

Chain Hoists

Series 7700-E and 7700-ET



Installation, Operation and Maintenance



Save These Instructions

Only allow **Ingersoll Rand** trained technicians to perform maintenance on this product. For additional information contact **Ingersoll Rand** factory or nearest Distributor.

Manuals can be downloaded from ingersollrand.com

The use of other than genuine **Ingersoll Rand** replacement parts may result in safety hazards, decreased performance and increased maintenance and will invalidate all warranties.

Original instructions are in English. Other languages are a translation of the original instructions.

Refer all communications to the nearest **Ingersoll Rand** Office or Distributor.

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Model Identification

Model Code Explanation

Example: 7770E-2C10-C6S

7770E - 2 C 10 - C 6 S

Base Model:

7770E	=	125 kg 1/8 T (275 lbs)
7718E	=	275 kg 1/4 T (550 lbs)
7756E	=	500 kg 1/2 T (1100 lbs)
7776E	=	1000 kg 1 T (2200 lbs)
7712EL	=	275 kg 1/4 T (550 lbs) Spark Resistant
7714EL	=	680 kg 0.68 T (1500 lbs) Spark Resistant

Control:

0	=	No control provided
1	=	Pull Chain
2	=	Single Motor Pendant
3	=	Two Motor Pendant
4	=	Three Motor Pendant

Suspension (1):

A	=	Fixed Lug
K	=	Bullard Hook (manual closing)
C	=	Swivel Steel Snap Hook
R	=	Bronze Snap Hook
DA	=	Plain Rigid Trolley (universal wheels "A" flange)
DD	=	Plain Rigid Trolley (universal wheels "D" flange)
FXXA (2)	=	Hand Geared Trolley (universal wheels "A" flange)
FXXD (2)	=	Hand Geared Trolley (universal wheels "D" flange)
HA	=	Vane Motor Powered Trolley (universal wheels "A" flange)
HD	=	Vane Motor Powered Trolley (universal wheels "D" flange)

Length of Lift:

10	=	10 feet (3 metres) Standard
XX	=	Specify Length

Lower Hook:

K	=	Bullard Hook (manual closing)
C	=	Steel Snap Hook
R	=	Bronze Snap Hook
G	=	Bullard Hook (self closing)

Length of Pull Chain or Pendant Control Hose Drop: *

6	=	6 feet (1.8 metres) Standard
XX	=	Specify Length (in feet)

Options:

P	=	Piped Away Exhaust
S	=	Steel Chain Container
U	=	Fabric Chain Container

Notes:

- (1) XX = Specify length of hand chain required. Example: "08" = 8 feet, standard.
- (2) Order hose lengths in feet. Metric sizes listed for reference only.

For spark-resistant models, refer "Spark-Resistant Hoist Section," p. 32.

Installation

⚠ WARNING

!

- **THE HOISTING EQUIPMENT SHOWN AND DESCRIBED IN THIS MANUAL SHALL NOT BE USED TO LIFT OR TRANSPORT HUMAN CARGO.**
- **The hoist shall be installed only in locations that will permit the operator to stand free of the load at all times. ARO® hoist is completely lubricated and load tested before being shipped from the factory.**

To place in service

Hook Suspended Models

Select an overhead support capable of safely supporting combined weight of hoist and its capacity load. Hang hoist, being certain the upper hook is firmly seated in the center of the hook saddle and that the safety latch is properly closed. The use of a secondary safety cable is recommended on page 37.

Trolley Suspended Models

The trolley side plates must be spaced so the trolley wheels will properly engage the beam on which the trolley will be operated. Adjustment for various beam sizes is accomplished by arrangement of the spacer washers on the shaft which connects the trolley side plates. The hoist can be suspended from the trolley by using trolley adapter or by attaching the upper hook directly to shaft [Figure 1, p. 7](#). Use of the trolley adapter is recommended. Trolley parts can be found in manual MHD56083 for the TIR/RT trolley series.

The distance between the outside edges of the trolley wheels should be approximately 1/2 inch greater than the width of the beam flange. The number of spacer washers used to space side plates out must be the same on each side of the shaft (or trolley adapter) and the remaining spacers must be equally distributed on the shaft outside the trolley side plates at each side between the side plates and lock nuts, [Figure 1, p. 7](#). When installing the trolley on the beam, be certain side plates are vertical.

Assemble trolley adapter to hoist housing. Determine the number of spacer washers needed to properly space side plates for beam to be used, and assemble shaft to trolley adapter. Assemble spacer washers, side plate, spacer washers and nut to one side of shaft. Position trolley and hoist on beam and assemble spacer washers, side plate, spacer washers and nut to other side of shaft. Tighten nuts securely. The lock nuts must properly engage shaft extending all the way through the nut.

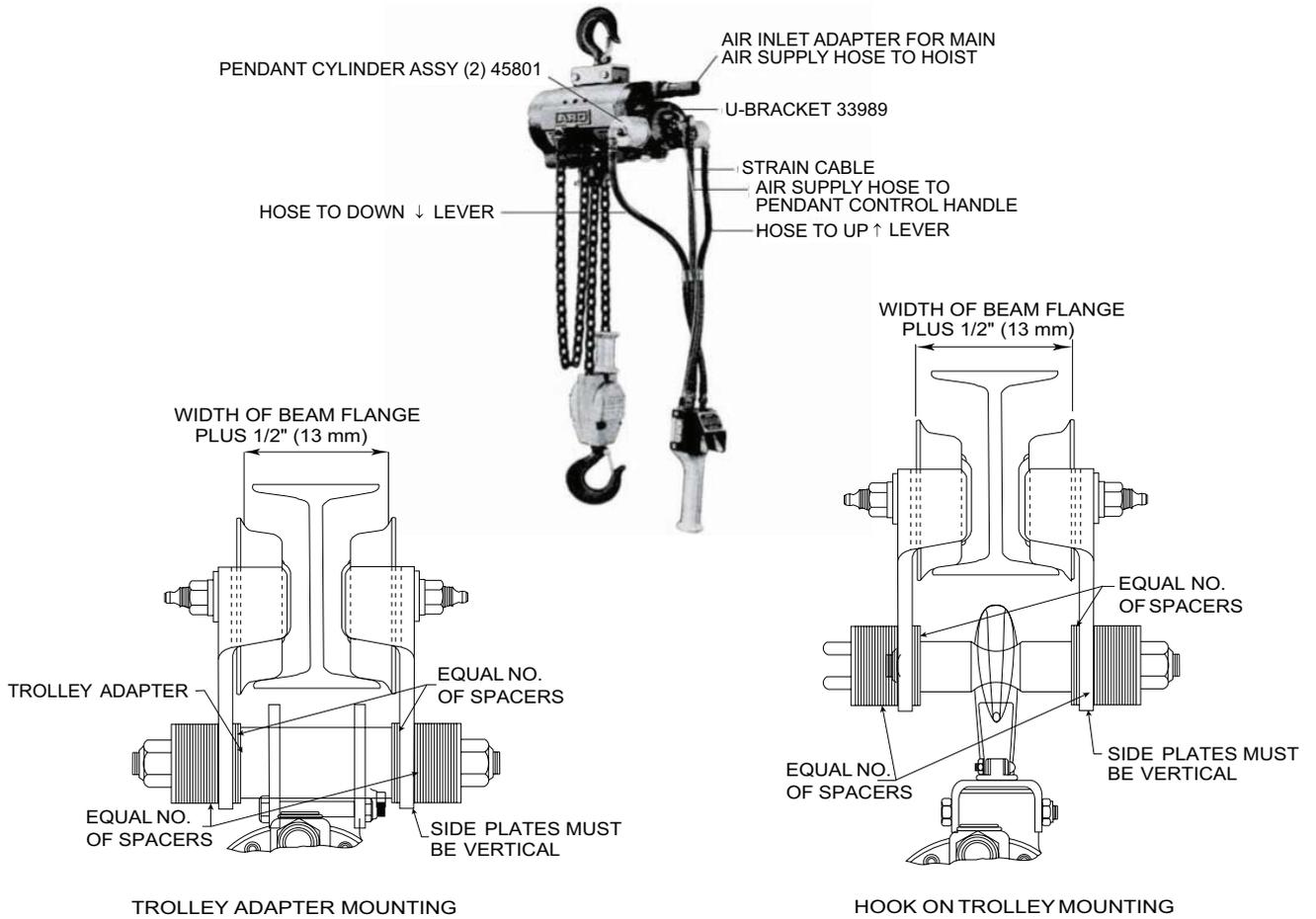
The trolley wheels should be positioned as close as possible to the edge of the beam flange. Operate the trolley over the entire length of the beam track and observe operation. If it appears the trolley side plates can be moved closer together and freedom of movement maintained, remove an equal number of spacer washers from between the side plates and trolley adapter at each side and assemble these spacers to the outside of the side plates between the side plate and lock nuts.

The beam on which the trolley is to be used must safely support the combined weight of the hoist, trolley, and capacity load. Minimum turning radius of the trolley is 24 inches for 1/4 and 1/2 ton models; 36 inches for 1 ton models.

Connect hoist to nearest air source using a minimum 1/2 inch i.d. air hose assembly. Sufficient air hose must be provided to reach the farthest point of travel of the trolley.

ARO® model 7703 hose trolley assemblies are recommended to keep air hose elevated and in line with the hoist, refer to ["Hose-Carrier Trolleys," p. 37](#).

Figure 1. MHP3409



Air and Lube Requirements

Air Pressure of 90 psig (6 bar) at the air inlet of the hoist is required for maximum motor efficiency. If necessary, an air regulator should be installed to maintain this pressure when hoist is in operation.

Filtered And Oiled Air will allow the hoist to operate more efficiently and yield a longer life to operating parts and mechanisms. A line filter capable of filtering particles larger than 50 microns should be used with a line oiler.

Filter-Regulator-Lubricator (F-R-L) assembly model C38341-810 is recommended for use with each hoist. The capacity of this F-R-L is adequate to provide clean (40 micron) oiled and regulated air for the hoist. The F-R-L must be installed on the stationary air line, in that order, with the lubricator nearest to the hoist.

Load Chain Lubrication - Chain should be lubricated periodically with heavy "EP" Gear Oil. Occasional cleaning of the chain under normal operation conditions will tend to reduce wear and prolong chain and pocket wheel (or sprocket) life. To properly clean, remove chain from hoist (refer to "[Removal and Installation of Load Chain,](#)" p. 13) and wash in an oil solvent. Lubricate chain. Under highly contaminated operating conditions, the load chain should be cleaned and re-lubricated with greater frequency to remove grit, sand, and other contaminants.

Oil Reservoir in head should be filled with spindle oil (29665) after each 40 hours of operation.

Inject Grease (33153), 2 to 3 strokes, through grease fitting in hoist housing to provide lubrication for gearing, and through fittings of trolley wheels a minimum of every 160 hours of operation.

Lower Block Assembly should be lubricated any time the lower block is disassembled either for inspection or for maintenance, or for chain replacement. Refer to "[Assembly,](#)" p. 22 and "[1 Ton Link Chain Models,](#)" p. 26 for lubrication instructions.

Recommended Hose Size - 1/2 inch (13 mm) nominal inside diameter.

Recommended Lubricants: Spindle Oil 29665, 1 qt. (0.9 liter) container for oiler and air inlet; Grease 33153, 5 lb. (2.3 kg) can for gears, lower block and bearings; O-Ring Lubricant 47622327001, 2 oz. (28g) tube for lubrication and installation of O-Rings.

Part Number	Where Used	Description
29665	Air Motor	A high quality light turbine or spindle oil. Rust inhibited, with viscosity of 100-150 S.U.S. At 100° F. Oil is compatible with polycarbonate type air line lubricator bowls.
33153	Gears & Bearings	A high quality "EP" Extreme Pressure anti-friction bearing and gear grease, NLGI NO. 1. Free of corrosive matter and fillers, with a viscosity of approximately 750 S.U.S. at 100° F.
47622327001 (2 oz tube)	O-Rings & Lip Type	A stringy lubricant for rubber seals, with good adhesive qualities.

Operation

⚠ WARNING

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- **Do not operate this hoist before reading Product Information Manuals.**
- **Read all documentation supplied with the product.**
- **Contact factory if in doubt about installation, operation, inspection and maintenance instructions.**
- **Do not discard manuals. Keep manuals readily available for all personnel.**

OPERATE HOIST CAUTIOUSLY to become familiar with the performance of the hoist. Hoist shall be operated from a position that will not be hazardous to the operator. Abrupt operation, resulting from “jerking” of controls, should be avoided.

The rate of lift or descent of any ARO® chain hoist can be governed manually by the operator, both the pull chain and pendant controls provide unlimited variation between full speed and the slowest “INCHING” movement. This is accomplished by movement of pull chain handles or pendant control levers. Pulling down on pull chain control as far as possible or depressing pendant control levers fully will result in maximum hoist speed.

