Follow all instructions and warnings for inspecting, maintaining and operating this trolley.

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 trolley, each operator should become thoroughly familiar with all warnings, instructions, and recommendations in this manual.

Retain this manual for future reference and use. Forward this manual to the hoist operator. Failure to operate the equipment as directed in the manual may cause injury.

Before using the hoist, fill in the information below. Refer to the hoist identification plate.

- Model Number: ____________________________
- Serial Number: ____________________________
- Purchase Date: ____________________________
- Voltage: ________________________________
CM HOIST PARTS AND SERVICES ARE AVAILABLE IN THE UNITED STATES AND IN CANADA

As a CM Hoist user, you are assured of reliable repair and parts services through a network of Master Parts Depots and Service Centers that are strategically located in the United States and Canada. These facilities have been selected on the basis of their demonstrated ability to handle all parts and repair requirements promptly and efficiently.

Below is a list of the Master Parts Depots in the United States and Canada. To quickly obtain the name of the U.S. Service Center located nearest you, call (800) 888-0985. Fax: (716) 689-5644. In the following list, the Canadian Service Centers are indicated.

<table>
<thead>
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<td>CALIFORNIA</td>
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<tr>
<td>OTTO SYSTEMS, INC.</td>
<td>BENNETT &amp; EMMOTT, LTD.</td>
</tr>
<tr>
<td>12010 Bloomfield Ave</td>
<td>18131 118th Avenue</td>
</tr>
<tr>
<td>Sante Fe Springs, CA 90670</td>
<td>Edmonton, Alberta T55 1M8</td>
</tr>
<tr>
<td>562/462-1612 or 800/596-7392</td>
<td>403/454-9000</td>
</tr>
<tr>
<td>Fax 562/462-1617</td>
<td>Fax 403/454-8990</td>
</tr>
<tr>
<td>or 7656 Las Positas Road</td>
<td>**COLUMBUS McKINNON, LTD.</td>
</tr>
<tr>
<td>Live more, CA 94551</td>
<td>10311-174th Street</td>
</tr>
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<td>925/245-8800</td>
<td>Edmonton, Alberta T55 1H1</td>
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<tr>
<td>Fax 925/245-8804</td>
<td>800/263-1997</td>
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<td>Fax 403/486-6160</td>
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<tr>
<td>GEORGIA</td>
<td>BRITISH COLUMBIA</td>
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<td>ACE INDUSTRIES, INC.</td>
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<tr>
<td>6295 McDonough Drive Norcross, GA 30093</td>
<td>4084 McConnel Court</td>
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<tr>
<td>770/641-0898 or 800/733-2231</td>
<td>Burnaby, British Columbia VSA 3N7</td>
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<tr>
<td>Fax 800/628-3648</td>
<td>MANITOBA</td>
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<td>KING’S ELECTRIC MOTORS, INC.</td>
</tr>
<tr>
<td>INDIANA</td>
<td>633 Tyne Avenue</td>
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<tr>
<td>HORNER ELECTRIC COMPANY, INC.</td>
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<tr>
<td>1521 East Washington Street</td>
<td>204/663-332</td>
</tr>
<tr>
<td>Indianapolis, IN 46201</td>
<td>Fax 204/663-4059</td>
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<td>IOWA</td>
<td>PENNSYLVANIA</td>
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<td>VMI HOIST &amp; CRANE SERVICES</td>
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</tr>
<tr>
<td>901 17th Street NE</td>
<td>11 Sycamore Street</td>
</tr>
<tr>
<td>Cedar Rapids, IA 52406</td>
<td>Carnegie, PA 15106-0529</td>
</tr>
<tr>
<td>319/561-4862 or 319/561-4866</td>
<td>412/429-1212 or 800/445-9456</td>
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<tr>
<td>Fax 319/365-8075</td>
<td>Fax 412/429-0191</td>
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<tr>
<td>KANSAS</td>
<td>RAM MOTORS &amp; CONTROLS, INC.</td>
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<tr>
<td>INDEPENDENT ELECTRIC MACHINERY</td>
<td>5460-B Pottsville Pike</td>
</tr>
<tr>
<td>4425 Oliver Street</td>
<td>Leesport, PA 19353</td>
</tr>
<tr>
<td>Kansas City, KS 66106</td>
<td>610/916-8000 or 877/916-8018</td>
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<tr>
<td>913/362-1135 or 913/904-3330</td>
<td>Fax 610/916-7957</td>
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<td>LOUISIANA</td>
<td>HYDRAULIC EQUIPMENT SERVICES, INC.</td>
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<tr>
<td>BEERMAN PRECISION, INC.</td>
<td>1021 North San Jacinto Street</td>
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<tr>
<td>4206 Howard Ave.</td>
<td>Houston, TX 77002</td>
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<tr>
<td>New Orleans, LA 70125</td>
<td>713/228-9601</td>
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<tr>
<td>504/486-9391 or 504/486-7482</td>
<td>Fax 713/228-0931</td>
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<td>WISCONSIN</td>
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<tr>
<td>ABEL DISTRIBUTORS, INC.</td>
<td>TRESTER HOIST &amp; EQUIPMENT, INC.</td>
</tr>
<tr>
<td>50 Parker Street, Unit 2</td>
<td>W136 N4863 Campbell Drive</td>
</tr>
<tr>
<td>Newburyport, MA 01950</td>
<td>Menomonee Falls, WI 53051</td>
</tr>
<tr>
<td>978/463-0700 or 978/463-5200</td>
<td>262/790-0700 or 800/234-6098</td>
</tr>
<tr>
<td>Fax 978/463-5200</td>
<td>Fax 262/790-1009</td>
</tr>
<tr>
<td>NEW JERSEY</td>
<td></td>
</tr>
<tr>
<td>SHUPPER-BRICKLE EQUIPMENT CO.</td>
<td></td>
</tr>
<tr>
<td>2394 Route 130, Suite C</td>
<td></td>
</tr>
<tr>
<td>Dayton, NJ 08810</td>
<td></td>
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<tr>
<td>732/438-3888 or 732/438-3889</td>
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</tbody>
</table>

**ARE ALSO MASTER PARTS DEPOTS**

**MASTER PARTS DEPOT ONLY**
SAFETY PRECAUTIONS

Each Series 635 Motor Driven Trolley is built in accordance with the specifications contained herein and at the time of manufacture complied with our interpretation of applicable sections of the *American Society of Mechanical Engineers Code B30.11 “Monorail Systems and Underhung Cranes,” the National Electrical Code (ANSI/NFPA 70) and the Occupational Safety and Health Act. Since OSHA states the National Electrical Code applies to all electrical installations and utilization equipment, installers are required to provide current overload protection and grounding in keeping with the code. Check each installation for compliance with the application, operation and maintenance sections of these articles.

After you have completely familiarized yourself with the contents of this manual, we recommend that you carefully file it for future reference.

*Copies of this standard can be obtained from ASME Order Department, 22 Law Drive, Box 2300, Fairfield, NJ 07007-2300, U.S.A.

