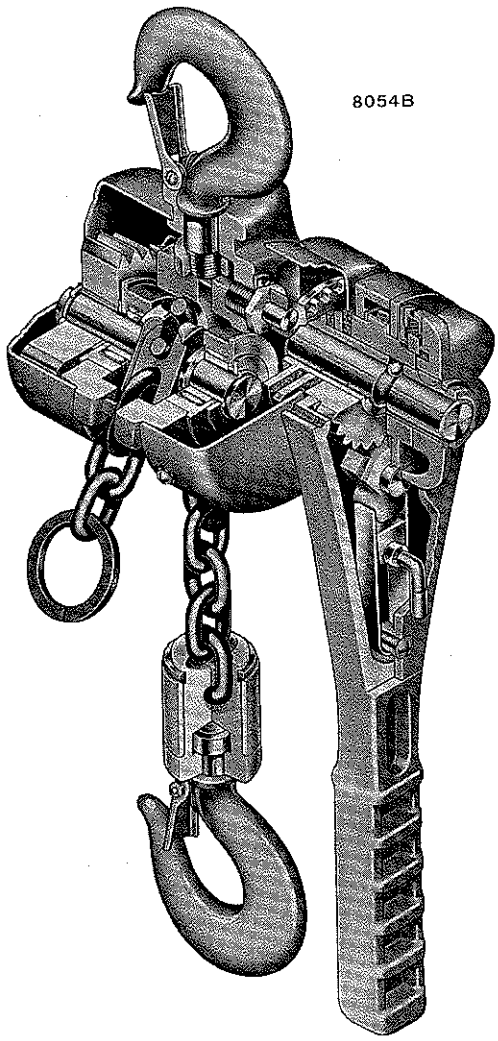
OPERATION, SERVICE AND PARTS MANUAL

TUGIT®

LEVER OPERATED HOISTS

CAPACITY (1 Ton = 2000 Pounds)	CATALOG NUMBER (R prefix designates Redline Model)	MODEL NUMBER Std. Units
3/4 Ton	234 R234	505105 507522
1 Ton	230 R230	505108 507523
1-1/2 Ton	245 R245	509080 509081
2 Ton	240 R240	502301 507524



LIFTTECH

LIFT-TECH INTERNATIONAL
CRANE AND HOIST OPERATIONS
MUSKEGON, MICHIGAN 49443

TUGIT

OCTOBER, 1997

PART NO. 113536-14

FOREWORD

This manual was written to assist in the operation, maintenance and service of the TUGIT Lever Operated Hoist. Please encourage those individuals who will operate the hoist to study its contents thoroughly before attempting operation. By applying the correct operating procedures and practicing the helpful maintenance and safety suggestions, you will be assured maximum performance and service.

It is suggested that reproductions of pages 2, 3 and the Safety Chart, located on the back cover, be made available to the hoist operators. **Copy herein cannot be reproduced without the permission of Lift-Tech International, except as noted herein.**

After the operator has become familiar with the contents of this manual, please file for future reference.

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Section **Page**

SECTION I – GENERAL DESCRIPTION

1-1. TUGIT Lever Operated Hoists are precision built spur geared type hoists, especially designed for close quarter lifting, pulling and stretching. They are operated by a handle instead of the usual hand chain.

1-2. This manual contains operating, service and parts information for 3/4, 1, 1-1/2 and 2 ton capacity lever hoists. Each size has hook latches as standard. The catalog number and model number of each hoist is found on the nameplate on the TUGIT hoist frame. When ordering parts, always give model and catalog number of hoist. INFORMATION CONTAINED IN THIS MANUAL IS SUBJECT TO CHANGE WITHOUT NOTICE.

1-3. The 3/4, 1, 1-1/2 and 2 ton capacity TUGIT hoists are basically the same and differ only in hook size and chain reeving. On 3/4 and 1 ton models the lower hook is suspended on a single part of load chain; two parts of load chain on 1-1/2 and 2 ton models. Frames are aluminum alloy; load chains are welded link type of special calibrated pitch and are heat treated alloy steel; hooks are forged steel.

1-4. TUGIT Redline Lever Operated Hoists are equipped with a Load Regulator which is designed to help guard against excessive overloads. The Redline TUGIT hoists may be identified by their red vinyl handle.

SECTION II – OPERATION

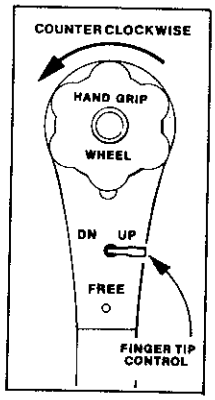
2-1. GENERAL.

A TUGIT Lever Hoist is an extremely versatile tool and will perform any number of load handling jobs when operated properly and its features are used to advantage. Operation is easy, once you have become acquainted with its convenient controls and their functions. Always practice hoist safety by applying the rules shown in the safety chart, located inside the back cover, and by observing the OPERATING PRECAUTIONS of paragraph 2-5.

⚠WARNING

This equipment is not designed or suitable as a power source for lifting or lowering persons.

2-2. TO RAISE LOAD HOOK.



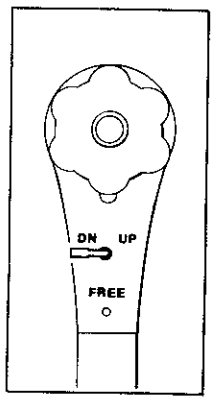
a. Turn finger-tip control lever to "UP" position (hoist must be free of handle loading when turning finger-tip control lever to "UP").

b. Rotate hand wheel counter-clockwise.

c. Load can now be raised by working the operating handle.

NOTE: If when working the handle you find pressure is required on the upward stroke, turn the hoist over so the handle is on the other side. You'll find it's easier when effort is applied in the downward direction.

2-3. TO LOWER LOAD HOOK.



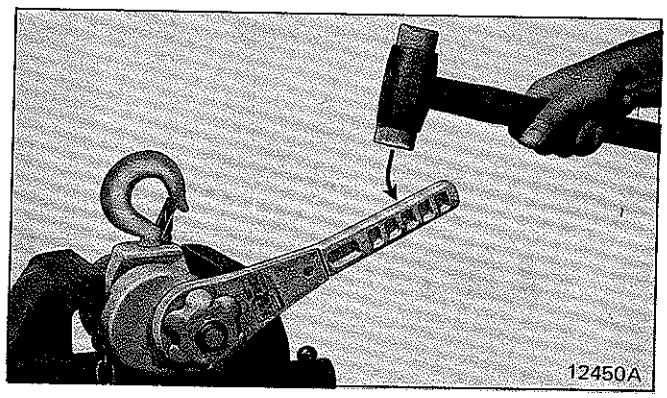
a. Turn finger-tip control lever to "DN" position (hoist must be free of handle loading when turning finger-tip control lever to "DN").

b. Load hook will now lower as the handle is actuated.

NOTE: On light loads, first turn finger-tip control lever to "UP", actuate handle once or twice to make certain handle engages. Then turn lever to "DN" and operate handle.

c. If operating handle works in "UP" direction but not in "DN" direction, the load brake is locked-up from previous load. This happens when it is unnecessary to relieve the load to detach the hoist from the load. One way to safely correct this condition is to firmly clamp the hoist frame in a vise, and sharply tap the handle with a rubber or leather mallet. This will unlock the load brake. (Figure 2-1).

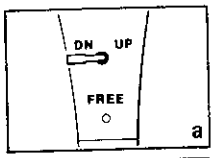
NOTE: The finger-tip lever must be in the "DN" position.



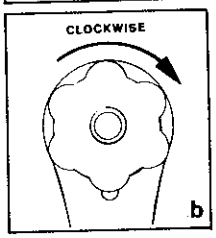
2-4. TO FREEWHEEL CHAIN.

Freewheeling allows the load chain to be quickly pulled thru the hoist without operating the handle.

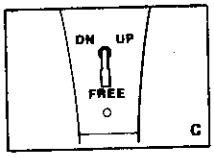
a. Set finger-tip control lever in "DN" position.



b. Rotate hand grip wheel clockwise as far as it will go.



c. Move finger-tip control lever to "FREE" position and pull chain, by hand, thru hoist.



