

# OPERATING, MAINTENANCE & PARTS MANUAL

## MOTOR-DRIVEN TROLLEY



# CM<sup>®</sup> UNIVERSAL TROLLEY<sup>™</sup> MOTORIZED

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

Model Number \_\_\_\_\_

Serial No. \_\_\_\_\_

Purchase Date \_\_\_\_\_

Voltage \_\_\_\_\_

Rated Load \_\_\_\_\_

### RATED LOADS 1 TO 3 TONNES

**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 trolley operator. Failure to operate equipment as directed in manual may cause injury.



### **CM HOIST PARTS AND SERVICES ARE AVAILABLE IN THE UNITED STATES AND IN CANADA**

As a CM Hoist and Trolley 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. To quickly obtain the name of the Master Parts Depot or Service Center located nearest you, call (800) 888-0985, Fax: (716) 689-5644, visit HYPERLINK "<http://www.cmworks.com>" [www.cmworks.com](http://www.cmworks.com).

### **LAS PIEZAS Y REPARACIONES DE LOS POLIPASTOS DE CM ESTÁN ASEGURADAS EN ESTADOS UNIDOS Y CANADÁ**

Como usuario de un polipasto y carro de CM le aseguramos cualquier reparación o la disponibilidad de cualquier pieza de repuesto a través de una red de almacenes de piezas de repuesto y centros de servicio situados estratégicamente en Estados Unidos y Canadá. Estas instalaciones se han seleccionado en base a su capacidad demostrada en la reparación de equipos y suministro de piezas de repuesto de forma rápida y eficaz. Para obtener la dirección del almacén de piezas de repuesto o del centro de servicio más cercano, llame al teléfono (800) 888-0985. Fax: (716) 689-5644, visita HYPERLINK "<http://www.cmworks.com>" [www.cmworks.com](http://www.cmworks.com) (sólo en Estados Unidos y Canadá).

### **LE SERVICE DE RÉPARATION ET DE PIÈCES POUR PALANS CM EST DISPONIBLE AUX ÉTATS-UNIS ET AU CANADA**

Soyez assurés qu'en temps d'utilisateur de palan et treuil CM, d'un service de réparation et de pièces fiable par l'entremise d'un réseau de Centres de service et de Dépôts de pièces maîtresses qui sont stratégiquement situés aux États-Unis et au Canada. Ces établissements ont été sélectionnés sur une base de leur habileté démontrée à s'occuper promptement et efficacement des besoins de réparation de pièces. Appelez le (800) 888-0985, Fax: (716) 689-5644, visitez HYPERLINK "<http://www.cmworks.com>" [www.cmworks.com](http://www.cmworks.com) pour obtenir rapidement le nom du dépôt de pièces maîtresses ou du centre de service situé le plus près.

## OPERATING AND SAFETY PROCEDURES

### **WARNING**

Improper operation of a trolley can create a potentially hazardous situation which, if not avoided, could result in death or serious injury. To avoid such a potentially hazardous situation, the operator shall follow these operating and safety procedures.

The following are operating and safety procedures for safe operation of the Universal 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 100% 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 sideplates 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.

### **SAFETY PRECAUTIONS**

Each Universal 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.



**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 UNIVERSAL MOTOR-DRIVEN TROLLEY.**



# FOREWORD

This manual contains important information to help you properly install, operate and maintain the Universal 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.

## TABLE OF CONTENTS

|                                                |       |
|------------------------------------------------|-------|
| <b>SAFETY PRECAUTIONS</b>                      |       |
| Operating and Safety Procedures .....          | ii    |
| Foreword .....                                 | 1     |
| <b>GENERAL INFORMATION</b>                     |       |
| Layout .....                                   | 2     |
| Specifications .....                           | 3     |
| CM Repair/Replacement Policy .....             | 3     |
| <b>INSTALLATION</b>                            |       |
| Unpacking Information .....                    | 3     |
| Suspension Kit to Hoist .....                  | 3     |
| Hoist to Trolley .....                         | 3     |
| Hoist / Trolley to Beam .....                  | 3     |
| Electrical Installation .....                  | 4     |
| Cord Layout .....                              | 4     |
| Input Power Cord .....                         | 4     |
| Trolley Motor Card .....                       | 4     |
| Control Station .....                          | 5     |
| Hoist Power Cord .....                         | 5     |
| Strain Relief Details .....                    | 5     |
| Hoist Control Cord .....                       | 6     |
| Combination Power / Control Cord .....         | 6     |
| Grounding the Enclosure .....                  | 6     |
| Three-Phase Units .....                        | 6     |
| <b>OPERATING INSTRUCTIONS</b>                  |       |
| General .....                                  | 6     |
| <b>INSPECTION</b>                              |       |
| Procedures .....                               | 6     |
| <b>MAINTENANCE</b>                             |       |
| General .....                                  | 7     |
| Optional Components .....                      | 7     |
| <b>TROUBLESHOOTING</b>                         |       |
| Electrical Data .....                          | 8     |
| <b>TROLLEY WASHER SPACING</b>                  |       |
| UTM Washer & Spacer Placement .....            | 9–10  |
| Ordering Instructions .....                    | 11    |
| Control Station and Parts List .....           | 12    |
| Trolley Components and Parts List .....        | 13    |
| Drive Assembly Components and Parts List ..... | 14–15 |
| Control Layout .....                           | 16    |
| Enclosure Components and Parts List .....      | 17–18 |
| Electric Hoist Suspension and Cord Kits .....  | 19    |
| Wiring Diagrams .....                          | 20–25 |

## LIST OF TABLES

| Table | Title                                               | Page |
|-------|-----------------------------------------------------|------|
| 1     | Universal Motor-Driven Trolley Specifications ..... | 3    |
| 2     | Universal Motor-Driven Trolley Specifications ..... | 3    |

## LIST OF ILLUSTRATIONS

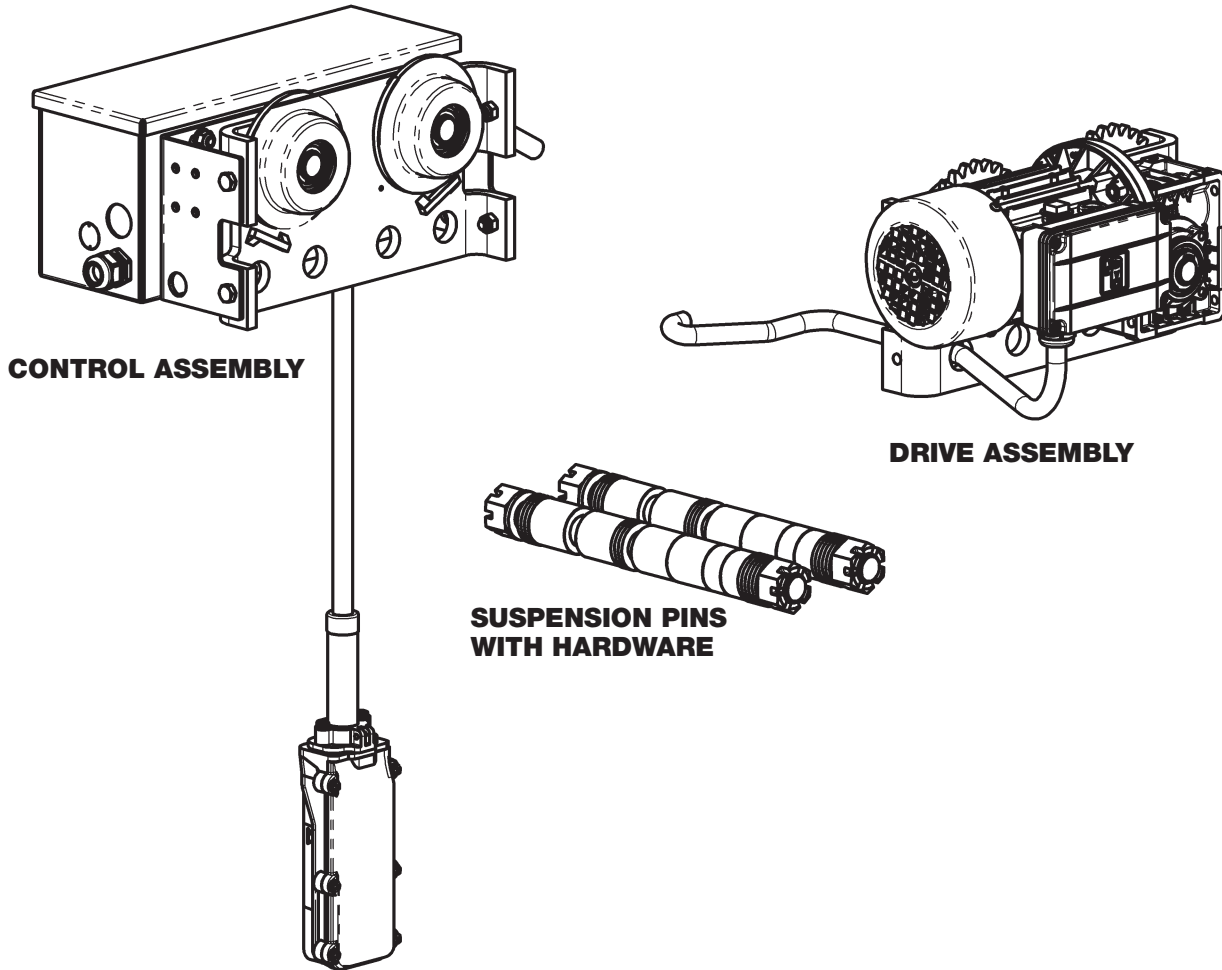
| Figure | Table                                       | Page |
|--------|---------------------------------------------|------|
| 1      | Hoist and Trolley General Arrangement ..... | 4    |
| 2      | Hoist and Trolley General Arrangement ..... | 4    |
| 3      | Strain Relief Details .....                 | 5    |



## GENERAL LAYOUT

As received, your trolley kit will be preassembled with the control assembly attached to the plain sideplate and the drive assembly attached to the geared sideplate. The push button and cable assembly and input power cord will be attached and wired to the control enclosure. The motor cord will be attached and wired to the motor. The suspension pins, washers and spacers will not be assembled to either sideplate. The installer will be required to set the trolley spacing according to the beam flange width the trolley is to be mounted. A cord kit will be needed to wire the hoist to the trolley. Some hoists use one combination cord for both power and control while other hoists use two separate cords for power and control.

Note: Some hoists do not require a trolley enclosure. In those cases, the trolley controls will be located inside the hoist body and the push button control will be attached to the hoist body.



## GENERAL INFORMATION

### SPECIFICATIONS

The Universal Motor-Driven Trolley is designed for use with many CMCO Electric Chain Hoists. The trolleys are available in 1t, 2t and 3t capacities. They are similar in design except the size of the load carrying members. Available speeds are 15, 35 and 75 feet per minute. 75 fpm is not available for 3t\* capacity, however.

The trolleys have rugged steel sideplates, steel axles, steel suspension pins, steel load bracket from which the hoist is suspended and machined, forged steel wheels that are suitable for operation on sloped or flat-flanged beams. Hardened trackwheel gear teeth are driven by a right angle worm gear reducer. The worm and gear of the gear reducer operate in an oil bath. An IP55 motor drives the gear reducer.

The control enclosure contains a reversing contactor, transformer and terminal blocks. There are three enclosures available based on supply voltages of 208v, 230v/460v and 575v. A four-button control station is suspended from the control enclosure. The up and down hoist control buttons are 2-step. Trolley control buttons are 1-step for 1-speed trolley or 2-step for 2-speed trolley.

See Table 1 and 2 for general specifications of the trolley.

\* 75 fpm traverse is only available on 3 ton trolley when trolley is used with 1 ton or 2 ton capacity hoist.

### CM REPAIR/REPLACEMENT POLICY

All Columbus McKinnon (CM) Universal Motor-Driven Trolleys are inspected and performance tested prior to shipment. If any properly maintained trolley develops a performance problem within 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 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.