OPERATING AND SAFETY PROCEDURES

The following are operating and safety procedures for safe operation of the Series 635 Motor Driven Trolley. Taking precedence over any specific rules listed here, however, is the most important rule of all, USE COMMON SENSE. 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 the safety of others. Frequent examinations and periodic inspections of the equipment as well as a conscientious observance of safety rules may save lives as well as time and money.

1. Immediately after installation, operate trolley (according to the Operating and Safety Procedures as follows) with a capacity 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 the 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 of any kind, especially 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 a 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 unattended.

13. **DO NOT** wrap the load chain around the load and hook onto itself as a choker chain. Doing this will result in the following:
   (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 liftwheel.
   (c) The chain could be damaged at the hook.

14. Permit only qualified personnel to operate unit.
FOREWORD

This manual contains important information to help you properly install, operate and maintain the Series 635 Motor Driven Trolley for maximum performance, economy and safety.

Please study its contents thoroughly before putting your trolley into operation. By practicing correct operating procedures and by carrying out the recommended preventive maintenance suggestions, you will experience long, dependable and safe service.

After you have completely familiarized yourself with the contents of this manual, we recommend that you carefully file it for future reference.

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**GENERAL INFORMATION**

**SPECIFICATIONS**

The Series 635 Motor Driven Trolleys are designed for use with the Lodestar, and Valustar Electric Chain Hoists. The trolleys are available in two capacities: 1/8 through 2-Tons and 3-Tons. These trolleys are similar except for the sizes of the load carrying members.

The trolleys have rugged steel side plates, hardened steel axles, steel suspension bolts, cast iron load bracket from which the hoist is suspended and hardened cast iron wheels that are suitable for operation on sloped or flat flanged beams. Hardened steel gears are attached to two track-wheels and driven by a right angle worm gear reducer. The worm and gear of the gear reducer operate in an oil bath. A weatherproof motor drives the gear reducer.

The control box contains a reversing contactor, terminal boards and a transformer (as required). A four-button control station is suspended from the control box. An electric brake, which fits between the motor and gear reducer, is available as optional equipment.

Table 1 provides the general specifications for the trolley. It should be noted that the table indicates that the standard travel speed is 75 FPM. However, other travel speeds are available.

**CM REPAIR/REPLACEMENT POLICY**

All Columbus McKinnon (CM) Series 635 Motor Driven Trolleys are inspected and performance tested prior to shipment. If any properly maintained Series 635 Motor Driven Trolley develops a performance problem, within 1 (one) year of shipment, due to a material or workmanship defect, as verified by CM, repair or replacement of the unit will be made to the original purchaser without charge. This repair/replacement policy applies only to Series 635 Motor Driven Trolleys installed, maintained and operated as outlined in this manual, and specifically excludes parts subject to normal wear, abuse, improper installation, improper or inadequate maintenance, hostile environmental effects and unauthorized repairs/modifications.

We reserve the right to change materials or design if, in our opinion, such changes will improve our product. Abuse, repair by an unauthorized person, or use of non-CM replacement parts voids the guarantee and could lead to dangerous operation. For full Terms of Sale, see Sales Order Acknowledgement. Also, refer to the back cover for Limitations of Warranties, Remedies and Damages, and indemnification and Safe Operation.

**INSTALLATION**

**UNPACKING INFORMATION**

After removing the trolley from the shipping carton, carefully inspect the external condition of the cords, control box, gear reducer, motor brake (if equipped with same) and motor for damage that may have occurred during shipment and handling. Check to make sure all parts (trolley side frame assembly with control box, trolley side frame with gear reducer and motor, load bracket, suspension bolts, spacer washer, cotter pins and nuts) are furnished. Also, before attempting to install the trolley, make sure that the power supply indicated on the labels attached to the control box is the same as the power supply on which the unit is to operate.

**INSTALLATION**

The hoist, trolley and lug suspension for suspending the hoist from the trolley are packed separately. Assemble the lug suspension to the hoist according to the instructions furnished with the suspension and/or the instructions in the manual furnished with the hoist.

**Table 1**

<table>
<thead>
<tr>
<th>Code</th>
<th>DC Code</th>
<th>Code</th>
<th>Capacity (Tons)</th>
<th>For Use With Models</th>
<th>Power Supply*</th>
<th>Travel Speed (FPM)</th>
<th>Motor H.P.</th>
<th>Depth (In.)</th>
<th>Flange Width (In.)</th>
<th>Minimum Radius Curve (In.)</th>
<th>Approx. Shipping Weight</th>
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<td>63670</td>
<td>1/8</td>
<td>A</td>
<td>115-1-60</td>
<td>6</td>
<td>3-3/8</td>
<td>103</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3671</td>
<td>63671</td>
<td>to</td>
<td>thru</td>
<td>230-3-60</td>
<td>75</td>
<td>1/4 thru</td>
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<td>3672</td>
<td>63672</td>
<td>2</td>
<td>RR</td>
<td>460-3-60</td>
<td>15</td>
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<td>112</td>
<td></td>
<td></td>
<td></td>
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<td>9577</td>
<td>69577</td>
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<td>6</td>
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<td>112</td>
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<td>69578</td>
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<td>130</td>
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</table>

* Trolleys are also available for operation on 573-3-60 and 220/380-3-50 power supply systems.
For the 3-Ton trolley, (refer to Figure 3), a shackle and pin assembly (627-729) consisting of a pin retained in a central position by retainers is packed loose with the suspension. Insert this assembly into the opening in the top of the load bracket (635-13) with the legs of the shackle down. Position the shackle pin in the groove provided for same in the load bracket making sure it is centered between the suspension bolts.

Now install the trolley (1/8 – 2-Ton or 3-Ton) on the beam by sliding one side frame out far enough to allow the trackwheels to clear the 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. Do not overtighten the nuts. Insert the cotter pins through the slotted nuts and holes in the suspension bolts and spread the legs of the cotter pins to secure.

**WARNING**

If CM’s washer spacing recommendations are not followed, trolley may fall from beam.

**TO AVOID INJURY:**

Measure the actual beam flange on which the trolley is to operate and use Table 2 to determine the arrangement of the spacer washers for that flange width.

For the 3-Ton trolley, (refer to Figure 3), a shackle and pin assembly consisting of a pin retained in a central position by retainers is packed loose with the suspension. Insert this assembly into the opening in the top of the load bracket (635-13) with the legs of the shackle down. Position the shackle pin in the groove provided for same in the load bracket making sure it is centered between the suspension bolts.

Now install the trolley (1/8 – 2-Ton or 3-Ton) on the beam by sliding one side frame out far enough to allow the trackwheels to clear the 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. Do not overtighten the nuts. Insert the cotter pins through the slotted nuts and holes in the suspension bolts and spread the legs of the cotter pins to secure.

**IMPORTANT:** After the trolley is installed on the beam, remove the hex socket plug from the top of the gear reducer and replace same with the breather packed loose with the trolley or remove the small brass nail projecting from the side of the gear reducer. This provides a vent for the gear reducer and failure to install the breather may cause the seals to leak.

