

KEW SERIES

Electric Wire Rope Hoist

Parts and Instruction Manual

Fill in the information below before installing the hoist.

Hoist S/N _____

Trolley S/N _____

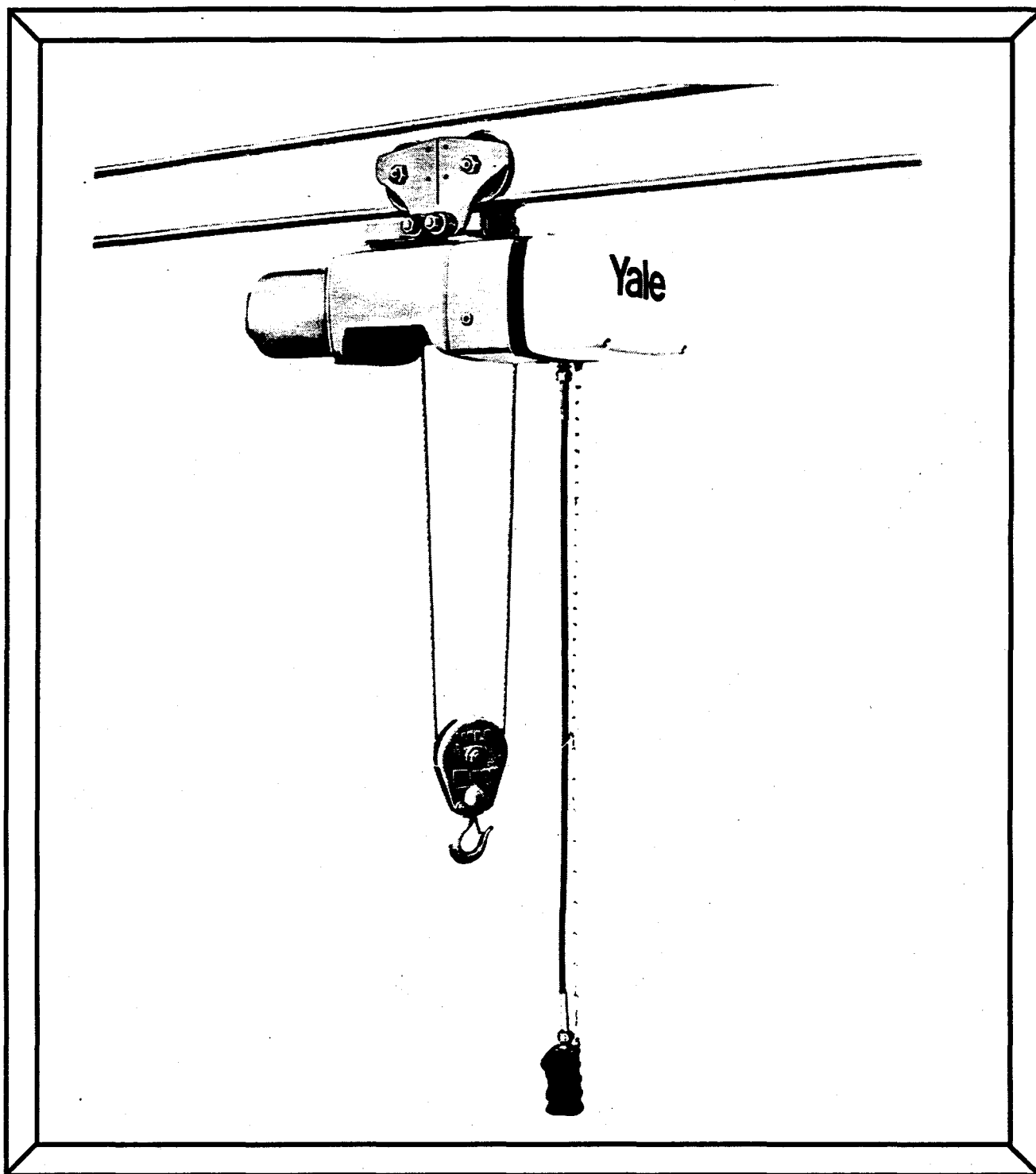
Voltage _____

Capacity _____

Model No. _____

Date of Purchase _____

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Yale® Hoists

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SAFE HOISTING PRACTICES

YALE ELECTRIC HOIST

For your own safety and that of your fellow workers, Material Handling Equipment must be used as recommended by the Manufacturer. Failure to heed the following recommendations could endanger your life. Use good common sense and judgment at all times. Safety is the responsibility of the operator of the equipment. You must be competent and attempt to foresee and avoid all hazardous conditions. To be safe as possible, the hoist must be given proper preventative maintenance and testing as described in the ANSI B30-16 Safety Code for Overhead Hoists and this manual.

BEFORE OPERATING HOIST:

1. Do not operate hoist unless you are properly trained, physically fit, and authorized to do so. You must be familiar with all operating controls of the hoist, warnings and instructions on the hoist, the safe hoisting practices listed in this bulletin, ANSI B30-16 Safety Code for Overhead Hoists, and all pertinent Federal, State, and local regulations before beginning operation.
2. Do not allow unqualified personnel to operate the hoist.
3. On powered hoists, test all controls and limit switches and make sure hoist is well lubricated at beginning of each shift. Make sure needed lubrication, adjustments or repairs are made by appointed personnel before operations are begun.
4. Be familiar with the equipment and its proper care. Do not operate hoist if adjustments or repairs are necessary, if any damage or undue wear is known or suspected, or if any warnings, operating, or capacity instructions normally attached to hoist are obscured, damaged or missing. Report same promptly to the proper person and also notify next operator when changing shifts.
5. Do not operate hoist if it is functioning improperly.
6. Do not operate hoist with an out-of-order sign attached until sign has been removed by a properly authorized person.
7. Do not adjust or repair hoist unless qualified for maintenance of hoist.
8. On powered hoists, be sure the power supply is disconnected before maintenance and repair procedure is performed.
9. Do not use the chain or rope as a ground for welding.
10. Do not touch a welding electrode to the chain or rope.

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APPLYING THE LOAD:

11. Never wrap the hoist rope or chain around the load, or allow it to drag under load.
12. Always use slings or other approved devices to attach load.
13. Be sure the sling is properly seated in the saddle of the hook. Do not allow hook latch to support any part of load.
14. Do not apply a load to tip of hook, or in such a way as to cause bending or prying forces on the hook or hook support block.
15. Be sure chains or wire ropes are not kinked or twisted or that multiple part chains or ropes are not twisted about each other.
16. Do not operate hoist if wire rope or chain is not seated properly in the grooves of the drum, sheaves or sprockets.
17. On wire rope hoists, do not load hoist with less than two wraps of rope on the drum, unless a lower limit device is provided, in which case, no less than one wrap shall remain on drum.
18. Center hoist unit over the load before lifting. Avoid side pull.
19. Never pick up a load beyond the rated capacity appearing on the hoist, except for properly authorized tests.
20. Do not use the load limiting device to measure the maximum load to be lifted; it is a safety device only.

MOVING THE LOAD:

21. Do not engage in any activity which will divert your attention while operating hoist.
22. Respond to signals from designated personnel only, except for stop signals.
23. Never lift a load with the hoist until you and all other personnel are clear of load.
24. Make sure a load clears neighboring stock piles or machinery before moving.
25. On powered hoists, inch the hoist slowly into engagement with a load, but avoid excessive plugging, inching, and quick reversals of load.
26. Do not lift load more than a few inches until it is well balanced in the sling or lifting device.

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27. Each time a load approaching rated capacity is handled, check load brake action by raising load just clear of supports and continuing only after you are sure brake is operating properly.
28. Do not transport load over personnel.
29. Never carry personnel on the hook or the load.
30. Avoid swinging of load or load hook when traveling the hoist.
31. On trolley mounted hoists, avoid sharp contact between trolleys, or between trolleys and rail stops.
32. On powered hoists, do not use limit devices as a normal means of stopping the hoist. These are emergency devices only.
33. On powered hoists, do not exceed the maximum duty cycle specified by the manufacturer.

PARKING:

34. Do not leave a load suspended in the air for extended or unattended periods.
35. On powered hoists, keep load block above head level when not in use.

SAFETY LAW FOR PASSENGER ELEVATORS

The safety laws for passenger elevators specify construction details that are not necessarily incorporated in Yale Hoists. We recommend that passenger elevator operation equipment be used that meets all state and national safety codes. Yale Hoists will not accept responsibility for applications of Yale hoists on passenger elevators.

INSPECTION PREVENTIVE MAINTENANCE AND TESTING

A preventive maintenance program should be initiated for the hoist immediately after it is entered into service. The preventive maintenance program should comply with recommendations in the applicable Yale parts and instructional manual, and all pertinent Federal, State, and local regulations and written inspection records kept as specified. Sample inspection check lists are included at back of this manual. Extra inspection check lists can be obtained from your nearest authorized Yale Hoists Distributor.

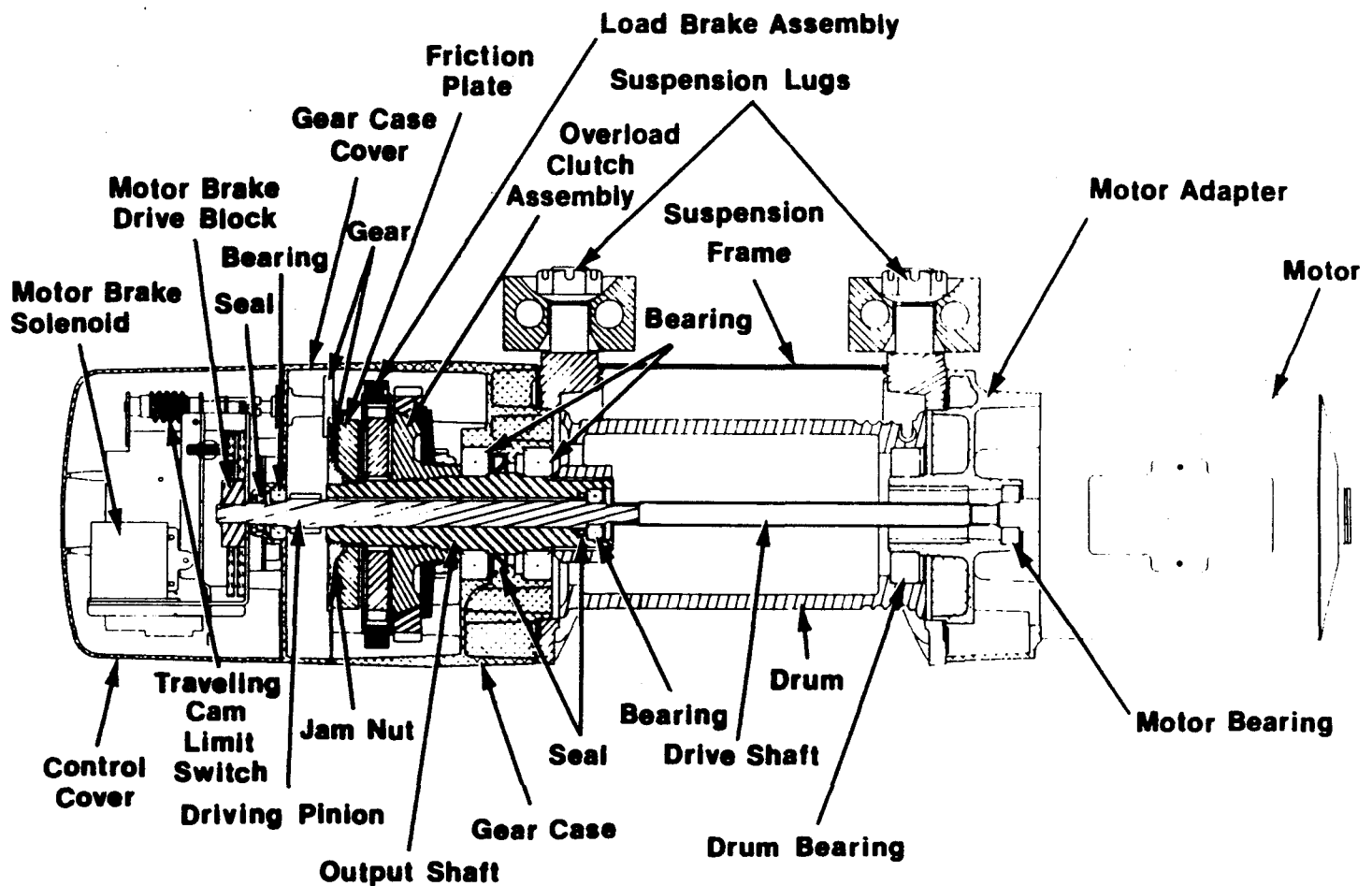
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MAJOR COMPONENT LOCATION



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GENERAL INFORMATION

REPAIR PARTS ORDERING INFORMATION

This Parts and Instruction manual is provided as a convenience to assist you in ordering repair parts for your YALE KEW Series Electric Hoist. To insure prompt service, place all parts orders with your local distributor.

Give all information listed below in items a, b, c, d, and e. This will enable your distributor to fill your order promptly.

- Give complete date from hoist nameplate.
- Give part numbers, description and quantity required.
- Give the correct shipping destination.
- For ordering motor repair parts, give all data on the hoist and motor nameplates.
- For motorized trolleys give complete trolley serial number.

If it becomes necessary to return the complete hoist or certain parts to the factory, a letter requesting such a return is necessary. This letter should contain an explanation for requesting the return. A return authorization will be issued giving you clearance for returning the hoist or parts to the factory. Should you need additional help in ordering, contact your local YALE distributor.

MODEL NUMBER EXPLANATION

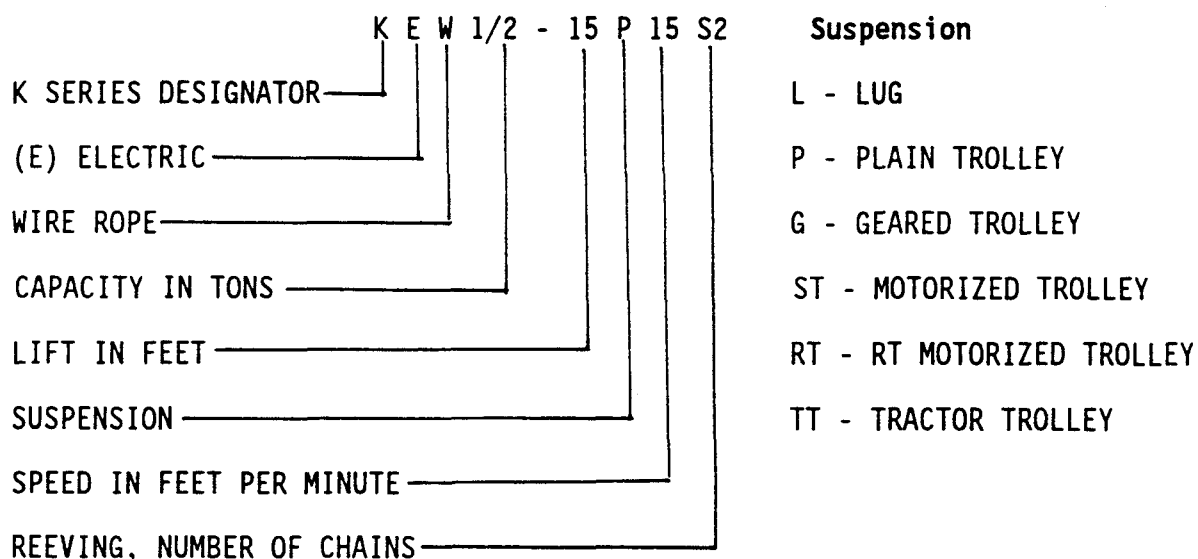


FIGURE 1

When Replacement Parts Are Needed, Order Only Yale® Factory Engineered Parts



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INSTALLATION INSTRUCTIONS

GEAR CASE VENT

Before hanging the hoist, remove the vinyl plug at the top of the unit with the tag attached. The plug was to prevent oil leakage during shipment and must be removed to prevent oil leaks due to pressure build-up. Check the oil level at the level plug on the side of the unit. See lubrication chart on page 9.

LUBRICATION

The wire rope is the only component requiring lubrication prior to putting the hoist in operation. See lubrication chart on page 9.

BASIS SUSPENSION

The basic hoist suspension types are: lug, plain trolley, geared trolley and motorized trolley.

NOTE: If your hoist is furnished with a motorized trolley, record the serial number in this book for future reference. If a tractor trolley is used, refer to the separate parts manual included. All other trolley types are covered in this manual.

To hang hoist furnished with plain, geared, or motorized trolley, first determine the beam size on which the trolley is to be used, then refer to trolley adjustment page 8 for proper spacer arrangement.

POWER CONNECTION

CAUTION: BEFORE CONNECTING POWER TO THE HOIST, BE SURE THE POWER SUPPLY CORRESPONDS TO THE HOIST RATING FOUND ON MOTOR NAMEPLATE.

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TROLLEY ADJUSTMENT

All Yale trolleys are normally properly adjusted at the factory to fit I-Beam size stated on the order.

NOTE: When disassembling the trolley for installation on the I-Beam, take note of the arrangement of the spacers and washers for correct reassembly.

For installation on I-Beam other than the size preset at the factory, or if final adjustment to beam is required, follow the instructions below:

Measure the I-Beam flange width and temporarily install the trolley sideplates on the hoist before installation to determine the exact distribution of washers.

The distance between track wheel flanges should be $\frac{3}{16}$ inch greater than the beam flange width for straight runway beams, or $\frac{3}{16}$ to $\frac{1}{4}$ inch on runway systems that include sharp curves. To keep the hoist centered under the I-Beam, the number of washers between the sideplates and the hoist lug should be the same, or differ only by one washer. The distribution of washers outside the trolley sideplates is unimportant except that the total number used must be sufficient to keep the nuts engaged.

NOTE: When installing hoist and trolley on beam, tighten nuts to 175 ft. lbs. torque so that the trolley sideplates are parallel and vertical.

CAUTION: BE SURE THERE IS A LOCKWASHER UNDER EACH NUT.

Center the trolley on the beam, and check the clearance between the wheel flange and beam flange. If the trolley is adjusted properly, this clearance will be $\frac{3}{32}$ " to $\frac{1}{8}$ ".

FUNCTION TESTING OF TROLLEY

After the hoist and trolley are installed on the I-Beam, operate the trolley over the entire length of the beam with a capacity load to be sure that adjustment and operation is satisfactory.

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LUBRICATION CHARTS

KEL, KEW HOISTS

PART	LUBRICANT	LUBRICATION POINT	LUBRICATION INSTRUCTIONS	DRAIN POINT
GEAR CASE	*Part No. 6496850-00 3/4 Pint Can Of Lube. (Gear Case Capacity 2 1/4 Pts.)	Fill Plug In Top Of Housing	Oil Should Be Level With Side Plug In Housing.	Located In Bottom Of Unit.
WIRE ROPE	Keystone WRD-OW Spray Type Wire Rope Dressing Or Other Prepared Cable Lubricant.	Wire Rope	Light Coat Of Lubricant.	
BOTTOM BLOCK ** & IDLER SHEAVE BEARINGS	Shell Alvania No. 2 (Or Equal)	Bearing Surfaces And Reservoirs At The End Of The Axle.	As Required.	

* SUBSTITUTIONS ARE NOT RECOMMENDED AS THEY MIGHT CAUSE LOAD BRAKE CHATTER.

** 2 AND 4 PART DOUBLE REQUIRE LUBRICATION. ALL OTHERS ARE LIFETIME LUBRICATED.

ST AND TT Series Trolleys

PARTS	LUBRICANT	LUBRICATION POINT	LUBRICATION INSTRUCTIONS	DRAIN POINT
GEAR CASE	Gulf EP No. 2 Grease (Or Equal)	Socket Head Plug In Side Of Gear Case.	Fill Until Grease Is Level With Hole.	Socket Head Plug In Bottom Of Gear Case.

RT SERIES TROLLEYS

GEAR CASE	Gear lub Aqma # 8	Socket Head Plug In Side of Gear Case.	Fill Until Oil Is level With Hole.	Socket Head Plug In Bottom Of Gear Case.
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TROLLEYS PLAIN AND GEARED

HAND CHAIN GUIDE (IF APPLICABLE)	Gulf EP No. 2 (Or Equal)	Alemite Fittings	Lubricate Until Grease Can Be Seen.	
SUPPORT BRACKET (IF APPLICABLE)	Gulf EP No. 2 (Or Equal)	Alemite Fittings	Lubricate Until Grease Can Be Seen.	
TROLLEY (WITH PRESSED STEEL WHEELS)	Gulf EP No. 2 (Or Equal)	Axles Are Hollow: Use Grease Gun Fitting 0596774-00	Fill Until Grease Can Be Seen On Inner Side Of Wheel.	

NOTE: If Trolley is NOT equipped with Alemite Fittings, the Bearings are lifetime lubricated.

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PREVENTIVE MAINTENANCE

PREVENTIVE MAINTENANCE SCHEDULE

The periods between inspections will vary due to the wide range of duty cycles and operating conditions encountered with this type of equipment. The following inspection periods are based on average duty with single shift operation (40 hours per week) under normal environmental conditions. If the hoist is used in heavier applications or under adverse environmental conditions, it should be inspected more frequently.

DAILY INSPECTION

Inspect the following items before operating hoist.

1. Electrical Connections: Check for worn or frayed wires, loose connections and for damage to, or improper operation of, push button assembly.
2. Limit Switch: Check the upper and lower limit switch by running the hook without load to the maximum up and maximum down positions. The switch should shut the hoist off before the bottom block contacts the drum at the upper extreme. 1 1/2 wraps of rope should remain on the drum at the shut-off point at the lower extreme. If adjustment is necessary, see page 39.
3. Hook: Check for cracks or deformation. Check for damaged or missing safety latch. Bent or twisted hook indicates overloading or abuse. Other load bearing parts should be inspected if overloading is apparent or suspected. The bottom hook must swivel freely.
4. Wire Rope: Check for fraying or kinks in the wire rope, and condition of end connections. (See page 14).
5. Hook Drift: With a load, the hook should stop promptly when the push button is released. Hook drift of more than 2 inches indicates that either one or both of the hoist brakes is malfunctioning. (See brakes under monthly inspection for more detail).
6. Unusual Conditions: Excessive noise, oil leaks, etc. should be investigated.

CAUTION DO NOT OPERATE THE HOIST IF ABOVE INSPECTION INDICATES THAT MAINTENANCE IS NEEDED.

MONTHLY INSPECTION

1. All items under daily inspection.
2. Lubrication: Check the level and condition of the gear case lubricant. The level must be maintained at the level plug at the side of the gear case. If the level is low, check for leaks. Replace gasket and shaft seals if necessary. Lubricant should be clear in color. Black color indicates a chemical change in the lubricant caused by excessive heat from the load brake, which in turn is caused by heavy duty cycles. Lubricant that is black in color must be replaced to prevent shortened life of drive components. Lubricate wire rope and other points as required. (See Chart Page 9).

CAUTION: FOR OPTIMUM LUBRICATION AND LOAD BRAKE COOLING, OIL LEVEL MUST BE MAINTAINED AT THE LEVEL PLUG.

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3. Hooks: Check hook retaining nuts and collars, and means used to secure them. Replace hook if throat opening is in excess of maximum shown in Table 1, page 12, or if there is 10 degrees or more twist from normal plane of hook.
4. Load Brake: Check the function of the load brake by lifting a light load, disconnecting electrical power, removing the control cover, and manually opening the motor brake. The load may "creep" slowly while the motor brake is held open. This is normal. However, if the load falls to the floor the instant the motor brake is released, the load brake is not functioning and should be repaired. Replace the load brake assembly 6445384-00.
5. Contactor: Check for burned or badly pitted contacts.
6. Push Button: Check the ground connections to be sure that the wire cores from the push button cable and the power cord are secured. Tighten the grounding screw. Replace the lockwasher if it is missing.
7. Bearings: Check all bearings for noisy operation, which is an indication of wear.
8. Hardware: Check for loose bolts, nuts and rivets.
9. Wire Rope: Check condition of wire rope using inspection check list. (See instructions page 14). Lubricate if needed (see chart page 9).
10. Warning Labels: Check for absence or illegibility of warning labels and tags, and replace if necessary.
11. Supporting Structure or Trolley: If used, should be checked for continued ability to support the imposed loads. Check for loose suspension or support bolts, axle nuts, etc.
12. Inspection Check List: Fill out Inspection Check List at the back of this manual, sign, date and file for future reference.

ANNUAL INSPECTION

1. All items under daily and monthly inspection.
2. Hooks: Magnetic particle or other suitable crack detecting inspection should be performed if need is indicated by external appearance. Check for loose retaining nuts and collars. (See page 12).
3. Load Bearing Parts: Check for worn, cracked, or distorted parts such as hook blocks, suspension housing, outriggers, clevises, yokes, suspension bolts, shafts, locking devices and bearings on hoist. (Also on trolley if so equipped.)
4. Load Brake: Check load brake for worn discs. If either disc is worn 1/32" or more replace both discs. New discs measure 3/32".
5. Load Limiting Device: Check load limiting device with 175% of rated load. If load can be lifted, the load limiting device must be replaced.

CAUTION PRIOR TO TESTING ALL SUPPORTING STRUCTURES, ANCHORAGES, AND/OR SUSPENSIONS MUST BE APPROVED BY THE APPOINTED PERSON FOR THE TEST LOADS USED.

6. Motor Brake: Check for excessive or uneven wear of the discs and excessive play between the splines hole in the discs and the drive block. Clean the solenoid plunger seat, and check for even seating between the plunger and coil. Manually hold the brake open and check adjustment as shown in Fig. 3, page 12.

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7. **Wiring and Terminals:** See that all connections are tight. Terminals are to be securely crimped to wires and the insulation sound. Bent terminals can usually be straightened to provide a tight fit. Replace terminals or wire if necessary.

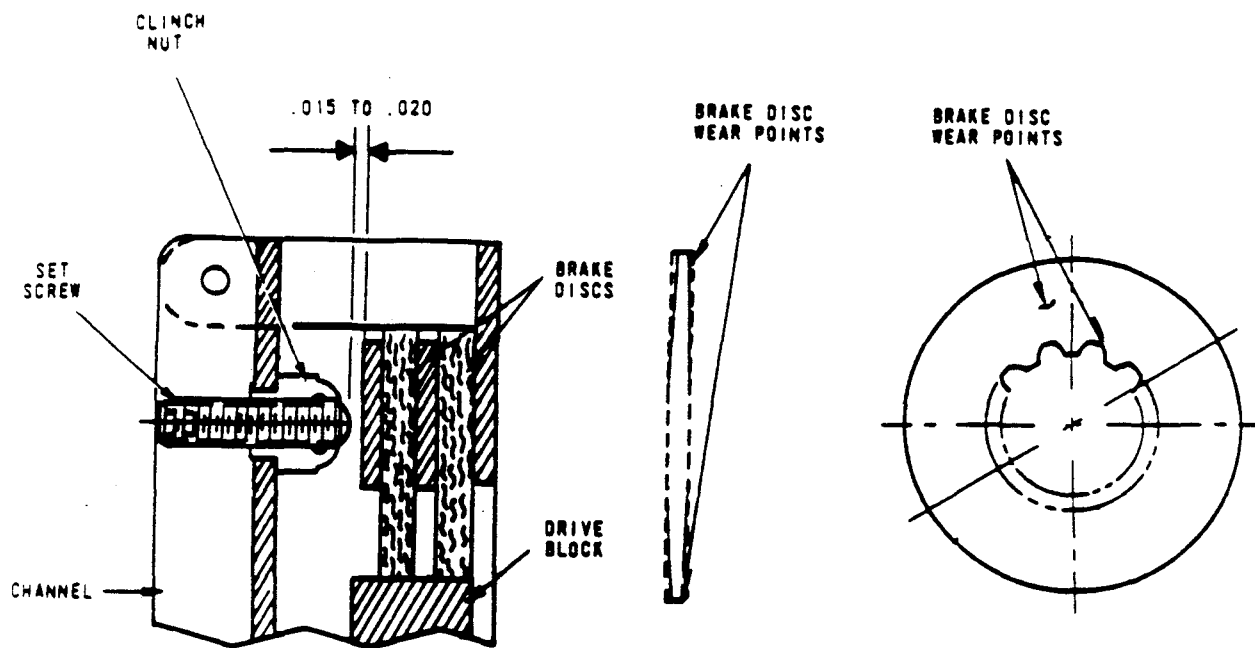


FIGURE 4.
MOTOR BRAKE

NORMAL AND MAXIMUM HOOK OPENINGS FOR KEW SERIES HOISTS

HEADROOM	CAPACITY IN TONS	DIMENSIONS IN INCHES			
		E BOTTOM HOOK			
		NORMAL		MAXIMUM	
STANDARD	1/2	1 1	32	1 7	32
	1	1 9	64	1 11	32
	2	1 21	64	1 9	16
CLOSE	1/2	1 21	64	1 9	16
	1	1 21	64	1 9	16
	2	1 21	64	1 9	16

TABLE 1. HOOK DIMENSIONS

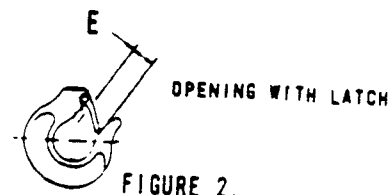


FIGURE 2.

CAUTION
IF "E" EXCEEDS MAXIMUM SHOWN IN
TABLE, REPLACE HOOK AND CHECK
OTHER LOAD BEARING PARTS.

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HOW TO CHANGE VOLTAGE AND POWER CONNECTIONS

CAUTION: BEFORE CONNECTING POWER TO THE HOIST, BE SURE THE POWER SUPPLY CORRESPONDS TO THE HOIST RATING.

To determine hoist rating or to change rating on units equipped with dual voltage connection, remove the large control cover at the end of the hoist to expose dual voltage terminal strip. Voltage setting is determined by location of the terminal connections in a vertical column on either the high or low voltage side of the terminal strip. To change voltage, simply move the wires to the opposite side of the terminal strip to the identically numbered terminals. Before replacing cover, check for bent terminals, and make sure all connections are tight.

PHASING

CAUTION: CHECK FOR CORRECT PHASING.

On poly phase A.C. hoists, it is impossible to know how to connect the power line for correct direction of the hook travel. If the hook does not travel up when the "up" button is depressed, interchange two of the line wires for three phase, and two of the line wires of any one phase for two phase operation.

CAUTION: DO NOT REWIRE THE PUSH BUTTON.

LIMIT SWITCH

CAUTION: DO NOT ALLOW HOOK BLOCK TO CONTACT DRUM BEFORE UPPER LIMIT IS REACHED. BEFORE PUTTING THE HOIST IN SERVICE, CHECK THE SETTING OF THE SWITCH BY RUNNING THE HOOK TO THE MAXIMUM UP AND MAXIMUM DOWN POSITIONS. THE SWITCH SHOULD SHUT THE HOIST OFF BEFORE THE BOTTOM BLOCK CONTACTS THE DRUM AT THE UPPER EXTREME. 1 1/2 WRAPS OF ROPE SHOULD REMAIN ON THE DRUM AT THE SHUT OFF POINT AT THE LOWER EXTREME.

