Product Information

Liftchain Industrial Hydraulic Hoist Models

LC2H060S, LC2H120D, LC2H180T and LC2H250Q

Save These Instructions

Ingersoll Rand
Industrial Technologies

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

For additional supporting documentation refer to Table 1 'Product Information Manuals' on page 2.
Manuals can be downloaded from www.ingersollrandproducts.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.

Table 1: Product Information Manuals

Publication	Part/Document Number	Publication	Part/Document Number
Product Safety Information Manual	MHD56295	Product Maintenance Information Manual	MHD56467
Product Parts Manual	MHD56466		

PRODUCT DESCRIPTION

LC2H Liftchain hydraulic hoists are designed to suit industrial applications. These hoists can be hook or lug mounted to a trolley, permanent mounting structure or any mounting point capable of supporting both load and hoist.

The hydraulic supply line can be strung to the hoist using cable hangers, cable trolleys or any festooning system that will ensure the hydraulic line remains free of kinks or sharp bends and is protected from being pinched or crushed by other equipment.

LC2H Liftchain hoists are driven by a hydraulic motor which is connected to a pinion shaft which in turn drives the planetary reduction gear. The output from the planetary reduction gear drives the load chain sprocket. The pinion shaft from the planetary reduction is also coupled to the brake discs.

The disc brake is spring applied and released by fluid pressure when the hoist is operated. In the event of a loss of fluid pressure the brake automatically applies.

SPECIFICATIONS

Model Code Explanation

Example: LC2H060SIFORE3M0A — **LC2H060S I F 0 RE 3M 0 A**

Liftchain Hydraulic Hoist Capacity and Chain Falls

LC2H060S	=	**6000 kg (13,200 lbs), single fall**
LC2H120D	=	12,000 kg (26,500 lbs), double fall
LC2H180T	=	18,000 kg (39,700 lbs), triple fall
LC2H250Q	=	25,000 kg (55,000 lbs), quad fall

Application

I	=	**Industrial**

Body Control Type

F	=	**Full flow**
P	=	Pilot control

Control Type

0	=	**No Control**
3	=	Joystick remote control

Suspension

A	=	Fixed lug
C	=	Swivel top hook
PU	=	Plain rigid universal trolley (flat or tapered beam) 1500 to 6000 kg
PE	=	Plain rigid trolley (flat beam) 12,000 to 25,000 kg
PN	=	Plain rigid trolley (tapered beam) 12,000 to 25,000 kg
GU	=	Geared rigid universal trolley (flat or tapered beam) 6000 kg only
GE	=	Geared rigid trolley (flat beam) 12,000 kg only
GN	=	Geared rigid trolley (tapered beam) 12,000 kg only
RU *	=	Motorized rigid universal trolley (flat or tapered beam) 6000 kg only
RE *	=	**Motorized rigid trolley (flat beam) 12,000 to 25,000 kg**
RN *	=	Motorized rigid trolley (tapered beam) 12,000 to 25,000 kg

Load Chain Lift

3M	=	**3 metres (standard) 10 ft**
XX	=	Specify length

Control

0	=	**No control hoses (= standard)**

Options

A	=	**Standard chain bucket**
B	=	Large chain container
C	=	Extra large chain container
D	=	XXL chain container
L	=	Low temperature design (-20° C DNV)
M	=	Material traceability cert per en 10204 3.1b or load bearing parts
P	=	Marine Paint (150 µ DFT)
QZ	=	Offshore Paint (290 µ DFT), sandblast
T1	=	Spark Resistance (S•COR•E) Package (ATEX Zone 1)
U	=	Emergency stop on joystick remote control
W	=	Witness test, specify type (W1=ABS, W2=DNV, W3=LRS or W4=client witness of load test)

* Add the letter 'L' for low headroom trolley.

* Add the letter 'R' for rack and pinion trolley.

Table 2: Specifications

Hoist Model	Rated Capacity metric tons	Load Chain Falls	Flow		Recommended Pressure @ Rated Load		Nominal Hoist Working Pressure	Chain Load Size	Weight of Chain per meter of lift		Unit Net Weight with Standard 10 ft (3 m) Lift		Minimum Headroom		Maximum Lifting Speed	
			GPM	L/min	PSI	bar	bar	mm	lb	kg	lb	kg	in	mm	ft/min	m/min
LC2H060S	6	1	12.7	48	2,466	170	125	16 x 45	12.5	5.7	275	125	28.2	717	18.4	3.7
LC2H120D	12	2							25.1	11.4	375	170	37.2	945	9.2	1.9
LC2H180T	18	3			2,538	175	145		37.6	17.1	610	277	41.9	1,063	6.1	1.25
LC2H250Q	25	4							50.7	23.0	713	325	45.5	1,156	4.6	0.95

Table 3: Trolley Specifications

Hoist Model	Flow		Travelling Speed		Minimum Headroom		Motor Trolley Hydraulic Pressure		Min/Max Trolley Flange Adjustment	Minimum Curve Radius		Total Weight With Standard Lift	
	GPM	L/min	ft/min	m/min	in	mm	PSI	bar	mm	ft	m	lb	kg
LC2H060S	2.6	10	39	12	28.78	731	2,538	175	100–310	10	3	550	250
LC2H120D					39.17	995			130–310			738	335
LC2H180T					47.05	1195			160–310			1437	652
LC2H250Q					48.82	1240						1543	700

■ Capacity Information

LC2H hoists are designed for lifting with a 5 to 1 minimum safety factor at rated load.