**TABLE 1**

| 1-Speed                                       |                   |                          |                    |            |                   |                       |
|-----------------------------------------------|-------------------|--------------------------|--------------------|------------|-------------------|-----------------------|
| Universal Motor-Driven Trolley Specifications |                   |                          |                    |            |                   |                       |
| Code                                          | Capacity (Tonnes) | Power Supply (ALL CODES) | Travel Speed (FPM) | Motor (HP) | Flange Width (IN) | Min Radius Curve (IN) |
| UT1M*                                         | 1                 | 208-3-60                 | 15, 35, 75         | .33        | 2.3-8.6           | 36                    |
| UT2M*                                         | 2                 | 230/460-3-60             | 15, 35, 75         |            |                   | 45                    |
| UT3M*                                         | 3                 | 575-3-60                 | 15, 35             |            |                   | 55                    |

\*15 = 15 fpm, 35 = 35 fpm, 75 = 75 fpm

\*3 = 230/460 V, 5 = 575 V, 7 = 208 V

\*0 = Type 0, 1 = Type 1.

Example: UT1M3530 = UT1 base trolley, 35 fpm, 230/460V, Type 0.

**TABLE 2**

| 2-Speed                                       |                   |                          |                    |            |                   |                       |
|-----------------------------------------------|-------------------|--------------------------|--------------------|------------|-------------------|-----------------------|
| Universal Motor-Driven Trolley Specifications |                   |                          |                    |            |                   |                       |
| Code                                          | Capacity (Tonnes) | Power Supply (ALL CODES) | Travel Speed (FPM) | Motor (HP) | Flange Width (IN) | Min Radius Curve (IN) |
| UT1M*                                         | 1                 | 208-3-60                 | 15/4, 35/9, 75/19  | .4/1       | 2.3-8.6           | 36                    |
| UT2M*                                         | 2                 | 230/460-3-60             | 15/4, 35/9, 75/19  |            |                   | 45                    |
| UT3M*                                         | 3                 | 575-3-60                 | 15/4, 35/9         |            |                   | 55                    |

\*15 = 15/4 fpm, 35 = 35/9 fpm, 75 = 75/19 fpm

\*2 = 230 V, 4 = 460 V, 6 = 575 V, 8 = 208 V

\*0 = Type 0, 1 = Type 1.

Example: UT2M1581 = UT2 base trolley, 15/4 fpm, 208V, Type 1.

## INSTALLATION

### UNPACKING INFORMATION

After removing the trolley from the shipping carton, carefully inspect the external condition of the cords, control box, gear reducer and motor for damage that may have occurred during shipment and handling. Check to make sure all parts (trolley sideplate assembly with control enclosure, push button and cable assembly, input power cord, trolley sideplate with gear reducer and motor, motor cord, suspension pins, spacers, washers, cotter pins and nuts) are furnished.

### INSTALLATION

The hoist and trolley are packed separately. The type of top suspension may vary per hoist model, therefore, the following installation steps will assume there is no top suspension assembled to the hoist.

#### Suspension Kit to Hoist

Assemble the UT suspension kit to the hoist according to the instructions furnished with the suspension kit and/or the instructions in the manual furnished with the hoist. Make sure the suspension kit is installed based on the application, considering the hoist's reeving (single, double or triple) and mounting (parallel or cross) configurations.

#### Hoist to Trolley

It is recommended that the trolley be mounted to the hoist prior to final installation onto the beam. Follow the washer and spacer placement instructions (page 9 and 10) to properly set the trolley based on the application's beam flange width. The suspension pins must be offset toward the motor side for the UT1M and UT2M trolleys. It is recommended to do the same for the UT3M, but it is not required. Note: the motor-driven side of the trolley should be located on the same side as the hoist's chain container.

### WARNING

An excessively worn beam flange may fail and allow the trolley to fall from the beam.

#### TO AVOID INJURY:

Periodically inspect the beam flange for wear. Replace beam if flange is worn.

#### Hoist / Trolley to Beam

After setting the trolley, install the hoist/trolley assembly onto the beam from the end. If this is not possible, loosen the suspension pin castle nuts so the trolley wheels clear the beam's flange. Lift the hoist/trolley assembly up and tighten the suspension pin castle nuts. Lower the hoist/ trolley assembly onto the beam's flange. Ensure rail stops are in place after the installation is complete.

### WARNING

Operating the trolley on a beam that has no rail stops may allow the trolley to fall off the end of beam.

#### TO AVOID INJURY:

Install rail stops at each end of the beam on which the trolley is to operate.

Rail stops must be positioned so as to not exert impact force on the hoist frame or trolley wheels. They must contact the ends of the trolley sideplates. The rubber bumper kit, purchased separately, should be considered if trolley to rail stop contact is frequent.

## INSTALLATION (CONTINUED)

### Electrical Installation

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.

The input power cord and push button and cable assembly are attached and wired to the control enclosure from the factory. The motor cord is attached and wired to the motor from the factory. A cord kit is required to connect the hoist power and controls from the hoist to the control enclosure. The cord kit will include either one combination cord or two individual cords, depending on the hoist model. The combination cord contains conductors for both power and control connections. The two-cord kit includes a power cord and a separate control cord.

### Cord Layout

**See Figure 1.** When viewing the assembly from the enclosure side, the input power cord is at the left end of the enclosure. A knockout plug is shown directly below the input power cord. Knockout plugs are provided loose in the enclosure. An additional knockout is provided on the left end as well. The push button and cable assembly is attached to the bottom left end of the enclosure.

**See Figure 2.** When viewing the assembly from the enclosure side, the trolley motor cord is at the right end of the enclosure. Note that the cord is routed through the unused suspension pin holes in the sideplates so the cord will not contact the beam. This particular hoist / trolley example requires individual power and control cords. Each cord is mounted to the right end of the enclosure and bottom of the hoist body. Both ends of the enclosure have the same number of holes and knockouts.

**Note:** UT2M\*\*\*0 trolley shown.

### Input Power Cord

The input power cord is attached and wired to the enclosure. It is for use with a collector and bus system. It should be discarded if a cable is to supply the trolley. Connections to the trolley are shown on wiring diagrams, see pages 20–25. The cord connector must be made tight on the cable, and if necessary, a separate strain relief provided to prevent any stress on the conductors.

### Trolley Motor Cord

The trolley motor cord is attached and wired to the motor. Connections within the enclosure are shown on wiring diagrams, see pages 20–25. The cord should be routed from the motor junction box through unused suspension pin holes in both sideplates to the control enclosure. This will keep the cord from being damaged by the beam.

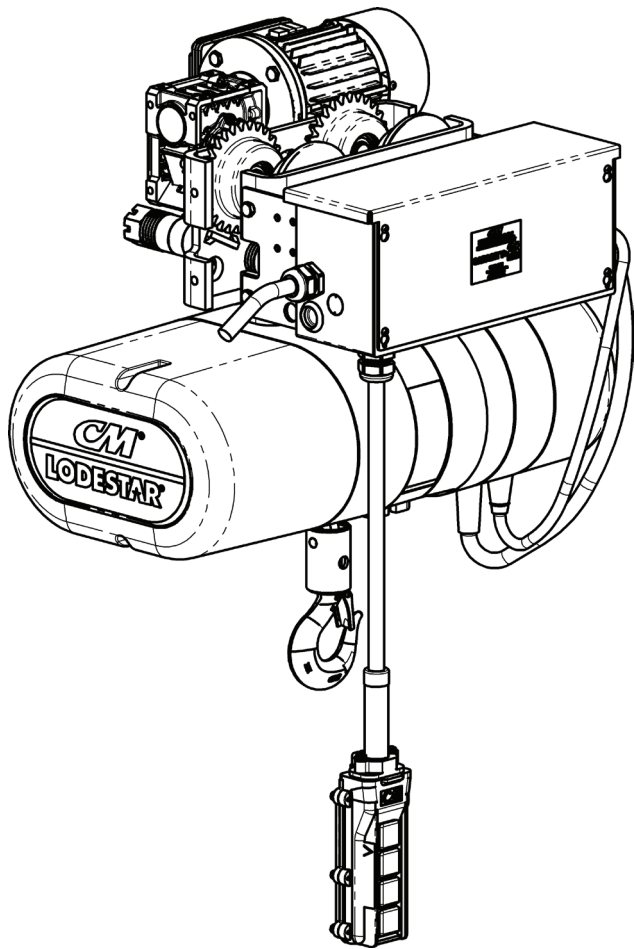


Figure 1. Hoist and Trolley General Arrangement

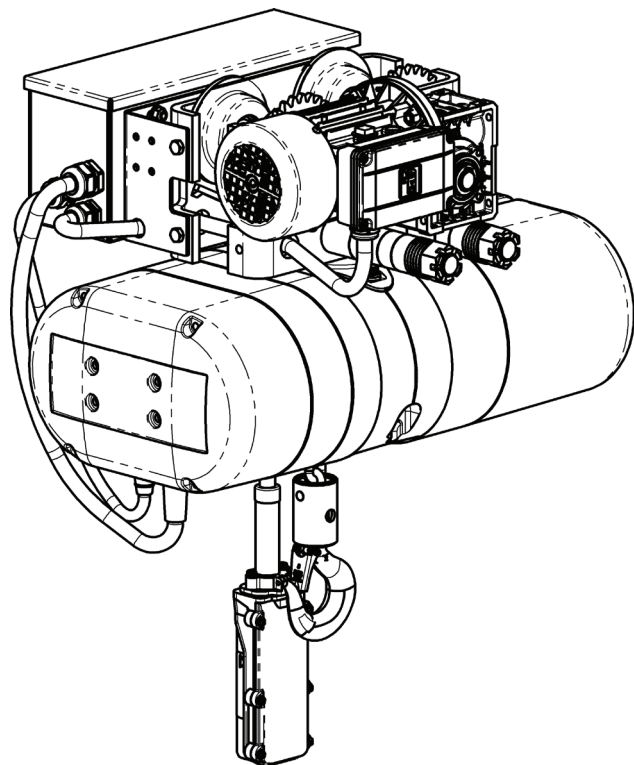


Figure 2. Hoist and Trolley General Arrangement

## Control Station

If not otherwise specified, the control station is suspended from the trolley control enclosure by a cord that is approximately 17' 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 INJURY:**

Shorten the control cord per the following instructions.

To shorten the cord, disconnect the trolley from the power supply system and loosen the cord connector at the bottom of the control enclosure. Remove the cover from the control enclosure and disconnect the control cord conductors. Loosen, but do not remove, the strain relief mounting screw. Slightly push the cord inside the

enclosure and unfasten the strain relief loop. Pull the cord out of the enclosure. Measuring from the end of the longest conductor, cut off the cord the distance the control is to be raised. Prepare the cable as shown below (Fig 3).

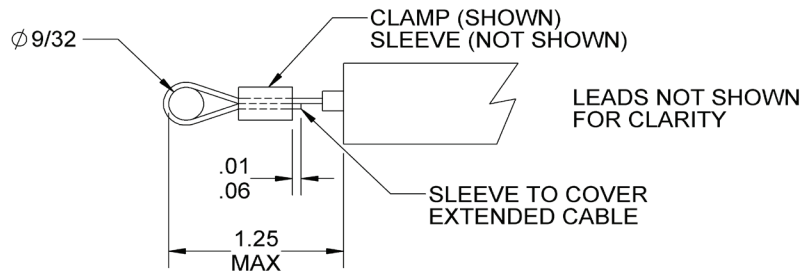
A clamp and sleeve are provided loose in the control enclosure. Be sure to firmly squeeze the clamp sleeve using a vise or very large pliers to secure the loop end. Insulate the clamp using the rubber sleeve.