To adjust the switch, loosen the two (2) screws, move the locking plate clear of the slotted cams and turn each cam either toward or away from its corresponding switch as necessary. The top switch is the upper limit. See page 39 for adjustment. Do not operate hoist with the locking plate out of position or the control cover not in place. This will cause adjustment to be lost.

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WIRE ROPE INSPECTION

All wire rope should be inspected once a month and a signed and dated inspection report maintained. The inspection check lists at the back of this manual can be used to record these inspections. Wire rope should be replaced if any of the following conditions are noted.

1. Twelve randomly distributed broken wires in one rope lay, or four broken wires in one strand in one rope lay.
2. Wear of (1/3) one third of the original diameter of outside individual wires.
3. Kinking, crushing, birdcaging or any distortion of the wire rope structure.
4. Evidence of heat damage.
5. Reduction from nominal diameter of more than 1/64 inch.
6. Rope sockets should be inspected for broken wires. If two or more broken wires are noted, the rope should be replaced.

CAUTION: REPLACEMENT WIRE ROPE SHOULD BE THE SAME SIZE, GRADE AND CONSTRUCTION AS THE ORIGINAL WIRE ROPE. AFTER WIRE ROPE REPLACEMENT CHECK FOR PROPER LIMIT SWITCH OPERATION. (SEE INSTRUCTIONS ON PAGE 13) WHEN REPLACING WIRE ROPE, READ THE PROCEDURE FOR REEVING THE WIRE ROPE. (SEE INSTRUCTIONS ON PAGE 15).

CAUTION: ROPE PILE UP ON THE HOISTING DRUM WILL SEVERELY DAMAGE THE HOISTING ROPE. IF THIS CONDITION IS NOTED THE HOISTING ROPE SHOULD BE INSPECTED ACCORDING TO THE PARAGRAPHS ON WIRE ROPE INSPECTION. IF DAMAGED ROPE IS FOUND, CHECK DRUM AND FRAME MEMBERS FOR DAMAGE.

How To Measure Wire Rope

The correct diameter of a wire rope is the diameter of a circumscribed circle which will enclose all the strands. It is the largest cross-sectional measurement as illustrated below. The measurement should be made carefully with calipers. The illustrations below show the correct and incorrect method of measuring the diameter of wire rope.

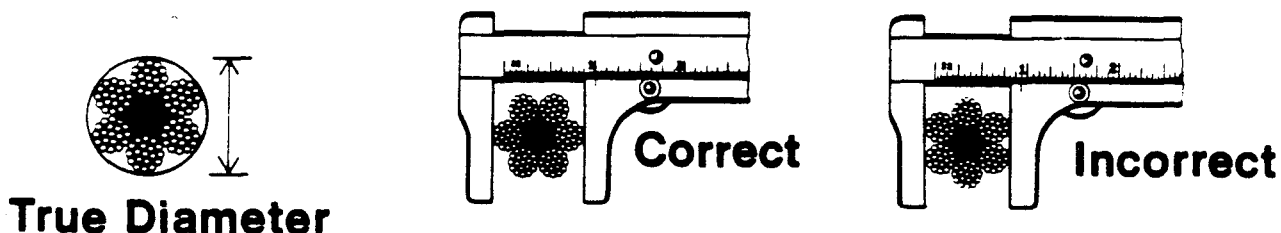


FIGURE 4.

NOTE: INSPECTION RECORD

The last page of this manual is an inspection record log to be filled out and signed by the person making the monthly inspection.

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PROCEDURE FOR REEVING WIRE ROPE ON THE DRUM

2 AND 4 PART DOUBLE UNITS

NOTE: Traveling nut limit switches must be preset before reeving, per steps 1 thru 7 on page 39 and readjusted per steps 8 thru 14 on page 40 after reeving.

1. Count the number of grooves on the gear side of the drum.
2. Starting from the center count the same number of grooves toward the motor side and mark the drum.
3. Anchor the rope in the drum on the motor side. Secure with set screw.
4. Reeve the rope up to the marked groove.
5. Anchor the free end of the rope in the gear side of the drum. Secure with set screw. Push the "UP" Button to reeve both sides of the drum, making sure there is enough force on the rope to insure proper reeving in all drum grooves. Leave enough to reeve bottom block and idler sheave. (See Figure 7 and 8 page 16).

NOTE: When the bottom block is raised to the upper limit the block should be at the mid-point of the ungrooved portion of the drum and even with the idler sheave. If this is not so, the unit is reeved incorrectly.

CAUTION: 2 AND 4 PART DOUBLE DRUMS ARE GROOVED OFF CENTER AND MUST BE REEVED THIS WAY TO MAINTAIN THE CENTER OF GRAVITY. WHEN A LOAD IS APPLIED TO A UNIT IT SHOULD SET LEVEL ON THE BEAM. IF IT DOES NOT SET LEVEL ON THE BEAM IT IS REEVED IMPROPERLY.

2 AND 4 PART SINGLE UNITS

1. Anchor the rope in the drum. Secure with set screw.
2. Reeve the rope on to the bottom block and for 4 part single on the equalizer sheave. (See Figure 7 and 8, Page 16).
3. Attach the dead end of the rope to the suspension frame.
4. Push the "UP" Button to reeve the drum making sure there is enough force on the rope to insure proper reeving in all drum grooves.

CAUTION: ALL UNITS MUST HAVE A MINIMUM OF 1 1/2 WRAPS OF WIRE ROPE ON THE DRUM WHEN THE BOTTOM BLOCK IS IN THE LOWEST POSITION.

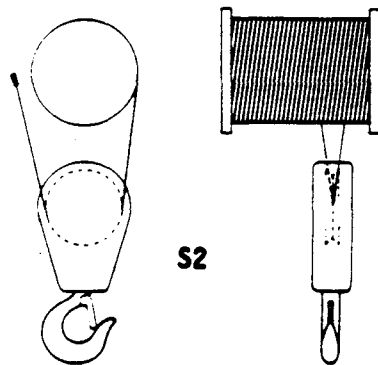
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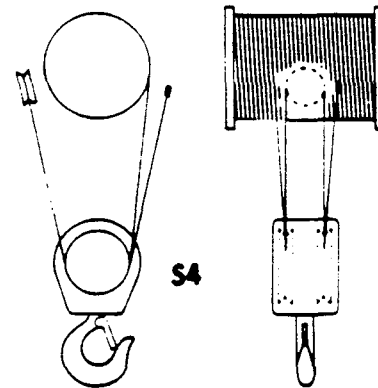
WIRE ROPE REEVING

SINGLE REEVED DRUM, STANDARD HEADROOM UNITS



S2

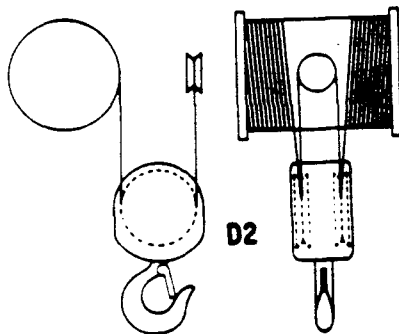
**2 PART SINGLE
FIGURE 5.**



S4

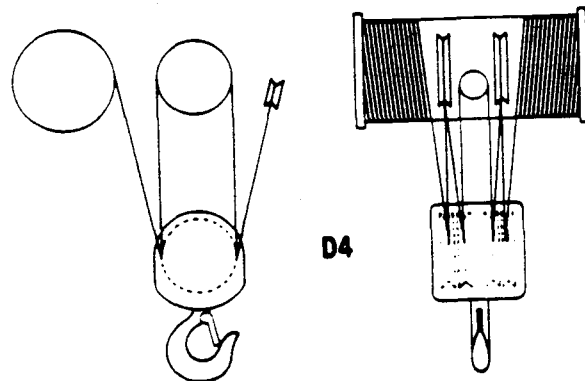
**4 PART SINGLE
FIGURE 6.**

DOUBLE GROOVED DRUM, LOW HEADROOM UNITS



D2

**2 PART DOUBLE
FIGURE 7.**



D4

**4 PART DOUBLE
FIGURE 8.**

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TROUBLE SHOOTING GUIDE

1. HOOK DOES NOT RESPOND TO PUSH BUTTON

Possible Cause

Remedy

- | | |
|---|--|
| (a) Power failure | (a) Check switches, circuit breakers and connections in the supply lines. |
| (b) Wrong voltage or frequency | (b) Be sure all electrical characteristics are as listed on the hoist nameplate. See power connection, page 13. |
| (c) Loose or broken connections in the hoist or push button | (c) Disconnect the hoist from the power source. Remove the control cover and the push button cover. Check all connections and the continuity of each wire. |
| (d) Contactor failure | (d) Disconnect the hoist from the power source. Check all contacts for burned or badly worn condition. |
| (e) Motor brake not opening.
(Motor will hum but not rotate) | (e) Disconnect the hoist from the power source. Check the brake solenoid leads. Replace the solenoid if necessary. |

2. HOOK LOWERS BUT WILL NOT RAISE, EMPTY HOOK

Possible Cause

Remedy

- | | |
|----------------------------|---|
| (a) Hoisting circuit open. | (a) Disconnect hoist from power source, and check for loose connections in the push button and the control section. |
|----------------------------|---|

3. HOOK RAISES BUT WILL NOT LOWER, EMPTY HOOK

Possible Cause

Remedy

- | | |
|----------------------------|---|
| (a) Lowering circuit open. | (a) Disconnect hoist from power source, and check for loose connections in the push button and control section. |
|----------------------------|---|

4. HOIST WILL NOT LIFT THE LOAD

Possible Cause

Remedy

- | | |
|---------------------|---|
| (a) Excessive load. | (a) Reduce load to the capacity limit shown on the hoist nameplate. |
|---------------------|---|

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- | | |
|---|--|
| (b) Motor centrifugal switch not operating (single phase units only). | (b) Check connections to the switch and examine the centrifugal mechanism for loose or damaged parts. Replace parts as required. |
| (c) Worn load limiting clutch | (c) Replace the load limiting clutch assembly. |
| (d) Motor overload thermostat open. | (d) Allow motor to cool. |

5. HOOK DOES NOT STOP PROMPTLY

Possible Cause

Remedy

- | | |
|---------------------------|---|
| (a) Motor brake slipping | (a) Check for oil on brake discs. Check for proper oil level.

Check brake discs for uneven or excessive wear. (Per instructions Page 12). Replace if necessary.

Check brake mechanism for free operation. |
| (b) Load brake discs worn | (b) Follow the instructions under preventive maintenance schedule, Monthly Inspection, number 4. Load Brake: page 11. |

6. MOTOR OVERHEATS

Possible Cause

Remedy

- | | |
|---|--|
| (a) Defective centrifugal switch (single phase units only). | (a) Replace. |
| (b) Defective capacitor (single phase units only). | (b) Replace. |
| (c) Rotor dragging in stator. | (c) Tighten motor bolts. Check for worn motor bearings. |
| (d) Motor brake too tight. | (d) See motor brake under preventative maintenance schedule page 11. |
| (e) Low voltage. | (e) Check voltage at power source with unit under load. |

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Duff-Norton**Yale® Hoists****7. HOIST IS NOISY IN LOWERING DIRECTION****Possible Cause****Remedy**

(a) Load brake "chattering"
due to improper lubricant

(a) Change lubricant to nameplate
specification.

(b) Defective roller clutch.

(b) Replace with Load Brake Assembly
6445384-00 under Item 38 Page 32.

NOTE: Load Brake Chattering Is Normal During The First
Minute Or Two Of Operation.

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Duff-Norton**Yale® Hoists**

RECOMMENDED SEQUENCE OF DISASSEMBLY

WARNING: DISCONNECT ALL ELECTRICAL POWER BEFORE ATTEMPTING DISASSEMBLY. SEE BELOW FOR EXCEPTIONS.

To completely disassemble the hoist, follow the disassembly procedures in the order listed.

To disassemble a specific part of the hoist, follow the instruction for that specific section. Individual component removal is self-explanatory after component becomes accessible. **BE SURE ELECTRICAL POWER IS DISCONNECTED.**

Specific instructions are provided for removal of:

1. Wire rope
2. Motor
3. Gear Case Cover
4. Drum
5. Gear Train

NOTE: Disassembly of motor or removal of gear case cover does not require wire rope removal. Complete disassembly, complete gear train removal, or drum removal require wire rope removal. Wire rope removal requires electrical power, so this should be done early in disassembly.

GENERAL INSTRUCTIONS

Remove wire rope if necessary. Remove power from the hoist. Drain oil by removing drain plug from bottom of hoist. If possible, detach hoist from support and place on maintenance bench. Unit may be inverted and top suspension lugs clamped in a vise for ease of maintenance.

CAUTION: OIL SEALS AND GASKETS ARE DELICATE AND ARE EASILY DAMAGED DURING DISASSEMBLY AND REASSEMBLY. COVER SERRATIONS AND LUBRICATE SEALS DURING ASSEMBLY. NEW OIL SEALS AND GEAR CASE GASKET MUST BE INSTALLED AFTER GEAR TRAIN DISASSEMBLY.

WIRE ROPE REMOVAL

WARNING: EACH STEP OUTLINED BELOW MUST BE FOLLOWED FOR PROTECTION AGAINST ELECTRICAL SHOCK.

1. DISCONNECT ALL ELECTRICAL POWER FROM THE HOIST.
2. Remove control cover and gasket by loosening the four control cover mounting screws. See page 31.

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Yale® Hoists

3. Reposition locking plate (See page 39) so that traveling nuts may be turned on the shaft. Rotate the lower traveling nut until it meets the upper traveling nut.
4. Replace control cover and hand tighten the four mounting screws.
5. Reconnect electrical power.
6. Run hoist in lowering direction until wire rope is completely unwound from drum.
7. DISCONNECT ELECTRICAL POWER.
8. Remove rope end attachments and remove rope from hoist.

MOTOR REMOVAL

WARNING: DISCONNECT ALL ELECTRICAL POWER BEFORE ATTEMPTING MOTOR REMOVAL.

KEW motor leads are connected inside one of the outlets illustrated below.

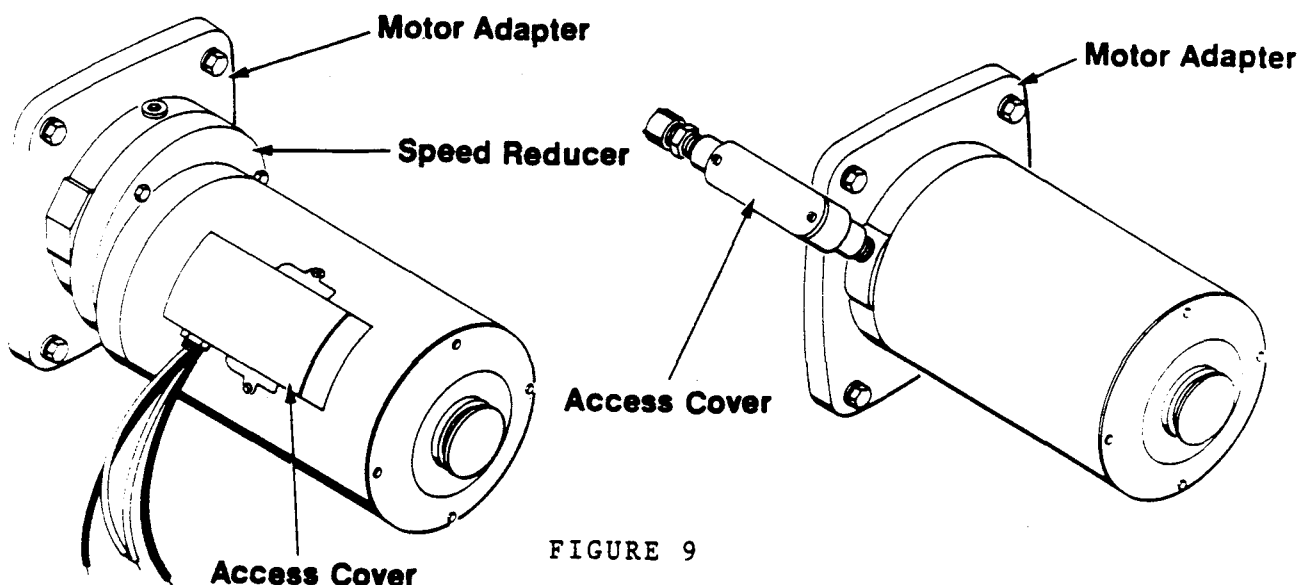


FIGURE 9

(a) Motor outlet connected to motor cover

(b) Motor outlet connected to motor adapter

All motor leads must be disconnected before motor removal. Leads must be cut and tagged in a manner which allows re-stripping and reconnecting after repair.

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Yale® Hoists

1. Remove access cover exposing motor leads.
2. Tag or number leads so they may be properly reconnected.
3. Cut motor leads.
4. If applicable, remove motor outlet (See (a) Page 21) from motor by removing the two slotted screws.
5. Loosen the four thru-bolts which attach the motor to the motor adapter. Remove the motor cover and stator. Care should be taken to avoid damaging wires.
- 5a. UNITS WITHOUT SPEED REDUCER: Rotor and rotor shaft should come out with stator and cover. If not, remove the rotor, shaft, and bearing. (See page 21).
- 5b. UNIT WITH SPEED REDUCER (See Page 21).
 1. Remove the four screws which attach speed reducer.
 2. Remove snap ring and spur gear from speed reducer and remove rotor and shaft. The bearing should come out with the shaft -- if not, remove bearing.
 3. Remove pipe plug from motor adapter and drive out grooved pin from shaft spur gear.
 4. Remove spur gear. Loosen conduit connection at outlet so that outlet will remain attached to motor adapter.
 5. Loosen the four motor adapter mounting screws and remove the motor adapter.
 6. Remove retaining ring and bearing if necessary.

GEAR CASE COVER REMOVAL

NOTE: New Gaskets Should Be Installed During Reassembly To Prevent Oil Leakage.

1. Remove control cover by loosening the four control cover mounting screws. (See Page 31).
2. Disconnect all electrical leads which pass through housing cut-out.
3. Remove motor brake grip ring from end of shaft (Item 41, Page 32).

NOTE: Individual Control Components, Motor Brake, Or Limit Switch May be Removed, If Necessary, At This Point.

4. Remove the seven self-tapping screws from the gear case cover and remove the gear case cover. CARE SHOULD BE TAKEN TO AVOID DAMAGE TO ELECTRICAL LEADS.

DRUM REMOVAL

NOTE: Wire Rope Must Be Removed Before Attempting Drum Removal.

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1. Remove motor (and speed reducers, if applicable). See motor removal.
2. If motor outlet is connected to motor adapter, loosen conduit connection so outlet will be removed with motor adapter.
3. Remove motor adapter by removing the four screws which attach the adapter to the frame. Drive shaft and bearing should come out with motor adapter. If not, remove drive shaft and bearing.
4. Remove drum and drum bearing by sliding drum through frame.

GEAR TRAIN REMOVAL

NOTE: Complete Disassembly Requires Drum Removal

1. Remove control cover and gear case cover. (See gear case cover removal).
2. Remove retaining ring from first reduction gear and pull off gear. (See Page 32).
3. Remove the three bearing retaining screws and pull out second reduction pinion.
4. Remove the two allen screws locking the sheave shaft nut and remove the nut (Left hand threads). Other shaft components may now be removed. (Rotate overload clutch assembly to right to remove).

WARNING: DO NOT ATTEMPT TO DISASSEMBLE THE LOAD BRAKE ASSEMBLY OR THE OVERLOAD CLUTCH AND SECOND REDUCTION GEAR ASSEMBLY. THESE ARE CALIBRATED AT THE FACTORY AND SPARE PARTS CANNOT BE OBTAINED SEPARATELY. ANY ALTERATION MAY RESULT IN HOIST MALFUNCTION OR BODILY INJURY.

5. Driving pinion may be removed by removing retaining ring on drum end of shaft. Bearing seal may be removed by removing retaining ring inside output shaft.
6. Leave output shaft attached to frame unless maintenance requires removal.
7. Remove output shaft and bearing. Care should be taken to avoid damaging seal in gear case.
8. To remove drum bearing gently tap on bearing from the gear case side.
9. Gently tap out oil seal from drum side. New seal must be installed during reassembly.

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Yale® Hoists

INSTRUCTIONS FOR REASSEMBLY

NOTE: Oil Seals Are Delicate And Are Easily Distorted Or Cut During Installation. Cover Serrations With Masking Tape And Lubricate All Seals When Assembling.

GEAR TRAIN (See Page 32).

1. If drum bearing was removed, replace bearing.
2. Install the output shaft, seal and bearing.
3. Install the seal (new), driving pinion, bearing and snap ring inside drum end of output shaft.
4. Slide the driving pinion through the seal and bearing and attach the retaining ring. Care should be taken to avoid damage to the seal.
5. Install the shaft components (See Page 32) and shaft nut. When installing the left-hand threaded shaft nut, be sure overload clutch assembly is screwed completely onto the shaft. Hand tighten the shaft nut, then back off for alignment with nearest locking screw hold.

CAUTION DO NOT USE WRENCH OR PLIERS TO TIGHTEN SHAFT NUT.

6. Lock shaft nut with the two allen screws.
7. Install second reduction pinion, bearing and bearing retaining screws. Insure that bearing on opposite end does not fall off during installation.
8. Install first reduction gear and retaining ring.
9. Replace driving pinion bearing.

DRUM INSTALLATION

NOTE: Make sure output shaft and driving pinion are properly installed before installing drum.

1. Insert drum and drum bearing into position through hole in motor end of frame.
2. Place drive shaft through center of drum. Align drive shaft and driving pinion and press together.
3. After drive shaft is properly aligned, install motor adapter and motor. See Motor Replacement.

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GEAR CASE COVER INSTALLATION

1. After gear train and drum are installed, install new gear case cover gasket.
2. Hold gear cover in place and pull electrical leads through housing cut-out.
3. Install the self-tapping gear case screws and tighten to 115-125 inch lbs.
4. Replace individual components. See correct wiring diagram.

CAUTION: BE SURE LEADS ARE RECONNECTED FOR PROPER VOLTAGE IF UNIT HAS DUAL VOLTAGE CAPABILITIES.

5. Replace motor brake grip ring. Insure motor brake drive block is properly seated.
6. Replace control cover if rope was removed, leave control cover screws loose until rope has been replaced and limit switch adjusted.

MOTOR INSTALLATION

A. UNITS WITH SPEED REDUCER

1. Install motor adapter to frame with the four hex screws.
2. Align drive shaft and press bearing into place. Install retainer ring.
3. Attach spur gear to drive shaft with grooved pin.
4. Position rotor, shaft and bearing in speed reducer. Replace spur gear and snap ring.
5. Attach speed reducer assembly to motor adapter and secure with the four mounting screws.
6. Slide motor cover and stator over the rotor, positioning motor leads for reconnection.
7. Secure motor cover with the four hex screws.
8. Replace motor outlet and reconnect motor leads according to applicable wiring diagram.
9. Replace outlet cover.

B. UNITS WITHOUT SPEED REDUCER

1. Attach motor adapter to frame with the four hex screws. Make sure outlet is in proper position for rewiring.
2. Insert rotor bearing into motor adapter.
3. Insert rotor through rotor bearing and into drive shaft.
4. Tape motor leads together and position motor stator and cover onto rotor so that leads may be pulled through outlet or housing.
5. Carefully pull motor leads through opening as motor is positioned against motor adapter.

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6. Secure motor cover and stator to adapter with the four hex screws.
7. Remove tape from motor leads and reconnect according to numbers. Tighten conduit connection if applicable.
8. Replace access cover.

WIRE ROPE REPLACEMENT

See Page 15, "Procedure for reeving wire rope on the drum." Replace control cover after limit switch is adjusted. Fill gear case to level plug with proper lubricant before operating hoist - See Lubrication Page 9.

FUNCTION TEST AFTER REPAIR

See page 8.

When Replacement Parts Are Needed, Order Only Yale® Factory Engineered Parts

Duff-Norton**Yale® Hoists****REPAIR PARTS****RECOMMENDED SPARE PARTS**

1. MOTOR BRAKE SOLENOID (See Table 5 Page 34).
2. CONTACTOR MAGNETIC COILS (See Page 46 and 47).
3. CONTACTOR PARTS KIT (See Page _____).
4. WIRE ROPE (See Parts Page 29A).
5. HOOK LATCH KIT (See Parts Pages 35, 36 and 37).

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TYPICAL KW SERIES COMPONENTS

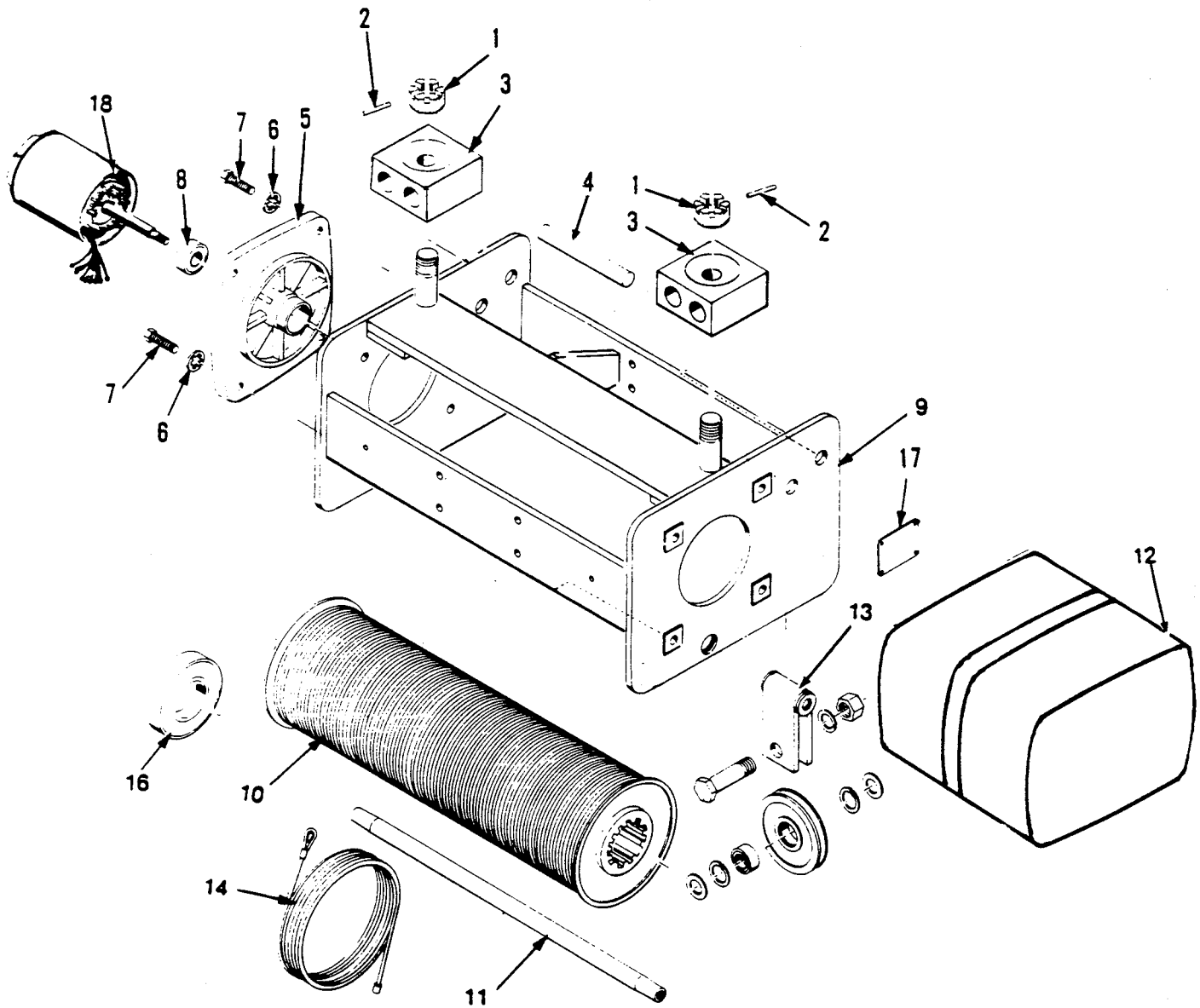
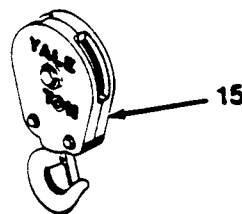


FIGURE 16



When Replacement Parts Are Needed, Order Only Yale® Factory Engineered Parts

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REPAIR PARTS
SUSPENSION PARTS

ITEM	PART NUMBER	DESCRIPTION	QTY.
1A	6437963-00	SLOTTED NUT (SPHERICAL)	2
1B	0106714-00	SLOTTED NUT USE N/3B	2
2	0230242-00	ROLL PIN	2
3A	6437953-00	SUSPENSION BLOCK	2
3B	6457244-00	SUSPENSION CHANNEL NOTCHED 19 FOOT LIFT (RIGID TROLLEY)	1
4	SEE REEVING KIT	YOKE PIN (S4 ONLY) PAGE 30	1
5	SEE TABLE 2C	MOTOR ADAPTER PAGE 38	1
6	0150326-00	LOCK WASHER	8
7	0554850-00	BOLT	4
8	SEE TABLE 2C	MOTOR SHAFT BEARING PAGE 38	1
9	SEE TABLE 1	SUSPENSION FRAME PAGE 29A	
10	SEE TABLE 1	DRUM PAGE 29A	1
11	SEE TABLE 1	DRIVE SHAFT PAGE 29A	1
12	SEE TABLE 1	GEAR CASE ASSEMBLY PAGE 29A	1
13	SEE TABLE 1	REEVING KIT PAGE 29A	1
14	SEE TABLE 1	ROPE ASSEMBLY PAGE 29A	1
15	SEE TABLE 1	BOTTOM BLOCK ASSEMBLY PAGE 29A	1
16	0151275-00	DRUM BEARING	1
17		NAMEPLATE	1
18	SEE TABLE 2A	MOTOR, KEW- PAGE 38	
18A	SEE TABLE 2B	MOTOR, KEWX PAGE 38	