■ Traceability

Load bearing parts are documented to provide traceability. Documentation includes chemical and physical properties of raw material, heat treating, and hardening, tensile and charpy tests as required for the part. Contact factory for documentation.

INSTALLATION

Prior to installing the product, carefully inspect it for possible shipping damage. Products are supplied fully lubricated from the factory. Check oil levels and adjust as necessary before operating product. Refer to "LUBRICATION" section on page 7 for recommended oils and lubrication intervals.

⚠ WARNING

- **Prior to installation refer to Product Safety Information Manual for all sections of Manual.**

⚠ CAUTION

- **Owners and users are advised to examine specific, local or other regulations, including American National Standards Institute and/or OSHA Regulations which may apply to a particular type of use of this product before installing or putting product to use.**

■ Mounting

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

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

If hoist is suspended by a top hook, the supporting member should rest completely within the saddle of the hook and be centered directly above hook shank. Do not use a supporting member that tilts hoist.

■ *Hook Mounted Hoist*

Place hook over mounting structure. Make sure hook latch is engaged.

■ *Trolley Mounted Hoist*

When installing a trolley on a beam, measure beam flange and temporarily install trolley on the hoist to determine exact distribution and arrangement of spacers. Adjust spacers in accordance with trolley manufacturer's literature to provide correct distance between the wheel flange and beam. The number of spacers between trolley side plate and mounting lug on the hoist must be the same on both sides in order to keep hoist centered under I-beam. Remaining spacers must be equally distributed on the outside of the side plates.

⚠ WARNING

- **At least one mounting spacer must be used between the head of each trolley bracket bolt and the trolley bracket and between each trolley bolt nut and the trolley bracket. Failure to do this could cause hoist to fall when used improperly.**

Ensure trolley hanger capscrews or nuts are torqued in accordance with manufacturer's specifications. For installation of hoist and trolley on beam, make certain the side plates are parallel and vertical.

After installation ensure beam stops are in place, operate trolley over entire length of beam with a capacity load suspended 4 to 6 inches (10 to 15 cms) off the floor.

⚠ CAUTION

- **To avoid an unbalanced load which may damage the trolley, the hoist must be centered under the trolley.**

NOTICE

- **Trolley wheels ride on the top of the lower flange of the beam.**

■ Hydraulic System

Refer to Dwg. MHP3136 on page 9.

■ *Hoses*

In order to maintain maximum efficiency of product, select size of hydraulic lines according to maximum volume of oil to be used. If hydraulic lines used are too small, they may cause excessive back pressure, generating heat and causing inefficiency within the hydraulic system. Sizes in Table 4 'Hose Recommendations' on page 4, are to be used as a guide only. If trouble is experienced due to the use of long hoses, it may be necessary to use hoses which are one size larger.

Table 4: Hose Recommendations

Oil Flow @ 3000 PSI max.		Pressure Hoses (inside diameter)	
GPM	L/min	inch	mm
12.7	48		

■ *Fluid*

The most frequent cause of malfunction or failure of hydraulic equipment is presence of contaminants in hydraulic fluid. Reduce contaminants by using clean hydraulic fluid, and changing the fluid before it deteriorates. When hydraulic fluid is changed, also clean out the hydraulic reservoir. At a minimum, the required oil cleanliness level is ISO 18/13 or better. Periodic checks which may be performed by the operator to test hydraulic fluid cleanliness include:

1. Check for a major change in color or noticeable thickening, which are signs of severe deterioration and indicate the need to change the fluid.
2. Check oil for foaming and aeration which may indicate low oil level in hydraulic tank, leaks, faulty hydraulic line connections or moisture build-up in oil.

ISO VG 30, 46 and 68 oils will give good results under normal temperature conditions. The use of an oil having a high viscosity index will minimize cold-start trouble and reduce the length of warm-up periods. A high viscosity index will minimize changes in viscosity with corresponding changes in temperature.

⚠ CAUTION

- **Do not substitute synthetic fluids unless it has been determined that hoist, motor and hydraulic system seals are compatible.**

Use a premium anti-wear (AW) hydraulic fluid in the hydraulic system. The following specifications are intended to serve as a general guide in selecting suitable oils.