On pendant control models, the control handle is supported by a strain cable to prevent stress on hoses.

BEFORE STARTING TO LIFT, ensure chain is properly seated in the sprockets (or pocket wheel). Do not lift or move load more than a few inches until load is well balanced in sling or lifting device. Care shall be taken in hoisting to ensure that chain is not kinked or twisted and load does not contact any obstruction. Be certain hoist is centered over load to prevent danger of load swinging when lifted. Side or end pulling should always be avoided. Take up slack chain carefully to avoid overstress caused by jerking load when lifting. Be certain that safety latch on load hook is properly closed. On 1 ton link chain models to avoid jamming of chain in lower block, allow only sufficient slack in chain to permit attaching hook to load.

DO NOT wrap the hoist chain around the load. The load shall be attached to the hook by means of slings or other approved devices and shall be properly seated in the saddle of the hook.

The maximum lift rate of a hoist is constant, provided that air pressure and load are also constant. The maximum descent rate of a hoist, with the exception of sparkresistant models (see spark-resistant hoist section), can be varied within fixed limits by means of regulating valves located on the underside of the head housing.

Hoists are shipped from the factory with regulator valves preset for rate of descent and fastest rate of lift. If a faster rate of descent is desired, turn regulator valve clockwise by small increments while testing with desired or rated load attached. If a slower rate of lift is desired, turn regulator valve counterclockwise by small increments while testing with desired or rated load.

The operator shall test the brakes each time a load approaching the rated load is handled by raising the load just enough to clear the floor, or supports, and checking for proper brake action and lift continued only if brake is functioning properly.

⚠ CAUTION

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- **DO NOT OPERATE HOIST WITHOUT CHAIN STOP ATTACHED PROPERLY TO HOIST LOAD CHAIN. DO NOT USE CHAIN STOP AS A LIMIT SWITCH (to stop hoist when operating in the “up” mode). The chain stop function is to keep the lower hook components (lower block on 1 ton models) from striking control arm (37719) should an over-run condition ever occur.**
- **DO NOT EXCEED RATED LOAD CAPACITY OF HOIST.**
- **DO NOT OPERATE HOIST OVER PEOPLE.**

Figure 2. MHP3410

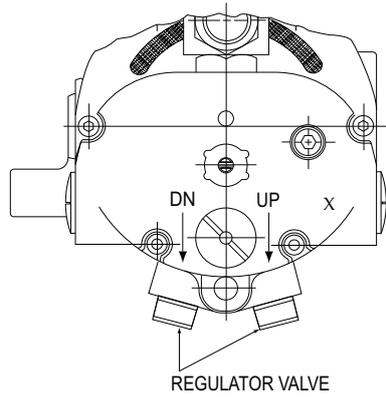
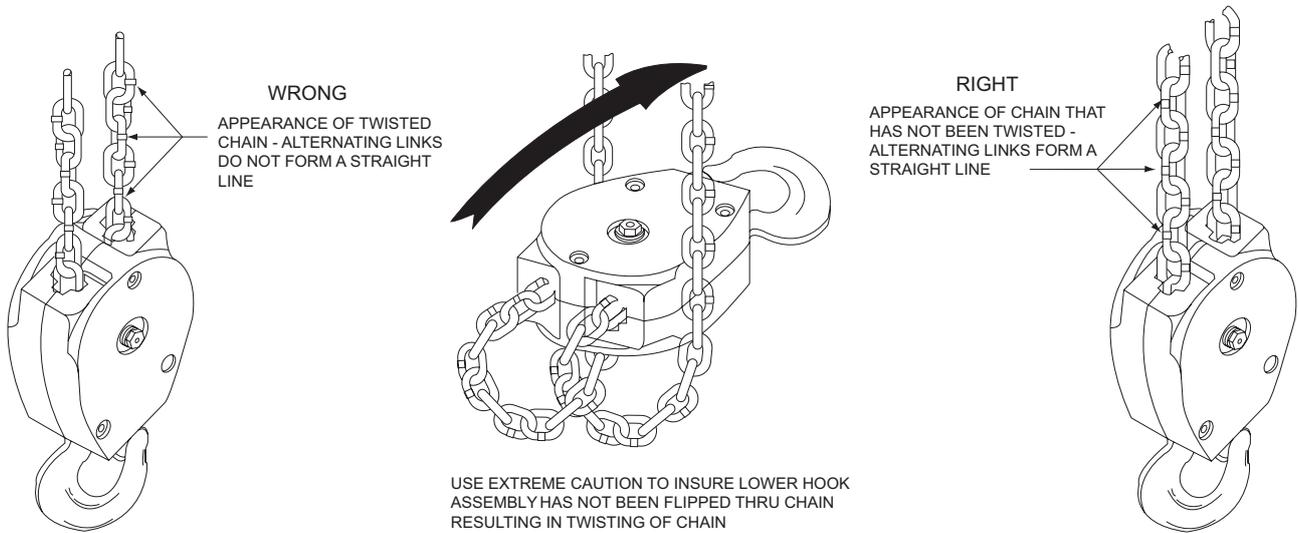


Figure 3. MHP4608



⚠ WARNING

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- **DO NOT USE HOIST FOR HUMAN TRANSPORT.**
- **DO NOT LEAVE LOAD SUSPENDED FOR EXTENDED OR UNATTENDED PERIODS.**
- **INSURE LOAD CHAIN IS HANGING PROPERLY AND IS FREE OF TWISTS, LOOPS OR KINKS.**
- **MAXIMUM LOWERING SPEED WITH RATED CAPACITY LOAD IS VERY HIGH. ADJUST WITH CARE. REFER TO MHP3410, p. 10**

Safe and efficient operation of your ARO® hoist can be attained by observing proper operating, inspection and maintenance procedures. Allow only competent and qualified people to operate hoist and subject each hoist to a regular inspection and maintenance procedure. The qualified hoist operator must be carefully instructed in the safe operation of the hoist, including a study of the manufacturer's literature, and must thoroughly understand proper methods of hitching loads. The operator should have a good attitude regarding safety.

To aid in better understanding of proper and safe use of hoists: the publication "Overhead Hoists", ASME B30.16 - 2017, can be purchased from the American Society of Mechanical Engineers, Three Park Avenue, New York, NY 10016.

Inspection and Maintenance

ARO recognizes the need for periodic inspection of hoist components as an important step in preventive maintenance. The type of application for a hoist varies so greatly, it is impractical to recommend an exact time-table for inspection of the hoist. Where hoist is subjected to continuous operation with capacity loads, it is recommended the unit be inspected daily to weekly. If the application is less demanding, the unit should be inspected weekly to monthly. In general, the frequency of inspection should be determined by the severity of the application.

The user of a hoist should be guided by any existing federal, state or local regulations governing the use, testing or inspection of the hoist.

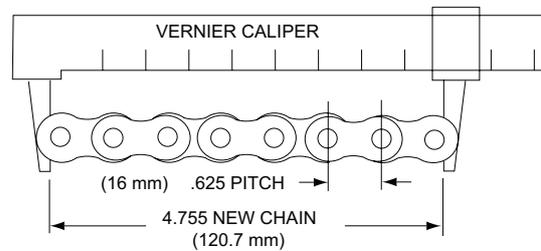
The following points and areas are recommended for inspection:

Load Chain and Anchors

1. Visually check for nicked, gouged, twisted, bent, corroded, rusted, worn or broken links. Check ends of chain where chain is anchored to hoist frame and where chain is fastened to lower hook. Check anchors and pins.
2. Check chain elongation with a vernier caliper as shown in [Figure 4, p. 11](#) and [Figure 5, p. 11](#). IT IS NOT INFERRED that a chain is safe prior to the occurrence of elongation of the chain. It is inferred ONLY, that when said elongation is evident, the chain must be replaced. Other factors, such as those mentioned as a visual check, may render chain unsafe long before replacement due to elongation is necessary.

Note: New chain should never be used on a worn pocketwheel. Replace chain and pocketwheel as a pair, chain should also be replaced when replacing brake shoes.

Figure 4. MHP3411

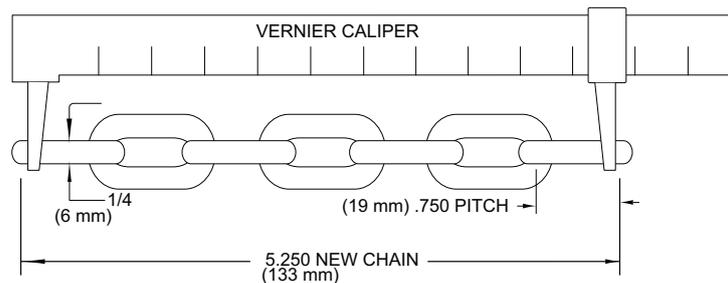


IF VISUAL CHECK REVEALS NO DEFECTS, PROCEED AS FOLLOWS:

LAY USED CHAIN ON FLAT SURFACE AND MEASURE OVER EIGHT (8) ROLLS, WHILE CHAIN IS PULLED TAUT, AS SHOWN. MEASUREMENT SHOULD BE TAKEN ON PORTION OF CHAIN WHICH HAS MOST PASSED OVER THE SPROCKET.

IF MEASUREMENT TAKEN IS 4.810 INCHES OR MORE. CHAIN SHOULD BE REPLACED.

Figure 5. MHP3427



IF VISUAL CHECK REVEALS NO DEFECTS, PROCEED AS FOLLOWS:

LAY USED CHAIN ON FLAT SURFACE AND MEASURE BETWEEN SEVEN (7) LINKS AS SHOWN. MEASUREMENT SHOULD BE TAKEN ON PORTION OF CHAIN WHICH HAS MOST PASSED OVER THE POCKET WHEEL.

IF MEASUREMENT TAKEN IS 5.355 OR MORE. CHAIN SHOULD BE REPLACED.
(136 mm)

Gears, Bearings and Sprocket

1. Check condition of teeth on gears and motor shaft pinion.
2. Check condition of sprocket teeth or pockets of pocketwheel.
3. Check condition of bearings.
4. Replace any worn or damaged parts.

Brake

1. Check brake linings and components.
2. Check brake operation.

Note: When replacement of brake shoes is indicated, they must be replaced as a pair. Also replace chain at this time.

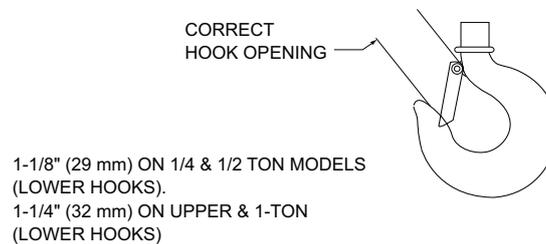
Throttle Valve Head and Gears

1. Check condition of valve body, valves, and O-Rings on valves.
2. Check condition of gear teeth and bearings.
3. Replace any worn or damaged parts.

Hooks and Suspension

1. Check upper and lower hooks and component parts for bent, worn, cracked, broken or otherwise damaged parts.
2. On trolley suspended models, check conditions of trolley parts, trolley adapter and component parts. Replace any damaged parts.

Figure 6. MHP4606



Air Motor

1. Check end faces of rotor for roughness and blade slots for wear or burrs. A new blade should slide in and out of slots without binding.
2. Check blades for wear, warpage or other damage.
3. Check cylinder bore diameter for rough circular grooves from scoring. A badly scored cylinder cannot be restored by honing since it will only enlarge bore diameter, widening seal point between rotor and cylinder, hindering free exhaust of air and result in loss of speed and power.
4. Check end plates for wear or scoring. Check bearings.
5. Replace any excessively worn or damaged parts.

General Maintenance

AIR HOISTS are made of precision parts and should be handled with reasonable care when servicing. Excessive pressure exerted by a holding device may cause distortion of a part. Apply pressure evenly when disassembling (or assembling) parts which have a press fit. When removing or installing bearings, apply pressure to the bearing race that will be press fit to the mating part; if this is not practiced, damage could occur to the bearing. It is important that the correct tools and fixtures are used when servicing this air hoist.

DISASSEMBLY should be done on a clean work bench with a clean cloth spread to prevent the loss of small parts. After disassembly is completed, all parts should be thoroughly washed in a clean solvent, blown dry with air and inspected for wear levels, abuse, and contamination. Double sealed or shielded bearings should never be placed in solvent unless a good method of re-lubricating the bearing is available. Open bearings may be washed but should not be allowed to spin while being blown dry. When REPLACEMENT PARTS are necessary, consult drawing containing part.

BEFORE REASSEMBLING, lubricate parts where required. Use 33153 grease, or equivalent, in bearings. Use 47622327001 lubricant for "O" ring assembly. When assembling "O" rings or parts adjacent "O" rings, care must be exercised to prevent damage to the rubber sealing surfaces. A small amount of grease will usually hold steel balls and other small parts in place while assembling.

