------|
| 3           | YSS-300 | MT-300  | 340 | 649 | 385 | 264 | 1120 | 326 | 314 | 0.6             | 32              | 125-175      | 1.8M             |
| 5           | YSS-500 | MT-500  | 389 | 641 | 410 | 231 | 1200 | 326 | 314 | 0.6             | 32              | 125-175      | 2M               |

# HOIST TO TROLLEY OF LOW HEADROOM DESIGN



| Capacity<br>(ton) | Model    | Dimensions (mm) |     |     |     |     |     | Lift Speed<br>(m/min) |         | Trolley Speed<br>(m/min) |        | Flange<br>Width<br>(mm) |
|-------------------|----------|-----------------|-----|-----|-----|-----|-----|-----------------------|---------|--------------------------|--------|-------------------------|
|                   |          | H               | A   | B   | C   | D   | E   | 50HZ                  | 60HZ    | 50HZ                     | 60HZ   |                         |
| 1                 | YLT-100  | 425             | 505 | 691 | 360 | 331 | 75  | 4.7                   | 5.6     | 20                       | 24, 16 | 75~<br>125              |
|                   | YLTD-100 |                 | 545 |     |     |     |     | 4.7/1.6               | 5.6/1.8 |                          |        |                         |
| 2                 | YLT-200  | 487             | 505 | 717 | 375 | 342 | 125 | 2.3                   | 2.8     | 20                       | 24, 16 | 100~<br>150             |
|                   | YLTD-200 |                 | 545 |     |     |     |     | 2.3/0.8               | 2.8/1.0 |                          |        |                         |
| 3                 | YLT-300  | 593             | 505 | 781 | 418 | 363 | 125 | 1.5                   | 1.8     | 20                       | 24, 16 | 125~<br>175             |
|                   | YLTD-300 |                 | 545 |     |     |     |     | 1.5/0.5               | 1.8/0.6 |                          |        |                         |
| 1                 | YHT-100  | 425             | 505 | 691 | 360 | 331 | 100 | 6.7                   | 8.0     | 20                       | 24, 16 | 75~<br>125              |
|                   | YHTD-100 |                 | 545 |     |     |     |     | 6.7/2.2               | 8.0/2.7 |                          |        |                         |
| 2                 | YHT-200  | 487             | 505 | 717 | 375 | 342 | 125 | 3.3                   | 4.0     | 20                       | 24, 16 | 100~<br>150             |
|                   | YHTD-200 |                 | 545 |     |     |     |     | 3.3/1.1               | 4.0/1.3 |                          |        |                         |
| 3                 | YHT-300  | 593             | 505 | 781 | 418 | 363 | 125 | 2.2                   | 2.6     | 20                       | 24, 16 | 125~<br>175             |
|                   | YHTD-300 |                 | 545 |     |     |     |     | 2.2/0.7               | 2.6/0.9 |                          |        |                         |
| 2                 | YST-200  | 702             | 640 | 925 | 423 | 502 | 125 | 6.7                   | 7.9     | 20                       | 24, 16 | 125~<br>175             |
|                   | YSTD-200 |                 | 647 |     |     |     |     | 6.7/2.2               | 7.9/2.6 |                          |        |                         |
| 2.5               | YST-250  | 724             | 640 | 925 | 423 | 502 | 125 | 5.2                   | 6.4     | 20                       | 24, 16 | 125~<br>175             |
|                   | YSTD-250 |                 | 647 |     |     |     |     | 5.2/1.7               | 6.4/2.1 |                          |        |                         |
| 3                 | YST-300  | 765             | 640 | 925 | 423 | 502 | 125 | 4.3                   | 5.2     | 20                       | 24, 16 | 125~<br>175             |
|                   | YSTD-300 |                 | 647 |     |     |     |     | 4.3/1.4               | 5.2/1.7 |                          |        |                         |
| 5                 | YST-500  | 805             | 640 | 925 | 423 | 502 | 125 | 2.6                   | 3.2     | 20                       | 24, 16 | 125~<br>175             |
|                   | YSTD-500 |                 | 647 |     |     |     |     | 2.6/0.9               | 3.2/1.0 |                          |        |                         |

#### 4. ELECTRICAL INSTALLATION

The trolley electrical connection must be completed as shown in Illust.5, the Hoist & Trolley General Arrangement. Generally, the electric housing is provided with three holes in the bottom, one for trolley motor cord, the second one for trolley power cord from hoist and the third one for control cord from hoist. Moreover, the optional five holes design for independent usage of trolley are also available, please refer to the Illus.5. There are two holes on each side of the housing, on the left is the power cord for trolley, on the right is for the trolley motor cord.

For the details of wiring connection, please refer to the wiring diagrams (Illust.6 & 7). Also be noted that the above mentioned diagrams only acceptable for the standard units of 3-phase & 1-phase.

Hoist with trolley wiring diagram shown example as follows:

Illust.8 is 3 phases, single speed model.

Illust.9 is 3 phases, dual speed model.

Illust.10 is 3 phases, hoist dual speed, trolley single speed model.

Illust.11 is 3 phases, hoist single speed, trolley dual speed model.

For special unit, please see wiring diagram supplied with unit.



