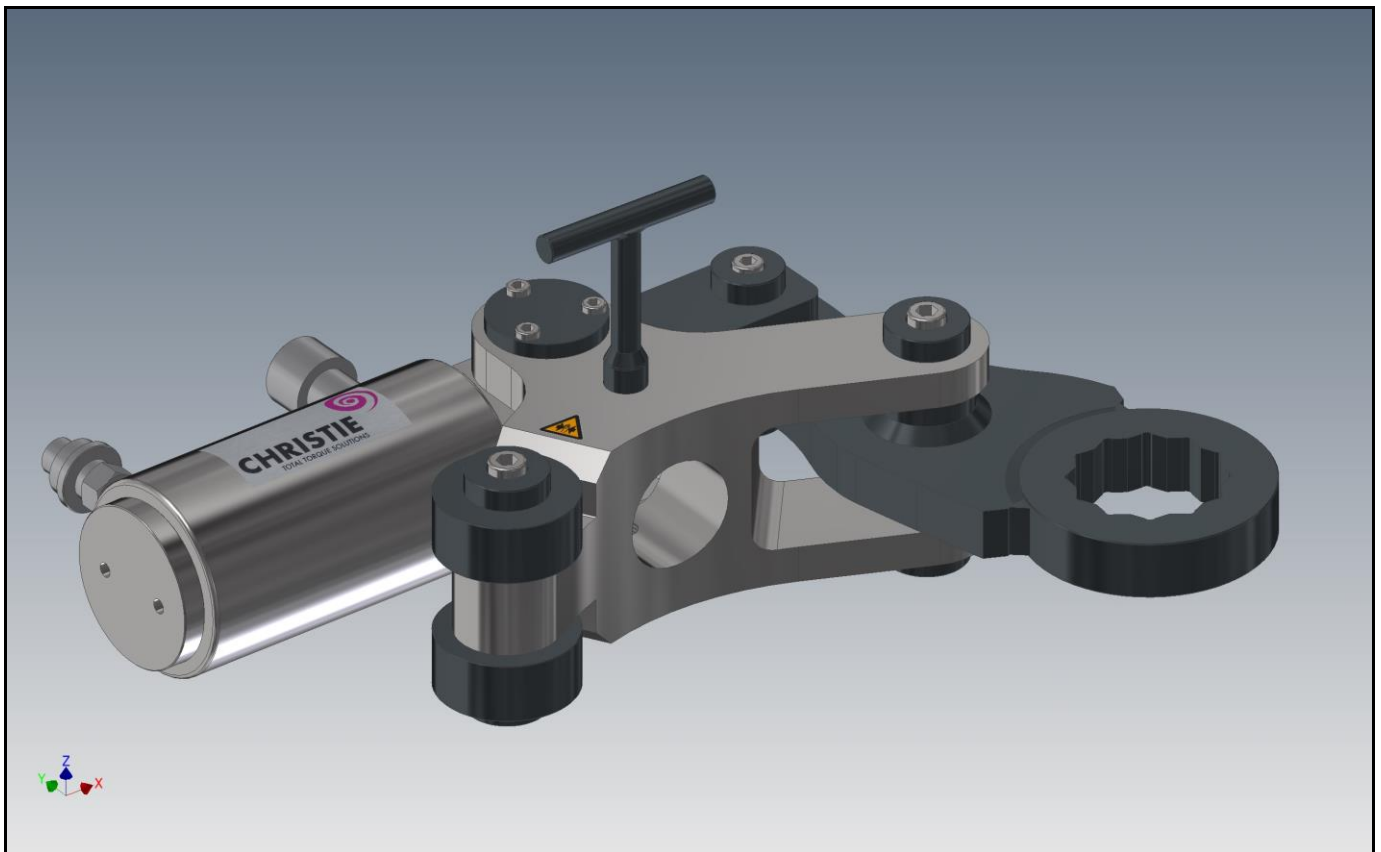




LOW HEIGHT HYDRAULIC TOOLING USER GUIDE



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INTRODUCTION

The Low Height (LH) Hydraulic wrench is a direct fitting hydraulic actuated power tool designed to accurately apply torque to tighten and remove threaded fasteners. The low height system is ideal for flange work with limited height access.

IMPORTANT **Before operating this tooling ensure the operating and safety instructions are read and understood. Read in conjunction with the appropriate power pack operating instructions. If breakdown or malfunction occurs repair should only be attempted by trained personnel, if in doubt contact W. Christie (Industrial) Limited immediately.**

The reaction wheel of the LH wrench sits firmly on the rim of the flange. The static / ratchet lever arm can be quickly changed for other hexagon sizes.

The unit can be adapted to suit many other specific bolting applications. This tool offers unique solutions with unchallenged access to those awkward bolts.

The LH wrench must always be operated with the following:-

- Double Acting Hydraulic Power Pack capable of 10,000 psi (690 bar) with low pressure return
- Hydraulic Mineral Oil (None Synthetic, Grade 32 or equivalent)
- Hydraulic Hoses (Working Pressure 10,000 psi, 6mm Bore)
- Stable torque reaction

If the intended use is other than for nuts, bolts and threaded fasteners please contact W. Christie (Industrial) Limited for guidance.

It is the responsibility of the user to consider associated site risks before introducing the equipment into the work-place.

TRAINING REQUIREMENTS

Training on the correct use of the LH hydraulic tooling is available. Please contact W. Christie (Industrial) Limited for more information.