WHEN ORDERING PARTS, be sure to list PART NUMBER, PART NAME and MODEL NUMBER OF HOIST. USE ONLY GENUINE ARO REPLACEMENT PARTS.

Removal and Installation of Load Chain

LINK CHAIN HOISTS - A new chain should never be used on a worn pocketwheel. Replace chain and pocket-wheel as a pair. To remove chain; disconnect end of load chain from anchor lug on housing by removing screw (Y157-51) and washer (Y13-4-C).

Note: Models with a chain basket, remove chain stop from end of chain. Chain can be pulled through housing by hand while holding brake open, by pulling (or pushing) on control arm (either end). On 1 ton models, disconnect opposite end of load chain from anchor bracket (41624) by removing nut (Y109-524) and bolt (41625). Remove chain stop and lower hook assembly.

ROLLER CHAIN MODELS - Disconnect end of load chain from anchor block (44686) by removing connecting link (33363).

Note: Models with a chain basket, remove chain stop (ring) from end of chain. Chain can be pulled through housing by hand while holding brake open, by pulling (or pushing) on control arm (either end). On 1 ton models, disconnect opposite end of load chain from anchor bracket (37579) by removing bolt (37580) and anchor pin (34316). Remove chain stop and lower hook assembly.

Figure 7. Installing Load Chain (MHP3428)



Installation

LINK CHAIN MODELS - Position hoist in a vise or other suitable holding device (Figure 7, p. 13) and remove housing cap, brake spring and brake shoes, Turn brake wheel by hand to rotate pocketwheel while carefully feeding chain through chain guide and around pocketwheel. Pull sufficient chain through housing to allow end link of chain to be attached to anchor lug on housing.

IMPORTANT NOTICE: The link chain must be positioned around the pocketwheel so the weld on the standing links of chain face outward from pocketwheel (Figure 7, p. 13). ALSO, the end link of chain must be fed over pocketwheel so it will be positioned properly to permit attaching chain to anchor lug on housing without twisting of chain (Figure 19, p. 26).

⚠ WARNING

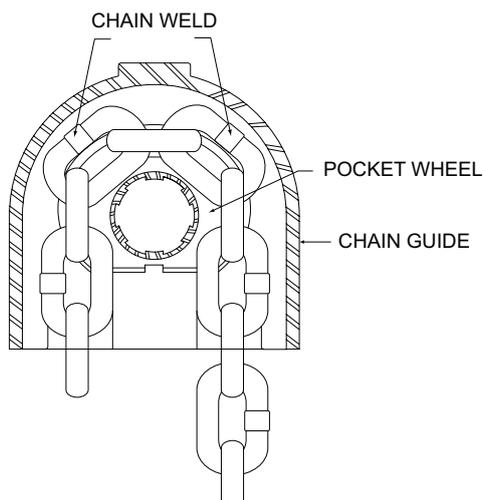
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DO NOT attempt to feed chain over pocketwheel or sprocket by air power as chain will be pulled through at a very fast rate.

ROLLER CHAIN MODELS - Remove housing cap, brake spring and brake shoes. Turn brake wheel by hand to rotate sprocket while carefully feeding chain through guide and around sprocket. Pull sufficient chain through housing to allow end link of chain to be attached to anchor block and anchor lug on housing.

To assemble chain to lower block on 1-TON models, refer to "Assembly," p. 22 and "1 Ton Link Chain Models," p. 26.

Figure 8. MHP3429

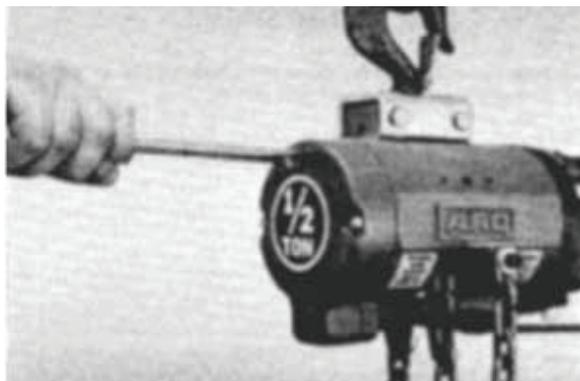


Brake Adjustment

To adjust brake, insert screwdriver through hole in housing cap. Turn screw (37701) counterclockwise to tighten brake, clockwise to loosen brake.

Brake adjustment should be made with air turned on and with rated load attached to lower hook. Operate hoist to raise load applying slight pressure to pendant control. If load starts to lower before it is raised by motor, tighten brake until no slippage is evident. Care should be taken not to tighten brake more than necessary to hold load. If brake is too tight, it will cause erratic hoist control.

Figure 9. MHP3430



Disassembly and Assembly

To minimize the possibility of parts damage and for convenience, the steps for disassembly or reassembly listed on the following pages are recommended.

Removal of Hoist

1. Lower and disconnect load from hoist.
2. Shut off air at source and operate hoist control to bleed air from hoist and line.
3. Disconnect air hose at inlet swivel (on pendant control models, remove pendant control hoses) and remove hoist from overhead suspension.
4. If chain basket is being used, remove from hoist.
5. Drain oil from reservoir in head.
6. Remove trolley from hoist housing.
7. Place hoist upside-down in vise and clamp on upper mounting on housing.
8. If hoist is to be completely disassembled, it is recommended the load chain be removed. For removal of chain, refer to "[Removal and Installation of Load Chain](#)," p. 13.

Head Section

1. Remove roll pin (Y178-56) from gear (34022) and control rod (34021).
Note: If head assembly is not to be disassembled, control rod may be removed with head, thereby making it unnecessary to re-time gear (34022) with throttle valves (see [Figure 10](#), p. 16). To remove control rod with head, remove roll pin (Y178-55) from control arm (37719), remove roll pin (Y178-60) from brake block (34029) and remove brake block.
2. Remove screws (Y154-54) and washers (Y14-10).
3. Remove head assembly from housing.

Brake and Gearing Section

1. Remove screws (Y19-113-C) and housing cap assembly.
2. Slide brake spring (42982) part way off brake shoes (33387 or 33387-1) and remove spring with brake spring spreader (33541). This will release brake shoes and steel balls (Y16-10).
3. Place a pin through hole in brake wheel (33376) to keep from turning and remove nut (Y12-106) and washer (Y117-616). Remove brake wheel.
4. Remove roll pin (Y178-60) from brake block (34029) and remove brake block from control rod (34021).
5. Remove screws (Y99-41) and washers (30997) and remove gearing assembly.

Motor Section

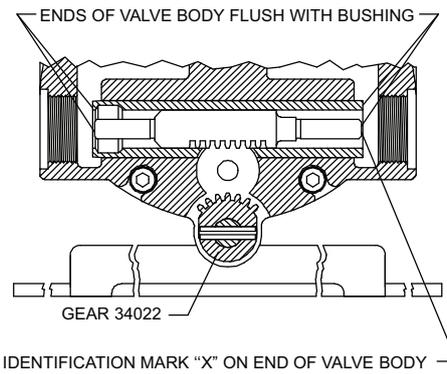
1. After removal of head assembly, housing cap, nut (Y12-106) and washer (Y117-616); motor assembly may be removed from housing.

Housing Section

1. Follow disassembly procedures as outlined in head section, brake and gearing section and motor section. For further disassembly of sections, see pages 18 to 29.

Figure 10. Timing of Head (MHP3431)

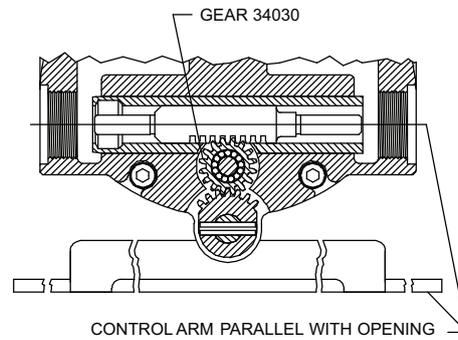
STEP 1



POSITION POWER UNIT SO YOU ARE FACING END WITH AIR INLET.

WITH VALVE PARTS AND GEAR (34030) REMOVED, PLACE VALVE BODY IN VALVE OPENING. INSERT FINGER IN EACH END OF VALVE OPENING AND ALIGN ENDS OF VALVE BODY WITH ENDS OF BUSHING. **NOTE:** VALVE BODY MUST BE INSTALLED WITH IDENTIFICATION MARK AS SHOWN.

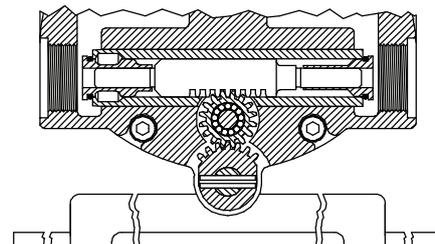
STEP 2



POSITION CONTROL ARM PARALLEL WITH OPENING.

DROP GEAR (34030) INTO PLACE AND SECURE WITH SHAFT (34025) AND LOCK SCREW.

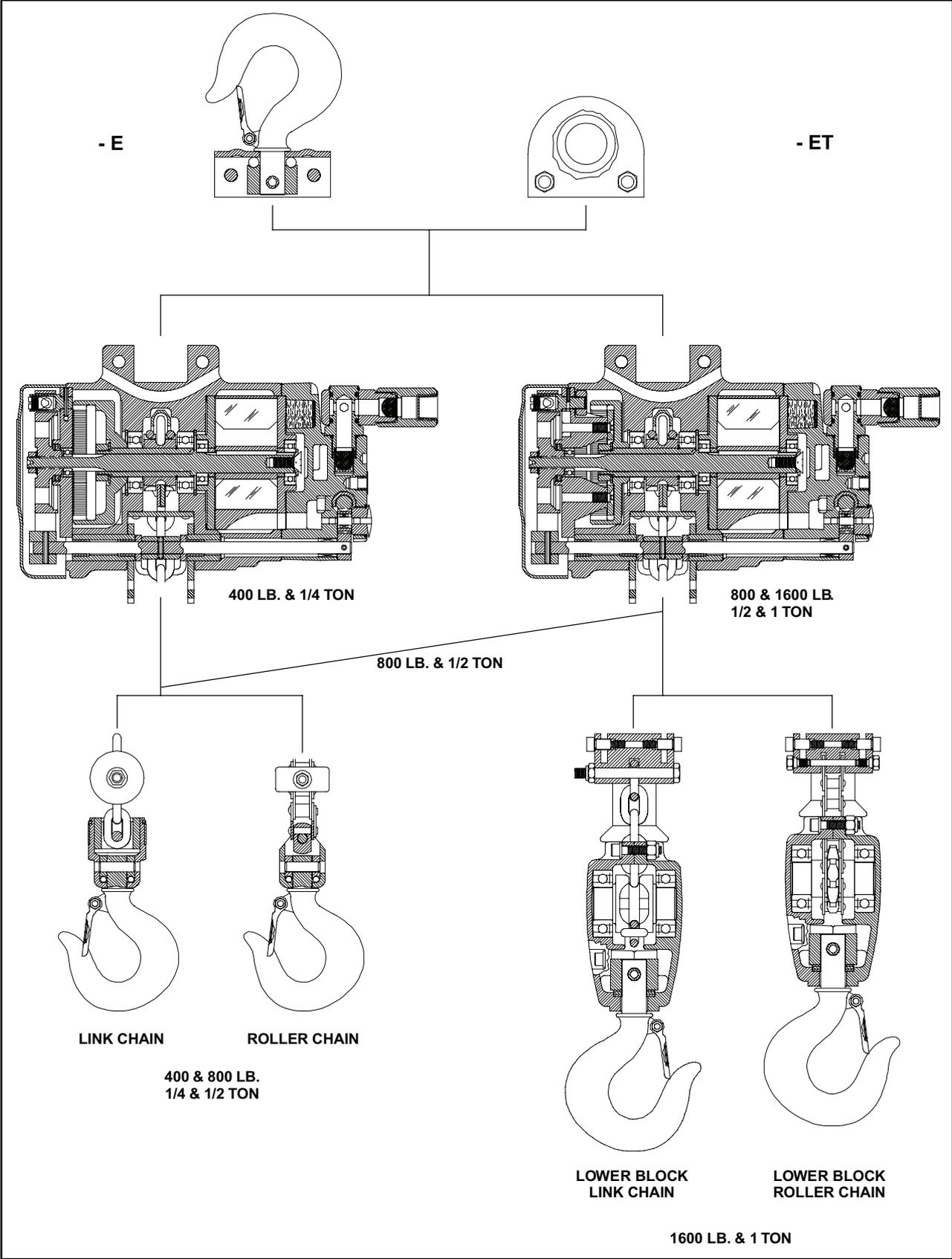
STEP 3



ASSEMBLE BALANCE OF VALVE PARTS.