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 (dimension "X") should be 1/8 to 3/16 inch greater than the beam flange width for straight runway beams, and 3/16 to 1/4 inch greater than the beam flange width if runway system includes sharp curves. Also, the use of other than CM supplied washers may result in trackwheel to beam flange variations and thus Table 2 will not apply.
Hoist to Trolley

On the 1/8 – 2-Ton trolley, assemble the suspension lug (on hoist) to the trolley (on beam) as shown in Figure 2. The lug is inserted in the trolley load bracket and retained by the suspension lug pin. A socket head cap screw and lockwasher are used to keep the pin in place. This assembly must be made with the hoist mounted parallel to the beam and the control cord to the right when facing the trolley control box.

Figure 2. 1/8 – 2-Ton Hoist to Trolley Assembly

On the 3-Ton trolley, drive one retaining pin into the hole on one end of the lug pin (627-730). Raise the hoist into position so that the lug (627-728) is between the legs of the shackle. Align the holes in the shackle and lug. Insert the lug pin in the aligned holes and secure the lug pin by driving the remaining retaining pin into the hole in the lug pin. Make certain that the shackle pin (627-729) is properly seated in the load bracket by manipulating the hoist and checking for freedom of movement (swinging) in both planes and all four directions.

Figure 3. 3-Ton Hoist to Trolley Assembly

Note that the shackle pin should be retained and centered in the shackle with retainers.

Electrical Installation

The trolley electrical connections must be completed as shown in Figure 4. Power to the trolley and hoist should be furnished from a compatible source through a disconnect device. Overcurrent protection and proper grounding means should be accomplished in accordance with the “National Electrical Code” and local codes if applicable. Power should be disconnected when making or changing connections.

A Field Wiring Kit 635-198 (part number 36666 for units with 4-button control station) is furnished containing the necessary material to complete the trolley electrical connections. Diagrams show connections to be made within trolley control box for standard units. For special units, see wiring diagram supplied with unit.

Trolley Motor Cord

Insert Trolley Motor Cord into control box (see Figure 4). Connections for the Trolley Motor Cord are shown in Figures 5 and 6. The cord should be brought over the top of the hoist and clamped to the control box mounting bracket (see Figure 4). The cord between the motor and clamp must be tight enough to prevent it from rubbing against the beam.

Trolley Power Cord

The short power cord furnished is for use with a collector and bus system. It should be discarded if a cable is to supply the trolley. Terminals for use on the trolley end of the supply cable are furnished in the Field Wiring Kit. Connections to the trolley are shown in Figures 5 and 6. The box connector must be made tight on the cable, and if necessary, a separate strain relief provided to prevent any stress on the terminals.
Hoist Power Cord

The trolley is supplied with a short hoist power cord connected into the power circuit of the trolley – refer to Figure 4. As a result, it is necessary to remove the power cord (if supplied – see note on page 6) from the hoist. To do this, remove the back frame cover (Lodestar and Valustar Hoists) from the hoist and remove and discard the power cord from the hoist. Then connect the short hoist power cord attached to the trolley to the hoist power circuit according to the wiring diagram furnished with the hoist. The trolley is also supplied with a short hoist control cord, and it should be connected to the hoist control circuit, as indicated below (see Hoist Control Cord) before the back frame cover (Lodestar and Valustar Hoists) is reassembled to the hoist frame.

Control Station

The standard trolleys for use with Lodestar and Valustar Hoists are supplied with a four directional control station.

Unless ordered special, the control station is suspended from the trolley control box by a cord that is approximately 16’ – 3” long. If this is too long for your application, the cord should be shortened so that the control station is suspended approximately four feet above the operating floor.

**WARNING**

Tying knots or loops to shorten the drop of the control station will make the strain relief ineffective and the internal conductors of the cord may break.

**TO AVOID PROBLEMS:**

Shorten the control cord per the following instructions.

To shorten the cord, measure the distance the control station is to be raised. Disconnect the trolley from the power supply system. Remove the cover from the control station and disconnect the conductors of the control cord from the various terminals. For cords with the internal type strain relief, disconnect the strain relief loop from the control station housing and retain the strain relief screw, washer and the terminal block tab. For cords with the external type chain strain relief, disconnect the chain from the control station by twisting open the link. Measuring from the end of the longest conductor, cut-off the cord the distance the control is to be raised. Using the cut-off piece of cord as an example, prepare the end of the shortened cord. For cords with the internal type strain relief, prepare the strain relief loop as shown below.

Be sure to firmly squeeze the clamp sleeve (from the field wiring kit) using a vise or very large pliers to secure the loop end and insulate the clamp sleeve using the rubber sleeve from the cut-off piece of cord.

For units with external chain strain relief, cut-off the chain the distance the control station is to be raised. Slide the prepared cord thru the grommet or box connector on top of the control station. Using the wiring diagram supplied with the trolley, connect the conductors of the control cord to the various terminals. For units with the internal type strain relief, attach the loop to the control station housing using the screw washer and the terminal block tab. For units with external type chain strain relief, attach the chain to the control station by re-closing the link. On these units, also firmly tighten the top ring of the box connector to seal the opening between the cord and the grommet.
Re-attach the cover to the control station. Energize the power supply system and test the trolley and hoist for proper operation.

**NOTE:** The four-directional control station can only be used with a hoist that has a reversing contactor. If the trolley and hoist is shipped direct from the factory, the hoist may not be equipped with the normal power cord or control station and cord assembly. As a result, these items will not have to be removed as indicated and the short hoist power and control cord on the hoist can be wired directly into the trolley. Use the wiring diagram supplied with the trolley for making the connections.

**Hoist Control Cord**

It is necessary to remove the control station (if supplied – see note above) from the hoist since the trolley is supplied with a short hoist control cord. Remove the control station and control cord assembly from the hoist. Connect the short hoist control cord from the trolley to the hoist control circuit following the wiring diagram supplied with the hoist. After this is completed, re-assemble the Back Frame Cover to the hoist frame.

The single-phase units are now ready for operation. However, on the three-phase units, the direction of trolley and hook travel must be checked (as indicated below) before the unit is put into service.

**Three-Phase Units**

A three-phase motor can rotate in either direction depending on its connection to the power supply. Therefore, the direction of trolley and hook travel relative to the selected indicated direction must be checked before the unit is put in service. If the hoist is incorrectly phased, the limit switches are ineffective and serious damage can result. Refer to hoist manual. The trolley should be checked out first, then the hoist. See Figure 7.

---

**OPERATING INSTRUCTIONS**

After the trolley and hook travel directions are correct, operate the trolley (according to the operating and safety procedures – see page ii) with a capacity load over the entire length of the runway or monorail system to be sure that all adjustments and operations are satisfactory.

The hoist/trolley combination is not ready for service and it should be moved forward by operating the controls marked (Forward) and (Reverse) in control station. Unless altered by the erector, depressing (Forward) control will move the hoist toward motor housing end. Anticipate the stopping point and allow trolley to coast to a smooth stop. Reversing or “plugging” to stop trolley causes overheating of motor and swaying of load.

---

**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 dusty, gritty, 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 list below.