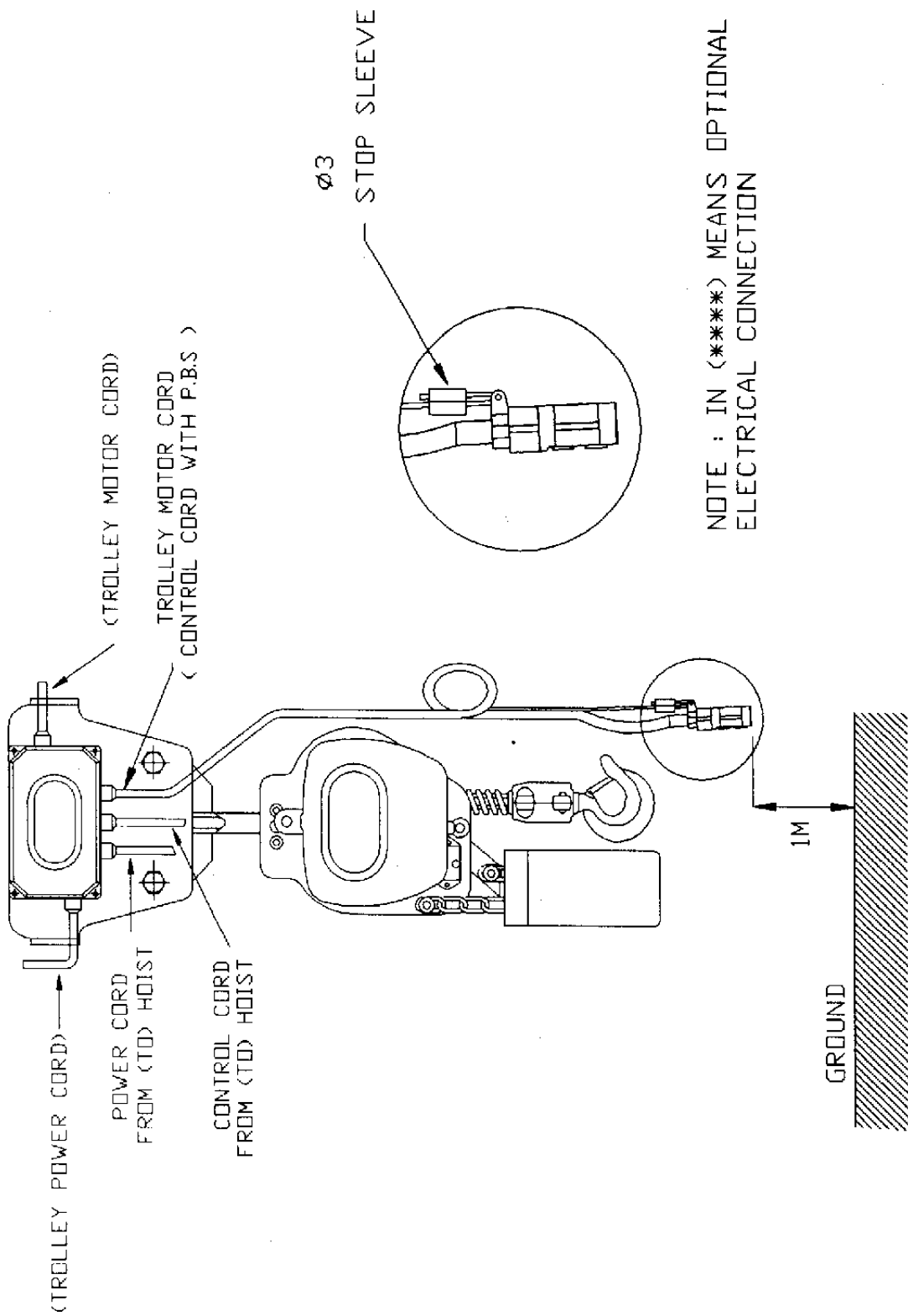
**WARNING**

**Power should be disconnected when making or changing connections, also proper grounding should be accomplished.**

#### 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.

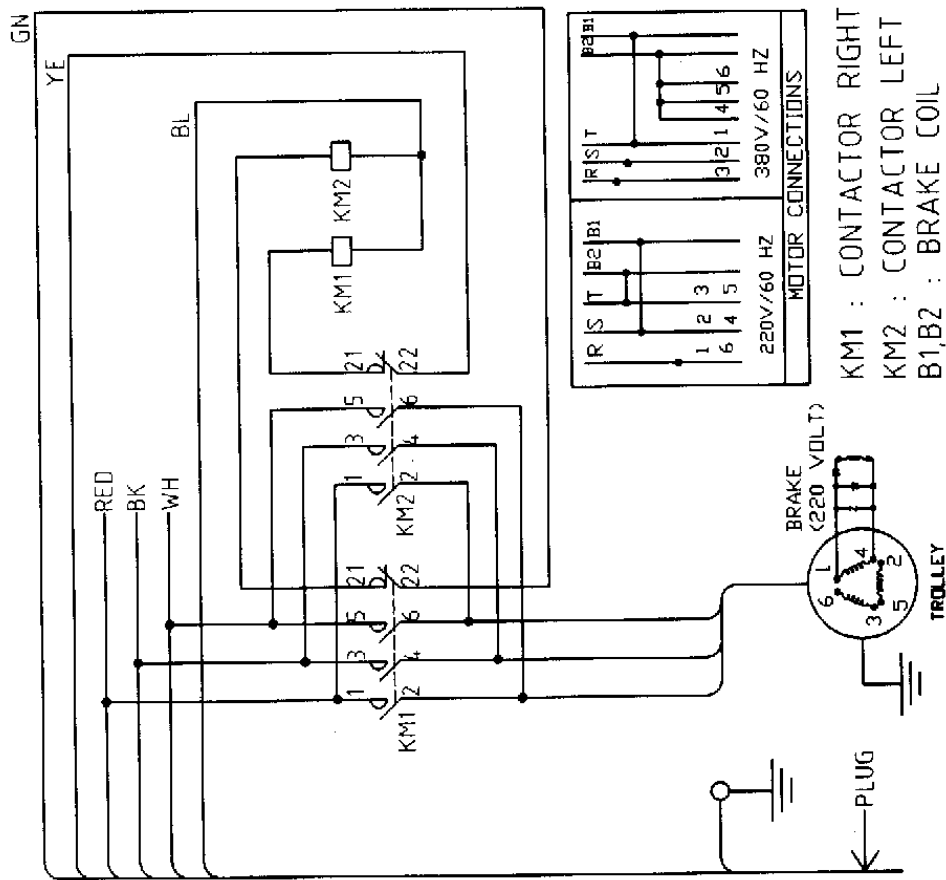
# HOIST & TROLLEY GENERAL ARRANGEMENT



NOTE : IN (\*\*\*\*) MEANS OPTIONAL OF ELECTRICAL CONNECTION

Illust.: 5

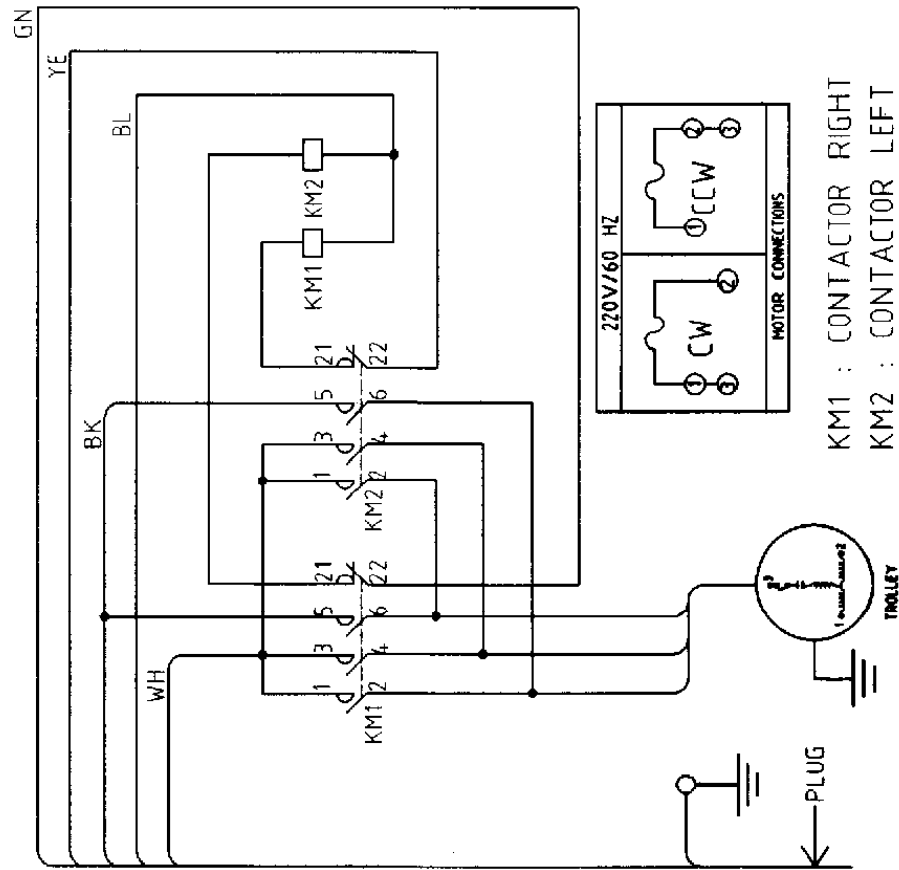
### THREE PHASE



KM1 : CONTACTOR RIGHT  
KM2 : CONTACTOR LEFT  
B1,B2 : BRAKE COIL

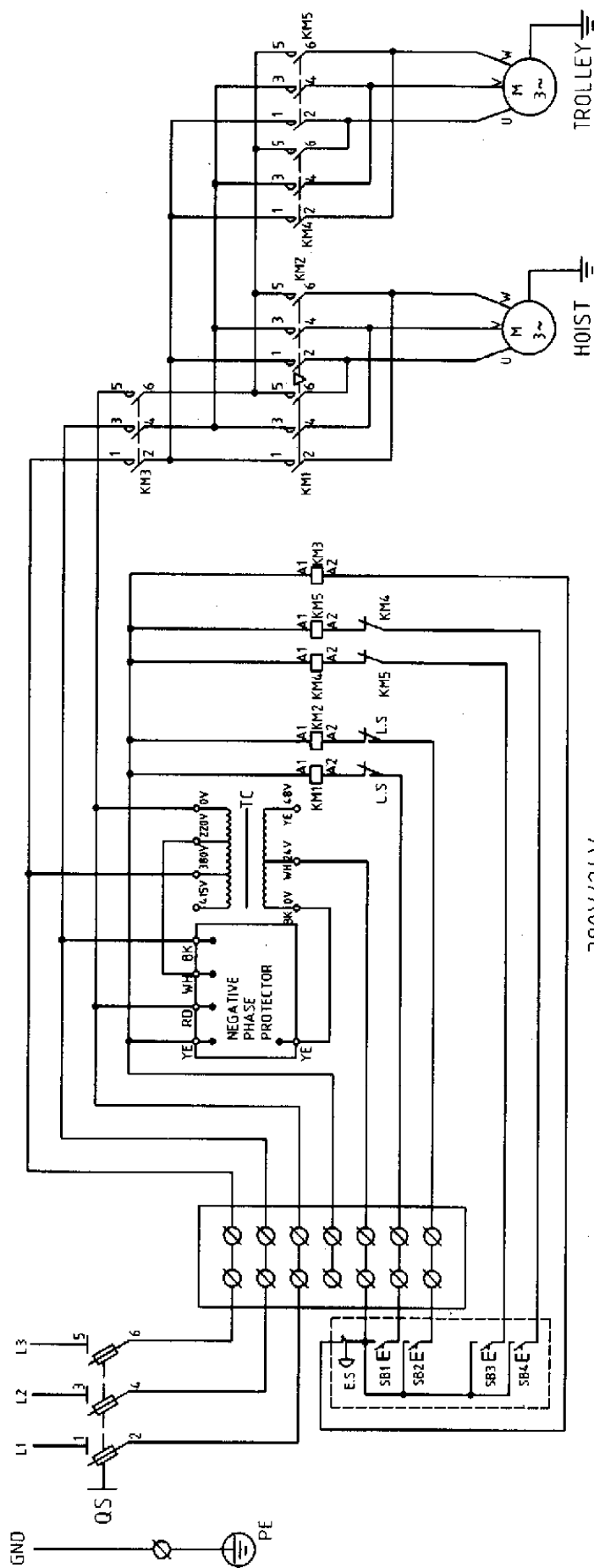
Illust. 7

### SINGLE PHASE



KM1 : CONTACTOR RIGHT  
KM2 : CONTACTOR LEFT

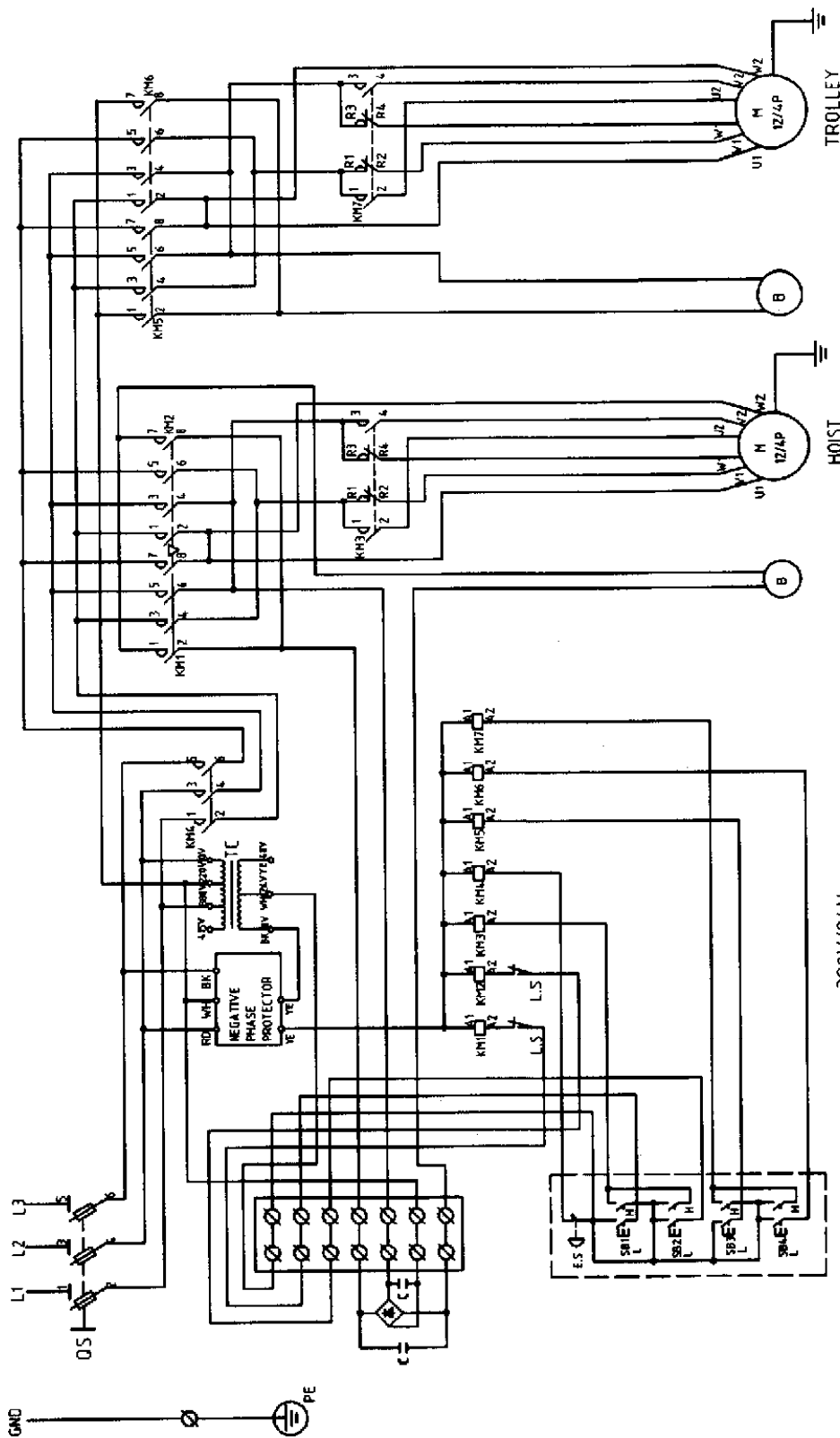
Illust. 6



380V/24V

- QS DISCONNECT SWITCH,OPTION,SUPPLY BY CUSTOMER
- PE PROTECTION EARTH
- E.S EMERGENCY STOP
- SB1 PUSH BUTTON LIFTING