Slide the prepared cord through the cord connector under the control enclosure. Using the wiring diagram supplied with the trolley, or see pages 20–25 within this manual, connect the control cord conductors. Attach the strain relief loop over the mounting screw and washer. Pull down on the cord to seat the strain relief cord. Tighten the strain relief mounting screw. Firmly tighten the cord connector.

## Hoist Power Cord

The hoist power cord, supplied within the cord kit, connects power from the control enclosure to the hoist. The hoist end of the cord will be configured just like a standard power cord for a specific hoist while the enclosure end will be stripped for inserting into the terminal blocks.

## STRAIN RELIEF DETAILS



| 1-Speed |                           |              |       |            |                    |
|---------|---------------------------|--------------|-------|------------|--------------------|
| Color   | Lead Length               | Strip Length | Label | Condition  | Location           |
| Brown   | 12                        | .35          | UP    | Solder Dip | Terminal Block - 3 |
| Yellow  | 12                        | .35          | DN    | Solder Dip | Terminal Block - 2 |
| Blue    | 12                        | .35          | HX1   | Solder Dip | Terminal Block - 4 |
| White   | 12                        | .35          | FA    | Solder Dip | Terminal Block - 1 |
| Purple  | 12                        | .35          | TL    | Solder Dip | REV CONT (L)       |
| Orange  | 12                        | .35          | TR    | Solder Dip | REV CONT (R)       |
| Red     | 12                        | .35          | X1    | Solder Dip | Terminal Block - 5 |
| Black   | SEE STRAIN RELIEF DETAILS |              |       |            | —                  |

| 2-Speed |                           |              |       |            |                    |
|---------|---------------------------|--------------|-------|------------|--------------------|
| Color   | Lead Length               | Strip Length | Label | Condition  | Location           |
| Brown   | 12                        | .35          | UP    | Solder Dip | Terminal Block - 3 |
| Yellow  | 12                        | .35          | DN    | Solder Dip | Terminal Block - 2 |
| Blue    | 12                        | .35          | HX1   | Solder Dip | Terminal Block - 4 |
| White   | 12                        | .35          | FA    | Solder Dip | Terminal Block - 1 |
| Purple  | 12                        | .35          | TL    | Solder Dip | REV CONT (L)       |
| Orange  | 12                        | .35          | TR    | Solder Dip | REV CONT (R)       |
| Red     | 12                        | .35          | X1    | Solder Dip | Terminal Block - 5 |
| Gray    | 12                        | .35          | TF    | Solder Dip | SPEED RELAY        |
| Pink    | 0                         | —            | —     | —          | —                  |
| Black   | SEE STRAIN RELIEF DETAILS |              |       |            | —                  |

Figure 3. Strain relief details.

## INSTALLATION (CONTINUED)

### Hoist Control Cord

The hoist control cord, supplied within the cord kit, connects the controls from the control enclosure to the hoist. The hoist end of the cord will be configured just like a standard control cord for a specific hoist while the enclosure end will be stripped for inserting into the terminal blocks.

### Combination Power / Control Cord

The combination cord is the cord kit. It connects both the power and controls from the control enclosure to the hoist. The hoist end of the cord will be configured just like a standard combination cord for a specific hoist while the enclosure end will be stripped for inserting into the terminal blocks.

### Grounding The Enclosure

The enclosure frame has one ground wire attached to a green ground screw. The input power cord, motor cord and hoist power cord will be connected to the one ground wire using a wire cap. The wire cap is installed from the factory less the hoist power cord ground.

## TEST AND ADJUSTMENTS FOR 3 PHASE MODELS

### WARNING

**Three phase hoists must be properly phased each time they are installed or moved to a new power source. Unless this is done, serious damage to the hoist can occur with resulting hazard to the operator and load.**

1. To properly phase hoists follow these steps.
  - a. Operate "UP" button briefly to determine direction of load hook travel.
  - b. If load hook raises when "UP" button is pressed, phase is correct and hoist may be operated.
  - c. If load hook lowers, hoist is "Reverse Phased" and must be corrected by interchanging any two leads at power source connection. Do not change internal wiring of hoist or trolley.
2. Check hoist upper and lower limit stop operation to determine if limit stop functions properly in both directions. Refer to hoist "Operation and Service Manual" under "Testing Hoist" for method to be followed.
3. Position hoist/trolley combination on I-beam so that enough clear track is available to allow travel of trolley in two directions to permit checking "RIGHT" and "LEFT" traverse operation.

#### Note:

Three Phase Motors: If it is desired to reverse the direction of trolley travel in relation to the push button markings, turn POWER OFF and interchange any two leads at trolley motor cord / reversing contactor connection.

## OPERATING INSTRUCTIONS

After the trolley and hook travel directions are correct, lubricate the geared wheel and driveshaft gear mesh with lubricant provided. 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.

## 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 pin 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 blocks 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 and pinion for wear.
7. Check suspension lug, suspension adapter and suspension shear pin for excess wear by manipulating hoist and visually inspecting suspension parts.
8. Collector or power supply system for damage, wear corrosion and proper operation.

## MAINTENANCE

### Lubrication requirements:

- a. Wheel bearings are permanently lubricated and require no additional lubricant.
- b. Drive wheel gears are to be lubricated with an open type gear grease which is heavy, plastic, extreme pressure and tacky; such as MOBILTAC 275 NC or equal.
- c. The right angle worm gear reducer oil is a synthetic lubricant with excellent wear protection capability and long life. This oil does not require changing. When replacing oil due to repairs, use MOBIL SHC 634 or equal.

### WARNING

The lubricants used in and recommended for the Universal 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.**

## OPTIONAL COMPONENTS

Two kits are available:

1. Rubber Bumper
2. Tow Arm.

### **Rubber bumper kit:**

Part number 33337905. Includes four bumpers with required mounting hardware.

### **Tow arm kit:**

Part number 11843111 for UT1M and UT2M; Part number 33336311 for UT3M. Includes tow arm bracket, tow arm and required mounting hardware. (See installation instructions 33339402)

Hanger plates are available for hook-mount installation. The hanger plate is based on the model of trolley.

UT1M – use hanger plate 00550051

UT2M – use hanger plate 00550059

UT3M – use hanger plate 00550073

Inside the control enclosure, additional components may be added to the unused sections of Din rail. For example, a speed relay may be added beside the reversing contactor. The two shorter Din rail sections may be used to mount taller components such as a phase monitor or main line contactor.

### WARNING

Working in or near exposed energized electrical equipment presents the danger of electric shock.

#### TO AVOID INJURY:

Disconnect power and lockout/tagout disconnecting means before removing cover or servicing this equipment.

## TROUBLESHOOTING

| TROUBLE                                          | PROBABLE CASE                     | REMEDY                                                                                                                                                                                                                                                                                                                                                                                       |
|--------------------------------------------------|-----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Trolley does not operate in either direction. | A. No voltage at trolley          | 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.                                                                                                                                                                                         |
|                                                  | B. Phase failure (single-phasing) | B. Open circuit, grounded or open connection in one line of supply system, collectors, hoist wiring, reversing contactor, motor leads or windings. Check for electrical continuity.                                                                                                                                                                                                          |
|                                                  | C. Open control circuit           | 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.                                                                                                                                                                                                    |
|                                                  | D. Wrong voltage or frequency     | D. The voltage and frequency must be the same as shown on trolley control box.                                                                                                                                                                                                                                                                                                               |
|                                                  | E. Low voltage                    | E. Voltage at the motor must be above the minimum with the unit in operation:                                                                                                                                                                                                                                                                                                                |
|                                                  | F. Excessive load                 | F. Reduce loading to the capacity limit of trolley.                                                                                                                                                                                                                                                                                                                                          |
| 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. |

## 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.

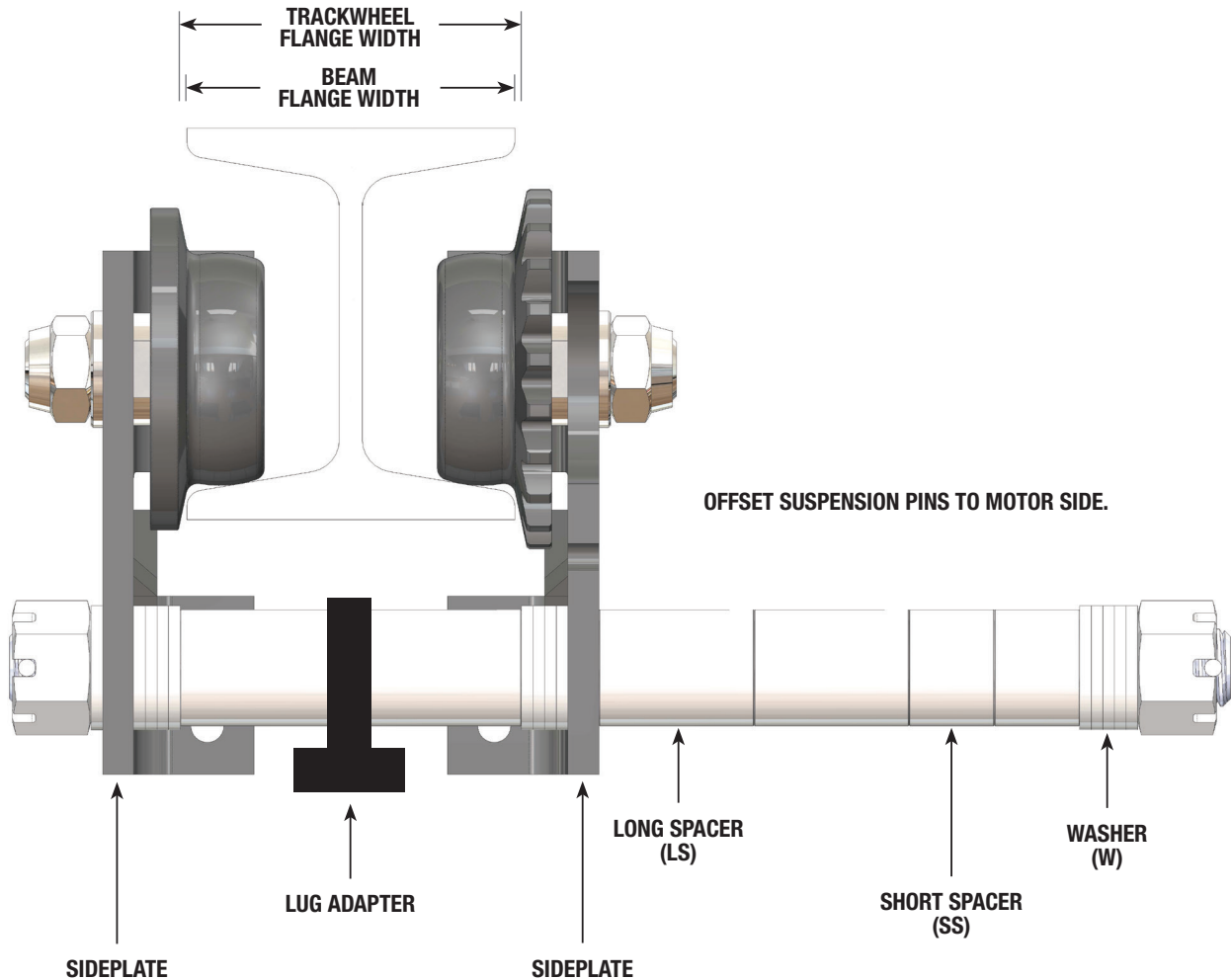
**MOTOR CURRENT** should be measured with the motor

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.

## UTM WASHER & SPACER PLACEMENT

Due to the variations in beam flange widths, it is suggested that the beam flange width be measured to determine the exact distribution of washers and spacers. The distance between trackwheel flanges 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 and spacers may result in trackwheel to beam flange variations and thus the recommendations in the following tables will not apply.