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 including trackwheel stud nuts and suspension bolt nuts.
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, also damaged insulation.
4. Terminal board for loose or corroded connections.
5. Trackwheels for wear of tread and flange and for bearing wear as indicated by excessive looseness of wheel on stud.
6. Trackwheel gear, pinion and pinion bearing for wear.
7. On the 1/8 – 2-Ton trolley, check suspension lug, load bracket, suspension adapter and suspension lug pin for excess wear by manipulating hoist and visually inspecting suspension parts.
8. On the 3-Ton trolleys, check shackle pin for proper seating in groove of load bracket.
   - Manipulate hoist and check for freedom of movement (swinging) in both planes and all four directions. Also examine the shackle, shackle pin, suspension lug pin retaining pins, sheave stud and suspension adapter for excess wear by manipulating hoist and visually inspecting suspension parts.
9. Collector or power supply system for damage, wear corrosion and proper operation.
10. On trolleys equipped with the optional motor brake, check for friction disc wear and proper adjustment of the solenoid air gap.
Once a month lubricate trackwheel gear and pinion with Texaco Novatex #2 or an equivalent heavy cup grease or graphite grease.

Motor gear box oil must be changed after the first 100 hours of operation, then every six months or 2500 hours of normal service, whichever comes first. Use 1/2 pint of Mobile SHC-626 or equal lubricant, for each oil change.

All other trolley parts and lubricated for life at the factory.

**WARNING**

The lubricants used in and recommended for the Series 635 Motor Driven Trolley may contain hazardous materials that mandate specific handling and disposal procedures.

**TO AVOID CONTACT AND CONTAMINATION:**

Handle and dispose of lubricants only as directed in applicable material safety data sheets and in accordance with applicable local, state and federal regulations.

**IMPORTANT: Refer to manual packed with the hoist for the inspection and maintenance of the hoist.**

**MOTOR BRAKE (OPTIONAL EQUIPMENT)**

A motor brake is available as optional equipment. The brake can be ordered with the trolley or it is available in kit form for installation on a unit in the field. To order a brake kit for an existing unit, order brake kit Key No. 635-287 and indicate the serial number of the trolley on which it is to be installed and the voltage on which the trolley operates.

![Figure 8. Motor Brake Adjustment.](image)

**Adjustment**

The motor brake should be checked periodically for wear of the friction discs and/or proper adjustment of the solenoid air gap. Refer to Figure 8. Normal lining wear will cause the solenoid lever (8) to move away from the solenoid frame (79) and thus increase the air gap and trolley stopping time.

When the gap reaches approximately 11/16" the brake should be adjusted. To adjust the brake, de-energize the power supply to the trolley.

Remove both access covers to expose the brake. Depress the plunger (13) towards the solenoid frame until spring pressure is felt. Hold the plunger firmly in this position and measure the air gap between the mating (ground) surfaces of the solenoid (79) and the solenoid plunger (29). To adjust, turn both wear adjustment screws (10) equal amounts clockwise until the air gap measures 13/32".

**REPLACEMENT OF FRICTION DISC**

(Refer to Figure 16, page 18)

1. De-energize the power supply to the trolley and remove the motor/brake assembly from the gear reducer. Remove housing (635-261) from the brake.
2. Remove the entire support plate assembly by unscrewing three (3) screws (635-294). Remove the stationary disc (635-269) and worn friction disc (635-270). Install the new friction disc, making sure that the two stabilizing springs are at 90° in the recessed portion of the square hole in the friction disc, with the prongs pointing into the brake. Place the stationary disc on the friction disc and re-assemble the entire support plate assembly engages the guide pins of the end plate.
3. Remove both access covers (635-263) from the housing (635-261) and slide the housing with its shaft assembly onto the mounting studs. Be sure the housing is assembled with the access windows above the horizontal centerline. Rotate shaft to engage key into the hub keyway.
4. Re-assemble the motor/brake assembly to the gear reducer using the four nuts and lockwashers.
5. Adjust air gap per above instructions (adjustment).
6. Re-energize power supply and operate trolley a few times to make sure air gap is correct and then replace access covers (635-263).

**REPLACEMENT OF COIL**

(Refer to Figure 8 on this page and Figure 15 on page 17)

1. De-energize the power supply to the trolley and remove the motor/brake assembly from the gear reducer.
2. Remove housing (635-261) from the brake and disconnect the coil lead wires from brake cord.
3. Insert screwdriver between support plate (126) and the top of lever arm (17). Wedge these apart and remove bearing pin (26) and solenoid lever (8) with link (13) and plunger (29).
4. Remove plunger guide screw (84) and both plunger guides (82). Slide old coil sideways out of frame (79). If coil is difficult to move, tap lightly with a soft hammer.
5. Install new coil in the same relative position as the old coil and replace the plunger guides (82) and screws (84, 84W).
6. Re-assemble following Step 3 in reverse order.
7. Re-connect the coil leads to the brake cord. Slide housing and shaft assembly onto mounting studs, rotating shaft to engage key into hub keyway. Be sure the access covers are above the horizontal centerline.
8. Re-assemble motor/brake assembly to gear reducer using the four nuts and lockwashers.
9. Adjust air gap per above instructions (Adjustment).
10. Re-energize power supply and operate trolley a few times to make sure air gap is correct and then replace access covers.

RECOMMENDED SPARE PARTS
To insure continued operation of the Series 635 Motor Driven Trolleys, the following is a list of parts that are recommended to be kept on hand at all times to replace parts that have worn or failed:

<table>
<thead>
<tr>
<th>Key No.</th>
<th>Part Name</th>
<th>Qty. for each Trolley in Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>635-45</td>
<td>Transformer</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>(3-phase units only)</td>
<td></td>
</tr>
<tr>
<td>635-126</td>
<td>Contactor</td>
<td>1</td>
</tr>
<tr>
<td>635-156</td>
<td>Control Station</td>
<td></td>
</tr>
<tr>
<td>635-286</td>
<td>Coil Kit</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>(for units equipped with brake)</td>
<td></td>
</tr>
</tbody>
</table>

Refer to page 11 for ordering information and the parts lists for the part numbers.

TROUBLESHOOTING

ELECTRICAL DATA
To detect open and short circuits in electrical components, use the following procedure.

OPEN CIRCUITS in the coils of electrical components may be detected by isolating the coil and checking for continuity with an ohmmeter or with the component in series with a light or bell circuit.

SHORTED TURNS are indicated by a current draw substantially above normal (connect ammeter in series with suspected element and impose normal voltage) or D.C. resistance substantially below normal. The current method is recommended for coils with very low D.C. resistance.

MOTOR CURRENT should be measured with the motor running under full load with rated voltage applied.

CONTACTOR COIL CURRENT should be measured with the contactor armature (contacts) closed and full voltage on the coil.