When Replacement Parts Are Needed, Order Only Yale® Factory Engineered Parts

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TABLE 1

HOIST MODEL	FRAME	DRUM	DRIVE SHAFT	GEAR * CASE	REEVING* KIT	ROPE ASSEMBLY	BOTTOM * BLOCK
KEW 1/2 - 19 ** 15S2	640926701	644036601	645708401	648318211	015016000	641487200	060573800
KEW 1/2 - 19 ** 30S2	640926701	644036601	645708401	648318213	015016000	641487200	060573800
KEW 1/2 - 35 ** 15S2	640926702	644036602	645708402	648318211	015016000	641488200	060573800
KEW 1/2 - 35 ** 30S2	640926702	644036602	645708402	648318213	015016000	641488200	060573800
KEW 1/2 X 60 ** 30S2	646041402	646042400	646054403	648328201	648323221	648325201	060573800
KEW 1 - 19 ** 15S2	640926701	644036601	645708401	648318221	015016000	641487200	060573900
KEW 1 - 19 ** 30S2	640926701	644036601	645708401	648318221	015016000	641487200	060573900
KEW 1 - 35 ** 15S2	640926702	644036602	645708402	648318221	015016000	641488200	060573900
KEW 1 - 35 ** 30S2	640926702	644036602	645708402	648318221	015016000	641488200	060573900
KEW 1 X 60 ** 30S2	646041402	646042400	646054403	648328202	648323221	648325201	060573900
KEW 2 - 16 ** 7.5S4	640927702	644036602	645708402	648318221	648320214	641488200	010155700
KEW 2 - 16 ** 15S4	640927702	644036602	645708402	648318221	648320214	641488200	010155700
KEW 2 X 20 ** 15S4	646041400	646042400	646054402	648328202	648323241	648325202	010155700
KEW 2 X 30 ** 15S4	646041401	646042401	646054403	648328202	648323241	648325203	010155700
KEW 1/2 - 16 ** 15D2	640905701	644033611	645708402	648318211	648320223	641420201	642751601
KEW 1/2 - 16 ** 30D2	640905701	644033611	645708402	648318213	648320223	641420201	642751601
KEW 1/2 X 36 ** 30D2	646043400	646013400	646054400	648328201	648323222	648326201	642751601
KEW 1/2 X 54 ** 30D2	646043401	646013401	646054401	648328201	648323222	648326202	642751601
KEW 1 - 16 ** 15D2	640905701	644033611	645708402	648318221	648320223	641420201	642751602
KEW 1 - 16 ** 30D2	640905701	644033611	645708402	648318221	648320223	641420201	642751602
KEW 1 X 36 ** 30D2	646043400	646013400	646054400	648328202	648323222	648326201	642751602
KEW 1 X 54 ** 30D2	646043401	646013401	646054401	648328202	648323222	648326202	642751602
KEW 2 X 18 ** 15D4	645995400	646013400	646054400	648328202	648323242	648326203	642750600
KEW 2 X 27 ** 15D4	645995401	646013401	646054401	648328202	648323242	648326204	642750600

* SEE APPROPRIATE SECTION

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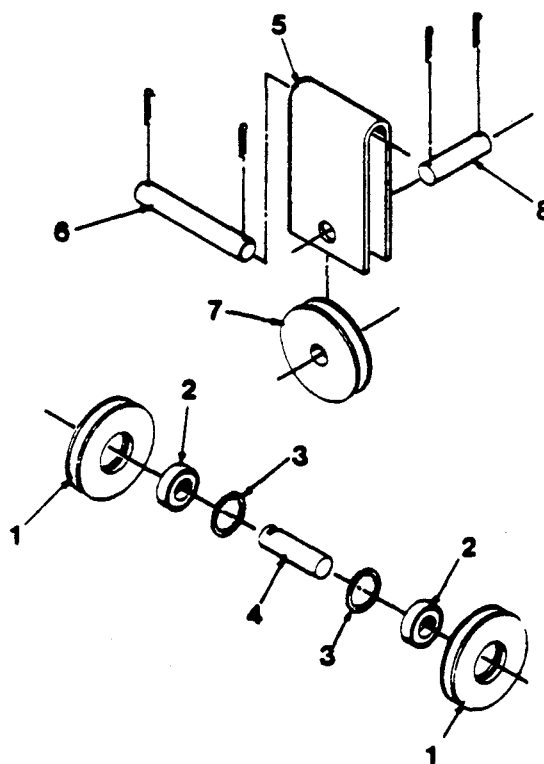
Yale® Hoists

REPAIR PARTS

REEVING KIT

TABLE 1A

	S2	S4	D2	D4
	0150160-00	6483202-14	6483232-23	
	&	&	&	
	6483232-11	6483232-41	6483232-22	6483232-42
1. IDLER SHEAVE	--	--	--	6445914-00
2. SHEAVE BEARING	--	0100808-00	--	6454318-00
2A. INNER RACE	--	--	--	6454298-00
3. RETAINING RING	--	0110017-00	--	
4. IDLER SHEAVE SHAFT	--		--	6451958-00
5. YOKE	--	6446864-00	6438043-00	6438043-00
6. YOKE/ANCHOR PIN	--	6445063-00	--	
7. EQUALIZER SHEAVE	--	0109965-01	6438053-00	6438053-00
8. SHEAVE PIN	--	6437903-00	6451958-00	6451958-00
9. NUT	0150160-00	--	--	--
10. WASHER	0535816-00	--	6452838-00	6452838-00



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GEAR CASE AND END COVER

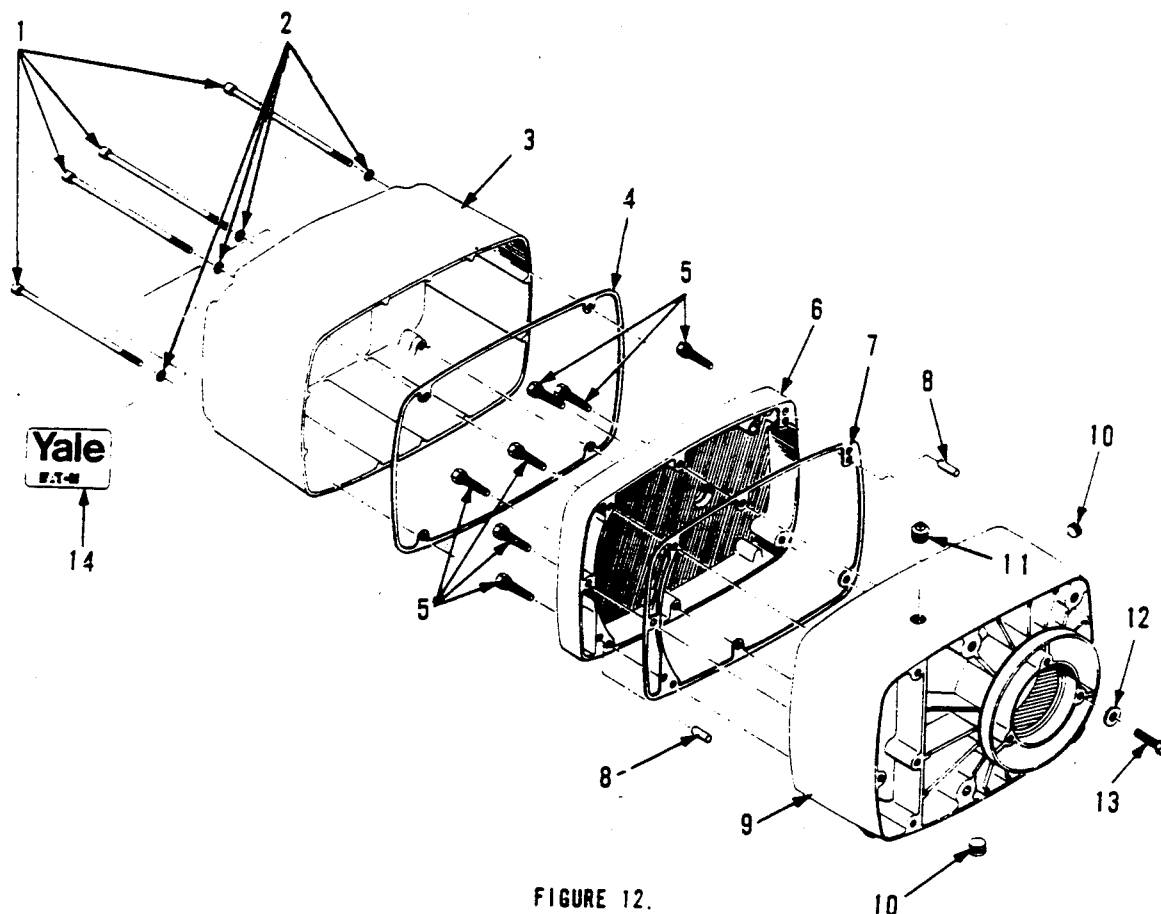


FIGURE 12.

ITEM NUMBER	PART NUMBER	DESCRIPTION	QTY.
1	6416611-00	COVER MOUNTING SCREW	4
2	6443488-00	FIBER WASHER	4
3	6403607-00	CONTROL COVER	1
4	6435574-00	CONTROL COVER GASKET	1
5	6401209-06	THREAD FORMING SCREW	7
6	6426056-00	GEAR CASE COVER	1
7	6435554-00	GEAR CASE COVER GASKET	1
8	0116531-00	DOWEL PIN	2
9	6405307-00	GEAR CASE	1
	6465474-00	GEAR CASE, KEWX	
10	0230810-00	OIL LEVEL AND DRAIN PLUG	2
11	6439518-00	BREATHER - FILL PLUG	1
12	6401269-02	WASHER	3
13	6401209-03	SCREW	3

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GEAR TRAIN AND MOTOR BRAKE

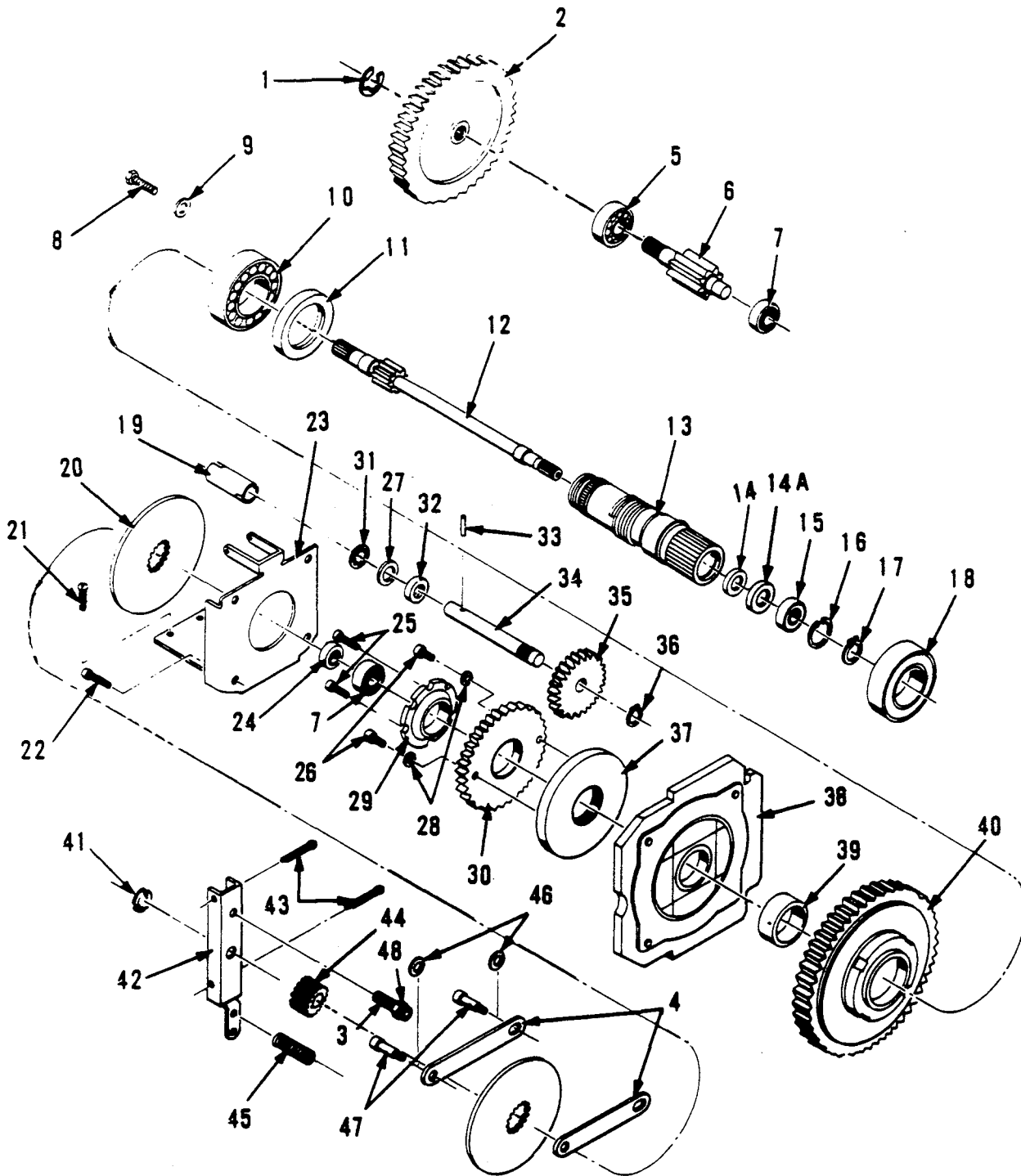


FIGURE 14.

When Replacement Parts Are Needed, Order Only Yale® Factory Engineered Parts

Yale® Hoists

GEAR TRAIN AND MOTOR BRAKE

ITEM NUMBER	PART NUMBER	DESCRIPTION	QTY.
1	0216767-00	RETAINING RING	1
2	SEE TABLE 3	H S GEAR	1
3	6401279-01	SOCKET SCREW	1
4	6416481-00	PLATE	2
5	0312756-00	BEARING	1
6	SEE TABLE 3	INT PINION	1
7	6400889-03	BEARING	2
8	6401209-05	HEX SCREW	3
9	0161036-00	WASHER	3
10	0151197-00	BEARING	1
11	6401229-01	SEAL	1
12-17	SEE TABLE 3		
18	0151275-00	DRUM BEARING	1
19	6451188-00	COUPLING	1
20	6488583-00	BRAKE DISC	2
21	6401209-07	SCREW	4
22	6401209-09	SCREW	2
23	6417316-00	BRACKET	1
24	6401219-01	SEAL	1
25	0656253-00	SCREW	2
26	6451658-00	BUTTON HEAD SCREW	2
27	0161037-00	WASHER	1
28	0656193-00	WASHER	2
29	6435913-00	JAM NUT	1
30	6436093-00	DRIVE GEAR FOR LIMIT SWITCH	1
31	6452168-00	RETAINER	1
32	6453718-00	SEAL	1
33	6401689-03	ROLL PIN	1
34	6451278-00	SHAFT	1
35	6436113-00	GEAR	1
36	0159144-00	RETAINING RING	1
37	6444664-00	FRICTION PLATE	1
38	6445384-00	LOAD BRAKE ASSEMBLY(Includes Item 39)	1
39	6416351-00	BUSHING	1
40	SEE TABLE 3	OVERLOAD CLUTCH ASSEMBLY	1
41	6401409-02	RETAINING RING	1
42	6423961-01	CHANNEL ASM (Includes Item 48)	1
43	0154201-00	COTTER PIN	2
44	6488573-01	DRIVE BLOCK	1
45	6416501-00	SPRING	1
46	0150359-00	LOCKWASHER	2
47	6416551-00	SHOULDER SCREW	2
48	6439608-00	CLINCH NUT	1
49	6470894-00	SCREW	1
50	0114305-01	WASHER	1
51	6470394-00	NUT NYLONE	1
52	0561668-00	SET SCREW	2

NOTE: Items 3,4,20,21,22,23, and 41 thru 48 not req'd. on KEW X Two-Speed.

When Replacement Parts Are Needed, Order Only Yale® Factory Engineered Parts

Yale Hoists

TABLE 3**GEAR CASE ASSEMBLY**

ITEM	DESC.	KEW 1/2 TON 648318211	KEW 1/2 TON 648318213	KEWX 1/2 TON 648328201	KEW 1 & 2 TON 648318221	KEWX 1 & 2 TON 648328202	QTY.
2	Gear	644507400	643738400	644507400	644507400	644507400	1
6	Pinion	643514400	643514400	646020400	643514400	646020400	1
12	Pinion	645649400	645647400	646022400	645649400	646022400	1
13	Shaft	644509400	644509400	646025400	644509400	646025400	1
14	Seal	645160800	645160800	646035400	645160800	646035400	1
14A	Seal	--	--	646034400	--	646034400	1
15	Bearing	O10083600	O10083600	646033400	O10083600	646033400	1
16	R/Ring	640123902	640123902	O15915100	640123902	O15915100	1
17	R/Ring	O64570500	O64570500	646036400	O64570500	646036400	1
40	Clutch	644539401	644539401	646019401	644539402	646019402	1

When Replacement Parts Are Needed, Order Only Yale Factory Engineered Parts

REVISED JANUARY, 1993

33A

KEW SERIES

Duff-Norton

Yale® Hoists

**KEW SERIES 1/2 - 1 AND 2 Ton
MOTOR BRAKE**

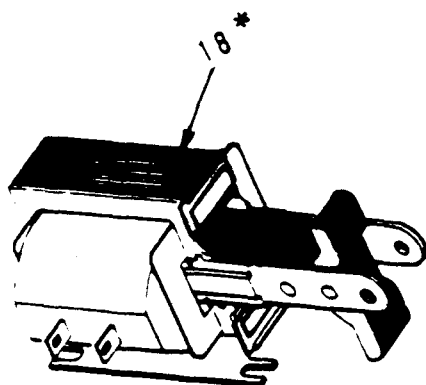
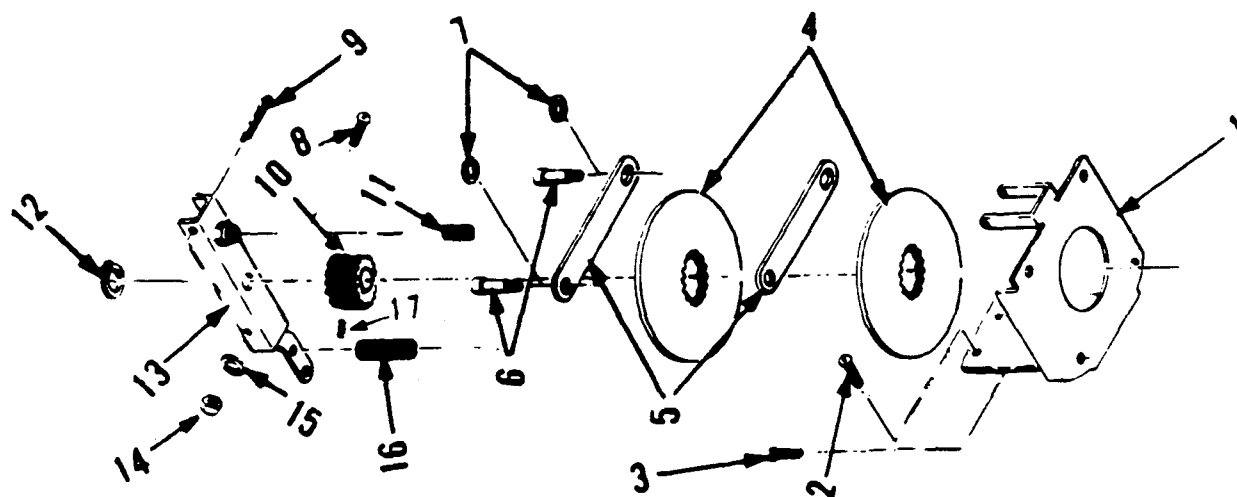


TABLE 5 MOTOR BRAKE SOLENOID ASSEMBLY

VOLTAGE	HERTZ	PART NUMBER
**115	60	6439508-00
**230	60	6439548-00
200	60	6439808-00
460	60	6441658-00
575	60	6439818-00

When Replacement Parts Are Needed, Order Only Yale® Factory Engineered Parts

Duff-Norton

Yale® Hoists

REPAIR PARTS

KEW SERIES 1/2 - 1 AND 2 TON

MOTOR BRAKE

ITEM	PART NO.	DESCRIPTION	QTY.
1	6417316-00	BRACKET	1
2	6401209-07	SCREW (TORQ. 25 TO 30 IN/LBS)	4
3	6401209-09	SCREW (TORQ. 50 TO 60 IN/LBS)	2
4	6488583-00	BRAKE DISC	2
5	6416481-00	PLATE	2
6	6416551-00	SHOLDER SCREW (TORQ. 50 TO 60 IN/LBS)	2
7	0150359-00	LOCKWASHER	2
8	6470984-00	SCREW	1
9	6401999-01	COTTER PIN	1
10	6488573-00	BRAKE DRIVE BLOCK	1
11	6401279-01	SOCKET SCREW	1
12	6401409-02	RETAINING RING	1
13	6423961-01	CHANNEL ASSEMBLY	1
14	6470394-00	NUT NYLON	1
15	0114305-01	WASHER	3
16	6416501-00	SPRING	2
17	0561668-00	SET SCREW	2
18	SEE TABLE 5 MTR MRK SOLENOID ASM.		

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Yale® Hoists

BOTTOM BLOCK ASSEMBLY (1/2 and 1 Ton, 2 Part Single Hoists)

ASSEMBLIES 0605738-00 1/2 TON
0605739-00 1 TON

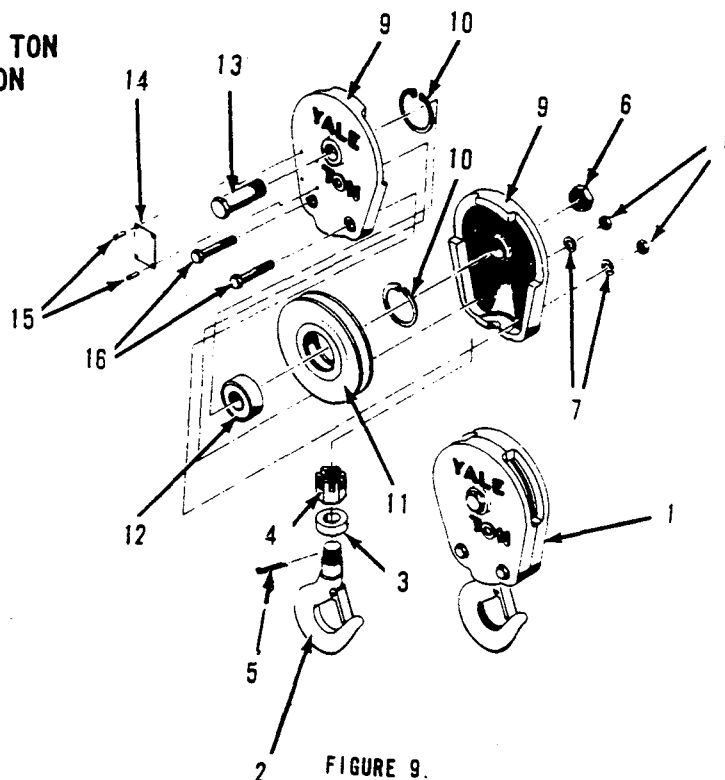


FIGURE 9.

ITEM NUMBER	PART NUMBER 1/2 TON	PART NUMBER 1 TON	DESCRIPTION	QTY.
1	060573800	060573900	BTM BLOCK ASM. W/STD. HOOK	1
	064303900	641471200	BTM BLOCK ASM. W/BRZ. HOOK	
	642323200	649740000	BTM BLOCK ASM. W/BULLARD HOOK	
2	647581000	647583000	LOWER HOOK ASM. STD.	1
	649714000	646377200	LOWER HOOK ASM. BRZ	
	644024300	645073400	LOWER HOOK. BULLARD	
3	0100851-00	0100852-00	HOOK BEARING	1
4	0106663-00	0652673-00	SLOTTED NUT	1
5	0154184-00	0154184-00	COTTER PIN	1
6	0106685-00	0106685-00	NUT, 3/4 - 16	1
7	0150262-00	0150262-00	LOCKWASHER	2
8	0149708-00	0149708-00	NUT	2
9	6414394-00	6414394-01	BLOCK HALF	2
10	0110017-00	0110017-00	RETAINING RING	2
11	0109965-00	0109965-00	SHEAVE	1
12	0100808-00	0100808-00	BEARING, SHEAVE	1
13	0107023-00	0107023-00	SHEAVE PIN	1
14	0595021-00	0595028-00	CAPACITY PLATE	2
15	0209149-00	0209149-00	ROUND HEAD SCREW	4
16	0629135-00	0629135-00	SCREW	2
17	0669400-00	0669402-00	LATCH KIT (Includes Latch, Spring and Rivet)	1

* Includes Hook, Nut, Latch, Bearing And Roll Pin.

** Bullard Hooks Do Not Require Latch Kit.

When Replacement Parts Are Needed, Order Only Yale® Factory Engineered Parts

Duff-Norton

Yale® Hoists

BOTTOM BLOCK ASSEMBLY (4 Part Single - 2 Ton)

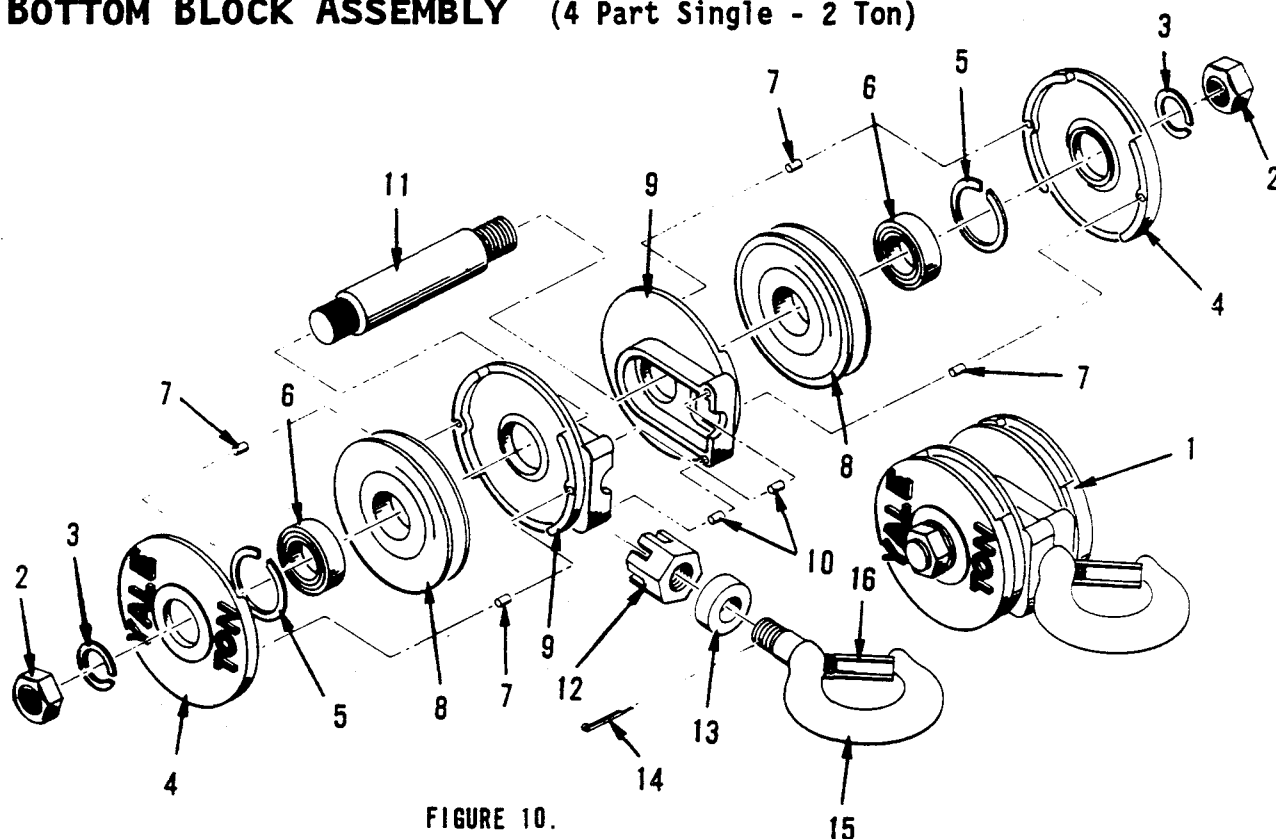


FIGURE 10.

ITEM NUMBER	PART NUMBER	DESCRIPTION	QTY.
1	010155700 503716000 643465200	BTM BLOCK W/STD. HOOK BTM BLOCK W/BRZ. HOOK BTM BLOCK W/BULLARD HOOK	1
2	014971500	NUT	2
3	015029600	LOCKWASHER	2
4	066665400	BTM. BLOCK COVER	2
5	500343912	RETAINING RING	2
6	015128300	BEARING	2
7	011652600	DOWEL PIN	4
8	010989200	BOTTOM BLOCK SHEAVE	2
9	022108900	CENTER HALF	2
10	011653100	DOWEL PIN	2
11	010986600	SHAFT	1
12	062901400	SLOTTED NUT	1
13	022067700	BEARING	1
14	023025000	ROLL PIN	1
15	* 647586000 * 066791400 644751400	LOWER HOOK ASM. STD. HOOK LOWER HOOK ASM. BRZ. HOOK LOWER HOOK, BULLARD	
16	066940300	LATCH KIT (INCLUDE SPRING AND RIVET)	1
17	063341200	NUMERAL 2	2
18	014989600	DRIVE SCREW	4

* INCLUDES HOOK, NUT, LATCH, BEARING AND ROLL PIN.

** BULLARD HOOKS DO NOT REQUIRE LATCH KITS.

When Replacement Parts Are Needed, Order Only Yale® Factory Engineered Parts

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Yale® Hoists

BOTTOM BLOCK ASSEMBLY (2 and 4 Part Double - 1/2, 1, and 2 Ton)

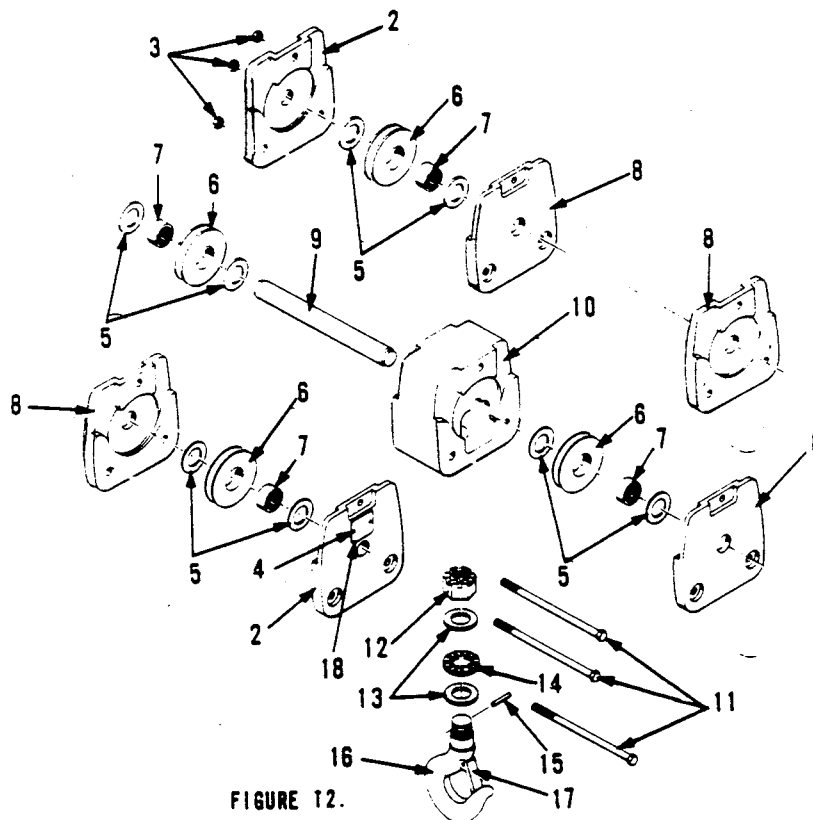


FIGURE 12.