## UTM WASHER & SPACER PLACEMENT (CONTINUED)

Each washer/spacer chart shows the available trackwheel flange width setting from minimum to maximum. To center the hoist under the beam, use the same amount of washers and spacers between the lug adapter and sideplates. The amount of washers and spacers on the outside of the sideplates does not have to be the same.

**Note:** For triple-line Man Guard, omit one long spacer per side of the lug adapter.

### UT1 MODEL

| Trackwheel<br>Flange Width<br>(in.) | Number of Washers & Spacers |    |    |           |   |    |    |             |    |    |   |           |    |    |    |
|-------------------------------------|-----------------------------|----|----|-----------|---|----|----|-------------|----|----|---|-----------|----|----|----|
|                                     | W                           | SS | LS |           | W | SS | LS |             | LS | SS | W |           | LS | SS | W  |
| 2.45                                | 1                           | 0  | 0  | SIDEPLATE | 0 | 0  | 1  | LUG ADAPTER | 1  | 0  | 0 | SIDEPLATE | 2  | 2  | 13 |
| 2.68                                | 1                           | 0  | 0  |           | 1 | 0  | 1  |             | 1  | 0  | 1 |           | 2  | 2  | 11 |
| 2.92                                | 1                           | 0  | 0  |           | 2 | 0  | 1  |             | 1  | 0  | 2 |           | 2  | 2  | 9  |
| 3.16                                | 1                           | 0  | 0  |           | 3 | 0  | 1  |             | 1  | 0  | 3 |           | 2  | 2  | 7  |
| 3.39                                | 1                           | 0  | 0  |           | 4 | 0  | 1  |             | 1  | 0  | 4 |           | 2  | 2  | 5  |
| 3.63                                | 1                           | 0  | 0  |           | 5 | 0  | 1  |             | 1  | 0  | 5 |           | 2  | 2  | 3  |
| 3.86                                | 1                           | 0  | 0  |           | 6 | 0  | 1  |             | 1  | 0  | 6 |           | 2  | 2  | 1  |
| 4.18                                | 1                           | 0  | 0  |           | 0 | 1  | 1  |             | 1  | 1  | 0 |           | 2  | 0  | 13 |
| 4.42                                | 1                           | 0  | 0  |           | 1 | 1  | 1  |             | 1  | 1  | 1 |           | 2  | 0  | 11 |
| 4.65                                | 1                           | 0  | 0  |           | 2 | 1  | 1  |             | 1  | 1  | 2 |           | 2  | 0  | 9  |
| 4.89                                | 1                           | 0  | 0  |           | 3 | 1  | 1  |             | 1  | 1  | 3 |           | 2  | 0  | 7  |
| 5.12                                | 1                           | 0  | 0  |           | 4 | 1  | 1  |             | 1  | 1  | 4 |           | 2  | 0  | 5  |
| 5.36                                | 1                           | 0  | 0  |           | 5 | 1  | 1  |             | 1  | 1  | 5 |           | 2  | 0  | 3  |
| 5.60                                | 1                           | 0  | 0  |           | 0 | 0  | 2  |             | 2  | 0  | 0 |           | 0  | 2  | 13 |
| 5.83                                | 1                           | 0  | 0  |           | 1 | 0  | 2  |             | 2  | 0  | 1 |           | 0  | 2  | 11 |
| 6.07                                | 1                           | 0  | 0  |           | 2 | 0  | 2  |             | 2  | 0  | 2 |           | 0  | 2  | 9  |
| 6.31                                | 1                           | 0  | 0  |           | 3 | 0  | 2  |             | 2  | 0  | 3 |           | 0  | 2  | 7  |
| 6.54                                | 1                           | 0  | 0  | SIDEPLATE | 4 | 0  | 2  | LUG ADAPTER | 2  | 0  | 4 | SIDEPLATE | 0  | 2  | 5  |
| 6.78                                | 1                           | 0  | 0  |           | 5 | 0  | 2  |             | 2  | 0  | 5 |           | 0  | 2  | 3  |
| 7.01                                | 1                           | 0  | 0  |           | 6 | 0  | 2  |             | 2  | 0  | 6 |           | 0  | 2  | 1  |
| 7.33                                | 1                           | 0  | 0  |           | 0 | 1  | 2  |             | 2  | 1  | 0 |           | 0  | 0  | 13 |
| 7.57                                | 1                           | 0  | 0  |           | 1 | 1  | 2  |             | 2  | 1  | 1 |           | 0  | 0  | 11 |
| 7.80                                | 1                           | 0  | 0  |           | 2 | 1  | 2  |             | 2  | 1  | 2 |           | 0  | 0  | 9  |
| 8.04                                | 1                           | 0  | 0  |           | 3 | 1  | 2  |             | 2  | 1  | 3 |           | 0  | 0  | 7  |
| 8.27                                | 1                           | 0  | 0  |           | 4 | 1  | 2  |             | 2  | 1  | 4 |           | 0  | 0  | 5  |
| 8.51                                | 1                           | 0  | 0  |           | 5 | 1  | 2  |             | 2  | 1  | 5 |           | 0  | 0  | 3  |
| 8.75                                | 1                           | 0  | 0  |           | 6 | 1  | 2  |             | 2  | 1  | 6 |           | 0  | 0  | 1  |

### UT2 & UT3 MODELS

| Trackwheel<br>Flange Width<br>(in.) |      | Number of Washers & Spacers |    |    |           |   |    |    |             |    |    |   |           |    |    |    |
|-------------------------------------|------|-----------------------------|----|----|-----------|---|----|----|-------------|----|----|---|-----------|----|----|----|
| UT2                                 | UT3  | W                           | SS | LS |           | W | SS | LS |             | LS | SS | W |           | LS | SS | W  |
| 2.45                                | 2.46 | 1                           | 0  | 0  | SIDEPLATE | 0 | 0  | 1  | LUG ADAPTER | 1  | 0  | 0 | SIDEPLATE | 2  | 2  | 11 |
| 2.76                                | 2.78 | 1                           | 0  | 0  |           | 1 | 0  | 1  |             | 1  | 0  | 1 |           | 2  | 2  | 9  |
| 3.08                                | 3.09 | 1                           | 0  | 0  |           | 2 | 0  | 1  |             | 1  | 0  | 2 |           | 2  | 2  | 7  |
| 3.39                                | 3.41 | 1                           | 0  | 0  |           | 3 | 0  | 1  |             | 1  | 0  | 3 |           | 2  | 2  | 5  |
| 3.71                                | 3.72 | 1                           | 0  | 0  |           | 4 | 0  | 1  |             | 1  | 0  | 4 |           | 2  | 2  | 3  |
| 4.02                                | 4.04 | 1                           | 0  | 0  |           | 0 | 1  | 1  |             | 1  | 1  | 0 |           | 2  | 0  | 11 |
| 4.34                                | 4.35 | 1                           | 0  | 0  |           | 1 | 1  | 1  |             | 1  | 1  | 1 |           | 2  | 0  | 9  |
| 4.65                                | 4.67 | 1                           | 0  | 0  |           | 2 | 1  | 1  |             | 1  | 1  | 2 |           | 2  | 0  | 7  |
| 4.97                                | 4.98 | 1                           | 0  | 0  |           | 3 | 1  | 1  |             | 1  | 1  | 3 |           | 2  | 0  | 5  |
| 5.28                                | 5.30 | 1                           | 0  | 0  |           | 4 | 1  | 1  |             | 1  | 1  | 4 |           | 2  | 0  | 3  |
| 5.60                                | 5.61 | 1                           | 0  | 0  |           | 0 | 0  | 2  |             | 2  | 0  | 0 |           | 0  | 2  | 11 |
| 5.91                                | 5.93 | 1                           | 0  | 0  |           | 1 | 0  | 2  |             | 2  | 0  | 1 |           | 0  | 2  | 9  |
| 6.23                                | 6.24 | 1                           | 0  | 0  |           | 2 | 0  | 2  |             | 2  | 0  | 2 |           | 0  | 2  | 7  |
| 6.54                                | 6.56 | 1                           | 0  | 0  |           | 3 | 0  | 2  |             | 2  | 0  | 3 |           | 0  | 2  | 5  |
| 6.86                                | 6.87 | 1                           | 0  | 0  |           | 4 | 0  | 2  |             | 2  | 0  | 4 |           | 0  | 2  | 3  |
| 7.17                                | 7.19 | 1                           | 0  | 0  |           | 0 | 1  | 2  |             | 2  | 1  | 0 |           | 0  | 0  | 11 |
| 7.49                                | 7.50 | 1                           | 0  | 0  |           | 1 | 1  | 2  |             | 2  | 1  | 1 |           | 0  | 0  | 9  |
| 7.80                                | 7.82 | 1                           | 0  | 0  |           | 2 | 1  | 2  |             | 2  | 1  | 2 |           | 0  | 0  | 7  |
| 8.12                                | 8.13 | 1                           | 0  | 0  | SIDEPLATE | 3 | 1  | 2  | LUG ADAPTER | 2  | 1  | 3 | SIDEPLATE | 0  | 0  | 5  |
| 8.43                                | 8.45 | 1                           | 0  | 0  |           | 4 | 1  | 2  |             | 2  | 1  | 4 |           | 0  | 0  | 3  |
| 8.75                                | 8.76 | 1                           | 0  | 0  |           | 5 | 1  | 2  |             | 2  | 1  | 5 |           | 0  | 0  | 1  |

#### Example using a UT1 model:

Measure your beam flange width - 4.94". In the trackwheel flange width column, the measured beam size is between 4.89" and 5.12". Always use the larger setting - 5.12".

The 5.12" setting requires 1-LS (long spacer), 1-SS (short spacer) and 4-W (washers) between the lug adapter and sideplates.

The total clearance distance will be  $5.12" - 4.94" = 0.18"$ . If the application requires more clearance, move to the next larger setting- 5.36".

**CAUTION:** The installer must confirm that the trolley will remain on straight sections of beam at increased clearance settings.

## REPLACEMENT PARTS LIST

### ORDERING INSTRUCTIONS

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

1. Serial number – located on 1.5" x 0.8" decal affixed to control enclosure.
2. Voltage, Phase, Hertz

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

For parts orders also specify:

1. Quantity desired.
2. Part number.
3. Part description.

Parts should be ordered from CM's authorized Master Parts Depots conveniently located throughout the United States and Canada. To quickly obtain the name of the Master Parts Depot or Service Center located nearest you, call (800) 888-0985. Fax: (716) 689-5644.

**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**

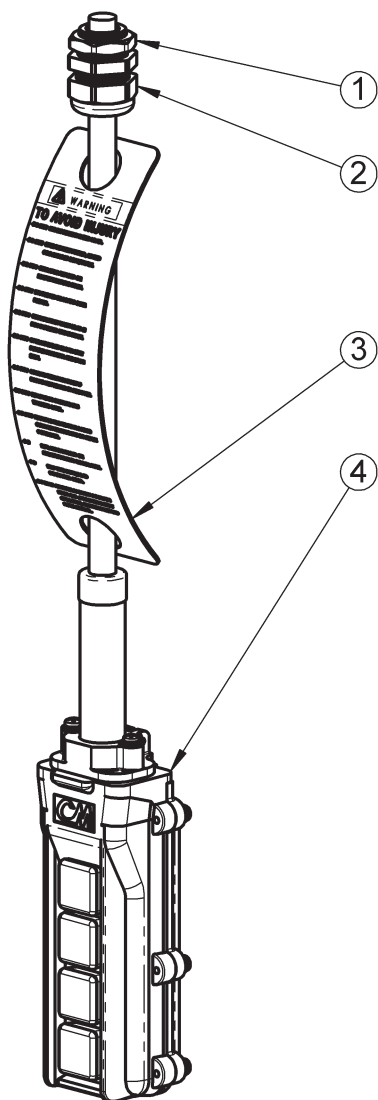
Using "commercial" or other manufacturer's parts to repair the Universal Motor-Driven Trolley may cause load loss.