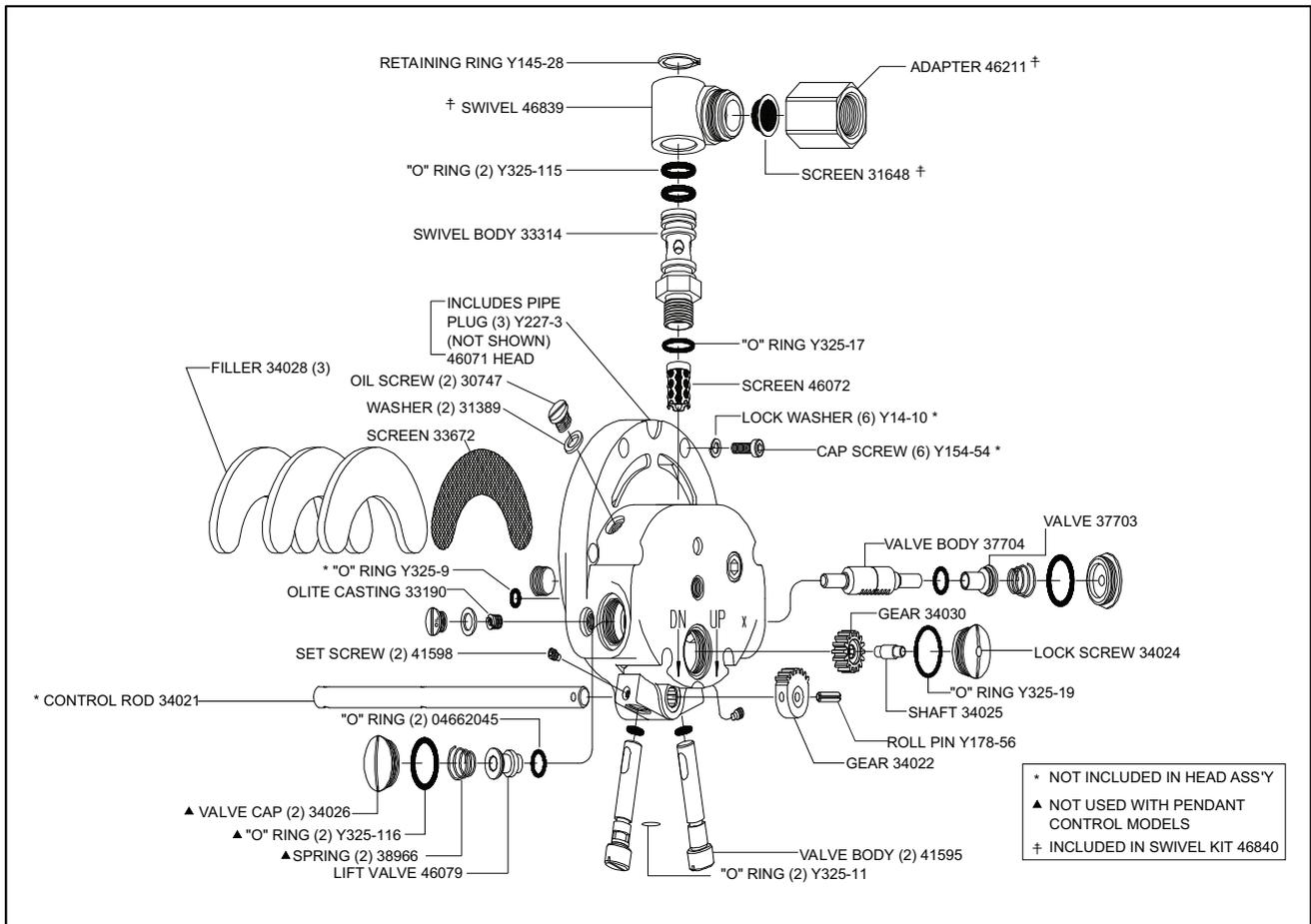
Typical Cross Section

Figure 11. MHP3432



Head Section

Figure 12. 46073-1 Head Assembly (MHP3433)



Disassembly

1. Remove head from housing as outlined in "Removal of Hoist," p. 15.
2. Remove lock screw (34024), gear (34030) and shaft (34025).
3. Remove valve caps (34026), "O" rings (Y325-116) and springs (38966).
4. Valves (33703) and (46079) with "O" rings (04662045) and valve body (37704) may now be removed from either end of head housing.
5. Swivel assembly may be disassembled while mounted to head or removed from head. To disassemble, remove retaining ring (Y145-28), pull off swivel (46839) exposing "O" rings (Y325-115) and swivel body (33314).
6. To remove oilite casting (33190), remove oil screw (30747) and washer (31389) on side of head. Insert screwdriver into opening and remove oilite casting.
7. Muffler fillers (34028) and screen (33672) are exposed after removal of head from housing and may be removed.
8. To remove regulator valve (41595), remove set screws (41598) and pull valves from housing.

Assembly

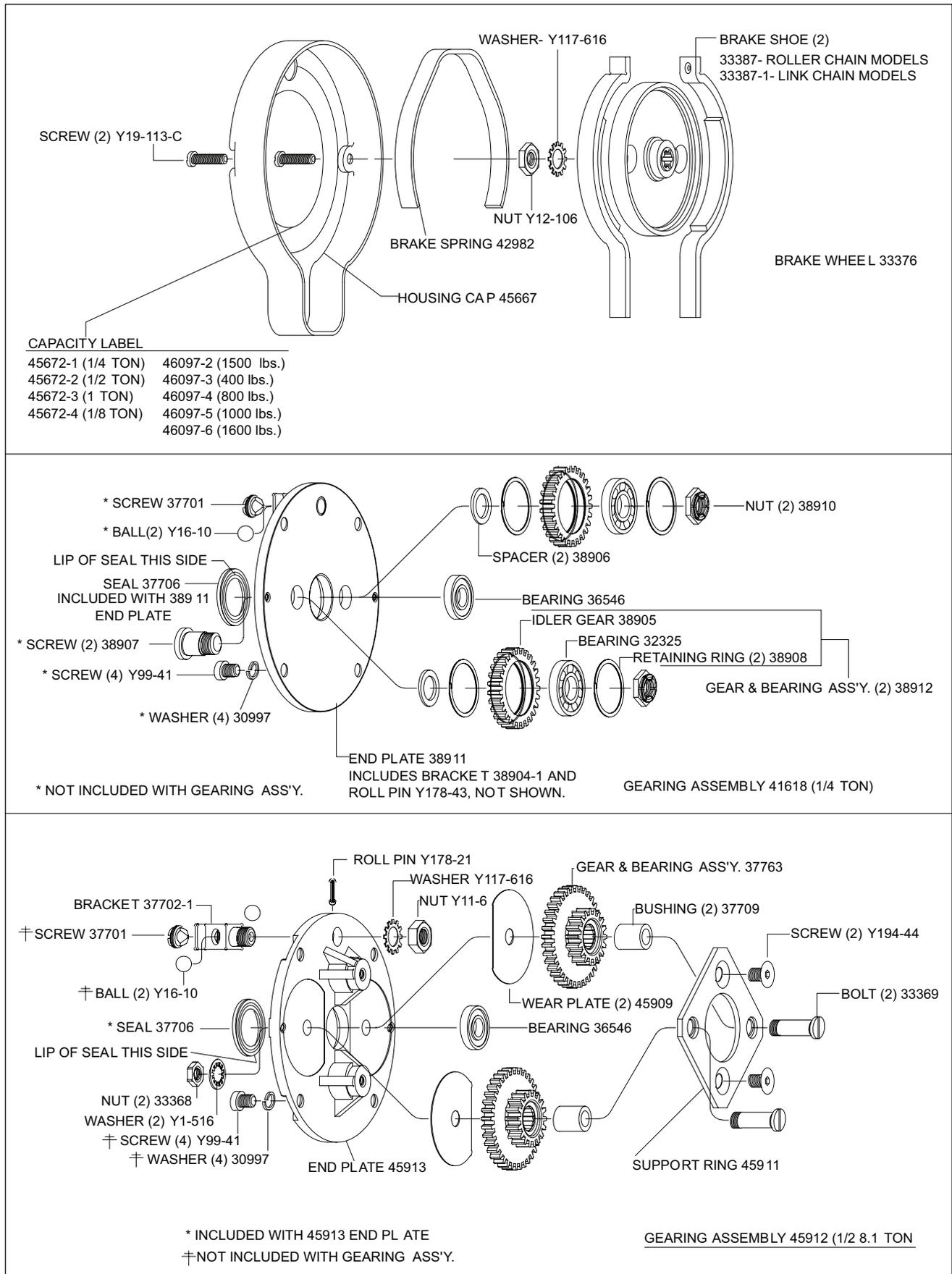
1. Assemble screen (33672) and fillers (34028) to head. Assuming other hoist components are assembled to housing, assemble head to housing with gasket (41623). Secure with washers (Y14-10) and screws (Y154-54).
2. Assemble "O" rings (Y325-17) and (Y325-115) and screen (46072) to swivel body and assemble to head. Assemble swivel to swivel body and secure with retaining ring (Y145-28). Assemble screen (31648) and adapter (46211) to swivel.
3. Assemble oilite casting (33190), screw (30747) with washer (31389) and regulator valves (41595) with "O" rings (Y325-11) to head.

Note: Assemble valves to head with slot in valve positioned to accept set screw. Secure valves with set screws (41598). After complete assembly of hoist, loosen set screw and adjust valve for desired rate of lift and descent. Refer to "Air and Lube Requirements," p. 8.

4. With gear (34022) and control rod assembled to housing, assemble valve parts, see Figure 10, p. 16.

Brake and Gearing Section

Figure 13. MHP3434



Disassembly and Assembly

Disassembly

1. Remove housing cap, brake spring, brake wheel and components as outlined on [Figure 11, p. 17](#).
2. On 1/4 ton models, remove nuts (38910), releasing gear and bearing assemblies.
3. On 1/2 and 1 ton models, remove screws (Y194-44), nuts (33368), washers (Y1-516) and bolts (33369), releasing support ring and gear assemblies.
4. Bearing (36546) and grease seal (37706) should be removed only for replacement.

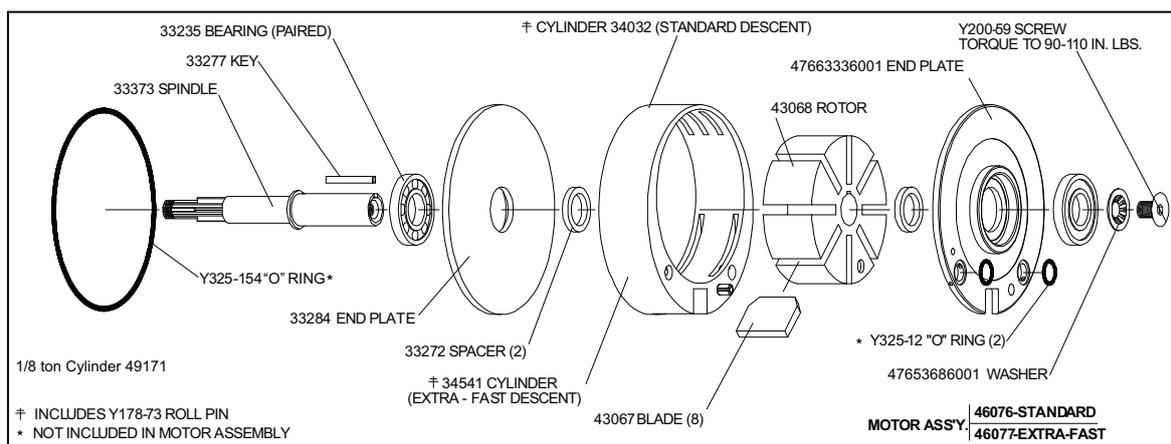
Assembly

Note: Lubricate gears and bearings liberally with ARO 33153 grease when assembling.

1. Assemble grease seal (37706) and bearing (36546) to end plate, if removed.
2. On 1/4 ton models, assemble bearings (32325) and retaining rings (38908) to idler gears (38905) and secure to end plate with screws (38907) and nuts (38910).
3. On 1/2 and 1 ton models, assemble wear plates (45909), gear assemblies and bushings to end plate and secure with support ring, screws (Y194-44), bolts (33369), washers (Y1-516) and nuts (33368).
4. Assemble end plate to housing and secure with washers (30997) and screws (Y99-41).
5. Assemble brake wheel (33376) to splined end of motor spindle and secure with washer (Y117-416) and nut (Y12-106).
6. Assemble steel balls (Y16-10) and screw (37701) into bracket. Position brake shoes (33387 or 33387-1) over brake wheel and assemble brake spring (42982) over shoes, using brake spring spreader (33541).
7. Assemble housing cap over brake and secure with screws (Y19-113-C). Refer to ["Brake Adjustment," p. 14](#).