"FREEWHEEL" CAUTION

Your TUGIT Lever Hoist will not "freewheel" if the handle is cocked (Figure 2-2). Make certain there is no side thrust or pressure that would prevent load brake from turning freely on its pivot.

d. After freewheeling load chain, briefly operate hoist as described in "TO RAISE LOAD HOOK", then hoist is ready to be used with load.

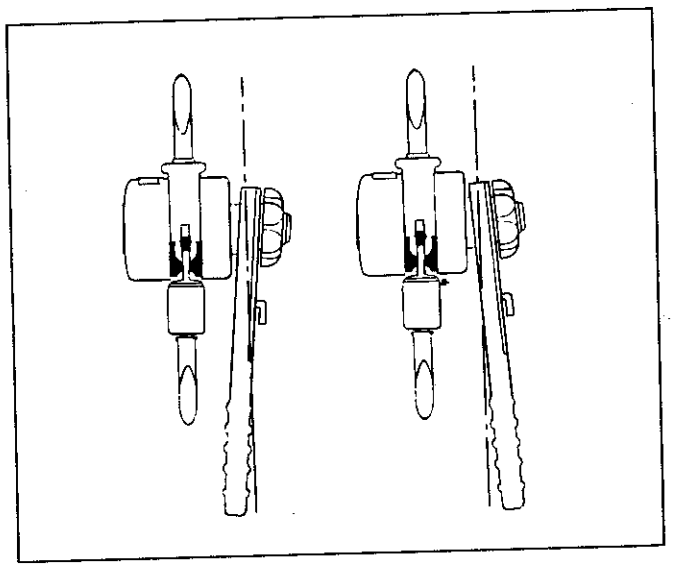


Figure 2-2.

2-5. OPERATING PRECAUTIONS.

Safe operation of this lever hoist is the operator's responsibility. Here are some basic rules that can make an operator aware of dangerous practices to avoid and precautions to take for his own safety and the safety of others. Observance of these rules in addition to frequent examinations and periodic inspection of the equipment may save injury to personnel and damage to equipment. Also see illustrated operating rules on inside back cover of this manual.

⚠WARNING

Failure to use the hoist properly may result in personal injury and property damage. Proper use of the hoist will include the following rules:

Do not load hoist beyond rated capacity.

Do not use extension on handle. Use of extension will severely overload the hoist and may result in personal injury.

An average force of 32 pounds applied to the 3/4 ton TUGIT lever hoist handle will produce rated capacity load at the load chain (3/4 ton = 1,500 pounds).

The average handle force required to produce rated capacity load is shown in Table 2-1. The user is here warned that forces larger than shown in Table 2-1, if placed on the TUGIT lever hoist handle by any means, will result in an overload condition on the hoist. Any such overload will result in a dangerous condition for the user, nearby persons and property.

Hoist Catalog Number	Rated Capacity Load	Average Handle Forced Required In Pounds To Raise Load
234	3/4 Ton (1500 Lbs.)	32
230	1 Ton (2000 Lbs.)	40
245	1-1/2 Ton (3000 Lbs.)	34
240	2 Ton (4000 Lbs.)	42

Table 2-1. TUGIT Lever Hoist Handle Force.

The user is also here warned that overloading of the TUGIT lever hoist can take place by means other than applying a high handle force. Proper rigging and observance of the rules listed here can help avoid such external causes of overload. Use good common sense and judgment at all times.

Do not use hoist to lift or lower persons.

Never lift loads over people.

Never rotate hand grip wheel or put hoist into freewheel when hoist is under load.

Do not use load chain as a sling or load binder.

Do not pull on tail chain except when freewheeling load chain.

Do not operate hoist with twisted, kinked, or damaged load chain. Be sure lower block is not capsized between strands of chain on 1-1/2 and 2 ton hoists.

Never operate hoist with hooks that have opened up.

Inspect hoist regularly and replace worn or damaged parts. Do not operate a damaged or malfunctioning hoist.

Do not operate hoist unless load hooks, load chain and hoist frame can be kept in a straight line.

Do not remove or obsure warning labels.

SECTION III – LUBRICATION

3-1. LUBRICATION OF INTERNAL PARTS.

All internal operating parts of the TUGIT Lever Operated Hoist that require lubrication are prelubricated at time of assembly by the factory. Periodic greasing only is recommended, and intervals are dependent upon type of service. See Section IV - Maintenance.

⚠WARNING

Do Not Oil Load Brake. It is extremely important the load brake friction surfaces be kept free of any oil film, so do not apply oil internally.

3-2. LUBRICATION OF EXTERNAL PARTS.

a. Load chain should always be protected from wear with a light film of oil (LUBRIPLATE Bar and Chain Oil or equal), especially when subjected to damp or corrosive atmospheres.

b. Lubricate needle bearings (N.L.G.I. No. 2 EP) in lower block of 1-1/2 and 2 ton models

c. Lubricate upper and lower hooks at the swivel point with heavy-duty lithium grease (Dow Corning MOLYKOTE BR-2 Plus or equal) periodically, as required.

SECTION IV – MAINTENANCE

4-1. GENERAL.

The following are preventive maintenance steps which should be performed periodically as operating conditions demand. Under most conditions, a yearly maintenance inspection is adequate. The entire hoist should be dismantled and its parts inspected for damage or wear and replaced as necessary. At reassembly, the hoist should be relubricated as outlined in paragraph 6-15. If the hoist has been subjected to extremely adverse conditions, such as excessive dirt, moisture, and misuse by overloading, a more frequent maintenance inspection should be made. Visually check hoist after each use.

4-2. LOAD BRAKE.

If load brake shows a tendency to slip or drag, remove brake parts, as outlined in paragraph 6-5, and inspect brake friction surfaces for signs of damage, wear, dirt, or an oil film. Contact surfaces of brake flange and ratchet wheel must be free of excessive scoring and clean. Faces of brake washers should be lightly wire brushed and buffed. Also, be certain that the inside diameter of the brake washers are free of loose material and burrs. Replace any worn parts. Load brake pawl should also be checked for signs of wear or damage.

NOTE: Be sure to keep brake friction surfaces free of oil at reassembly. See paragraph 6-15.

4-3. LOAD CHAIN.

Clean chain for inspection. Examine visually for gouges, nicks, weld splatter, corrosion or distorted links. Slacken chain and check bearing surfaces between links for wear (Figure 4-1). Greatest wear will often occur at sprocket at high or low point of lift, particularly when hoist is subjected to repetitive lifting cycles. Case hardness of chain is .010 – .015" deep. Chain must be replaced before the case is worn thru. Also check chain for elongation using a vernier caliper (Figure 4-2). Select an unworn, unstretched section of chain (usually at slack or tail end) and measure and record the length over the number of chain links (pitches)(Figure 4-2). Measure and record the same length of a worn section in the load side of the chain. Obtain the amount of wear by subtracting the measurement of the unworn section from the measurement of the worn section. If the result (amount of wear) is greater than the amount specified in Table 4-1, the chain has elongated beyond the maximum allowable length and must be replaced. Chain with excessively pitted, corroded, nicked, gouged, twisted or worn links should be replaced using only factory approved chain. Never weld or attempt to repair coil chain.

