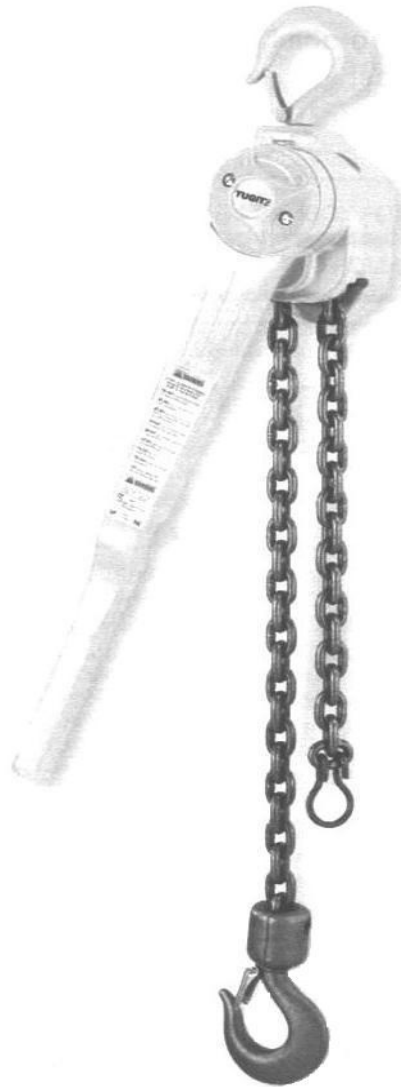


OPERATION – SERVICE – PARTS

Manually Operated Lever Hoist



With 21" Handle

A3134-XXX	3/4 Ton (1500 lb's)
A3191-XXX	1 1/2 Ton (3000 lb's)
A3192-XXX MA8196-XXX (with special attachments) MA8206-XXX (with special attachments)	3 Ton (6000 lb's)
A3195-XXX MA8195-XXX (with special attachments) MA8205-XXX (with special attachments)	6 Ton (12000 lb's)
A3197-XXX	7 1/2 Ton (15000 lb's)

Sold & Serviced by
Morgan Aero 1450 80th Street SW Everett WA 98203 U.S.A.
425/438.9600

SAFETY PRECAUTIONS

WARNING!

Improper operation of a hoist can create a potentially hazardous situation which, if not avoided, could result in *death* or *serious injury*. To avoid such a potentially hazardous situation, the operator shall:

1. **NOT** operate a malfunctioning or unusually performing hoist.
2. **NOT** operate the hoist until you have thoroughly read and understood this Operating, Maintenance and Parts Manual.
3. **NOT** lift or pull more than rated load for the hoist
4. **NOT** use damaged hoist or hoist that is NOT working properly.
5. **NOT** use a hoist with twisted, kinked, damaged, or worn load chain.
6. **NOT** operate with a lever extension (cheater bar).
7. **NOT** attempt to "free chain" the hoist
8. **NOT** use the hoist to lift, support or transport people.
9. **NOT** lift loads over people and make sure all personnel remain clear of the supported load.
10. **NOT** attempt to lengthen the load chain or repair damaged load chain.
11. **Protect** the hoist's load chain from any damaging contaminants.
12. **NOT** operate hoist when it is restricted from forming a straight line from hook to hook in the direction of loading.
13. **NOT** use load chain as a sling or wrap load chain around load.
14. **NOT** apply the load to the tip of the hook or to the hook latch.
15. **NOT** apply load unless load chain is properly seated in the chain sprockets.
16. **NOT** apply load if bearing prevents equal loading on all load supporting chains
17. **NOT** operate beyond the limits of the load chain travel.
18. **NOT** leave load supported by the hoist unattended unless specific precautions have been taken.
19. **NOT** operate the hoist unless load attachments are seated properly.
20. **NOT** operate a hoist unless all persons are and remain clear of the supported load.

21. **REPORT** malfunctions or unusual performance of hoist and do not re-use until checked by qualified persons.
22. **BE** familiar with operation controls, procedures, and warnings.

CAUTION!