#### **TO AVOID CONTACT AND CONTAMINATION:**

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



## CM® 4 DIRECTIONAL CONTROL STATION PARTS LIST



| 1-Speed |             |                                  |      |
|---------|-------------|----------------------------------|------|
| Item    | Part Number | Description                      | Qty. |
| 1       | 23251009    | Nut, Connector                   | 1    |
| 2       | 23251012    | Connector                        | 1    |
| 3       | 81704       | Warning Tag                      | 1    |
| 4       | 58220CM     | PB Station                       | 1    |
| 1-4     | 33339806    | PB & Cable Assembly (10-ft Lift) | -    |
|         | 33339811    | PB & Cable Assembly (15-ft Lift) |      |
|         | 33339816    | PB & Cable Assembly (20-ft Lift) |      |
|         | 33339821    | PB & Cable Assembly (25-ft Lift) |      |
|         | 33339826    | PB & Cable Assembly (30-ft Lift) |      |
|         | 33339831    | PB & Cable Assembly (35-ft Lift) |      |
|         | 33339836    | PB & Cable Assembly (40-ft Lift) |      |

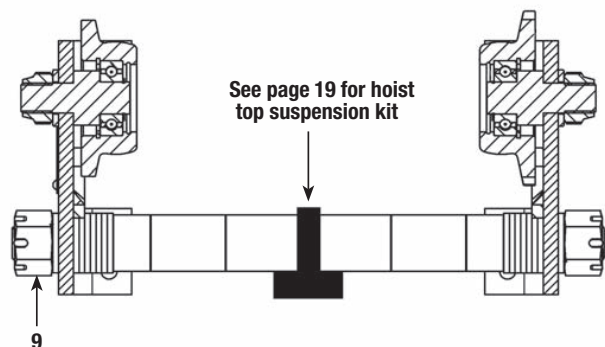
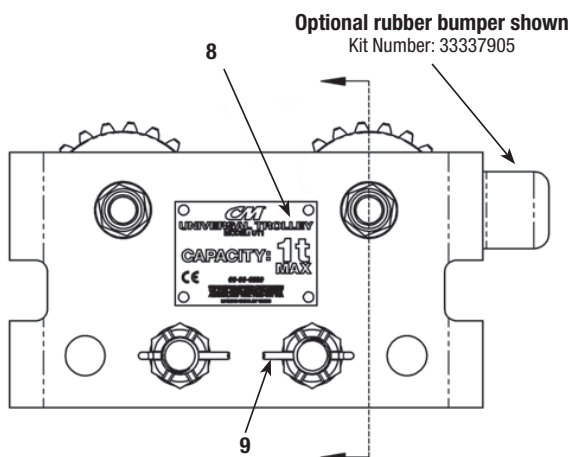
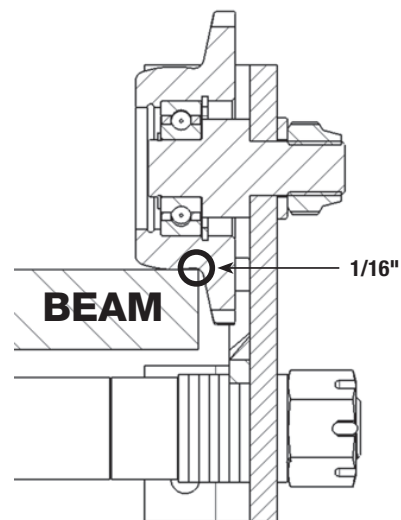
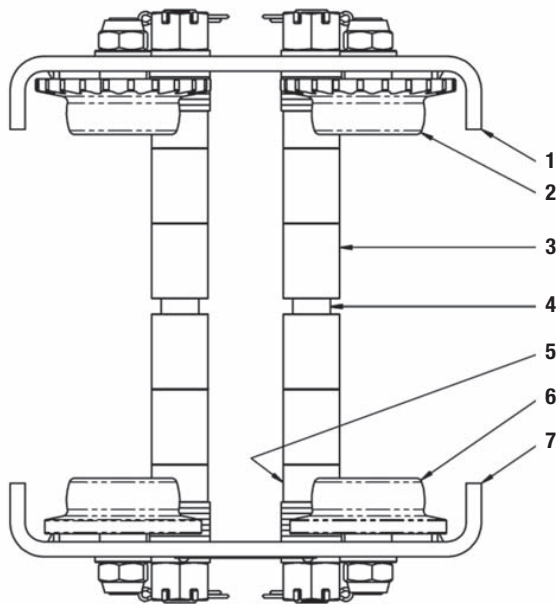
If replacing 58220CM PB station, remove cable clamps and jumper between 1 and 16 inside PB station. PB station will have 2-step buttons for hoist and 1-step buttons for trolley.

| 2-Speed |             |                                  |      |
|---------|-------------|----------------------------------|------|
| Item    | Part Number | Description                      | Qty. |
| 1       | 23251009    | Nut, Connector                   | 1    |
| 2       | 23251012    | Connector                        | 1    |
| 3       | 81704       | Warning Tag                      | 1    |
| 4       | 58222CM     | PB Station                       | 1    |
| 1-4     | 33341306    | PB & Cable Assembly (10-ft Lift) | -    |
|         | 33341311    | PB & Cable Assembly (15-ft Lift) |      |
|         | 33341316    | PB & Cable Assembly (20-ft Lift) |      |
|         | 33341321    | PB & Cable Assembly (25-ft Lift) |      |
|         | 33341326    | PB & Cable Assembly (30-ft Lift) |      |
|         | 33341331    | PB & Cable Assembly (35-ft Lift) |      |
|         | 33341336    | PB & Cable Assembly (40-ft Lift) |      |

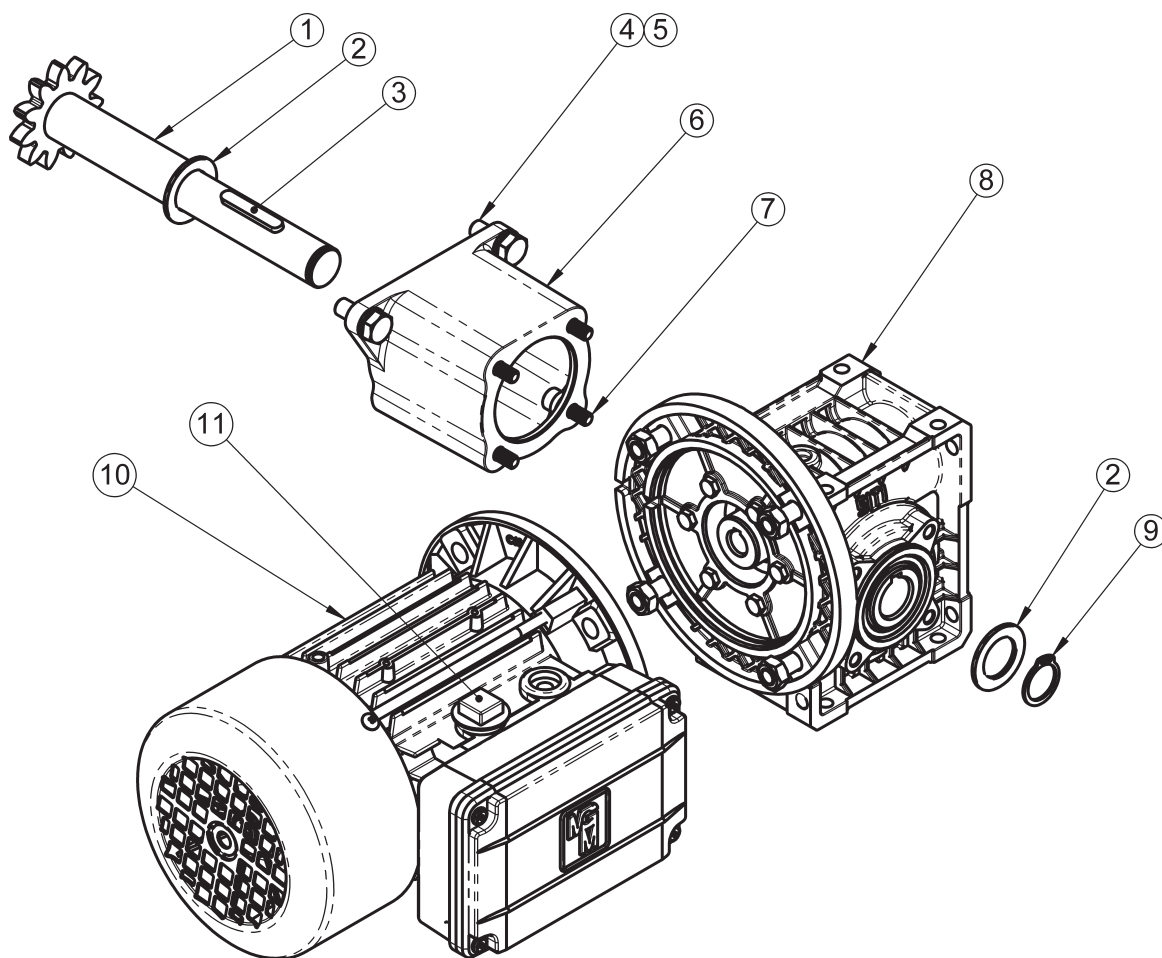
58222CM PB station will have 2-step buttons for hoist and trolley.

## UT PARTS LIST

| Item | Description            | Part Number |          |          | Qty, | Kit Contents                                                                                                                           |
|------|------------------------|-------------|----------|----------|------|----------------------------------------------------------------------------------------------------------------------------------------|
|      |                        | UT1         | UT2      | UT3      |      |                                                                                                                                        |
| 1    | SIDEPLATE KIT, GEARED  | 11843108    | 23554608 | 33336308 | 1    | 2 - geared wheels, 1 - geared sideplate, 2 (UT1 & UT2) or 4 (UT3) - bearings, 4 - retaining rings, 2 - axles, 2 - nuts and 2 - washers |
| 2    | WHEEL ASSEMBLY, GEARED | 0508211A    | 0508212A | 0508213A | 1    | 1 - geared wheel, 2 - retaining rings, 1 (UT1 & UT2) or 2 (UT3) - bearings, 1 - axle, 1 - washer and 1 - nut                           |
| 3    | SPACER KIT, LONG       | 11842001    | 11842003 | 11842007 | 1    | 8 - long spacers                                                                                                                       |
| 4    | SUSPENSION PIN KIT     | 11843101    | 23554601 | 33336301 | 1    | 2 - suspension pins                                                                                                                    |
| 5    | SPACER KIT, SHORT      | 11842002    | 11842004 | 11842008 | 1    | 4 - short spacers                                                                                                                      |
| 6    | WHEEL ASSEMBLY, PLAIN  | 0508207A    | 0508208A | 0508209A | 1    | 1 - plain wheel, 2 - retaining rings, 1 (UT1 & UT2) or 2 (UT3) - bearings, 1 - axle, 1 - washer and 1 - nut                            |
| 7    | SIDEPLATE KIT, PLAIN   | 11843107    | 23554607 | 33336307 | 1    | 2 - plain wheels, 1 - plain sideplate, 2 (UT1 & UT2) or 4 (UT3) - bearings, 4 - retaining rings, 2 - axles, 2 - nuts and 2 - washers   |
| 8    | NAMEPLATE KIT          | 11843102    | 23554602 | 33336302 | 1    | 1 - nameplate and 4 - drive screws                                                                                                     |
| 9    | HARDWARE KIT           | 11843104    | 23554604 | 33336304 | 1    | 28 (UT1) or 24 (UT2 & UT3) - suspension pin washers, 4 - slotted nuts and 4 - cotter pins                                              |