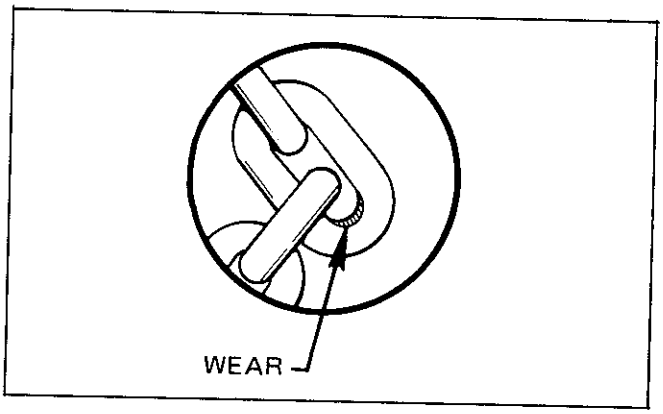


Figure 4-1. Check Chain Wear at Bearing Surfaces Between Links

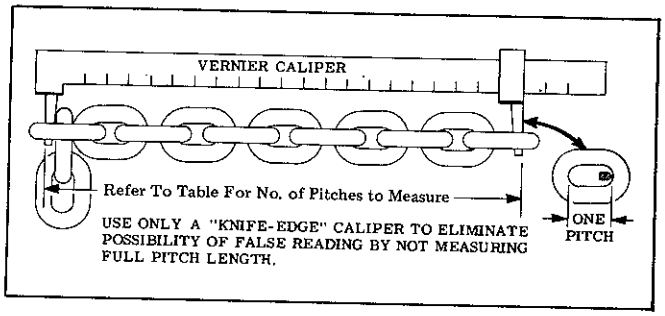


Figure 4-2. Checking Coil Chain Using Vernier Caliper

Hoist Cap. (Ton)	Chain Size (Wire Dia.)	No. of Pitches To Measure	Nominal Length	Maximum Wear Limit
3/4	1/4	13	10.56"	.264"
1, 1-1/2, 2	9/32	11	8.71"	.218"

Table 4-1. Allowable Chain Wear - Elongation

⚠CAUTION

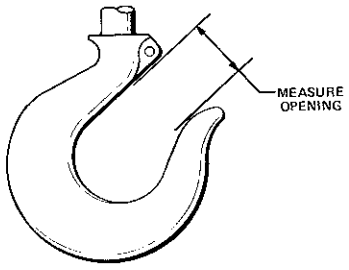
Do not assume that the load chain is safe because it measures below replacement points given herein. Other factors, such as those mentioned in visual checks above, may render chain unsafe or ready for replacement long before elongation replacement is necessary.

⚠WARNING

When replacing load chain, use only factory approved chain conforming to factory specifications for material, hardness, strength and link dimensions. Chain not conforming to TUGIT hoist specifications may be dangerous as it will not fit in the load sprocket and chain guide correctly, causing damage to hoist, and it will wear prematurely, deform and eventually break.

4-4. HOOKS.

Inspect both hooks regularly for evidence of overloading or damage. Check for proper hook opening (Figure 4-3). If hook is opened beyond the given dimension, replace immediately. If hooks are damaged, dismantle hoist and inspect all parts thoroughly. Refer to Section VI for hook removal and installation instructions. If your TUGIT is equipped with specially ordered hooks other than standard, contact the factory for correct dimensions, giving model number of hoist and all identification material from hooks.



HOIST	HOOK THROAT OPENING	
	Nominal Opening	Replace Hook If Opening Is Greater Than
3/4 Ton, Upper and Lower Hooks	1-1/16"	1-1/4"
1 Ton, Upper and Lower Hooks	1-1/16"	1-1/4"
1-1/2 Ton, Upper and Lower Hooks	1-1/4"	1-7/16"
2 Ton, Upper and Lower Hooks	1-1/4"	1-7/16"

Figure 4-3. Upper and Lower Hook Openings

NOTES

SECTION V – TROUBLE SHOOTING

Condition	Probable Cause	Remedy
1. Load Brake Locked-Up. (Handle works in "UP" but not "DN".)	1. Load not lowered after hoist was used for lifting.	1. Unlock load brake as outlined in paragraph 2-3, c.
2. Load Brake Slips. (Hoist will not support loads.)	1. Brake friction surfaces coated with oil, or brake washers glazed. 2. No lubrication on cam surfaces of load brake. 3. Brake parts damaged or worn. 4. Load chain installed backwards.	1. Remove brake parts and clean surfaces. Lightly wire brush friction faces of brake washers; remove any inside diameter burrs, and buff or replace if necessary. 2. Clean thoroughly and add lubrication. 3. Remove and inspect brake parts. Replace if necessary. 4. Remove and reinstall. See paragraph 6-18.
3. Handle Works Hard. (Load brake drags.)	1. Hoist is overloaded. 2. Brake friction surfaces are scored. 3. Sprocket bearings are damaged. 4. Load gearing is damaged. 5. Excessive dirt inside or internal parts corroded.	1. Remove a portion of the load. 2, 3, & 4. Remove and inspect brake parts, bearings and load gearing. Replace damaged or defective parts. See Section VI. 5. Disassemble and thoroughly clean. See Section VI.
4. Erratic Operation. (Chain gags or jumps in lowering direction.)	1. Load chain installed wrong, welds on links facing sprocket. 2. Load brake pawl or ratchet teeth worn or damaged.	1. Remove and reinstall. See paragraph 6-18. 2. Remove load brake parts and inspect pawl and ratchet as outlined in Section VI. Replace if necessary.
5. Finger-Tip Control Lever Sticks.	1. Dirt inside handle or lack of lubrication.	1. Disassemble and thoroughly clean. Add lubrication as outlined in Section VI.
6. Hoist Will Not Freewheel.	1. Improperly operated. 2. Handle cocked when attempting to pull chain thru hoist. 3. Lock-out plunger damaged. 4. Lock-out spring damaged. 5. Load chain installed wrong, welds on links facing sprocket. 6. Lack of lubrication.	1. Follow correct operating procedure, Section II. 2. Eliminate side thrust or pressure as outlined in paragraph 2-4. 3 & 4. Remove and inspect for damage. Replace if necessary. 5. Remove and reinstall load chain. See paragraph 6-18. 6. Clean thoroughly and add lubrication.
7. Hooks Opened.	1. Hoist overloaded.	1. Remove lower hook on 3/4 and 1 ton models and replace as noted in paragraph 6-3. For removal of lower hook on 1-1/2 and 2 ton models, refer to paragraph 6-11 for instructions. For removal of upper hook, refer to paragraph 6-10.
8. Frame Cracked or Badly Mutilated.	1. Hoist subjected to overloading. 2. Load chain run thru hoist too far, in lowering, causing welded end link bind against frame. 3. Hoist subjected to extreme angular or side pulls, causing chain to bind on side of frame. 4. Hoist dropped or thrown.	1. Whenever the frame shows evidence of damage from misuse or rough handling, the hoist should be completely dismantled, all parts inspected and damaged or worn parts replaced, as outlined in Section VI. Always apply the safety rules shown on the inside of back cover when using the TUGIT Lever Hoist.

SECTION VI – DISASSEMBLY & REASSEMBLY

6-1. DISASSEMBLY.

6-2. GENERAL.

The following disassembly procedure applies to all hoists. A complete teardown procedure is given, however, when servicing specific parts, only a partial teardown may be required.

6-3. REMOVAL OF LOAD CHAIN. (3/4 & 1 Ton Model)

a. To remove hook from end of load chain, remove snap ring at top of sleeve, slide sleeve from body halves and separate parts. See Figure 6-1.

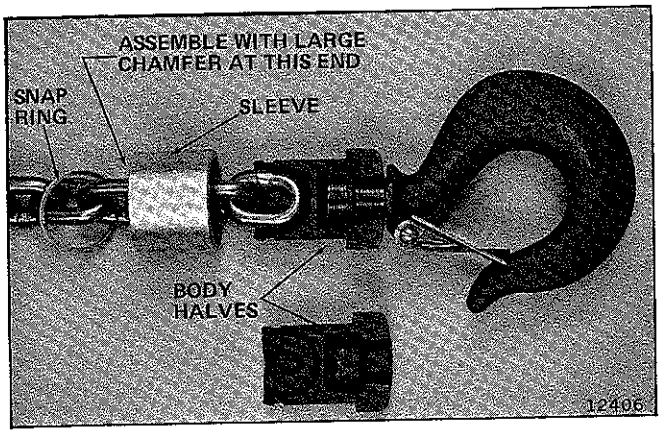


Figure 6-1. Lower Hook Connection
3/4 & 1 Ton Model Hoists

b. Place hoist in freewheel position (paragraph 2-4) and pull out load chain. The retaining ring on end of chain opposite hook end, will not pass thru hoist, so pull hook end thru by tail chain end.