- SB2 PUSH BUTTON LOWERING
- SB3 PUSH BUTTON LEFT
- SB4 PUSH BUTTON RIGHT
- TC TRANSFORMER FOR CONTROL POWER
- KM1 CONTACTOR LIFTING
- KM2 CONTACTOR LOWERING
- KM3 POWER SOURCE CONTACTOR MAIN
- KM4 CONTACTOR LEFT
- KM5 CONTACTOR RIGHT
- L.S LIMIT SWITCH UP/DOWN

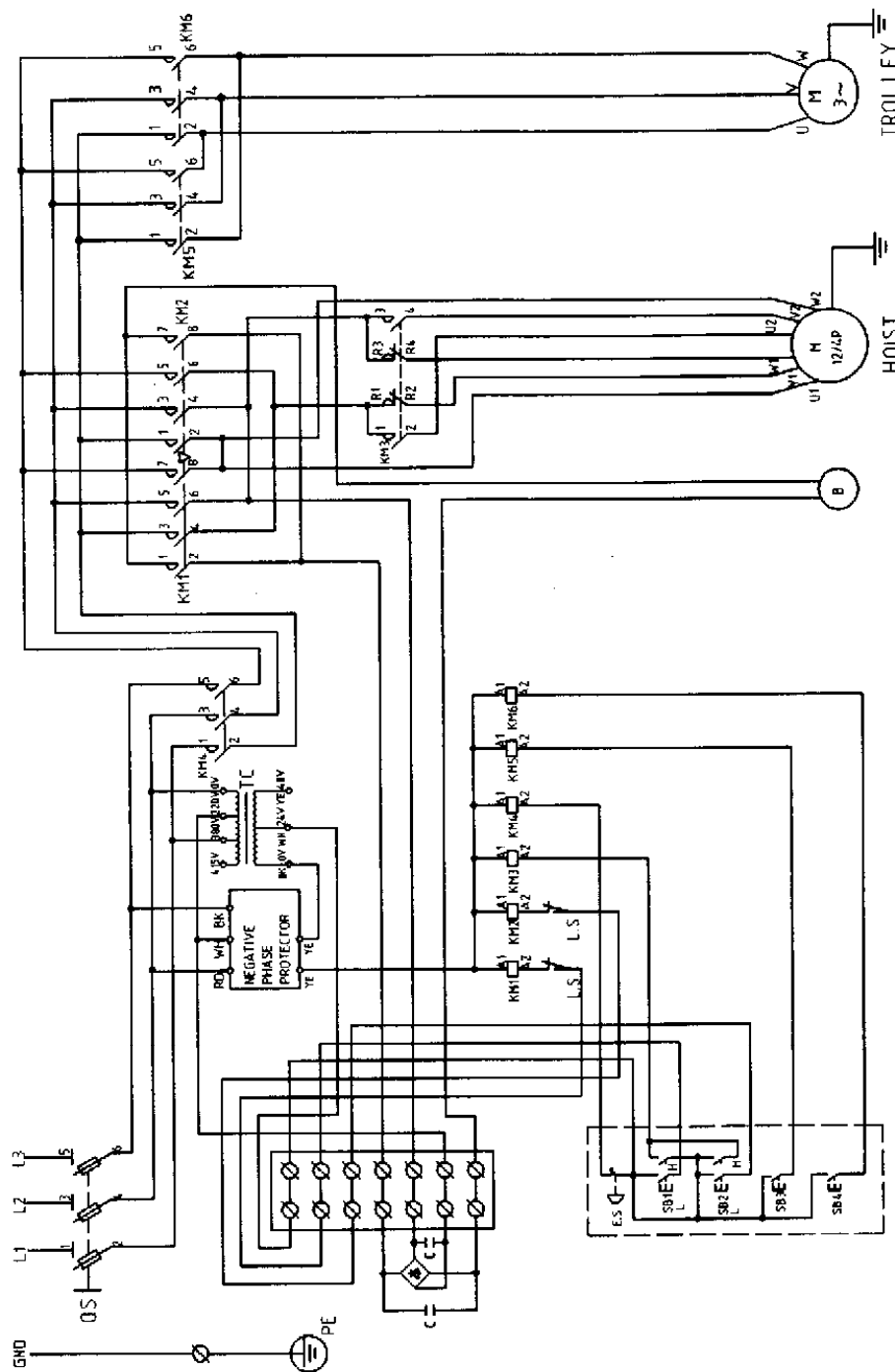
Illust. 8



380V/24V

- DS DISCONNECT SWITCH,OPTION,SUPPLY BY CUSTOMER
- PE PROTECTION EARTH
- E.S EMERGENCY STOP
- SB1 DUAL SPEED,PUSH BUTTON,LIFTING
- SB2 DUAL SPEED,PUSH BUTTON,LOWERING
- SB3 DUAL SPEED,PUSH BUTTON,LEFT
- SB4 DUAL SPEED,PUSH BUTTON,RIGHT
- TC TRANSFORMER FOR CONTROL POWER
- KM1 CONTACTOR LIFTING
- KM2 CONTACTOR LOWERING
- KM3 CONTACTOR,DUAL SPEED CONTROL
- KM4 POWER SOURCE CONTACTOR MAIN
- KM5 CONTACTOR LEFT
- KM6 CONTACTOR RIGHT
- KM7 CONTACTOR,DUAL SPEED CONTROL
- L.S LIMIT SWITCH UP/DOWN
- B BRAKE COIL