Table 3

<table>
<thead>
<tr>
<th>Voltage-Phase Hertz</th>
<th>Full Load Current (Amps.)</th>
<th>Leads</th>
<th>D.C. Resistance (Ohms)</th>
</tr>
</thead>
<tbody>
<tr>
<td>115-1-60/50</td>
<td>3.4/4.2</td>
<td>1-3</td>
<td>3.3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2-3</td>
<td>3.1</td>
</tr>
<tr>
<td>230/460-3-60</td>
<td>1.3/.65</td>
<td>1-4</td>
<td>15.3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2-5</td>
<td>15.3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3-6</td>
<td>15.3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7-8</td>
<td>30.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7-9</td>
<td>30.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>8-9</td>
<td>30.5</td>
</tr>
<tr>
<td>220/380-3-50</td>
<td>1.7/.85</td>
<td>1-4</td>
<td>15.3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2-5</td>
<td>15.3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3-6</td>
<td>15.3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7-8</td>
<td>30.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7-9</td>
<td>30.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>8-9</td>
<td>30.5</td>
</tr>
<tr>
<td>575-3-60</td>
<td>.52</td>
<td>1-2</td>
<td>95.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1-3</td>
<td>95.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2-3</td>
<td>95.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Voltage Leads</th>
<th>Leads</th>
<th>D.C. Resistance (Ohms)</th>
</tr>
</thead>
<tbody>
<tr>
<td>230/460</td>
<td>H4 to H3</td>
<td>150</td>
</tr>
<tr>
<td>To</td>
<td>H1 to H2</td>
<td>150</td>
</tr>
<tr>
<td>115</td>
<td>X1 to X2</td>
<td>21</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Voltage Hertz</th>
<th>Current (Amps)</th>
<th>D.C. Resistance (Ohms)</th>
</tr>
</thead>
<tbody>
<tr>
<td>120-60</td>
<td>.10</td>
<td>150</td>
</tr>
<tr>
<td>110-50</td>
<td>.12</td>
<td>210</td>
</tr>
<tr>
<td>115-60/50</td>
<td>.124/.140</td>
<td>132</td>
</tr>
</tbody>
</table>
Figure 9. Typical Wiring Diagrams. Wiring Diagrams shown are representative. Consult diagram attached to contactor or furnished with unit.
## TROUBLE SHOOTING

<table>
<thead>
<tr>
<th>Probable Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Trolley does not operate in either direction.</strong></td>
<td></td>
</tr>
<tr>
<td>A. No voltage at trolley</td>
<td>A. Main line or branch circuit switch open; branch line fuse blown or circuit breaker tripped. Close, replace or reset. Check for grounded or open connection in supply lines or current collectors.</td>
</tr>
<tr>
<td>B. Phase failure (single-phasing)</td>
<td>B. Open circuit, grounded or open connection in one line of supply system, collector, hoist wiring, reversing contactor, motor leads or windings. Check for electrical continuity.</td>
</tr>
<tr>
<td>C. Open control circuit</td>
<td>C. Open or shorted windings in transformer or reversing contactor coil; loose connection or broken wire in circuit; mechanical binding in contactor; control station contacts not making.</td>
</tr>
<tr>
<td>D. Wrong voltage or frequency</td>
<td>D. The voltage and frequency must be the same as shown on trolley control box.</td>
</tr>
<tr>
<td>E. Low voltage</td>
<td>E. Voltage at the motor must be above the minimum with the unit in operation:</td>
</tr>
<tr>
<td>F. Excessive load</td>
<td>F. Reduce loading to the capacity limit of trolley.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>UNIT RATING</th>
<th>MINIMUM VOLTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>110-120/1/60</td>
<td>99</td>
</tr>
<tr>
<td>208-240/3/60</td>
<td>187</td>
</tr>
<tr>
<td>440-480/3/60</td>
<td>396</td>
</tr>
<tr>
<td>220/3/50</td>
<td>198</td>
</tr>
<tr>
<td>380/3/50</td>
<td>342</td>
</tr>
<tr>
<td>575/3/60</td>
<td>517</td>
</tr>
</tbody>
</table>

| **2. Trolley operates in one direction only.** | |
| A. Open control circuit | A. See Item 1c. |

| **3. Trolley operates sluggishly.** | |
| A. Excessive load | A. See Item 1f. |
| B. Low voltage | B. See Item 1e. |
| C. Worn or dirty rails | C. Clean rails, inspect for worn spots. |

| **4. Motor overheats.** | |
| A. Excessive load | A. See Item 1f. |
| B. Low voltage | B. See Item 1e. |
| C. Extreme external heating | C. Above an ambient temperature of 104°F, 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. See Item 1b. |
REPLACEMENT PARTS

ORDERING INSTRUCTIONS

The following information must accompany all correspondence or orders for replacement parts:

1. Serial number – this is stamped on the side frame above the motor mounting, as shown below.

2. Voltage, Phase, Hertz – see the labels located next to the power cord and on the inside of the control box cover.

When ordering motor parts, give the motor name plate data in addition to the above.

For parts orders also specify:

1. Quantity desired.
2. Key number or part.
3. Part name.
4. Part number.

Parts should be ordered from CM’s authorized Master Parts Depots conveniently located throughout the United States and Canada. Refer to page i of this manual to locate the Master Parts Depot nearest you.

NOTE: When ordering replacement parts, it is recommended that consideration be given to the need for also ordering such items as bearings, contacts, fasteners, etc. These items may be damaged or lost during disassembly or just unfit for future use because of deterioration from age or service.

WARNING

Using “commercial” or other manufacturer’s parts to repair the Series 635 Motor Driven Trolley may cause load loss.

TO AVOID INJURY:

Use only CM supplied replacement parts. Parts may look alike, but CM parts are made of specific materials or processed to achieve specific properties.

Figure 10. Trolley Arrangement
## CM® 4 DIRECTIONAL CONTROL STATION PARTS LIST

### Figure 11. Control Station Exploded View.

<table>
<thead>
<tr>
<th>Key No.</th>
<th>Part Name</th>
<th>No. Req’d.</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>635-21</td>
<td>Warning Tag</td>
<td>1</td>
<td>81704</td>
</tr>
<tr>
<td>635-141</td>
<td>Control Cord Complete</td>
<td>1</td>
<td>51708</td>
</tr>
<tr>
<td></td>
<td>(Specify Length Required.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>8 Conductors, 16'-3'</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>All others</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Consists of (1) Control Cord and (1) Warning Tag</td>
<td></td>
<td></td>
</tr>
<tr>
<td>635-144</td>
<td>Chain Clip at Control Box</td>
<td>1</td>
<td>68704</td>
</tr>
<tr>
<td></td>
<td>8 Conductors</td>
<td></td>
<td>57817</td>
</tr>
<tr>
<td></td>
<td>10 Conductors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>635-146</td>
<td>Control Station Support Chain</td>
<td>–</td>
<td>621431</td>
</tr>
<tr>
<td></td>
<td>(Specify Length Required.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>635-147</td>
<td>Cable Clip (Specify Number Required.)</td>
<td>1</td>
<td>20744</td>
</tr>
<tr>
<td>635-148</td>
<td>Support Chain Attaching Link</td>
<td>2</td>
<td>59883</td>
</tr>
<tr>
<td>635-155</td>
<td>Control Station Inserts</td>
<td>1</td>
<td>58255</td>
</tr>
<tr>
<td></td>
<td>1-Speed Inserts</td>
<td></td>
<td>58256</td>
</tr>
<tr>
<td></td>
<td>2-Speed Inserts</td>
<td></td>
<td></td>
</tr>
<tr>
<td>635-156</td>
<td>Control Station Complete</td>
<td>1</td>
<td>58220CM</td>
</tr>
<tr>
<td></td>
<td>4 Button Control Station</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>6-Button Control Station</td>
<td>1</td>
<td>58252</td>
</tr>
<tr>
<td>635-551</td>
<td>Control Station Grommet</td>
<td>1</td>
<td>58278</td>
</tr>
<tr>
<td>635-553</td>
<td>Control Station Housing Kit</td>
<td>1</td>
<td>58388</td>
</tr>
<tr>
<td></td>
<td>(Includes Housing, Boots, Collar Gasket &amp; Hardware)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>635-563</td>
<td>Control Station Hardware Kit w/Gaskets</td>
<td>1</td>
<td>58279</td>
</tr>
<tr>
<td>635-566</td>
<td>Control Station Warning Label Kit</td>
<td>1</td>
<td>57276</td>
</tr>
<tr>
<td>635-567</td>
<td>Control Station Button Label Kit</td>
<td>1</td>
<td>58277</td>
</tr>
</tbody>
</table>