6-4. REMOVAL OF LOAD CHAIN. (1-1/2 & 2 Ton Model)

a. At anchor end of load chain, remove chain pin and jam nut. When pin is out, the chain can be lifted out.

b. Remove lower block and hook assembly from load chain and lay to one side for further disassembly.

c. Remove chain as noted in paragraph 6-3, b. above.

6-5. REMOVAL OF OPERATING HANDLE AND LOAD BRAKE PARTS.

a. Remove snap ring that retains hand wheel on shaft. This can be done with a U-shaped snap ring tool or by holding two screwdrivers in one hand with ends against snap ring as shown in Figure 6-2. Tap on one of the screwdrivers lightly until snap ring comes out of groove.

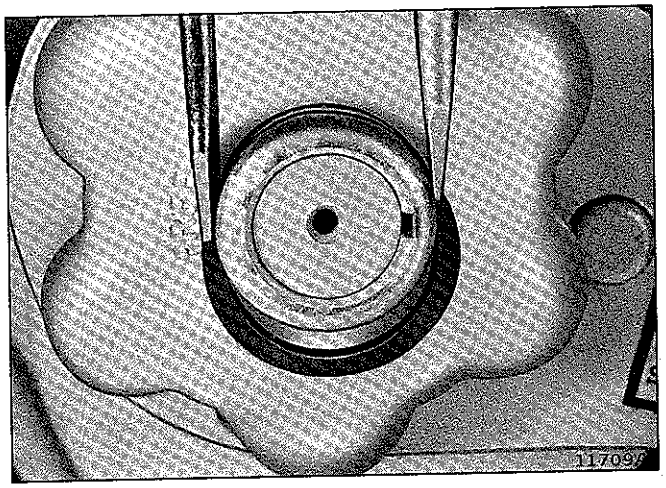


Figure 6-2.

b. Expose Load Brake Hub by prying off hand wheel as shown in Figure 6-3.

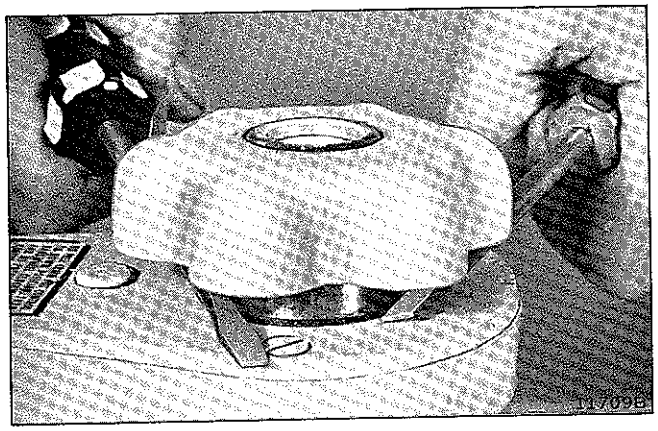


Figure 6-3.

c. After snap ring and hand wheel have been removed, remove brake flange key from brake flange by placing end of screwdriver on edge of key (Figure 6-4), and tapping lightly until key comes out of keyway.

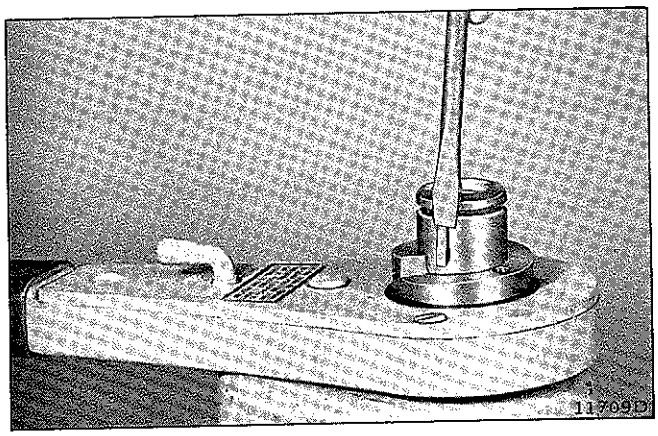


Figure 6-4.

d. Grip hoist firmly with one hand and lift handle evenly upward with a hard pull. When handle comes off a small steel ball may fall from the shaft. Make certain that steel ball is replaced when hoist is reassembled (Figure 6-5).

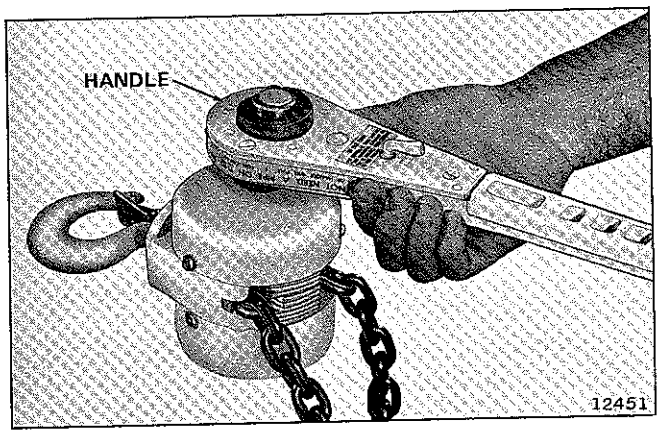


Figure 6-5. Removing Handle

e. Remove front frame cover by unscrewing three screws.

f. Take out load brake parts; two brake washers, brake ratchet, and brake flange by sliding them off pinion shaft. Next, remove the brake flange key (Figure 6-6).

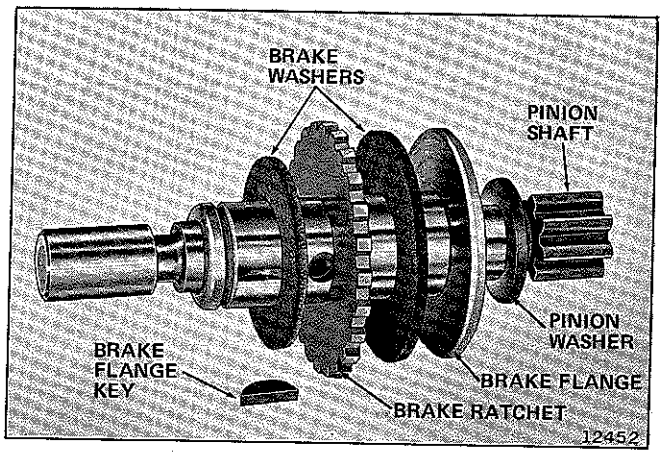


Figure 6-6. Load Brake Parts
(Refer to Page 12 for a complete parts illustration.)

g. To remove brake spring and pawl, slide pawl off shaft. Spring may then be removed.

6-6. REMOVAL OF CHAIN STRIPPER.

Remove the chain stripper by pulling out the two stripper pins.

6-7. REMOVAL OF SPRING AND PLUNGER IN HAND WHEEL.

Remove plug in hand wheel. This allows spring and plunger to be removed.

6-8. DISASSEMBLY OF OPERATING HANDLE.

a. Remove the three screws, and separate the lever cover from the handle.

b. The thumb lever will lift out with the cover and can be removed by tilting it to the side.

c. The other internal parts; brake hub thrust washers (2), brake hub, lever pawl, and lever spring, then lift out.

6-9. REMOVAL OF LOAD GEARING.

a. From opposite side of hoist, remove three screws and lift off rear cover. If necessary, loosen by tapping with a soft mallet.

b. Remove sprocket gear from sprocket shaft by removing retaining ring. After the sprocket gear has been removed, the pinion shaft and pinion washer may be pulled free by sliding thru the pinion shaft bearings.

NOTE: Do not remove the pinion shaft needle bearings unless they are worn or damaged and replacement is needed.

c. The sprocket shaft may be removed by first removing the plain parallel sprocket shaft key and tapping the gear end of shaft with a soft mallet. The sprocket with a sprocket bearing will come out opposite side of frame. Separate the sprocket bearings from shaft by removing the snap ring from end of shaft. The bearing inner races will remain on the sprocket shaft.

d. An alternate method is to remove retaining ring from load brake end of sprocket shaft and remove sprocket shaft, sprocket gear and inner bearing as a unit to disassemble outside of hoist frame.

e. Remove chain guide from inside of frame.

