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Form P6110
Edition 3
August, 1978

PARTS BULLETIN

SERIES HRE AND HLE ELECTRIC MOTOR DRIVEN OVERHEAD CHAIN HOISTS

Sizes HRE20A and HRE20B (1 Ton Capacity; Roller Chain)
Sizes HLE20A and HLE20B (1 Ton Capacity; Link Chain)
Sizes HRE30A and HRE30B (1-½ Ton Capacity; Roller Chain)
Sizes HLE30A and HLE30B (1-½ Ton Capacity; Link Chain)
Sizes HRE40A and HRE40B (2 Ton Capacity; Roller Chain)
Sizes HLE40A and HLE40B (2 Ton Capacity; Link Chain)
Sizes HRE60A and HRE60B (3 Ton Capacity; Roller Chain)
Sizes HLE60A and HLE60B (3 Ton Capacity; Link Chain)

WARNING
THESE HOISTS ARE NOT TO BE USED FOR LIFTING OR LOWERING PEOPLE

HOW TO ORDER

Order all repair parts for your Ingersoll-Rand Tool by the **NAME** and **NUMBER** shown in the Repair List section. **Never** use the illustration numbers which appear in the first column.

For prompt service and genuine Ingersoll-Rand parts, place orders with the nearest Ingersoll-Rand Office or Authorized Distributor.

Notice: The use of other than genuine Ingersoll-Rand replacement parts may result in decreased tool performance and increased maintenance, and may, at the Company's option, invalidate all warranties.

Refer All Communications to the Nearest Ingersoll-Rand Office or Distributor.

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Ingersoll-Rand®

OPERATING PRACTICES

The two most important aspects of safe Hoist operation are: (1) Allow only qualified people to operate a Hoist, and (2) Subject each Hoist to a regular inspection and maintenance procedure.

A qualified operator must be physically competent. He must have no health condition which might affect his ability to react, and he must have good hearing, vision and depth perception. The qualified Hoist operator must be carefully instructed in his duties and must understand the operation of the Hoist, including a study of the manufacturer's literature. He must thoroughly understand proper methods of hitching loads. He should have a good attitude regarding safety and should refuse to operate under unsafe conditions.

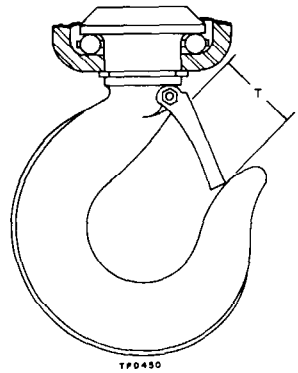
Regular inspection procedures should be set up, rigidly adhered to and recorded by or under the direction of a qualified person. On Hoists in continuous service, inspection should be made at the beginning of each shift. The items to be checked include, but are not limited to:

a. Lubrication according to manufacturer's instructions.

b. **Brakes**: Visually check for proper adjustment. Lift a capacity or near capacity load a few inches off the floor and check ability of braking system to stop and hold the load and without excessive drift.

c. **Chain and Hooks**: Visually inspect the load chain for cleanliness and lubrication as well as wear or other damage. **Note**: Excessive wear may not be apparent upon casual observation. The only positive check is to gauge it according to manufacturer's instructions. Refer to **CHAIN REPLACEMENT** on page 10. Never operate a Hoist with dry, dirty, worn, damaged or kinked chain.

Hooks should be checked for wear, increase in throat opening, and bending. (**Note**: Increased throat opening or a bent hook indicates overloading or abuse). Replace hooks having a 15% increase in throat opening or 10% bend. If the latch snaps past the tip of the hook, the hook is sprung and must be replaced. Check hook support bearings for lubrication or damage. See that they swivel easily and smoothly.



Hoist Size	"T" Throat Opening	
	New Hook	Discard Hook
HRE20, HLE20 (1-ton Hoist)	1-1/4	1-7/16
HRE30, HLE30 (1-1/2-ton Hoist)	1-3/8	1-9/16
HRE40, HLE40 (2-ton Hoist)	1-1/2	1-3/4
HRE60, HLE60 (3-ton Hoist)	1-7/8	2-7/32

Observe the action of Chain feeding through the Hoist. Do not operate a Hoist unless the Chain feeds through the Hoist and Hook Block smoothly and without audible clicking or other evidence of binding or malfunctioning.

d. **Controls**: See that the controls function properly and return to neutral when released. Check the functioning of up and down stops by running the empty hook slowly to both extremes of travel. If the hook does not stop in its normal position, do not operate the Hoist until the cause of the trouble is located and corrected.

e. **General**: Check to see that suspension fastenings are secure, unworn and undamaged. On trolley-mounted Hoists, check that trolley wheels track the rail properly and that wheels and rail are not excessively worn. Be alert for unusual visual or audible signs which could indicate a defect. Do not operate the Hoist until the defect has been determined and corrected.

Periodically, depending upon severity of service, the following items should also be inspected. These are in addition to those previously listed.

a. Check all load-supporting members, including Chain, Pocket Wheel and Chain Guides, for excessive wear or damage.

b. Inspect top and bottom hooks with a magnetic particle or other suitable crack detector.

c. Hook retaining nuts or collars along with their locking members and support bearings should be inspected. Proper inspection will require disassembly.

d. The Hoist should be disassembled and checked for worn gearing, bearings and shafts. Parts should be cleaned, lubricated and reassembled with all worn parts discarded and replaced.

e. Check all Trolleys for smoothness of operation and wear on supporting members.

f. Check all trolley wheel nuts and suspension bolts for tightness.

OPERATING INSTRUCTIONS

1. Read the manufacturer's instructions before operating the Hoist.
2. Never lift a load greater than the rated capacity of the Hoist.
3. Never use the load chain as a sling.
4. Always stand clear of the load.
5. Never use the Hoist for lifting or lowering people, and never stand on a suspended load.
6. Never carry loads over people.
7. Before each shift, check the Hoist for wear or damage. Check brakes, limit stops, etc.
8. Periodically inspect the Hoist thoroughly and replace worn or damaged parts.
9. Follow the lubrication instructions.
10. Do not attempt to repair load chain or hooks. Replace them when worn or damaged.
11. Never operate a Hoist when the load is not centered under the hook. Do not "side pull" or "yard".
12. Always rig the Hoist properly and carefully.
13. Never operate a Hoist with twisted, kinked or damaged chain.
14. Ease the slack out of the load chain when starting a lift. Do not jerk the Hoist.
15. Keep the load chain clean and well lubricated. Do not drag the load chain or hook on the floor.
16. Be certain there are no objects in the way of a load or hook when moving the Hoist.
17. Be certain the electrical power is shut off before performing maintenance work on the Hoist.
18. Avoid swinging the load when moving the Hoist.
19. Keep the load block overhead when not in use.
20. Properly secure an outdoor Hoist before leaving it unattended.
21. Be certain the load is properly seated in the saddle of the hook. Do not tip-load the hook as this leads to spreading and eventual failure of the hook.
22. Do not allow unqualified personnel to operate a Hoist.
23. Avoid collision or bumping of Hoists. Do not swing a suspended load.
24. Do not operate a Hoist if you are not physically fit to do so.

25. Do not do anything you believe may be unsafe.
26. Do not use load chains as a ground for welding. Do not attach a welding electrode to a Hoist or sling chain.
27. Do not divert your attention from the load while operating a Hoist.
28. Do not use up and down stops as a means of stopping a Hoist--these are emergency devices only.
29. Do not leave a load suspended for any extended period.
30. Never splice a hoist chain by inserting a bolt between links, or by any other means.
31. Do not force a chain or hook into place by hammering. Do not insert the point of the hook into a chain link.
32. Do not expose the chain to freezing temperatures, and do not apply sudden loads to a cold chain.

INSTALLING THE HOIST

Make certain the Hoist is properly installed. A little extra time and effort in so doing can contribute a lot toward preventing accidents and helping you get the best service possible.

Always make certain the supporting member from which the Hoist is suspended is strong enough to support the weight of the Hoist plus the weight of a maximum rated load **plus** a generous safety factor of at least 500% of the combined weights.

On Hoists equipped with a Chain Bucket, relocate the **UP** stop ring to prevent raising the load into the Chain Bucket. Since double line Hoists are not furnished with an **UP** stop ring, the proper up stop parts will have to be installed on Hoists using a Chain Bucket.

If the Hoist is suspended by a Top Hook, the supporting member should rest completely within the saddle of the Hook and be centered directly above the hook shank. Do not use a supporting member that cants the Hoist to one side or the other.

All Ingersoll-Rand Trolleys shipped with a new Hoist are adjusted at the factory to fit the minimum width beam flange on which the Trolley will operate. When disassembling the Trolley for installation on the beam, note the exact arrangement of spacers so that the Trolley can be correctly reassembled.

For installation on a beam flange other than that for which the Trolley is pre-adjusted, measure the beam flange and temporarily install the Trolley on the Hoist to determine the exact distribution and arrangement of the spacers.

The distance between the wheel flanges should be 3/16" greater than the width of the beam flange for straight runway beams, and 3/16" to 1/4" greater in a runway system that includes sharp curves. The number of spacers between the Trolley Bracket and the mounting lug on the Hoist should be the same in all four locations in order to keep the Hoist centered under the I-beam. The remaining spacers must be equally distributed on the outside of the Trolley Bracket. At least one spacer must be installed between each bolt head and Trolley Bracket, and each nut and Trolley Bracket.

When installing the Hoist and Trolley on the beam, make certain the Trolley Brackets are parallel and vertical. After installation, operate the Trolley over the entire length of beam with a capacity load suspended a few inches off the floor to make certain that adjustment and operation are satisfactory.

When installing an electric motor Hoist, make certain the power supply is of the same voltage and frequency as stated on the Hoist nameplate. If an electric Hoist is connected to the wrong power supply, the motor may be severely damaged or burned out.

The 230/460 volt 3 phase motor is reconnectable. That is, it can be connected internally for use on 230 volt 3 phase power supply, or it can be connected internally for use on 460 volt 3 phase power supply. However, if the motor is internally connected for one voltage, it cannot be used on the other voltage without seriously damaging the motor. Unless otherwise specified, all 230/460 volt Hoists are shipped from the factory connected for use on 460 volts.

After installing a 3 phase Hoist, check the pendent control to be certain the Hoist properly responds to the RAISE and LOWER signals. If the hook lowers when you depress the RAISE button, or if it raises when you depress the LOWER button, refer to the section **Pre-Operation Checks.**

Note: All Hoists are shipped from the factory with an initial filling of gear lubricant suitable for ambient temperatures about 50°F (10°C).

PRE-OPERATION CHECKS

Before putting a new Electric Chain Hoist in regular operation, check the following:

1. **Power Supply**: This must be the same voltage and frequency as stated on the tag attached to the motor. Unless otherwise specified, all Hoists are shipped from the factory with the motor and controls connected for operation on 460 volt, 3 phase, 60 Hertz current. If a hoist motor connected for operation on 200 or 230 volt current is connected to a 460 volt power supply, the motor will be burned out.
2. Depress and quickly release the UP button to make certain the hook travels in the correct direction. If the hook lowers when the UP button is depressed, disconnect the power supply and transpose any two of the hot power supply leads L1, L2, or L3 at the terminal block on the Control Panel. Do not attempt to make the change in any other manner. **Warning**: It is extremely important that the UP button be depressed first. Should the DOWN button be depressed first when the hot power leads are incorrectly connected, the hook block might rise into the Hoist resulting in serious damage to equipment and possible injury to personnel. When the hot power leads are incorrectly connected, the up limit switch is inoperative.

LUBRICATION

For ambient temperatures above 50°F (10°C), use Ingersoll-Rand Extra Heavy Industrial Oil No. 55 or any nonemulsifying, non-detergent, rust-inhibited, oxygen-stable oil meeting AGMA Standard No. 3. Example: Mobile DTE Extra Heavy Turbine Oil or Texaco Regal E.

For ambient temperatures below 50°F (10°C), use Ingersoll-Rand Heavy-Medium Industrial Oil No. 45 or any nonemulsifying, non-detergent, rust-inhibited, oxygen-stable oil meeting AGMA Standard No. 2. Example: Mobil DTE Heavy-Medium or Texaco Regal PC.

Weekly, or as experience indicates, remove the Pipe Plug (23) from the side of the Gear Case (22). If the oil level is below the pipe tapped hole, remove the Vent Pipe Plug (24) from the top of the Gear Case and add a sufficient amount of the recommended gearing lubricant to bring the oil level up to the pipe tapped hole in the side of the Gear Case.

Caution: Improper or lack of lubrication in the gearing will result in costly and unnecessary repairs.

After each 160 hours of operation, or as experience indicates, inject 3 to 6 strokes of Ingersoll-Rand Lubricant No. 28 into the Grease Fittings on the Trolley Wheel Shafts.

On initial and replacement installations, it is imperative that load chain and chain attachment pins be kept clean and lubricated at all times. Unlubricated Chain will wear out in a very few capacity lifts. Failure to maintain clean lubricated Chain will void the Manufacturer's Warranty and cause chain wear which will make operation of the Hoist hazardous. Where the Hoist is being used in clean areas, an open chain lubricant or any good EP gear oil may be used. Several excellent types of open chain lubricants are available and can be purchased in convenient aerosol cans.

The Top Hook and Bottom Hook are both supported on thrust bearings. At each 160 hour check-up, work some Ingersoll-Rand Lubricant No. 28 into each of these bearings. Failure to lubricate these bearings could eventually cause bearing failure. Both Hooks should swivel freely with a rated load.

Disassemble the sheave block on double line Hoists and work some grease into the Bottom Chain Wheel Bearings.

AFTER-REPAIR CHECKS

After making any repairs or replacing any parts on an Electric Chain Hoist, and before putting it back into regular operation, make the following checks in the sequence in which they are listed.

1. Check the power supply as instructed under PRE-OPERATION CHECKS.
2. Check lubrication of the gearing as instructed under LUBRICATION.
3. Depress and quickly release the UP button to make certain the hook travels in the correct direction. If the hook lowers when the UP button is depressed, disconnect the power supply and transpose any two of the hot power supply leads L1, L2 or L3 at the terminal block on the Control Panel. Do not attempt to make the change in any other manner. **Warning**: It is extremely important that the UP button be depressed first. Should the DOWN button be depressed first when the hot power leads are incorrectly connected, the hook block might rise into the Hoist resulting in serious damage to equipment and possible injury to personnel.

4. Depress the UP button and, while the hook is rising, pull down on the plain end of the Lever (153). The hook should automatically reverse direction of travel. If it does not automatically reverse, there is an error in the wiring connections or the bottom Limit Switch (109) is defective. Recheck the wiring as instructed in step 3. If the wiring is correct, replace the bottom Limit Switch.
5. Depress the DOWN button and, while the hook is lowering, push **up** on the plain end of the Stop Lever. The hook should automatically reverse direction of travel. If it does not reverse, there is an error in the wiring connections or the top Limit Switch is defective. Recheck the wiring, and if the wiring is correct, replace the top Limit Switch.
6. **For Model A Hoists**: Remove the Brake Cover (158) and check the operation of the motor brake. When either the UP or DOWN button is depressed, the brake linings must move clear of the Brake Drum (161). When the controls buttor are released, the brake linings must instantly clamp around the Brake Drum, and the Brake Drum must stop rotating in less than one second. If there is excessive overtravel of the Brake Drum after the brake is applied, increase the brake pressure by running the Support Rod Nuts (168) further onto the Spring support Rod (167).

   For Model B Hoists: Remove the Brake Cover (268) and check the operation of the motor brake. When either the UP or DOWN button is depressed, the Brake Solenoid (271) must pull the Brake Compression Plate (260) far enough to allow the Friction Discs (257) to rotate freely. A solenoid gap of about 1/16" is sufficient for proper brake action. When the solenoid gap reaches 3/32" due to wear, readjust the solenoid gap to 1/16". Replace Friction Discs (257) when they are worn to 5/64" thick.

MECHANICAL LOAD BRAKE INFORMATION

The mechanical load brake used in these Hoists is self-adjusting. It is located in the Gear Case (22), and will last for a long period of time if the proper lubricant is maintained at the correct level in the Gear Case. Should the Hoist ever perform erratically in the lowering direction, it is an indication that the facing on one or more of the friction discs may be worn below the oil grooves, and that a new Brake Disc Pack (34A) must be installed as instructed in the following disassembly and assembly procedures.

Do not under any condition, attempt to replace individual members of the Brake Disc Pack. It must be replaced only as a unit.

DISASSEMBLY OF GEARING, BRAKE AND SPRAG CLUTCH

Do not disassemble this unit any further than necessary to replace or repair a worn or damaged part. Do not remove any member which is a press fit in or on a subassembly unless the removal of that member is necessary for replacement or repair of damaged parts.