Improper operation of a hoist can create a potentially hazardous situation which, if not avoided, could result in injury to persons or damage to equipment. To avoid such a potentially hazardous situation the operator shall:

1. **MAINTAIN** a firm footing or be otherwise secured when operation the hoist.
2. **CHECK** brake function by tensioning the hoist prior to each lift.
3. **USE** hook latches.
4. **MAKE** sure the hook latches are closed and not supporting any parts of the load.
5. **MAKE** sure the load is free to move and will clear all obstructions.
6. **AVOID** swinging the load.
7. **KEEP** a firm grip on the lever until operation stroke is completed and the lever is at rest.
8. **INSPECT** the hoist regularly, replace damaged or worn parts, and keep appropriate records of maintenance.
9. **USE** only recommended parts when repairing the unit.
10. **LUBRICATE** load chain per maintenance manual
11. **NOT** operate except with manual power.
12. **NOT** permit more than one operator to pull on lever at the same time. More than one operator is likely to cause hoist overload.
13. **NOT** allow attention to be diverted from proper operation of the hoist.
14. **NOT** adjust or repair the hoist unless qualified to perform such adjustments or repairs.

SPECIAL NOTICE!

See page 7 for information on special attachment fittings.

OPERATION

General

Keep the hoist and chain clean to insure proper operation.

Do not use on loads beyond the operating range of the hoist.

Do not use for lifting people or for lifting loads over people.

Do not leave a load on the hoist unattended.

Read and understand this manual prior to operating hoist.

Do not hold or pull on load chain while operating hoist.

Stay alert; Watch what you are doing. Use common sense.

Do not operate hoist when under the influence of alcohol, drugs or medication that may cause diminished control.

To lift load

Properly attach hoist per tooling manual.

Move the lever trigger to the "UP" position. Operate lever in an up and down motion.

When pulling or lifting move the load only enough to slightly load the unit, then check to be sure that the attachments to the load connections are firmly seated and positively connected.

Insure that the load and the path of load movement are clear and free of obstructions.

NEVER under any circumstance use a lever extension or any form of "cheater bar" to operate hoist.

To lower load

Move the lever trigger to the "DN" position. Operate the lever in an up and down motion.

After lifting operation is complete inspect the hoist as directed in the inspection section.

MAINTENANCE

Inspection

To maintain continuous and satisfactory operation, a regular periodic inspection procedure must be initiated so that worn, damaged and missing parts can be replaced before the unit becomes unsafe. The frequency of inspection must be determined by user procedures, regulations and requirements.

Under normal usage use the following as a guide to proper inspection.

When the unit is subjected to heavy usage or dusty, gritty, moist or corrosive atmospheric conditions, shorter time periods between inspections must be used. Inspection must be made of all parts for unusual wear, corrosion or damage, in addition to those specifically mentioned in the schedule. Make certain that the unit is complete and contains all parts including end rings.

Any part's that are deemed unserviceable must be replaced with new parts before the unit is returned to service. It is very important that the unserviceable parts be destroyed and disposed of to prevent their possible future use as a repair item. All the proper repair parts and required service can be obtained through Morgan Aero.

Frequent Inspections

These inspections are by the operator or other designated personnel. Frequent inspections are to be performed prior to each use and are to include the following:

1. Check for free movement of the lever and direction control trigger.
2. Operate hoist with no load and check for visual signs or abnormal noises that could indicate a potential problem.
3. Check brake for evidence of slippage.
4. Check chain for lubrication, worn or damaged links or foreign object contamination.
5. Check attach point's for any evidence of cracking, bending or other damage.
6. Check lever and directional trigger for damage and proper operation.

Any deficiencies noted during pre-use inspection must be corrected before using the hoist.

Periodic Inspections

These are visual inspections by an appointed person who records conditions to provide a basis for a continuing evaluation of the hoist. Periodic inspections are to be performed semi-annually or as specified by owners regulations and procedures and should include the following:

1. All items listed under "Frequent Inspections"
2. Evidence of loose or damaged screw's and fasteners.
3. Evidence of worn, corroded, cracked or distorted upper and lower attach points, frame, end ring, attach block, covers, lever, suspension bolt, gears, bearings, pawls, pawl springs, lever cover, ratchet hub, stripper and ratchet.
4. Evidence of worn, glazed or oil contaminated friction discs. Frictions discs should be replaced if their thickness is less than .075 inch (2mm).