6-10. REMOVAL OF UPPER HOOK.

a. On some TUGIT hoist models the upper hook is permanently attached to the frame by welding hook nut to shank of hook at time of assembly. If the hook becomes distorted, the frame will also likely be damaged requiring replacement of both hook and frame. The frame may be returned to the factory or authorized repair station, where it will be inspected and the hook replaced and hook nut welded following an approved welding method.

b. On models where nut is pinned to hook, align grooved pin in hook nut with opening in frame and drive out pin with drift punch. Use drift punch to hold nut while hook is being unscrewed.

6-11. DISASSEMBLY OF LOWER BLOCK. (1-1/2 and 2 Ton Models)

a. Remove sprocket shaft snap rings and shaft washers.

b. Press sprocket shaft from yoke.

c. Lift the sprocket out.

NOTE: Do not remove needle bearings from sprocket unless they are worn or damaged and replacement is required.

d. On some TUGIT hoist models the lower hook is permanently attached to the yoke at time of assembly. Refer to paragraph 6-10 for replacement instructions.

6-12. REASSEMBLY.

6-13. GENERAL.

The procedure to be followed for reassembly is in reverse order of the disassembly steps outlined above. There are, however, certain precautionary steps that must be taken, as outlined in paragraphs 6-14 thru 6-18 below.

6-14. CLEANING AND INSPECTION OF PARTS.

a. Before assembly, all parts should be thoroughly cleaned and inspected to determine their serviceability.

b. Replace parts that are excessively worn or damaged.

6-15. LUBRICATION OF PARTS.

a. Lubricate upper and lower hooks with heavy-duty lithium grease (Dow Corning MOLYKOTE BR-2 plus or equal). Apply on hook shanks and surfaces between hook, frame, washer and nut. On lower blocks, apply a good grade of bearing grease (N.L.G.I. No. 2 EP) to needle bearings in sprockets.

b. Lubricate gearing with a N.L.G.I. No. 2 EP grease. Apply a light film of 2 EP grease to sprocket bearing surfaces and sprocket bearings. Apply a light film of 2 EP grease to the pinion bushing surfaces, bushings and pinion washer. Lubricate lever pawl with a small amount of 2 EP grease at support pin and ratchet engagement tip. To make sure that the brake hub friction surfaces do not become greased, do not lubricate the ratchet bearing surface. Apply a small amount of 2 EP grease on the pinion shaft. Lubricate both diameters of brake hub where it contacts handle and lever cover. Apply a light film of 2 EP grease to the surfaces of the lever spring, thumb lever, and cam surface of hand wheel.

⚠WARNING

It is extremely important that load break friction surfaces be kept dry, as an oily film may cause slippage, thereby, permitting a load to drop.

c. Load chain should be lubricated with a light film of (LUBRIPLATE Bar and Chain Oil or equal) oil.

6-16. INSTALLING HOOKS.

When installing hooks be certain original nuts are used. The nut side with the greater distance to the center of the hole should face the hook. See Figure 8-1.

6-17. INSTALLING LOAD GEARING.

a. Before load gearing is installed, be certain chain guide is properly seated in frame.

b. Reverse the procedure noted in paragraph 6-9.

6-18. INSTALLATION OF LOAD BRAKE PARTS.

a. Slide brake flange on pinion shaft. Then add the large diameter brake washer, brake ratchet and small diameter brake washer. See Figure 6-6. The brake pawl and spring is then installed last. Attach cover with three screws.

b. Place steel ball check in hole and hold in place.

c. Install handle with brake hub on brake flange.

d. Place brake flange key in brake flange keyway.

e. Position brake hub and handwheel so that cams are at minimum lateral position (straight sides are nearly together).

f. Install brake flange snap ring.

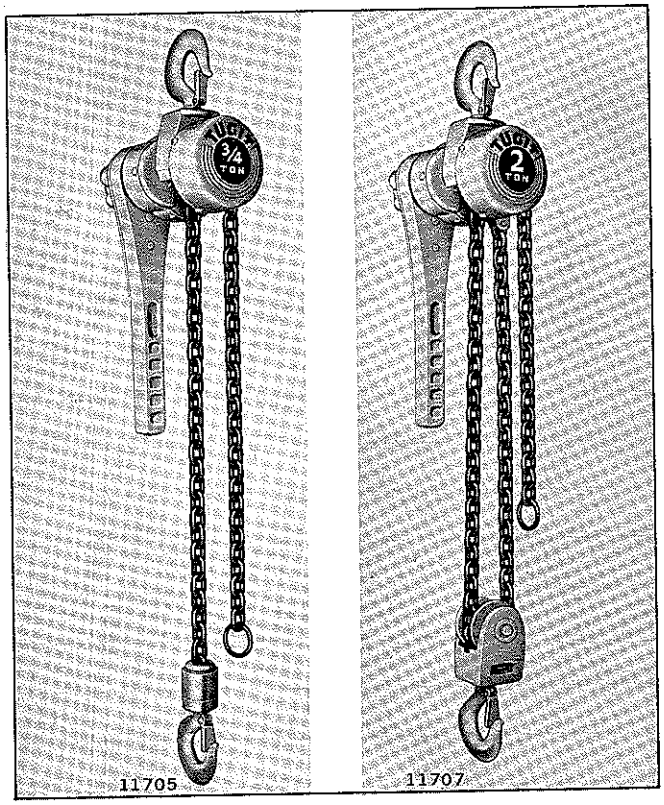
6-19. INSTALLING LOAD CHAIN.

⚠WARNING

When installing load chain it is possible to feed it into the wrong side of hoist, which will result in a reversed hoist action and the load brake will not function.

a. Lay hoist on work bench in the position so that the hand wheel side is at your right. Then with control lever in "FREE" position, run chain thru from tail chain side, using hand wheel. Be sure welded side of chain links face up so they do not enter chain pockets in sprocket, and chain is not twisted.

b. On 3/4 and 1 ton models, pull approximately three feet of chain thru the hoist and attach to lower hook (Figure 6-1).



Left – 3/4 Ton Std. Model. Right – 2 Ton Std. Model

c. On 1-1/2 and 2 ton models, insert anchor end of chain into position in the frame and install chain pin and nut. Install lower block on load chain.

d. If retaining ring requires replacement, replace per Figure 6-7.

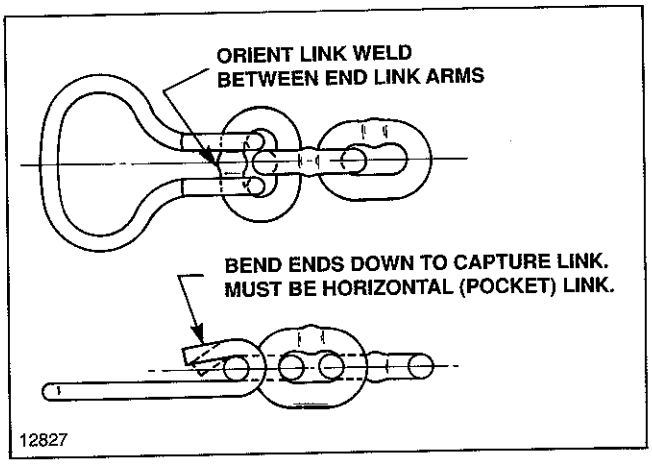


Figure 6-7. Retaining Ring

e. Check operation of hoist at no load, partial load, and rated load.

IMPORTANT: After completion of reassembly and before being placed in service, the TUGIT hoist should be tested with rated load to ensure safe operation.

SECTION VII – SPECIAL REDLINE INFORMATION

7-1. GENERAL.

a. TUGIT Lever Operated Hoists having a red vinyl coated handle are equipped with a Load Regulator which is designed to help guard against excessive overloads.

b. The Load Regulator is preset at the factory. If a TUGIT hoist is subjected to overload, the Load Regulator unit will allow the handle to turn without increasing the load on the hoist. This slippage will occur at a handle force greater than required for rated load and the normal ratcheting sound during the "UP" stroke will not be heard. When this condition occurs, the hoist will continue to support the overload, however, **the overload must be released as soon as possible.** Normal operating procedure is to be followed by turning the finger-tip control to "DN" position and ratcheting the handle.

c. Testing of TUGIT hoist with Load Regulator is recommended at regular intervals which should be determined by amount and conditions of use.