ITEM NO.	PART NO. 1/2TON 2PD	QTY	PART NO. 1 TON 2PD	QTY	PART NO. 2 TON 4PD	QTY	DESCRIPTION
1	6427516-01	1	6427516-02	1	6427506-00	1	BTM.BLK.ASM.STD. HOOK
	6483522-00	1	6487792-00	1	6487802-00	1	BTM.BLK.ASM.BRZ. HOOK
	6413932-00	1	6413542-00	1	6415472-00	1	BTM.BLK.ASM. BULLARD HOOK
2	6429056-00	2	6429054-00	2	6429056-00	2	SHEAVE COVER
3	0150153-00	3	0150153-00	3	0150153-00	3	LOCKNUT
4	0149887-00	4	0149887-00	4	0149887-00	4	DRIVE RIVET
5	6452818-00	4	6452818-00	4	6452818-00	8	THRUST BEARING
6	6445954-00	2	6445954-00	2	6445954-00	4	SHEAVE
7	6452798-00	2	6452798-00	2	6452798-00	4	BEARING
8	---	---	---	---	6445934-00	4	SHEAVE COVER
9	6436943-01	1	6436943-01	1	6436943-02	1	SHAFT
10	6429066-00	1	6429066-00	1	6429066-00	1	BOTTOM BLOCK CENTER
11	0588012-00	3	0588012-00	3	6401929-01	3	HEX BOLT
12	0629014-00	1	0629014-00	1	0629014-00	1	SLOTTED NUT
13	6452968-00	2	6452968-00	2	6452968-00	2	BEARING RACE
14	6452958-00	1	6452958-00	1	6452958-00	1	BEARING
15	0230250-00	1	0230250-00	1	0230250-00	1	ROLL PIN
16	*6498490-00	1	6498490-00	1	6498480-00	1	LOWER HOOK ASM. STD. HOOK
	*0667915-00	1	0667915-00	1	0667915-00	1	LOWER HOOK ASM. BRZ. HOOK
	6447514-00	1	6447514-00	1	6447514-00	1	LOWER HOOK, BULLARD
17	0669403-00	1	0669403-00	1	0669403-00	1	LATCH KIT
18	0595021-00	2	0595020-00	2	0595029-00	2	CAPACITY PLATE

* INCLUDES HOOK, NUT, BEARING, BEARING RACE, ROLL PIN & LATCH KIT.

When Replacement Parts Are Needed, Order Only Yale® Factory Engineered Parts

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Yale® Hoists

TABLE 2A KEW - MOTORS *

HORSEPOWER	RPM	VOLTAGE	PHASE	HERTZ	MOTOR NUMBER	
					CLASS B INSUL	CLASS H INSUL
.5	1800	115/230	1	60	643773800	648619300
1.0	1800	200	1	60	643998800	
1.0	1800	115/230	1	60	643767800	
1.0	1800	230/460	3	60	643968800	646200800
1.0	1800	MULTI	3	60	646375300	649956300
1.0	1800/600	200	3	60	644045800	
1.0	1800/600	230	3	60	644043800	
1.0	1800/600	460	3	60	644044800	646234800
1.0	1800/600	575	3	60	644046800	
2.0	3600	230/460	3	60	644417800	645526800
2.0	3600	MULTI	3	60	646376300	
2.0	3600/900	200	3	60	647342300	
2.0	3600/900	230	3	60	647343300	
2.0	3600/900	460	3	60	647344300	
2.0	3600/900	575	3	60	647345300	
3.0	3600	230/460	3	60	644836800	646041800
3.0	3600	MULTI	3	60	646377300	649773300

TABLE 2B KEWX MOTORS *

HORSEPOWER	RPM	VOLTAGE	PHASE	HERTZ	MOTOR NUMBER	
					CLASS H INSUL	
2.0	1800	200	3	60	646412100	
2.0	1800	230/460	3	60	644729800	
2.0	1800	575	3	60	646622800	
2.0	1800/600	200	3	60	646296400	**
2.0	1800/600	230	3	60	646297400	**
2.0	1800/600	460	3	60	646298400	**
2.0	1800/600	575	3	60	646299400	**

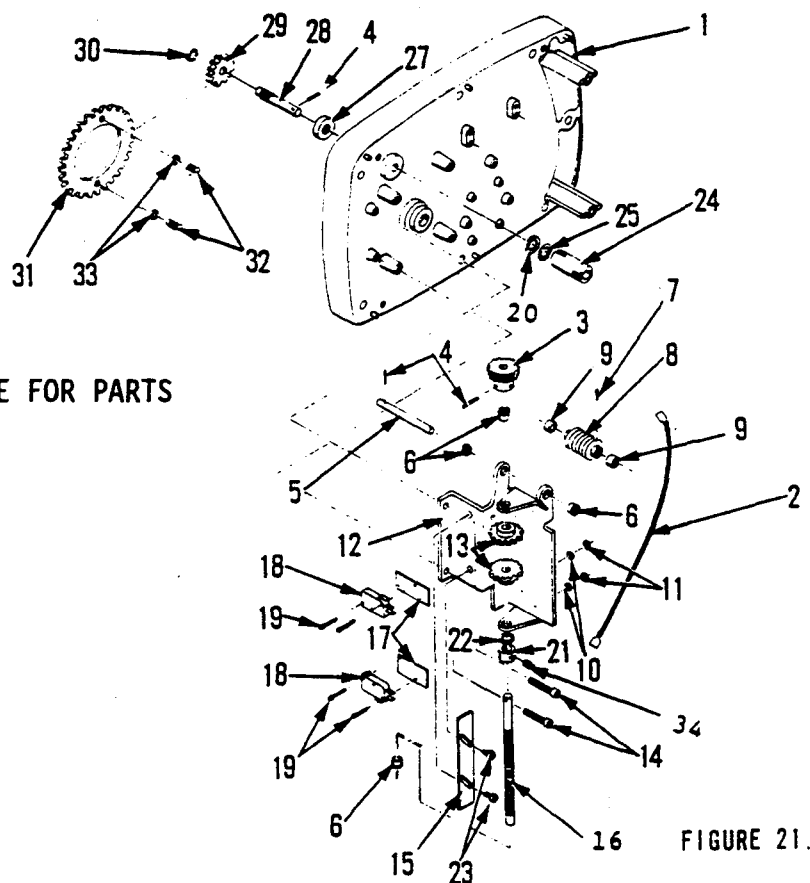
** TWO-SPEED MOTORS ARE WITH BRAKE

TABLE 2C

DESCRIPTION		MOTOR ADAPTER NUMBER	MOTOR SHAFT BEARING
KEW-	OPEN FRAME	642964602	022061000
KEWX	SINGLE SPEED	646018400	646039400
KEWX	TWO SPEED	646285400	646039400

* TO INSURE THAT THE CORRECT MOTOR PART NUMBER HAS BEEN SELECTED, REFER TO THE NAMEPLATE LOCATED ON THE MOTOR.

When Replacement Parts Are Needed, Order Only Yale® Factory Engineered Parts

Duff-Norton
Yale® Hoists
LIMIT SWITCH (Adjustable Upper and Lower)


SEE REVERSE SIDE FOR PARTS LISTING

FIGURE 21.

ADJUSTMENT OF LIMIT SWITCH

WARNING: EACH STEP OUTLINED BELOW MUST BE FOLLOWED FOR PROTECTION AGAINST ELECTRICAL SHOCK AND INJURY FROM MOVING COMPONENTS.

To adjust the limit switches, or to set them at other levels:

1. REMOVE ALL ELECTRICAL POWER FROM THE HOIST.
2. Loosen the four control cover screws and remove the control cover. (Items 1 thru 3 page 31).
3. Loosen the locking plate screws, slide plate from under the traveling cams, and turn both cams until they meet at the center of the shaft.
4. Slide the locking plate under the traveling cams.
5. Replace the control cover and hand tighten the four control screws.
6. Apply electrical power to the hoist.
7. Run hoist to the desired lower limit.

WARNING: AT LEAST 1 1/2 WRAPS OF ROPE MUST REMAIN ON THE DRUM AT LOWEST POSITION.

When Replacement Parts Are Needed, Order Only Yale® Factory Engineered Parts

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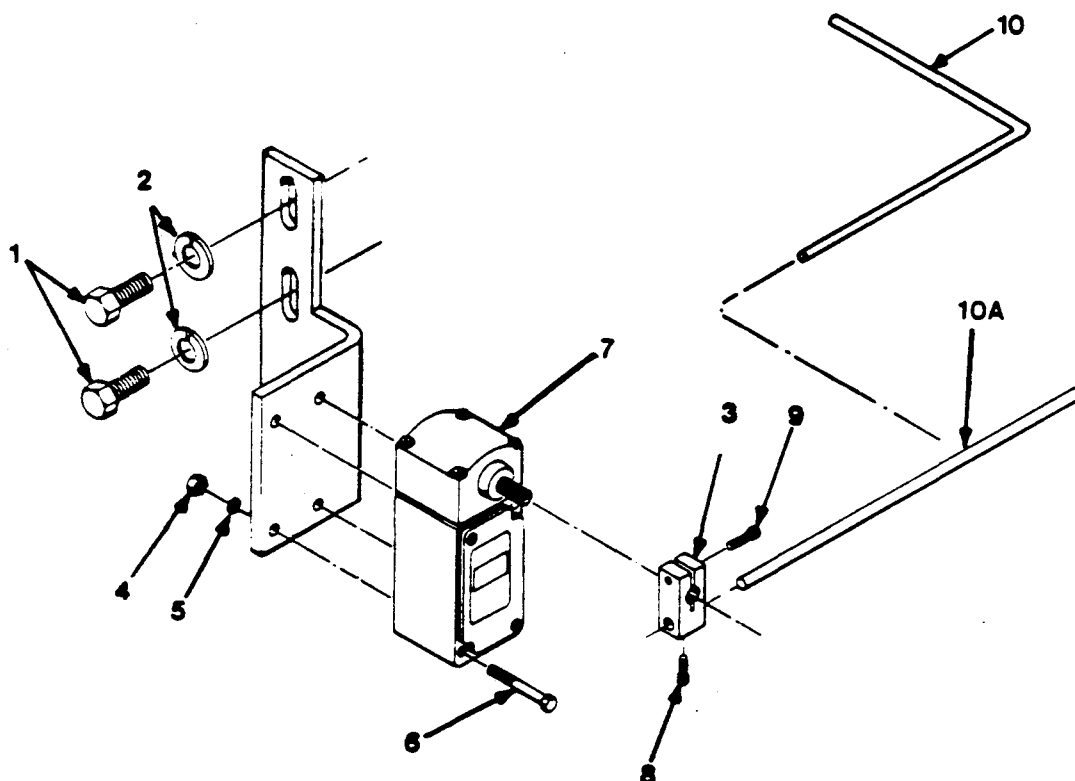
Yale® Hoists

LIMIT SWITCH (Adjustable Upper and Lower)

8. Remove electrical power from the hoist and remove the control cover.
9. Slide the locking plate from under the traveling cams.
10. Rotate the lower cam until it contacts the switch. Continue rotating until switch can be heard to trip.
11. Slide locking plate under traveling cams (slight adjustment of traveling cams may be necessary) and tighten locking plate screws.
12. Replace control cover and hand tighten control cover screws.
13. Apply power and check lower limit switch operation. If minor adjustment is necessary, repeat steps 8 through 13, rotating cam one step at a time until proper adjustment is accomplished.
14. Repeat steps 7 through 13 to adjust the upper limit switch. (By substituting "upper" for "lower" in steps 7 & 10).

ITEM NUMBER	PART NUMBER	DESCRIPTION	QTY.
1		GEAR CASE COVER (SEE ITEM 6 PAGE 31)	
2	6451968-04	JUMPER (FOR LIMIT SWITCH ASSEMBLY)	1
3	6419231-00	HELICAL GEAR	1
4	6401689-00	ROLL PIN	3
5	6451128-00	WORM SHAFT	1
6	6451648-00	BUSHING	4
7	0318061-00	ROLL PIN	1
8	6412921-00	WORM GEAR	1
9	6451208-00	WORM SPACER	2
10	5000309-02	WASHER	4
11	0326435-00	NUT	4
12	6445134-00	BRACKET	1
13	6440883-00	TRAVELING CAMS	2
14	6401209-05	SCREW	2
15	6440833-00	LOCKING PLATE	1
16	6443383-00	SHAFT	1
17	6450008-00	INSULATOR	2
18	6455998-00	MICRO-SWITCH	2
19	5004169-07	SCREW	4
20	6439233-00	DECAL (NOT SHOWN)	1
21	6459968-00	RETAINING COLLAR AND SET SCREW	1
22	0236034-00	WASHER	1
23	6401209-07	SCREWS	2
24	6451188-00	COUPLING	1
25	6452168-00	RETAINING RING	1
26	0161037-00	WASHER	1
27	6453718-00	SEAL	1
28	6451278-00	PINION SHAFT	1
29	6436113-00	DRIVE PINION	1
30	0159144-00	RETAINING RING	1
31	6436093-00	DRIVE GEAR	1
32	6451658-00	BUTTON HEAD SCREW	2
33	0656193-00	LOCKWASHER	2

When Replacement Parts Are Needed, Order Only Yale® Factory Engineered Parts

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Yale® Hoists
UPPER PLUGGING L/S




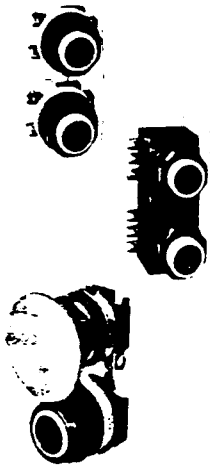




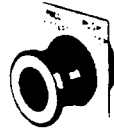

ITEM	PART NUMBER	DESCRIPTION	QTY.
1	0597115-00	BOLT 3/8-16 X 3/4 IN	2
2	0150264-00	LOCKWASHER 3/8 IN	2
3	6467791-00	HUB	1
4	0149393-00	NUT 10 - 32	2
5	0150285-00	LOCKWASHER NO. 10	2
6	0148768-00	MACHINE SCREW 10 - 32 X 2	2
7	6455291-00	LIMIT SWITCH	1
8	0656254-00	SCREW 10 - 32 X 3/8	1
9	0656255-00	SCREW 10 - 32 X 5/8	1
10	6457143-00	ROD, LIMIT SWITCH BENT D2-D4	1
10A	6483211-00	ROD, LIMIT SWITCH S2, S4	1
11	6495351-00	WEIGHT HALF (NOT SHOWN)	2

When Replacement Parts Are Needed, Order Only Yale® Factory Engineered Parts

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Yale® Hoists

PUSH BUTTON

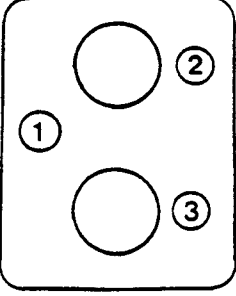
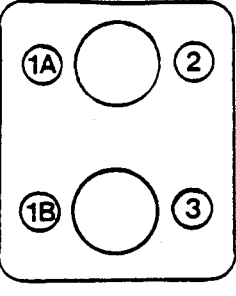
2740		Complete Station	Two Button S / Speed	Up-Down Fwd- Rev	6471993-00 6471993-00
			Two Button Two Speed	UP-DOWN FWD-REV	6469823-01 6469823-02
			Special Push Button Station		
		Enclosure (Less) (Elements)	Two Button Four Button Six Button Eight Button Ten Button		6452753-02 6452753-04 6452753-06 6452753-08 6452753-10
2750		Elements	Single Speed		6452763-01
			Two Speed		6452763-02
			Five Speed		6452763-05
			Maintained/ Momentary		6455953-00
		Selector Switch	Two Position Three Position		6463493-00 6482733-00
		Pilot Light	115 Volt Red		6455973-00
		Potentiometer	1000 Ohm		6451821-41
		Elements	Single Button		6456263-00
		Off/On Element	Locking Non-Locking		6455963-00 6448821-21
		Closing Plate			6452883-00

When Replacement Parts Are Needed, Order Only Yale® Factory Engineered Parts

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Yale® Hoists

**THESE NAMEPLATES ARE APPLICABLE TO P/B STATION
SHOWN IN SECTION 2740 ONLY**

2760	Component Number	Markings				
		1	1A	1B	2	3
	6452803-01	Hoist			Up	Down
	6452803-02	Trolley			East	West
	6452803-03	Trolley			Forward	Reverse
	6452803-04	Trolley			North	South
	6452803-05	Bridge			Foward	Reverse
	6452803-06	Bridge			East	West
	6452803-07	Bridge			North	South
	6452803-08				Start	Stop
	6452803-09				Reset	Stop
	6452803-10					
	6452803-11				Foward	Reverse
	6452803-12				North	South
	6452803-13				East	West
	6452803-14				In	Out
	6452803-15				Left	Right
	6452803-16	Crane			Forward	Reverse
	6452803-17				Off	On
	6452803-18				On	Off
	6452803-19				Stop	Start
	6452803-20				Stop	Reset
	6452803-21			Inch Slow		Run
	6452803-22					Fast

When Replacement Parts Are Needed, Order Only Yale® Factory Engineered Parts

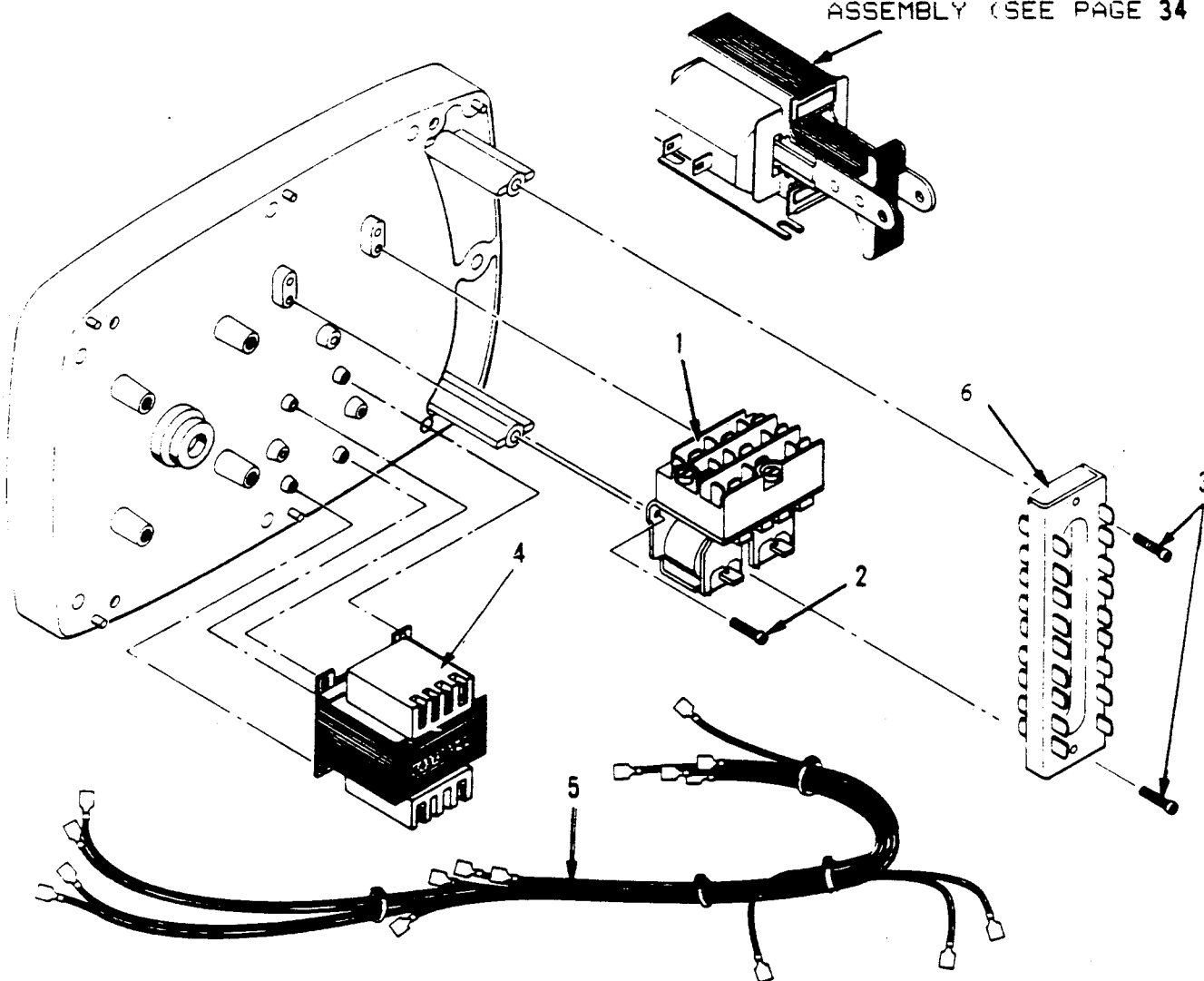
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Yale® Hoists

1/2, 1, 2, AND 3 Ton

ELECTRICAL CONTROLS - SINGLE SPEED

MOTOR BRAKE SOLENOID
ASSEMBLY (SEE PAGE 34)



- * Solenoid Coil Cannot be Purchased Separately.
- ** Dual Voltage Hoists Use Solenoid For Low Voltage.

When Replacement Parts Are Needed, Order Only Yale® Factory Engineered Parts

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Yale® Hoists

ITEM	PART NUMBER	DESCRIPTION	QTY
1A	6401559-01	REVERSING CONTACTOR 24V	1
1B	6401559-02	REVERSING CONTACTOR 115V	1
2	6401209-02	MOUNTING SCREW	3
3	6401209-17	MOUNTING SCREW	2
4	SEE TABLE	TRANSFORMER	1
5	6428756-00	WIRE HARNESS SINGLE PHASE	1
	6421006-00	WIRE HARNESS 230/460 3 PHASE	1
	6421016-00	WIRE HARNESS 200/575 3 PHASE	1
6	6440524-00	TERMINAL BLOCK 115/230-1-60	1
	6440534-00	TERMINAL BLOCK 230/460-3-60	1
7	SEE PAGE 34	MOTOR BRAKE SOLENOID ASSEMBLY	

SINGLE SPEED HOIST AND/OR TROLLEY ONLY GROUP A

VA	PRIMARY VOLTS	SECONDARY VOLTS	HERTZ	PART NO.	REPLACEMENT FUSE
25	115/230	24	50/60	6437393-01	N/R
	230/460	24	50/60	6437393-02	N/R
	115/230	110	50/60	6437393-03	N/R
	230/460	110	50/60	6437393-04	N/R
	200	24	50/60	6437393-05	N/R
	200	110	50/60	6437393-06	N/R
	575	24	50/60	6437393-07	N/R
	575	110	50/60	6437393-08	N/R

GROUP B

50	200	115	50/60	6478963-12	6458398-04
	230/460	115	50/60	6478963-13	6458398-04
	575	115	50/60	6478963-14	6458398-04
	200	24	50/60	6478963-16	6458398-11
	230/460	24	50/60	6478963-17	6458398-11
	575	24	50/60	6478963-18	6458398-11
150	200	115	50/60	6478963-22	6458398-08
	230/460	115	50/60	6478963-23	6458398-08
	575	115	50/60	6478963-24	6458398-08
	200	24	50/60	6478963-26	6458398-20
	230/460	24	50/60	6478963-27	6458398-20
	575	24	50/60	6478963-28	6458398-20

When Replacement Parts Are Needed, Order Only Yale® Factory Engineered Parts

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Yale® Hoists

AC REVERSING CONTACTORS

TYPES R0-1, R0-4, & R0-10

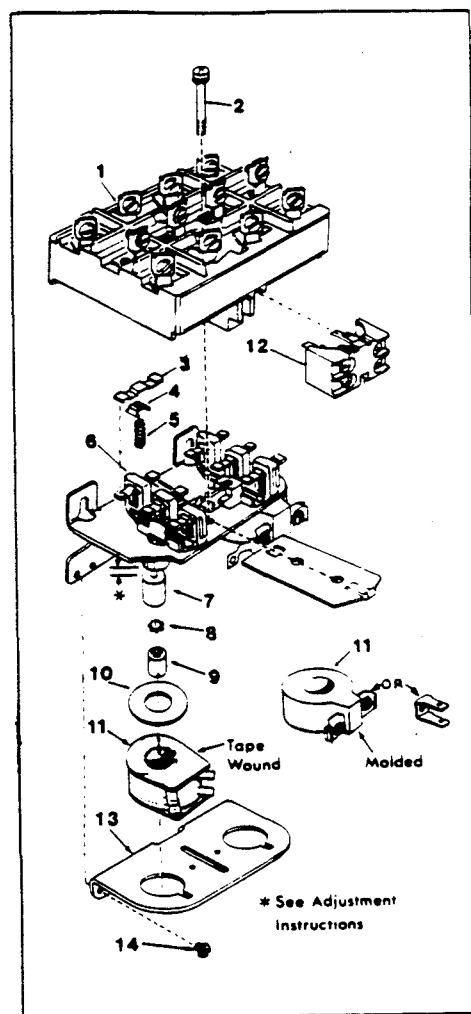
Contacts - are not harmed by discoloration and slight pitting. Do not file them as dressing only wastes contact material. Replacement is required only when the contact has worn thin.

Contact Inspection - Disconnect electrical power and remove all power wiring. Make note of the connections so they may be reconnected correctly.

Remove the stationary contact assembly (item 1) by loosening mounting screws (2) to expose the stationary and movable contacts. Movable contact finger (3) is removed by pulling straight out. Stationary contacts of newer contactors and of replacement kits are staked in place and cannot be individually replaced. The contact kit includes a stationary contact block assembly a set of movable contacts, a set of contact springs, and a set of spring retainers. The springs and retainers should always be replaced when new contacts are installed.

Coil Replacement - To replace coil (Item 11), disconnect electrical power and remove the wiring from the coil terminals. Remove the coil jumper connecting the two coils. Remove screws (14) holding the bottom plate (13). When the bottom plate is removed, the coils will drop freely. To replace coils, reverse the procedure. The bottom plate must engage the locating nibs on the base before the screws are installed.

Adjustment Instructions - If the solenoid armature is removed, it should be adjusted when reassembled by screwing the armature (7) to within 19/64" of the magnet core and locking with slotted nut (9) to 20 inch - pounds torque.



Repair parts for Square D Class 8965
Types R0-1, R0-4, and R0-10 contactors

Dwg. I.D.	Description	Qty.	Part No.
1-3-4-5	Contact kit	1	6489198-00
2	Contact block mtg. screw	2	6489218-00
6	Contact carrier	2	6489238-00
7-8-9	Armature assembly	2	6457238-04
10	Coil washer	2	6489278-00
14*	Bottom plate mtg. screw	2	#8-32 x 1/4"
12	Auxiliary contact N.O.	**	6446608-01
12	Auxiliary contact N.C.	**	6446608-02
11	Coil 24 volts	2	5030618-00
11	Coil 115 volts	2	5030628-00

* Standard hardware item - obtain locally.

** Optional accessory.

***Replacement contact block has slipon type terminals.

If other parts are required, the complete contactor should be replaced.

When Replacement Parts Are Needed, Order Only Yale® Factory Engineered Parts

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Yale® Hoists

PROCEDURE FOR REPLACING FURNACE CONTACTOR WITH SQUARE D CONTACTOR IN YALE KEW HOISTS

1. Remove all power from hoist. Remove hoist end cover.
2. Remove power leads, coil leads, and motor leads from both contactor and transformer. Be sure to identify these wires as they are disconnected.
3. Remove screws holding contactor and transformer to mounting plate. Discard furnace contactor, retain transformer and all hardware.
4. Remove and discard mounting plate, but retain hardware.
5. Observe gear case cover and locate two (2) angular bosses and one (1) round boss which the mounting plate had been bolted onto. These are the mounting lugs for the Square D contactor.
6. Below the contactor are four (4) round lugs arranged in a rectangular configuration. These are the mounting lugs for transformer.

NOTE: The hardware we use is self tapping, therefore, the holes in the mounting lugs are not tapped for the screws. Do not allow the amount of pressure required to tighten the screws lead you to believe the screws are tight against the components you are mounting on the hoist.

7. After completion of mounting the contactor and transformer connect the wiring to the appropriate terminals and double check before applying power to the hoist.

NOTE: The Square D contactor will not have any jumper wires as shipped from the parts depot. It is suggested you use the wires from the existing contactor. The numbering of the terminals on the contactors is identical so the jumper wires can be transferred directly from one contactor to the other.

8. After completing the wiring apply power to the hoist and perform a functional test of the hoist. If the hoist runs in the wrong direction, remove the power and switch any two of the three "L" leads.

When Replacement Parts Are Needed, Order Only Yale® Factory Engineered Parts

Duff-Norton

Yale® Hoists

ST TROLLEY ASSEMBLY

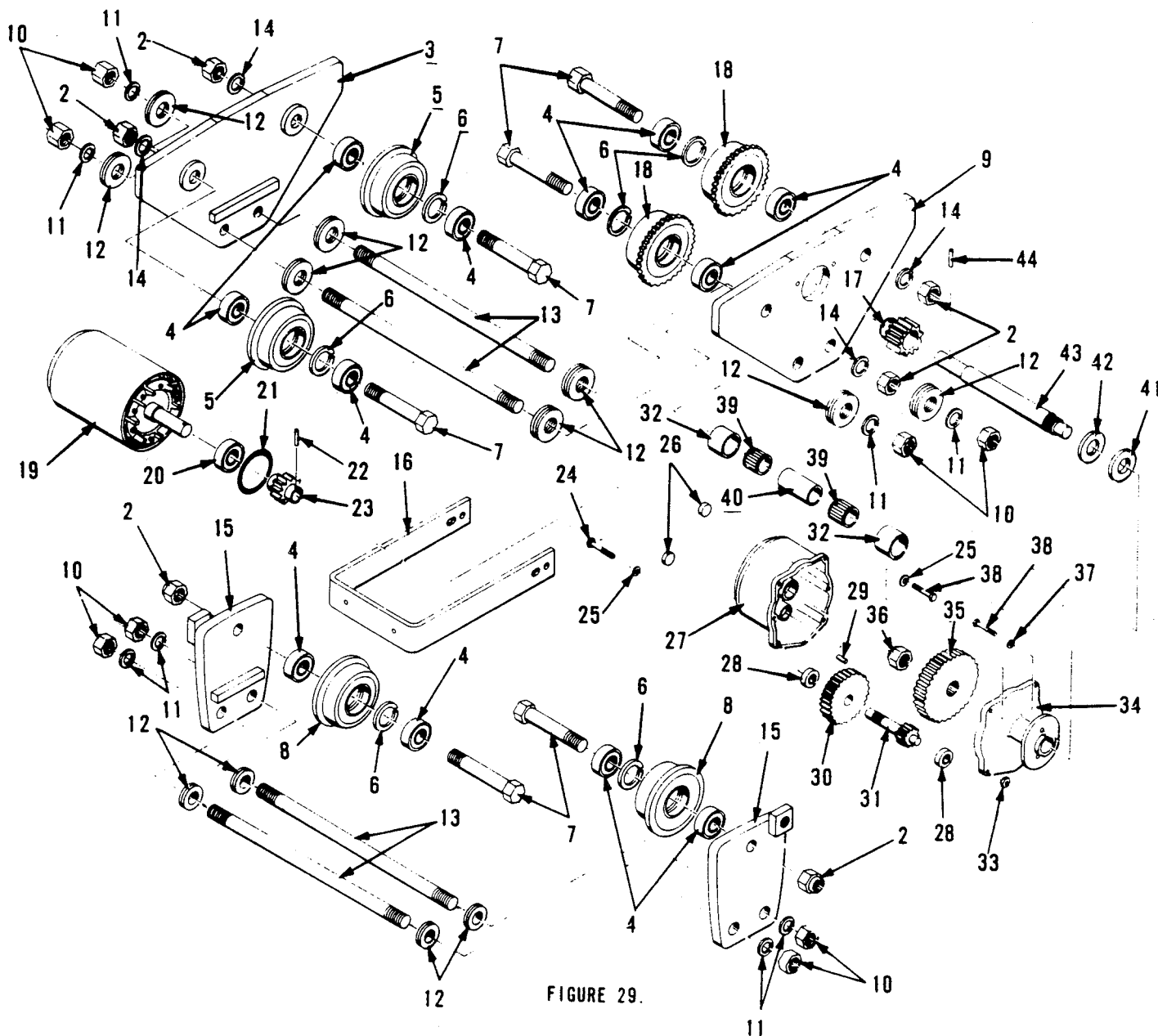


FIGURE 29.