Table 5: Recommended Hydraulic Oil

Temperature		Recommended Hydraulic Oil
Fahrenheit	Celsius	
above 32° F	0° C	ISO VG 46 (SSU 230-240 @ 100° F)
0° to 32° F	-17.7° to 0° C	ISO VG 32 (SSU 60-165 @ 100° F)
below 0° F	below -17.7° C	Consult local oil company representative for oil having a maximum viscosity of 7,400 SSU's at the minimum temperature encountered.

Filters

Filters should be equipped with dirty filter indicators, which should be checked daily. Replace filters if indicators show filter is dirty. It is also recommended that filters be changed if hydraulic oil is changed or a major component (pump, valve, motor, etc.) is repaired or replaced.

When product is installed with its own hydraulic system or when there is no filter in existing circuit, a partial flow microfilter should be installed between control valve and reservoir. This filter should be rated at Beta 200=6µm. Filters must include an integral 345 kPa/3.45 bar (50 psi) bypass check valve which will open when filter element is filled to 80% capacity.

Refer to 'Filter Maintenance' in "MAINTENANCE" section for servicing information.

Connections

When repairing or servicing any hydraulic lines or fittings in the system, always flush each line and connection of all foreign contaminants before making the final connection. Always cap or plug open connections or lines. Verify port connections match motor and installation information provided.

Pump

Ensure pump used with motor is capable of producing pressure and volume as specified for the product.

Controls

Ensure control valve moves smoothly in both directions before operating product with full load.

Motor

For optimum performance and maximum durability of parts, ensure hydraulic supply does not exceed recommended pressures and flows. When feasible motor should be installed as near as possible to the pump. Refer to Table 2 'Specifications' on page 4. Motor case drain lines must be ported to reservoir and must not exceed 207 kPa/2 bar (30 psi).

Reduction Gear

Product is shipped with petroleum based cooling oil. Prior to operation, check oil level. Refer to "LUBRICATION" section on page 7.

Chain Container

Refer to Dwg. MHP2658 and MHP3059 in Product Parts Information Manual.

Check the chain container size to make sure the length of the load chain is within the capacity of the chain container. Replace with a larger chain container if required.

⚠ WARNING

- **Allow chain to pile naturally in the chain container. Load chain that does not pile naturally can chafe excessively, leading to sparks.**

NOTICE

- **Make certain to adjust the balance chain so that the chain container does not contact the load chain.**

Attaching Limit Stop

Refer to "MAINTENANCE" section in Product Maintenance Information Manual.

1. On hoists without a chain bucket, slide buffer and limit stop washer onto chain.
2. Install limit stop as described under "Load Chain Replacement".
3. Run hoist slowly in the both directions to verify limit stops activate and hoist ceases to operate.

Trolley Rack Drive (optional)

Install the trolley rack drive onto the support beam. Installation should only be done by authorized service personnel.

Pre-Installation Checks

Refer to Dwg. MHP2990 on page 10, **A**. Rack; **B**. Pinion; **C**. Maintain clearance between rack and pinion teeth of 0.16 inch (minimum) to 0.20 inch (maximum) [4 to 5 mm] to prevent pinion binding during operation. Measure gap between the outside diameter of drive pinion and root of rack segment.

Before welding the rack segments onto the trolley beam, install the rack segments on the bottom of the beam lower flange and clamp in place. Mount the trolley on the lower beam flange. Measure the gap between the outside diameter of the drive pinion and root of rack segment teeth. As shown in Dwg. MHP2990, the trolley drive pinion and rack teeth must have a 0.16 to 0.20 inch (4 to 5 mm) clearance.

To Adjust Clearance

Refer to Dwg. MHP2991on page 10, **A**. Mounting Capscrew;**B**. Jam Nut; **C**. Adjustment Screw.

There is an adjustment screw located below the reducer adapter.

1. Loosen capscrews attaching trolley drive to sideplate.
2. Loosen jam nut and rotate adjustment screw to achieve clearance as shown inDwg. MHP2990 on page 10.
3. Tighten jam nut and mounting screws.

If a larger adjustment is required:
1. Add shims between the rack segment and beam to decrease distance.
2. Remove material from rack segment to increase distance.

Installing Rack Segments Onto Beam

Refer to Dwg. MHP1178 on page 10, **A**. Hoist Trolley Drive Assembly mounted this side; **B**. Lower Beam Flange; **C**. Rack Segment; **D**. Fillet Weld: Allow 1/4 inch (6.5 mm) clearance between edge of lower flange and rack segment. Apply weld to both sides of rack segment. Refer to Dwg. MHP3016 on page 10, **A**. Stagger welds along rack; **B**. (Not to scale); **C** . Check clearance between racks; **D**. Use the rack guide for correct track positioning.

Rack segments should be installed on the outside edge of the lower flange of the trolley beam. Allow 1/4 inch (6.5 mm) clearance between the edge of the lower flange and rack segment for fillet weld. The rack segments should be clamped tight against the lower flange so that there is no sagging. Sagging of the rack could cause the drive pinion to bind as it traverses along the runway beam.