*Refer to parts list on page 15 for information on these parts

---

*6-Button Control Station—Individual components not available for repair

Multifunction Control Stations*
## Trolley Components Parts List

### Figure 12. Trolley Exploded View

<table>
<thead>
<tr>
<th>Key No.</th>
<th>Part Name</th>
<th>No. Req'd.</th>
<th>Part No. 1/8 – 2-Ton</th>
<th>Part No. 3-Ton</th>
</tr>
</thead>
<tbody>
<tr>
<td>635-1</td>
<td>Side Frame – Plain Side</td>
<td>1</td>
<td>35680</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>(Does not include wheels)</td>
<td></td>
<td>3-3(\frac{3}{8}) thru 5(\frac{5}{8}) Flange Range</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>5(\frac{5}{8}) thru 8(\frac{3}{8}) Flange Range</td>
<td>35680</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4(\frac{1}{4}) thru 5(\frac{3}{8}) Flange Range</td>
<td>-</td>
</tr>
<tr>
<td>635-2</td>
<td>Side Frame – Geared Side</td>
<td>1</td>
<td>35690</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>(Does not include wheels)</td>
<td></td>
<td>3-3(\frac{3}{8}) thru 5(\frac{5}{8}) Flange Range</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>5(\frac{5}{8}) thru 8(\frac{3}{8}) Flange Range</td>
<td>35690</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4(\frac{1}{4}) thru 5(\frac{3}{8}) Flange Range</td>
<td>-</td>
</tr>
<tr>
<td>635-3</td>
<td>Motor Shaft Bearing</td>
<td>1</td>
<td>82055</td>
<td>82055</td>
</tr>
<tr>
<td>635-4</td>
<td>Trackwheel Plain</td>
<td>2</td>
<td>39002</td>
<td>39002</td>
</tr>
<tr>
<td>635-5</td>
<td>Trackwheel with Gear</td>
<td>2</td>
<td>35642</td>
<td>35642</td>
</tr>
<tr>
<td>635-6</td>
<td>Trackwheel Bearing</td>
<td>4</td>
<td>82113</td>
<td>82113</td>
</tr>
<tr>
<td>635-7</td>
<td>Trackwheel Stud – Plain Wheel</td>
<td>2</td>
<td>36361</td>
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<tr>
<td>635-8</td>
<td>Trackwheel Stud – Geared Wheel</td>
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<tr>
<td>635-9</td>
<td>Trackwheel Washer – Steel</td>
<td>4</td>
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<td>635-10</td>
<td>Trackwheel Washer – Oilite</td>
<td>4</td>
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<td>635-11</td>
<td>Trackwheel Stud Lockwasher</td>
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<td>635-12</td>
<td>Trackwheel Stud Nut</td>
<td>4</td>
<td>988155</td>
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</table>

### Figure 12 Trolley Exploded View

**NOTE:** 3 Ton Trolley Side Frames shown. 1/2-2 Ton Trolley Side Frames are similar.

For Trolleys with standard ranges of adjustment and without trolley guards. For all others, contact CM for side frame part numbers.
Figure 13. Control Box Exploded View.
### CONTROL BOX COMPONENTS PARTS LIST

<table>
<thead>
<tr>
<th>Key No.</th>
<th>Part Name</th>
<th>No. Req’d.</th>
<th>Part No.</th>
<th>1/8 – 2-Ton, 3-Ton</th>
</tr>
</thead>
<tbody>
<tr>
<td>635-26</td>
<td>Control Box &amp; Brackets w/ Cover and Cover Mounting Screws Units w/o Main Line Contactor</td>
<td>1</td>
<td>36801 36248</td>
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<tr>
<td>635-29</td>
<td>Control Box Mounting Screw</td>
<td>4</td>
<td>982693</td>
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<tr>
<td>635-30</td>
<td>C.M. Nameplate</td>
<td>1</td>
<td>935899 936828</td>
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<tr>
<td>635-31</td>
<td>Wiring Diagram</td>
<td>1</td>
<td>Contact CM</td>
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<tr>
<td>635-32</td>
<td>Current Label</td>
<td>2</td>
<td>935884 935885 935886</td>
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<tr>
<td>635-33</td>
<td>Strain Relief Screw</td>
<td>1</td>
<td>982695</td>
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<tr>
<td>635-34</td>
<td>Strain Relief Screw Washer</td>
<td>2</td>
<td>954802</td>
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<tr>
<td>635-35</td>
<td>Cable Clamp</td>
<td>1</td>
<td>27833</td>
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<tr>
<td>635-36</td>
<td>Cable Clamp Screw Washer</td>
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<td>954802</td>
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<td>Cable Clamp Screw</td>
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<td>635-38</td>
<td>Power Cord (Specify Length)</td>
<td>1</td>
<td>51436 51434</td>
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<tr>
<td>635-39</td>
<td>Power Cord Connector</td>
<td>1</td>
<td>98926 98916</td>
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<tr>
<td>635-40</td>
<td>Power Cord Connector Locknut</td>
<td>1</td>
<td>51434 51434</td>
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<tr>
<td>635-41</td>
<td>Transformer (See Units with Main Line Contactor)</td>
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<tr>
<td>635-42</td>
<td>Transformer Mounting Screw</td>
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<td>982656</td>
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<tr>
<td>635-43</td>
<td>Terminal Board</td>
<td>1</td>
<td>35800</td>
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<tr>
<td>635-44</td>
<td>Terminal Board Mounting Screw</td>
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<td>982654 982657</td>
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</tr>
<tr>
<td>635-45</td>
<td>Transformer (See Units with Main Line Contactor)</td>
<td>1</td>
<td>230, 230-Volt &amp; 460-Volt 230-Trolleys (115 V. cont.)</td>
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<tr>
<td>635-46</td>
<td>Transformer Mounting Screw</td>
<td>2</td>
<td>982656</td>
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<tr>
<td>635-47</td>
<td>Terminal Board</td>
<td>1</td>
<td>35800</td>
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<tr>
<td>635-48</td>
<td>Terminal Board Mounting Screw</td>
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<td>982654 982657</td>
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<tr>
<td>635-49</td>
<td>Terminal Board Mounting Screw Nut</td>
<td>2</td>
<td>988101</td>
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<tr>
<td>635-50</td>
<td>Control Box Connector</td>
<td>2</td>
<td>983979 83982</td>
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<tr>
<td>635-51</td>
<td>Control Box Connector Locknut</td>
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<td>989772 989773</td>
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<tr>
<td>635-52</td>
<td>Control Box Connector Screw</td>
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<tr>
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<td>Contactor Mounting Screw &amp; Lockwasher</td>
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<td>957854 957855</td>
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<tr>
<td>635-54</td>
<td>Jumper (Specify Length)</td>
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<td>51487</td>
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<td>635-55</td>
<td>Jumper (Between Coil Terminals)</td>
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<tr>
<td>635-56</td>
<td>Cover Gasket</td>
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<td>982484</td>
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<td>635-57</td>
<td>Term. Bd. Motor Cable</td>
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<td>28719</td>
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<td>635-58</td>
<td>Term. Bd. Motor Cable</td>
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<td>635-59</td>
<td>Term. Bd. Motor Cable</td>
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<tr>
<td>635-60</td>
<td>Motor Cable Connector</td>
<td>1</td>
<td>898771</td>
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<td>635-61</td>
<td>Power Cord Connector</td>
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<td>Power Cord Connector</td>
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### UNITS WITH MAIN LINE CONTACTOR