NOTE: To perform some of the periodic inspections it will be necessary to partially disassemble the hoist. Refer to the Disassembly and Assembly procedure sections.

Any deficiencies noted during the periodic inspection must be corrected before using the hoist.

Load Chain

Chain should feed smoothly into and away from the hoist. If chain binds, jumps or is noisy, first clean and lubricate it. If trouble persists, inspect chain and mating parts for wear, distortion or other damage.

ALWAYS insure the chain is free from knots and kinks.

Clean chain with a non-caustic, non-acid type solvent and make a link by link inspection for nicks, gouges, twisted links, cracks in the weld area, wear and stretching. Chain with any of these defects must be replaced.

When replacing chain the entire length must be replaced. Never attempt to repair, lengthen or modify the hoist load chain. Load chain is special chain manufactured to precise tolerances for use on specific lever hoists. NEVER use any chain that is not supplied by the hoist manufacturer or personal injury or equipment damage could result.

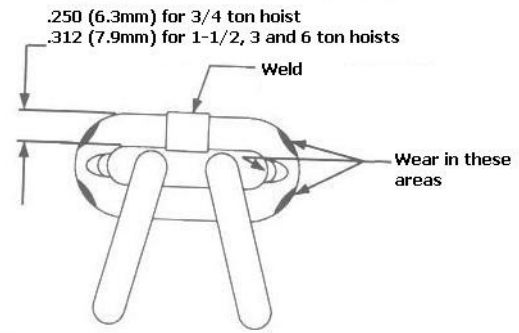


Fig. 1

For the following procedure refer to Fig. 1. Slack the portion of the chain that normally passes over the liftwheel. Examine the interlink area for the point of maximum wear (polishing). Measure and record the stock diameter at this point of the link. Then measure stock diameter in the same area on a link that does not pass through the liftwheel (use a link adjacent to the end ring for this purpose). Compare these two measurements. If the stock diameter of the worn link is 0.010 inches (.254mm), or more, less than the stock diameter of the unworn link, the chain must be replaced.

Also check the chain for stretch. Use a vernier

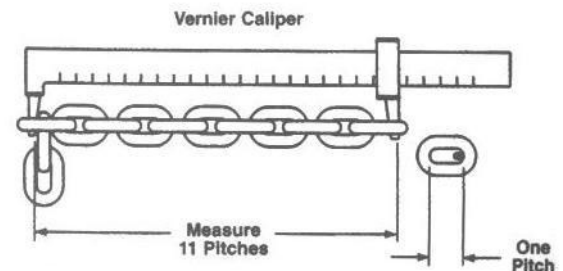


Fig. 2

caliper as shown in Figure 2.

Select an unused, unstretched section of chain (usually at the loose end) and measure and record the length over 11 chain links (pitches). Measure and record the same length on a worn section of chain. Obtain the amount of stretch and wear by subtracting the measurement of the unworn section from the measurement of the worn section. If the result (amount of stretch and wear) is greater than .145 inch (3.7mm), the chain must be replaced.

Use only a knife edge caliper to eliminate possibility of false reading by not measuring full pitch length. Note that worn chain can be an indication of worn

hoist components. For this reason, the hoist's frame, stripper, and liftwheel should be examined for wear and replaced as necessary when replacing worn chain.

The load chain is specially heat treated, hardened and dimensioned and should never be repaired.

Do not use replaced chain for other purposes such as lifting or pulling. Load chain may break suddenly without visual deformation. For this reason, cut replaced chain into short lengths to prevent its use after disposal.

Chain Lubrication

A small amount of lubricant will greatly increase the life of load chain. Do not allow the chain to run dry. Keep it clean and lubricate at regular intervals with a good quality chain and bar lubricant. (Lubriplate or equal). Normally, weekly cleaning and lubrication is satisfactory, but under hot and dirty conditions, it may be necessary to clean the chain at least once a day and lubricate it several times between cleanings.