When Replacement Parts Are Needed, Order Only Yale® Factory Engineered Parts



Yale® Hoists

ST TROLLEY ASSEMBLY

ITEM NUMBER	PART NUMBER	DESCRIPTION	QTY.
1	SEE TABLE 24	TROLLEY ASSEMBLY	1
2	0150157-00	HEX NUT	**
3	SEE TABLE 24	SIDEPLATE, PLAIN	1
4	0250647-00	BEARINGS	**
5	SEE TABLE 24	TROLLEY WHEEL, PLAIN	**
6	6400469-04	RETAINING RING	**
7	SEE TABLE 24	AXLE	**
8	SEE TABLE 24	TROLLEY WHEEL, PLAIN	4
9	SEE TABLE 24	SIDEPLATE, GEARED	1
10	SEE TABLE 24	HEX NUT	**
11	SEE TABLE 24	LOCKWASHER	**
12	0114221-00	ADJUSTING WASHER	**
13	SEE TABLE 24	DOUBLE END STUD	**
15	SEE TABLE 24	SIDEPLATE, TRAILING TROLLEY	2
16	6438184-00	BUMPER (OPTIONAL)	1
18	SEE TABLE 24	TROLLEY WHEEL, GEARED	2
19	*	MOTOR ASSEMBLY	1
20	0325737-00	MOTOR BEARING	1
21	0193248-00	"o" RING	1
22	SEE TABLE 23	LOCK PIN	1
23	SEE TABLE 23	MOTOR PINION	1
24	0146723-00	SCREW	2
25	0150264-00	LOCKWASHER	4
27	0192483-00	GEAR CASE	1
28	0100850-00	BEARING	2
29	6400529-01	DOWEL PIN	2
30	SEE TABLE 23	GEAR	1
31	SEE TABLE 23	PINION	1
32	0610994-00	INNER RACE	2
33	0149369-00	HEX NUT	2
34	0307058-00	GEAR CASE COVER	1
35	SEE TABLE 23	GEAR	1
36	0326590-00	LOCK NUT	1
37	0150264-00	LOCKWASHER	2
38	0570482-00	SCREW	4
39	0572813-00	NEEDLE BEARING	2
40	0317344-00	BEARING SPACER	1
41	0535816-00	WASHER	1
42	0544158-00	THRUST WASHER	1
43	6400851-00	SHAFT & PINION ASSEMBLY	1
44	0106959-00	PIN	1

* When ordering motor parts give complete data on hoist & motor nameplate.

** As required.

When Replacement Parts Are Needed, Order Only Yale® Factory Engineered Parts

Duff-Norton
Yale® Hoists
TABLE 23. SIDEWINDER GEARING

ITEM NUMBER	PART NUMBER	DESCRIPTION	TRAVEL SPEEDS		
			FPM	FPM	FPM
23	0104602-00	MOTOR PINION, 16 TOOTH		1	1
23	0104607-00	MOTOR PINION, 12 TOOTH	1		
22	0106953-00	LOCK PIN FOR 16 TOOTH PINION		1	1
22	0106959-00	LOCK PIN FOR 12 TOOTH PINION	1		
30	6407531-00	GEAR		1	
30	6407531-00	GEAR	1		
31	6407521-00	PINION	1	1	
35	0226408-00	GEAR, 47 TOOTH	1	1	
35	0610986-00	GEAR, 40 TOOTH			1

TABLE 24. SIDEWINDER TROLLEY

ITEM NUM	2PS-19 FT. LIFT		ALL OTHERS		DESCRIPTION
	6-15 STD.BEAM	PATENTED TRACK	6-15 STD.BEAM	PATENTED TRACK	
1	6409942-00	6411482-00	6409962-00	6490070-00	TROLLEY ASSEMBLY
3	6426936-00	6429716-00	6426936-00	6429716-00	SIDEPLATE, PLAIN
5	6412103-00	0650863-00	6412103-00	0650863-00	WHEEL, PLAIN
7	0597659-00	0650864-00	0597659-00	0650864-00	WHEEL AXLE
8	6412103-00	0650863-00	6412103-00	0650863-00	WHEEL, PLAIN
9	6426916-00	6429726-00	6426916-00	6429726-00	SIDEPLATE, GEARED
10	0149375-00	0149374-00	0149375-00	0149375-00	HEX NUT
11	0150270-00	0105268-00	0150270-00	0150270-00	LOCKWASHER
13	0609928-00	0650872-00	0609928-00	0650872-00	STUD
15	--	--	6451934-00	6455504-00	SIDEPLATE TT
18	6412113-00	5011583-00	6412113-00	5011583-00	WHEEL, GEARED

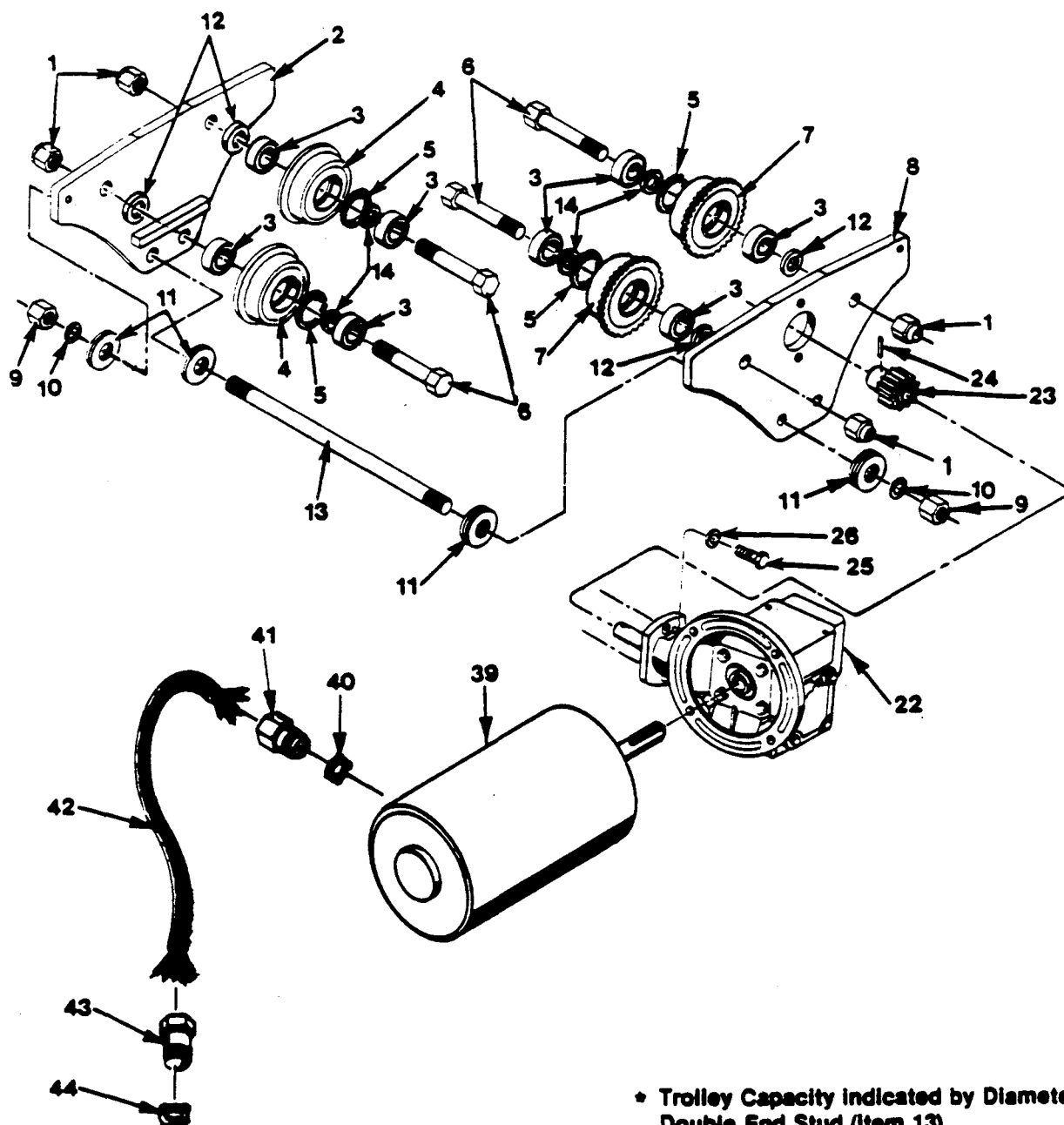
When Replacement Parts Are Needed, Order Only Yale® Factory Engineered Parts

Duff-Norton

Yale® Hoists

RT SERIES 1/2 THROUGH 2 TON*

TROLLEY ASSEMBLY



* Trolley Capacity indicated by Diameter of Double End Stud (Item 13).

When Replacement Parts Are Needed, Order Only Yale® Factory Engineered Parts

Duff-Norton

Yale® Hoists

RT 1/2 THROUGH 2 TON (6-15 Inch I-Beam)

TROLLEY ASSEMBLY

ITEM NBR	AMERICAN STD. 6-15" I-BEAM	PATENTED TRACK	DESCRIPTION	QTY.
	6465932-00	6467752-00	TROLLEY ASSEMBLY (INCL. ITEMS 1 THRU 14)	1
1	0150158-00	0150158-00	NUT	4
2	6461873-01	6461873-01	SIDEPLATE, PLAIN	1
3	5003539-07	5003539-07	BEARING	8
4	6412103-00	0650863-00	WHEEL, PLAIN	2
5	6400469-04	6400469-04	RETAINING RING	4
6	0250576-00	0650864-00	AXLE, WHEEL	4
7	6412113-00	5011583-00	WHEEL, GEARED	2
8	6461873-02	6461873-02	SIDEPLATE, GEARED	1
9	0149374-00	0149374-00	HEX NUT	4
10	0150268-00	0150268-00	LOCKWASHER	4
11	0114200-00	0114200-00	ADJUSTMENT WASHERS	48/20
12	6445021-05	0114207-00	WASHER	4
13	0101020-00	0101017-00	DOUBLE END STUD (5/8 IN.)	2
14	0161158-00	0161158-00	WASHER	16/24
22	SEE TABLE	SEE TABLE	GEAR CASE	1
	6467002-00		RT MTG KIT (INCL. ITEMS 23, 24, 25 AND 26)	1
23	6462883-00	6462883-00	PINION	1
24	6462973-01	6462973-01	GROOVE PIN	1
25	0554856-00	0554856-00	BOLT	2
26	0150266-00	0150266-00	LOCK WASHER	2
39	*	*	MOTOR ASSEMBLY	1
40	0103739-00	0103739-00	LOCK NUT	1
41	6401569-10	6401569-10	WATER TIGHT CONNECTOR	1
42	6431261-81	6431261-81	POWER CORD	7 FT.
43	6401589-18	6401569-18	WATER TIGHT CONNECTOR	1
44	0103740-00	0103740-00	LOCKNUT	1

* When Ordering Motors Give Complete Data On Motor Nameplate.

GEAR TABLE

TRAVEL SPEED (FT/MIN)	GEAR CASE	RATIO
15	6462923-30	30:1
30	6462923-15	15:1
45	6462923-10	10:1
90	6462923-05	5:1

When Replacement Parts Are Needed, Order Only Yale® Factory Engineered Parts

Duff-Norton

Yale® Hoists

HAND CHAIN OPERATED TROLLEY ASSEMBLY

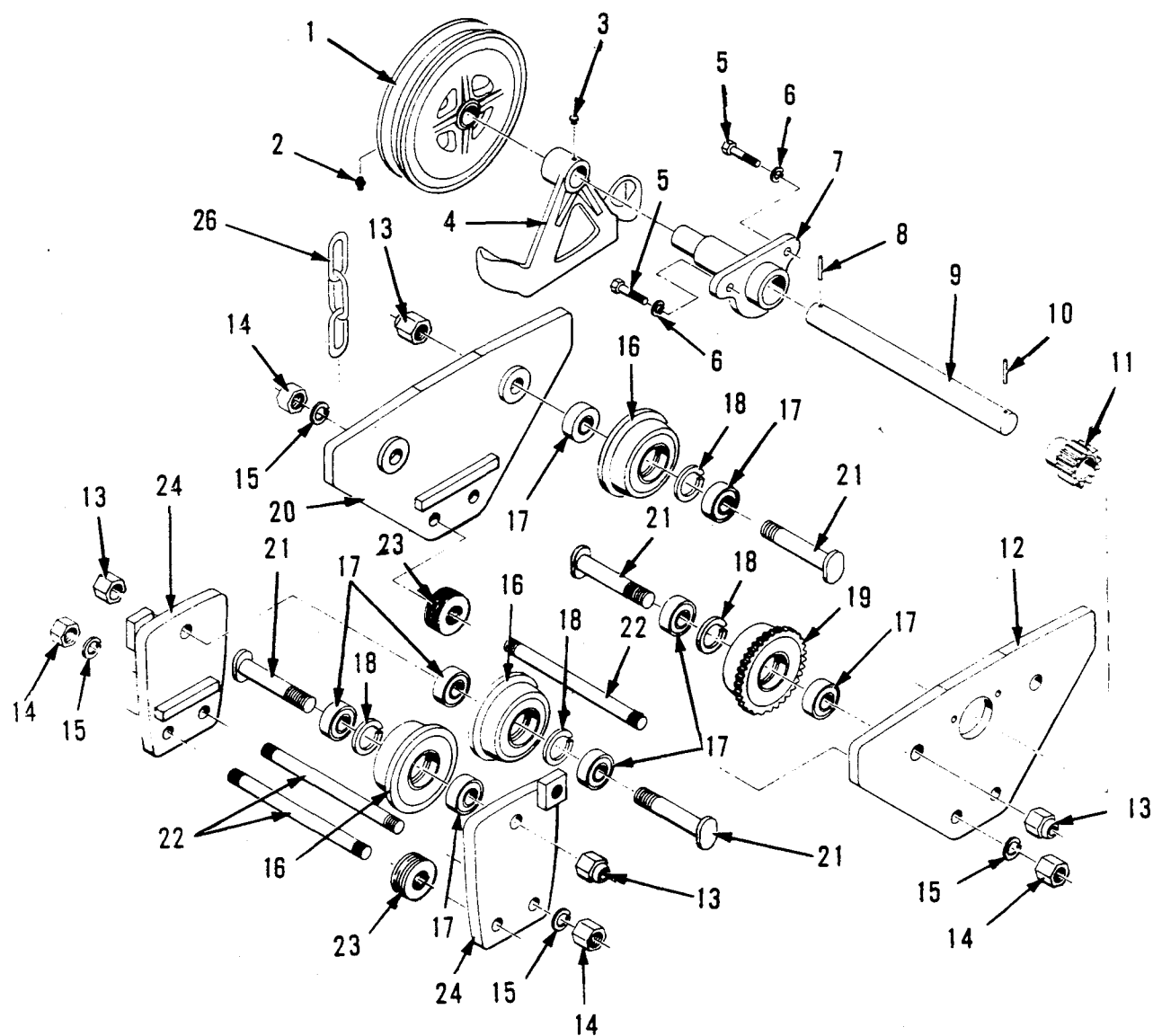


FIGURE 30.

When Replacement Parts Are Needed, Order Only Yale® Factory Engineered Parts

Duff-Norton
Yale® Hoists
HAND CHAIN OPERATED TROLLEY ASSEMBLY

ITEM NUMBER	PART NUMBER	DESCRIPTION	QTY.
	SEE TABLE 25	GEARED TROLLEY ASSEMBLY	1
1	0250218-00	HANDWHEEL	1
2	0156287-00	ALEMITE FITTING	1
3	0227845-00	ALEMITE FITTING	1
4	0603328-00	CHAIN GUIDE	1
5	0570482-00	HEX SCREW	2
6	0150264-00	LOCKWASHER	2
7	SEE TABLE 25	EXTENSION BRACKET	1
8	0230207-00	ROLL PIN	1
9	SEE TABLE 25	SHAFT	1
10	0250666-00	DRIVE LOC PIN	1
11	0250202-00	PINION	1
12	SEE TABLE 25	SIDE PLATE, GEARED SIDE	1
13	0150157-00	LOCKNUT, AXLE	6
14	SEE TABLE 25	HEX NUT	8
15	0150270-00	LOCKWASHER	8
16	SEE TABLE 25	WHEEL, PLAIN	4
17	0250647-00	BEARING	12
18	6400469-04	RETAINING RING	6
19	SEE TABLE 25	WHEEL, GEARED	2
20	SEE TABLE 25	SIDE PLATE, PLAIN	1
21	0597659-00	AXLE	6
22	SEE TABLE 25	DOUBLE END STUD	4
23	0114221-00	ADJUSTING WASHERS	*
24	SEE TABLE 25	SIDE PLATE, TRAILING TROLLEY	2
25	0033730-00	HAND CHAIN (SPECIFY LENGTH)	1

* As Required.

** 2 Part Single - 19 foot lift does not use a trailer trolley.

TABLE 25

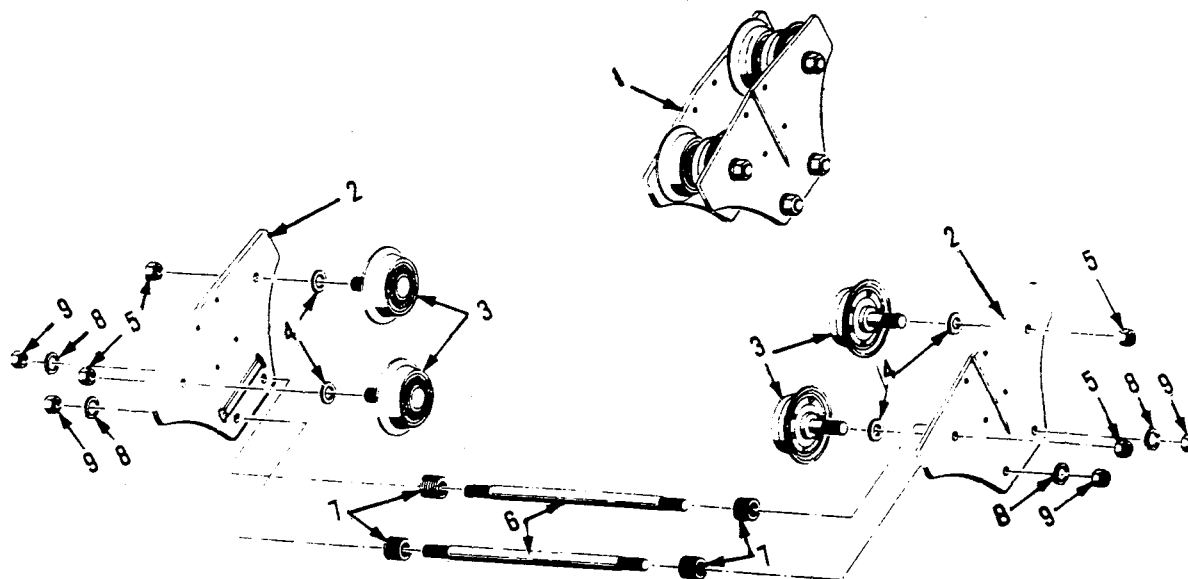
ITEM NUM	2 PS - 19 FT. LIFT		ALL OTHERS		DESCRIPTION
	I-BEAM	PAT. TRACK	I-BEAM	PAT. TRACK	
ASM.	6409922-00	6409982-00	6406947-00	6458990-00	TROLLEY ASSEMBLY
7	5028204-00	5028204-00	5028204-00	5028204-00	EXTENSION BRACKET
9	5024541-00	5024541-00	5024541-00	5024541-00	SHAFT
12	6426916-00	6429726-00	6426916-00	6429726-00	SIDE PLATE GEARED
14	0149375-00	0149375-00	0149375-00	0149375-00	HEX NUT
16	6412103-00	0650863-00	6412103-00	0650863-00	PLAIN WHEEL
20	6426936-00	6429716-00	6426936-00	6429716-00	SIDE PLATE PLAIN
22	0609928-00	0650872-00	0609928-00	0650872-00	DOUBLE END STUD
24			6451934-00	6455502-00	SIDEPLATE T.T.
19	6412113-00	5011583-00	6412113-00	5011583-00	GEARED WHEEL

When Replacement Parts Are Needed, Order Only Yale® Factory Engineered Parts

Duff-Norton

Yale® Hoists

PLAIN TROLLEY ASSEMBLY (1/2 AND 1 TON, WITH STANDARD PRESSED STEEL WHEELS FOR STANDARD I-BEAMS AND PATENTED TRACK)



2 P/S 19' LIFT I-BEAM

ITEM NUMBER	PART NUMBER	DESCRIPTION	QTY.
1	6409912-00	PLAIN TROLLEY ASSEMBLY (INCLUDES ITEMS 2 THROUGH 9)	1
2	6429716-00	TROLLEY SIDE PLATES	2
3	0501071-00	TROLLEY WHEELS	4
4	0150296-00	WASHER	4
5	0149376-00	LOCKNUTS	4
6	0609928-00	DOUBLE END STUDS	2
7	0114221-00	ADJUSTING WASHERS	*
8	0150270-00	LOCKWASHER	4
9	0149375-00	HEX NUT	4

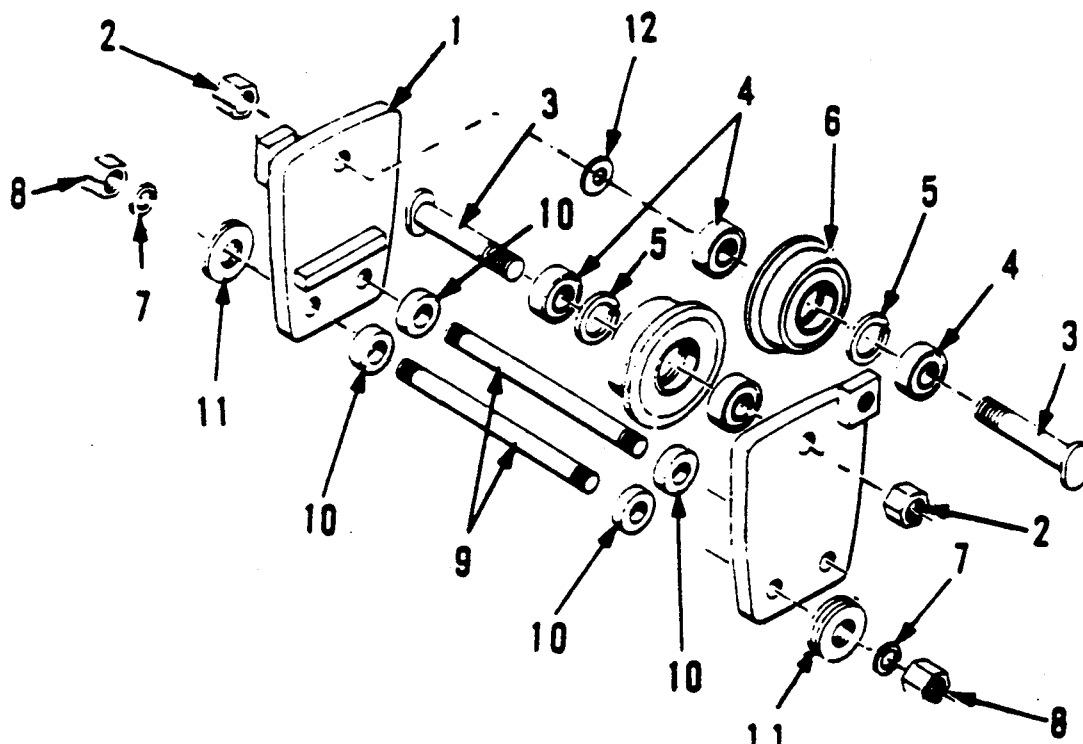
* As Required.

2 P/S 19' LIFT PAT. TRK.

1	6409972-00	PLAIN TROLLEY PAT. TRK.	1
2	6429716-00	TROLLEY SIDEPLATE	2
3	0650863-00	TROLLEY WHEELS PAT. TRK.	4
5	0150158-00	STOVER NUT	4
6	0650872-00	STUDS	2
7	0114221-00	WASHERS	*
8	0150270-00	LOCKWASHER	4
9	0149375-00	HEX NUT	4
10	0650864-00	AXLE (NOT SHOWN)	4
11	0250647-00	BEARING NICE (NOT SHOWN)	8
12	6400469-04	RET. RING (NOT SHOWN)	4

* As Required.

When Replacement Parts Are Needed, Order Only Yale® Factory Engineered Parts


Duff-Norton
Yale® Hoists
TRAILER TROLLEY ASSEMBLY

FIGURE 38

ITEM NUM.	1/2 - 1-2 TON 4 7/8 DIA. WHEEL	1/2 - 1-2 TON 4 DIA. WHEEL	1/2 - 1-2 TON PAT. TRK.	DESCRIPTION	QTY.
	6426986-00	6426106-00	6497160-00	TROLLEY ASSEM. (INCL. ITEM 1 THROUGH 12)	
1	6451934-00	6451934-00	6455504-00	SIDE PLATE	1
2	0150157-00	0150158-00	0150158-00	LOCKNUT	4
3	0597659-00	0250576-00	0650864-00	AXLE	4
4	0250647-00	5003539-07	0250647-00	BEARINGS	4
5	6400469-04	6400469-04	6400469-04	RETAINING RING	8
6	6412103-00	0604052-00	0650863-00	TROLLEY WHEEL	4
7	0150270-00	0150270-00	0150270-00	LOCKWASHER	4
8	0149375-00	0149375-00	0149375-00	HEX NUTS	8
9	0609928-00	0609928-00	0605872-00	DOUBLE END STUD	8
10	N/A	N/A	N/A		4
11	0114221-00	0114221-00	0114221-00	WASHER	*
12	N/A	0629806-00	N/A	SPACER WASHER	4

* As Required.

NOTE: 4 7/8 Dia. Tread Wheel For 8-Beam 6" - 15"

4 Dia. Ball Tread Wheel For I-Beam 5" - 15"

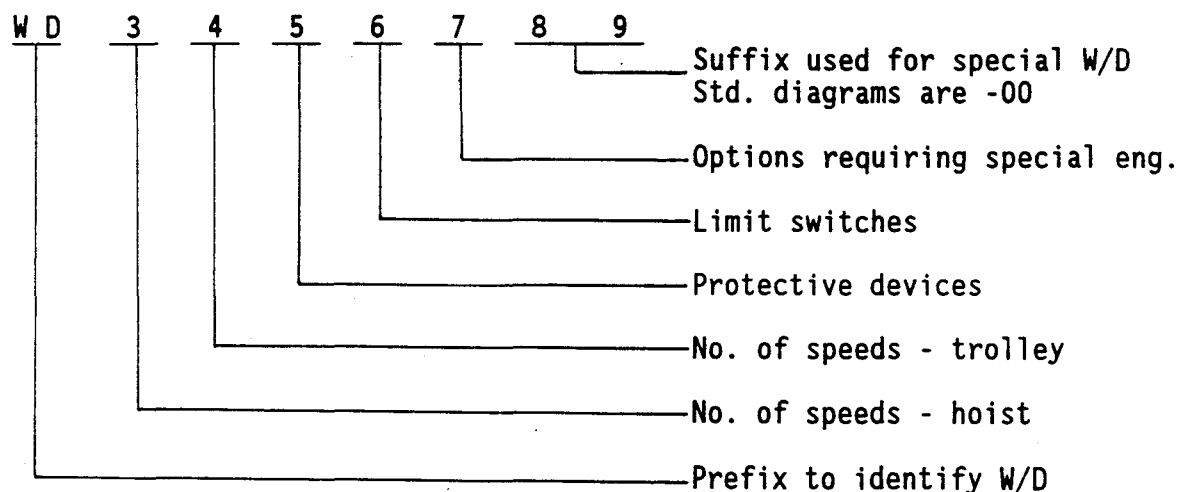
When Replacement Parts Are Needed, Order Only Yale® Factory Engineered Parts

Duff-Norton

Yale® Hoists

ATTACHMENT "A"

How to select a 9-digit drawing number for a standard wiring diagram:



(5) - Protective Devices

- 0 = None
- 1 = MLC, TOLR, Load Limiter
- 2 = MLC, TOLR
- 3 = TOLR, Load Limiter
- 4 = MLC, Load Limiter
- 5 = TOLR
- 6 = MLC
- 7 = Load Limiter

(7) - Options requiring special engineering

- 0 = None
- 1 = Hoist inching control
- 2 = Unit selector-hoist only
- 3 = Unit selector-hoist & trolley
- 4 = Phase sequence protection
- 9 = Combination or other

(6) - Limit Switches

- 0 = No limit switches
- 1 = UPLS, GLS 4 pos.
- 2 = UPLS, TNLS or GLS 2 pos.
- 3 = PCLS, GLS 4 pos.
- 4 = PCLS, TNLS or GLS 2 pos.
- 5 = UPLS only
- 6 = GLS 4 pos. only
- 7 = TNLS or GLS 2 pos.
(Std. EW Winch)

(8) -)

-) Suffix used to identify specific variations of std. diagrams

(9) -)

When Replacement Parts Are Needed, Order Only Yale® Factory Engineered Parts

Duff-Norton**Yale® Hoists****WIRING DIAGRAMS****WIRING DIAGRAMS****KEW HOIST**

NOTE:
THE WIRING DIAGRAMS INCLUDED IN THIS MANUAL ARE STANDARD DIAGRAMS SHOWING TYPICAL WIRING OF KEL HOISTS. IF SPECIAL OPTIONS OR ACCESSORIES HAVE BEEN PROVIDED, USE THE SPECIAL WIRING DIAGRAM FURNISHED WITH THE HOIST.

When Replacement Parts Are Needed, Order Only Yale® Factory Engineered Parts

Duff-Norton**Yale® Hoists****DEVICE TERMINOLOGY****DEVICE TERMINOLOGY**

- ULS UPPER LIMIT SWITCH-TRIPPED AT HOIST UPPER LIMIT
- UPLS UPPER PLUGGING LIMIT SWITCH-TRIPPED AT HOIST UPPER LIMIT - PLUGS ON
OVERTRAVEL.
- GULS GEARED UPPER LIMIT SWITCH-TRIPPED JUST BEFORE UPLS OR ULS-ADJUSTABLE.
- GLLS GEARED LOWER LIMIT SWITCH-TRIPPED AT HOIST LOWER LIMIT - ADJUSTABLE.
- TTLS TROLLEY TRAVEL LIMIT SWITCH-TRIPPED AT END OF TROLLEY TRAVEL.
- OLS OVERLOAD LIMIT SWITCH-TRIPPED IF LOAD EXCEEDS RATED CAPACITY OF HOIST.