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<tr>
<th>Key No.</th>
<th>Part Name</th>
<th>No. Req’d.</th>
<th>Part No.</th>
<th>1/8 – 2-Ton, 3-Ton</th>
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<tbody>
<tr>
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<td>Transformer W/Fuse</td>
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<td>635-46</td>
<td>Main Line Contactor (115 Volt, 3-Phase)</td>
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<tr>
<td>635-47</td>
<td>Main Line Contactor (48 Volt, 3-Phase)</td>
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<tr>
<td>635-48</td>
<td>Main Line Contactor (24 Volt, 3-Phase)</td>
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</tr>
<tr>
<td>635-49</td>
<td>Main Line Contactor (115 Volt, 1-Phase)</td>
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<td>36947 36947</td>
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<tr>
<td>635-50</td>
<td>Main Line Contactor (48 Volt, 1-Phase)</td>
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</tr>
<tr>
<td>635-51</td>
<td>Main Line Contactor (24 Volt, 1-Phase)</td>
<td>1</td>
<td>35249 35249</td>
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</tr>
</tbody>
</table>

*For weatherproof units only
-For use with 6-Button Control Stations
*Individual components not available for repairs
*Not shown
## MOTOR AND HUB CITY TYPE GEAR REDUCER PARTS LIST

### Key No. | Part Name | No. Req’d. | Part No.
--- | --- | --- | ---
635-89 | Gear Reducer Mtg. Screw | 4 | 927764
635-90 | Gear Reducer Screw L.W. | 4 | 982226
635-91 | Pinion Washer | 1 | 982263
635-92 | Pinion | 1 | 35429
635-93 | Pinion Key | 2 | 85546
635-94 | Pinion Retaining Ring | 1 | 82680
635-95 | Motor Cable Assembly Single-Phase Three-Phase | 1 | 36500 51440
635-96 | Motor Cable Connector Single-Phase Three-Phase | 1 | 83969 83968
635-97 | Connector Lockout | 1 | 989771
635-288 | Motor – Complete (Individual Components not available for repairs) 115-1-60 230/460-3-60 and 220/380-3-50 575-3-60 | 1 | 36925 36984 36926
635-289 | Gear Reducer – Complete 75 F.P.M. Trolleys (10:1) 30 F.P.M. Trolleys (25:1) | 1 | 36204 36205
635-290 | Motor Shaft Key | 1 | 85554
635-291 | Motor Attaching Screw and Lockwasher | 4 | 987005 987919
635-325 | Housing | 1 | Contact CM
635-326 | Cap, Output | 2 | Contact CM
635-327 | Cap, Closed Input | 1 | Contact CM
635-328 | Flange, Motor | 1 | Contact CM

### Key No. | Part Name | No. Req’d. | Part No.
--- | --- | --- | ---
635-329 | Shaft, Output | 1 | Contact CM
635-330 | Worm, Integral | 1 | Contact CM
635-331 | Gear, Worm | 1 | Contact CM
635-332 | Cup, Bearing | 2 | Contact CM
635-333 | Cone, Bearing | 2 | Contact CM
635-334 | Bearing, Ball | 1 | Contact CM
635-335 | Washer | 1 | Contact CM
635-336 | Screw, Hex Cap (1/4 NC x 5/8-GR5) | 4 | Contact CM
635-337 | Screw, Hex Cap (1/4 NC x 7/8-GR5) | 4 | Contact CM
635-338 | Screw, Hex Cap (1/4 NC x 1-3/8) | 8 | Contact CM
635-339 | Screw, Hex Cap (3/8 NC x 1-GR5) | 4 | Contact CM
635-340 | Washer, Locking (3/8) | 4 | Contact CM
635-341 | Kit, Repair (Includes 635-342 thru 635-351) | 1 | Contact CM
635-342* | Seal, Input Shaft | 1 | Contact CM
635-343* | Seal, Output Shaft | 1 | Contact CM
635-344* | Key, P&W (3/16 Sq. x 1) | 1 | Contact CM
635-345* | Key, P&W (3/16 Sq. x 1-3/8) | 1 | Contact CM
635-346* | Ring, Retaining | 1 | Contact CM
635-347* | Ring, Retaining | 1 | Contact CM
635-348* | Gasket, Input Cap | 12 | Contact CM
635-349* | Gasket, Output Cap | 12 | Contact CM
635-350* | Plug, Pipe, Socket (1/8 NPT) | 4 | Contact CM
635-351* | Plug, Vented | 1 | Contact CM
635-352 | Cap, Closed | 1 | Contact CM

* These Items are only available in Repair Kit Form. Order “Kit, Repair, Key No. 635-341”.

---

Figure 14. Motor and Hub City Type Gear Reducer Exploded View.
<table>
<thead>
<tr>
<th>Key No.</th>
<th>Part Name</th>
<th>No. Req’d.</th>
<th>Part No.</th>
</tr>
</thead>
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<tr>
<td>635-89</td>
<td>Gear Reducer Mtg. Screw</td>
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<tr>
<td>635-90</td>
<td>Gear Reducer Screw L.W.</td>
<td>4</td>
<td>922226</td>
</tr>
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<td>Pinion Washer</td>
<td>1</td>
<td>982263</td>
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<td>Pinion</td>
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<td>635-93</td>
<td>Pinion Key</td>
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<tr>
<td>635-94</td>
<td>Pinion Retaining Ring</td>
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<td>82680</td>
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<tr>
<td>635-95</td>
<td>Motor Cable Assembly</td>
<td>Single-Phase</td>
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<td>635-96</td>
<td>Motor Cable Connector</td>
<td>Single-Phase</td>
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<td>Three-Phase</td>
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<td>635-97</td>
<td>Connector Lockout</td>
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<td>989771</td>
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<td>635-288</td>
<td>Motor – Complete (Individual Components not available for repairs)</td>
<td>1</td>
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<td>115-1-60</td>
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<td>230/460-3-60 and 220/380-3-50</td>
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<td>575-3-60</td>
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<td>Gear Reducer – Complete</td>
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<td>75 F.P.M. Trolleys (10:1)</td>
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<td>30 F.P.M. Trolleys (25:1)</td>
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<td>635-290</td>
<td>Motor Shaft Key</td>
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<td>85554</td>
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<tr>
<td>635-291</td>
<td>Motor Attaching Screw and Lockwasher</td>
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<td>987005</td>
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<td>Ball Bearing</td>
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<td>635-402</td>
<td>Cone, Roller Bearing</td>
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<td>Contact CM</td>
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<td>635-403</td>
<td>Cup, Roller Bearing</td>
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<td>635-404</td>
<td>Temper Load Ring</td>
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<td>635-405</td>
<td>Truarc Spacer</td>
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<td>Contact CM</td>
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</tbody>
</table>