Motor Section

Figure 14. MHP3435



Disassembly

1. Remove motor from housing as outlined on ["Removal of Hoist," p. 15](#).
2. Remove screw (Y200-59) and washer (47653686001). Motor will now come apart.

Assembly

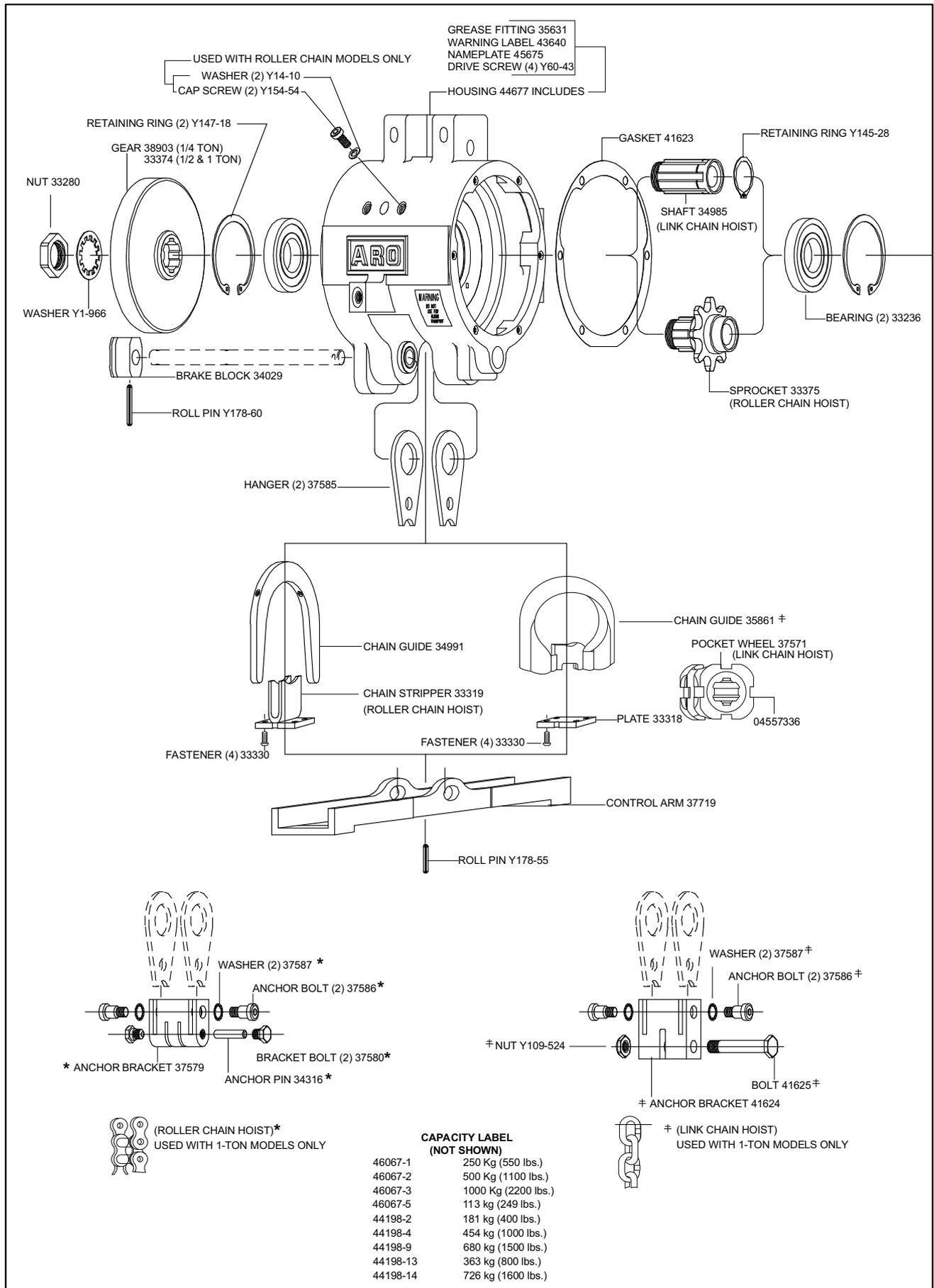
1. Assemble bearings (33235) and spacers (33272) into end plates.

Note: Bearings (33235) are paired flush face bearings, shielded on one side. The open or unshielded side must be installed facing the end plate. Lubricate bearings with 33153 grease when assembling.

2. Assemble end plate (33284) together with bearing and spacer on large end of spindle shaft (33373) and slide up to boss on shaft.
3. Assemble key (33277) into groove in spindle and assemble rotor with groove aligned with key on spindle.
4. Assemble cylinder over rotor to end plate and assemble blades (43067) to rotor.
5. Assemble end plate (47663336001) together with spacer and bearing. Secure with washer (47653686001) and screw (Y200-59). Hold spindle in a suitable holding device, being careful not to damage splines or threads on end of spindle.
6. Assemble "O" rings (Y325-12) into end plate.
7. Assemble motor with "O" ring (Y325-154) into housing.

Housing Section

Figure 15. MHP3436



Disassembly and Assembly

Disassembly

1. Remove plate (33318) on link chain models; remove chain stripper (33319) on roller chain models.
2. Place brass or wood block in sprocket cavity to prevent turning of sprocket shaft and remove nut (33280), washer (Y1-966) and gear.
3. Remove retaining ring (Y147-18) from “motor end” of housing.
4. Sprocket shaft and bearing (33236) may now be removed through “motor end” of housing.
5. Remove chain guide (35861) and pocketwheel (37571) on link chain models. On roller chain models, to remove chain guide (34991), remove cap screws (Y154-54) and washers (Y14-10) from housing.
6. Remove retaining ring (Y147-18) and bearing (33236) from “brake end” of housing.

Assembly

Link-chain Models

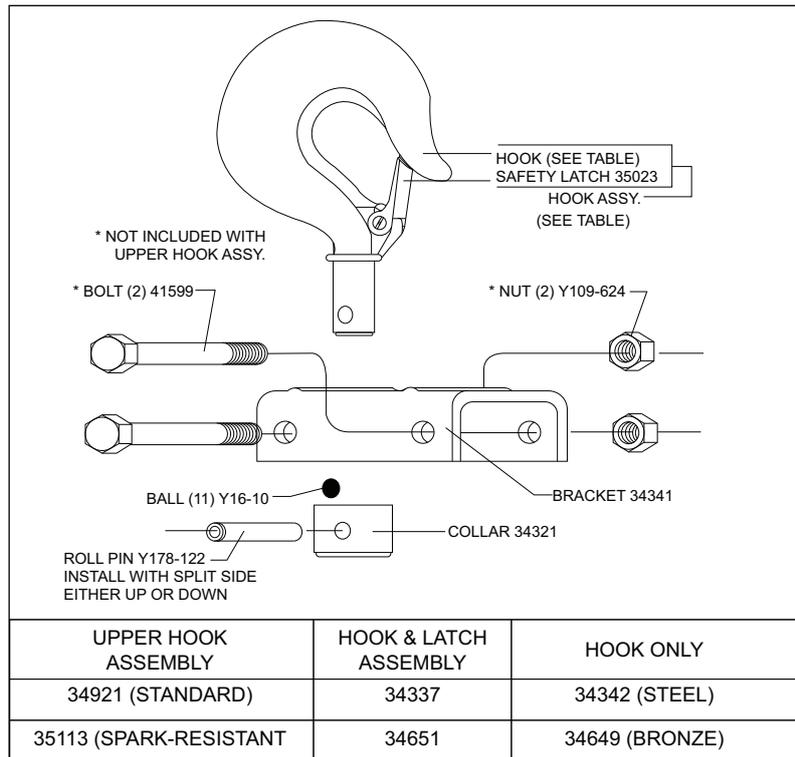
1. Insert pocketwheel (37571) into chain guide (35861) and place in housing.
Note: *Pocketwheel must be installed with 1.250 diameter counterbore facing away from “brake end” of housing. Secure plate (33318) to housing with sems fasteners (33330).*
2. Assemble bearing (33236) and retaining ring (Y147-18) into “brake end” of housing.
3. Assemble retaining ring (Y145-28) into groove in shaft (34985) and assemble bearing (33236) on end of shaft with retaining ring.
4. Assemble shaft, with bearing and retaining ring through opening at “motor end” of housing. Insert shaft through pocketwheel and through bearing in “brake end” of housing. Assemble retaining ring (Y147-18) into housing.
5. Assemble gear (33374) to shaft and secure with washer (Y1-966) and nut (33280).
6. Assemble brake block (34029) to control rod (34021) and secure with roll pin (Y178-60).
7. Assemble hangers (37585) and control arm (37719) to housing.
Note: *Assemble control arm in housing with arms for mounting control chains pointing towards air inlet and insert control rod through housing, hangers and control arm. Secure control rod and arm with roll pin (Y178-55).*
8. On 1 ton models, assemble anchor bracket (41624) to hangers (37585) and secure with washers (37587) and anchor bolts (37586).
9. For installation of load chain, refer to [“Removal and Installation of Load Chain,” p. 13.](#)

Roller Chain Models

1. Insert chain guide (34991) into housing and secure with washers (Y14-10) and cap screws (Y154-54).
2. Assemble bearings (33236) and retaining ring (Y147-18) into “brake end” of housing.
3. Assemble bearing (33236) on sprocket (33375) and assemble into housing through “motor end” with threaded end of sprocket through bearing in “brake end” of housing.
4. Assemble gear (33374) to shaft and secure with washer (Y1-966) and nut (33280).
5. Secure chain stripper (33319) to housing with sems fasteners (33330).
6. Assemble brake block (34029) to control rod (34021) and secure with roll pin (Y178-60).
7. Assemble hangers (37585) and control arm (37719) to housing.
Note: *Assemble control arm in housing with arms for mounting control chains pointed towards air inlet) and insert control rod through housing, hangers and control arm. Secure control rod and arm with roll pin (Y178-55).*
8. On 1 ton models, assemble anchor bracket (37579) to hangers (37585) and secure with washers (37587) and anchor bolts (37586).
9. For installation of load chain, refer to [Figure 7, p. 13.](#)

Upper Hook Section

Figure 16. MHP3437



Disassembly

1. To remove upper hook assembly from housing, remove nuts (Y109-624) and bolts (41599).
2. To disassemble hook assembly, drive out roll pin (Y178-122) from collar (34321).
3. Removing collar will release steel balls and bracket from hook and latch assembly.

Assembly

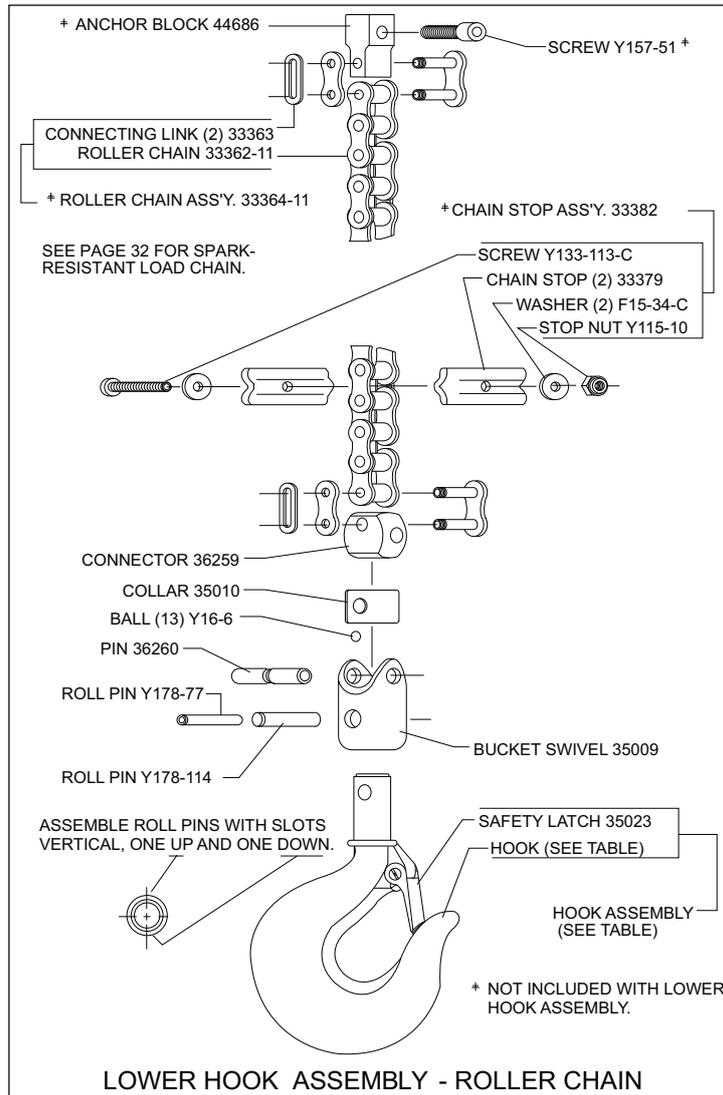
1. To assemble steel balls to collar, apply a liberal amount of grease in groove of collar and place steel balls into groove.
2. Place bracket in a holding device with flanges down. Insert hook through bracket and slip collar with steel balls over end of hook. Secure with roll pin.
3. Assemble to housing and secure with bolts and nuts.