7-2. TEST PROCEDURE.

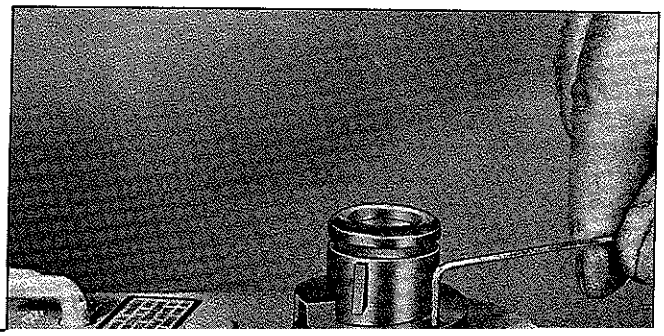
a. Suspend hoist by its upper hook from an overhead structure capable of supporting several times rated capacity of the hoist. Position hoist so that all parts of hoist as well as test load, when suspended on load hook, are free of obstructions. Attach the load hook to a test equal to the rated capacity of the hoist. Operate handle to lift the load. If handle slippage occurs and rated load cannot be lifted,

Load Regulator may require adjustment (see ADJUSTMENT paragraph) or the Regulator may be worn from use and require replacement. Service is available from TUGIT Hoist Authorized Repair Stations.

b. If hoist operates properly with rated load on hook, it should next be tested with a load equal to two times rated capacity. With this overload attached to load hook, complete slippage of handle should occur. If handle does not slip, Load Regulator may require adjustment (see ADJUSTMENT paragraph) or may require replacement which is available from any Authorized Repair Station.

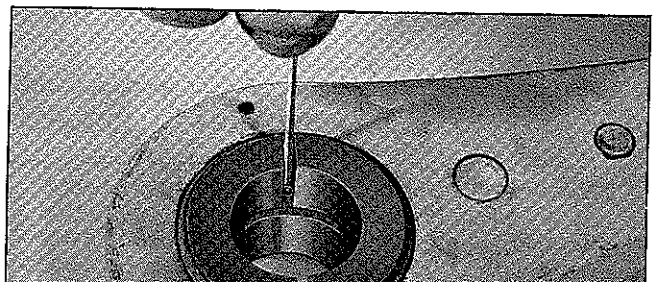
7-3. LOAD REGULATOR ADJUSTMENT.

a. Remove hand wheel and handle per instructions in paragraph 6-5 of this Manual. This exposes Load Regulator for adjustment as shown in Figure 7-1. Adjustment screws are locked in position with set screws. Set screws must be removed before attempting adjustment. Use a 3/32" hex key and insert it 1/8" into set screw of each hole and remove set screw.



b. **Increased** Load Regulator Capacity is obtained by tightening the adjusting screw in each hole NOT MORE THAN 1/8" TURN. Replace set screws and reassemble hand wheel and snap ring. Check hoist performance according to recommended TEST PROCEDURE.

c. To **decrease** Load Regulator Capacity, it is necessary to remove the handle from the hoist, per the instructions in paragraph 6-5. Then remove set screws from each tapped hole in Regulator helix surface. Then loosen each adjusting screw **one complete turn**. Turn handle over so that slots in opposite side of Regulator are accessible. Loosen steel ball in each slot by tapping lightly with a hex key or narrow bladed tool, as in Figure 7-2, until balls are touching ends of adjusting screws.



NOTES

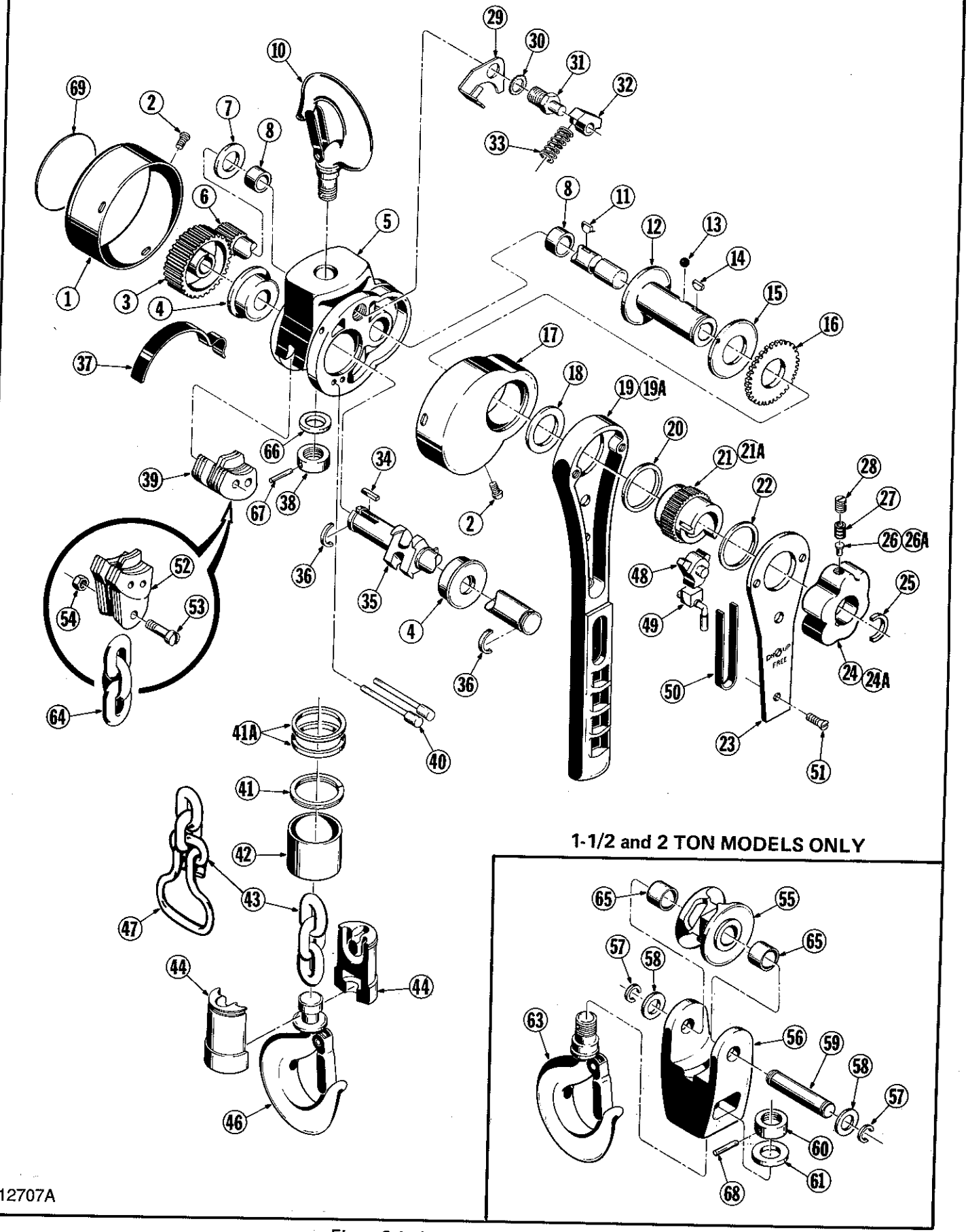


Figure 8-1. Lever Operated Hoist

Figure 8-1. Lever Operated Hoist (Cont'd.)