When lubricating the chain, apply sufficient lubricant to obtain natural run-off and full coverage, especially in the interlink area.

Lubrication

For lubrication locations refer to exploded hoist view and parts list.

Be sure to always use the highest quality lubricant available. Use new, not used oil. Never use discarded motor, crankcase or gear lubricant's.

Except for lubricating the load chain frequently, the hoist requires no additional lubrication, unless it has been disassembled for cleaning, inspection and/or repairs. If the unit has been disassembled, remove the old lubricant from the parts and apply new lubricants as described in the assembly procedure.

When lubricating parts adjacent to the load brake, DO NOT use an excessive amount of lubricant which could seep onto the brake surfaces. If brake surfaces become contaminated with any lubricant they must be replaced.

Preventative Maintenance

A preventative maintenance program should be established to prolong the useful life of the hoist and

maintain its reliability and continued safe use. The program should include frequent and periodic inspections with particular attention paid to cleaning and lubrication of various components using the recommended lubricants.

Recommended Spare Parts

At a minimum, it is advisable to keep on hand for each hoist in operation the following:

Ref. No.	Disc.	Qty.
640-123	Friction disc	2
640-139	End ring	1
NA	Lubricant's	As req.

Disassembly

Pay careful attention when disassembling and lay parts out in logical order for ease of assembly. When disassembling and assembling refer to the exploded view and parts list. Two points of caution to be observed in disassembly are:

1. When removing the Ratchet Plunger Spring Pin (640-131). This pin retains a spring which is in compression and can spring out.
2. The dead end pin on the 3 & 6 ton units has a tapered spline. Remove this pin by tapping on the end opposite the splined grooves.

Assembly

Assemble unit in reverse order of disassembly. Insure all parts are clean and free of damage. Lubricate as required and as noted in Lubrication section of this manual. The following points should be observed when assembling the hoist.

1. RATCHET PLUNGER
 - A. Coat tip and sides of small diameter with a light film of a lubricant consisting of 1 lb. (.46 kg) of graphite #590 (Superior Graphite Co.) and 2 lbs. (.92 kg) of Lubriko M-32 (Master Lubricant Co.).
 - B. The Ratchet Plunger Spring must be held depressed when driving in the Ratchet Plunger Pin through the lugs on the frame.
2. FRAME BUSHING

All Frame Bushings should be given a light coating of lubricant as specified above.

3. BRAKE ASSEMBLY
 - A. Assemble on Friction Washer.
 - B. Check Bushing in Ratchet (640-124) to be sure it is flush or below the surface of the ratchet on both sides. Assemble ratchet with ratchet teeth facing as shown in fig. 3.

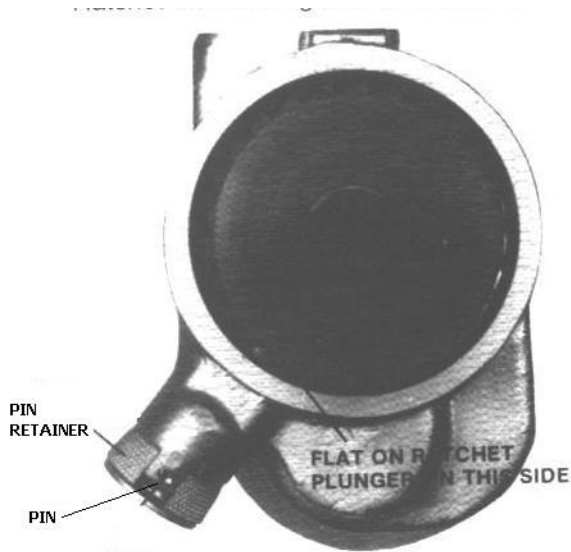


Fig. 3

- C. Place second Friction Washer on the Ratchet
- D. Apply a light film of Anderol #786 (Nuodex, Inc.) to the inside diameter of the lever ratchet hub and place on top of the second friction washer as shown in fig.4



Fig. 4

- E. Lubricate Brake Cam (640-126) by coating cam faces and outside surface with a light film of Anderol #786 grease.