Racks are provided in segments. These segments should be tack welded (refer to Dwg. MHP3016 on page 10) in place and the trolley traversed the entire length. During this movement observe for any high or low spots and correct. Also check each segment connection for drive tooth contact and correct as necessary. When all clearances are achieved, weld both sides of the rack to the beam flange to prevent corrosion between the rack segment and beam.

OPERATION

It is recommended that the user and owner check all appropriate and applicable regulations before placing this product into use. Refer to Product Safety Information Manual.

The product operator must be carefully instructed in his or her duties and must understand the operation of the product, including a study of the manufacturer's literature. The operator must thoroughly understand proper methods of hitching loads and should have a good attitude regarding safety. It is the operator's responsibility to refuse to operate the product under unsafe conditions.

⚠ WARNING

- **The product is not designed or suitable for lifting, lowering or moving people.**
- **Never lift loads over people.**
- **The hook latch is intended to retain loose slings or devices under slack conditions. Use caution to prevent the latch from supporting any of the load.**
- **Refer to Product Safety Information Manual before operating any product.**

Hydraulic System

Efficient operation of the product requires attention to hydraulic oil system. The most important elements to ensure proper operation of the hydraulic system are:

1. **Oil Temperature.** The presence of hot fluid in a hydraulic system is a primary cause of poor operation, component failure and system downtime. The fluid used in any hydraulic system is formulated for operation within a temperature range of 0° to 60° C (32° to 140° F). If the temperature is frequently exceeded component and system operation will be degraded. Under continuous operating conditions the temperature of the oil at any given point in the hydraulic system should not be allowed to exceed 82° C (180° F).
2. **Oil Cleanliness.** Hydraulic system cleanliness is extremely important to ensure safe, continued operation of components. Dirty or contaminated hydraulic fluid may cause components to break down, operate erratically or damage valuable equipment.

■ Hoist Controls

Hoist controls are customer supplied.

■ Initial Hoist Operating Checks

Hoists are tested for proper operation prior to leaving the factory. Before the hoist is placed into service the following initial operating checks should be performed.

1. After installation, ensure the clevis or hook is centered below the beam.
2. Make sure the hydraulic motor and case drain line is filled with the recommended hydraulic fluid. Internal motor leakage at low operating pressures may not be sufficient to provide start-up lubrication.
3. Verify oil levels are in accordance with recommendations in "LUBRICATION" section on page 7.
4. When first operating the hoist it is recommended that the hoist be driven slowly in both directions for a few minutes.
5. Check for oil leaks in the supply hose and fittings to controls, and from controls to hoist.
6. Check that trolley and clevis or hook movement is the same direction as arrows or information on the controls.
7. If hoist is trolley mounted operate the trolley along the entire length of the beam.
8. Using a light load on the hoist check operation of hoist and trolley brakes. Refer to Product Maintenance Information manual for brake adjustment or repair.
9. Check hoist and trolley performance when raising, moving and lowering test load(s). Hoist and trolley must operate smoothly and at rated specifications prior to being placed in service.
10. Check operation of limit switches, emergency stops and all safety devices when equipped.

■ Storing the Hoist

1. Always store hoist in a no load condition.
2. Wipe off all dirt and water.
3. Oil the chain, hook pins and hook latch.
4. Place in a dry location.
5. Plug hoist air inlet port.
6. Before returning hoist to service, follow instructions for "Hoists Not In Regular Use". Refer to the "INSPECTION" section on page 6.

INSPECTION

Inspection information is based in part on American Society of Mechanical Engineers Safety Codes (ASME B30.16).

⚠ WARNING

- **All new or repaired equipment should be inspected and tested by Ingersoll Rand trained technicians to ensure safe operation at rated specifications before placing equipment in service.**
- **Never use a hoist that inspection indicates is damaged.**

Frequent and periodic inspections should be performed on equipment in regular service. Frequent inspections are visual examinations performed by operators or **Ingersoll Rand** trained inspectors and include observations made during routine equipment operation. Periodic inspections are thorough inspections conducted by **Ingersoll Rand** trained technicians. ASME B30.16 states inspection intervals depend upon the nature of the critical components of the equipment and the severity of usage. Refer to 'Inspection Classifications' chart and 'Maintenance Intervals' chart in Product Maintenance Information Manual for recommended maintenance intervals. Careful inspection on a regular basis will reveal potentially dangerous conditions while still in the early stages, allowing corrective action to be taken before the condition becomes dangerous.

Deficiencies revealed through inspection, or noted during operation, must be reported to designated personnel to ensure corrective action is taken. A determination as to whether a condition constitutes a safety hazard(s) must be decided, and the correction of noted safety hazard(s) accomplished and documented by written report before placing the equipment in service.

■ Frequent Inspection

On equipment in continuous service, a 'Daily Inspection' should be made by the operator at the beginning of each shift and a 'Quarterly Inspection' (90 days) should be conducted during regular service for any damage or evidence of malfunction.