1. Unfasten the Chain (43 or 45) from the housing boss. Run the motor in the lowering direction until the Chain is removed from the Hoist. Disconnect the power supply.
2. Drain the oil from the Gear Case (22).
3. Disconnect the motor leads at the Control Housing. Remove the Link Pin (177) that connects the Stop Lever (153) to the Limit Switch Connecting Yoke (144).
4. Remove the Brake Cover (158 or 268).
5. **For Model A Hoists**: Remove the two Support Rod Nuts (168) and the Brake Arm Spring (166) from one end of the Spring Support Rod (167). Remove the Spring Support Rod from the Brake Arm Assembly (163). Remove the E-type Retaining Ring (169) from the brake arm anchor stud.
6. Remove the Control Housing and its assembled parts, as a unit, from the Hoist.
7. **For Model A Hoists**: Withdraw the Brake Arms (163) and their assembled parts from the Hoist.
8. Remove the motor end bell from the Motor. Unscrew the Housing Cap Screws (180), and remove the Motor, as a unit, from the Hoist.
9. Unscrew and remove the Gear Case Cap Screws (26).
10. Withdraw the Gear Case Cover (27) along with the Pinion Shaft (7) and its assembled parts from the Hoist.

11. In the following sequence, withdraw the Gear Case (22), Stationary Cam (30), Ring Gear (31) and the Brake Actuator (32).

12. Withdraw the Gear Frame Assembly.

13. As a unit, withdraw the Top Chain Wheel Shaft (16), Brake Pressure Plate (33), Brake Disc Stack (34) and Outer Clutch Race (36). If necessary, tap the small end of the Top Chain Wheel Shaft with a soft hammer to start it from the Chain Housing (1). Stand this unit on a workbench with the splined-shaft end up.

14. Lift the complete Brake Disc Stack (34) from the unit. **If the facing on any one of the friction discs is worn below the oil grooves, a new Brake Disc Pack (34A) must be installed.**

15. Lift off the Brake Pressure Plate (33).

16. Grasp the Outer Clutch Race (36) and, using a soft hammer, lightly strike the small end of the Top Chain Wheel Shaft (16) to remove the Large Wheel Shaft Bearing (21).

17. If the Outer Clutch Race and Sprag Clutch (35) did not come off the Top Chain Wheel Shaft along with the Bearing, slightly rotate the Outer Clutch Race in a clockwise direction and pull it from the Top Chain Wheel Shaft.

18. Slip the Sprag Clutch from the bore of the Outer Clutch Race.

For Model B Hoists (old style and new style), the electric motor brake parts may be disassembled as follows:

19. Remove the two outer Brake Adjusting Nuts (263).

20. This will permit removal of the Solenoid Mounting Bracket (273) and its attached parts.

21. Remove the remaining two Brake Adjusting Nuts (263) followed by the Brake Springs (259), Compression Plate (260), the Friction Discs (257) and Disc Brake Plates (256).

22. Brake Friction Discs should be replaced if:

    a. they have worn to 5/64" thickness or less.

    b. they show signs of damage or glazing that will affect or shorten their service life.

    Warning: Do not use any solvent that attacks organics on the Friction Discs.

23. Remove the Brake Adapter Retainers (255) and the Brake Adapter (253). The Pinion Shaft (7) can now be removed from the Gear Case Cover (250).

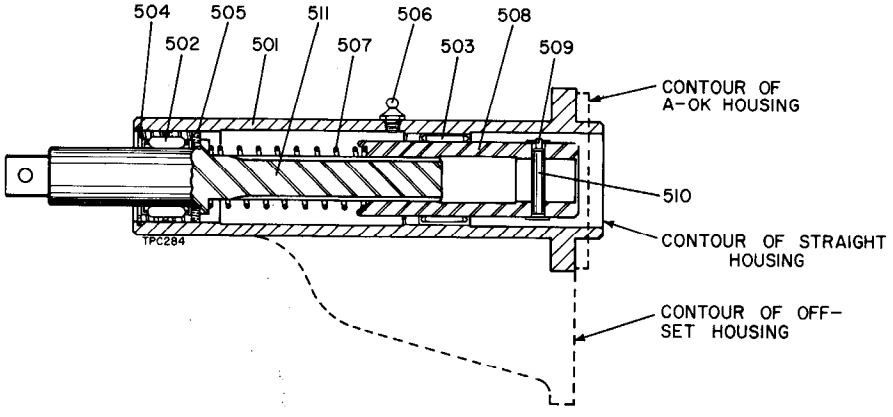
24. Remove the Pinion Shaft Seal (252) and the Pinion Shaft Bearing (8) if necessary. These parts should be replaced if the time to the next overhaul is expected to be long. Additionally, the Seal should be replaced if there is an indication of grease leakage. The bearings should be replaced if there is any sign of roughness or excessive looseness.

ASSEMBLY OF GEARING, BRAKE AND SPRAG CLUTCH

1. Slide the Sprag Clutch (35), flanged end first, into the bore of the Outer Clutch Race (36). **Warning: If the Clutch is installed backwards, the brake will not function.**
2. While slightly rotating the clutch race and clutch assembly in a clockwise direction, slide it, **large open end first**, onto the Top Chain Wheel Shaft (16). If correctly assembled, the Outer Clutch Race can be rotated in a clockwise direction only.
3. Using a sleeve that will contact only the inner ring of the Large Wheel Shaft Bearing (21), press the Bearing onto the Chain Wheel Shaft until it seats against the Outer Clutch Race (36). Stand this unit on a workbench so that the small end of the Top Chain Wheel Shaft is upward.
4. Make certain the Wheel Shaft Seal (17) is in the annular groove in the small end of the Top Chain Wheel Shaft.
5. Slide the 1/4" thick Brake Pressure Plate (33) down over the Outer Clutch Race (36).
6. If the facing on any one of the friction discs is worn below the oil grooves, install a new Brake Disc Pack (34A).

Important: The Brake Disc Stack has been greatly improved since these Electric Chain Hoists were originally introduced. If the Brake Actuator (32) is 2-51/64" long, you have the latest style Brake Disc Stack in your Hoist, and need only to replace the Brake Disc Pack. If the Brake Actuator is 2-7/16" long, you have one of the old style Brake Disc Stacks. If this is to be replaced, you must also purchase and install a new Brake Actuator (32) along with a complete Brake Disc Stack.

Assemble the members of the Brake Disc Stack on the Outer Clutch Race as shown in the following illustration.



Assembly of Brake Disc Stack

8. Make certain the Chain Housing Seal (2) is installed in the annular undercut in the Chain Housing (1).
9. Place the Chain Housing, motor end down on a workbench. Place a Gear Case Gasket (25) on the face of the Chain Housing.
10. Take the assembled Chain Wheel Shaft, Clutch and Brake Disc Stack unit, and slide it, shaft end first, into the Chain Housing so that the splines on the shaft engage the spline-broached bore of the Chain Wheel, and so that the end of the shaft passes through the Chain Wheel Spacer (38) and enters the bore of the Small Wheel Shaft Bearing (20).
11. Insert the Pinion Connector (6) into the bore of the Top Chain Wheel Shaft (16).
12. Note that there is one marked tooth on each Planet Gear (11). Rotate the Planet Gears until the marked teeth are spaced 120^{o} apart outside the gear frame web. Align the marks on the Planet Gears with the three timing marks on the wheel shaft gear and insert the gear frame assembly, small gear end first, into the wheel shaft gear.

Note: The front Gear Frame Bearing (15) may be a light press fit in the bearing recess in the Chain Wheel Shaft. If necessary, tap the Gear Frame (10) with a soft hammer to seat the Bearing. When properly seated, the small gear end of each Planet Gear (11) is slightly below the face of the wheel shaft gear.

13. Insert the Pinion Shaft (7) and Bearing, small splined end first, into the bore of the Gear Frame, meshing the teeth on the pinion gear with the Planet Gears.

14. Slide the Brake Actuator (32), long tang end first, over the assembled gearing. Engage the tangs on the long tang end of the Actuator with the notches in the Brake Pressure Plate and the two notched circular members of the Brake Disc Stack.

15. Slide the Ring Gear (31), notched end first, onto the Planet Gears, engaging the notches in the Ring Gear with the short tangs on the Brake Actuator (32).

16. Rotate the notched square members of the Brake Disc Stack until the notches are aligned with the four tapped holes in the Chain Housing (1). Make certain the tangs on the Brake Actuator are aligned with the inboard notched circular member of the Brake Disc Stack. **This alignment must be maintained.**

17. Slide the Gear Case (22) over the Brake Disc Stack and against the Gasket, making certain the monogram is positioned right side up and is on the nameplate side of the Hoist.

18. Place the Stationary Cam (30), lobe end first, into the back of the Gear Case so that the lobes on the Cam engage the lobes on the Ring Gear (31).

19. **For Model B Hoists (old style and new style)**: Insert the Pinion Shaft Seal (252) and the Pinion Shaft Bearing (8) into the Gear Case Cover (250). **Note**: Insert the Seal with the cupped surface closest to the Bearing as illustrated on page 24.

20. Insert the Pinion Shaft (7) through the Gear Case Cover (250). Apply the Brake Adapter Retainers (255) and the Brake Adapter (253).

21. Install three sets consisting of a Disc Brake Plate (256) and a Friction Disc (257) onto the Brake Mounting Studs (258) **in the order named.** Slide the Compression Plate (260), followed by the Brake Springs (259) and 3/8" Plain Washers (262), onto the Studs and retain them using the two Brake Adjusting Nuts (263). Refer to the drawing on page 00 to assure proper sequence of installation.

22. Install the Solenoid Mounting Bracket (273) and its attached parts and retain them using the two outer Brake Adjusting Nuts (263).

23. Place the second Gear Case Gasket over the Stationary Cam and against the face of the Gear Case.

24. Align the dowels in the Gear Case Cover (27) with the dowel holes in the Gear Case, and slide the Gear Case Cover over the Stationary Cam. Tap it with a soft hammer until it seats against the Gasket. Be certain not to distort the Pinion Shaft Seal (29).

25. Install the Gear Case Cap Screws (26), tightening each screw a little at a time to a final torque of 40 ft-lb (54.2 Nm).

26. **For Model A Hoists**: Install the E-type Retaining Ring (169) in the inner groove on the Pinion Shaft (7). Install the Brake Drum Key (162) in the keyway in the Pinion Shaft.

27. **For Model A Hoists:** Slide the Brake Drum (161), flat side first, onto the end of the Pinion Shaft until it seats against the E-type Retaining Ring. Retain it with a second E-type Retaining Ring.

28. Position the Housing Gasket (179) on the face of the Chain Housing (1) and install the Electric Motor.

29. Attach the Control Housing and its assembled parts to the back side of the Hoist.

30. **For Model A Hoists:** Install the Brake Arms (163), Spring Support Rod (167) with springs and nuts and limit switch linkage as shown in Sections AA and BB of the sectional view.

31. Connect the motor leads as shown in the wiring diagram inside the Control Housing Cover.

32. Reeve the Chain over the Top Chain Wheel (37) and anchor it to the housing boss.

33. Lubricate the gearing as instructed under LUBRICATION.

34. Before putting the Hoist in service, thoroughly check it as instructed under AFTER-REPAIR CHECKS.

IMPROVED TOP CHAIN WHEEL SHAFT ASSEMBLY

Effective May 1974, all new HRE and HLE Hoists are equipped with an improved one-piece Top Chain Wheel Shaft Assembly (18) which is completely interchangeable with corresponding old style parts.

On sizes HRE20, HLE20, HRE40 and HLE40 Hoists, old style parts consisted of an HRA20A-A459 Top Chain Wheel Shaft Assembly and an HRA20A-A798 Wheel Shaft Gear Assembly which included two HRA20A-799 Gear Locating Rings. The HRA20A-A798 and HRA20A-799 remain available as repair parts for Hoists with the old style construction.

On sizes HRE30, HLE30, HRE60 and HLE60 the old style part consisted of a riveted two-piece construction which is no longer available.

CAP SCREW TORQUE SPECIFICATIONS

When assembling an HRE or HLE Hoist, tighten the following cap screws to the torques shown:

	Minimum		Maximum	
	ft-lb	Nm	ft-lb	Nm
Top Hook Yoke Screw (96)	60	81.4	70	95.0
Yoke Anchor Screw (99)	60	81.4	70	95.0
Trolley Adapter Screw (212 and 240)	60	81.4	70	95.0
Trolley Side Adapter Screw (213 and 241)	60	81.4	70	95.0
Gear Case Cap Screw (26)	30	40.7	35	47.5

CHAIN CARE

Keep the Chain well lubricated as instructed in the section under LUBRICATION. Never operate a Hoist when the Chain does not flow freely and smoothly into and out of the Top Chain Wheel, or when it makes noises indicative of binding or other malfunctions. Under certain circumstances, particulary when worn or gummy, slack Chain can become tangled and jammed, causing the Chain to break. Chain can also fail to feed properly with an undersize or improperly mounted Chain Bucket.

Periodically (at the beginning of each shift for Hoists in continuous high duty cycle service), the Chain should be examined for cleanliness, lubrication, wear or other damage, and proper and smooth feeding through the Hoist. If the Hoist is deficient in any of these respects, it must not be operated until the deficiency is corrected.

CHAIN REPLACEMENT

Carefully read and follow the instructions in the section LUBRICATION.

Excessive chain wear cannot be detected by casual observation. The chain is case hardened, and once this case is worn through, wear will progress rapidly and the strength of the chain will be considerably reduced. Further, the Chain will no longer fit the Top Chain Wheel properly, greatly increasing the chance of malfunction and chain breakage.

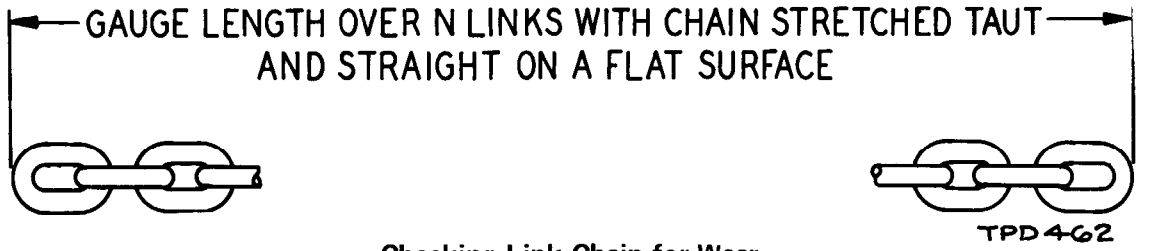
One Top Chain Wheel will outlast several Chains if the Chain is replaced as recommended, whereas the use of a worn Chain will cause the Top Chain Wheel to wear rapidly.

If the Chain is visibly damaged, examine the Top Chain Wheel and Chain Guard. Install a new Top Chain Wheel if the old one is visibly worn; install a new Guard if the old one is broken or distorted.

Warning: Do not use a Top Chain Wheel (37) that is visibly worn or damaged. Using a worn or damaged Top Chain Wheel could result in chain slippage with damage to the Hoist and possible personal injury.

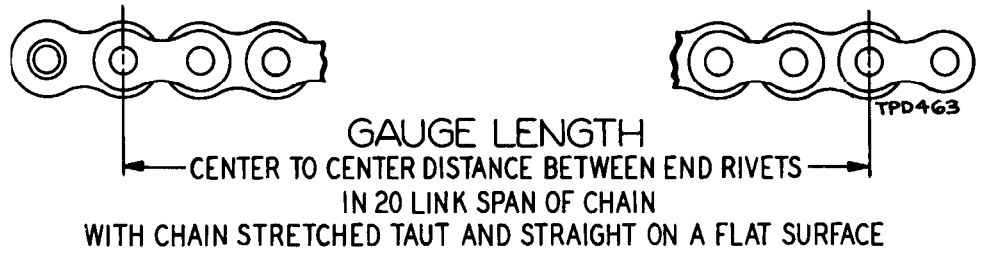
Periodically, as experience indicates, examine the Chain for wear. Be certain to inspect that portion of the Chain which regularly passes over the Top Chain Wheel, since this is the portion that suffers the greatest wear. Check the individual links for striation – that is, minute parallel lines indicating excessive stress or wear.

With the Chain taut, measure the gauge length within the section of greatest wear. If the Chain is worn to the extent that this measurement has reached the discard dimension, install a new Chain. Always use a genuine Ingersoll-Rand replacement Chain. Never use any other Chain.



Checking Link Chain for Wear

Hoist Series on Which Chain is Used	N Number of Links	Gauge Length, inches	
		New Chain	For Discard
HLE20, HLE40	21	18-5/8	18-7/8
HLE30, HLE60	19	19-15/16	20-3/16



Checking Roller Chain for Wear

Hoist Series on Which Chain is Used	N Number of Links	Gauge Length, inches	
		New Chain	For Discard
HRE20, HRE40	20	15	15-3/16
HRE30, HRE60	20	20	20-1/4

Warning: An improved one-piece Link Chain Anchor (82) is now used on all HLE40 and HLE60 Hoists. It replaces the original two-piece Chain Anchor, and is the only Chain Anchor furnished as a repair item.