Note: Assemble roll pin with split side pointing directly UP or DOWN. Ensure safety latch is properly assembled to hook.

Lower Hook Section

400# & 800# Roller Chain Models

Figure 17. MHP3438



LOWER HOOK ASSEMBLY	HOOK & LATCH ASSEMBLY	HOOK ONLY
33381-1 (STANDARD)	35005	35006 (STEEL)
34655-1 (SPARK-RESISTANT)	35007	35008 (BRONZE)

Disassembly

1. Remove connecting link (33363). Remove pin (36260), releasing connector (36259).
2. To disconnect hook from bucket swivel (35009), drive out roll pins (Y178-114 and Y178-77), releasing collar (35010) and steel balls (Y16-6).

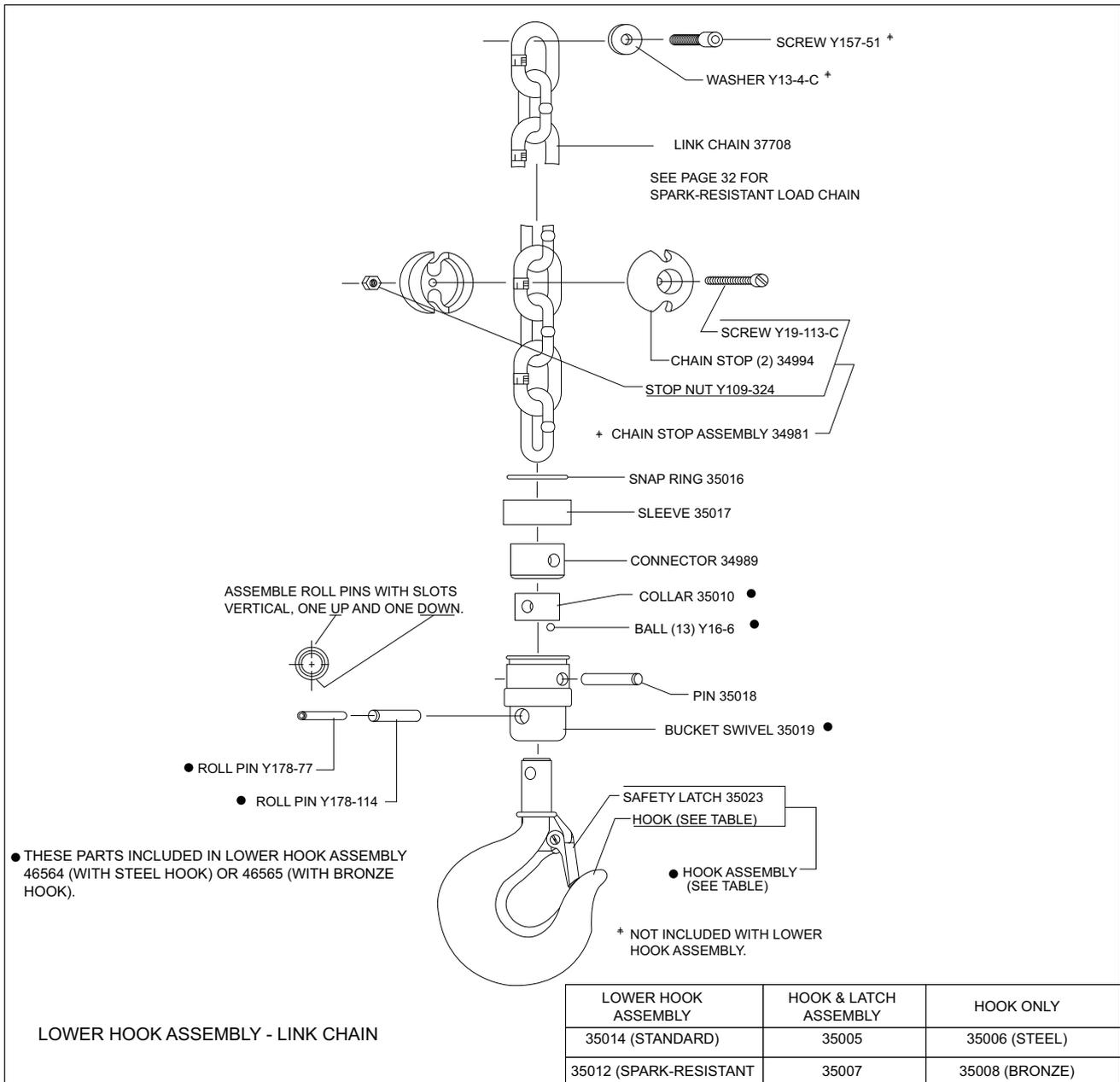
Assembly

1. Assemble steel balls (Y16-6) to collar (35010), applying a liberal amount of grease in groove of collar to hold steel balls in place and also for lubrication.
2. Place bucket swivel (35009) in holding device with opening for collar pointing down. Place hook and latch assembly through swivel and slip collar with steel balls over end of hook and secure with roll pins (Y178-114 and Y178-77).
3. Assemble connector (36259) to bucket swivel (35009) and secure with pin (36260). Assemble chain to connector and secure with connecting link.

Note: Install roll pins with slots vertical, one UP and one DOWN, see Figure 17, p. 24. Ensure safety latch is properly assembled to hook.

1/4 and 1/2 Ton Link Chain Models

Figure 18. MHP3439



Disassembly

1. Remove snap ring (35016) and sleeve (35017). Drive out pin (35018), releasing chain and connector (34989).
2. To disconnect hook from bucket swivel (35019), drive out roll pins (Y178-114 and Y178-77), releasing collar (35010) and steel balls (Y16-6).

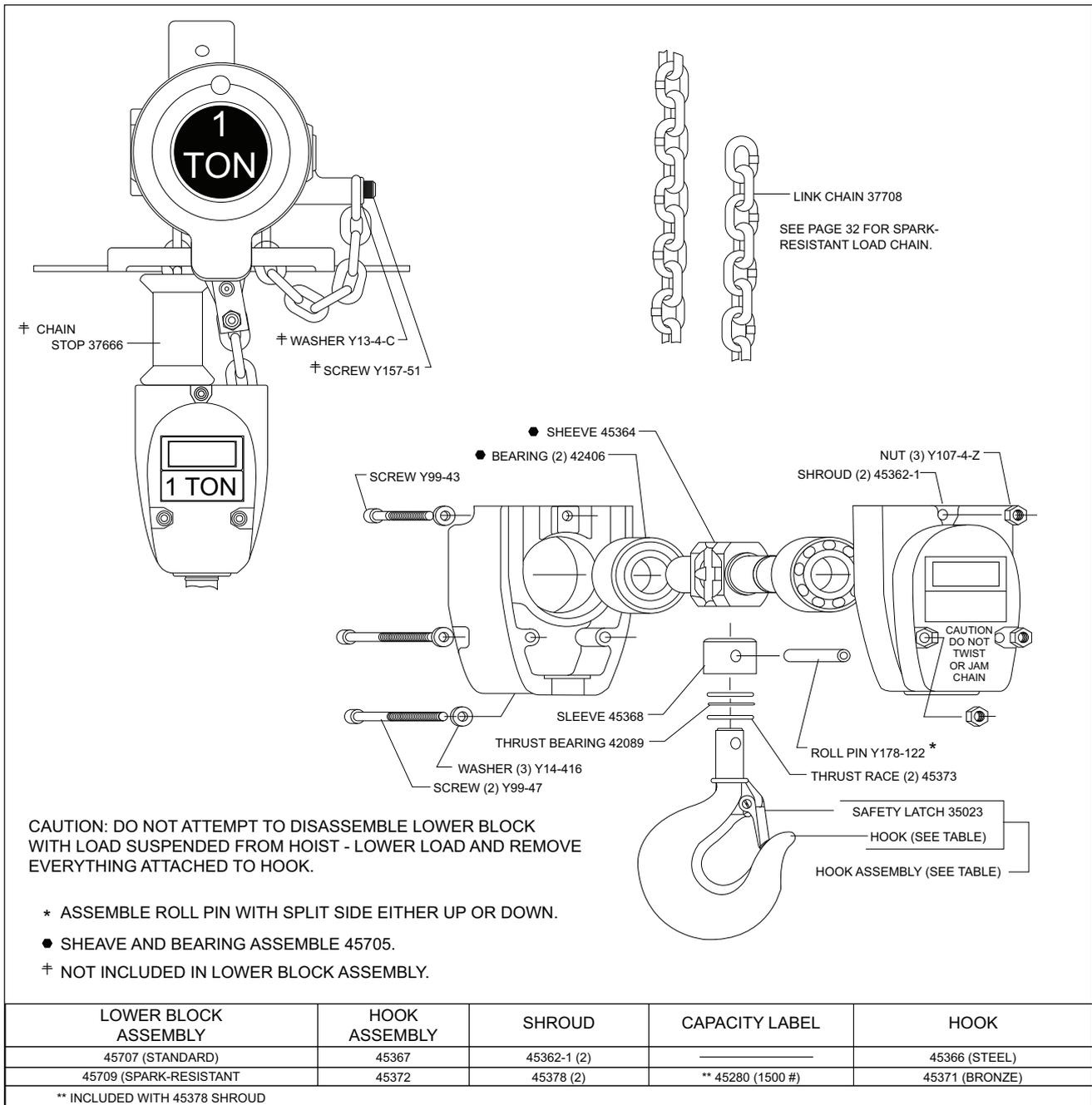
Assembly

1. Assemble steel balls (Y16-6) to collar (35010), applying a liberal amount of grease in groove of collar to hold steel balls in place and also to lubricate balls.
2. Place bucket swivel (35019) in a suitable holding device with opening for collar pointing down. Place hook and latch assembly through bucket swivel and slip collar with steel balls over end of hook and secure with roll pins (Y178-114 and Y178-77).
3. Place bucket swivel in holding device with hook down. Insert connector (34989) in proper position in swivel, place snap ring (35016) and sleeve (35017) over end of chain. Place chain in connector and secure chain and connector to swivel with pin (35018).
4. Slip sleeve (35017) over end of swivel and secure with snap ring (35016).

Note: Install roll pins with slots vertical - one UP and one DOWN. Ensure safety latch is properly assembled to hook.

1 Ton Link Chain Models

Figure 19. MHP3440



Disassembly

1. Remove screw (Y99-43) and two (2) screws (Y99-47), lock washers (Y14-416) and nuts (Y107-4-Z).
2. Pull shroud apart releasing hook and components. Bearings (42406) are pressed on shaft of sheave (45364).
3. To remove thrust bearing from hook shank, remove roll pin (Y178-122) and sleeve (45368).

Assembly

1. Lubricate thrust bearing liberally with grease 33153 or equivalent and assemble to shank of hook. Assemble sleeve (45368) to hook and secure with roll pin (Y178-122).

Note: Assemble roll pin to hook with split side vertical with hook (either up or down).

2. Pack bearings (42406) with grease 33153 and assemble to sheave with shielded side going on shaft first (shielded side towards sheave).
3. Assemble sheave and hook into one half of shroud, insuring thrust bearing and race are properly seated in shroud.
4. Feed load chain around sheave.