## DRIVE ASSEMBLY COMPONENTS



| Item | DESCRIPTION    | UT1       | UT2       | UT3       | Qty |
|------|----------------|-----------|-----------|-----------|-----|
| 1    | Driveshaft     | 33337908  | 33337908  | 33337908  | 1   |
| 2    | Washer, Flat   | H4210P    | H4210P    | H4210P    | 2   |
| 3    | Key            | 09131071  | 09131071  | 09131071  | 1   |
| 4    | Bolt M8        | 33339101  | 33339101  | 33339101  | 3   |
| 5    | Locking washer | 09122016  | 09122016  | 09122016  | 3   |
| 6    | Adapter        | 33337906  | 33337906  | 33337906  | 1   |
| 7    | SHCS, M6       | 33339103  | 33339103  | 33339103  | 4   |
| 8    | Gearbox        | See Table | See Table | See Table | 1   |
| 9    | Retaining Ring | 09129028  | 09129028  | 09129028  | 1   |
| 10   | Motor          | See Table | See Table | See Table | 1   |
| 11   | Plug           | 33339108  | 33339108  | 33339108  | 1   |

|   | DESCRIPTION | SPEED 15 (fpm) | SPEED 35 (fpm) | SPEED 75 (fpm) | Qty |
|---|-------------|----------------|----------------|----------------|-----|
| 8 | Gearbox     | 33337911       | 33337910       | 33337909       | 1   |

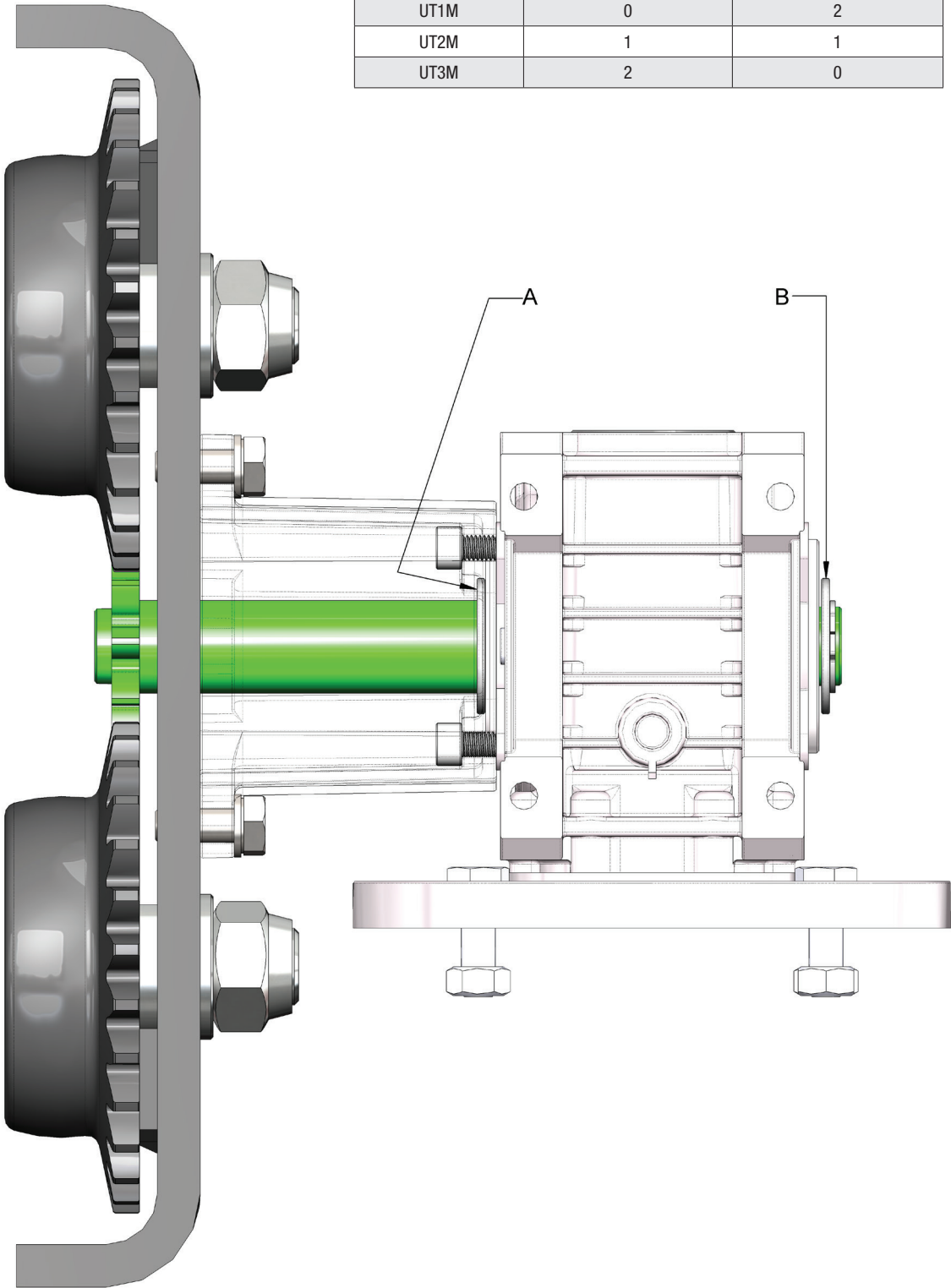
|    | DESCRIPTION     | VOLTAGE 208-230/460 | VOLTAGE 575 | Qty |
|----|-----------------|---------------------|-------------|-----|
| 10 | Motor (1-Speed) | 33337912            | 33337913    | 1   |

|    | DESCRIPTION     | VOLTAGE 208-230 | VOLTAGE 460 | VOLTAGE 575 | Qty |
|----|-----------------|-----------------|-------------|-------------|-----|
| 10 | Motor (2-Speed) | 33337953        | 33337954    | 33337955    | 1   |

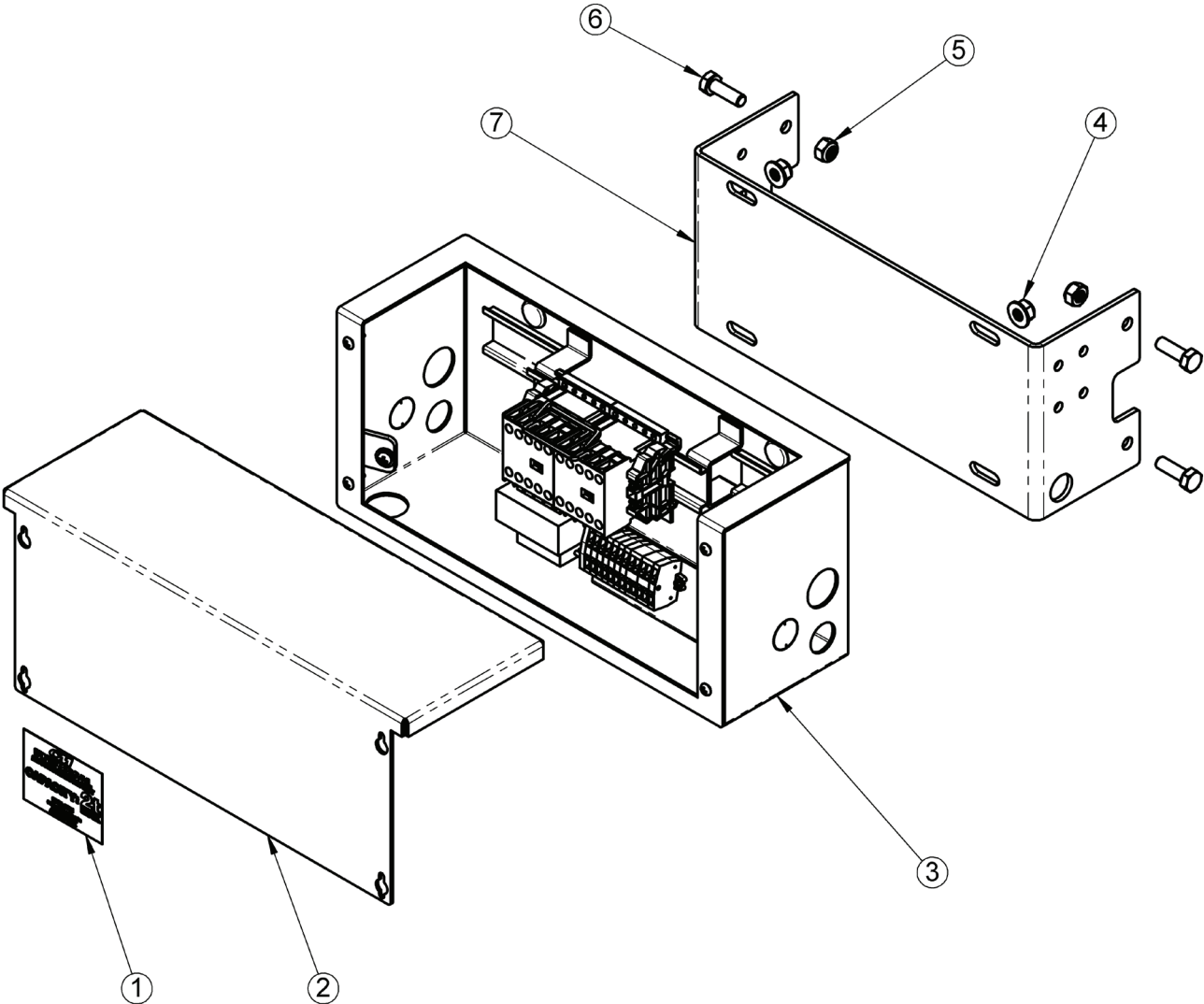
# WASHER PLACEMENT FOR DRIVESHAFT ALIGNMENT

The same drive assembly components are used no matter the UTM frame size. Therefore, since the sideplate thickness differs, the driveshaft must be positioned to ensure proper gear teeth alignment. Use the chart below to place the washers as needed. UT2M model shown.

| Trolley | Location A | Location B |
|---------|------------|------------|
| UT1M    | 0          | 2          |
| UT2M    | 1          | 1          |
| UT3M    | 2          | 0          |



CONTROL LAYOUT

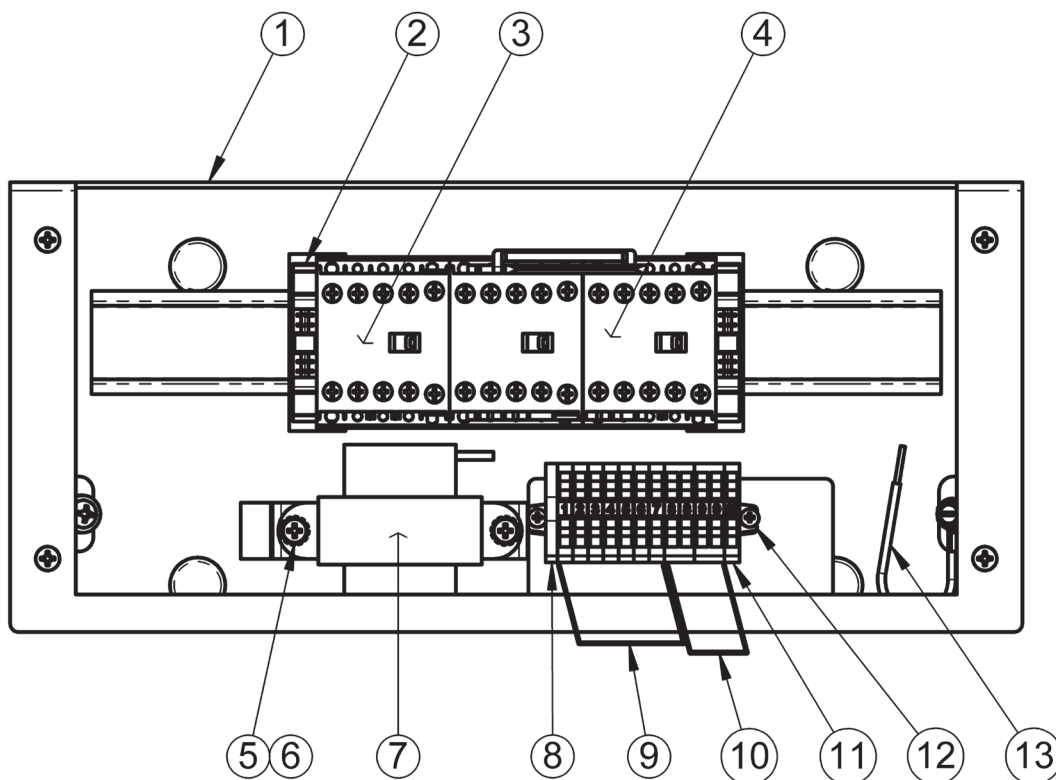


|   | DESCRIPTION           | UT1      | UT2      | UT3      | UT3*     | Qty |
|---|-----------------------|----------|----------|----------|----------|-----|
| 1 | Decal                 | 33339104 | 33339105 | 33339106 | 33339107 | 1   |
| 2 | Cover                 | 33337915 | 33337915 | 33337915 | 33337915 | 1   |
| 3 | Enclosure             | 33337914 | 33337914 | 33337914 | 33337914 | 1   |
| 4 | Nut, Locking, Flanged | 33337920 | 33337920 | 33337920 | 33337920 | 4   |
| 5 | Nut, Locking          | 11803002 | 11803002 | 11803002 | 11803002 | 4   |
| 6 | Screw, M8             | 33339102 | 33339102 | 33339102 | 33339102 | 4   |
| 7 | Bracket               | 33337917 | 33337918 | 33337919 | 33337919 | 1   |