When replacing either a Chain or Chain Anchor on an HLE40 or HLE60 Hoist, be certain to:

1. If you are replacing a Chain Anchor – regardless of whether the old one is two-piece or one-piece construction – count the number of links in the Chain. Chain used with the one-piece Chain Anchor must have an odd number of links, and must be installed as illustrated on page 13.
2. If you are replacing a Chain, make certain to use the new style one-piece Chain Anchor and make certain the new Chain has an odd number of links. Install the Chain in accordance with the illustration on page 13.

Failure to comply with these instructions will result in a twisted Chain which could cause chain breakage with possible damage to the Hoist.

TROUBLE SHOOTING

Trouble	Probable Cause	Remedy
Hoist will not operate	a. No power to Hoist.	a. Check switches, circuit breakers and connections in power supply lines.
	b. Wrong voltage or frequency.	b. Check voltage and frequency rating on motor data plate against power supply. Check wiring connections against wiring diagrams.
	c. Loose or broken wire connections in hoist electrical system.	c. Shut off power supply, remove control housing cover and check wiring connections. Check connections in push button station.
	d. Contactor assembly not functioning.	d. Check contact points. Replace if excessively burned or pitted. Check for burned out solenoid coil. See that necessary jumper wires are properly installed.
	e. Defective transformer.	e. Check transformer coil for signs of overheating. Replace if burned out.
	f. Motor burned out.	f. Replace motor.
Hook moves in wrong direction.	a. Reverse phasing. b. Hoist wired wrong.	a. Follow instructions in AFTER REPAIR CHECKS. b. Check wiring connections with appropriate wiring diagram.
Hook will raise but not lower	a. Lower electrical circuit open.	a. Check for loose connections. See that necessary jumper wires are properly installed on contactor. Check for defective lower Limit Switch.
	b. Contactor not functioning.	b. Check for burned or pitted contact points or burned out solenoid coil.
Hook will lower but not raise	a. Excessive load. b. Hoist circuit open.	a. Reduce loading to rated capacity of Hoist. b. Check for loose connections. See that necessary jumper wires are properly installed on contactor. Check for defective upper Limit Switch.
	c. Contactor not functioning.	c. Check for burned or pitted contact points or burned out solenoid coil.
Hoist will not lift rated load	a. Low voltage.	a. See that power supply current is same voltage as listed on motor data plate. Check size of power supply lines. Check wiring connections against wiring diagrams.
Load drifts excessively when Hoist is stopped	a. Motor brake not holding. b. Load brake not holding.	a. Check motor brake as instructed in AFTER REPAIR CHECKS. b. Remove load brake and inspect parts. See DISASSEMBLY OF GEARING, BRAKE AND SPRAG CLUTCH.
Hoist Motor overheats	a. Excessive load. b. Wrong voltage or frequency. c. Excessive jogging.	a. Reduce loading to rated capacity of Hoist. b. Check current rating on motor data plate against power supply. c. Reduce frequency of raise-lower cycles.
Lowering speed is erratic.	a. Sprag clutch is worn. b. Friction discs in Brake Disc Stack are worn.	a. Check for flat sprags. Replace sprag clutch if necessary. b. Check friction discs. If facing of any one disc is worn below oil grooves, replace entire Brake Disc Pack. Do not attempt to replace individual members of the Brake Disc Pack. Replace complete unit.

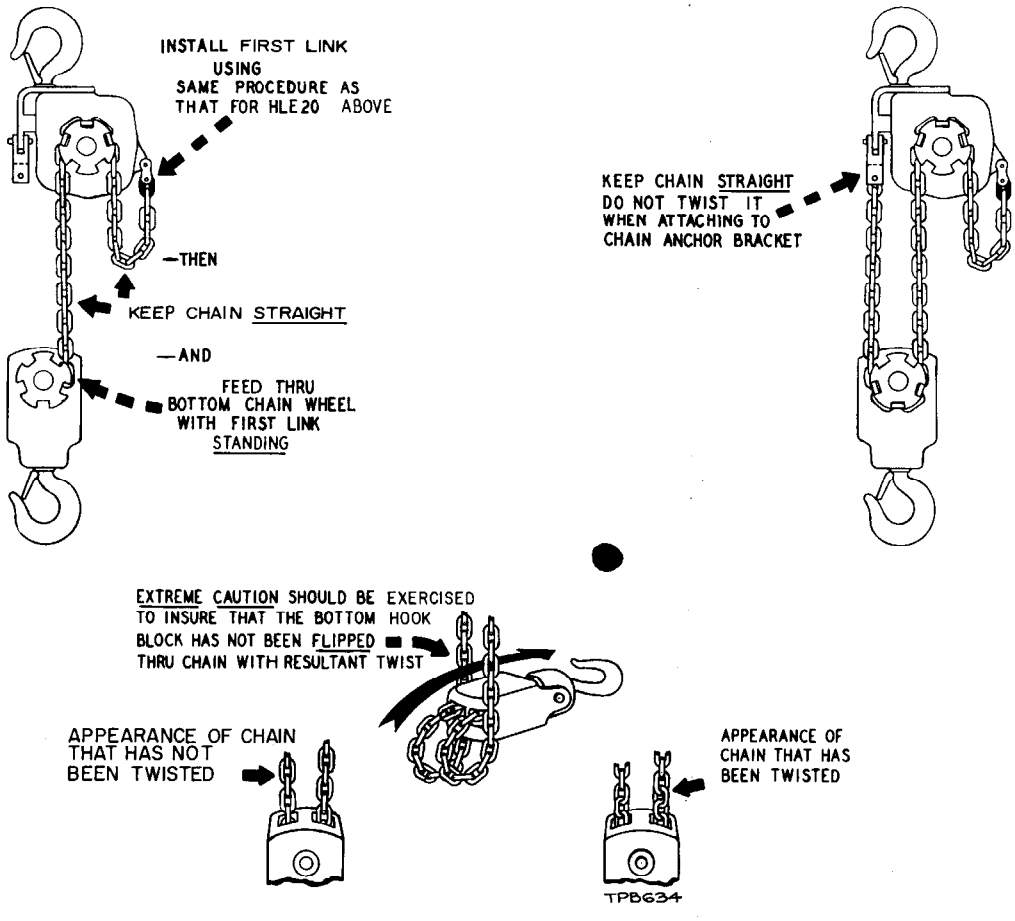
INSTALLATION OF LINK CHAIN IN SERIES HLE HOISTS

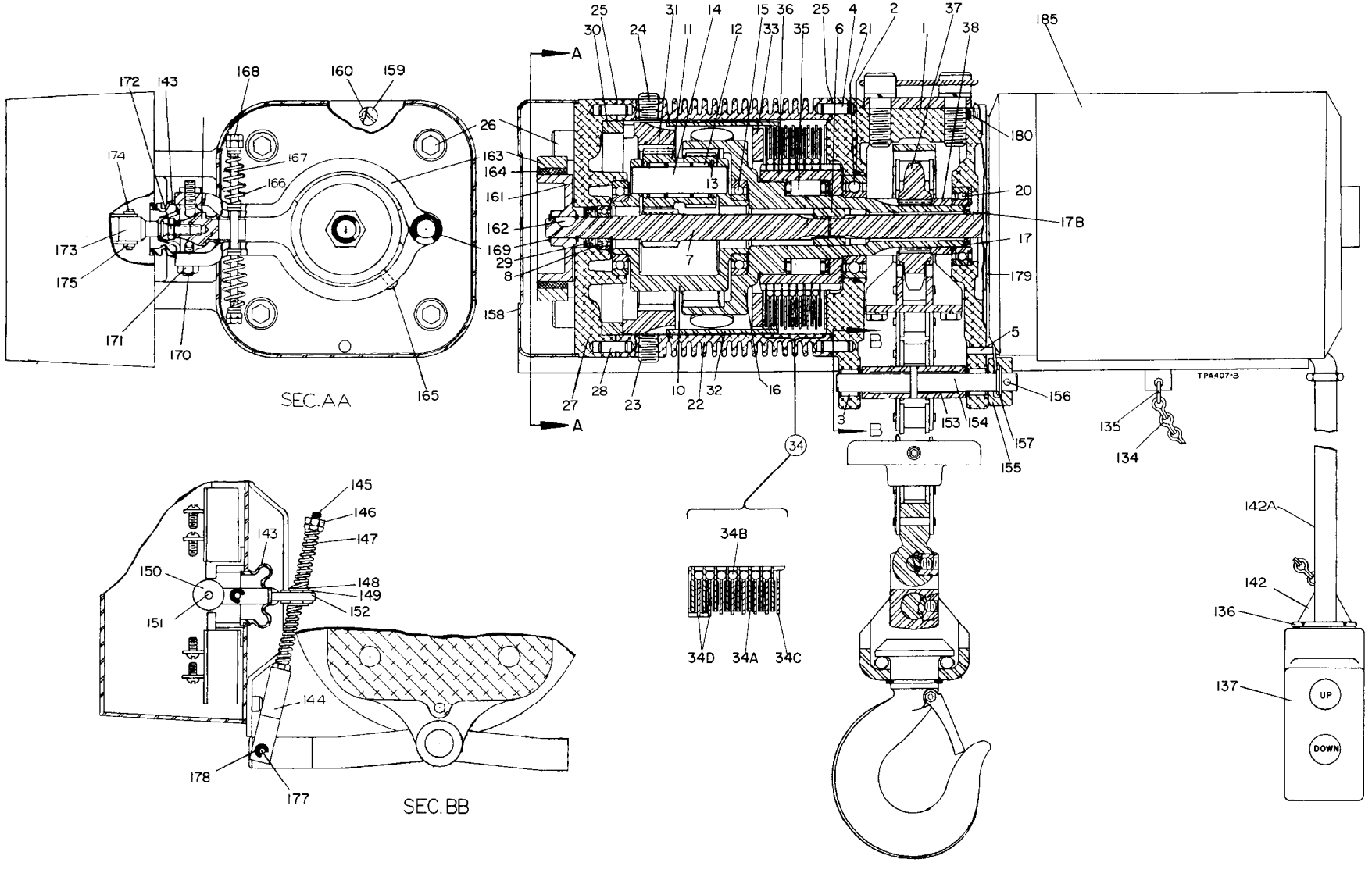
SERIES HLE20 AND HLE30

IMPROPER INSTALLATION OF THE CHAIN CAN RESULT IN CHAIN BREAKAGE WITH POSSIBLE INJURY TO PERSONNEL OR DAMAGE TO EQUIPMENT.