**Figure 15. Motor and Peerless-Winsmith Type Gear Reducer Exploded View.**
### MOTOR BRAKE PARTS LIST

**Figure 16. Motor Brake Exploded View.**

#### Key No. | Part Name | No. Req’d. | Part No. 
--- | --- | --- | --- 
635-206 | Brake Cord | 1 | 51074 
635-260 | Coupler Brake Shaft Kit (Includes Shaft, Bearing, Snap Ring, Retainer Ring and Key) | 1 | Contact CM 
635-261 | Housing | 1 | Contact CM 
635-262 | Mounting Stud with Nut | 4 | Contact CM 
635-263 | Access Cover – Plain | 2 | Contact CM 
635-264 | Access Cover Screw (Specify No. Req’d.) | – | Contact CM 
635-265* | Access Cover Gasket | 2 | Contact CM 
635-266* | Drain Plug | 1 | Contact CM 
635-267* | Housing to End Plate Gasket | 1 | Contact CM 
635-268* | Gasket – Each End of Brake | 2 | Contact CM 
635-269 | Stationary Disc | 1 | Contact CM 
635-270 | Friction Disc Kit (Includes 3 Discs with Stabilizer Spring – Only one Disc required per Brake) | 1 | Contact CM 
635-271 | Hub Kit (Includes Hub and Set Screws) | 1 | Contact CM 
635-272 | End Plate Assembly | 1 | Contact CM 
635-273 | Plug – External Lead Hole | 1 | Contact CM 
635-274 | Bearing | 1 | Contact CM 
635-275 | Solenoid Lever | 1 | Contact CM 
635-276 | Retainer Ring | 1 | Contact CM 
635-277 | Spacer | 2 | Contact CM 
635-278 | Torque Adjusting Screw | 2 | Contact CM 
635-279 | Wear Adjusting Screw | 2 | Contact CM 
635-280 | Pressure Spring | 2 | Contact CM 
635-281 | Lever Arm and Stop Nut Assembly | 1 | Contact CM 
635-282 | Bearing Pin | 1 | Contact CM 
635-283 | Support Plate and Stop Nut Assembly | 1 | Contact CM 
635-284 | Pivot Pin | 1 | Contact CM 
635-285 | Solenoid Kit (Includes Plunger, Link, Frame Link Screw, Link Nut and Mounting Screws) | 1 | Contact CM 
635-286 | Coil Kit (Includes Coil, Plunger Guides, Guide Screw and Lockwasher) | 1 | Contact CM 
635-287 | Motor Brake Kit (Includes Complete Brake Assembly, Brake Cord, Connector Wire Nuts and Installation Instructions) | 1 | 115 Volt Brake 9597 220, 230, 380, 460 Volt Brake 9598 
635-292 | Brake Cord Connector | 1 | 83968 
635-293 | Wire Nut | 4 | 982473 
635-294 | Brake Attaching Screw | 3 | Contact CM 
635-353** | Access Cover (with Manual Release Knob) | 1 | Contact CM 

*For Weatherproof Units – Not Shown

**Not Shown
Note: When ordering parts, always furnish hoist model and serial number, motor horsepower, voltage, phase, frequency and rated capacity of hoist on which the parts are to be used.
For the location of the nearest CM Master Parts Depot, see the list located on the inside front cover.

LIMITATION OF WARRANTIES, REMEDIES AND DAMAGES

THE WARRANTY STATED BELOW IS GIVEN IN PLACE OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR OTHERWISE, NO PROMISE OR AFFIRMATION OF FACT MADE BY ANY AGENT OR REPRESENTATIVE OF SELLER SHALL CONSTITUTE A WARRANTY BY SELLER OR GIVE RISE TO ANY LIABILITY OR OBLIGATION.

Seller warrants that on the date of delivery to carrier the goods are free from defects in workmanship and materials.

SELLER’S SOLE OBLIGATION IN THE EVENT OF BREACH OF WARRANTY OR CONTRACT OR FOR NEGLIGENCE OR OTHERWISE WITH RESPECT TO GOODS SOLD SHALL BE EXCLUSIVELY LIMITED TO REPAIR OR REPLACEMENT, F.O.B. SELLER’S POINT OF SHIPMENT, OF ANY PARTS WHICH SELLER DETERMINES TO HAVE BEEN DEFECTIVE or if Seller determines that such repair or replacement is not feasible, to a refund of the purchase price upon return of the goods to Seller.

Any action against Seller for breach of warranty, negligence or otherwise, must be commenced within one year after such cause of action occurs.

NO CLAIM AGAINST SELLER FOR ANY DEFECT IN THE GOODS SHALL BE VALID OR ENFORCEABLE UNLESS BUYER’S WRITTEN NOTICE THEREOF IS RECEIVED BY SELLER WITHIN ONE YEAR FROM THE DATE OF SHIPMENT.

Seller shall not be liable for any damage, injury or loss arising out of the use of the goods if, prior to such damage, injury or loss, such goods are (1) damaged or misused following Seller’s delivery to carrier; (2) not maintained, inspected, or used in compliance with applicable law and Seller’s written instructions and recommendations; or (3) installed, repaired, altered or modified without compliance with such law, instructions or recommendations.

UNDER NO CIRCUMSTANCES SHALL SELLER BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES AS THOSE TERMS ARE DEFINED IN SECTION 2-715 OF THE UNIFORM COMMERCIAL CODE.

INDEMNIFICATION AND SAFE OPERATION

Buyer shall comply with and require its employees to comply with directions set forth in instructions and manuals furnished by Seller and shall use and require its employees to follow such instructions and manuals and to use reasonable care in the use and maintenance of the goods. Buyer shall not remove or permit anyone to remove any warning or instruction signs on the goods. In the event of personal injury or damage to property or business arising from the use of the goods, Buyer shall within 48 hours thereafter give Seller written notice of such injury or damage. Buyer shall cooperate with Seller in investigating any such injury or damage and in the defense of any claims arising therefrom.

If Buyer fails to comply with this section or if any injury or damage is caused, in whole or in part, by Buyer’s failure to comply with applicable federal or state safety requirements, Buyer shall indemnify and hold Seller harmless against any claims, loss or expense for injury or damage arising from the use of the goods.