\* For 2T MAX Models

## ENCLOSURE COMPONENTS

If additional holes are required in the ends, make sure your connectors clear the cover when installed.



| 115-volt Control |             |                            |     |
|------------------|-------------|----------------------------|-----|
| Item             | Part Number | Description                | Qty |
| 1                | 33337916    | Enclosure, with Cover      | 1   |
| 2                | 909J13      | End Clamp                  | 2   |
| 3                | 28870       | Speed Relay (2-Speed Only) | 1   |
| 4                | 24799       | Reversing Contactor        | 1   |
| 5                | H4158       | Washer, External Locking   | 2   |
| 6                | H2751       | Screw, #8-32               | 2   |
|                  | 821J431     | 230/460 Transformer        | 1   |
|                  | 821J471     | 208 Transformer            |     |
| 7                | 821J451     | 575 Transformer            |     |
| 8                | 39452       | Flange End                 | 1   |
| 9                | 39451       | Single Block               | 7   |
| 10               | 39460       | Double Block               | 2   |
| 11               | 39450       | Single Block Flange End    | 1   |
| 12               | 982718      | Screw, #5-40               | 2   |
| 13               | 33337933    | Ground Wire Assembly       | 1   |

| 24-volt Control |             |                            |     |
|-----------------|-------------|----------------------------|-----|
| Item            | Part Number | Description                | Qty |
| 1               | 33337916    | Enclosure, with Cover      | 1   |
| 2               | 909J13      | End Clamp                  | 2   |
| 3               | 28878       | Speed Relay (2-Speed Only) | 1   |
| 4               | 28860       | Reversing Contactor        | 1   |
| 5               | H4158       | Washer, External Locking   | 2   |
| 6               | H2751       | Screw, #8-32               | 2   |
|                 | 821J432     | 230/460 Transformer        | 1   |
|                 | 821J472     | 208 Transformer            |     |
| 7               | 821J452     | 575 Transformer            |     |
| 8               | 39452       | Flange End                 | 1   |
| 9               | 39451       | Single Block               | 7   |
| 10              | 39460       | Double Block               | 2   |
| 11              | 39450       | Single Block Flange End    | 1   |
| 12              | 982718      | Screw, #5-40               | 2   |
| 13              | 33337933    | Ground Wire Assembly       | 1   |

### Holes and Knockout in each end:

(1) 1.065 DIA hole

(1) 0.845 DIA hole

(1) 0.845 DIA knockout

### Hole and Knockout in bottom:

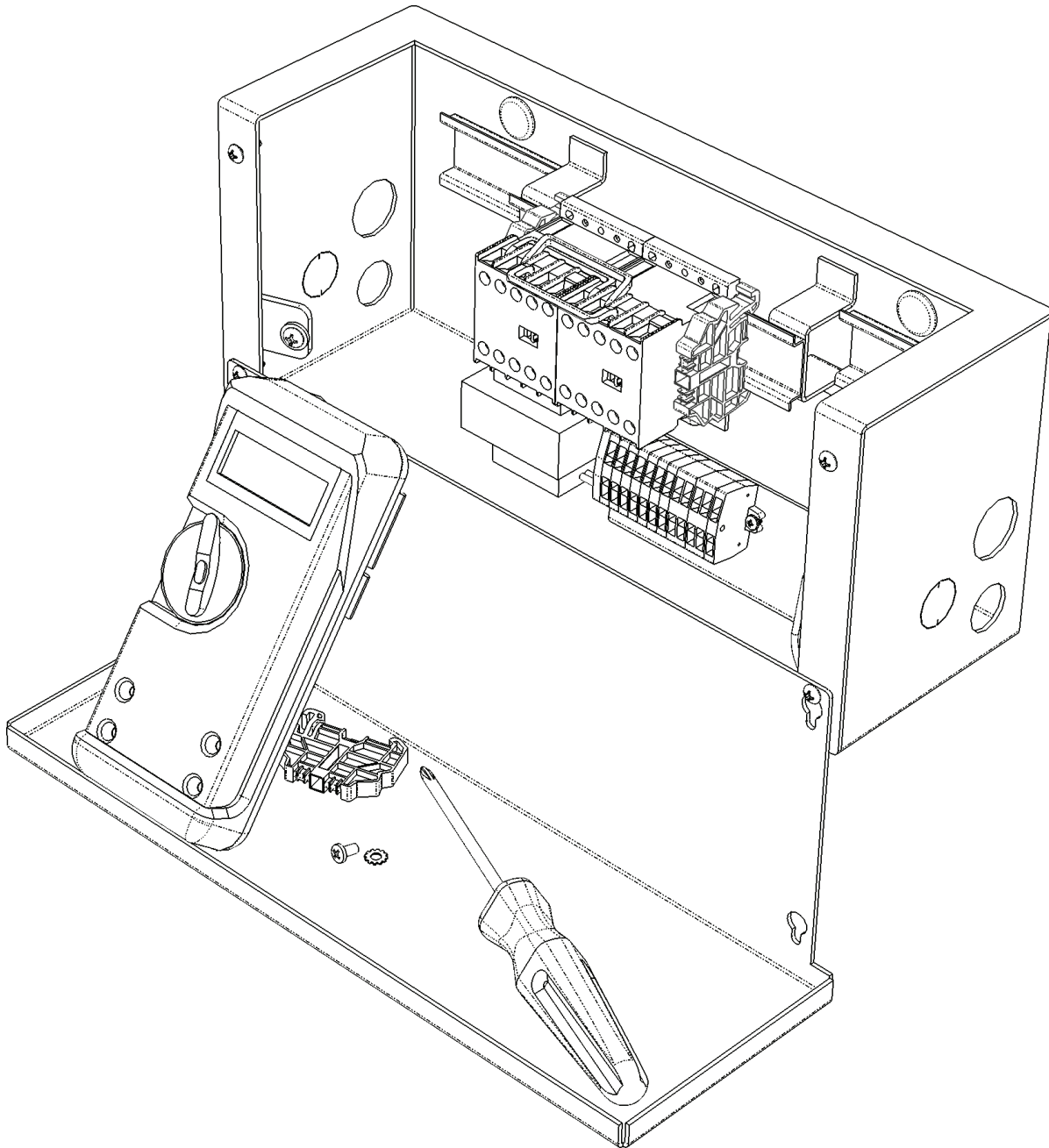
(1) 1.065 DIA hole

(1) 1.065 DIA knockout

## ENCLOSURE TOOL TRAY

The enclosure cover may be mounted as shown to be used as a tool tray. When removing the cover, loosen the four mounting screws one revolution. Lift cover until mounting holes are centered around the mounting screws. Pull cover toward you.

**Note:** The tool tray may interfere with some cross-mount hoists.



## ELECTRIC HOIST SUSPENSION AND CORD KITS

The CM Universal Motor-Driven Trolley is designed to suspend several electric chain hoist models that are part of the CMCO family of brands. Select the appropriate Suspension and Cord Kit for your specific hoist listed below.

**Note:** Cord kits are used with the UTM control enclosure. If your hoist does not require the UTM enclosure, other tie cables and/or interconnections cables will be required.

| HOIST                                                                                                         | REEVING | MOUNTING POSITION | TROLLEY | SUSPENSION KIT | CORD KIT |
|---------------------------------------------------------------------------------------------------------------|---------|-------------------|---------|----------------|----------|
| CM SHOPSTAR / CM SHOPAIR / COFFING SLC / COFFING SLA / LITTLE MULE SLM / BUDGIT SHOPHOIST / BUDGIT SERIES 600 | 1 & 2   | CROSS             | UT1     | 20655K         | 33337952 |
| CM LODESTAR (CLASSIC) (V1) (Small Frame)                                                                      | 1       | PARALLEL          | UT1     | 2992UT         | 33337950 |
| CM LODESTAR (CLASSIC) (V1) (Small Frame)                                                                      | 1       | CROSS             | UT1     | 2992UTC        | 33337950 |
| CM LODESTAR (CLASSIC) (V1) (Small Frame)                                                                      | 2       | CROSS OR PARALLEL | UT1     | 2993UT         | 33337950 |
| CM LODESTAR (CLASSIC) (V2) (Large Frame)                                                                      | 1       | CROSS OR PARALLEL | UT2     | 3677UT         | 33337951 |
| CM LODESTAR (CLASSIC) (V2) (Large Frame)                                                                      | 2       | CROSS OR PARALLEL | UT2     | 3668UT         | 33337951 |
| CM LODESTAR (CLASSIC) (V2) (Large Frame)                                                                      | 3       | CROSS OR PARALLEL | UT3     | 9561UT         | 33337951 |
| CM LODESTAR (NH) (V1) (Small Frame)                                                                           | 1       | PARALLEL          | UT1     | 2992NHUT       | 33337950 |
| CM LODESTAR (NH) (V1) (Small Frame)                                                                           | 1       | CROSS             | UT1     | 2992NHUTC      | 33337950 |
| CM LODESTAR (NH) (V1) (Small Frame)                                                                           | 2       | CROSS OR PARALLEL | UT1     | 2993NHUT       | 33337950 |
| CM LODESTAR (NH) (V2) (Large Frame)                                                                           | 1       | CROSS OR PARALLEL | UT2     | 3677NHUT       | 33337951 |
| CM LODESTAR (NH) (V2) (Large Frame)                                                                           | 2       | CROSS OR PARALLEL | UT2     | 3668NHUT       | 33337951 |
| CM LODESTAR (NH) (V2) (Large Frame)                                                                           | 3       | CROSS OR PARALLEL | UT3     | 9561NHUT       | 33337951 |
| CM LODESTAR (RRS)                                                                                             | 1       | PARALLEL          | UT2     | 10001578       | 33337951 |
| CM LODESTAR (RRS)                                                                                             | 1       | CROSS             | UT2     | 10001578X      | 33337951 |
| CM MAN GUARD / BUDGIT BEHC / YALE KELC                                                                        | 1       | CROSS OR PARALLEL | UT2     | 23456925       | 33337946 |
| CM MAN GUARD / BUDGIT BEHC / YALE KELC                                                                        | 2       | CROSS             | UT2     | 32560625       | 33337946 |
| CM MAN GUARD / BUDGIT BEHC / YALE KELC                                                                        | 2       | PARALLEL          | UT2     | 32560625       | 33337946 |
| CM MAN GUARD / BUDGIT BEHC / YALE KELC                                                                        | 3       | CROSS OR PARALLEL | UT3     | 50796125       | 33337946 |
| COFFING JLC / LITTLE MULE FLC / YALE YJL                                                                      | 1 & 2   | PARALLEL          | UT2     | 33337901       | 33337940 |
| COFFING JLC / LITTLE MULE FLC / YALE YJL                                                                      | 1 & 2   | CROSS             | UT2     | 33337901C      | 33337940 |
| COFFING EC1                                                                                                   | 1 & 2   | CROSS OR PARALLEL | UT2     | 33337902       | 33337941 |
| COFFING EC1                                                                                                   | 3       | CROSS OR PARALLEL | UT3     | 33337903       | 33337941 |
| COFFING EC3 (3t Max.)                                                                                         | 1 & 2   | CROSS OR PARALLEL | UT3     | 33337904       | 33337942 |