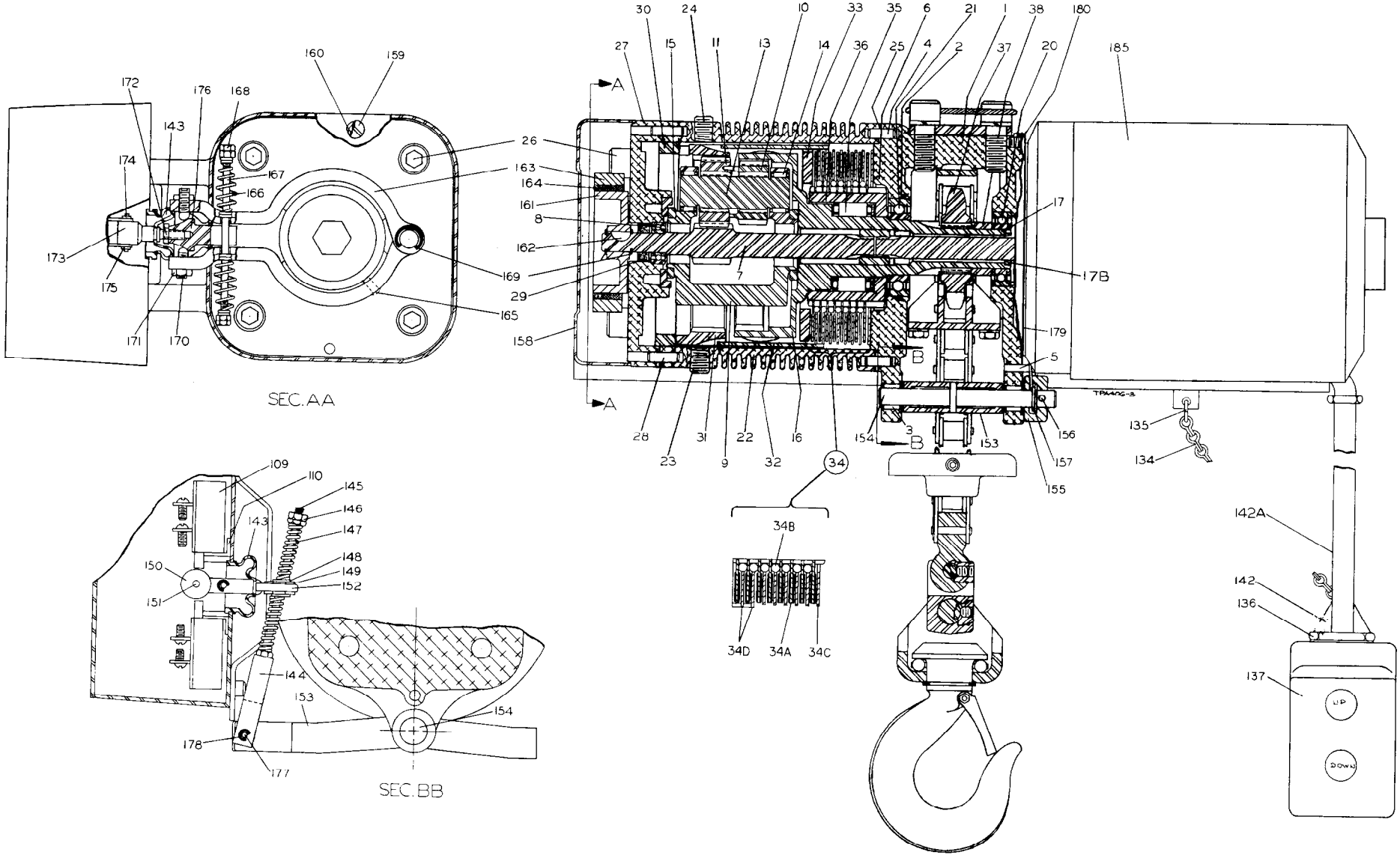
SERIES HLE40 AND HLE60

CHAIN MUST CONSIST OF ODD NUMBER OF LINKS

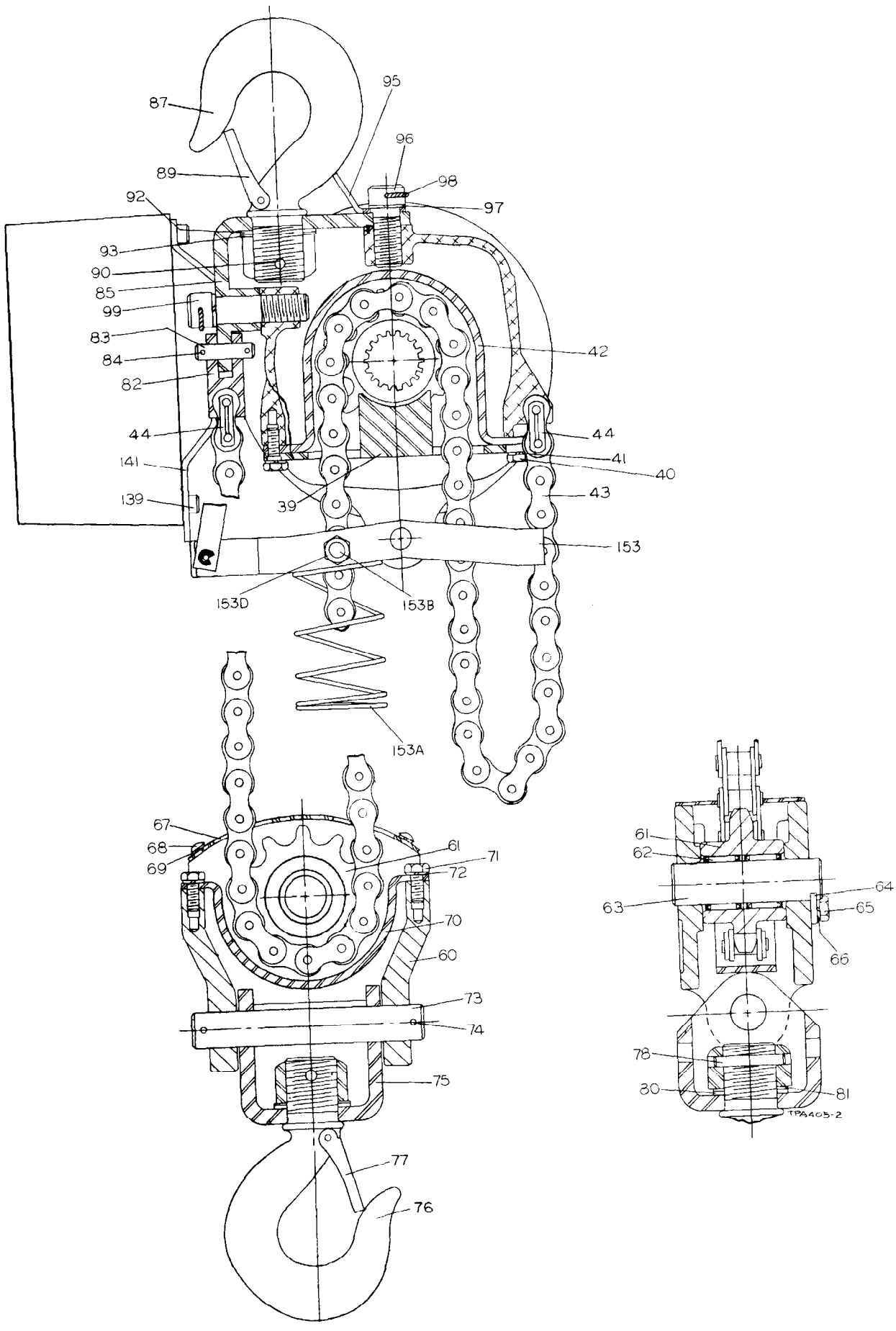




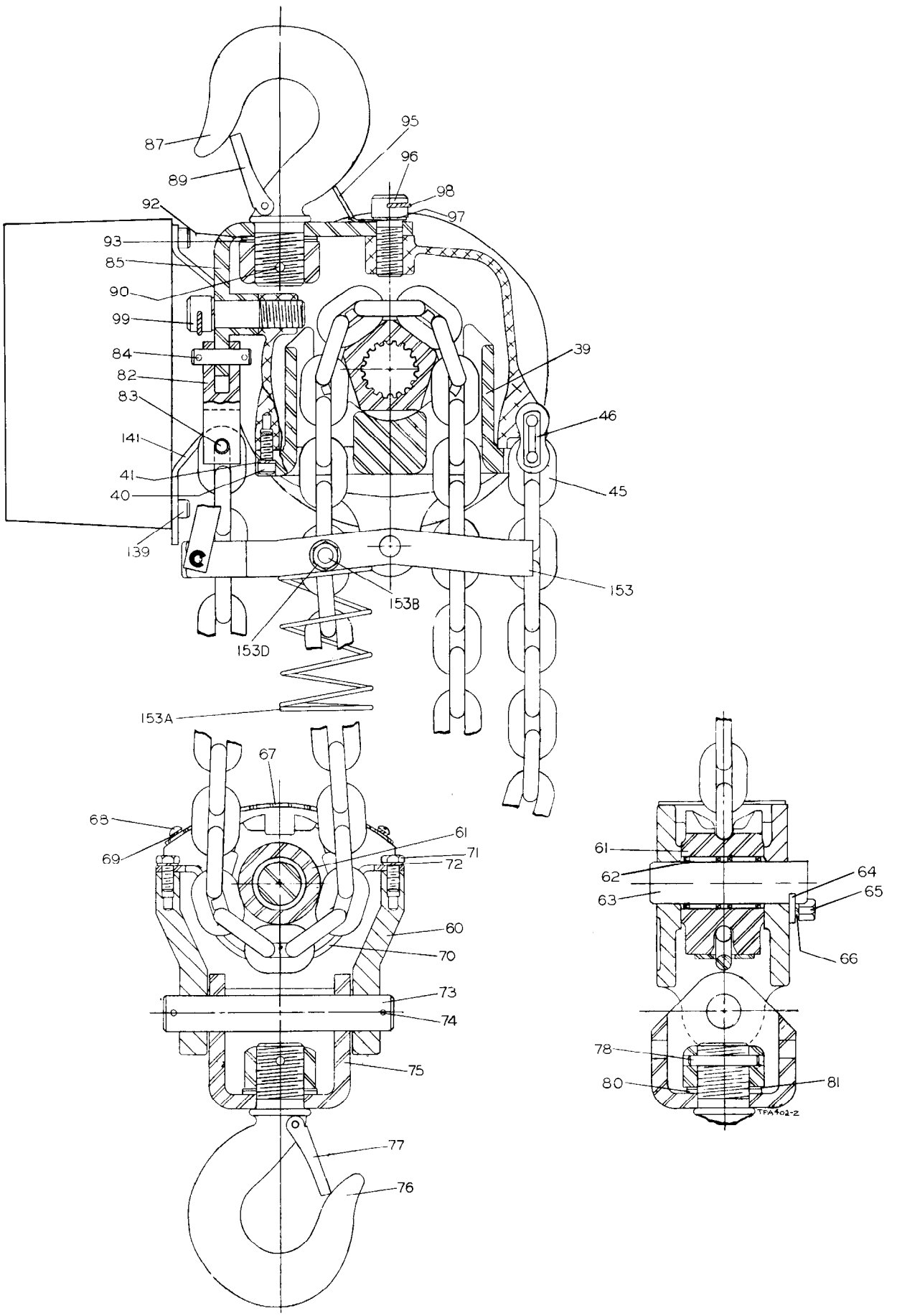
Size HRE20A Overhead Chain Hoist
(Construction of gearing, load brake and clutch typical of Series HLE20, HRE40, and HLE40 Hoists)
(Construction of motor brake typical of all Model A Hoists)



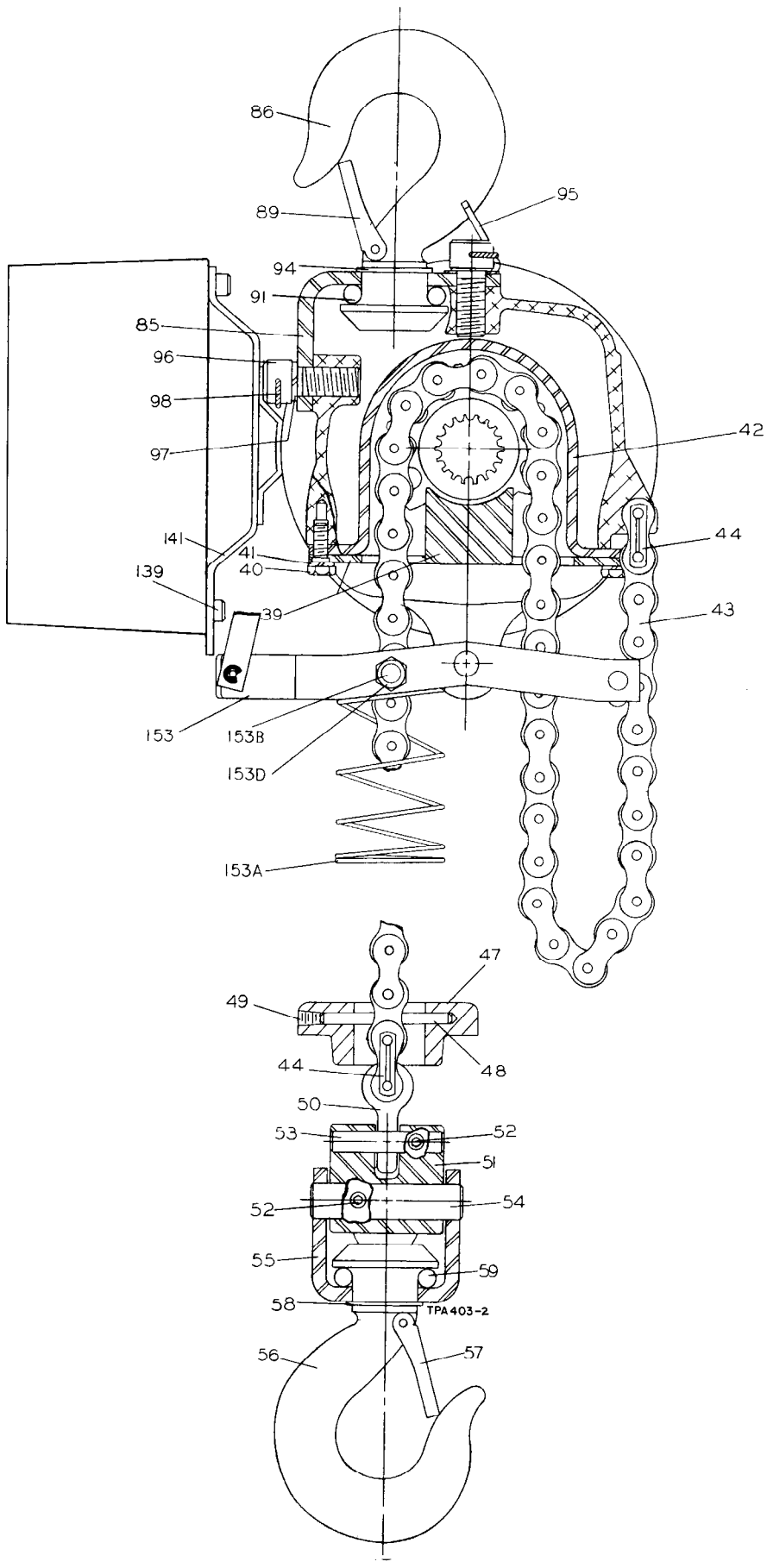
Size HRE30A Overhead Chain Hoist
(Construction of gearing, load brake and clutch typical of Series HLE30, HRE60 and HLE60 Hoists)
(Construction of motor brake typical of all Model A Hoists)



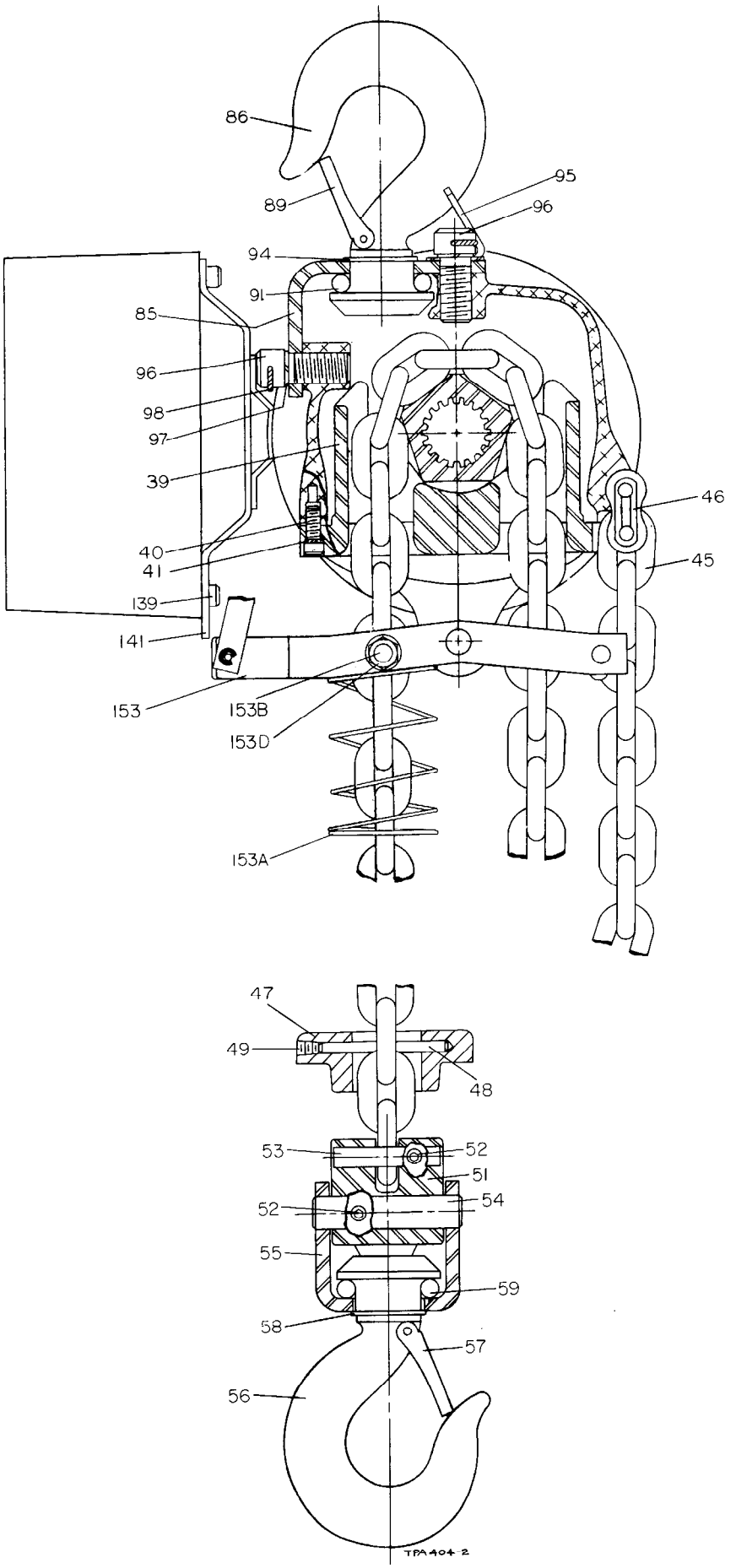
Sizes HRE40 and HRE60 Overhead Chain Hoists



Sizes HLE40 and HLE60 Overhead Chain Hoists



Sizes HRE20 and HRE30 Overhead Chain Hoists



Sizes HLE20 and HLE30 Overhead Chain Hoists

			PART NUMBER FOR ORDERING
	1	Chain Housing Assembly	HRA20A-A300
•	2	Chain Housing Seal	HRA20A-990
	3	Stop Lever Shaft Bearing	34U-357
	4	Housing Dowel (2)	D02-527
	5	Spring Stop Pin	5BM-278
	6	Pinion Connector	HRA20A-317
+	7	Pinion Shaft for Model A or Old Style Model B	
		for HRE20, HLE20, HRE40 and HLE40	HRE20A-319
		for HRE30, HLE30, HRE60 and HLE60	HRE30A-319
	7	Pinion Shaft for New Style Model B	
		for HRE20, HLE20, HRE40 and HLE40	HRE20A-319A
		for HRE30, HLE30, HRE60 and HLE60	HRE20A-319A
•	8	Pinion Shaft Bearing	402-22
For HRE20,HLE20, HRE40 and HLE40		Gear Frame Assembly (for HRE20, HLE20, HRE40 and HLE40)	HRA20A-A8
	10	Planet Gear Frame (for HRE20, HLE20, HRE40 and HLE40)	HRA20A-8
	11	Planet Gear Assembly (for HRE20, HLE20, HRE40 and HLE40)	HRA20A-A10
•	12	Planet Gear Bearing (2 for each Gear) (for HRE20, HLE20, HRE40 and HLE40)	R0H-556
	13	Planet Gear Bearing Retainer (for HRE20, HLE20, HRE40 and HLE40) (2 for each Gear)	HRA20A-515
	14	Planet Gear Shaft (for HRE20, HLE20, HRE40 and HLE40) (3)	HRA20A-191
•	15	Gear Frame Bearing (for HRE20, HLE20, HRE40 and HLE40) (2)	834-97
For HRE30,HLE30, HRE60 and HLE60		Gear Frame Assembly (for HRE30, HLE30, HRE60 and HLE60)	HRA30A-A8
	9	Planet Gear Frame (for HRE30, HLE30, HRE60 and HLE60)	HRA30A-8
	10	Small Planet Gear (for HRE30, HLE30, HRE60 and HLE60) (3)	HRA30A-110
	11	Large Planet Gear (for HRE30, HLE30, HRE60 and HLE60) (3)	HRA30A-10
	13	Planet Gear Shaft (for HRE30, HLE30, HRE60 and HLE60) (3)	HRA30A-191
	14	Planet Gear Shaft Bearing (for HRE30, HLE30, HRE60 and HLE60) (6)	R1610-593
	15	Gear Frame Thrust Washer (for HRE30, HLE30, HRE60 and HLE60) (2)	HRA30A-554
	16	Top Chain Wheel Shaft Assembly	
		for HRE20, HLE20, HRE40 and HLE40	HRA20A-A459A
		for HRE30, HLE30, HRE60 and HLE60	HRA30A-A459A
•	17	Wheel Shaft Seal	C321-606
•	17B	Drive Shaft Oil Seal	HRA20A-457
†	*	Wheel Shaft Gear Assembly (for HRE20, HLE20, HRE40 and HLE40)	HRA20A-A798
†	*	Gear Locating Ring (for HRE20, HLE20, HRE40 and HLE40) (2)	HRA20A-799
•	20	Small Wheel Shaft Bearing	HRA20A-987
•	21	Large Wheel Shaft Bearing	HRA20A-988
	22	Gear Case Assembly	HRA20A-A353
	23	1/4" Pipe Plug (2)	R0H-377
	24	Vent Pipe Plug	P250-546
•	25	Gear Case Gasket (2)	HRA20A-931
	26	Gear Case Cap Screw (4)	HRA20A-354
	27	Gear Case Cover Assembly	■
	28	Gear Case Cover Dowel	■
	29	Pinion Shaft Seal	■
	30	Stationary Cam	HRA20A-88
	31	Ring Gear	
		for HRE20, HLE20, HRE40 and HLE40	HRA20A-406
		for HRE30, HLE30, HRE60 and HLE60	HRA30A-406
	32	Brake Actuator	HRA20A-83
	33	Brake Pressure Plate	HRA20A-84
	34	Brake Disc Stack	HRA20A-388
•	34A	Brake Disc Pack (set of 8 faced Discs)	HRA20A-B388
	34B	Brake Cushion (7) (replace as a set)	557-216
	34C	Brake Plate (6)	HRA20A-389
	34D	Brake Engaging Plate (2)	HRA20A-85
•	35	Sprag Clutch	HRA20A-86
	36	Outer Clutch Race	HRA20A-87

+ Available only until present stock is depleted. Refer to Conversion of Model A or Model B Hoists to New Style Model B on page 27.