Illust. 9

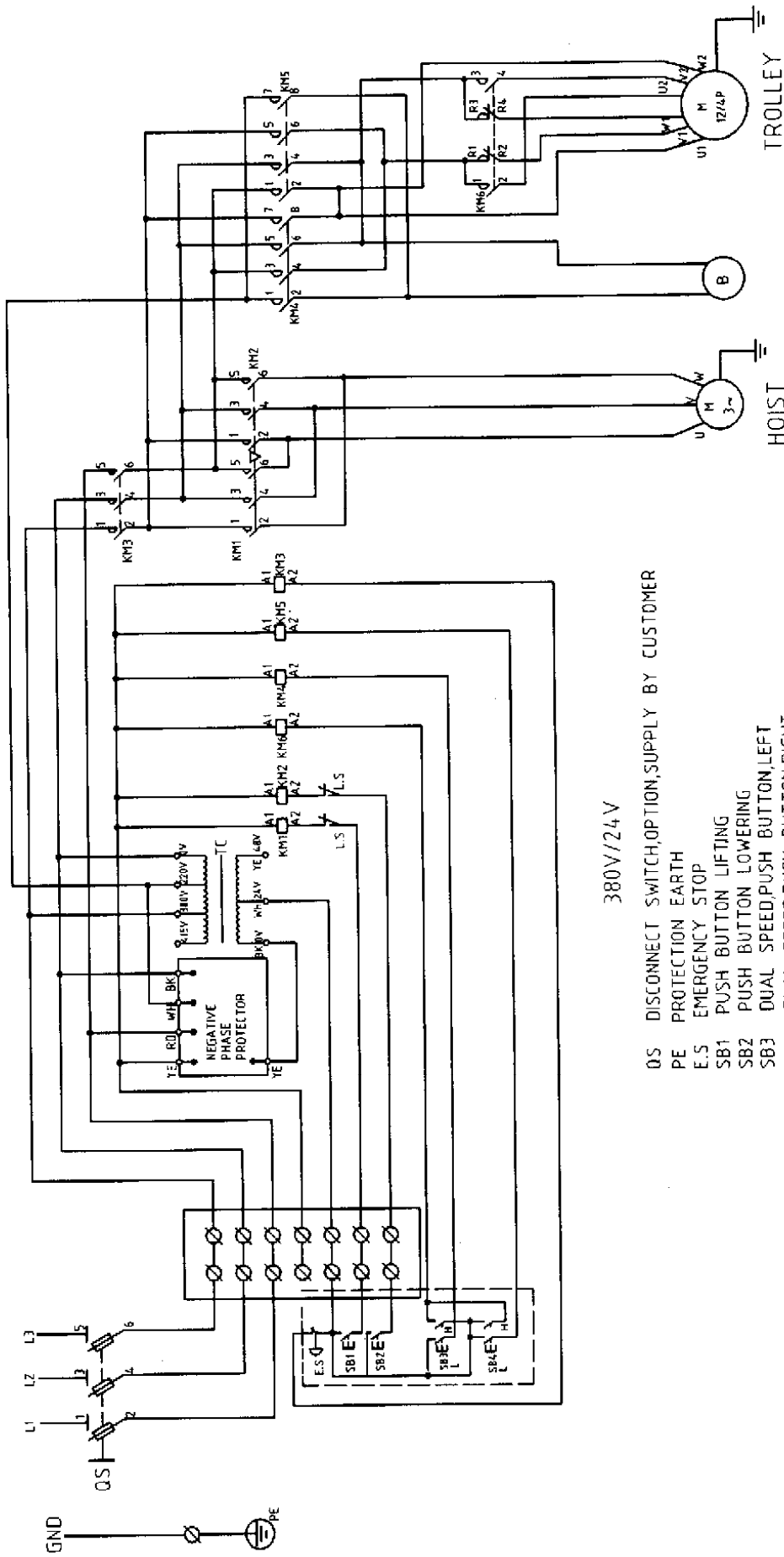


380V/24V

- QS DISCONNECT SWITCH, OPTION, SUPPLY BY CUSTOMER
- PE PROTECTION EARTH
- ES EMERGENCY STOP
- SB1 DUAL SPEED, PUSH BUTTON LIFTING
- SB2 DUAL SPEED, PUSH BUTTON LOWERING
- SB3 PUSH BUTTON, LEFT
- SB4 PUSH BUTTON, RIGHT
- TC TRANSFORMER FOR CONTROL POWER
- KM1 CONTACTOR LIFTING

- KM2 CONTACTOR LOWERING
- KM3 CONTACTOR DUAL SPEED CONTROL
- KM4 POWER SOURCE, CONTACTOR MAIN
- KM5 CONTACTOR LEFT
- KM6 CONTACTOR RIGHT
- L.S. LIMIT SWITCH UP/DOWN
- Ⓟ BRAKE COIL

Illust.:10



380V/24V

- QS DISCONNECT SWITCH,OPTION,SUPPLY BY CUSTOMER
- PE PROTECTION EARTH
- E.S EMERGENCY STOP
- SB1 PUSH BUTTON LIFTING
- SB2 PUSH BUTTON LOWERING
- SB3 DUAL SPEED,PUSH BUTTON,LEFT
- SB4 DUAL SPEED,PUSH BUTTON,RIGHT
- TC TRANSFORMER FOR CONTROL POWER
- KM1 CONTACTOR LIFTING
- KM2 CONTACTOR LOWERING
- KM3 POWER SOURCE CONTACTOR MAIN
- KM4 CONTACTOR LEFT
- KM5 CONTACTOR RIGHT
- KM6 CONTACTOR,DUAL SPEED CONTROL
- L.S LIMIT SWITCH UP/DOWN

Illust.:11

# 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 32 No.㉘ and page 36 No.㉙, brake adjusting hex. bolt.)

## VII. TROUBLE SHOOTING

Please refer to table 1 on page 21.

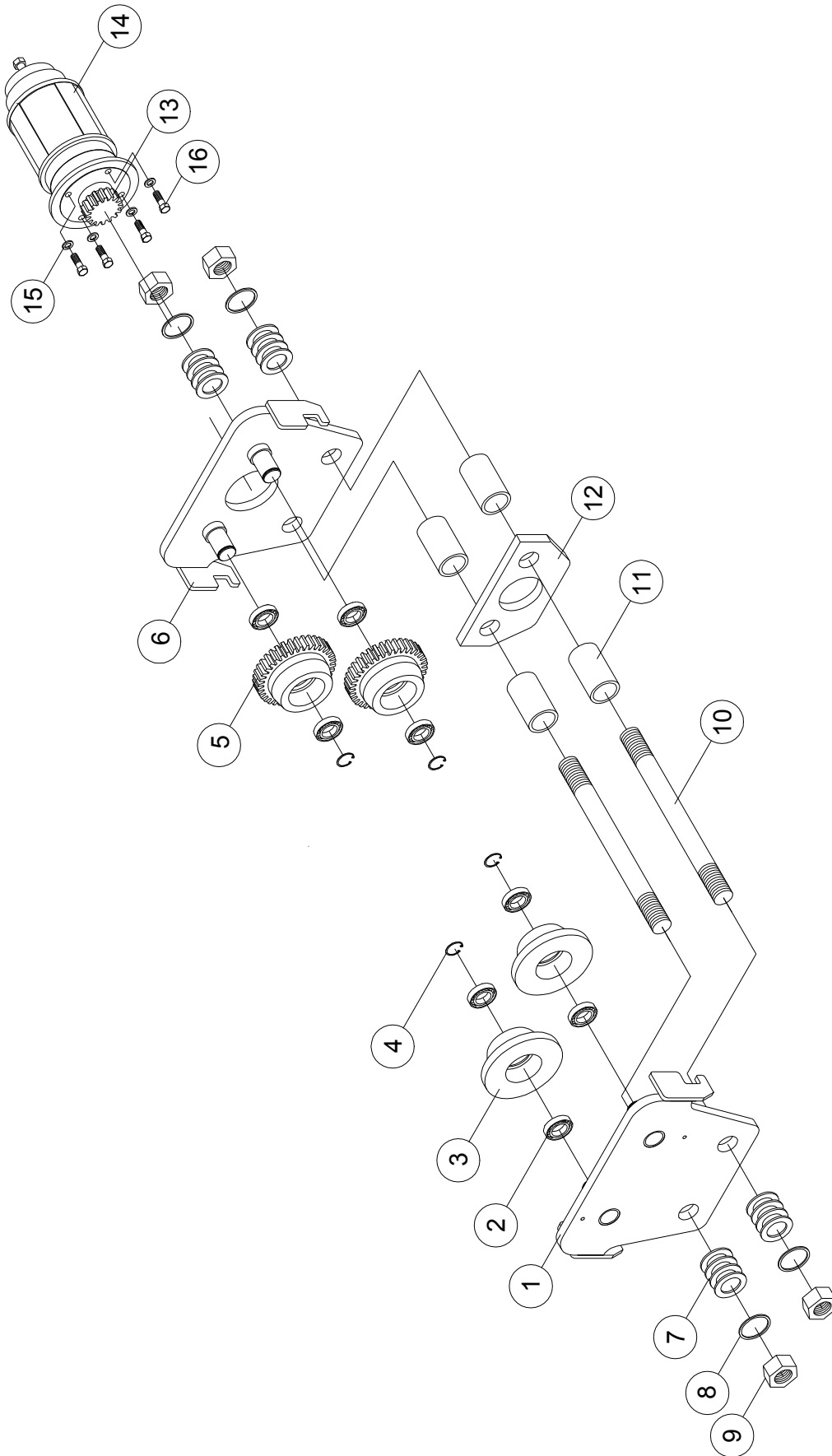
## VIII. PARTS LIST (BOM)

1. Trolley Exploded view, 1~5 ton.....P.22~P.24
2. Trolley Exploded view, 7.5ton, 10 ton.....P.25~P.26
3. Electric Explosion, 1~10 ton.....P.27~P.28
4. Reducing Gear Motor, 0.25KW.....P.29~P.31
5. Reducing Gear Motor, 0.6KW & 0.9KW.....P.32~P.35
6. Reducing Gear Motor, 1.5KW.....P.36~P.38

**Table 1. Troubleshooting and Remedial Action**

| <b>IF</b>  | <b>CAUSE MAY BE</b>  | <b>REMEDY</b>   |
|--|--|---|
| 1. Trolley does not operate in either direction. | a) Power failure at trolley<br><br>b) Phase error (Single phasing)<br><br>c) Turn on control circuit<br><br>d) Wrong voltage or frequency<br><br>e) Low voltage<br><br>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.<br><br>Power on, grounded or connected one line of supply system, collectors, trolley wiring, reversing contactor, motor leads or windings. Check for electrical continuity.<br><br>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.<br><br>The voltage and frequency must be the same as shown on trolley control box.<br><br>Control power supply deviates from standard not to exceed $\pm 10\%$ to prevent abnormal operation or damage to the motor.<br><br>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<br>b) Low Voltage<br>c) Worn or dirty rail   | As item 1. f)<br>As item 1. e)<br>Clean rails, inspect for worn spots.  |
| 4. Motor overheats                               | a) Excessive load<br>b) Low voltage<br>c) Extreme external heating<br><br>d) Frequent starting or reversing<br><br>e) Phase error  | As item 1. f)<br>As item 1. e)<br>Above an ambient temperature of $40^{\circ}\text{C}$ ., 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.<br><br>Excessive inching, jogging or plugging should be avoided since this type of operation will drastically shorten the life of motor and contactor.<br><br>As item 1. e)  |