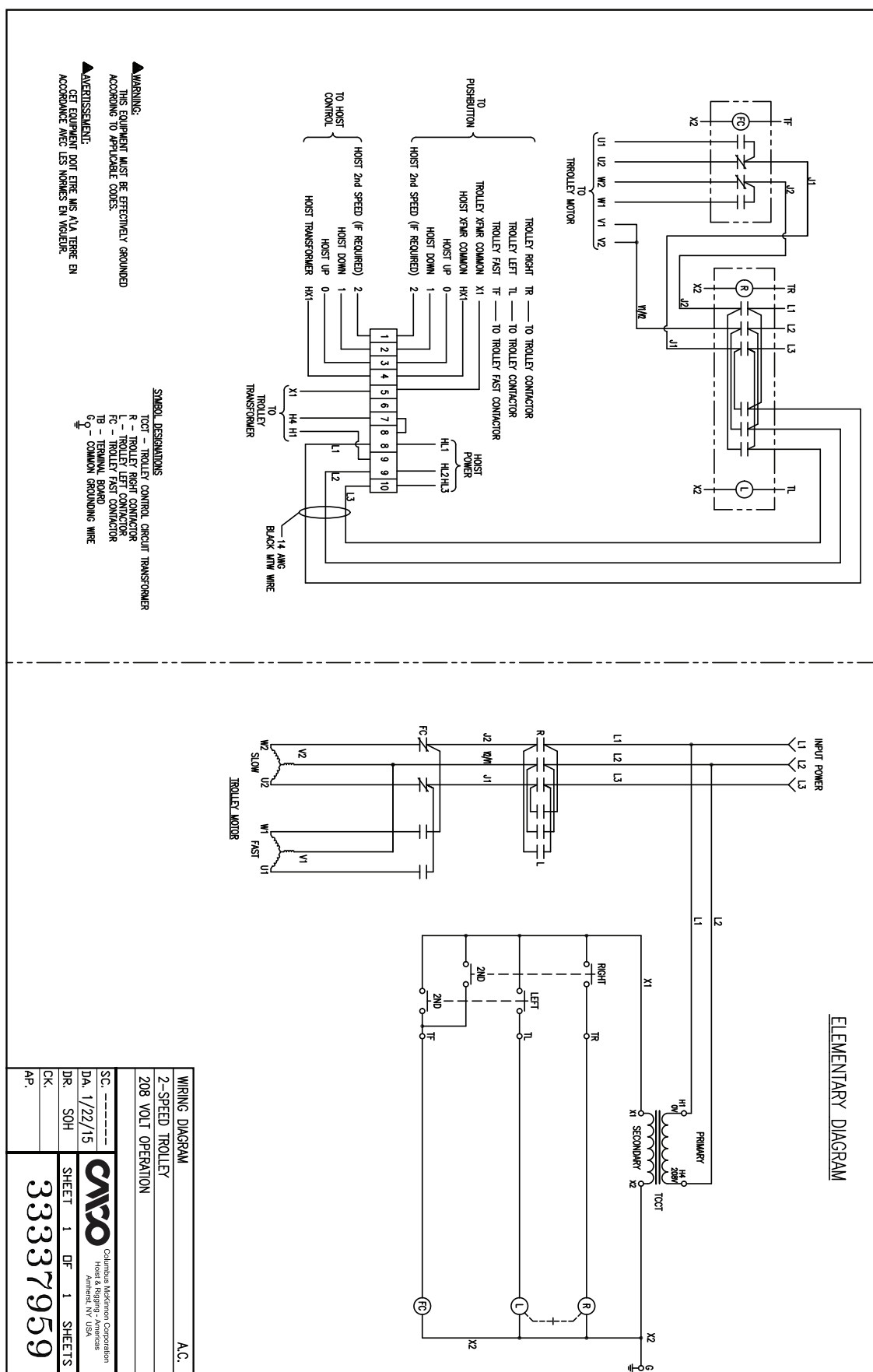






## WIRING DIAGRAM

### 2-SPEED UNIVERSAL TROLLEY 208 VOLT OPERATION





[illegible]

# WARRANTY

## LIMITATION OF WARRANTIES, REMEDIES AND DAMAGES

### 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 and any replacement parts. Buyer shall not remove or permit anyone to remove any warning or instruction signs on the goods or replacement parts. In the event of personal injury or damage to property or business arising from the use of the goods or replacement parts, 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 laws, rules or regulations 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 and/or replacement parts.

### CMCO Warranty (HOISTS)

A. Columbus McKinnon Corporation ("Seller") warrants to the original end user ("Buyer") that, for a period of one (1) year from the date of Seller's delivery of the goods (collectively, the "Goods") to the carrier, the Goods will be free from defects in workmanship and materials. (b) for a period of three (3) years from the date of Seller's delivery of the Goods to the carrier, the brake discs on the Goods will be free from defects in workmanship and materials; and (c) for the life of the Goods, the mechanical components including, without limitation, the sidewinder hoist lever, of the Goods (other than the brake discs on the Goods) will be free from defects in workmanship and materials. . In addition, Seller warrants to Buyer that, for a period of one (1) year from the date of their delivery by Seller to the carrier, any aftermarket or replacement parts, accessories or components purchased by Buyer with respect to any Goods (collectively, "Replacement Parts") will be free from defects in workmanship and materials.

B. IN THE EVENT OF ANY BREACH OF ANY SUCH WARRANTY, SELLER'S SOLE OBLIGATION SHALL BE EXCLUSIVELY LIMITED TO, AT THE OPTION OF SELLER, REPAIR OR REPLACEMENT, F.O.B. SELLER'S POINT OF SHIPMENT, OF ANY GOODS OR REPLACEMENT PARTS THAT 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 OR REPLACEMENT PARTS TO SELLER. NO CLAIM AGAINST SELLER FOR ANY BREACH OF (i) SUCH WARRANTY WITH RESPECT TO THE ELECTRICAL COMPONENTS OF ANY GOOD OR REPLACEMENT PARTS SHALL BE VALID OR ENFORCEABLE UNLESS BUYER'S WRITTEN NOTICE THEREOF IS RECEIVED BY SELLER WITHIN ONE (1) YEAR FROM THE DATE OF SELLER'S DELIVERY TO THE CARRIER, (ii) SUCH WARRANTY WITH RESPECT TO THE BRAKE DISCS OF ANY GOOD SHALL BE VALID OR ENFORCEABLE UNLESS BUYER'S WRITTEN NOTICE THEREOF IS RECEIVED BY SELLER WITHIN THREE (3) YEARS FROM THE DATE OF SELLER'S DELIVERY TO THE CARRIER AND (iii) SUCH WARRANTY WITH RESPECT TO THE MECHANICAL COMPONENTS, INCLUDING, WITHOUT LIMITATION, THE SIDEWINDER HOIST LEVER, OF ANY GOOD (OTHER THAN THE BRAKE DISCS ON ANY GOOD) SHALL BE VALID OR ENFORCEABLE UNLESS BUYER'S WRITTEN NOTICE THEREOF IS RECEIVED BY SELLER WITHIN ONE (1) YEAR FROM THE DATE ANY ALLEGED CLAIM ACCRUES. EXCEPT FOR THE WARRANTIES SET FORTH ABOVE, SELLER MAKES NO OTHER WARRANTIES WITH RESPECT TO THE GOODS OR ANY REPLACEMENT PARTS, WHETHER EXPRESSED OR IMPLIED, INCLUDING ANY WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, QUALITY AND/OR THOSE ARISING BY STATUTE OR OTHERWISE BY LAW OR FROM ANY COURSE OF DEALING OR USE OF TRADE, ALL OF WHICH ARE HEREBY EXPRESSLY DISCLAIMED.

C. IN NO EVENT SHALL SELLER BE LIABLE TO BUYER OR ANY THIRD PARTY WITH RESPECT TO ANY GOOD OR REPLACEMENT PART, WHETHER IN CONTRACT, TORT OR OTHER THEORY OF LAW, FOR LOSS OF PROFITS OR LOSS OF USE, OR FOR ANY INCIDENTAL, CONSEQUENTIAL, SPECIAL, DIRECT OR INDIRECT DAMAGES, HOWSOEVER CAUSED. SELLER'S MAXIMUM LIABILITY TO BUYER WITH RESPECT TO THE GOODS OR ANY REPLACEMENT PART SHALL IN NO EVENT EXCEED THE PRICE PAID BY BUYER FOR THE GOODS OR REPLACEMENT PART THAT ARE THE SUBJECT OF THE APPLICABLE CLAIM.

D. Seller shall not be liable for any damage, injury or loss arising out of the use of the Goods or any Replacement Part if, prior to such damage, injury or loss, such Goods or Replacement Parts are: (1) damaged or misused following Seller's delivery to the 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 (a) with any part or accessory other than those supplied by Seller or (b) without compliance with such laws, instructions or recommendations.

E. This warranty is limited and provided only to the original end user. **Each Good and Replacement Part must be registered within sixty (60) days of receipt of each product to establish eligibility.** Please register at [www.cmworks.com/hoist-warranty-registration](http://www.cmworks.com/hoist-warranty-registration) or submit registration card via US mail.

F. Any action against Seller for breach of warranty, negligence or otherwise in connection with the electrical components of any Good must be commenced by Buyer within one (1) year after: (a) the date any alleged claim accrues; or (b) the date of delivery of the Goods to Buyer, whichever is earlier. Any action against Seller for breach of warranty, negligence or otherwise in connection with the brake discs on any Good must be commenced by Buyer within three (3) years after: (y) the date any alleged claim accrues; or (z) the date of delivery of the Goods to Buyer, whichever is earlier. Any action against Seller for breach of warranty, negligence or otherwise in connection with the mechanical components of any Good (other than the brake discs on any Good) must be commenced by Buyer within one (1) year after the date any alleged claim accrues. Any action against Seller for breach of warranty, negligence or otherwise in connection with any Replacement Part must be commenced by Buyer within one (1) year after: (y) the date any alleged claim accrues; or (z) the date of delivery of the Replacement Part to Buyer, whichever is earlier.

G. This warranty is contingent upon Buyer's proper maintenance and care of the Goods and/or Replacement Part, and does not extend to normal wear and tear. Seller reserves the right, at its option, to void this warranty in the event of Buyer's use with the Goods and/or Replacement Parts of parts or accessories other than those supplied by Seller.

### WARNING

Alterations or modifications of equipment and use of non-Seller replacement parts can lead to dangerous operation and injury.

#### TO AVOID INJURY:

- Do not alter or modify equipment.
- Do use only replacement parts manufactured by seller.



COLUMBUS McKINNON  
CORPORATION

FAMILY OF BRANDS



**USA:** Ph: (800) 888.0985 • (716) 689.5400 • Fax: (716) 689.5644 • [www.cmworks.com](http://www.cmworks.com)

**CANADA:** Ph: (877) 264.6478 • Fax: (877) 264.6477 • [www.cmworks.com](http://www.cmworks.com)

**UK:** Ph: +44 1244 375375 • Fax: +44 1244 377403 • [www.cmco.eu](http://www.cmco.eu)