† Refer to Improved Top Chain Wheel Shaft Assembly on page 10.

• To keep downtime to a minimum, it is desirable to have on hand certain repair parts. We recommend that you stock one (pair or set) of each part indicated by a bullet (•) for every four tools in service.

PART NUMBER FOR ORDERING

37	Top Chain Wheel	
	for HRE20 and HRE40	HRA20A-640
	for HLE20 and HLE40	HLA20A-740
	for HRE30 and HRE60	HRA30A-640
	for HLE30 and HLE60	HLA30A-740
38	Chain Wheel Spacer	HRA20A-974
39	Chain Guide	
	for HRE20 and HRE40	HRA20A-741
	for HLE20 and HLE40 (2 pieces)	HLA20A-741
	for HRE30 and HRE60	HRA20A-741
	for HLE30 and HLE60 (2 pieces)	HLA30A-741
40	Chain Guide Screw (4)	
	for series HRE	R3-7
	for Series HLE	G57T-634
41	Chain Guide Screw Lock Washer (4)	
	for Series HRE	L01-67
	for Series HLE	8U-58
42	Chain Guard (for Series HRE)	HRA20A-6
43	Roller Chain Assembly	
	for HRE20	
	10 ft. maximum lift	HRA20A-A645
	15 ft. maximum lift	HRA20A-A645-15
	20 ft. maximum lift	HRA20A-A645-20
	25 ft. maximum lift	HRA20A-A645-25
	lift as specified	HRA20A-AB645
	for HRE30	
	10 ft. maximum lift	HRA30A-A645
	15 ft. maximum lift	HRA30A-A645-15
	20 ft. maximum lift	HRA30A-A645-20
	25 ft. maximum lift	HRA30A-A645-25
	lift as specified	HRA30A-AB645
	for HRE40	
	10 ft. maximum lift	HRA40A-A645
	15 ft. maximum lift	HRA40A-A645-15
	20 ft. maximum lift	HRA40A-A645-20
	25 ft. maximum lift	HRA40A-A645-25
	lift as specified	HRA40A-AB645
	for HRE60	
	10 ft. maximum lift	HRA60A-A645
	15 ft. maximum lift	HRA60A-A645-15
	20 ft. maximum lift	HRA60A-A645-20
	25 ft. maximum lift	HRA60A-A645-25
	lift as specified	HRA60A-AB645
44	Roller Chain Connecting Link (2)	
	for HRE20 and HRE40	DRC10-646
	for HRE30 and HRE60	HRA30A-646
45	Link Chain	
	for HLE20	
	10 ft. maximum lift	HLA20A-745
	15 ft. maximum lift	HLA20A-745-15
	20 ft. maximum lift	HLA20A-745-20
	25 ft. maximum lift	HLA20A-745-25
	lift as specified	HLA20A-B745
	for HLE30	
	10 ft. maximum lift	HLA30A-745
	15 ft. maximum lift	HLA30A-745-15
	20 ft. maximum lift	HLA30A-745-20
	25 ft. maximum lift	HLA30A-745-25
	lift as specified	HLA30A-B745

		PART NUMBER FOR ORDERING
	for HLE40	
	10 ft. maximum lift	HLA40A-745
	15 ft. maximum lift	HLA40A-745-15
	20 ft. maximum lift	HLA40A-745-20
	25 ft. maximum lift	HLA40A-745-25
	lift as specified	HLA40A-B745
	for HLE60	
	10 ft. maximum lift	HLA60A-745
	15 ft. maximum lift	HLA60A-745-15
	20 ft. maximum lift	HLA60A-745-20
	25 ft. maximum lift	HLA60A-745-25
	lift as specified	HLA60A-B745
46	Link Chain Connecting Link	
	for HLE20 and HLE40	DRC10-646
	for HLE30 and HLE60	HRA30A-646
47	Stop Ring Assembly (for HRE20, HLE20, HRE30 and HLE30)	HRA20A-A259
48	Stop Ring Pin (for HRE20, HLE20, HRE30 and HLE30)	HRA20A-124
49	Stop Ring Plug (for HRE20, HLE20, HRE30 and HLE30)	502-95
50	Roller Chain Adapter Link	
	for HRE20	HRA20A-460
	for HRE30	HRA30A-460
▲ 51	Chain Connector (for HRE20, HLE20, HRE30 and HLE30)	HRA20A-461
▲ 52	Rollpin Retainer (2) (for HRE20, HLE20, HRE30 and HLE30)	5BM-278
53	Chain Connector Pin (for HRE20, HLE20, HRE30 and HLE30)	HRA20A-603
54	Hook Block Pin (for HRE20, HLE20, HRE30 and HLE30)	HRA20A-462
55	Hook Block	
	for HRE20 and HLE20	HRA20A-463
	for HRE30 and HLE30	HRA30A-463
56	Bottom Hook	
	for HRE20 and HLE20	HRA20A-377
	for HRE30 and HLE30	HRA30A-377
57	Hook Latch Kit	
	for HRE20 and HLE20	D01-S123
	for HRE30 and HLE30	HRA30A-S123
58	Hook Retaining Ring	
	for HRE20 and HLE20	HRA20A-375
	for HRE30 and HLE30	HRA30A-375
• 59	Hook Bearing (for HRE20 and HLE20)	HRA20A-379
• 59	Hook Bearing Ball (for HRE30 and HLE30) (15) (replace in sets)	514-929-10
*	Hook Block with Bullard-Burnham Safety Hook	
	for HRE20	HRA20A-BB377
	for HLE20	HLA20A-BB377
60	Wheel Block (for HRE40, HLE40, HRE60 and HLE60)	HRA40A-378
61	Bottom Chain Wheel Assembly	
	for HRE40	HRA40A-A380
	for HLE40	HLA40A-A380
	for HRE60	HRA60A-A380
	for HLE60	HLA60A-A380
• 62	Bottom Chain Wheel Bearing (for HRE40, HLE40, HRE60 and HLE60) (2)	R2H-606
63	Bottom Chain Wheel Shaft (for HRE40, HLE40, HRE60 and HLE60)	HRA40A-382
64	Wheel Shaft Lock (for HRE40, HLE40, HRE60 and HLE60)	MR20-383
65	Shaft Lock Screw (for HRE40, HLE40, HRE60 and HLE60) (2)	JC3350-103
66	Shaft Lock Screw Lock Washer (for HRE40, HLE40, HRE60 and HLE60) (2)	L01-67
67	Wheel Block Cover (for HRE40, HLE40, HRE60 and HLE60)	HRA40A-441
68	Wheel Block Cover Screw (for HRE40, HLE40, HRE60 and HLE60) (4)	R2-312
69	Cover Screw Lock Washer (for HRE40, HLE40, HRE60 and HLE60) (4)	R2-320
70	Wheel Block Chain Guard	
	for HRE40 and HRE60	HRA40A-445
	for HLE40 and HLE60	HLA40A-445

* Not illustrated.

▲ If the Hoist has a set screw type Retainer, order the Retainer by Part No. HRA20A-561. If you are ordering a new Chain Connector to replace one having Set Screw Retainers, you must also order two (2) Rollpin Retainers No. 5BM-278.

• To keep downtime to a minimum, it is desirable to have on hand certain repair parts. We recommend that you stock one (pair or set) of each part indicated by a bullet (•) for every four tools in service.

		PART NUMBER FOR ORDERING
71	Wheel Block Guard Screw (for HRE40, HLE40, HRE60 and HLE60) (2)	R2N-103
72	Guard Screw Lock Washer (for HRE40, HLE40, HRE60 and HLE60) (2)	L01-67
73	Wheel Block Pin (for HRE40, HLE40, HRE60 and HLE60)	HRA40A-464
74	Wheel Block Pin Cotter (for HRE40, HLE40, HRE60 and HLE60) (2)	D02-330
75	Hook Block	
	for HRE40 and HLE40	HRA40A-463
	for HRE60 and HLE60	HRA60A-463
76	Bottom Hook and Nut	
	for HRE40 and HLE40	HRA40A-377A
	for HRE60 and HLE60	HRA60A-377
77	Hook Latch Kit	
	for HRE40 and HLE40	D02-S123
	for HRE60 and HLE60	D04-S123
78	Hook Pin (for HRE40, HLE40, HRE60 and HLE60)	D02-374
• 80	Hook Bearing	
	for HRE40 and HLE40	R4810-105
	for HRE60 and HLE60	HRA60A-379
• 81	Hook Thrust Washer (2)	
	for HRE40 and HLE40	HRA40A-465
	for HRE60 and HLE60	HRA60A-465
82	Chain Anchor	
	for HRE40	HRA40A-373
	for HLE40 and HLE60	HLA60A-373
	for HRE60	HRA60A-373
83	Chain Anchor Pin (1 for HRE40 and HRE60; 2 for HLE40 and HLE60)	HRA40A-962
84	Anchor Pin Cotter (2 for each Anchor Pin)	D02-524
85	Top Hook Yoke	
	for HRE20 and HLE20	HRA20A-590
	for HRE30 and HLE30	HRA30A-590
	for HRE40 and HLE40	HRA40A-B590A
	for HRE60 and HLE60	HRA60A-B590A
86	Top Hook	
	for HRE20 and HLE20	HRA20A-377
	for HRE30 and HLE30	HRA30A-377
87	Top Hook and Nut	
	for HRE40 and HLE40	HRA40A-377A
	for HRE60 and HLE60	HRA60A-377
89	Hook Latch Kit	
	for HRE20 and HLE20	D01-S123
	for HRE30 and HLE30	HRA30A-S123
	for HRE40 and HLE40	D02-S123
	for HRE60 and HLE60	D04-S123
90	Hook Pin (for HRE40, HLE40, HRE60 and HLE60)	D02-374
91	Hook Bearing (for HRE20 and HLE20)	HRA20A-379
91	Hook Bearing Ball (for HRE30 and HLE30) (16)	G601-65
92	Hook Bearing	
	for HRE40 and HLE40	R4810-105
	for HRE60 and HLE60	HRA60A-379
93	Hook Thrust Washer	
	for HRE40 and HLE40	HRA40A-465
	for HRE60 and HLE60 (2)	HRA60A-465
94	Hook Retaining Ring	
	for HRE20 and HLE20	HRA20A-375
	for HRE30 and HLE30	HRA30A-375
95	Hook Stop	
	for HRE20, HLE20, HRE30 and HLE30	HRE20A-591
	for HRE40, HLE40, HRE60 and HLE60	HRE40A-591
96	Top Hook Yoke Screw	
	for HRE20, HLE20, HRE30 and HLE30 (4)	HRA20A-339
	for HRE40, HLE40, HRE60 and HLE60 (2)	HRA40A-339

• To keep downtime to a minimum, it is desirable to have on hand certain repair parts. We recommend that you stock one (pair or set) of each part indicated by a bullet (•) for every four tools in service.

		PART NUMBER FOR ORDERING
97	1/2" Lock Washer (4)	HRA20A-322
• 98	Lock Wire (12" long) (2)	HRA20A-698
99	Yoke Anchor Screw (for HRE40, HLE40, HRE60 and HLE60) (2)	HRA40A-743
127	Power Supply Cable Fitting	HRE20A-757
128	Motor Connection Elbow	HRE20A-284
*	1/2" Close Pipe Nipple	AAM-286
*	Pipe Nipple (1/2" x 2")	AAM-287
131	1/2" Conduit Lock Nut (6)	2EH20A-180
132	Control Cord Fitting	HRE20A-506
*	Conduit Fitting Gasket (4)	2EH20A-183
134	Control Station Chain (length as specified)	DU-413
135	S-Hook	D01-221
136	Control Station Cord Fitting	2EH20A-241
137	Push Button Control Station	HRE20A-A269
139	Control Housing Mounting Screw (6)	B4U-667A
*	Mounting Screw Nut (4)	G8-120A
141	Control Housing Mounting Bracket	HRE20A-503
142	Push Button Station Hanger	2EH20A-270
142A	Pendent Control Cord (length as specified)	ZEH20A-L238
*	Pendent Control Cord Tie Strap (4)	HRE20A-283
143	Protection Boot (2 for Model A Hoists; 1 for Model B)	HRE20A-511
144	Limit Switch Connecting Yoke	HRE20A-526
145	Connecting Yoke Rod	HRE20A-528
146	Connecting Rod Lock Nut (3)	MF-38
147	Connecting Rod Spring (2)	503-431
148	Spring Seat (2)	ST01-240
149	Spring Seat Washer (2)	B12-265
150	Limit Switch Cam	HRE20A-537
151	Cam Retaining Pin	FMD2-667
152	Limit Switch Arm	HRE20A-555
153	Stop Lever Assembly	HRE20A-A556A
153A	Bumper Spring	HRE20A-550
153B	Spring Lock (2)	HRE20A-551
*	3/8" Lock Washer (2)	D02-321
153D	3/8" - 16 thd. Jam Nut (2)	D02-558
154	Stop Lever Shaft	HRE20A-254
155	Stop Lever Shaft Collar	HRA20A-33
156	Shaft Pin (2)	R1AF-524
157	Stop Lever Return Spring	TVH50A-412
158	Brake Cover	■
159	Brake Cover Screw (2)	■
160	Cover Screw Lock Washer (2)	■
161	Brake Drum	■
162	Brake Drum Key	■
163	Brake Arm Assembly (2)	■
164	Brake Lining (1 for each Arm)	■
165	Lining Rivet (3 for each Arm)	■
166	Brake Arm Spring (2)	■
167	Spring Support Rod	■
168	Support Rod Nut (4)	■
169	Retaining Ring (3)	■
170	Brake Adjusting Screw (2)	■
171	Adjusting Screw Lock Nut (2)	■
172	Solenoid Cam Lock Nut	■
173	Solenoid Cam Rod	■
174	Cam Rod Pin	■
175	Cam Rod Pin Retainer (2)	■
176	Solenoid Brake Cam	■
177	Link Pin (2)	■
178	Link Pin Retainer (4)	HRE20A-523
		R000A2-38

* Not illustrated.

• To keep downtime to a minimum, it is desirable to have on hand certain repair parts. We recommend that you stock one (pair or set) of each part indicated by a bullet (•) for every four tools in service.

■ These parts were used only on Model A Hoists and are no longer available. They are illustrated for identification purposes only. Should it become necessary to replace any of these parts, refer to the section Conversion of Model A Hoists to New Style Models.