# 1-5 TON BODY PARTS

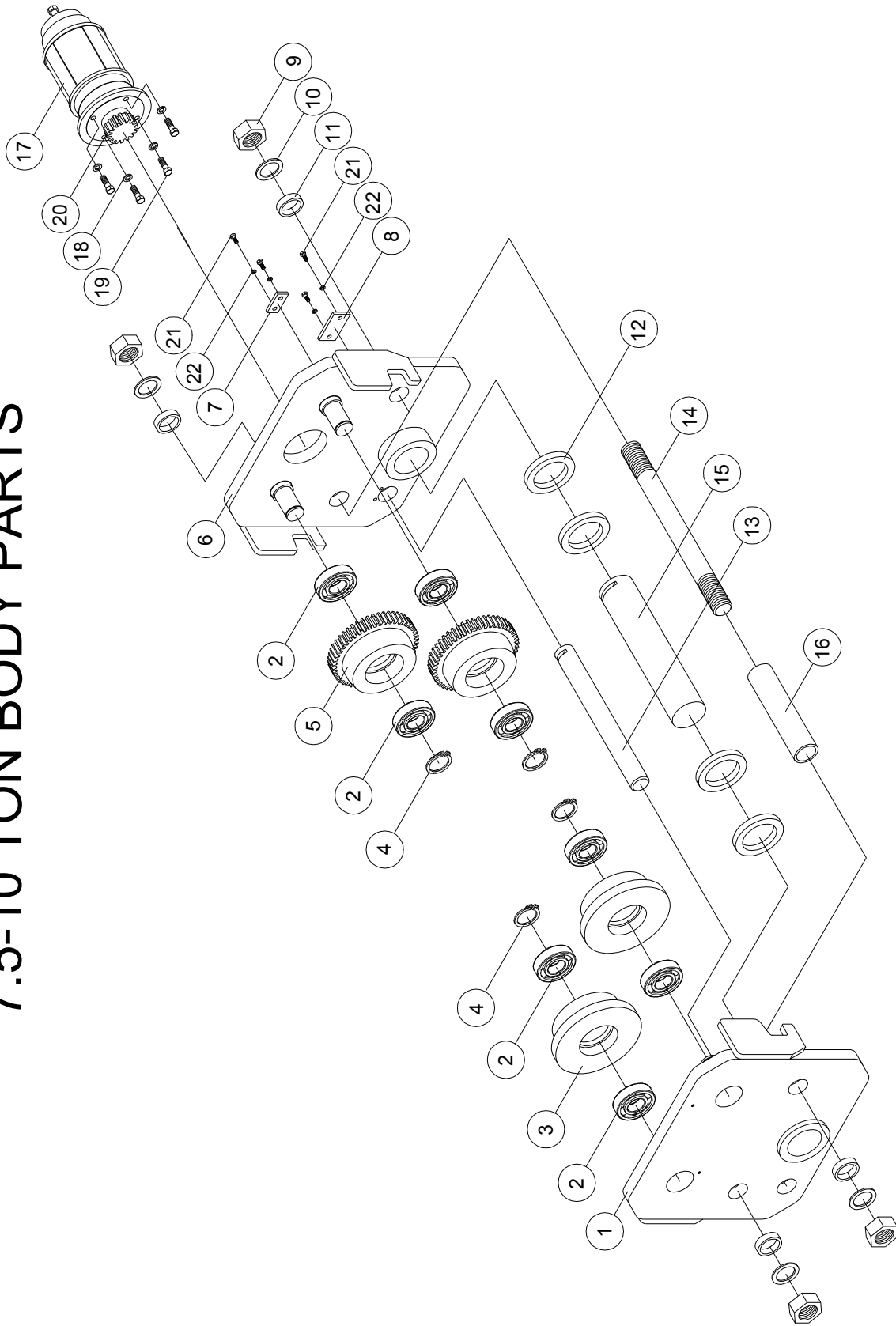


# BODY PARTS B.O.M.

| NO. | PARTS CODE | DESCRIPTION                 | Q'TY REQ'D EACH UNIT |    |    |    |
|-----|------------|-----------------------------|----------------------|----|----|----|
|     |            |                             | 1T                   | 2T | 3T | 5T |
| 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<ø105x40L>       | 2                    |    |    |    |
|     | 203132     | Plain Wheel<ø119x49L>       |                      | 2  |    |    |
|     | 203133     | Plain Wheel<ø133x54L>       |                      |    | 2  |    |
|     | 203134     | Plain Wheel<ø143.5x59L>     |                      |    |    | 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<M3.5x28Tx47L>    | 2                    |    |    |    |
|     | 203112     | Gear Wheel<M3.5x32Tx56L>    |                      | 2  |    |    |
|     | 203113     | Gear Wheel<M3.5x36Tx59L>    |                      |    | 2  |    |
|     | 203114     | Gear Wheel<M3.5x39Tx67L>    |                      |    |    | 2  |
| 6   | 202931     | Motor Frame                 | 1                    |    |    |    |
|     | 202932     |                             |                      | 1  |    |    |
|     | 202933     |                             |                      |    | 1  |    |
|     | 202934     |                             |                      |    |    | 1  |
| 7   | 203221     | Spacer Washer<ø40xø24x1/8"> | 32                   |    |    |    |
|     | 203222     | Spacer Washer<ø46xø27x1/8"> |                      | 32 |    |    |
|     | 203223     | Spacer Washer<ø54xø34x1/8"> |                      |    | 32 |    |
|     | 203224     | Spacer Washer<ø60xø40x1/8"> |                      |    |    | 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  |
| 9   | 400070     | Hex. Nut<7/8"x9UNC>         | 4                    |    |    |    |
|     | 400071     | Hex. Nut<1"x8UNC>           |                      | 4  |    |    |
|     | 400072     | Hex. Nut<1 1/4"x7UNC>       |                      |    | 4  |    |
|     | 400073     | Hex. Nut<1 1/2"x6UNC>       |                      |    |    | 4  |



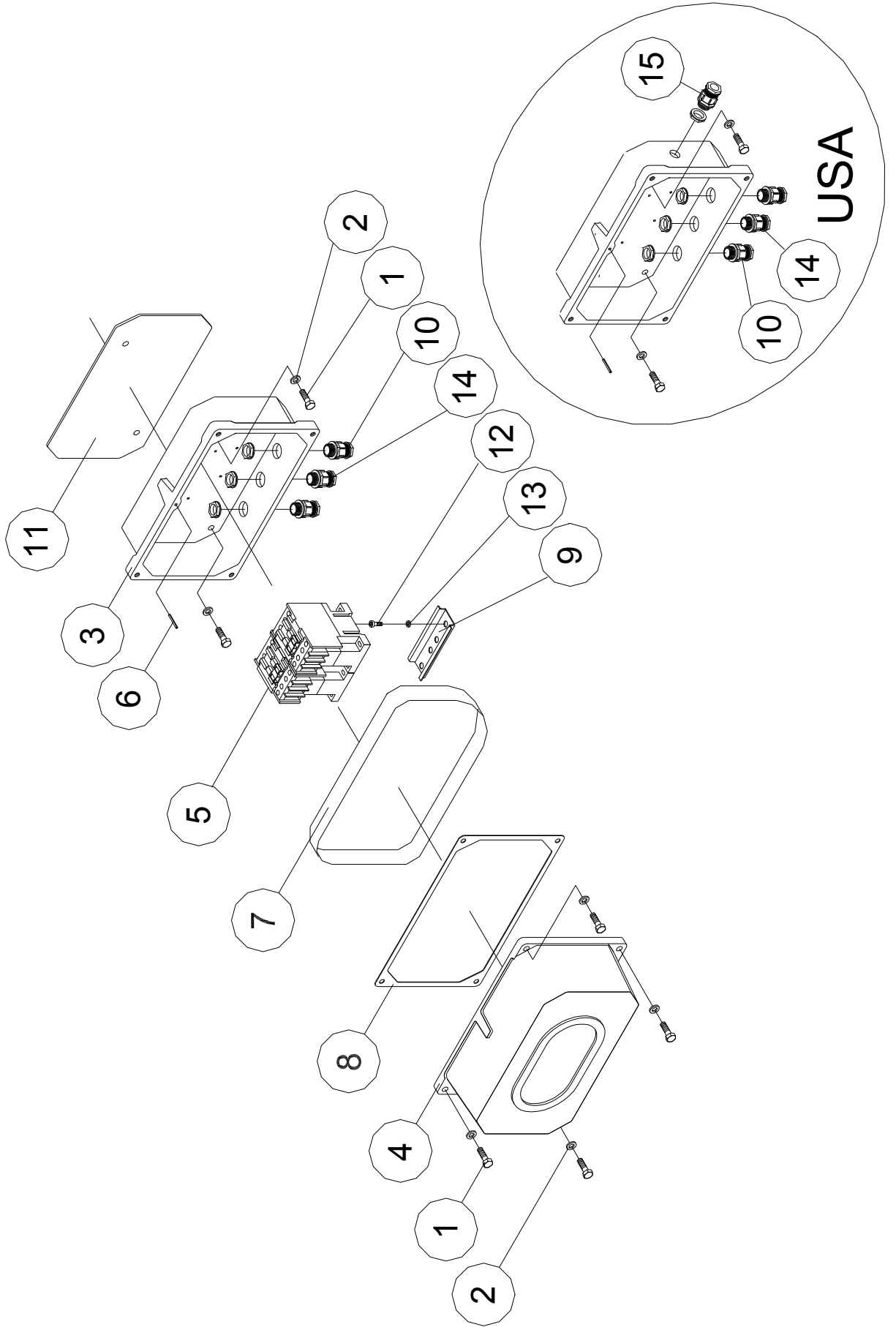
# 7.5-10 TON BODY PARTS



# BODY PARTS B.O.M.

| NO. | PARTS CODE | DESCRIPTION                           | Q'TY REQ'D EACH UNIT |     |
|-----|------------|---------------------------------------|----------------------|-----|
|     |            |                                       | 7.5T                 | 10T |
| 1   | 202965     | Electric Frame                        | 1                    |     |
|     | 202966     |                                       |                      | 1   |
| 2   | 407817     | Bearing<6307 Z>                       | 8                    |     |
|     | 407825     | Bearing<6308 Z>                       |                      | 8   |
| 3   | 203135     | Plain Wheel<ø178.5x60L>               | 2                    |     |
|     | 203136     | Plain Wheel<ø203x60L>                 |                      | 2   |
| 4   | 400194     | Retaining Ring<S-35>                  | 4                    |     |
|     | 400195     | Retaining Ring<S-40>                  |                      | 4   |
| 5   | 203115     | Gear Wheel<M3.5x49Tx65L>              | 2                    |     |
|     | 203116     | Gear Wheel<M3.5x56Tx65L>              |                      | 2   |
| 6   | 202935     | Motor Frame                           | 1                    |     |
|     | 202936     |                                       |                      | 1   |
| 7   | 200636     | Stopper For Load Shaft<t6x25x50L>     | 1                    | 1   |
| 8   | 200635     | Stopper For Load Shaft<t6x38x70L>     | 1                    | 1   |
| 9   | 400073     | Hex. Nut<1 1/2"x6UNC>                 | 4                    |     |
|     | 400644     | Hex. Nut<1 3/4"x5UNC>                 |                      | 4   |
| 10  | 400106     | Spring Washer<1 1/2">                 | 4                    |     |
|     | 400104     | Spring Washer<1 3/4">                 |                      | 4   |
| 11  | 203171     | Spacer Sleeve<ø50xø40x13L>            | 8                    |     |
|     | 203172     | Spacer Sleeve<ø60xø46x13L>            |                      | 8   |
| 12  | 203225     | Spacer Ring<ø100xø71x13L>             | 4                    | 4   |
| 13  | 203090     | Load Shaft B<ø38x355L>                | 1                    | 1   |
| 14  | 408374     | Stay Bolt<1 1/2"x6UNCx435L>           | 2                    |     |
|     | 400411     | Stay Bolt<1 3/4"x5UNCx460L>           |                      | 2   |
| 15  | 203245     | Load Shaft A<ø70x365L>                | 1                    | 1   |
| 16  | 203155     | Stay Bolt Position Tube<ø50xø40x216L> | 2                    |     |
|     | 203156     | Stay Bolt Position Tube<ø60xø46x216L> |                      | 2   |
| 17  |            | Motor Ass'y-0.9Kw                     | 1                    |     |
|     |            | Motor Ass'y-1.5Kw                     |                      | 1   |
| 18  | 400096     | Spring Washer<M10>                    | 4                    | 4   |
| 19  | 400047     | Hex. Headed Bolt<M10x1.5x30L>         | 4                    | 4   |
| 20  | 201782     | Transmission Pinion<0.9Kw-M3.5x16T>   | 1                    |     |
|     | 201730     | Transmission Pinion<1.5Kw-M3.5x23T>   |                      | 1   |
| 21  | 400012     | Hex. Recess Bolt<M8x1.25x20L>         | 4                    | 4   |
| 22  | 400095     | Spring Washer<M8>                     | 4                    | 4   |