■ *Daily Inspection*

Complete inspections prior to start of daily tasks. Conduct visual inspections during regular operation for indications of damage or evidence of malfunction (such as abnormal noises).

1. **Surrounding Area.** Visually check hoist for oil leaks. Do not operate hoist if leaking oil is found. Ensure surrounding area has no slippery surfaces and is obstruction free.
2. **Hoses and Fittings.** Visually inspect for damage, leaks, and loose connections. Repair all leaks or damage and tighten loose connections prior to starting daily tasks.
3. **Hoist.** Check for visual signs or abnormal noises (grinding, etc.) which could indicate a potential problem. Make sure all controls function properly. Check chain feed through hoist and bottom block. If chain binds, jumps, is excessively noisy or "clicks," clean and lubricate chain. If problem persists, replace chain. Do not operate hoist until all problems have been corrected.
4. **Hydraulic System.** Check hydraulic lines, fittings, valves and other components for deterioration, leakage or wear. Tighten, repair or replace as necessary. Check reservoir sight gauge for proper hydraulic oil level. Check dirt alarms at both pressure and return line filters for visual indication of dirty filter.
5. **Controls.** Controls are customer supplied, however, during operation of the hoist, verify that response of controls is quick and smooth. Ensure controls return to neutral when released. If hoist responds slowly or movement is unsatisfactory, do not operate the hoist under load conditions until all problems have been corrected.
6. **Brake.** During operation test brake. Brake must be capable of supporting load without slipping. Brake must release when control returns to neutral. If brake does not hold load or does not release properly when pendant is not being used, brake must be further inspected. Refer to Product Maintenance Information Manual.

⚠ WARNING

- **Worn or improperly functioning brakes may cause excessive heat build up and sparks.**

7. **Hooks.** Check for wear or damage, increased throat width, bent shank or twisting of the hook. Replace if hook latch snaps past tip of hook. Check hooks swivel freely. Replace hooks which exceed the throat opening. Refer to Dwg. MHP0040 on page 9, **A.** Throat Width. Replace hooks which exceed a 10° twist. Refer to Dwg. MHP0111 on page 9, **A.** Twisted DO NOT USE; **B.** Normal Can Be Used. If hook latch snaps past tip of hook, the hook is sprung and must be replaced. Refer to the latest edition of ASME B30.10 'HOOKS' for additional information. Check hook support bearings for lubrication or damage. Ensure that they swivel easily and smoothly. Refer to Product Maintenance Information Manual.
8. **Hook Latch.** Make sure hook latch is present and not damaged. Replace if necessary.

⚠ CAUTION

- **Do not use hoist if hook latch is missing or damaged.**

9. **Load Chain.** Examine each of the links for bending, cracks in weld areas or shoulders, traverse nicks and gouges, weld splatter, corrosion pits, striation (minute parallel lines) and chain wear, including bearing surfaces between chain links. Refer to Dwg. MHP0102 on page 9, **A.** Diameter; **B.** Welded Area; **C.** Wear in these areas. Visually inspect as much of the chain as is possible. Inspect for wear, damage and corrosion. If damage is evident, do not operate hoist until the damage has been reviewed and inspected further by an **Ingersoll Rand** trained inspector. Refer to Product Maintenance Information Manual.

NOTICE

- **The full extent of chain wear cannot be determined by visual inspection. At any indication of wear inspect chain in accordance with instructions in 'Periodic Inspection'. Refer to Product Maintenance Information Manual.**

10. **Load Chain Reeving.** Ensure welds on standing links are away from load sheave. Reinstall chain if necessary. Refer to Product Maintenance Information Manual. Make sure chain is not capsized, twisted or kinked. Adjust as required. Refer to Dwg. MHP0043 in Product Safety Information Manual.
11. **Lubrication.** Refer to "LUBRICATION" on page 7 for recommended procedures and lubricants.
12. **Labels and Tags:** check for presence and legibility of labels. Refer to Product Parts Information Manual for correct labels and placement. Replace if damaged or missing.

■ Load Chain Reports

Records should be maintained documenting condition of load chain removed from service as part of a long-range chain inspection program. Accurate records will establish a relationship between visual observations noted during 'Frequent Inspections' and actual condition of load chain as determined by 'Periodic Inspections'. Refer to Product Maintenance Information Manual for chain specifications.

■ Hoists Not in Regular Use

1. Equipment which has been idle for a period of one month or more, but less than six months, shall be given an inspection conforming to the requirements of 'Frequent Inspection' on page 6 before being placed in service.
2. Equipment which has been idle for a period of over six months shall be given a complete inspection conforming with requirements of 'Periodic Inspection' before being placed in service. Refer to Product Maintenance Information Manual.
3. Standby equipment shall be inspected at least semiannually in accordance with requirements of 'Frequent Inspection'.