Ref. No.	Description of Part	No. Req'd.	Part Number	
			3/4 Ton	1, 1-1/2 & 2 Ton
1	Rear Frame Cover	1	T-301	T-201
2	Cover Screw	6	T-302	T-202
3	Sprocket Gear	1	T-303	T-203
4	Sprocket Bearing (With Washer)	2	T-304	T-204
5	Frame Assembly *			
	3/4 Ton	1	T-305	
	1 Ton	1		T-205
	1-1/2 and 2 Ton	1		T-205A
6	Pinion Shaft	1	T-306	T-206
7	Pinion Washer	1	T-307	T-207
8	Pinion Shaft Bearing	2	T-308	T-208
10	Upper Hook, Latch and Nut Kit			
	3/4 Ton **	1	T-310	
	1 Ton **	1		T-210
	1-1/2 and 2 Ton **	1		T-210A
11	Pinion Shaft Key	1	T-311	T-211
12	Brake Flange	1	T-312	T-212
13	Ball Check	1	T-313	T-213
14	Brake Flange Key	1	T-314	T-214
15	Brake Washer	1	T-315	T-215
16	Brake Ratchet	1	T-316	T-216
17	Front Frame Cover	1	T-317	T-217
18	Brake Washer	1	T-318	T-218
19	Handle	1	T-319	T-219
19A	Handle With Red Vinyl Grip (Redline Models)	1	T-319A	T-219A
20	Brake Hub Thrust Washer	1	T-320	T-220
21	Brake Hub	1	T-321	T-221
21A	Brake Hub (Redline Models)	1	T-321A	T-221A
22	Brake Hub Thrust Washer +	1	T-322	T-222
23	Lever Cover	1	T-323	T-223
24	Hand Wheel Assembly ***	1	T-324	T-224
24A	Hand Wheel Assembly (Redline Models) ***	1	T-324A	T-224A
25	Brake Flange Snap Ring	1	T-325	T-225
26	Lock Out Plunger	1	T-326	T-226
26A	Lock Out Plunger (Redline Models)	1	T-326A	T-226A
27	Lock Out Spring	1	T-327	T-227
28	Lock Out Plug	1	T-328	T-228
29	Pawl Spring Support Plate	1	T-329	T-229
30	Pawl Shaft Washer	1	T-330	T-230
31	Pawl Shaft	1	T-331	T-231
32	Brake Pawl	1	T-332	T-232
33	Brake Pawl Spring	1	T-333	T-233
34	Sprocket Shaft Key	1	T-334	T-234
35	Sprocket Shaft	1	T-335	T-235
36	Sprocket Shaft Snap Ring	2	T-336	T-236
37	Chain Guide	1	T-337	T-237
38	Top Hook Nut			
	3/4 Ton **	1	T-338	
	1 Ton **	1		T-238
	1-1/2 and 2 Ton **	1		T-238A
39	Chain Stripper (3/4 and 1 Ton Only)	1	T-339	T-239
40	Stripper Pin	2	T-340	T-240
	Lower Block Assembly (3/4 and 1 Ton Only)	1	T-340A	T-240A
41	Body Snap Ring (3/4 and 1 Ton Only)	1	T-341	T-241
41A	Retaining Ring – Early Models (3/4 and 1 Ton Only)	2	T-341A	T-241A
42	Lower Block Sleeve (3/4 and 1 Ton Only) #	1	T-342	T-242
43	Lift Chain – Standard Lift (3/4 and 1 Ton Only)	1	T-343	T-243
44	Lower Block Body – Pair (3/4 and 1 Ton Only) #	2	T-344	T-244
46	Lower Hook and Latch (3/4 and 1 Ton Only)	1	T-346	T-246
47	Retaining Ring	1	T-280A	T-280A
48	Lever Pawl	1	T-348	T-248
49	Thumb Lever	1	T-349	T-249
50	Lever Spring	1	T-350	T-250
51	Lever Cover Screw	3	T-351	T-251

(Continued On Next Page)

Figure 8-1. Lever Operated Hoist (Cont'd.)

Ref. No.	Description of Part	No. Req'd.	Part Number	
			3/4 Ton	1, 1-1/2 & 2 Ton
52	Chain Stripper (1-1/2 and 2 Ton Only)	1	—	T-252
53	Chain Pin (1-1/2 and 2 Ton Only)	1	—	T-253
54	Chain Pin Nut (1-1/2 and 2 Ton Only)	1	—	T-254
	Lower Block Assembly			
	1-1/2 Ton	1	—	T-276
	2 Ton	1	—	T-277
55	Sprocket	1	—	T-255
56	Yoke			
	1-1/2 Ton	1	—	T-278
	2 Ton	1	—	T-279
57	Sprocket Shaft Snap Ring	2	—	T-257
58	Sprocket Shaft Washer	2	—	T-258
59	Sprocket Shaft	1	—	T-259
60	Hook Nut	1	—	T-260
61	Hook Washer	1	—	T-261
63	Lower Hook, Latch and Nut Kit ##	1	—	T-263
64	Lift Chain — Standard Lift (1-1/2 and 2 Ton Only)	1	—	T-264
65	Sprocket Bearing	2	—	T-265
66	Thrust Washer			
	3/4 Ton	1	T-355	—
	1 Ton	1	—	T-274
	1-1/2 and 2 Ton	1	—	T-275
67	Grooved Pin			
	3/4 Ton	1	T-353	—
	1 Ton	1	—	T-268
	1-1/2 and 2 Ton	1	—	T-269
68	Grooved Pin (1-1/2 and 2 Ton Only)	1	—	T-270
69	Capacity Label			
	3/4 Ton	1	T-354	—
	1 Ton	1	—	T-271
	1-1/2 Ton	1	—	T-272
	2 Ton	1	—	T-273

* Frame Assembly includes frame; pinion shaft bearings (8); hook, latch and nut with grooved pin (10); pawl spring support plate (29); pawl shaft washer (30); and pawl shaft (31).

** Upper hook is not available separately when nut is welded to hook. Order Frame Assembly (5) or return original frame and hook to factory or Authorized Repair Station to have hook replaced. When nut is pinned to hook, Ref. No. 10 only may be ordered.

*** Hand Wheel Assembly includes proper hand wheel, lock out plunger (26), lock out spring (27), and lock out plug (28) for each capacity.

This part is not available separately. A body snap ring (41), lower block sleeve (42) and lower block body (44) will be furnished in kit form.

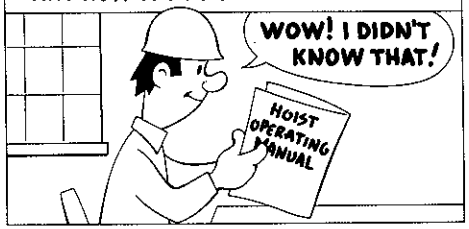
Lower hook is not available separately when nut is welded to hook. Order Lower Block Assembly, Part No. T-276 or T-277. When nut is pinned to hook, Ref. No. 63 only may be ordered.

+ Later model units will have 2 Reference Numbers 22.

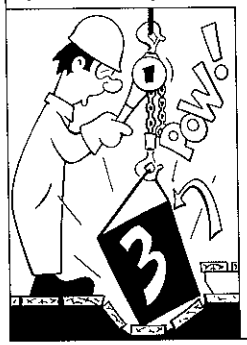
When ordering parts, always give Model and Catalog Number of Hoist. (See Hoist Nameplate.)

Order replacement parts from an Authorized BUDGIT/TUGIT Repair Station or from a BUDGIT/TUGIT Distributor. Do not order from factory.

SAFE IS... KNOWING YOUR HOIST! STUDY MANUFACTURER'S OPERATING INSTRUCTION MANUAL FOR CORRECT HOIST OPERATION. KNOW WHAT TO DO. -AND HOW TO DO IT! ... EVERYTIME!

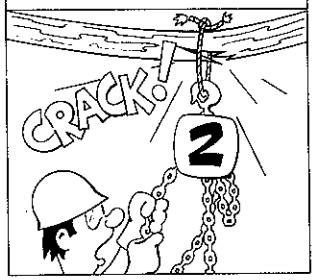


SAFE IS... NEVER OVERLOADING!

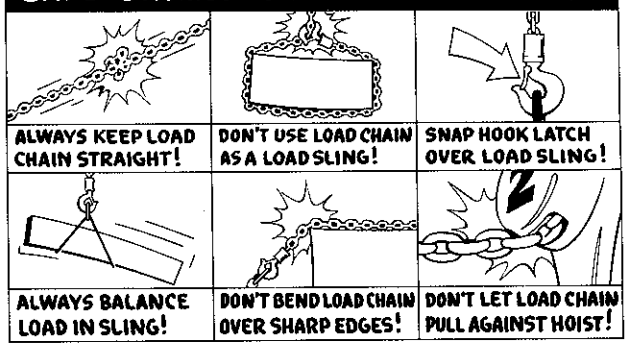


ALWAYS BE SURE TO USE PROPER CAPACITY HOIST. ...IN DOUBTFUL WEIGHT SITUATIONS USE HOISTS WITH *OVERLOAD PROTECTION DEVICES* WHICH WILL REJECT DANGEROUS OVERLOADS.