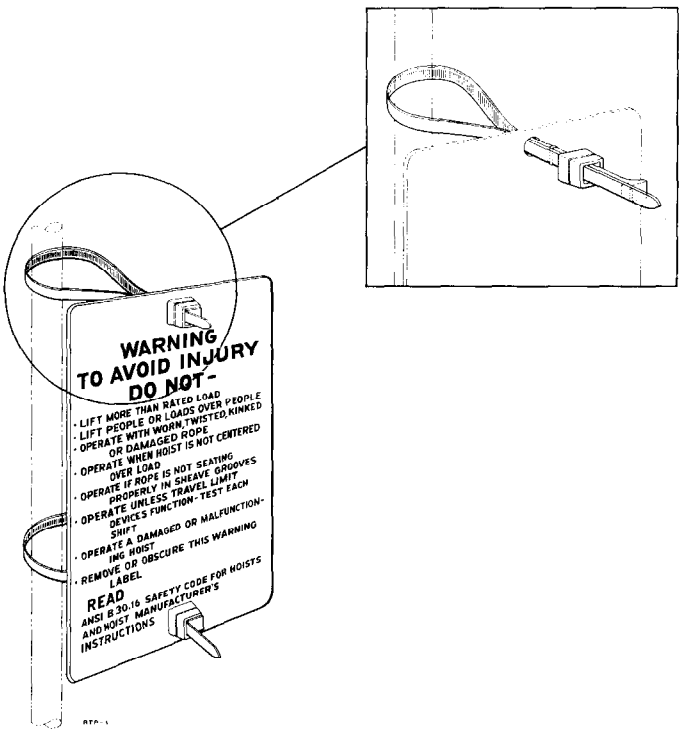
		PART NUMBER FOR ORDERING
• 179	Housing Gasket	HRA20A-739
180	Housing Cap Screw (4)	R2-548
*	1/4" Lock Washer (4)	8U-58
185	Electric Motor	
	200 Volt 3 Phase 60 Hertz	
	for HRE20, HRE40, HLE20 and HLE40	HRE20B-475
	for HRE30, HRE60, HLE30 and HLE60	HRE30B-475
	230/460 Volt 3 Phase 60 Hertz	
	for HRE20, HRE40, HLE20 and HLE40	HRE20B-275
	for HRE30, HRE60, HLE30 and HLE60	HRE30B-275
	575 Volt 3 Phase 60 Hertz	
	for HRE20, HRE40, HLE20 and HLE40	HRE20B-575
	for HRE30, HRE60, HLE30 and HLE60	HRE30B-575
*	Power Supply Cable (length as specified)	HRE20A-L756
*	Warning Tag	CE110-33
*	Hoist Instruction Label (see Installation Instructions below)	CA110-K598
*	Caution Plate	TA-147A
*	Caution Plate Screw (4)	9BM-302
*	Nameplate	PCG107AC-99
*	Nameplate Screw (4)	R4-302

* Not illustrated.

■ These parts were used only on Model A Hoists and are no longer available. They are illustrated for identification purposes only. Should it become necessary to replace any of these parts, refer to the section **Conversion of Model A Hoists to New Style Model B.**

• To keep downtime to a minimum, it is desirable to have on hand certain repair parts. We recommend that you stock one (pair or set) of each part indicated by a bullet (•) for every four tools in service.

INSTALLATION OF NO. CA110-K598 HOIST INSTRUCTION LABEL



In accordance with ANSI B30.16 Safety Code for Hoists, a Hoist Instruction Label is to be attached to all Hoists. Attach the Label to the Pendent Control Cord directly above the Push Button Control Station.

Attach the label as follows:

1. Note that there are two plastic fasteners included in the kit, one for each end of the Label.
2. Run the end of one fastener through the top hole in the Label, around the Pendent Control Cord and back through the hole in the Label.
3. After bringing the end of the fastener back through the Label, run it through the square collar as shown in the upper right-hand illustration.
4. Pull the end of the fastener through the collar until the loop is snug against the Pendent Control Cord.
5. Lock the fastener in the tightened position by pressing the square head of the fastener into the square collar as shown in the left-hand illustration.

CONVERSION OF MODEL A OR MODEL B HOISTS TO NEW STYLE MODEL B

As of March, 1978, there are three generations of Electric Motor Brakes in the field:

The first generation is a drum design as shown in cross section views on pages 14 and 15.

The second generation is a disc design using a square Adapter (253) between the Pinion Shaft (7) and Friction Discs (257) illustrated at the top of page 28.

The third generation is the disc design using a splined Adapter (253) between the Pinion Shaft and Friction Discs, also illustrated at the top of page 28.

In the third generation, to improve the service life of electric motor brakes, the brake disc-to-shaft connection has been redesigned incorporating a spline between the pinion shaft and the brake adapter, and spline engagement between the adapter and the friction disc.

Third generation "New Style Model B" can be identified visually by removing the Gear Case Cover (250).

MODEL "A" HOISTS	OLD STYLE MODEL "B" HOISTS	NEW STYLE MODEL "B" HOISTS
Parts identified by Illus. No. 27 thru 29 and 158 thru 176.	Parts identified by Illus. No. 250 thru 273.	Parts identified by Illus. No. 7, 253, 255 and 257 (delete 254).
Remove and destroy – no longer available.	Affected parts No. 7, 253, (delete 254), 255 and 257. Available only until present stocks are depeleted.	New parts for this model carry suffix A.

PARTS AFFECTED BY THIS CHANGE

OLD PART NUMBER	NEW PART NUMBER	PART NAME
Sizes HLE20, HRE20, HLE40 and HRE40:		
HRE20B-855 (3)	HRE20B-855A (3)	Friction Disc
HRE20B-837	HRE20B-837A	Brake Adapter
HRE20B-319	HRE20B-319A	Pinion Shaft
404-118 (2)	12E-6 (2)	Retainer
HWA20B-405	(not required)	Brake Adapter Key

To convert Model "A" to New Style "B", order HRE20A-C831 Conversion Kit.

To convert Model "B" to New Style "B", order HRE20B -C855A Conversion Kit.

Sizes HLE30, HRE30, HLE60 and HRE60:		
HRE20B-855 (3)	HRE20B-855A (3)	Friction Disc
HRE20B-837	HRE20B-837A	Brake Adapter
HRE30B-319	HRE30B-319A	Pinion Shaft
404-118 (2)	12E-6 (2)	Retainer
HWA20A-405	(not required)	Brake Adapter Key

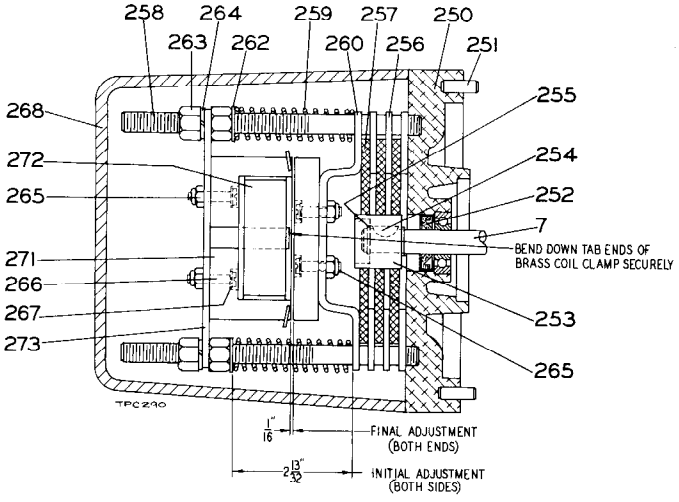
To convert Model "A" to New Style "B", order HRE30A-C831 Conversion Kit.

To convert Model "B" to New Style "B", order HRE30B-C855A Conversion Kit.

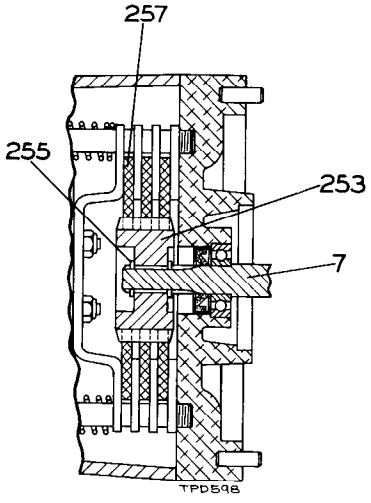
All parts not specifically identified above are common to all three generations.

Note: Any Model "A" Hoist with other than a 220/440 volt motor was handled on a special basis. Brake Conversion Kits for such Hoists must also be handled on a special basis. Follow the established procedure for special applications.

ELECTRIC MOTOR BRAKE PARTS



Old Style Model B



New Style Model B

PART NUMBER FOR ORDERING

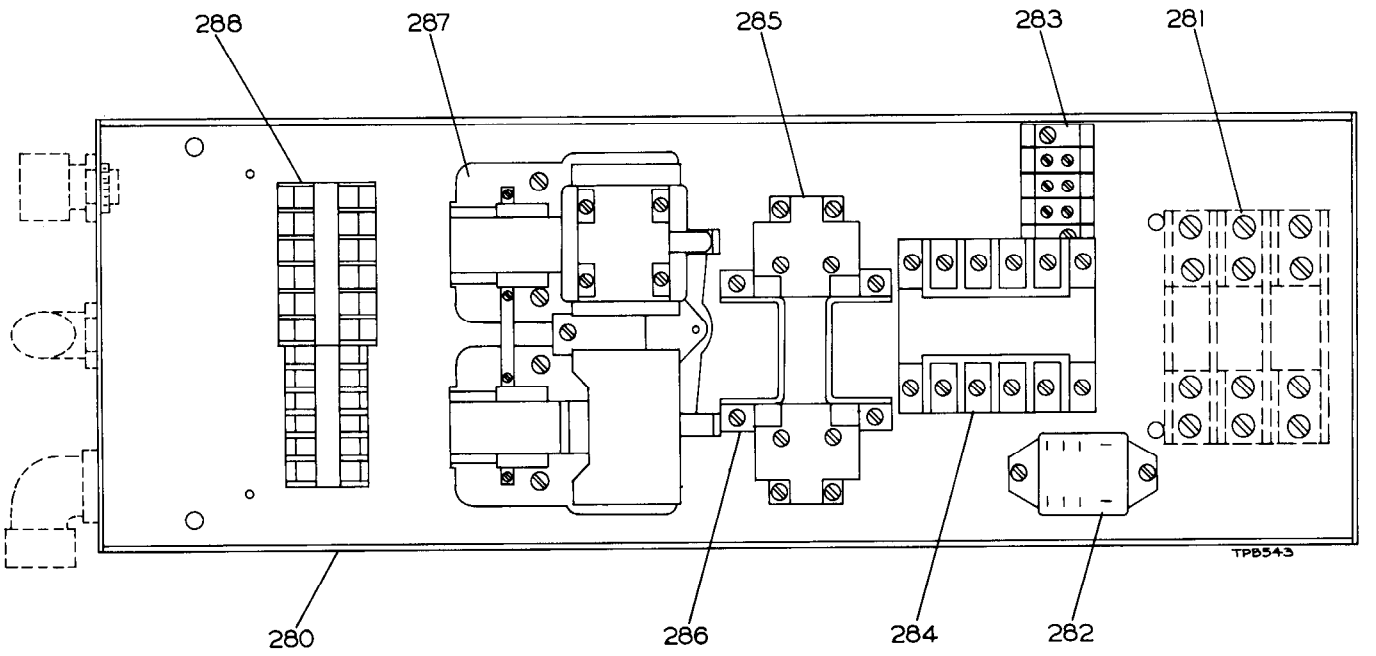
		OLD STYLE B	★NEW STYLE B
250	Gear Case Cover Assembly		
	for HRE20, HLE20, HRE40 and HLE40	HRE20B-A352	HRE20B-A352
	for HRE30, HLE30, HRE60 and HLE60	HRE30B-A352	HRE30B-A352
251	Gear Case Cover Dowel (2)	D02-257	D02-257
• 252	Pinion Shaft Seal	R10V-350	R10V-350
253	Brake Adapter	HRE20B-837	HRE20B-837A
254	Brake Adapter Key	HWA20A-405	--------
255	Brake Adapter Retainer (2)	404-118	12E-6
256	Disc Brake Plate (3)	HRE20B-834	HRE20B-834
• 257	Friction Disc (3)	HRE20B-855	HRE20B-855A
258	Brake Mounting Stud (2)	HRE20B-833	HRE20B-833
259	Brake Spring (2)	HRE20B-832	HRE20B-832
260	Compression Plate	HRE20B-838	HRE20B-838
262	3/8" Plain Washer (2)	S12-265	S12-265
263	Brake Adjusting Nut (4)	D02-558	D02-558
264	3/8" Lock Washer (2)	D02-321	D02-321
265	No. 10-32 Nut (4) (Self Locking Nut)	504-639	504-639
266	Solenoid Mounting Cap Screw (4)	HRE20B-835	HRE20B-835
267	No. 10 Lock Washer (4)	R2-320	R2-320
268	Disc Brake Cover	HRE20B-862	HRE20B-862
*	Brake Cover Cap Screw (2)	510-638	510-638
*	Rubber Grommet	HRE20B-863	HRE20B-863
*	Wire Wedge	HRE20B-864	HRE20B-864
• 271	Brake Solenoid Assembly		
	for 200 Volt 3 Phase 60 Hertz	HRE20B-A830-2	HRE20B-A830-2
	for 230/460 Volt 3 Phase 60 Hertz	HRE20A-A830-1	HRE20A-A830-1
	for 575 Volt 3 Phase 60 Hertz	HRE20B-A830-3	HRE20B-A830-3
272	Solenoid Coil		
	for 200 Volt 3 Phase 60 Hertz	HRE20B-830-2	HRE20B-830-2
	for 230/460 Volt 3 Phase 60 Hertz	HRE20B-830-1	HRE20B-830-1
	for 575 Volt 3 Phase 60 Hertz	HRE20B-830-3	HRE20B-830-3
273	Solenoid Mounting Bracket	HRE20B-831	HRE20B-831

* Not illustrated.

★ See **Conversion of Model A or Model B Hoists to New Style Model B on page 00.**

• To keep downtime to a minimum, it is desirable to have on hand certain repair parts. We recommend that you stock one (pair or set) of each part indicated by a bullet (•) for every four tools in service.

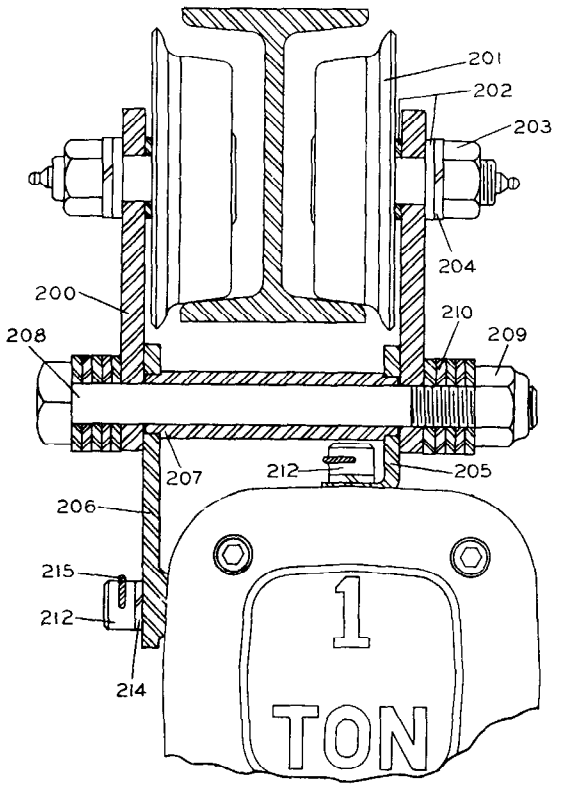
CONTROL HOUSING ASSEMBLY

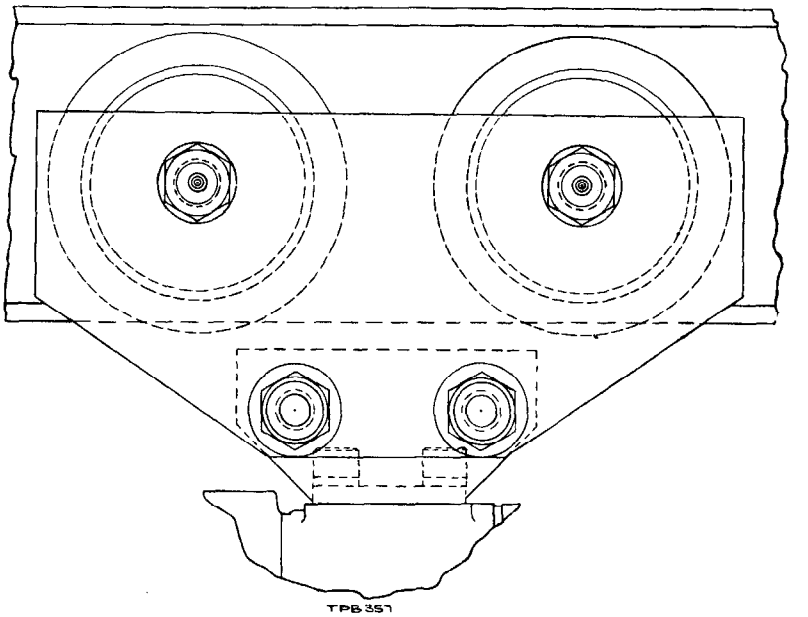


		PART NUMBER FOR ORDERING
	Control Housing Assembly	
	for 24 Volt Control Circuit	HRE20B-A500-24
	for 110 Volt Control Circuit	HRE20B-A500-110
280	Control Housing	HRE20B-500-2
*	Control Housing Cover	HRE20B-501
281	Overload Relay	HRE20B-80
282	Control Relay	HRE20B-516
283	Terminal Block	HRE20A-535
284	Transformer	
	for 24 Volt Control Circuit	HRE20B-79
	for 110 Volt Control Circuit	HRE20B-79-2
285	Limit Switch	HRE20B-525
286	Limit Switch Bracket	HRE20B-521
287	Contactor	
	for 24 Volt Control Circuit	HRE20B-78
	for 110 Volt Control Circuit	HRE20B-78-2
288	Terminal Block Assembly	HRE20B-A91A

* Not illustrated.