LUBRICATION

To ensure continued satisfactory operation of hoist, all points requiring lubrication must be serviced with correct lubricant at proper time interval as indicated for each assembly.

Refer to 'Maintenance Interval' chart in Product Maintenance Information Manual for recommended lubrication intervals. Use only those lubricants recommended. Other lubricants may affect product performance. Approval for use of other lubricants must be obtained from your **Ingersoll Rand** distributor. Failure to observe this precaution may result in damage to winch and/or its associated components.

INTERVAL	LUBRICATION CHECKS
Weekly	Lubricate load chain.
Monthly	Inspect and clean or replace oil filter.
	Lubricate components supplied by grease fittings.
Quarterly	Check reduction gear oil level.
Yearly	Change reduction gear oil.

■ General Lubrication

⚠ WARNING

- **Pneumatic Hoists use oil to prevent excessive heat build up and to prevent wear that could cause sparks. Oil levels must be properly maintained.**

Always collect lubricants in suitable containers and dispose of in an environmentally safe manner.

■ Reduction Gear Assembly

Refer to Dwg. MHP3135 on page 9, **A.** Fill Plug; **B.** Drain Plug; **C.** Oil Level Plug; **D.** Motor Side.

Replace the oil in the reduction housing once every year. If the hoist is used at a normal frequency, the oil in the reduction housing is suitable for one year's operation without being changed. However, when the hoist is used at a high frequency, the oil may need to be changed more often.

To ensure correct performance, highest efficiency and long life, it is essential that the lubricating oil be maintained at the correct level. The recommended grade of oil must be used at all times since the use of unsuitable oil may result in excessive temperature rise, loss of efficiency and possible damage to the gears.

NOTICE

- **Only use synthetic oil.**

Table 6: Reduction Gear Assembly Oil Type

Models	Capacity		Oil
	oz	litres	
LC2H060S	10.14	0.30	Mobil SHC629 ISO VG 150
LC2H120D	10.14	0.30	
LC2H180T			
LC2H250Q			

To replace oil remove fill plug and add oil to the reduction gear assembly, replace plug. Refer to Product Parts Information Manual.

■ Seals and Bearings

If hoist is disassembled, clean all parts thoroughly and coat bearings and seals with clean grease. Use sufficient grease to provide a good protective coat.

■ Hook Assemblies

Hoist top and bottom hooks are supported by thrust bearings. These bearings must be packed with **Ingersoll Rand** No. 68 Grease or a standard No. 2 multi-purpose grease at regular intervals. Neglect of proper lubrication can lead to bearing failure.

1. Lubricate hook and latch pivot points. Refer to Dwg. MHP1300 on page 9, **A.** Hook latch pivot point. Hook and latch should swivel/pivot freely.
2. Use **Ingersoll Rand** LUBRI-LINK-GREEN® or ISO VG 220 (SAE 50W) lubricant.
3. Lubricate hook bearings by applying several shots of grease from a grease gun to the grease fittings provided on the hook blocks.

■ Trolley (optional feature)

Grease wheel bearings and wheel drive gear with **Ingersoll Rand** No. 68 Grease or a standard No. 2 multi-purpose grease periodically. Refer to manufacturer's literature for additional lubrication information.

■ Load Chain

⚠ WARNING

- **Failure to maintain a clean and well-lubricated load chain will result in rapid load chain wear that can lead to chain failure which can cause severe injury, death or substantial property damage.**

1. Lubricate each link of load chain weekly, or more frequently, depending on severity of service.
2. In corrosive environments, lubricate more frequently than normal.
3. Lubricate each link of the load chain and apply new lubricant over existing layer.
4. Lubricate hook and hook latch pivot points.
5. If required, clean chain with acid free solvent to remove rust or abrasive dust buildup and lubricate chain.
6. Use **Ingersoll Rand** LUBRI-LINK-GREEN® or an ISO VG 220 to 320 (SAE 50W to 90 EP) oil.

Table 7: Ingersoll Rand Lubricants

Where Used	Size	Part Number
Hook Assemblies	16 oz	Lubri-Link Green®
	5 Gal	LLG-5
Upper and Lower Hook Thrust bearings, Trolley Wheel Bearings and Gear	8 LB	68 8 LB
Air Line Lubricator	1 Qt	29665
Load Chain	1 pt	50P
	1 Gal	50G

WARRANTY

Ingersoll Rand Limited Warranty
Ingersoll Rand Company ("**IR**") warrants to the original user its material handling products ("Products") to be free of defects in material and workmanship for a period of one year from the date of purchase. **IR** will, at its option either (1) repair, without cost, any Product found to be defective, including parts and labor charges, or (2) replace such Products or refund the purchase price, less a reasonable allowance for depreciation, in exchange for the Product. Repairs or replacements are warranted for the remainder of the original warranty.