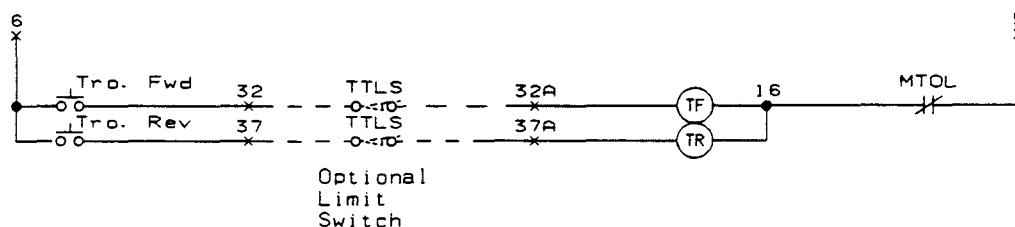
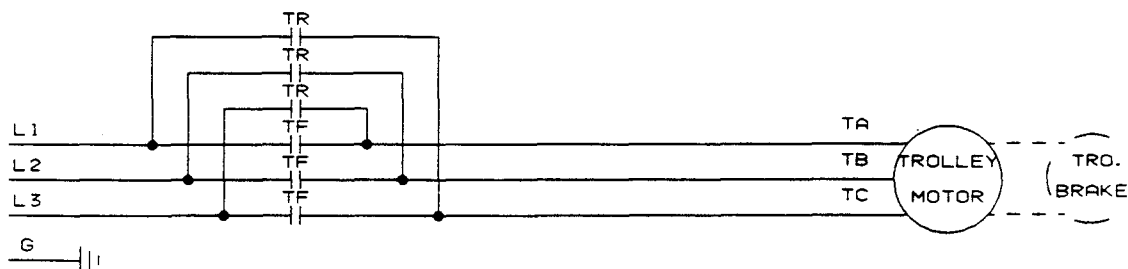
C	-CONTACTOR	BF	-BRIDGE FORWARD CONTACTOR
M	-MAINLINE CONTACTOR	BR	-BRIDGE REVERSE CONTACTOR
U	-HOIST UP CONTACTOR	SB	-BRIDGE SLOW CONTACTOR
D	-HOIST DOWN CONTACTOR	FB	-BRIDGE FAST CONTACTOR
SH	-HOIST SLOW CONTACTOR	CR	-CONTROL RELAY
FH	-HOIST FAST CONTACTOR	TD	-TIME DELAY RELAY
TF	-TROLLEY FORWARD CONTACTOR	OL	-OVERLOAD RELAY
TR	-TROLLEY REVERSE CONTACTOR	MTOL	-MOTOR THERMAL OVERLOAD DEVICE
ST	-TROLLEY SLOW CONTACTOR	TO	-TIMED OPEN
FT	-TROLLEY FAST CONTACTOR	TC	-TIMED CLOSED
CB	-CIRCUIT BREAKER	FU	-FUSE

When Replacement Parts Are Needed, Order Only Yale® Factory Engineered Parts

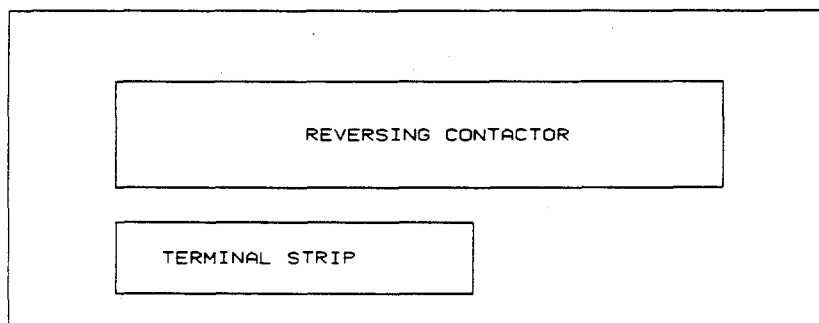
STANDARD WIRING DIAGRAMS

SPEED			VOLTAGES	MODEL	MODEL
HOIST	TROLLEY	PHASE		KEL	KEW
				DIAGRAM #	DIAGRAM #
1		1	115 OR 230	WD1007024	WD1007024
1		1	115 & 230	WD1007025	WD1007025
1		3	230 & 460	WD1007023	WD1007023
1		3	200-230-460-575	WD1007022	WD1007022
1	1	1	115 OR 230	WD1107024	WD1107024
1	1	1	115 & 230	WD1107025	WD1107025
1	1	3	230 & 460	WD1107023	WD1107023
1	1	3	200-230-460-575	WD1107022	WD1107022
2		3	200-230-460-575	WD2007021	WD2007021
2		3	200-230-460-575	WD2007021	
	1	3	230 & 460	WD0100014	
2	1	3	230 & 460	WD2107000	WD2107000
2	2	3	200-230-460-575	WD2207000	WD2207000

KEL/KEW SERIES



COMPONENT LOCATION



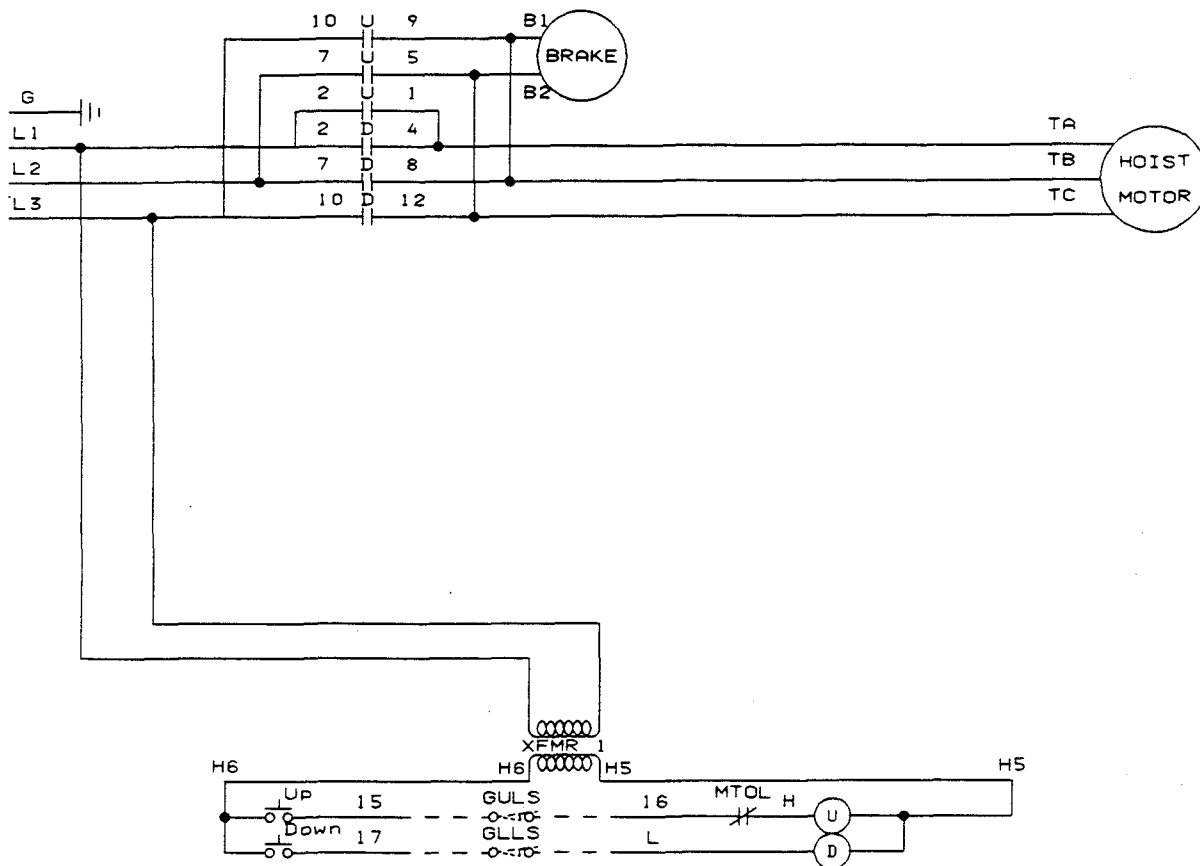
DUAL VOLTAGE MOTOR CONNECTIONS		DUAL VOLTAGE TRANSF. CONNECTIONS	
LOW VOLTAGE	HIGH VOLTAGE	LOW VOLTAGE	HIGH VOLTAGE
<p>TA TB TC</p> <p>T1 T2 T3</p> <p>T7 T8 T9</p> <p>B1 B2</p> <p>T4 T5 T6</p>	<p>TA TB TC</p> <p>T1 T2 T3</p> <p>T7 T8 T9</p> <p>B1 B2</p> <p>T4 T5 T6</p>	<p>XFMR</p>	<p>XFMR</p>

Drawn by: FW Date: 11/18/85
Rev. by: Date:

Drawing No.

WDO100014

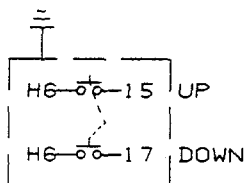
Page 1 of 1



SINGLE SPEED HOIST & TROLLEY
MULTI-VOLTAGE HOIST MOTOR
200-3-60, 230-3-60, 460 & 575-3-60

Drawn by: DJ	Date: 10/09/92	Drawing No.	WD1007022	Page 1 of 2
Rev.	by:	Date:		

PANEL LAYOUT



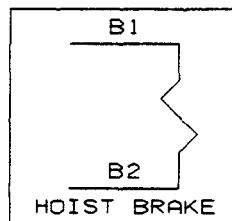
LIMIT

SWITCH

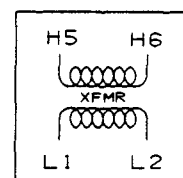
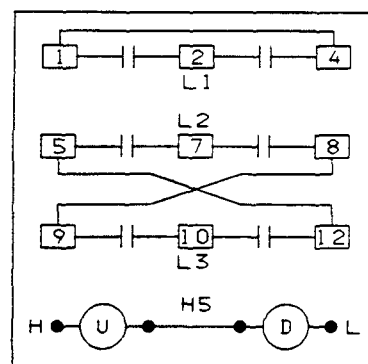
15 17

16 L

(OPTIONAL
ON
CHAIN
HOIST)

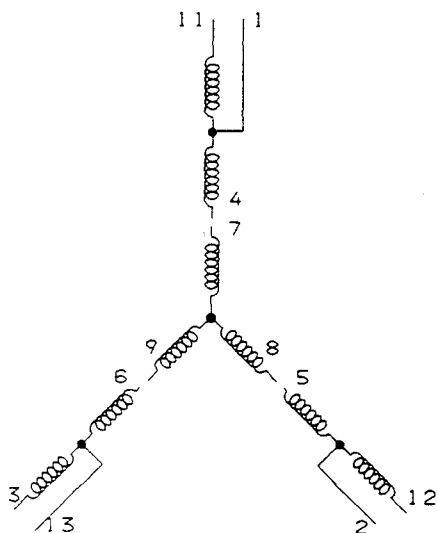


HOIST BRAKE

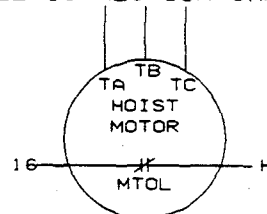


CONTROL PANEL

MULTI-VOLTAGE MOTOR
WINDING ARRANGEMENT



SEE CONNECTION CHART



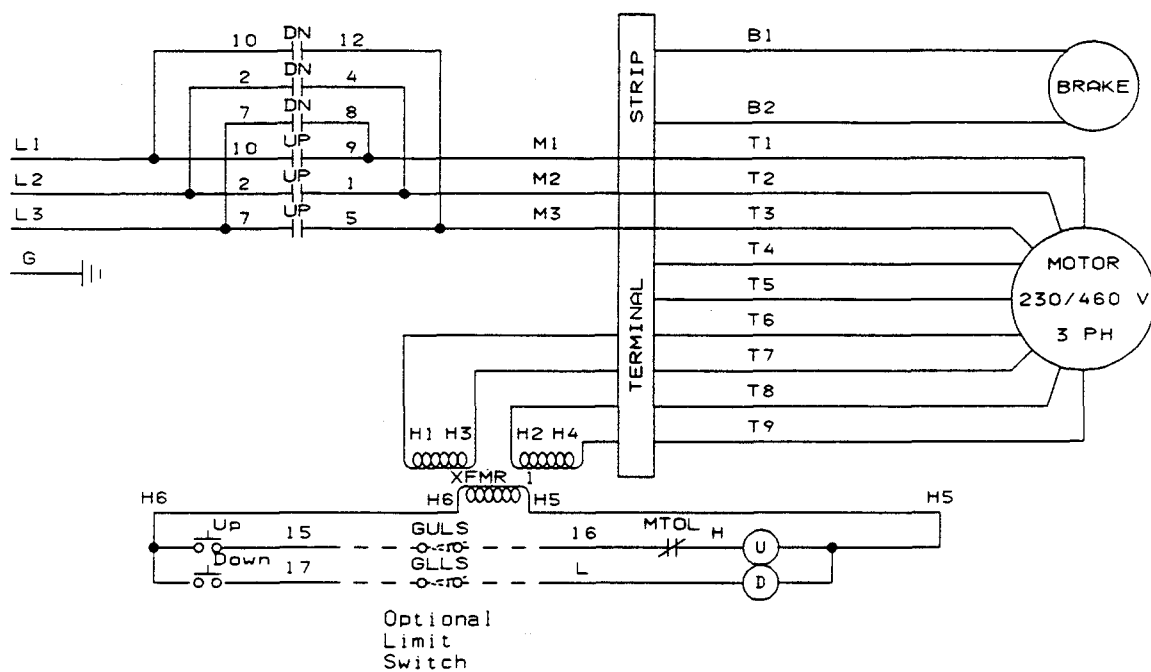
200-230 VOLTS	460 VOLTS	575 VOLTS
* (13) (12) (11)	* (13) (12) (11)	* (1) (2) (3)
(4) (5) (6)	(4) (5) (6)	(4) (5) (6)
(7) (8) (9)	(7) (8) (9)	(7) (8) (9)
(1) (2) (3)	(1) (2) (3)	(11) (12) (13)
TA TB TC	TA TB TC	TA TB TC

*INSULATE THESE TERMINATION
POINTS SEPARATELY.

TRANSFORMER CONNECTIONS		
SINGLE VOLTAGE	DUAL VOLTAGE	
	LOW	HIGH
H1 TO L1 H2 TO L3	H1 TO H3 TO L1 H2 TO H4 TO L2	H2 TO H3 H1 TO L1 H4 TO L2
H5 H6 H1 H2	H5 H6 H1 H2 H3 H4	

SINGLE SPEED HOIST & TROLLEY
MULTI-VOLTAGE HOIST MOTOR
200, 230, 460 & 575-3-60

Drawn by: DJ	Date: 10/09/92	Drawing No.	WD1007022	Page 2 of 2
Rev. by:	Date:			



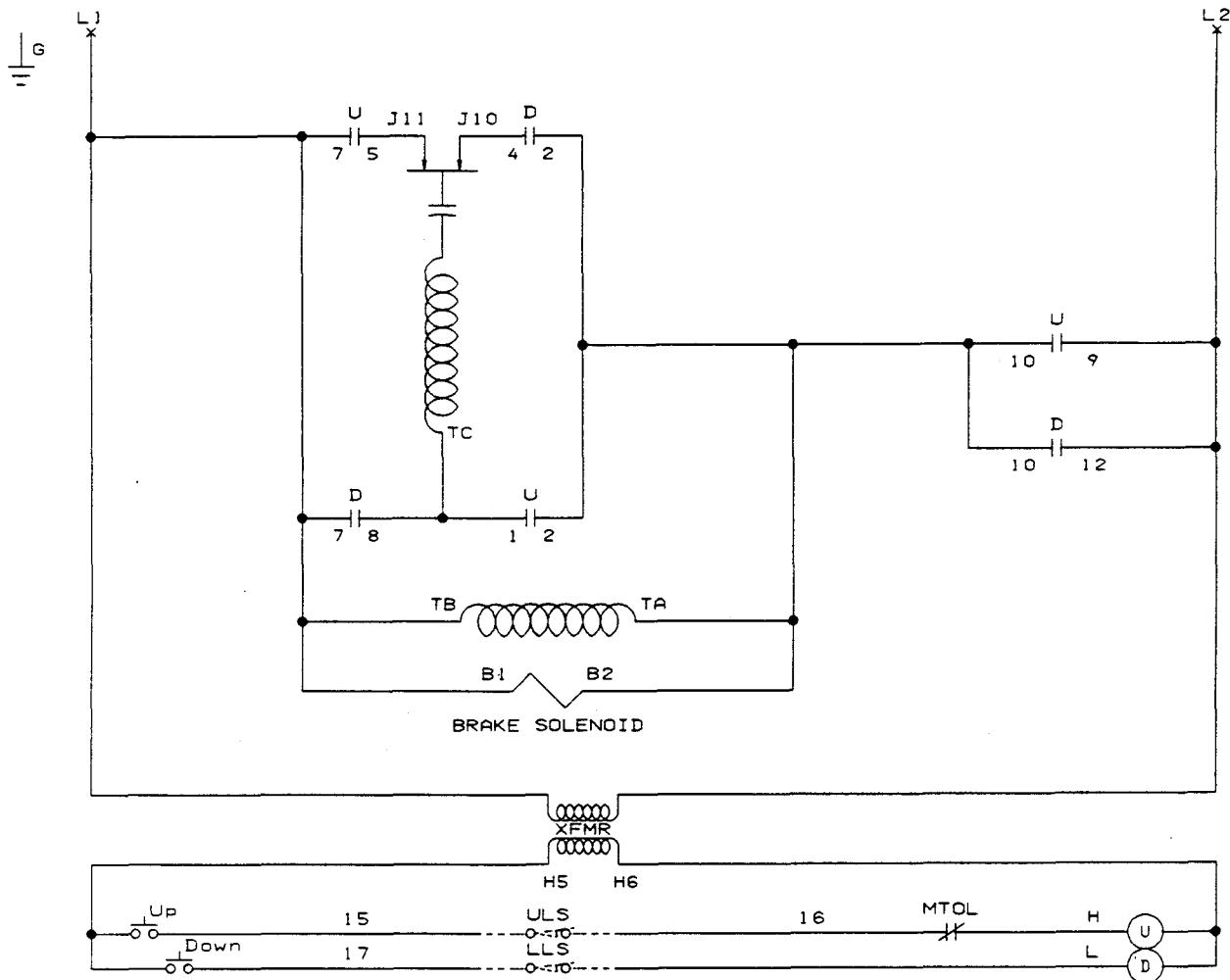
DEVICE TERMINOLOGY

U - HOIST UP CONTACTOR
D - HOIST DOWN CONTACTOR
MTOL - MOTOR THERMAL OVERLOAD DEVICE

SINGLE SPEED HOIST
230/460-3-60

[illegible]

Duff-Norton

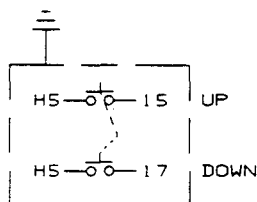
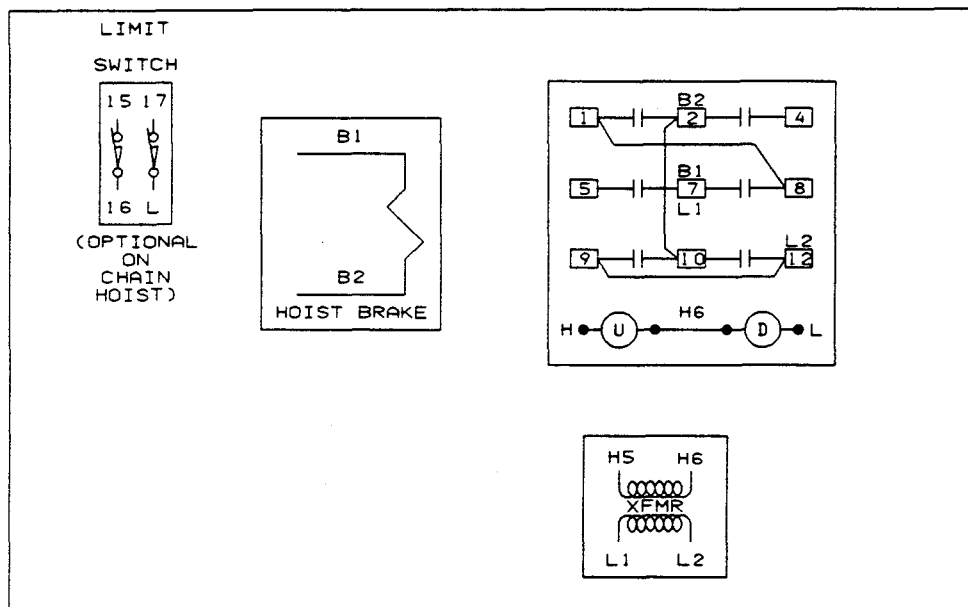


DEVICE TERMINOLOGY	
U	- HOIST UP CONTACTOR
D	- HOIST DOWN CONTACTOR
MTOL	- MOTOR THERMAL OVERLOAD DEVICE

SINGLE SPEED HOIST
115 OR 230-1-60

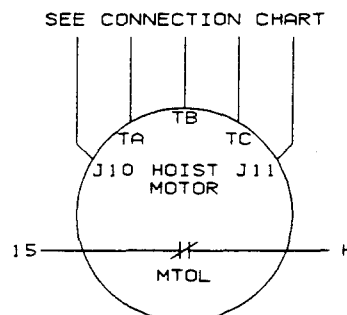
Drawn by: DJ	Date: 10/23/90	Drawing No.	WD1007024	Page 1 of 2
Rev.	by:	Date:		

PANEL LAYOUT



HOIST MOTOR CONNECTIONS														
SINGLE VOLTAGE MOTOR					DUAL VOLTAGE MOTORS									
					LOW VOLTAGE					HIGH VOLTAGE				
HOIST CONTACTOR TERMINAL					HOIST CONTACTOR TERMINAL					HOIST CONTACTOR TERMINAL				
10	7	1	4	5	10	7	1	4	5	10	7		4	5
TA	TB	TC			TA	TB	TC			TA	TB			
●	●	●	●	●	T1	●	T4	●		●	●			
T1	T4	T5	J10	J11	T3	T2	T5	J10	J11	T2	T3	T5	J10	J11

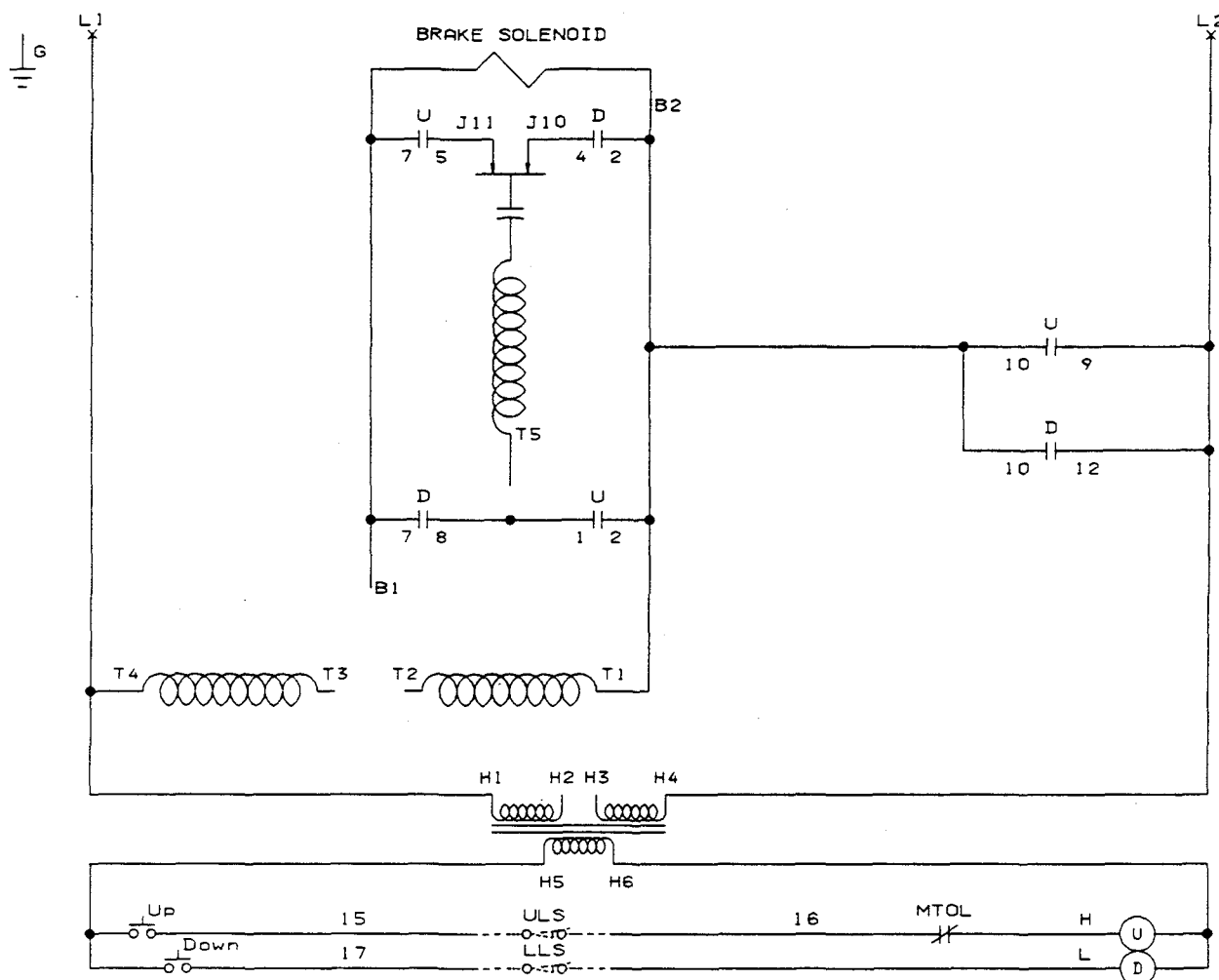
TRANSFORMER CONNECTIONS		
SINGLE VOLTAGE	DUAL VOLTAGE	
H1 TO L1 H2 TO L2	LOW	HIGH
	H1 TO H3 TO L1 H2 TO H4 TO L2	H2 TO H3 H1 TO L1 H4 TO L2
H5 H6 XFMR H1 H2	H5 H6 XFMR H1 H2 H3 H4	



NOTE: UNIT CAN NOT BE FIELD CONNECTED FOR DIFFERENT VOLTAGE. HOIST BRAKE SOLENOID IS SINGLE VOLTAGE.

SINGLE SPEED HOIST
115 OR 230-1-60

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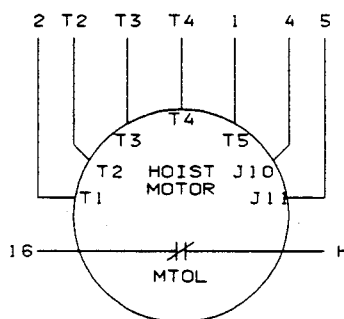
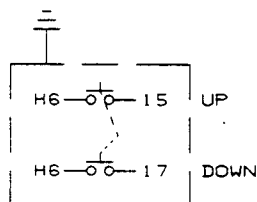
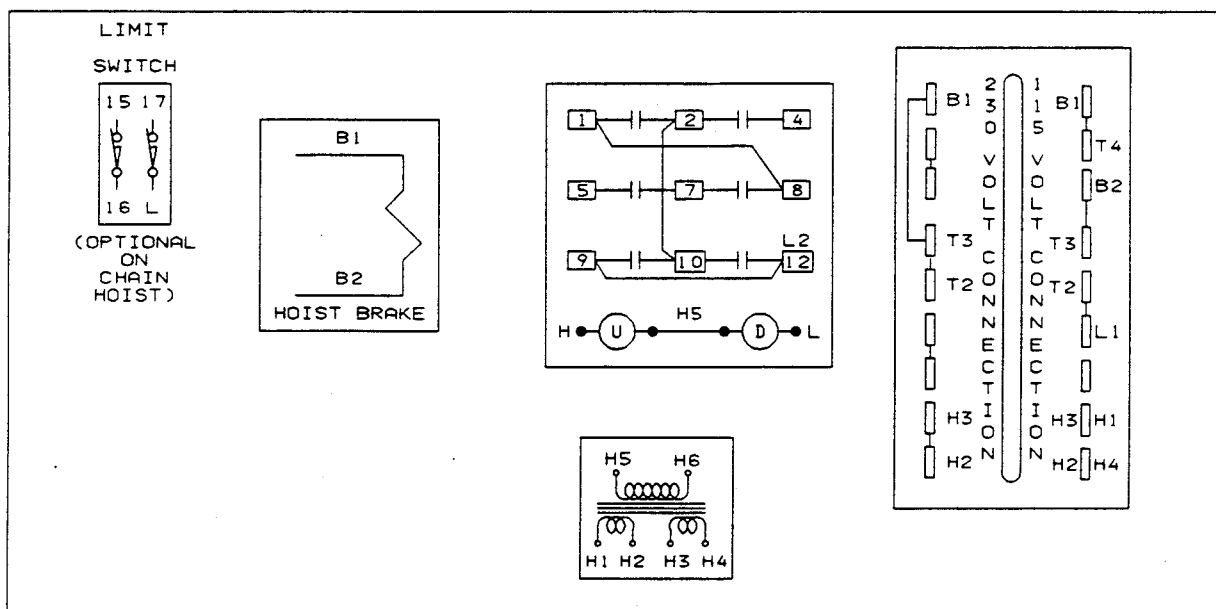


DEVICE TERMINOLOGY	
U	- HOIST UP CONTACTOR
D	- HOIST DOWN CONTACTOR
MTOL	- MOTOR THERMAL OVERLOAD DEVICE

SINGLE SPEED HOIST
115/230 - 1 - 60

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PANEL LAYOUT



TO CHANGE HOIST OPERATING VOLTAGE, MOVE WIRES ON TERMINALS B1, T3, T2, H3 AND H2 TO THE SAME NUMBERED TERMINALS ON THE OPPOSITE SIDE OF THE DUAL VOLTAGE TERMINAL STRIP. THE CHART BELOW SHOWS INTERNAL CONNECTIONS MADE BY THE WIRE HARNESS WHEN OPERATING VOLTAGE IS CHANGED.