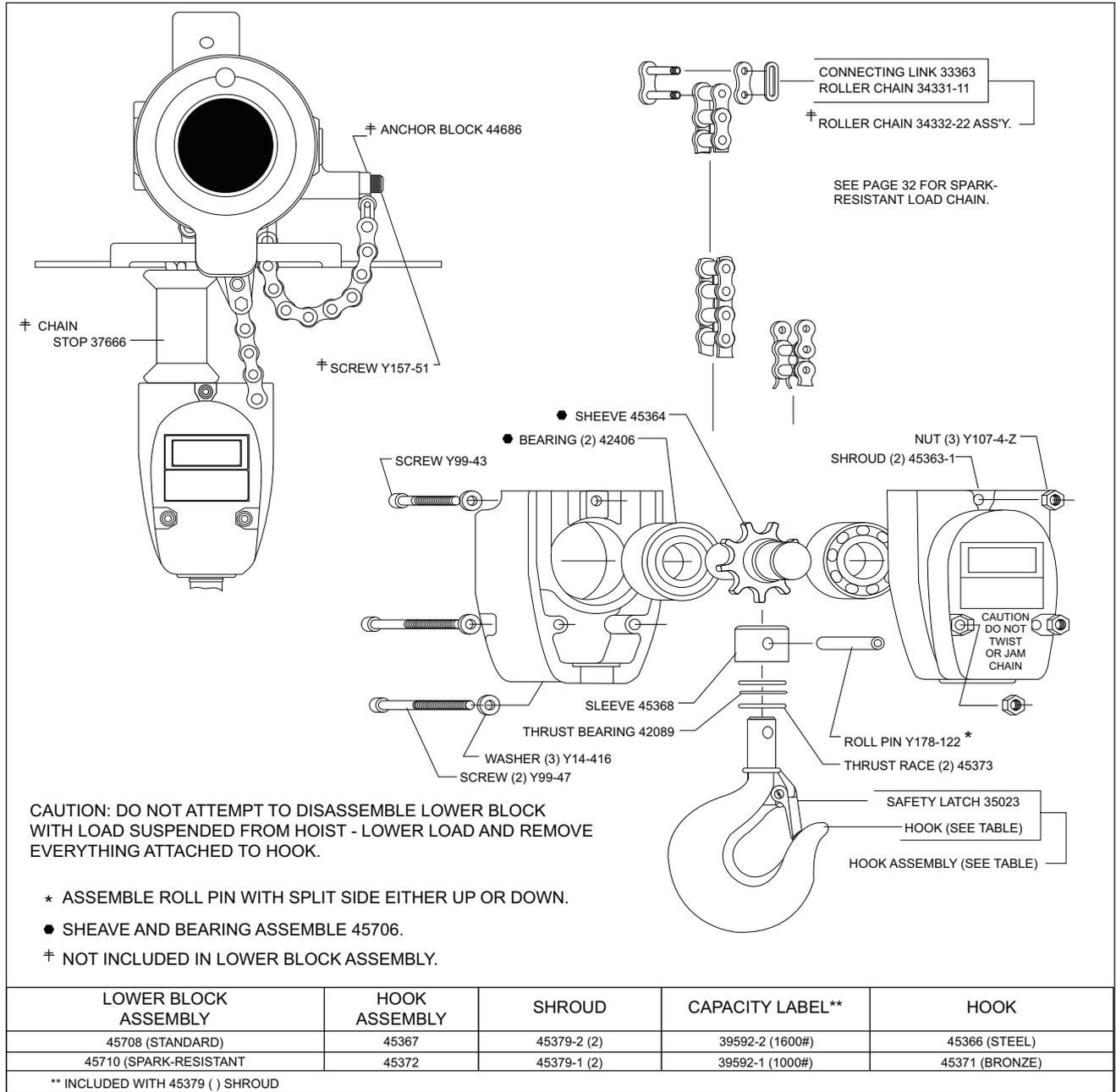
⚠ CAUTION

! Make sure chain is not twisted and that welded side of links face away from sheave - see [Installing Load Chain \(MHP3428\), p. 13](#) and inset above.

5. Assemble other half of shroud and secure shroud with screws, washers and nuts as shown, tightening securely.

1600# Roller Chain Models

Figure 20. MHP3441



Disassembly

1. Remove screws (Y99-43) and two (2) screws (Y99-47), lock washers (Y14-416) and nuts (Y107-4-Z).
2. Pull shroud apart, releasing hook and components. Bearings (42406) are pressed on shaft of sprocket (45365).
3. To remove thrust bearing from hook shank, remove roll pin (Y178-122) and sleeve (45368).

Assembly

1. Lubricate thrust bearing liberally with ARO 33153 grease, or equivalent, and assemble to shank of hook. Assemble sleeve (45368) to hook and secure with roll pin (Y178-122).

Disassembly and Assembly

Note: Assemble roll pin to hook with split side vertical with hook (either up or down).

2. Pack bearings (42406) with ARO 33153 grease and assemble to sprocket, with shielded side going on shaft first (shielded side towards sprocket).
3. Assemble sprocket and hook into one half of shroud, insuring thrust bearing and race are properly seated in shroud.
4. Feed load chain around sheave.

⚠ CAUTION

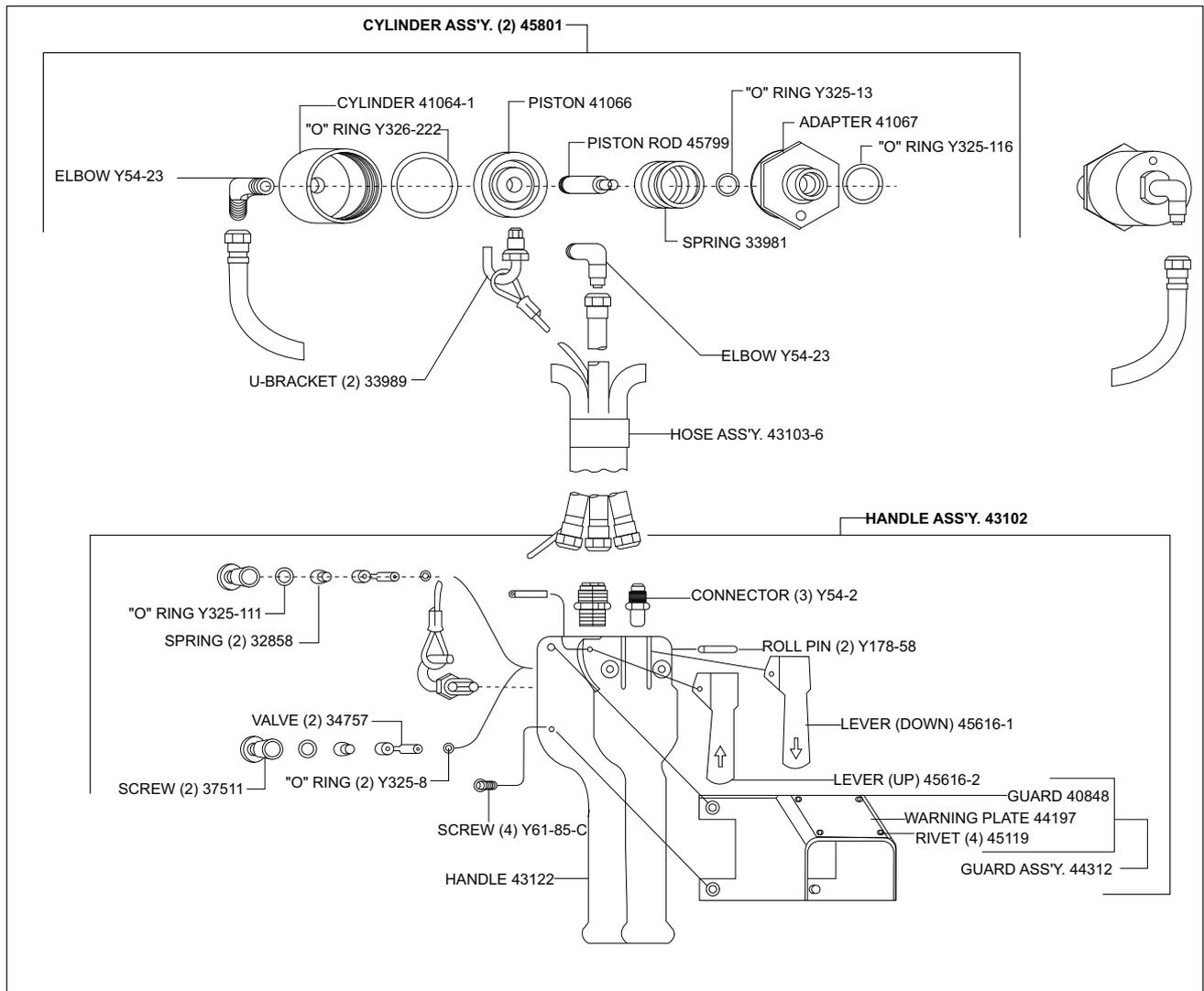
!

Ensure chain is not twisted.

5. Assemble other half of shroud and secure shroud with screws, washers and nuts as shown, tightening securely.

Controls Section

Figure 21. 46094-6 Pendant Control Assembly (MHP3442)



Pendant Control 3-Hose System

Disassembly

1. To remove from hoist, shut off air and disconnect hoses from cylinder assemblies and from head.
2. Remove "U" bracket (33989) from head, releasing cable.
3. To disassemble cylinders, unscrew and remove from head.
4. Remove adapter (41067) releasing spring, piston, piston rod and "O" ring.
5. To disassemble control handle, remove screws (37511) with "O" rings (Y325-111), releasing spring (32858) and valve (34757) with "O" rings (Y325-6).

Assembly

1. Assemble "O" ring (Y325-13) into adapter (41067).
2. Assemble piston rod (45799) and "O" ring (Y325-222) to piston (41066) and assemble with spring (33981) into cylinder (41064-1). Secure with adapter (41067).
3. Assemble with "O" ring (Y325-116) to hoist.
4. To assemble control handle, reverse disassembly procedure.

3-Hose System

THE HOIST WILL ALWAYS CEASE OPERATION WHEN OPERATOR RELEASES THE PENDANT CONTROL. IF ANY HOSE (AIR INLET OR PENDANT CONTROL HOSES) SHOULD BECOME CUT OR RUPTURED - 1) RELEASE PENDANT CONTROL. 2) SHUT OFF AIR SUPPLY AND REPLACE HOSE.

TO OPERATE HOIST IF HOSE SHOULD RUPTURE, BE GUIDED BY THE FOLLOWING:

AIR INLET HOSE CUT OR RUPTURED:

TO LOWER LOAD - Load may be lowered by manually operating control arm. Pull down on control arm at "B". See WARNING note below.

IF HOSE "W" IS CUT OR RUPTURED TO LOWER LOAD - Load may be lowered by manually operating control arm. Pull down on control arm at "B". See WARNING note below.

IF HOSE "X" IS CUT OR RUPTURED:

TO LOWER LOAD - Load may be lowered by depressing "DOWN" lever of pendant control.

IF HOSE "Y" IS CUT OR RUPTURED:

TO LOWER LOAD - Load may be lowered by manually operating control arm. Pull down on control arm at "B". See WARNING note below.

TO RAISE LOAD - Load may be raised by depressing "UP" lever of pendant control.

⚠ WARNING

!

Exercise care when operating control arm to lower load as load will be lowered at a very fast rate.

Spark-Resistant Hoist Section

Models Hook Mounting	Capacity (lbs)	Load Chain		Hooks	Max. Lift Rate at 90 psig	Max. Descent rate at 90 psig
		Type	Number			
7712EL	550	Zinc Plated, Link	37708*	Bronze	50 fpm	70 fpm
7714EL	1500	Zinc Plated, Link	37708*	Bronze	16 fpm	16 fpm

* Note: Order in FT.

The hoists listed in the chart above are furnished with load chain made of zinc plated alloy steel. The top and bottom hooks of these hoists are bronze, with snaps.

The 550 lb. capacity, hoists have a rate of lift of 50 feet per minute and 70 feet per minute on descent. The 1500 lb. capacity hoists have a rate of lift and descent at approximately 16 feet per minute.

SPECIAL NOTE: Spark-resistant models are shipped from the factory with valves (41595) preset for maximum rates of lift and descent and are secured by set screws (41627-1). **DO NOT ADJUST OR REMOVE VALVES (41595)** on these models. If head assembly is replaced for service, valves (41595) must be adjusted for the following rates of lift and descent.