If any Product proves defective within its original one-year warranty period, it should be returned to any Authorized Product Service Distributor, transportation prepaid with proof of purchase or warranty card. This warranty does not apply to Products which **IR** has determined to have been misused or abused, improperly maintained by the user, or where the malfunction or defect can be attributed to the use of non-genuine **IR** repair parts.

IR MAKES NO OTHER WARRANTY, CONDITION OR REPRESENTATION OF ANY KIND WHATSOEVER, EXPRESSED OR IMPLIED, STATUTORY OR OTHERWISE, AND ALL IMPLIED WARRANTIES AND CONDITIONS RELATING TO MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE HEREBY DISCLAIMED.

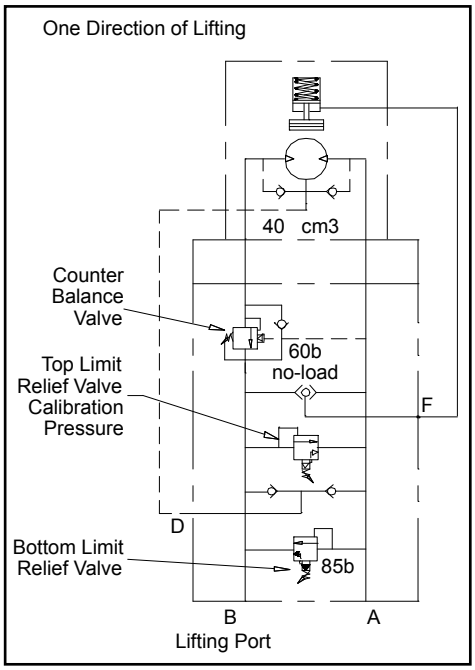
IR's maximum liability is limited to the purchase price of the Product and in no event shall **IR** be liable for any consequential, indirect incidental or special damages of any nature arising from the sale or use of the Product, whether in contract, tort or otherwise.

Note: Some states do not allow limitations on incidental or consequential damages, so that the above limitations may not apply to you. This warranty gives you specific legal rights and you may also have other rights which may vary from state to state.

Fulcrum series electric winch, product code 405-002: 2 year warranty.

Winch and Hoist Solutions Extended Warranty This option provides a price for extending the **Ingersoll Rand** Winch and Hoist Solutions Warranty from the standard one (1) year to two (2) years from the date of purchase. All other provisions of the standard warranty to remain in effect.

For additional information or quotations for warranties falling outside of these parameters, please contact your Client Services Representative with your requirements.



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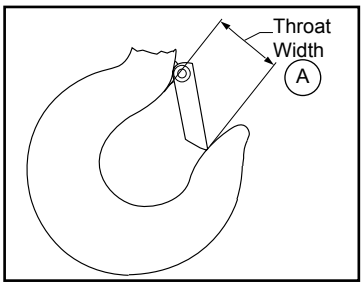

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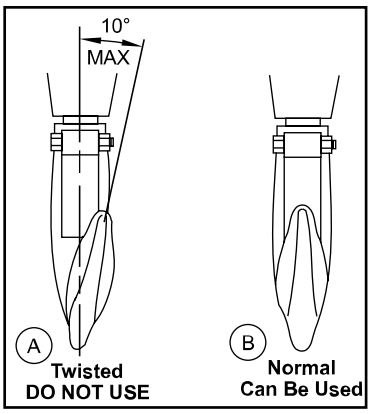

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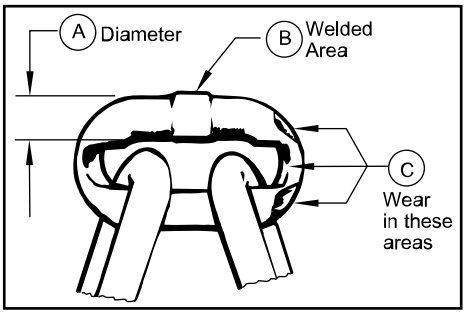

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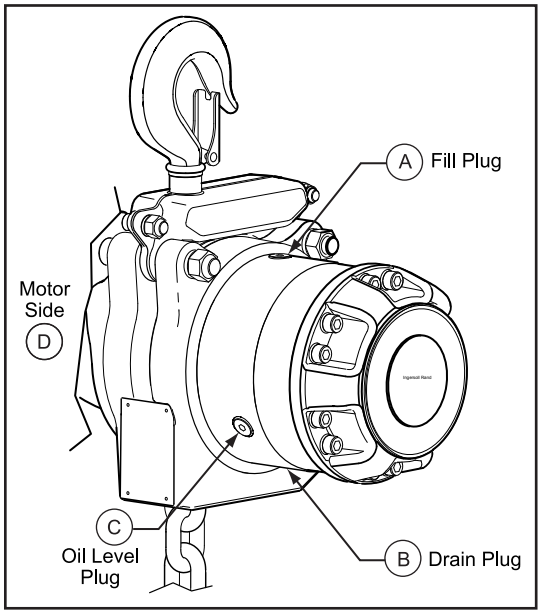