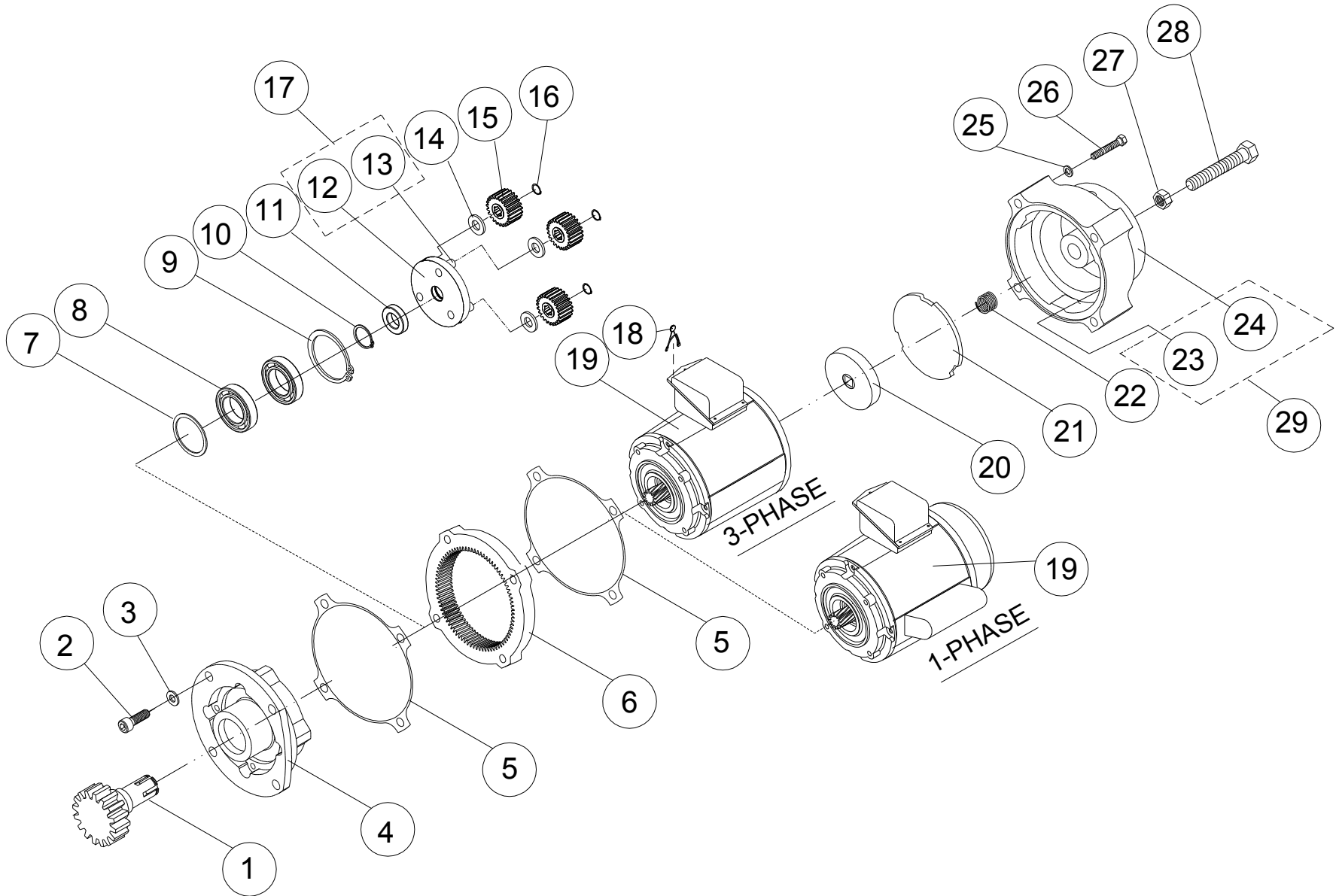
# ELECTRIC EXPLOSION



# ELECTRIC PARTS B.O.M.

| NO. | PARTS CODE | DESCRIPTION                    | Q'TY REQ'D EACH UNIT |     |
|-----|------------|--------------------------------|----------------------|-----|
|     |            |                                | STD                  | USA |
| 1   | 400006     | Hex. Recess Bolt<M6×1.0×16L>   | 6                    | 6   |
| 2   | 400094     | Spring Washer<M6>              | 6                    | 6   |
| 3   | 300395     | Electric Housing               | 1                    |     |
|     | 300398     | Electric Housing<USA>          |                      | 1   |
| 4   | 300394     | Electric Housing Cover         | 1                    | 1   |
| 5   |            | Contacto                       | 2                    | 2   |
| 6   | 400211     | Spring Pin<ø3×14L>             | 1                    | 1   |
| 7   | 400266     | Rubber Band                    | 1                    | 1   |
| 8   | 402583     | Gasket 68#                     | 1                    | 1   |
| 9   | 300079     | Contacto Rail<2PC>             | 1                    | 1   |
| 10  | 400270     | Rubber Cap                     | 2                    |     |
|     | 400222     | Rubber Cap<USA>                |                      | 2   |
| 11  | 402516     | Gasket 16#                     | 1                    | 1   |
| 12  | 400052     | Cross Headed Screw<M4×0.7×15L> | 4                    | 4   |
| 13  | 400092     | Spring Washer<M4>              | 4                    | 4   |
| 14  | 400339     | Rubber Cap                     | 1                    |     |
|     | 400222     | Rubber Cap<USA>                |                      | 1   |
| 15  | 400941     | Rubber Cap<USA>                |                      | 2   |

# 0.25 kw REDUCING GEAR MOTOR



# 0.25kw REDUCING GEAR MOTOR B.O.M.

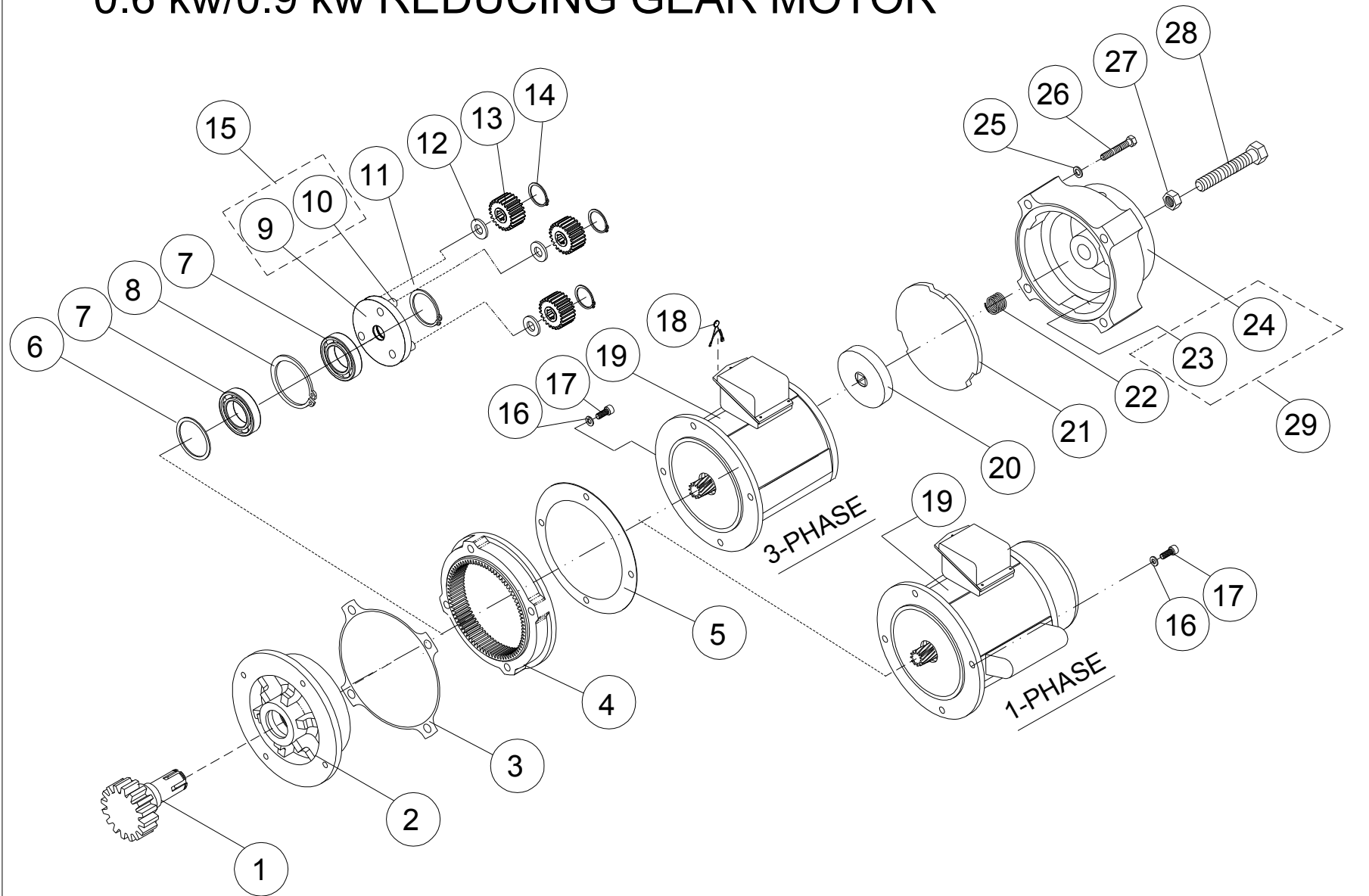
| NO. | PARTS CODE | DESCRIPTION                    | Q'TY REQ'D EACH UNIT |   |         |
|-----|------------|--------------------------------|----------------------|---|---------|
|     |            |                                | 3-Phase              |   | 1-Phase |
|     |            |                                | S                    | D |         |
| 1   | 201761     | Transmission Axle With Pinion  | 1                    |   |         |
| 2   | 400046     | Hex. Headed Bolt<M10×1.5×25L>  | 4                    |   |         |
| 3   | 400096     | Spring Washer<M10>             | 4                    |   |         |
| 4   | 200320     | Gear Box                       | 1                    |   |         |
| 5   | 402513     | Gear Box Gasket 13#            | 2                    |   |         |
| 6   | 200334     | Inner Teeth Gear Sleeve        | 1                    |   |         |
| 7   | 400182     | Oil Seal<ø25×ø40×6t>           | 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<ø25×ø20×6L>        | 1                    |   |         |
| 12  | 200328     | Reducing Gear Frame            | 1                    |   |         |
| 13  | 200392     | Planetary Gear Axle<ø13×26.5L> | 3                    |   |         |
| 14  | 400669     | Flat Washer<ø21×ø11×2>         | 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  | A          | Motor Ass'y                    | 1                    |   |         |
|     | B          |                                |                      | 1 |         |
|     | C          |                                |                      |   | 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  | 400027     | Hex. Headed Bolt<M6×1×45L>     | 4                    |   |         |