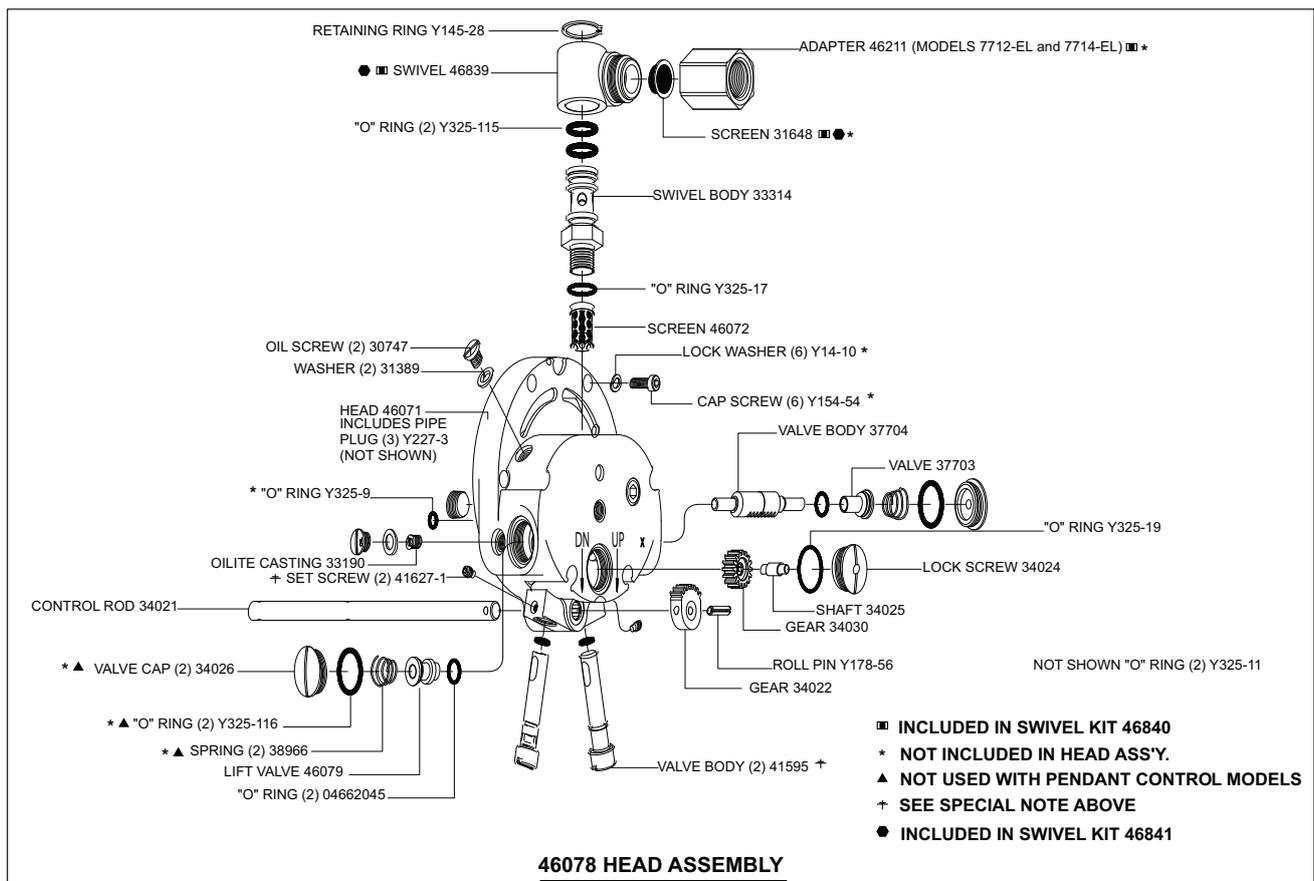
550 LB. CAPACITY HOISTS:

Rate of lift with maximum throttle opening with a 500 lb. load shall be: 50 ft/min. maximum.

Rate of descent with maximum throttle opening and a 500 lb. load shall not exceed: 70 ft/min.

1500 LB. CAPACITY HOIST - Rate of lift and descent with maximum throttle opening with a 1500 lb. load shall not exceed 16 ft./min.

Figure 24. MHP3445



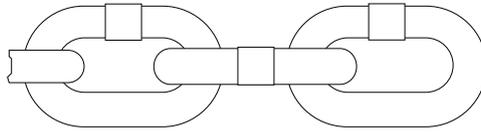
Load Chain

Zinc Plated Steel Link Chain 37708-()

550 lb. and 1500 lb. Capacity Hoist:

Dash number indicates exact length in feet. For 550 lb. capacity hoists, order lift footage and add one extra foot for assembly. For 1500 lb. capacity hoists, order twice the lift footage and two extra feet for assembly and specify by corresponding dash number. Example: 37708-10, the dash 10 indicates 10 feet of chain.

Figure 25. MHP3446



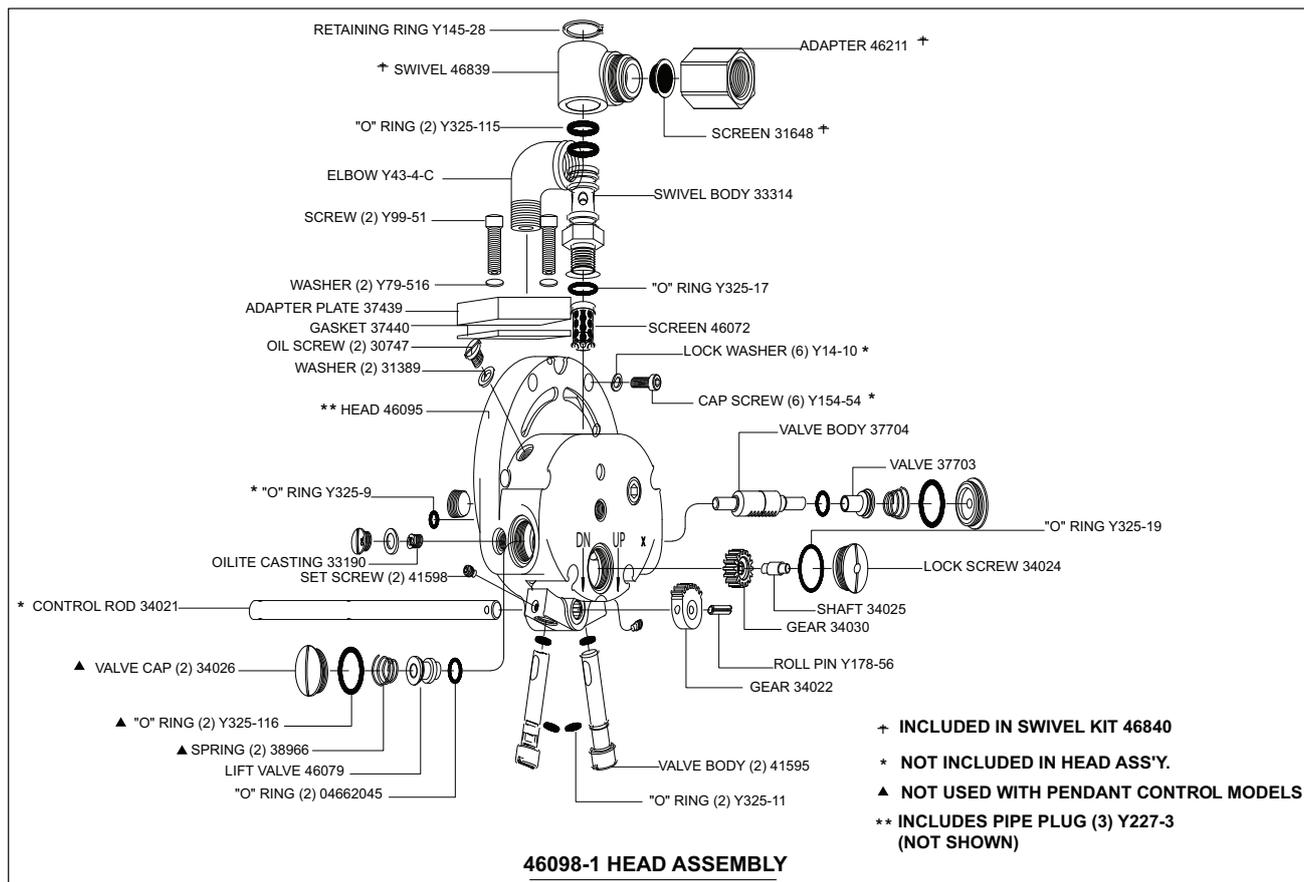
Accessories Section

Piped Exhaust

Exhaust from the air motor normally escapes into the room atmosphere, however, exhaust can be piped out of the room. The hoist can be furnished, at extra cost, with a modified head for piped exhaust. An exhaust hose, 1/2" (12 mm) diameter recommended, can then be attached to this outlet and air can be vented at any remote point. Piped exhaust is highly desirable in applications involving food processing, chemicals or other processes where atmospheric purity must be maintained. It is also preferred for its low noise level characteristics.

When ordering, specify model number and add "with piped exhaust".

Figure 26. MHP3449



Troubleshooting

Hoist will not operate - check for:

1. Excessive Load.
2. Sufficient air pressure.
3. Clogged air intake screen.
4. Clogged valves.
5. Proper brake adjustment.
6. Proper installation of Roll Pin in Control Rod and Gear (34022).

Unable to regulate hoist speed by controls check for:

1. Proper brake adjustment.

Hoist will not hold load in suspension - check for:

1. Excessive load.
2. Worn or oily brake linings.
3. Proper brake adjustment.
4. Proper timing of gears in head.

Hoist loses power - check for:

1. Sufficient air pressure.
2. Clogged air intake screen.
3. Clogged muffler screen or filler.

Hoist lifting or lowering speed differs from rated speed at full load - check for:

1. Proper timing of gears in Head.

Hoist control lever will not return to horizontal position - check for:

1. Bent control rod.
2. Binding of control rod.
3. Proper brake adjustment.
4. Lack of lubrication in pendant control cylinders.
5. Proper timing of gears In head.

Service Kits

Service Kit No. 41329-1 (For Link Chain Hoists)					
Qty.	Part No.	Description	Qty.	Part No.	Description
1	33274	Lockwasher	2	33236	Bearing
1	33387-2	Brake Shoe Kit	4	33330	Screw
3	34028	Filler	1	Y117-616	Washer
1	35023	Safety Latch	1	46072	Screen
1	41623	Gasket	1	31648	Screen
1	41795	Motor Oil	1	Y325-9	O-Ring
2	41799	Gear Lube	1	Y145-28	Retainer Ring
8	43067	Blade	2	Y325-11	O-Ring
1	Y1-966	Washer	2	Y325-12	O-Ring
1	42982	Spring	1	Y325-17	O-Ring
1	Y200-59	Screw	1	Y325-19	O-Ring
1	Y12-106	Nut	2	Y325-115	O-Ring
1	37706	Seal	1	Y325-116	O-Ring
1	33235	Bearing	1	Y325-154	O-Ring
1	Y147-18	Ring			
Does not include Chain, Pocket wheel or Sprocket					

Service Kit No. 41335		
Qty.	Part No.	Description
1	33375	Sprocket Wheel
1	34991	Chain Guide
4	33330	Fasteners

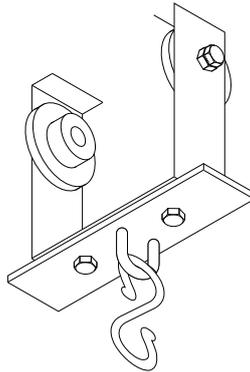
Service Kit No. 41336		
Qty.	Part No.	Description
1	37571	Pocket Wheel
1	35861	Chain Guide
4	33330	Fasteners

Bullard Snap Hooks

35205-1	Lower Hook Assembly for 1/4 and 1/2 Ton ROLLER CHAIN only. Includes Bucket Swivel, Steel Balls, Collar, Roll Pins, Connector and Pin.
35206	Lower Hook Assembly for 1/4 and 1/2 Ton LINK CHAIN only. Includes Bucket Swivel, Steel Balls, Collar, Roll Pins, Connector, Pin, Sleeve and Snap Ring.
35203	Upper Hook Assembly for 1/4, 1/2 and 1-Ton Link and Roller Chain. Includes Mounting Bracket, Bearing, Sleeve and Roll Pin.
45934	Lower Hook and Block Assembly for 1-Ton LINK CHAIN only. Includes Sheave Assembly, Shroud's and all necessary components for attaching to load chain.
45935	Lower Hook and Block Assembly for 1-Ton ROLLER CHAIN only. Includes Sprocket Assembly, Shroud's and all necessary components for attaching to load chain.
45374	Lower Hook (with latch) Only for 1-Ton LINK and ROLLER CHAIN. (Same hook as furnished with 45934 and 45935 assemblies).

Hose-Carrier Trolleys

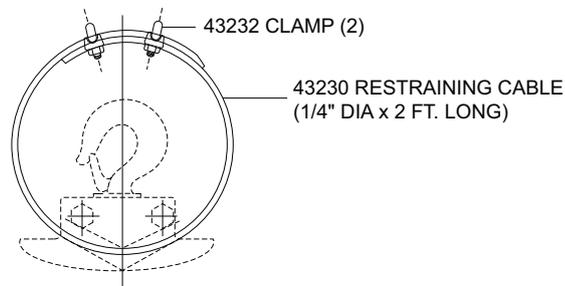
Figure 27. MHP3453



Model - 7703

Recommended when hoist is trolley-mounted. Adjustable clamp fits hose in sizes up to 1-1/4" o.d. can be mounted on the same beam that carries the hoist trolley. Use on L-beams from 3" to 10" high, having minimum width of 2-3/8" and maximum width of 53/32". For best results, use one trolley at each 8' hose interval.

Figure 28. MHP3452



43231 Restraining Cable Assembly

For use as an added safety precaution in hoist suspension. Insert cable through hole provided in housing as shown and around L- beam (or other overhead support capable of safely supporting combined weight of hoist and its capacity load).

Brake Spring Spreader

Figure 29. MHP3454



No.33541 specifically designed for hoist brake spring. Develops strong leverage for spreading brake band open when removal is required for service or maintenance.

Series 7700 Hoist Chain Basket Installation

Figure 30. MHP3455