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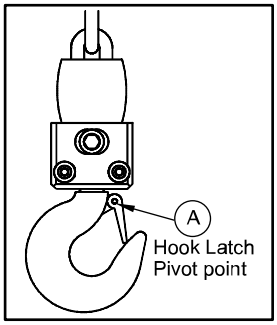

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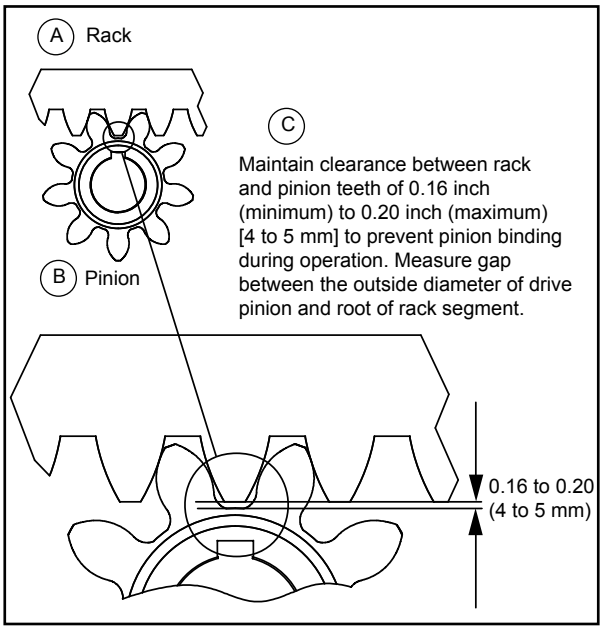

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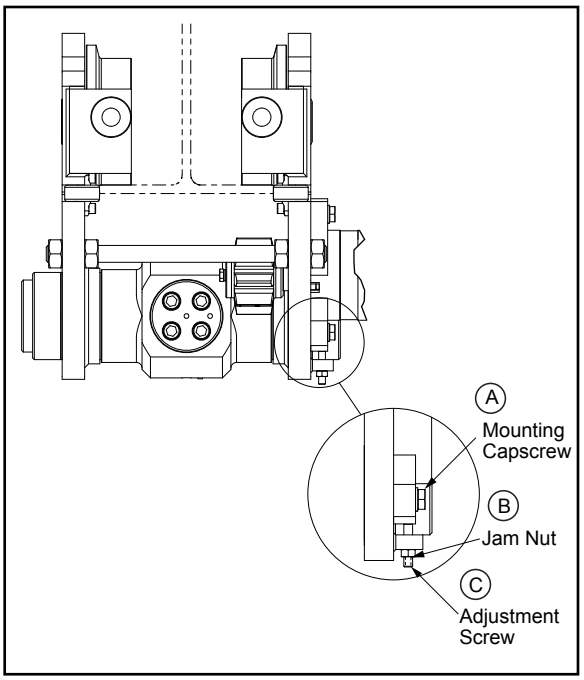

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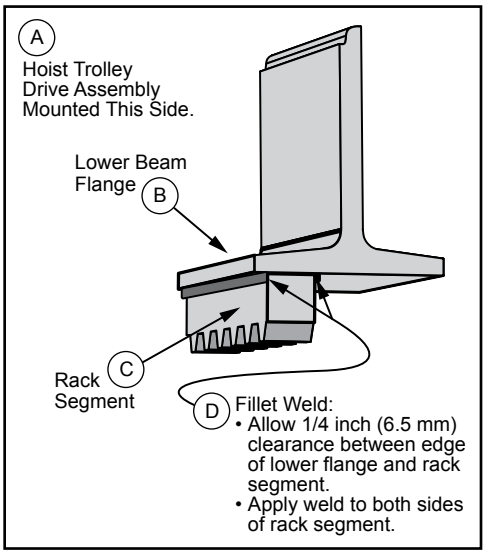

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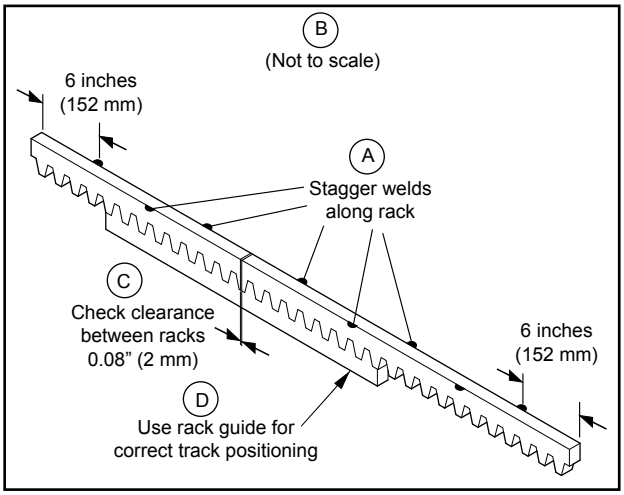

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SERVICE NOTES

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