115 VOLT	230 VOLT
B1 TO T2 TO T4 T3 TO T1 H1 TO H3 H2 TO H4	B1 TO T2 TO T3 H2 TO H3

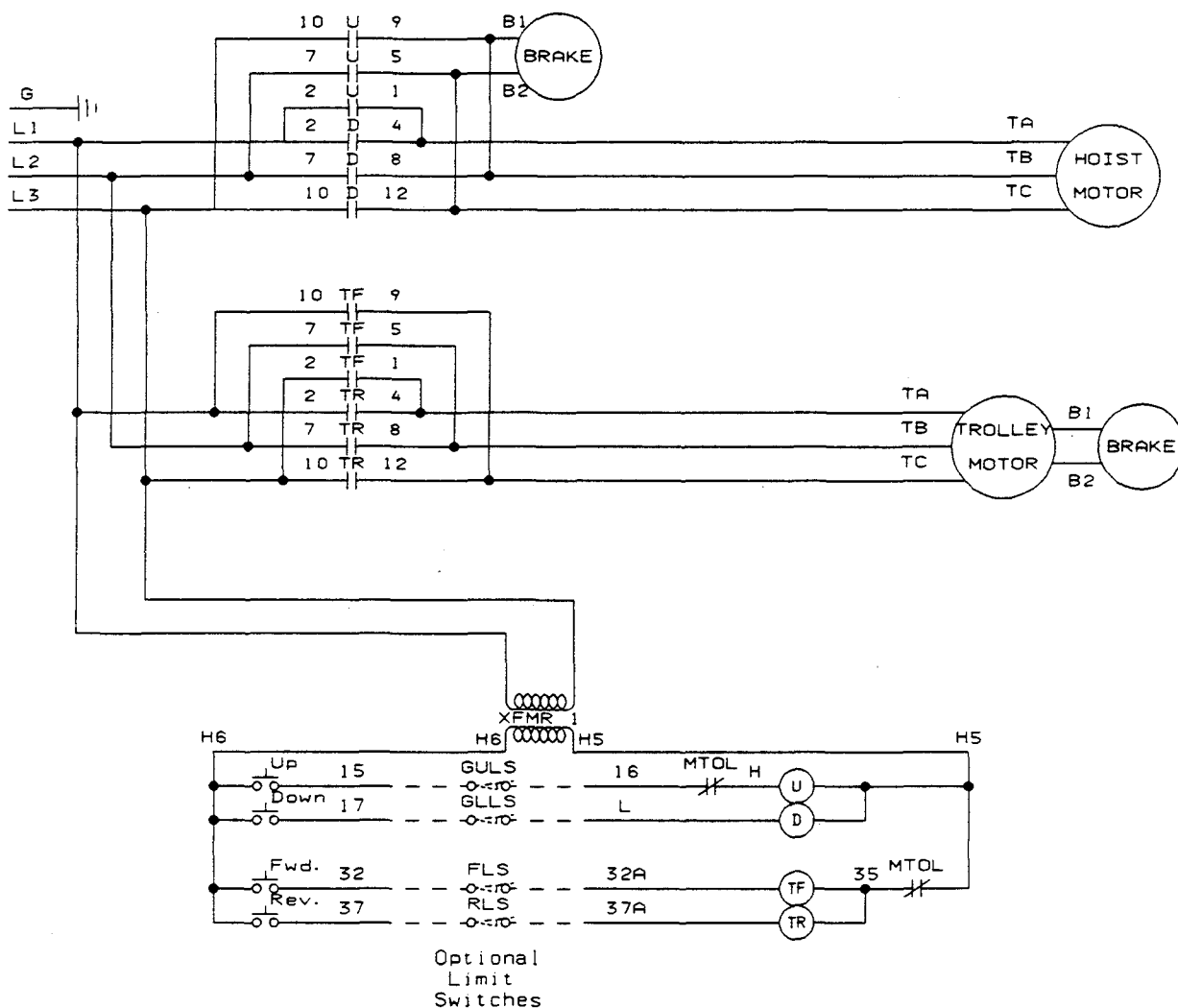
SINGLE SPEED HOIST
115/230 - 1 - 60

Drawn by: DJ Date: 10/24/90
Rev. by: Date:

Drawing No.

WD1007025

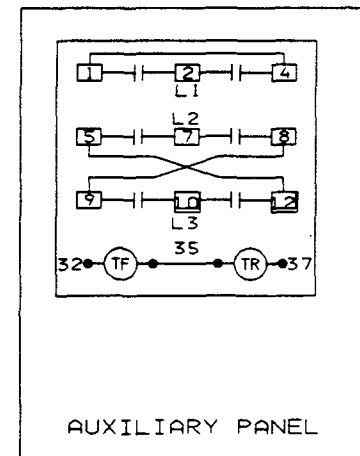
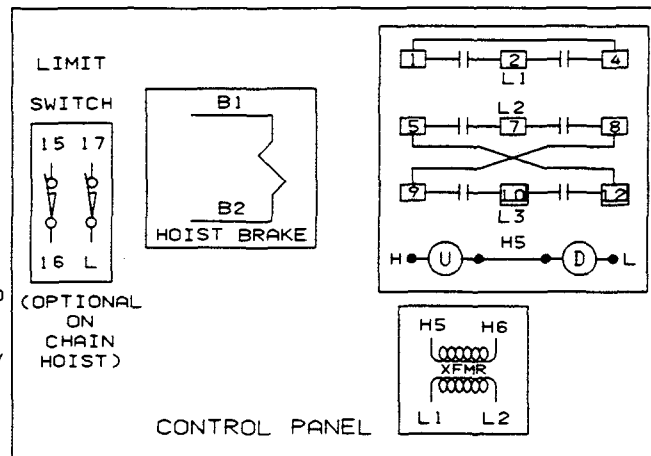
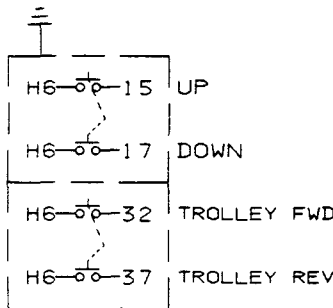
Page 2 of 2



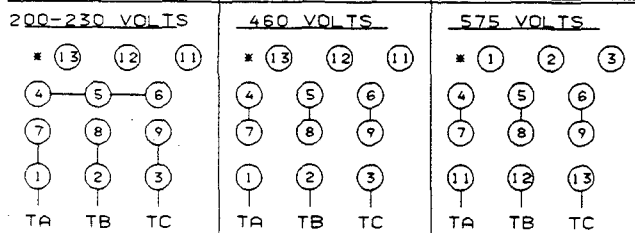
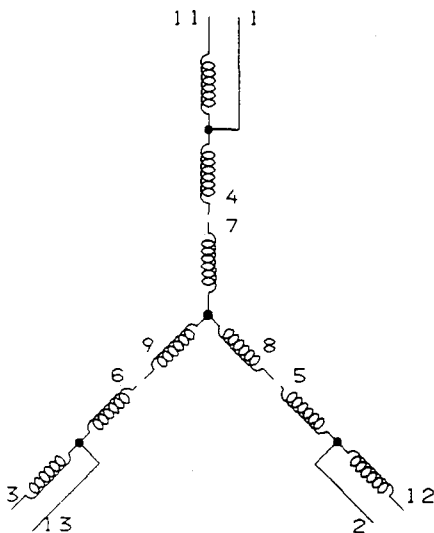
SINGLE SPEED HOIST & TROLLEY
MULTI-VOLTAGE HOIST MOTOR
200-3-60, 230-3-60, 460 & 575-3-60

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PANEL LAYOUT



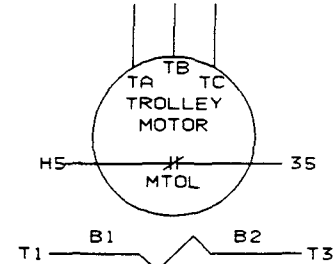
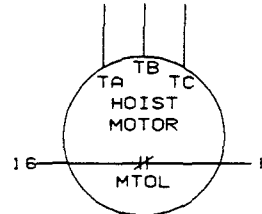
MULTI-VOLTAGE MOTOR WINDING ARRANGEMENT



*INSULATE THESE TERMINATION POINTS SEPERATELY.

SINGLE SPEED HOIST & TROLLEY
MULTI-VOLTAGE HOIST MOTOR
200, 230, 460 & 575-3-60

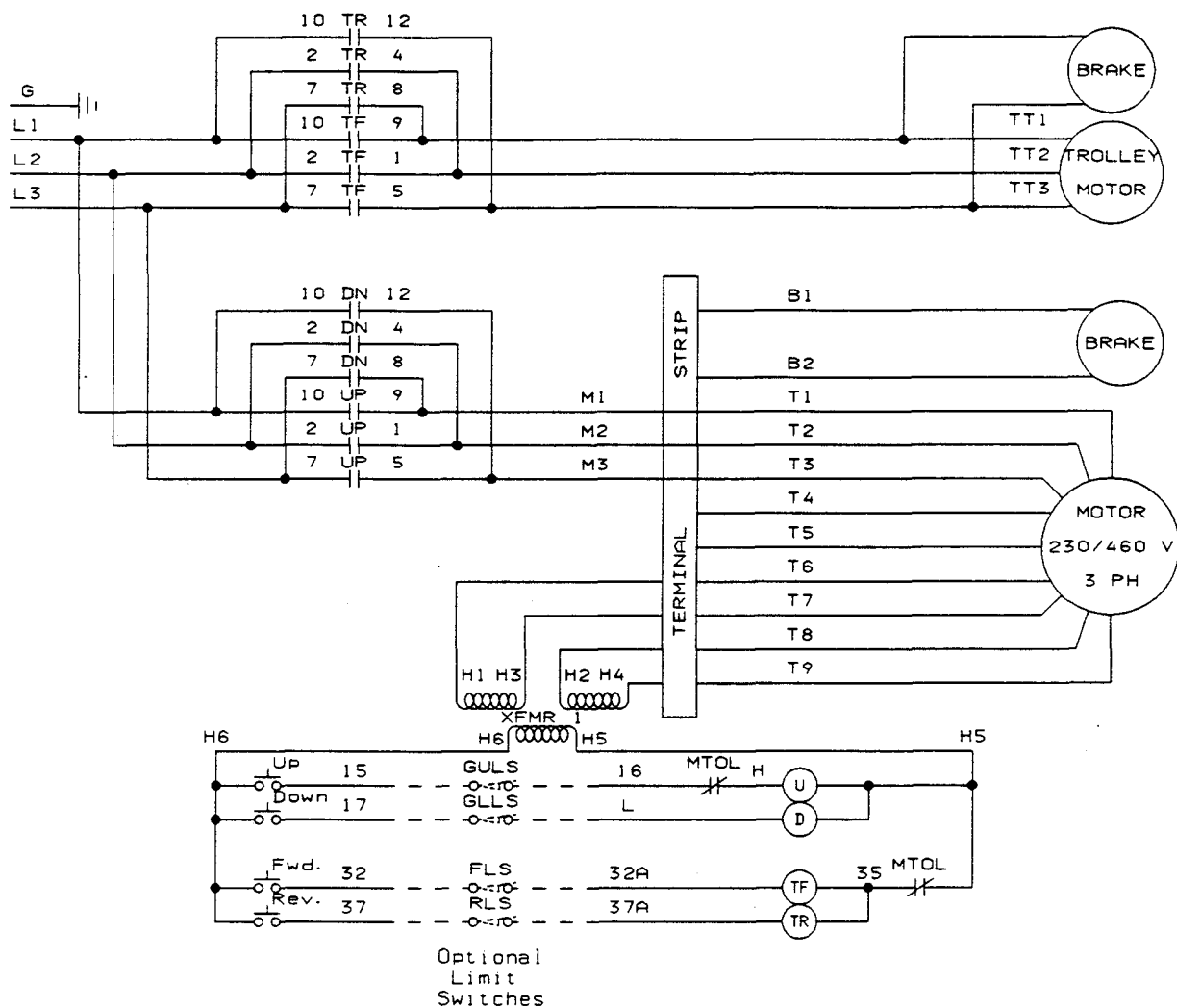
SEE CONNECTION CHART SEE CONNECTION CHART



TROLLEY BRAKE
(IF USED)

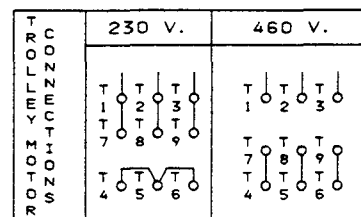
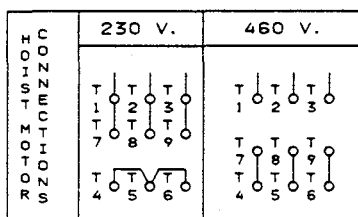
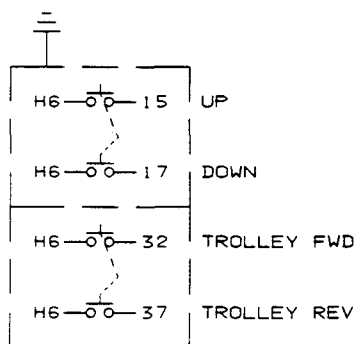
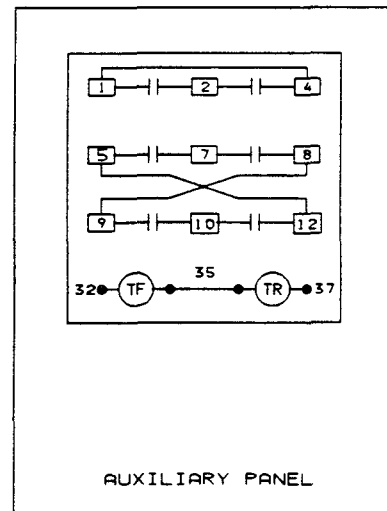
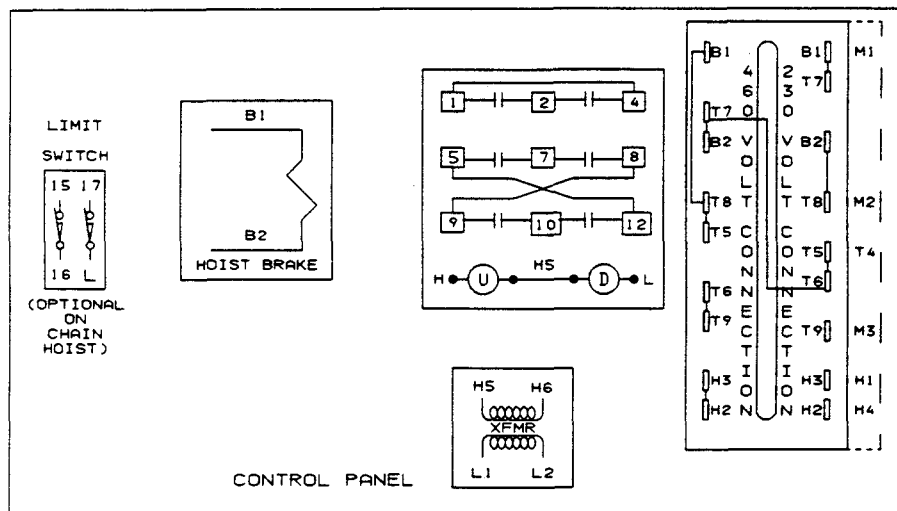
TROLLEY MOTOR CONNECTIONS		
SINGLE VOLTAGE MOTORS	DUAL VOLTAGE MOTORS	
	LOW VOLTAGE	HIGH VOLTAGE
TROLLEY CONTACTOR TERMINAL	TROLLEY CONTACTOR TERMINAL	TROLLEY CONTACTOR TERMINAL
4 TA 8 TB 12 TC	4 TA 8 TB 12 TC	4 TA 8 TB 12 TC
T10 B10 T20 B20	T10 B1 T20 B1	T10 B1 T20 B1
	T40 T50 T60	T40 T50 T60

TRANSFORMER CONNECTIONS		
SINGLE VOLTAGE	DUAL VOLTAGE	
	LOW	HIGH
H1 TO L1 H2 TO L3	H1 TO H3 TO L1 H2 TO H4 TO L2	H2 TO H3 H1 TO L1 H4 TO L2
H5 H6 H1 H2	H5 H6 H1 H2 H3 H4	

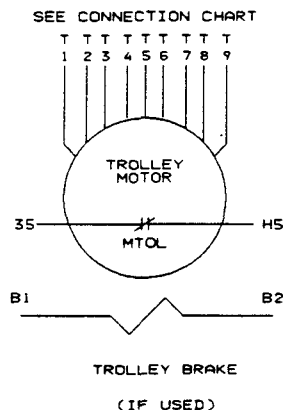
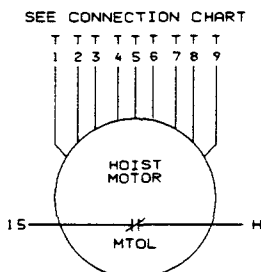


SINGLE SPEED HOIST-TROLLEY
230/460-3-60

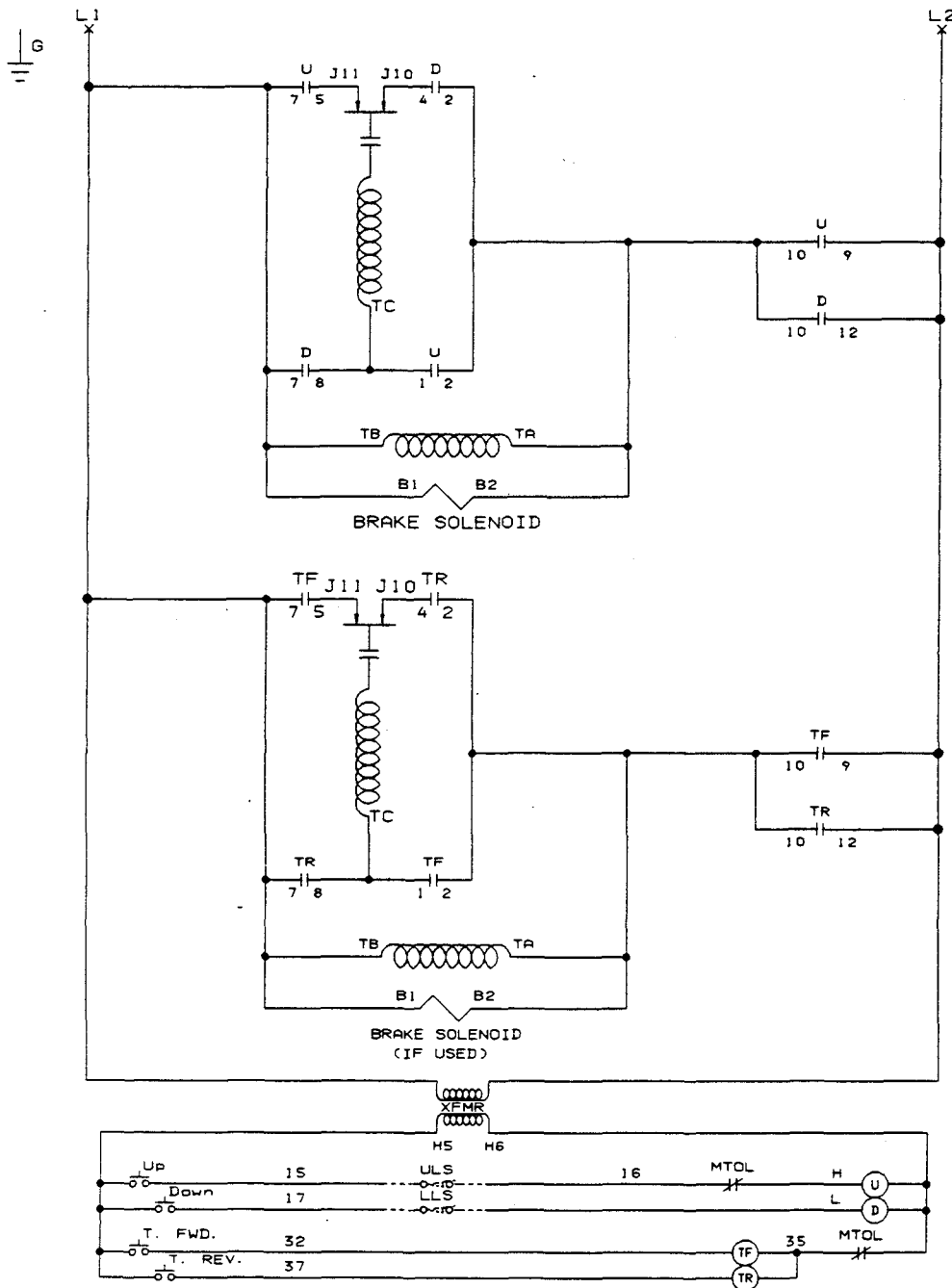
PANEL LAYOUT



TRANSFORMER CONNECTIONS	
DUAL VOLTAGE	
LOW	HIGH
H1 TO H3 TO L1 H2 TO H4 TO L2	H2 TO H3 H1 TO L1 H4 TO L2
H1 H2 H3 H4	



SINGLE SPEED HOIST-TROLLEY
230/460-3-60

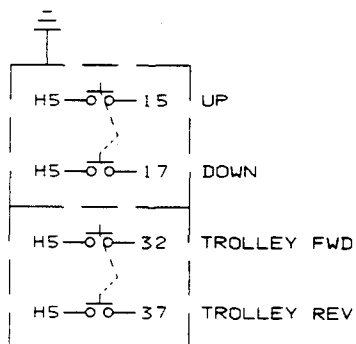
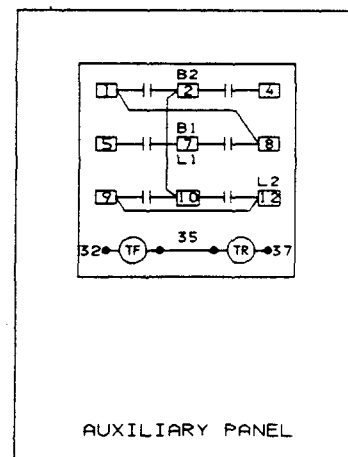
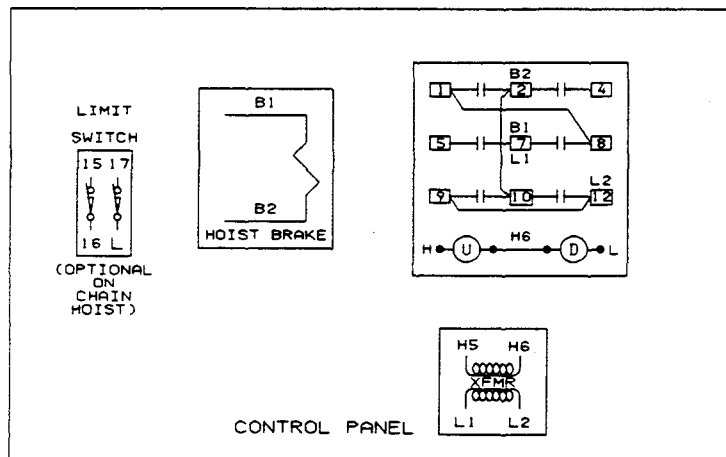


DEVICE TERMINOLOGY	
U	- HOIST UP CONTACTOR
D	- HOIST DOWN CONTACTOR
TF	- TROLLEY FWD CONTACTOR
TR	- TROLLEY REV CONTACTOR
MTOL	- MOTOR THERMAL OVERLOAD DEVICE

SINGLE SPEED HOIST-TROLLEY
115 OR 230-1-60

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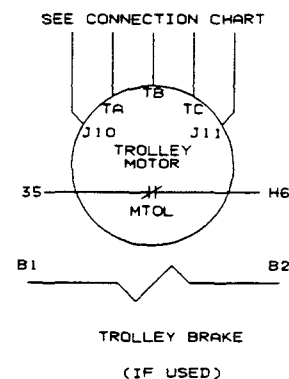
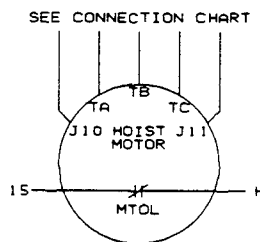
PANEL LAYOUT



HOIST MOTOR CONNECTIONS														
SINGLE VOLTAGE MOTOR					DUAL VOLTAGE MOTORS									
					LOW VOLTAGE					HIGH VOLTAGE				
HOIST CONTACTOR TERMINAL					HOIST CONTACTOR TERMINAL					HOIST CONTACTOR TERMINAL				
10	7	1	4	5	10	7	1	4	5	10	7	4	5	
TA	TB	TC			TA	TB	TC			TA	TB			
•	•	•	•	•	T1	T4	•	•	•	•	T1	T4	•	
T1	T4	T5	J10	J11	T3	T2	T5	J10	J11	T2	T3	T5	J10	J11

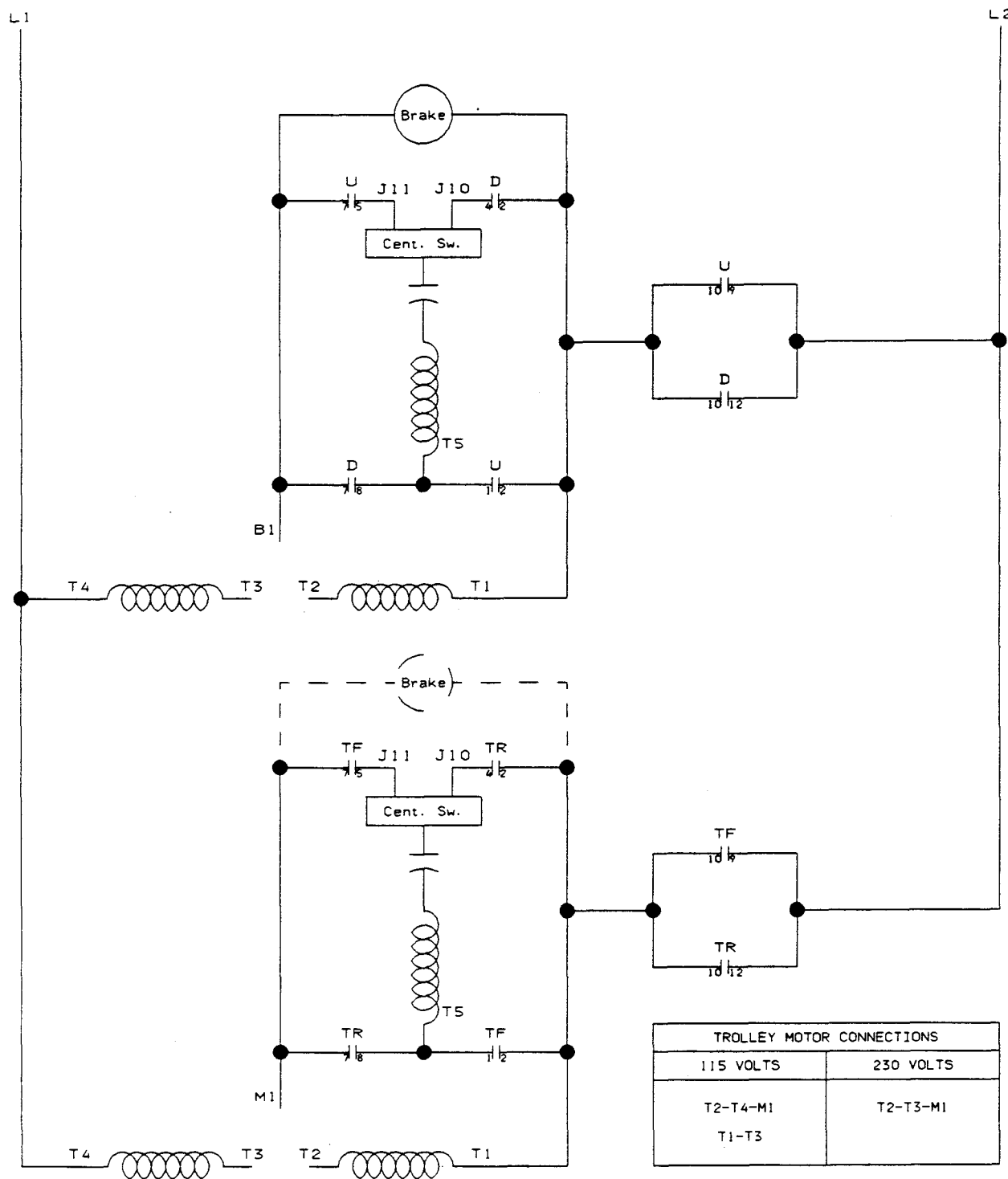
TROLLEY MOTOR CONNECTIONS														
SINGLE VOLTAGE MOTOR					DUAL VOLTAGE MOTORS									
					LOW VOLTAGE					HIGH VOLTAGE				
TROLLEY CONTACTOR TERMINAL					TROLLEY CONTACTOR TERMINAL					TROLLEY CONTACTOR TERMINAL				
10	7	1	4	5	10	7	1	4	5	10	7	4	5	
TA	TB	TC			TA	TB	TC			TA	TB			
•	•	•	•	•	T1	T4	•	•	•	•	T1	T4	•	•
T1	T4	T5	J10	J11	T3	T2	T5	J10	J11	T2	T3	T5	J10	J11

TRANSFORMER CONNECTIONS			
SINGLE VOLTAGE		DUAL VOLTAGE	
		LOW	HIGH
H1 TO L1			
H2 TO L2		H1 TO H3 TO L1	H2 TO H3
		H2 TO H4 TO L2	H1 TO L1
			H4 TO L2
H5 H6		H5 H6	
H1 H2		H1 H2 H3 H4	



NOTE: UNIT CAN NOT BE FIELD CONNECTED FOR DIFFERENT VOLTAGE. HOIST BRAKE SOLENOID IS SINGLE VOLTAGE.

SINGLE SPEED HOIST-TROLLEY
115 OR 230-1-60



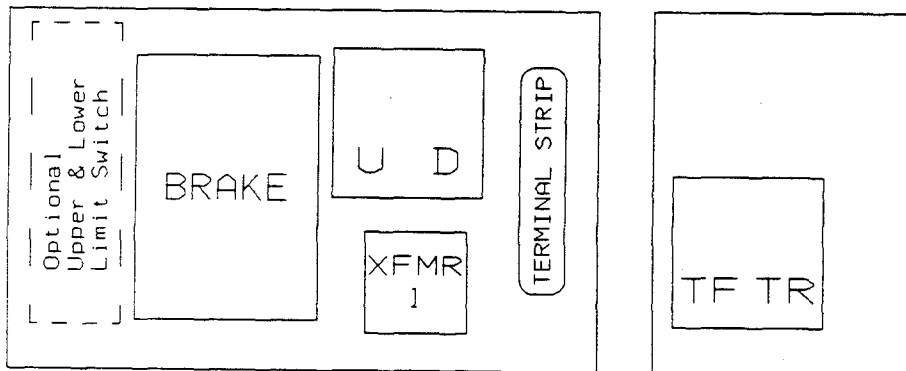
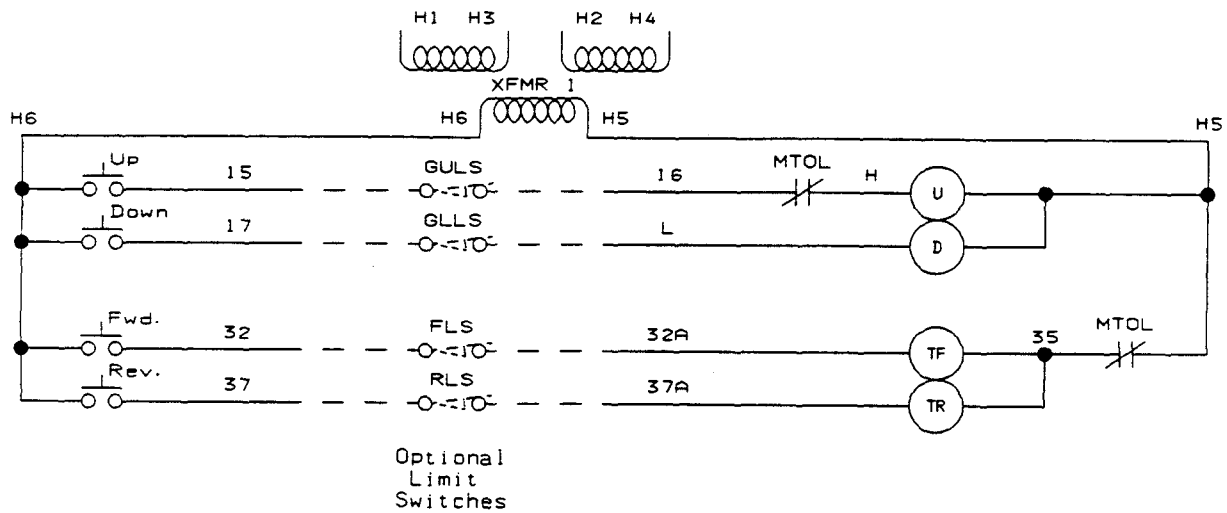
SINGLE SPEED HOIST-TROLLEY
115/230-1-60

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Rev. A by: FW Date: 03/15/90

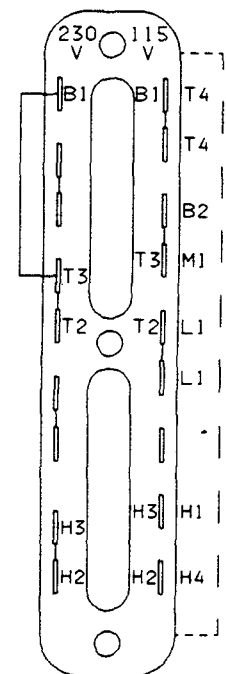
Drawing No.