- F. Assemble Brake Cam onto shaft then insert brake cam key (640-110) rounded end first.
- G. Turn Lever Ratchet Hub clockwise until vertical ends (shoulders) of the helical surfaces of lever ratchet hub and brake cam are in contact. Place the disc spring on the brake cam with the large end against the brake cam. Assemble brake adjusting nut to shaft and tighten nut until snug. Then continue to tighten nut at least one but no more than two slots in order to align hole in shaft with slot in nut. Insert the cotter pin and bend the ends of same as shown in Fig. 5.



Fig. 5.

4. GEARS
(1 1/2, 3 & 6 Ton)
Lubricate the gears with 3 1/2 to 4 oz. (118 ml) of Texaco Novatex #2 grease or equal, by spreading some on the gear teeth and balance in the lower portion of gear cover.
5. CHAIN GUIDE
(1 1/2, 3 & 6 Ton)
When installing the chain guide, the chain guide screw must be tightened to a torque of 10-13 inch pounds.
6. LEVER ASSEMBLY
 - A. Coat lever plunger (640-176) tip for a length of 1 1/2 inches (38 mm) with a lubricant consisting of 1 oz. Of graphite #590 (Superior Graphite Co.) and 1 qt (946 ml) of Acheson #DAG-1556 dry film lubricant (Acheson Collids Co.)

- B. When assembling lever trigger (640-180) be sure to maintain relation of lever plunger tip and lever trigger as shown in Fig. 6.
- C. Coat inside of lever head with Lubriko M-32. Wipe off excess lubricant.

Fig. 6



Chain Removal & Installation

If the load chain has worn or been damaged to the point it is necessary to have it changed it is recommended the complete unit be returned to the supplier. If the chain needs replacement there are many other parts of the hoist that may need inspection, repair or replacement. A new proof load must be done and current certification issued.

Testing

If a hoist has not been used or tested in the previous 12 months it must be tested prior to use.

To test the hoist, first operate in the unloaded state. Check for satisfactory operation in the up and down mode.

Next apply a light load equal to approximately 50 LB's times the number of load supporting strands of load chain. Again check for proper operation in the up and down mode.

As a final test apply 125% of the rated load for the hoist and check for proper operation in the up and down mode.

If any abnormality is detected during any of the above test have the hoist checked by qualified personnel prior to operation.

SPECIAL NOTE ON SOME 6 & 3 TON HOISTS

Part number's MA8195-XXX, MA8196-XXX MA8205-XXX and MA8206-XXX utilize special attachment points designed for bootstrap attaching. If any of these parts need replacement please contact the manufacture as they require special machining, fitting and testing after replacement.

PARTS LIST

(For units with Long 21" handle)

Due to the requirements of tooling there may be differences on some hoist models. To receive proper replacement parts please provide the serial number of your hoist when ordering parts.

Ref. No.	Qty.	Description	Part Number Capacity in Ton's			
			¾	1 ½	3	6 – (7.5)
640-100	1	Frame with bushing	MA5001		-	
640-101	1	Frame with bushings	-		MA5017	
640-102	1	Frame expansion plug	MA5002		-	
640-103	1	Stripper screw	MA5003		-	
640-104	2	Chain guide screw	MA5004		-	
640-105	1	Stripper	MA5005		-	
640-106	2	Gear cover screw	-		MA5018	
640-107	1	Chain guide screw	-		MA5019	
640-108	1	Friction hub key	-		MA5020	
640-109	1	Pinion thrust washer	-		MA5021	
640-110	1	Brake cam key			MA5022	
640-111	1	Brake adjusting nut			MA5023	
640-112	1	Brake nut cotter pin			MA5024	
640-113	2	Lever cap screw			MA5025	
640-114	1	Liftwheel	MA5006		MA5026	
640-115	1	Chain guide	MA5007		MA5027	
640-116	1	Liftwheel bushing (gear end)	-		MA5028	
640-117	1	Liftwheel bushing (brake end)	-		MA5029	
640-118	1	Pinion shaft bushing (brake end)	-		MA5030	
640-119	1	Pinion shaft busing (pinion end)	-		MA5029	
640-120	1	Gear cover	-	MA5032	MA5033	
640-121	1	Pinion shaft	-		MA5034	
640-122	1	Friction hub	-		MA5035	
640-123	2	Friction Washer			MA5036	
640-124	1	Ratchet with bushing			MA5037	
640-125	1	Lever ratchet hub			MA5038	
640-126	1	Brake cam			MA5039	
640-127	1	Lever Assembly			MA5040	
640-129	1	Ratchet plunger			MA5041	
640-130	1	Ratchet plunger spring			MA5042	
640-131	1	Ratchet plunger spring pin			MA5043	
640-132	1	Upper hook assembly	MA5008	MA5044	MA5045	MA5046
640-133	1	Upper hook nut or collar	MA5009	MA5047	MA5048	MA5049
640-134	1	Upper hook pin	MA5010	MA5050	MA5051	MA5052
640-135	1	Upper hook washer		-		MA5053
640-137	1	Lever cap			MA5054	
640-138	1	Disc spring			MA5055	