SAFE IS... MAKING SURE UPPER SUSPENSION WILL HOLD THE LOAD!



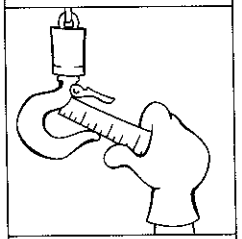
SAFE IS... RIGGING THE HOIST CORRECTLY!



ALWAYS KEEP LOAD CHAIN STRAIGHT! | DON'T USE LOAD CHAIN AS A LOAD SLING! | SNAP HOOK LATCH OVER LOAD SLING!

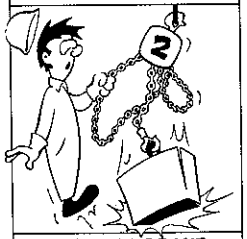
ALWAYS BALANCE LOAD IN SLING! | DON'T BEND LOAD CHAIN OVER SHARP EDGES! | DON'T LET LOAD CHAIN PULL AGAINST HOIST!

SAFE IS... NEVER USING A HOIST WITH "OPENED" HOOKS!



CHECK HOOKS OFTEN WITH SCALE OR GAUGE!

SAFE IS... NEVER USING A HOIST WITH SLIPPING BRAKE!

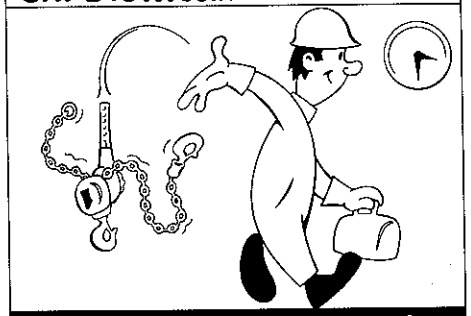


CHECK LOAD BRAKE OPERATION OFTEN!

SAFE IS... NEVER USING A DAMAGED HOIST!

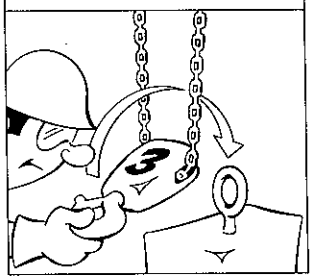
VISUALLY CHECK HOIST CONDITION!

SAFE IS... USING GOOD JUDGMENT!

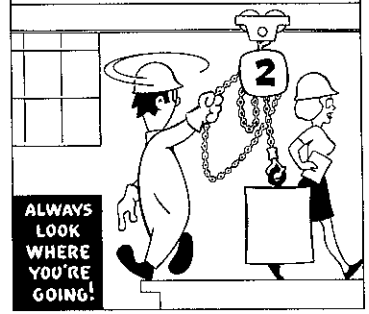


NEVER THROW OR DROP A HOIST!

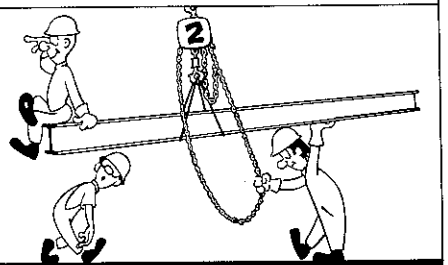
SAFE IS... NEVER TWISTING CHAIN BY CAPSIZING LOWER BLOCK!



SAFE IS... ALWAYS MAKING SURE OF YOUR FOOTING!

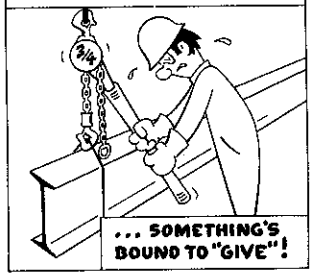


SAFE IS... ALWAYS STAYING OUT FROM UNDER A SUSPENDED LOAD!



NEVER CARRY PEOPLE ON A HOIST OR THE LOAD. NEVER CARRY LOADS OVER PEOPLE!

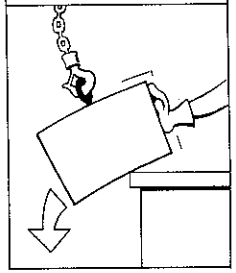
SAFE IS.... NEVER USING A PIPE (CHEATER) ON LEVER HOIST HANDLE!



... SOMETHING'S BOUND TO "GIVE"!

SAFE IS... NEVER PERMITTING A WELDING TORCH TO HEAT LOAD CHAIN!

SAFE IS... NEVER APPLYING SHOCK LOAD TO CHAIN SUDDENLY!



SAFE IS... ALSO

- NEVER DRAGGING A LOAD CHAIN FROM UNDER THE LOAD!
- BEING A THOUGHTFUL, COURTEOUS WORKER!

Safe is Beautiful

Recommended Spare Parts for Your TUGIT Hoist

Certain parts of your hoist will, in time, require replacement under normal wear conditions. It is suggested that the following parts be purchased for your hoist as spares for future use.

Description	Quantity for One Hoist	Quantity for Five Hoists	Quantity for Ten Hoists
Brake Pawl	1	3	5
Brake Washer	1 Set	3 Sets	5 Sets
Brake Ratchet	1	2	4
Load Chain	1	3	5
Lower Hook	1	3	5
Lower Hook Assembly	1	2	3

NOTE: When ordering parts always furnish Model and Catalog Number of Hoist and lift of hoist on which the parts are to be used.

Parts for your hoist are available from your local authorized BUDGIT/TUGIT repair station. For the location of your nearest repair station, write:

	IN USA	**IN CANADA**
	LIFT-TECH INTERNATIONAL P.O. BOX 769 MUSKEGON, MI 49443-0769	LIFT-TECH INTERNATIONAL CRANES & HOISTS 53-D COWANSVIEW ROAD CAMBRIDGE, ONTARIO, N1R 7L2
or phone:	**616-733-0821**	**519-621-3201**
or fax:	**800-742-9270**	**519-621-3125**

WARRANTY

WARRANTY AND LIMITATION OF REMEDY AND LIABILITY

A. Seller warrants that its products and parts, when shipped, and its work (including installation, construction and start-up), when performed, will meet applicable specifications, will be of good quality and will be free from defects in material and workmanship. All claims for defective products or parts under this warranty must be made in writing immediately upon discovery and, in any event, within one (1) year from shipment of the applicable item unless Seller specifically assumes installation, construction or start-up responsibility. All claims for defective products or parts when Seller specifically assumes installation, construction or start-up responsibility, and all claims for defective work must be made in writing immediately upon discovery and, in any event, within one (1) year from completion of the applicable work by Seller, provided; however, all claims for defective products and parts must be made in writing no later than eighteen (18) months after shipment. Defective items must be held for Seller's inspection and returned to the original f.o.b. point upon request. THE FOREGOING IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES WHATSOEVER, EXPRESS, IMPLIED AND STATUTORY, INCLUDING, WITHOUT LIMITATION, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS.

B. Upon Buyer's submission of a claim as provided above and its substantiation, Seller shall at its option either (i) repair or replace its product, part or work at either the original f.o.b. point of delivery or at Seller's authorized service station nearest Buyer or (ii) refund an equitable portion of the purchase price.

C. This warranty is contingent upon Buyer's proper maintenance and care of Seller's products, and does not extend to fair wear and tear. Seller reserves the right to void warranty in event of Buyer's use of inappropriate materials in the course of repair or maintenance, or if Seller's products have been dismantled prior to submission to Seller for warranty inspection.

D. The foregoing is Seller's only obligation and Buyer's exclusive remedy for breach of warranty, and is Buyer's exclusive remedy hereunder by way of breach of contract, tort, strict liability or otherwise. In no event shall Buyer be entitled to or Seller liable for incidental or consequential damages. Any action for breach of this agreement must be commenced within one (1) year after the cause of action has accrued.