RIGID TROLLEY PARTS
For Sizes HRE20 and HLE20



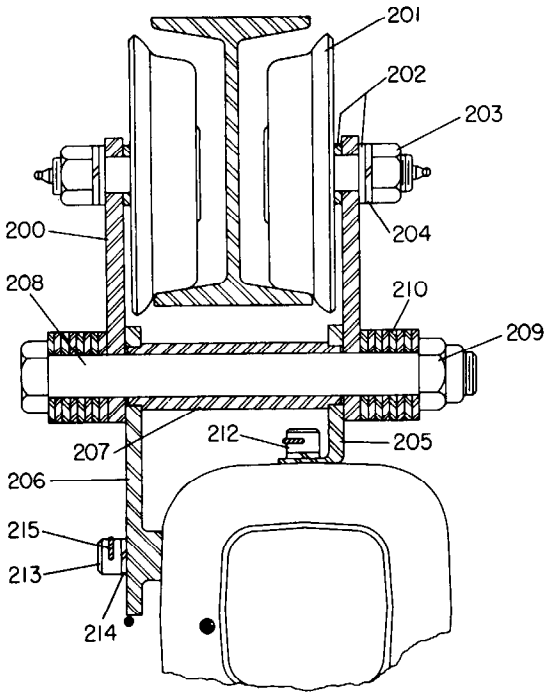


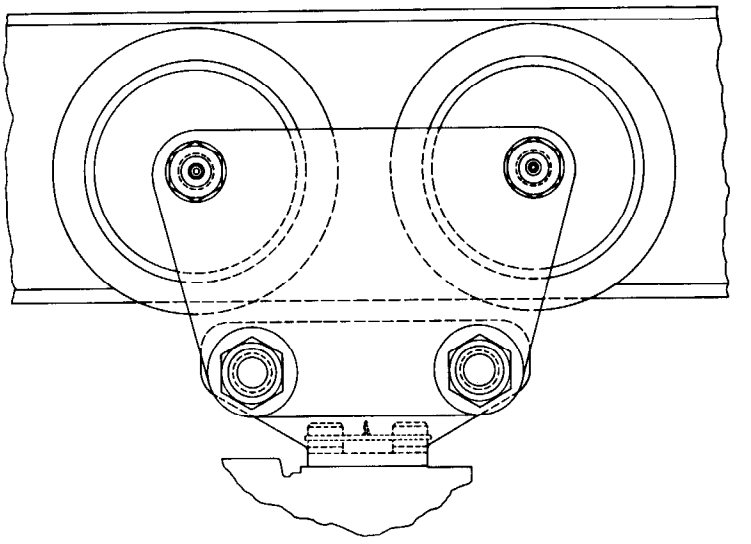
		PART NUMBER FOR ORDERING For I-Beam	For Flat Tread Monorail
	Rigid Trolley Assembly	HRA20A-A430	HRA20A-A430T
200	Trolley Bracket (2)	MR20-430	MR20-430
201	Trolley Wheel (4)	MR20-691	MR20-691T
202	Trolley Wheel Spacer (8)	21-748	21-748
203	Trolley Wheel Shaft Nut (4)	DU-562	DU-562
204	Trolley Wheel Shaft Lock Washer (4)	D01-692	D01-692
205	Trolley Top Adapter	HRA20A-426	HRA20A-426
206	Trolley Side Adapter	HRA20A-425	HRA20A-425
207	Trolley Adapter Spacer (2)	HRA20A-446	HRA20A-446
208	Trolley Bracket Bolt (2)	D01-694-8	D01-694-8
209	Trolley Bolt Nut (2)	D01-341A	D01-341A
210	1/16" Trolley Bracket Spacer (24)	D01-442-1/6	– – –
212	Trolley Adapter Screw (4)	HRA40A-339	HRA40A-339
214	Adapter Screw Lock Washer (4)	HRA20A-322	HRA20A-322
215	Lock Wire (12" long) (2)	HRA20A-698	HRA20A-698
*	1/4" Trolley Bracket Spacer (4)	– – –	D01-442-1/4
*	3/8" Trolley Bracket Spacer (4)	– – –	D01-442-3/8
*	Trolley Bracket Spacer (4)	– – –	24-741

* Not illustrated.

Note: No. HRA20A-A430 Trolley will operate on 6" to 8" I-beams having Flanges 3.33" to 6.00" wide.
No. HRA20A-A430T Trolley will operate on Flat Tread Monorails having Flanges 3.25" to 4.50" wide.
Always specify the size, type and flange width of track on which Trolley is to operate.

RIGID TROLLEY PARTS
For Sizes HRE30 and HLE30



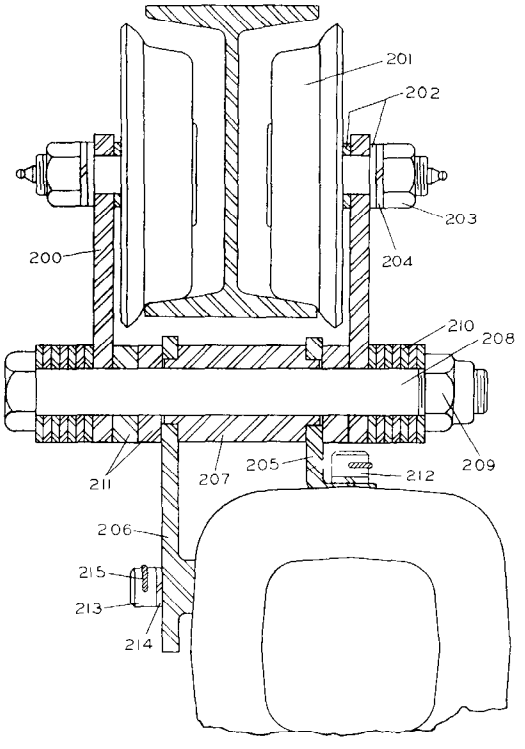


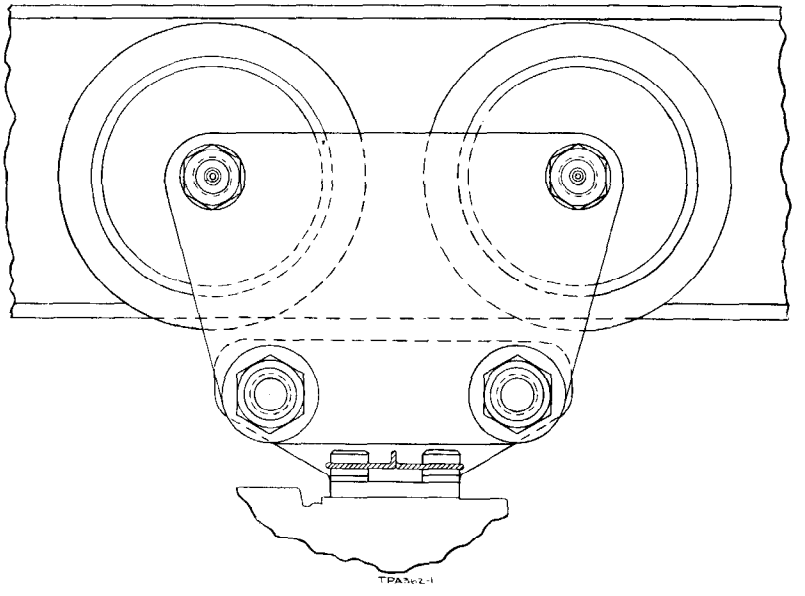
		PART NUMBER FOR ORDERING	
		For I-Beam	For Flat Tread Monorail
	Rigid Trolley Assembly	HRA30A-A430	HRA30A-A430T
200	Trolley Bracket (2)	HRA40A-430	HRA40A-430
201	Trolley Wheel (4)	HRA40A-691	HRA40A-691T
202	Trolley Wheel Spacer (8)	21-748	21-748
203	Trolley Wheel Shaft Nut (4)	DU-562	DU-562
204	Trolley Wheel Shaft Lock Washer (4)	D01-692	D01-692
205	Trolley Top Adapter	HRA40A-426	HRA40A-426
206	Trolley Side Adapter	HRA40A-425	HRA40A-425
207	Trolley Adapter Spacer (2)	HRA30A-446	HRA30A-446
208	Trolley Bracket Bolt (2)	D02-439A-9½	D01C-694-7½
209	Trolley Bolt Nut (2)	D02-440B	D02-440B
210	1/16" Trolley Bracket Spacer (4)	D02-442A-1/6	– – –
*	1/4" Trolley Bracket Spacer (4)	– – –	D02-442-1/4
*	3/8" Trolley Bracket Spacer (4)	– – –	D02-442A-3/8
212	Trolley Adapter Screw (2)	HRA20A-339	HRA20A-339
213	Trolley Side Adapter Screw (2)	HRA40A-743	HRA40A-743
214	Adapter Screw Lock Washer (4)	HRA20A-322	HRA20A-322
215	Lock Wire (12" long) (2)	HRA20A-698	HRA20A-698

* Not illustrated.

Note: No. HRA30A-A430 Trolley will operate on 6" to 8" I-beams having Flanges 3.33" to 6.00" wide.
No. HRA30A-A430T Trolley will operate on Flat Tread Monorails having Flanges 3.25" to 4.50" wide.
Always specify the size, type and flange width of track on which Trolley is to operate.

RIGID TROLLEY PARTS
For Sizes HRE40 and HLE40



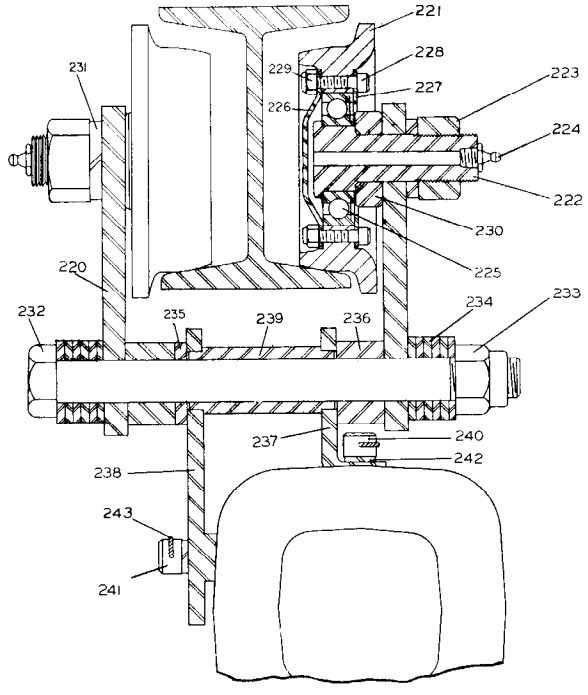


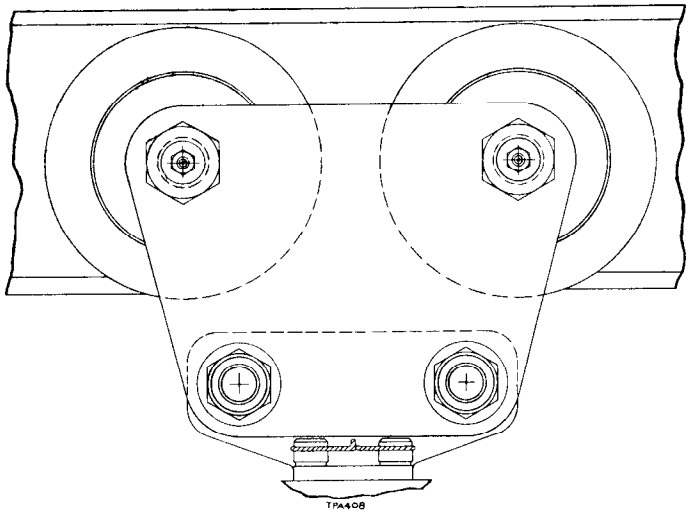
		PART NUMBER FOR ORDERING	
		For I-Beam	For Flat Tread Monorail
	Rigid Trolley Assembly	HRA40A-A430	HRA40A-A430T
200	Trolley Bracket (2)	HRA40A-430	HRA40A-430
201	Trolley Wheel (4)	HRA40A-691	HRA40A-691T
202	Trolley Wheel Spacer (8)	21-748	21-748
203	Trolley Wheel Shaft Nut (4)	DU-562	DU-562
204	Trolley Wheel Shaft Lock Washer (4)	D01-692	D01-692
205	Trolley Top Adapter	HRA40A-426	HRA40A-426
206	Trolley Side Adapter	HRA40A-425	HRA40A-425
207	Trolley Adapter Spacer (2)	HRA40A-446	HRA40A-446
208	Trolley Bracket Bolt (2)	D02-439A-9½	D02-439A-9
209	Trolley Bolt Nut (2)	D02-440B	D02-440B
210	1/16" Trolley Bracket Spacer (32)	D02-442A-1/6	– – –
211	1/2" Trolley Bracket Spacer (6)	D02-442A-1/2	D02-442A-1/2
*	1/4" Trolley Bracket Spacer (4)	– – –	D02-442A-1/4
*	3/8" Trolley Bracket Spacer (4)	– – –	D02-442A-3/8
212	Trolley Adapter Screw (2)	HRA40A-339	HRA40A-339
213	Trolley Side Adapter Screw (2)	HRA40A-743	HRA40A-743
214	Adapter Screw Lock Washer (4)	HRA20A-322	HRA20A-322
215	Lock Wire (12" long) (2)	HRA20A-698	HRA20A-698

* Not illustrated.

Note: No. HRA40A-A430 Trolley will operate on 6" to 18" I-beams having Flanges 3.33" to 6.00" wide.
No. HRA40A-A430T Trolley will operate on Flat Tread Monorails having Flanges 3.25" to 4.50" wide.
Always specify the size, type and flange width of track on which Trolley is to operate.

RIGID TROLLEY PARTS
For Sizes HRE60 and HLE60





		PART NUMBER FOR ORDERING For I-Beam	For Flat Tread Monorail
	Rigid Trolley Assembly	HRA60A-A430	HRA60A-A430T
	Assembled Trolley Bracket (2)	HRA60A-B430	HRA60A-B430T
220	Trolley Bracket (1 for each Assembled Trolley Bracket)	HRA60A-430	HRA60A-430
221	Trolley Wheel (2 for each Assembled Trolley Bracket)	D04-231	D04-T431
222	Trolley Wheel Shaft Assembly (1 for each Wheel)	HRA60A-A435	HRA60A-A435
223	Trolley Wheel Shaft Nut (1 for each Shaft)	D04-305	D04-305
224	Grease Fitting (1 for each Shaft)	23-189	23-189
225	Trolley Wheel Bearing (1 for each Wheel)	D04-956	D04-956
226	Bearing Cap (1 for each Wheel)	D04-954	D04-954
227	Bearing Plate (1 for each Wheel)	D04-955	D04-955
228	1/4" Cap Screw (4 for each Wheel)	501-638	501-638
229	1/4" Elastic Stop Nut (4 for each Wheel)	501-639	501-639
230	Trolley Wheel Spacer (1 for each Wheel)	HRA60A-432	HRA60A-432T
231	1" Lock Washer (1 for each Wheel)	D04-960	D04-960
232	Trolley Bracket Bolt (2)	C6H40A-439-11	D02-439A-9
233	Trolley Bolt Nut (2)	D02-440B	D02-440B
234	1/6" Trolley Bracket Spacer (24)	D02-442A-1/6	– – –
235	1/4" Trolley Bracket Spacer (2 for I-beam Trolley; 6 for Flat Tread Monorail Trolley)	D02-442A-1/4	D02-442A-1/4
*	3/8" Trolley Bracket Spacer (4)	– – –	D02-442A-3/8
236	1/2" Trolley Bracket Spacer (8)	D02-442A-1/2	D02-442A-1/2
237	Trolley Top Adapter	HRA40A-426	HRA40A-426
238	Trolley Side Adapter	HRA40A-425	HRA40A-425
239	Trolley Adapter Spacer (2)	HRA40A-446	HRA40A-446
240	Trolley Adapter Screw (2)	HRA40A-339	HRA40A-339
241	Trolley Side Adapter Screw (2)	HRA40A-743	HRA40A-743
242	Adapter Screw Lock Washer (4)	HRA20A-322	HRA20A-322
243	Lock Wire (12" long) (2)	HRA20A-698	HRA20A-698

* Not illustrated.