640-139	1	End ring	MA5056			
640-140	1	Hoist hanger	-	MA5057	MA5058	
640-141	1	Adapter sleeve	-	MA5049	-	
640-142	1	Hanger screw (3 Ton)	-	MA5060		
640-143	1	Hanger screw washer		MA5061		
640-144	1	Dead end pin		MA5062		
640-145	1	Hoist hanger set screw		MA5063		
640-146	1	Hanger screw	-		MA5064	
640-147	1	Dead end pin	-		MA5065	
640-148	1	Bearing retainer snap ring	-		MA5066	
640-149	1	Hanger screw washer	-		MA5067	
640-159	1	Hanger screw nut	-		MA5068	
640-151	1	Hanger screw nut pin	-		MA5069	
640-152	1	Upper sheave	-		MA5070	
640-153	2	Upper sheave bearing	-		MA5071	
640-154	1	Lower hook assembly	MA5011	MA5072	-	
640-155	1	Gook block drilled	MA5012	MA5073	-	
640-156	1	Hook block tapped	MA5013	MA5074	-	
640-157	1	Hook block screw	MA5014	MA5075	-	
640-158	1	Lower hook assembly	MA5015	MA5076	MA5077	MA5078
640-159	1	Lower hook washer	-		MA5079	MA5080
640-160	1	Lower hook nut	-		MA5081	MA5082
640-161	1	Lower hook nut pin	-		MA5083	MA5084
640-162	3	Lower hook block screw	-		MA5085	-
640-163	3	Lower hook block screw lock washer	-		MA5086	-
640-164	3	Lower hook block screw nut	-		MA5087	-
640-165	1	Reeving caution plate	-		MA5088	-
640-166	1	Lower sheave bearing spacer		-		MA5089
640-167	2	Bearing retainer snap ring		-		MA5090
640-168	2	Expansion plug		-		MA5091
640-169	1	Lower sheave	-	-	MA5092	-
640-170	2	Lower sheave		-		MA5093
640-171	4	Sheave bearing		-		MA5094
640-172	2	Lower hook block	-		MA5095	-
640-173	1	Lower hook block		-		MA5096
640-174	A/R	Contact Dealer	-	-	-	-
640-175	2	Latch kit	MA5016	MA5097	MA5098	MA5099
640-176	1	Lever plunger		MA5100		
640-177	1	Lever expansion plug		MA5101		
640-178	1	Lever plunger spring		MA5102		
640-179	1	Lever plunger pin		MA5103		
640-180	1	Lever trigger		MA5104		
640-181	1	Lever trigger pin		MA5105		

Parts Ordering Information

All repair parts and maintenance can be obtained through:

Morgan Aero
1450 80th. Street SW
Everett, WA USA
425.438.9600

When contacting the supplier about parts please include the following information:

Serial Number - Model Number – Capacity

This information can be found stamped in the main body of the hoist.

When ordering parts for the 3197 series (7.5 Ton) hoists select & specify (S) symbol parts