# 0.25kw REDUCING GEAR MOTOR B.O.M.

| NO. | PARTS CODE | DESCRIPTION                    | Q'TY REQ'D EACH UNIT |   |         |
|-----|------------|--------------------------------|----------------------|---|---------|
|     |            |                                | 3-Phase              |   | 1-Phase |
|     |            |                                | S                    | D |         |
| 27  | 400084     | Nut<M12×1.75>                  | 1                    |   |         |
| 28  | 400030     | Hex. Headed Bolt<M12×1.75×30L> | 1                    |   |         |
| 29  | 100502     | Brake Drum Ass'y               | 1                    |   |         |

| NO. | PARTS CODE | DESCRIPTION     | φ -HZ-V |           |
|-----|------------|-----------------|---------|-----------|
| 19  | A          | Motor Ass'y (S) | 3φ 60HZ | 220V/380V |
|     |            |                 |         | 220V/440V |
|     |            |                 |         | 230V/460V |
|     |            |                 |         | 240V      |
|     |            |                 |         | 480V      |
|     |            |                 |         | 600V      |
|     |            |                 | 3φ 50HZ | 220V/380V |
|     |            |                 |         | 400V      |
|     |            |                 |         | 415V      |
|     |            |                 |         | 525V      |
|     | B          | Motor Ass'y (D) | 3φ 60HZ | 208V      |
|     |            |                 |         | 220V      |
|     |            |                 |         | 230V      |
|     |            |                 |         | 380V      |
|     |            |                 |         | 440V      |
|     |            |                 |         | 460V      |
|     |            |                 | 3φ 50HZ | 600V      |
|     |            |                 |         | 220V      |
|     |            |                 |         | 230V      |
|     |            |                 |         | 380V      |
|     |            |                 |         | 400V      |
|     |            |                 |         | 415V      |
|     | 525V       |                 |         |           |
|     | C          | Motor Ass'y     | 1φ 60HZ | 110V/220V |
|     |            |                 |         | 115V/230V |
|     |            |                 | 1φ 50HZ | 110V/220V |
|     |            |                 |         | 220V/230V |

# 0.6 kw/0.9 kw REDUCING GEAR MOTOR



# 0.6kw/0.9kw REDUCING GEAR MOTOR B.O.M.

| NO. | PARTS CODE | DESCRIPTION                    | 0.6kw   |   | 0.9kw   |   |         |
|-----|------------|--------------------------------|---------|---|---------|---|---------|
|     |            |                                | 3-Phase |   | 3-Phase |   | 1-Phase |
|     |            |                                | S       | D | S       | D |         |
| 1   | 201771     | Transmission Axle With Pinion  | 1       |   |         |   |         |
|     | 201782     |                                |         |   | 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<30×45×8>              |         |   | 1       |   |         |
| 7   | 400803     | Bearing<6205Z>                 |         |   | 2       |   |         |
| 8   | 400199     | Retaining Ring<R-52>           |         |   | 1       |   |         |
| 9   | 200332     | Reducing Gear Frame            |         |   | 1       |   |         |
| 10  | 200394     | Planetary Gear Axle<ø15×29.5L> |         |   | 3       |   |         |
| 11  | 400192     | Retaining Ring<S-25>           |         |   | 1       |   |         |
| 12  | 400667     | Flat Washer<ø20×ø12×2>         |         |   | 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<M8×1.25×45L>  |         |   | 4       |   |         |
| 18  | 300144     | Rectifier                      | 1       |   |         |   |         |
| 19  | A          | Motor Ass'y                    | 1       |   | 1       |   |         |
|     | B          |                                |         | 1 | 1       |   |         |
|     | C          |                                |         |   |         | 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       |   |         |   |         |

# 0.6kw/0.9kw REDUCING GEAR MOTOR B.O.M.

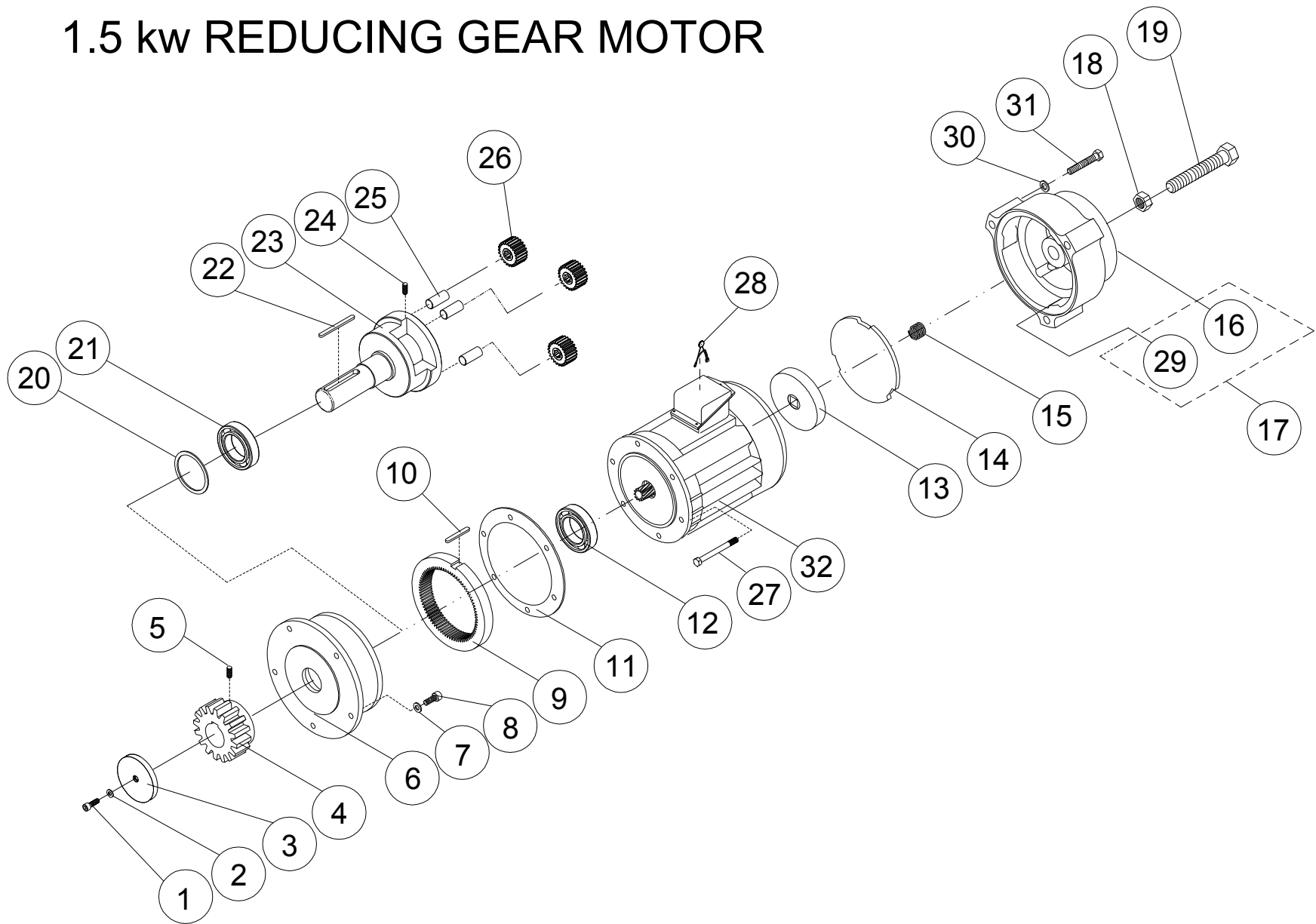
| NO. | PARTS CODE | DESCRIPTION                   | 0.6kw   |   | 0.9kw   |   |         |
|-----|------------|-------------------------------|---------|---|---------|---|---------|
|     |            |                               | 3-Phase |   | 3-Phase |   | 1-Phase |
|     |            |                               | S       | D | S       | D |         |
| 26  | 400027     | Hex. Headed Bolt<M6×1×45L>    | 4       |   |         |   |         |
| 27  | 400085     | Nut<M16×1.5>                  | 1       |   |         |   |         |
| 28  | 400468     | Hex. Headed Bolt<M16×1.5×50L> | 1       |   |         |   |         |
| 29  | 100501     | Brake Drum Ass'y              | 1       |   |         |   |         |