WD1107025

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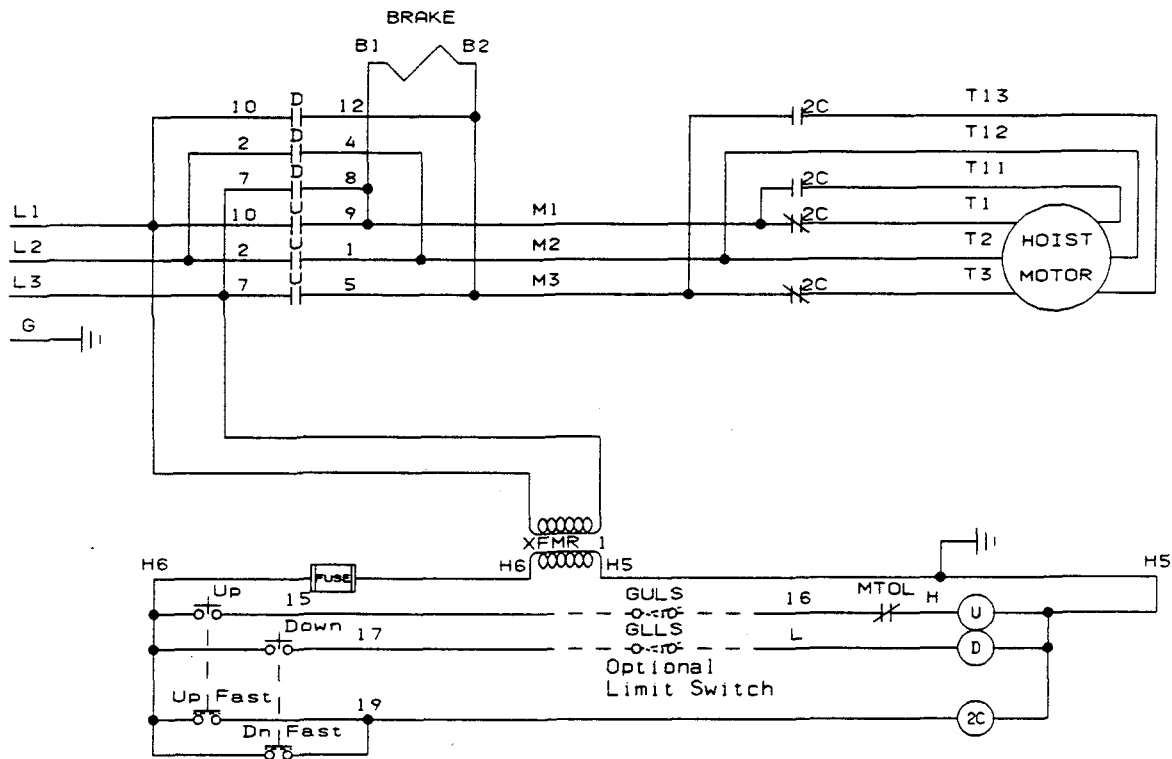


Panel Layout



Terminal
Strip
Detail

SINGLE SPEED HOIST-TROLLEY
115/230-1-60



DEVICE TERMINOLOGY

U - HOIST UP CONTACTOR
D - HOIST DOWN CONTACTOR
MTOL - MOTOR THERMAL OVERLOAD DEVICE

TWO SPEED HOIST
200-230-460-575-3-60

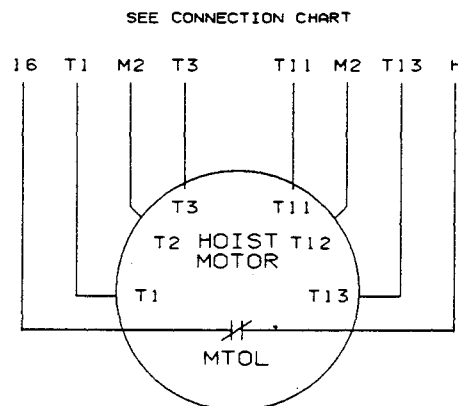
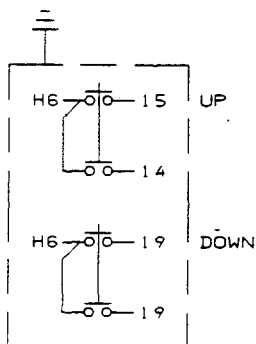
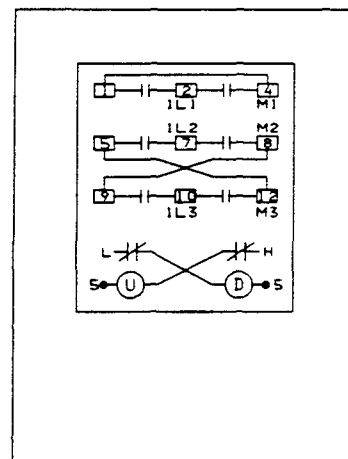
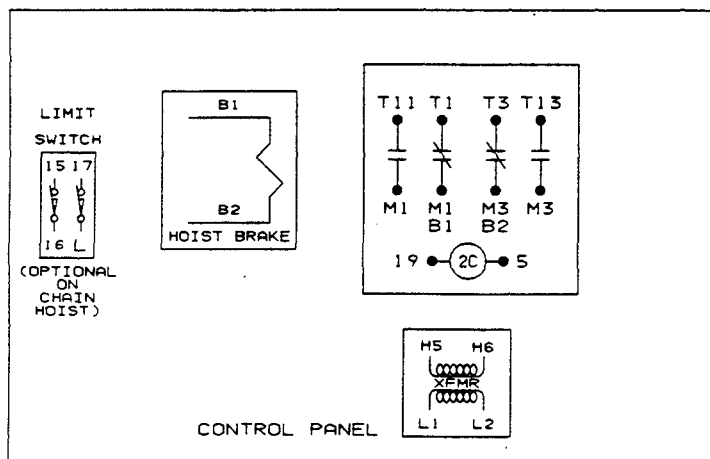
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Rev. by: Date:

Drawing No.

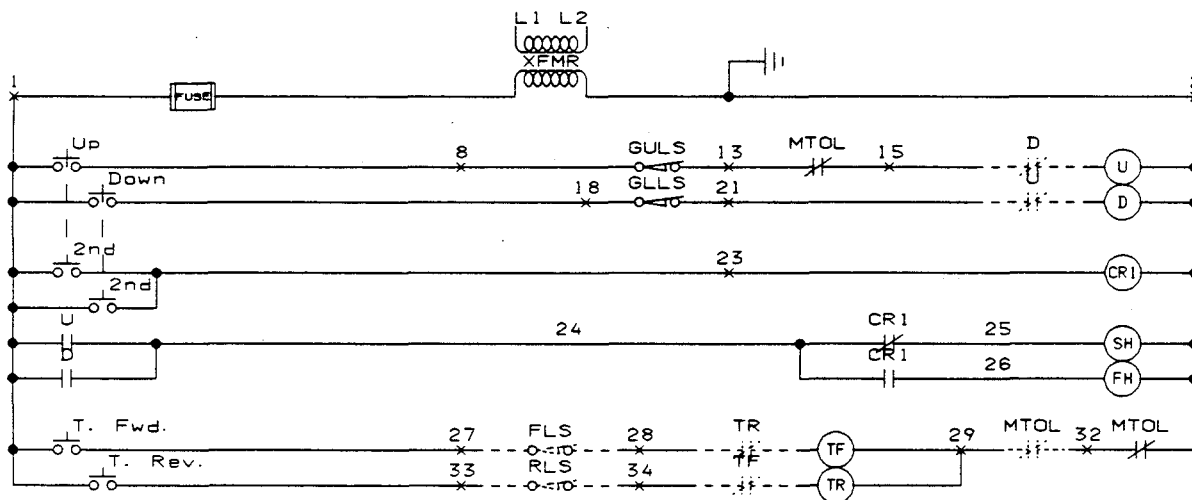
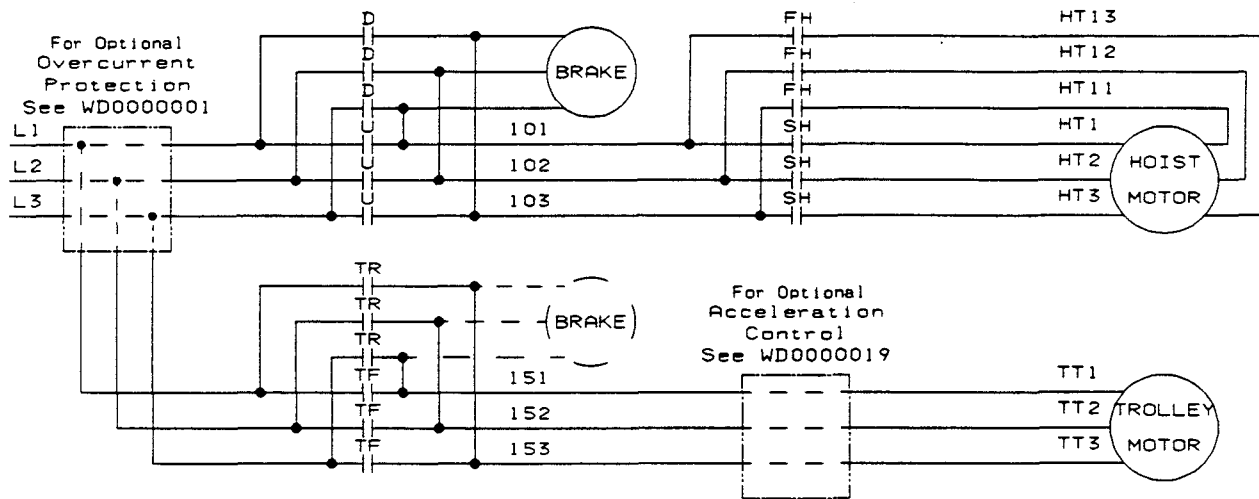
WD2007021

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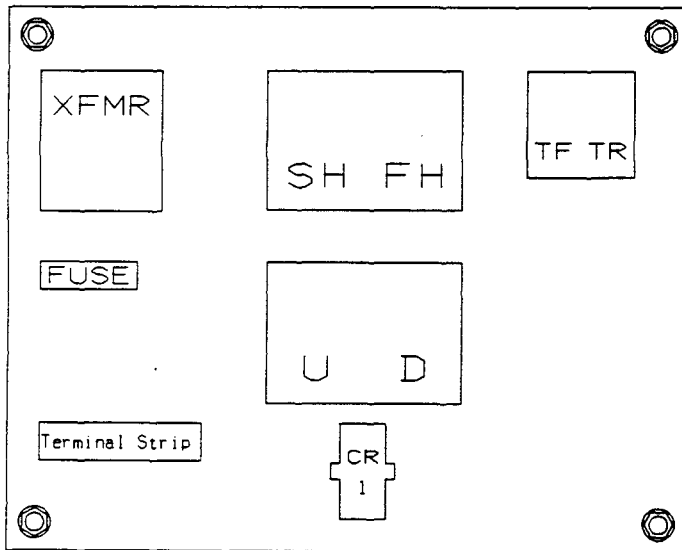
PANEL LAYOUT



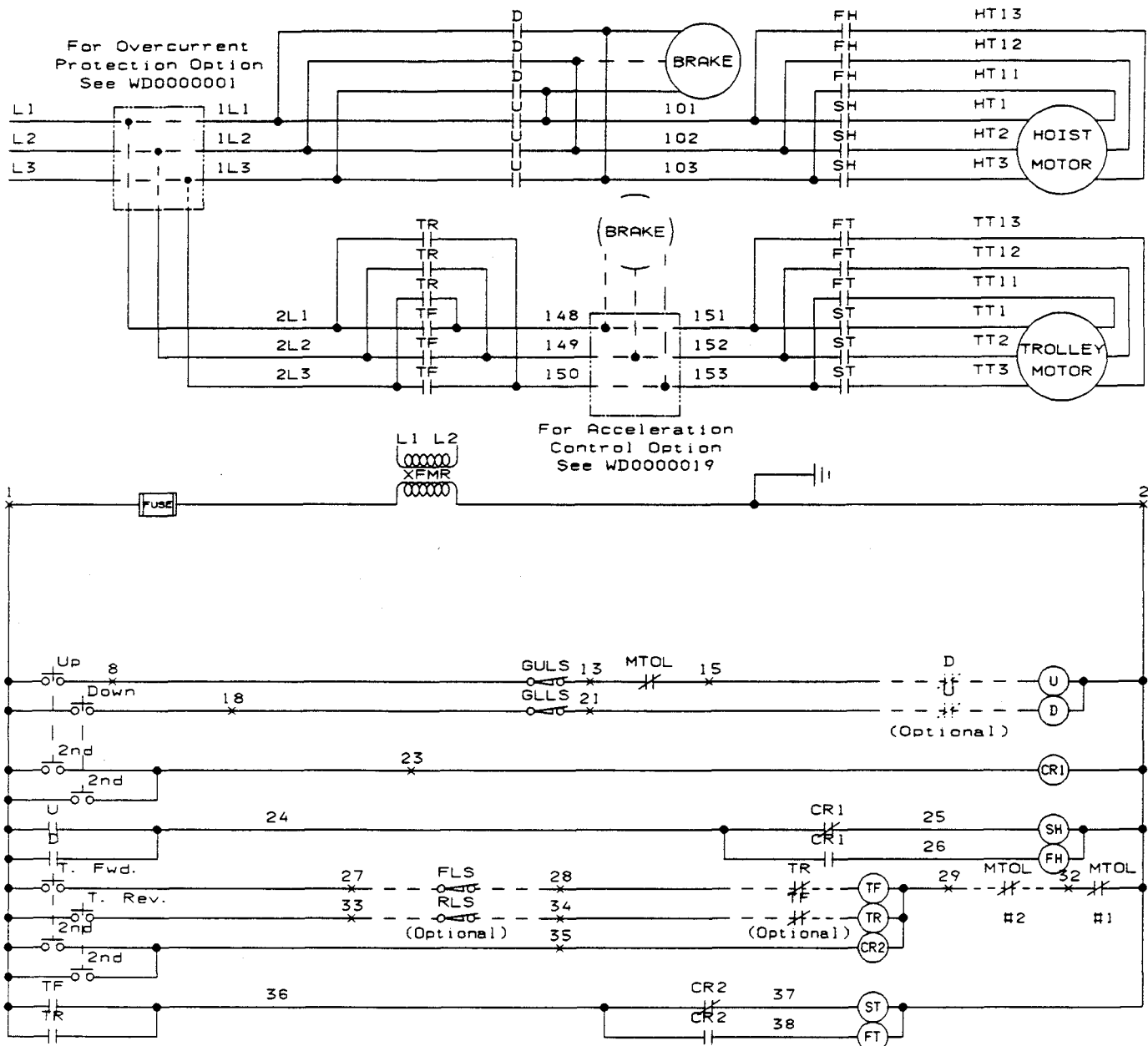
TWO SPEED HOIST
200-230-460-575-3-60



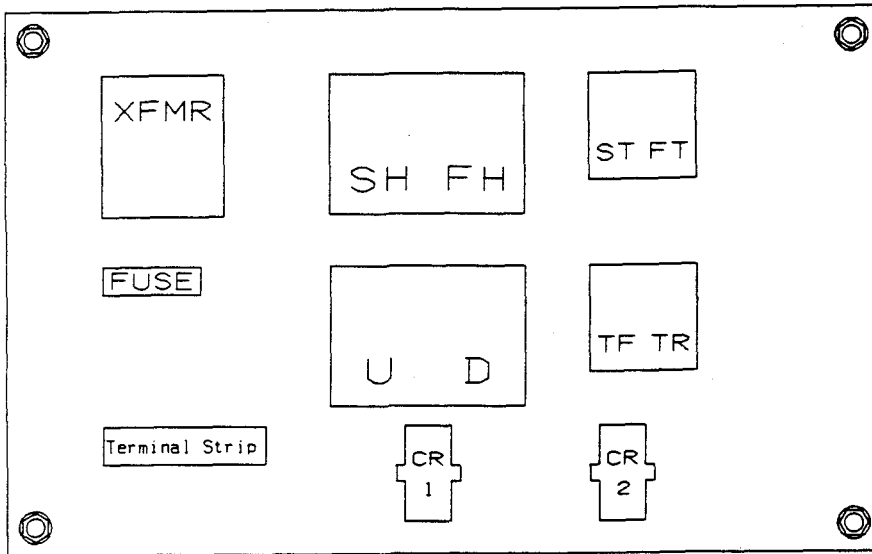
TWO SPEED HOIST-SINGLE SPEED TROLLEY
230 & 460-3-60



TWO SPEED HOIST-SINGLE SPEED TROLLEY
230&460-3-60



TWO SPEED HOIST-TWO SPEED TROLLEY
200-230-460-575 V-3-60



TWO SPEED HOIST-TWO SPEED TROLLEY
200-230-460-575 V-3-60

POWERED HOIST INSPECTION CHECK LIST

SEE PREVENTIVE MAINTENANCE SECTION OF INSTRUCTION MANUAL FOR DETAILS.

CHECK ONLY COMPONENTS APPLICABLE FOR SPECIFIC EQUIPMENT AND INSPECTION TYPE.

HOIST MODEL _____

HOIST S/N _____

HOOKS			CABLE			CHAINS		
YES	NO		YES	NO		YES	NO	
HARDWARE LOOSE	<input type="checkbox"/>	<input type="radio"/>	BROKEN WIRES AT ENDS	<input type="checkbox"/>	<input type="radio"/>	BINDING	<input type="checkbox"/>	<input type="radio"/>
CRACKS	<input type="checkbox"/>	<input type="radio"/>	BROKEN WIRES EXCESSIVE	<input type="checkbox"/>	<input type="radio"/>	CRACKED	<input type="checkbox"/>	<input type="radio"/>
EXCESSIVE WEAR	<input type="checkbox"/>	<input type="radio"/>	EXCESSIVE WEAR	<input type="checkbox"/>	<input type="radio"/>	TWISTED	<input type="checkbox"/>	<input type="radio"/>
BENT	<input type="checkbox"/>	<input type="radio"/>	KINKED OR DISTORTED	<input type="checkbox"/>	<input type="radio"/>	DISTORTED	<input type="checkbox"/>	<input type="radio"/>
SPREADING	<input type="checkbox"/>	<input type="radio"/>	CORROSION	<input type="checkbox"/>	<input type="radio"/>	CORRODED	<input type="checkbox"/>	<input type="radio"/>
FREELY ROTATE	<input type="radio"/>	<input type="checkbox"/>	HEAT DAMAGED	<input type="checkbox"/>	<input type="radio"/>	EXCESSIVE WEAR	<input type="checkbox"/>	<input type="radio"/>
LATCH DAMAGED	<input type="checkbox"/>	<input type="radio"/>				WORN CHAIN GUIDES	<input type="checkbox"/>	<input type="radio"/>
						POCKET WHEELS WORN	<input type="checkbox"/>	<input type="radio"/>
BRAKES			WIRING			DRUM & SHEAVES		
YES	NO		YES	NO		YES	NO	
MOTOR BRAKE WORN OR NOT OPERATING	<input type="checkbox"/>	<input type="radio"/>	LOOSE CONNECTIONS	<input type="checkbox"/>	<input type="radio"/>	WORN EXCESSIVELY	<input type="checkbox"/>	<input type="radio"/>
EXCESSIVE LOADBRAKE DRIFT			FRAYED	<input type="checkbox"/>	<input type="radio"/>	CRACKED OR SCORED	<input type="checkbox"/>	<input type="radio"/>
OR BLACKLASH	<input type="checkbox"/>	<input type="radio"/>	DAMAGED	<input type="checkbox"/>	<input type="radio"/>			
EXCESSIVE DISC WEAR	<input type="checkbox"/>	<input type="radio"/>	PROPER GROUNDING	<input type="radio"/>	<input type="checkbox"/>			
LIMIT SWITCHES			LOAD LIMITING DEVICE			COLLECTORS		
YES	NO		YES	NO		YES	NO	
OPERATING PROPERLY	<input type="radio"/>	<input type="checkbox"/>	OPERATING PROPERLY	<input type="radio"/>	<input type="checkbox"/>	BINDING	<input type="checkbox"/>	<input type="radio"/>
						EXCESSIVE WEAR	<input type="checkbox"/>	<input type="radio"/>
HOUSING			OPERATION CONTROLS			LUBRICATION		
YES	NO		YES	NO		YES	NO	
DISTORTED	<input type="checkbox"/>	<input type="radio"/>	CONTACTOR PITTING	<input type="checkbox"/>	<input type="radio"/>	ALL POINTS LUBRICATED AS GIVEN IN LUB CHART	<input type="radio"/>	<input type="checkbox"/>
CRACKS	<input type="checkbox"/>	<input type="radio"/>	OPERATING PROPERLY	<input type="radio"/>	<input type="checkbox"/>	OIL DARK OR LOW	<input type="checkbox"/>	<input type="radio"/>
LOOSE HARDWARE	<input type="checkbox"/>	<input type="radio"/>	DAMAGED PUSH BUTTON			OIL LEAKS	<input type="checkbox"/>	<input type="radio"/>
BEARING NOISE	<input type="checkbox"/>	<input type="radio"/>	HOUSING	<input type="checkbox"/>	<input type="radio"/>			
SUPPORTING STRUCTURE			AIR SYSTEM			WARNING LABELS		
YES	NO		YES	NO		YES	NO	
CONTINUED ABILITY TO SUPPORT IMPOSED LOADS	<input type="radio"/>	<input type="checkbox"/>	LEAKING	<input type="checkbox"/>	<input type="radio"/>	MISSING	<input type="checkbox"/>	<input type="radio"/>
WORN OR DISTORTED TROLLEY PARTS	<input type="checkbox"/>	<input type="radio"/>	LOOSE CONNECTIONS	<input type="checkbox"/>	<input type="radio"/>	ILLEGIBLE	<input type="checkbox"/>	<input type="radio"/>
			BROKEN CONTROL PENDANT	<input type="checkbox"/>	<input type="radio"/>			

NOTE: IF ANY () IS CHECKED DO NOT OPERATE THE HOIST UNTIL REPAIRS HAVE BEEN MADE.

REMARKS AND REPAIRS MADE

SIGNATURE _____ DATE _____ CLOCK NUMBER _____

POWERED HOIST INSPECTION CHECK LIST

SEE PREVENTIVE MAINTENANCE SECTION OF INSTRUCTION MANUAL FOR DETAILS.

CHECK ONLY COMPONENTS APPLICABLE FOR SPECIFIC EQUIPMENT AND INSPECTION TYPE.

HOIST MODEL _____

HOIST S/N _____

HOOKS			CABLE			CHAINS		
	YES	NO		YES	NO		YES	NO
HARDWARE LOOSE	<input type="checkbox"/>	<input type="checkbox"/>	BROKEN WIRES AT ENDS	<input type="checkbox"/>	<input type="checkbox"/>	BINDING	<input type="checkbox"/>	<input type="checkbox"/>
CRACKS	<input type="checkbox"/>	<input type="checkbox"/>	BROKEN WIRES EXCESSIVE	<input type="checkbox"/>	<input type="checkbox"/>	CRACKED	<input type="checkbox"/>	<input type="checkbox"/>
EXCESSIVE WEAR	<input type="checkbox"/>	<input type="checkbox"/>	EXCESSIVE WEAR	<input type="checkbox"/>	<input type="checkbox"/>	TWISTED	<input type="checkbox"/>	<input type="checkbox"/>
BENT	<input type="checkbox"/>	<input type="checkbox"/>	KINKED OR DISTORTED	<input type="checkbox"/>	<input type="checkbox"/>	DISTORTED	<input type="checkbox"/>	<input type="checkbox"/>
SPREADING	<input type="checkbox"/>	<input type="checkbox"/>	CORROSION	<input type="checkbox"/>	<input type="checkbox"/>	CORRODED	<input type="checkbox"/>	<input type="checkbox"/>
FREELY ROTATE	<input type="checkbox"/>	<input type="checkbox"/>	HEAT DAMAGED	<input type="checkbox"/>	<input type="checkbox"/>	EXCESSIVE WEAR	<input type="checkbox"/>	<input type="checkbox"/>
LATCH DAMAGED	<input type="checkbox"/>	<input type="checkbox"/>				WORN CHAIN GUIDES	<input type="checkbox"/>	<input type="checkbox"/>
						POCKET WHEELS WORN	<input type="checkbox"/>	<input type="checkbox"/>
BRAKES			WIRING			DRUM & SHEAVES		
	YES	NO		YES	NO		YES	NO
MOTOR BRAKE WORN OR NOT OPERATING	<input type="checkbox"/>	<input type="checkbox"/>	LOOSE CONNECTIONS	<input type="checkbox"/>	<input type="checkbox"/>	WORN EXCESSIVELY	<input type="checkbox"/>	<input type="checkbox"/>
EXCESSIVE LOADBRAKE DRIFT OR BLACKLASH	<input type="checkbox"/>	<input type="checkbox"/>	FRAYED	<input type="checkbox"/>	<input type="checkbox"/>	CRACKED OR SCORED	<input type="checkbox"/>	<input type="checkbox"/>
EXCESSIVE DISC WEAR	<input type="checkbox"/>	<input type="checkbox"/>	DAMAGED	<input type="checkbox"/>	<input type="checkbox"/>			
			PROPER GROUNDING	<input type="checkbox"/>	<input type="checkbox"/>			
LIMIT SWITCHES			LOAD LIMITING DEVICE			COLLECTORS		
	YES	NO		YES	NO		YES	NO
OPERATING PROPERLY	<input type="checkbox"/>	<input type="checkbox"/>	OPERATING PROPERLY	<input type="checkbox"/>	<input type="checkbox"/>	BINDING	<input type="checkbox"/>	<input type="checkbox"/>
						EXCESSIVE WEAR	<input type="checkbox"/>	<input type="checkbox"/>
HOUSING			OPERATION CONTROLS			LUBRICATION		
	YES	NO		YES	NO		YES	NO
DISTORTED	<input type="checkbox"/>	<input type="checkbox"/>	CONTACTOR PITTING	<input type="checkbox"/>	<input type="checkbox"/>	ALL POINTS LUBRICATED AS GIVEN IN LUB CHART	<input type="checkbox"/>	<input type="checkbox"/>
CRACKS	<input type="checkbox"/>	<input type="checkbox"/>	OPERATING PROPERLY	<input type="checkbox"/>	<input type="checkbox"/>	OIL DARK OR LOW	<input type="checkbox"/>	<input type="checkbox"/>
LOOSE HARDWARE	<input type="checkbox"/>	<input type="checkbox"/>	DAMAGED PUSH BUTTON	<input type="checkbox"/>	<input type="checkbox"/>	OIL LEAKS	<input type="checkbox"/>	<input type="checkbox"/>
BEARING NOISE	<input type="checkbox"/>	<input type="checkbox"/>	HOUSING	<input type="checkbox"/>	<input type="checkbox"/>			
SUPPORTING STRUCTURE			AIR SYSTEM			WARNING LABELS		
	YES	NO		YES	NO		YES	NO
CONTINUED ABILITY TO SUPPORT IMPOSED LOADS	<input type="checkbox"/>	<input type="checkbox"/>	LEAKING	<input type="checkbox"/>	<input type="checkbox"/>	MISSING	<input type="checkbox"/>	<input type="checkbox"/>
WORN OR DISTORTED TROLLEY PARTS	<input type="checkbox"/>	<input type="checkbox"/>	LOOSE CONNECTIONS	<input type="checkbox"/>	<input type="checkbox"/>	ILLEGIBLE	<input type="checkbox"/>	<input type="checkbox"/>
			BROKEN CONTROL PENDANT	<input type="checkbox"/>	<input type="checkbox"/>			

NOTE: IF ANY () IS CHECKED DO NOT OPERATE THE HOIST UNTIL REPAIRS HAVE BEEN MADE.

REMARKS AND REPAIRS MADE _____

SIGNATURE _____ DATE _____ CLOCK NUMBER _____

Yale®

HOISTS

Warranty

Every hoist is thoroughly inspected and tested prior to shipment from the factory. Should any problems develop, return the complete hoist prepaid to your nearest Yale Authorized Warranty Repair Station.

This warranty does not apply where: (1) deterioration is caused by normal wear, abuse, improper or inadequate power supply, eccentric or side loading, overloading, chemical or abrasive actions, improper maintenance or excessive heat; (2) problems resulted from repairs, modifications or alterations made by persons other than factory or Duff-Norton personnel;

(3) the hoist has been abused or damaged as a result of an accident; (4) repair parts or accessories other than those supplied by Duff-Norton are used on the hoist. Equipment and accessories not of the seller's manufacture are warranted only to the extent that they are warranted by the manufacturer. EXCEPT AS STATED HEREIN, DUFF-NORTON MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

Improvements:

Yale is constantly striving to improve its product. Changes in design and improvements will be made whenever the manufacturer believes the efficiency of the product will be improved without incurring any obligation to incorporate such improvements in any products which have been shipped or are in service.

Important Notice:

Use of chain, wire rope or replacement parts other than as supplied as original equipment on Yale hoists may lead to dangerous operation. Accordingly, Yale cannot be responsible in such cases and our warranty should be voided.

For more information write Yale Hoists, Forrest City, Arkansas 72335.



Yale® Hoists
Highway 1 North
P.O. Box 1000
Forrest City, Arkansas 72335
Customer Service Phone (800) 999-6318
Fax (800) 766-0223

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