Note: No. HRA60A-A430 Trolley will operate on 6" to 18" I-beams having Flanges 3.33" to 6.00" wide.
No. HRA60A-A430T Trolley will operate on Flat Tread Monorails having Flanges 3.25" to 4.50" wide.
Always specify size, type and flange width of track on which Trolley is to operate.

HOOK-ON TROLLEY PARTS
For Sizes HRE20, HLE20, HRE30, HLE30, HRE40 and HLE40

(NOT ILLUSTRATED)

	PART NUMBER FOR ORDERING	
	For I-Beam	For Flat Tread Monorail
Hook-On Trolley Assembly		
for HRE20 and HLE20	MR20-7928	
for HRE30 and HLE30	HRA40A-A700	
for HRE40 and HLE40	HRA40A-A700	HRA40A-AT700
Trolley Wheel (4)		
for Hook-On Trolley No. MR20-7928	MR20-691	
for Hook-On Trolley No. HRA40A-A700	HRA40A-691	HRA40A-691T

Note: The Hook-On Trolley for HRE20 and HLE20 will operate on 5" to 12" I-beams having Flanges 3.00" to 5.00" wide.
The Hook-On Trolley for HRE30, HLE30, HRE40 and HLE40 will operate on 6" to 18" beams having Flanges 3.33" to 6.00" wide.
No. HRA40A-AT700 Trolley will operate on Flat Tread Monorails having flanges 3.0" to 5.7" wide.
Always specify the type, size and flange width of track on which Trolley is to operate.

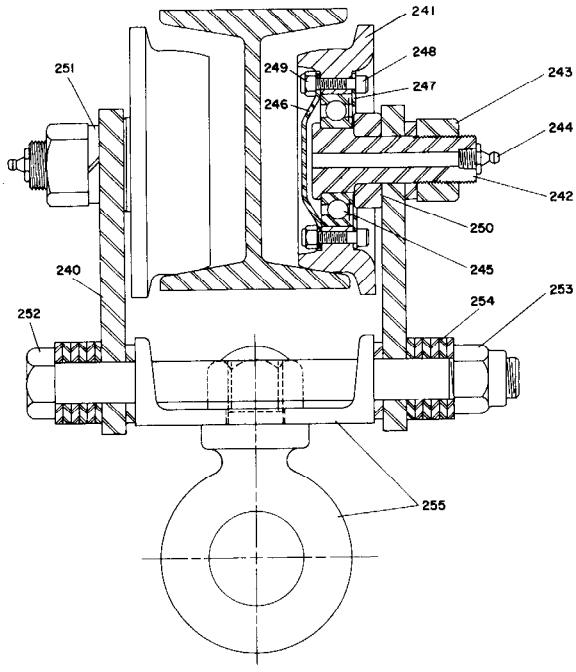
DRAWBAR PARTS

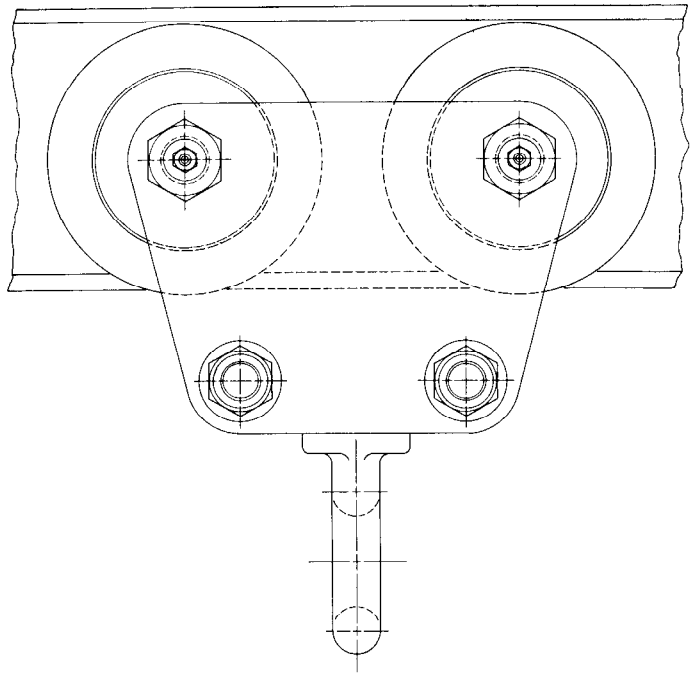
These parts are required for attaching a tractor drawbar to a trolley-mounted Hoist.

(NOT ILLUSTRATED)

	PART NUMBER FOR ORDERING
Drawbar Yoke	
for HRE20, HLE20, HRE30 and HLE30	HRA20A-607
for HRE40, HLE40, HRE60 and HLE60	HRA40A-607
Drawbar Yoke Pin	HRA20A-617
Yoke Pin Retainer	5UT-281
Drawbar Pin	C6H20A-793
Drawbar Pin Cotter (2)	D02-524

HOOK-ON TROLLEY PARTS
For Sizes HRE60 and HLE60



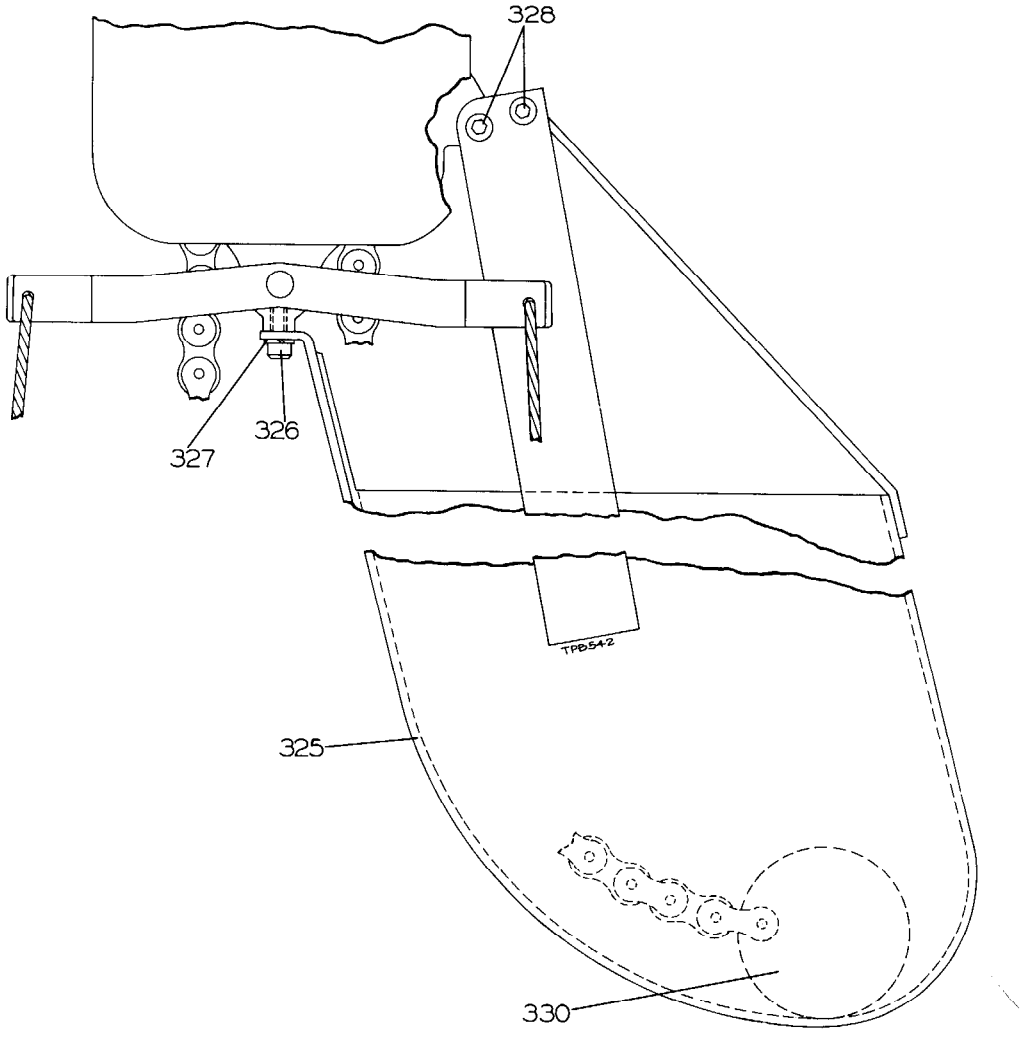


PART NUMBER FOR ORDERING

		For I-Beam	For Flat Tread Monorail
	Hook-On Trolley Assembly	HRA60A-A690	HRA60A-AT690
	Assembled Trolley Bracket (2)	HRA60A-B430	HRA60A-B430T
240	Trolley Bracket (1 for each Assembled Trolley Bracket)	HRA60A-430	HRA60A-430
241	Trolley Wheel (2 for each Assembled Trolley Bracket)	D04-231	D04-T431
242	Trolley Wheel Shaft Assembly (1 for each Wheel)	HRA60A-A435	HRA60A-A435
243	Trolley Wheel Shaft Nut (1 for each Shaft)	D04-305	D04-305
244	Grease Fitting (1 for each Shaft)	23-189	23-189
245	Trolley Wheel Bearing (1 for each Wheel)	D04-956	D04-956
246	Bearing Cap (1 for each Wheel)	D04-954	D04-954
247	Bearing Plate (1 for each Wheel)	D04-955	D04-955
248	1/4" Cap Screw (4 for each Wheel)	501-638	501-638
249	1/4" Elastic Stop Nut (4 for each Wheel)	501-639	501-639
250	Trolley Wheel Spacer (1 for each Wheel)	HRA60A-432	HRA60A-432T
251	1" Lock Washer (1 for each Wheel)	D04-960	D04-960
252	Trolley Bracket Bolt (2)	C6H40A-439-11	C6H40A-439-11
253	Trolley Bolt Nut (2)	D02-440B	D02-440B
254	1/6" Trolley Bracket Spacer (36)	D02-442A-1/6	D02-442A-1/6
255	Trolley Bracket Block	HRA60A-690	HRA60A-690

Note: The No. HRA60A-A690 Hook-On Trolley will operate on 8" to 18" I-beams having Flanges 4.00" to 6.00" wide.
The No. HRA60A-AT690 Hook-On Trolley will operate on Flat Tread Monorails having Flanges 3.25" to 4.50" wide.
Always specify the type, size and flange width of track on which the Trolley is to operate.

CHAIN BUCKETS



		PART NUMBER FOR ORDERING
325	Chain Bucket (**Note:** capacities are shown in feet of Chain – not feet of lift. Double-line Hoists require a Chain Bucket with a capacity equal to twice the lift.)	
	for Series HRE	
	10 ft.	HRA20A-649-1
	20 ft.	HRA20A-649-2
	30 ft.	HRA20A-649-3
	60 ft.	HRA20A-649-4
	for Series HLE	
	10 ft.	HLA20A-749-1
	20 ft.	HLA20A-749-2
	30 ft.	HLA20A-749-3
	50 ft.	HLA20A-749-4
	80 ft.	HLA20A-749-5
326	Chain Bucket Cap Screw (2)	
	for Chain Housing with round mounting boss	G57T-634
	for Chain Housing with flat mounting boss	34U-667A
*	Flat Washer (4) (for Chain Housing with round mounting boss)	R3-94
327	Lock Washer (2)	10BM-67
328	Chain Bucket Bolt (1 for Series HLE; 2 for Series HRE)	D10-957A
329	Chain Bucket Bolt Nut (1 for Series HLE; 2 for Series HRE)	503-639
330	Stop Ring	
	for Series HLE	HRA20A-A259
	for Series HRE	HRA20A-1259

Important: Before ordering any of the foregoing Chain Buckets or mounting parts, examine the Chain Housing (1) of the Hoist to see whether or not it has been drilled and tapped as shown in the illustration. If the Chain Housing is tapped, note whether the boss containing the tapped hole is flat or round.

Chain Housings that are already tapped and that have a flat mounting boss, as shown in the illustration, are of the latest construction.

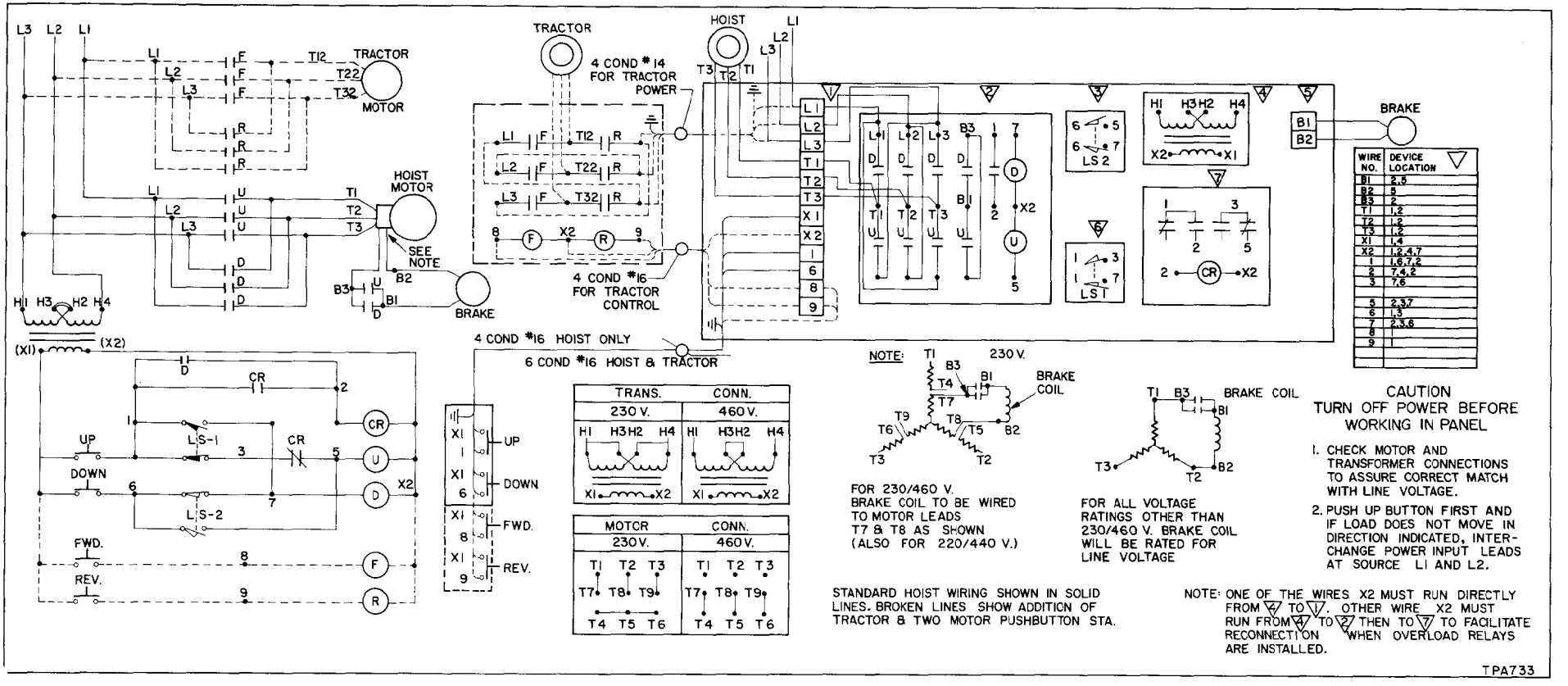
If the Chain Housing is not drilled and tapped, press out the Stop Lever Shaft Bearings (3). Using a No. 7 (.201") drill, drill a hole on the centerline through each boss from which the Bearings were removed. Tap each hole with a 1/4"-20 thread tap, and press in new Stop Lever Shaft Bearings.

Note: Do not attempt to reuse the old Stop Lever Shaft Bearings. These are needle type bearings and are always damaged in the removal process.

On all Hoists with the round mounting boss, use No. G57T-634 Chain Bucket Cap Screw with two No. R3-94 flat Washers located between the chain bucket bracket and the mounting boss.

On all Hoists with the flat mounting boss, mount the Chain Bucket as shown in the illustration.

After mounting the Chain Bucket on the Hoist, attach the proper Stop Ring (330) to the end of the Chain and drop it in the Bucket. When the maximum allowable Chain is payed from the Hoist, the Stop Ring contacts the Stop Lever and stops the Hoist. Fastening the Stop Ring to the end of the Chain promotes more uniform gathering of the Chain in the Bucket.



Wiring Diagram for HRE, HLE Hoists

MAINTENANCE TOOLS

Tool Number For Ordering	Tool Name For Ordering	Operation
34766	Control Shaft Bearing Inserting Tool . .	Pressing the Stop Lever Shaft Bearings (3) into the Chain Housing (1).
77135	Bottom Chain Wheel Bearing Inserting Tool	Pressing the Bottom Chain Wheel Bearings (62) into the Bottom Chain Wheel (61).

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