| NO.     | PARTS CODE | DESCRIPTION     | φ -HZ-V |         |           |
|---------|------------|-----------------|---------|---------|-----------|
| 19      | A          | Motor Ass'y (S) | 0.6KW   | 3φ 60HZ | 220V/380V |
|         |            |                 |         |         | 220V/440V |
|         |            |                 |         |         | 230V/460V |
|         |            |                 |         |         | 600V      |
|         |            |                 |         | 3φ 50HZ | 220V/380V |
|         |            |                 |         |         | 400V      |
|         |            |                 |         |         | 415V      |
|         |            |                 | 0.9KW   | 3φ 60HZ | 440V      |
|         |            |                 |         |         | 525V      |
|         |            |                 |         |         | 220V/380V |
|         |            |                 |         |         | 220V/440V |
|         |            |                 |         | 3φ 50HZ | 230V/460V |
|         |            |                 |         |         | 600V      |
|         |            |                 |         |         | 220V/380V |
|         | B          | Motor Ass'y (D) | 0.6KW   | 3φ 60HZ | 400V      |
|         |            |                 |         |         | 415V      |
|         |            |                 |         |         | 440V      |
|         |            |                 |         |         | 525V      |
|         |            |                 |         |         | 550V      |
|         |            |                 |         |         | 208V      |
|         |            |                 |         |         | 220V      |
| 3φ 50HZ | 230V       |                 |         |         |           |
|         | 380V       |                 |         |         |           |
|         |            |                 |         | 440V    |           |
|         |            |                 |         | 460V    |           |
|         |            |                 |         | 600V    |           |
|         |            |                 |         | 380V    |           |

# 0.6kw/0.9kw REDUCING GEAR MOTOR B.O.M.

| NO.    | PARTS CODE |         | DESCRIPTION     | φ -HZ-V |           |           |
|--------|------------|---------|-----------------|---------|-----------|-----------|
| 19     | B          | 106846  | Motor Ass'y (D) | 0.6KW   | 3φ 50HZ   | 400V      |
|        |            | 106834  |                 |         |           | 415V      |
|        |            | 106799  |                 |         |           | 440V      |
|        |            | 106842  |                 |         |           | 460V      |
|        |            | 106835  |                 |         |           | 525V      |
|        |            | 106867  |                 |         |           | 220V      |
|        |            | 106869  |                 | 380V    |           |           |
|        |            | 106871  |                 | 460V    |           |           |
|        |            | 106859  |                 | 600V    |           |           |
|        |            | 106862  |                 | 380V    |           |           |
|        |            | 106863  |                 | 400V    |           |           |
|        |            | 106864  |                 | 415V    |           |           |
|        | 106865     | 525V    |                 |         |           |           |
|        | C          | 106787  | Motor Ass'y     | 0.9KW   | 1φ 60HZ   | 110V/220V |
|        |            | 106786  |                 |         |           | 115V      |
| 106783 |            | 1φ 50HZ |                 |         | 110V/220V |           |

# 1.5 kw REDUCING GEAR MOTOR



# 1.5kw REDUCING GEAR MOTOR B.O.M.

| NO. | PARTS CODE | DESCRIPTION                   | Q'TY REQ'D EACH UNIT |   |
|-----|------------|-------------------------------|----------------------|---|
|     |            |                               | 3-Phase              |   |
|     |            |                               | S                    | D |
| 1   | 400013     | Hex. Recess Bolt<M8×1.25×25L> | 1                    |   |
| 2   | 400095     | Spring Washer<M8>             | 1                    |   |
| 3   | 200349     | Pinion's End Stopper          | 1                    |   |
| 4   | 201730     | Transmission Axle Pinion      | 1                    |   |
| 5   | 400204     | Bolt<M8×1.25×12L>             | 1                    |   |
| 6   | 200323     | Gear Box                      | 1                    |   |
| 7   | 400095     | Spring Washer<M8>             | 6                    |   |
| 8   | 400013     | Hex. Recess Bolt<M8×12.5×25L> | 6                    |   |
| 9   | 200335     | Inner Teeth Gear Sleeve       | 1                    |   |
| 10  | 400951     | Key<t7×7×50L>                 | 1                    |   |
| 11  | 402514     | Motor Gasket 14#              | 1                    |   |
| 12  | 400124     | Bearing<6907>                 | 1                    |   |
| 13  | 100482     | Brake Lining                  | 1                    |   |
| 14  | 100459     | Brake Disc                    | 1                    |   |
| 15  | 400314     | Brake Spring                  | 1                    |   |
| 16  | 100458     | Brake Drum                    | 1                    |   |
| 17  | 100503     | Brake Drum Ass'y              | 1                    |   |
| 18  | 400085     | Nut<M16×1.5>                  | 1                    |   |
| 19  | 400468     | Hex. Recess Bolt<M16×1.5×50L> | 1                    |   |
| 20  | 400187     | Oil Seal<35×50×8>             | 1                    |   |
| 21  | 400145     | Bearing<6207 Z>               | 1                    |   |
| 22  | 400980     | Key<t10×10×70L>               | 1                    |   |
| 23  | 200331     | Reducing Gear Frame           | 1                    |   |
| 24  | 400205     | Bolt<M5×0.8×8L>               | 3                    |   |
| 25  | 200346     | Planetary Gear Axle           | 3                    |   |
| 26  | 200339     | Planetary Gear                | 3                    |   |
| 27  | 400013     | Hex. Recess Bolt<M8×1.25×25L> | 6                    |   |

# 1.5kw REDUCING GEAR MOTOR B.O.M.

| NO. | PARTS CODE | DESCRIPTION                   | Q'TY REQ'D EACH UNIT |   |
|-----|------------|-------------------------------|----------------------|---|
|     |            |                               | 3-Phase              |   |
|     |            |                               | S                    | D |
| 28  | 300144     | Rectifier                     | 1                    |   |
| 29  | 400245     | Brake Coil                    | 1                    |   |
| 30  | 400095     | Spring Washer<M8>             | 3                    |   |
| 31  | 400012     | Hex. Recess Bolt<M8×1.25×20L> | 3                    |   |
| 32  | A          | Motor Ass'y                   | 1                    |   |
|     | B          |                               |                      | 1 |

| NO. | PARTS CODE | DESCRIPTION     | $\phi$ -HZ-V  |           |
|-----|------------|-----------------|---------------|-----------|
| 32  | A          | Motor Ass'y (S) | 3 $\phi$ 60HZ | 220V/380V |
|     |            |                 |               | 220V/440V |
|     |            |                 |               | 460V      |
|     |            |                 | 3 $\phi$ 50HZ | 220V/380V |
|     |            |                 |               | 400V      |
|     |            |                 |               | 415V      |
|     |            |                 |               | 550V      |
|     | B          | Motor Ass'y (D) | 3 $\phi$ 60HZ | 220V      |
|     |            |                 |               | 380V      |
|     |            |                 |               | 460V      |
|     |            |                 | 3 $\phi$ 50HZ | 380V      |
|     |            |                 |               | 400V      |
|     |            |                 |               | 415V      |
|     |            |                 |               |           |



# DECLARATION OF CONFORMITY



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

We declare under our sole responsibility that the products:

Motorized trolley MT-100,200,300,500,750,1000

Working load limit : for all types from 1,000 kgs to 10,000 kgs.

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

- Machinery Directive 89 / 392 / EEC 1989.
- Low Voltage Directive 73 / 23 / EEC.
- EMC Directive 89 / 336 / EEC.
- ISO 12100-1 (E) ( Basic terminology, methodology )
- ISO 12100-2 (E) (Technical principles)
- EN 418 ( Emergency stop equipment, functional aspects )
- EN 60204-1 ( Electrical equipment of machines )
- FEM 9.511 ( Classification of mechanisms )
- FEM 9.681 ( Selection of travel motors )
- FEM 9.682 ( Selection of lifting motors )
- FEM 1.001 ( Rules for the design of hoisting appliances )

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

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

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

-The Marking is placed on the machine

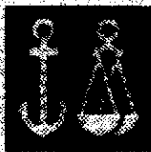
Hoist type / Trolley:.....

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

CHENG DAY MACHINERY WORKS CO., LTD.

*C. F. HUANG*

C. F. HUANG  
MANAGER  
QUALITY ASSURANCE DEPT.  
DATE:



**DNV**

# DET NORSKE VERITAS

## CERTIFICATE OF CONFORMITY

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

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

This is certify that the technical documentation for the product:

**Electrical Chain Hoist**

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

*Manufactured by*

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

*at*

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

**complies with the requirements applicable to it**

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

**Limitations:**

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

*Bergen, 18. October, 1999*

for Det Norske Veritas Region Norge AS

Terje Lien  
Head of section

Replaces certificate no.

98-OSL-SM-0164

Valid from 1998-06-22

Gunnar Matre  
Project Engineer \* 1864 \*



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

DET NORSKE VERITAS REGION NORGE, Veritas veien 1, 1322 Høvik, Norway.  
Form no.: 89/392-140c



## EC TYPE-EXAMINATION

## ANNEX I

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

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

Date of Examination :

Place of Examination :

Surveyor : Dennis Lin

## 1 Description of the Machinery (Black Bear)

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



## EC TYPE-EXAMINATION PROGRAM

## ANNEX I

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

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



**EC TYPE-EXAMINATION PROGRAM**

**ANNEX I**

**2 Conditions**

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

The examination has not considered optional accessories.

- oOp -