GENERAL SAFETY

The improper use of the LH hydraulic tooling is unsafe and may result in personal injury. It is important that operators have read, understood and comply with all instructions in this user guide.

Operators must be equipped with the following personal protective equipment (PPE):

- Eye Protection (Safety Glasses / Goggles)
- Safety Footwear (Steel Toe Cap Boots)
- Heavy Gloves

To prevent entanglement with moving parts operators must not wear loose clothing, ties, jewellery etc... Long hair must be tied back.

Always keep hands, fingers and body parts clear of the reaction wheel at all times. Trapping in this area can result in serious personal injury.

All equipment and ancillary products should be inspected for damage and irregularities prior to use. If in doubt **do not use**.

LH HYDRAULIC TOOLING MODELS COVERED BY MANUAL

Model	Weight (kg)	Maximum A/F		Torque Capacity		psi
		Inch	mm	lbf.ft	Nm	
LH20K	6.5	2”	51	2,000	2,720	10,000
LH30K	9.0	2-3/4”	70	5,400	7,400	10,000
LH60K	14.0	3-1/2”	90	10,900	14,800	10,000
LH60KX	21.0	3-1/2”	90	10,900	14,800	10,000
LH100K	26.0	4-5/8”	120	18,000	24,000	10,000

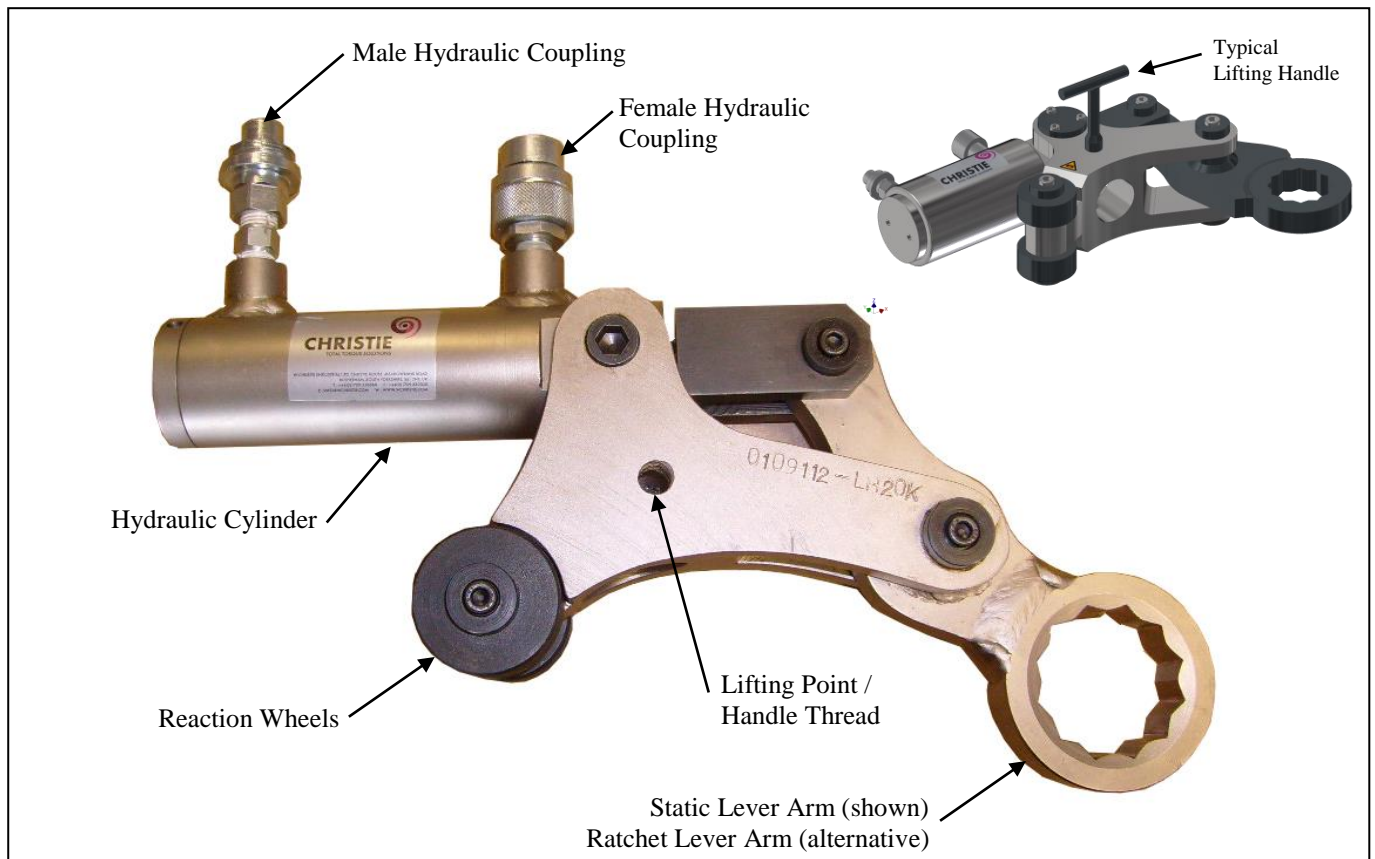
LH tools are available with either static or ratchet lever arms.

ACCESSORIES AVAILABLE TO BUY OR HIRE

The following accessories are available upon request and can be custom made to suit requirements. Please contact W. Christie (Industrial) Limited for more information:-

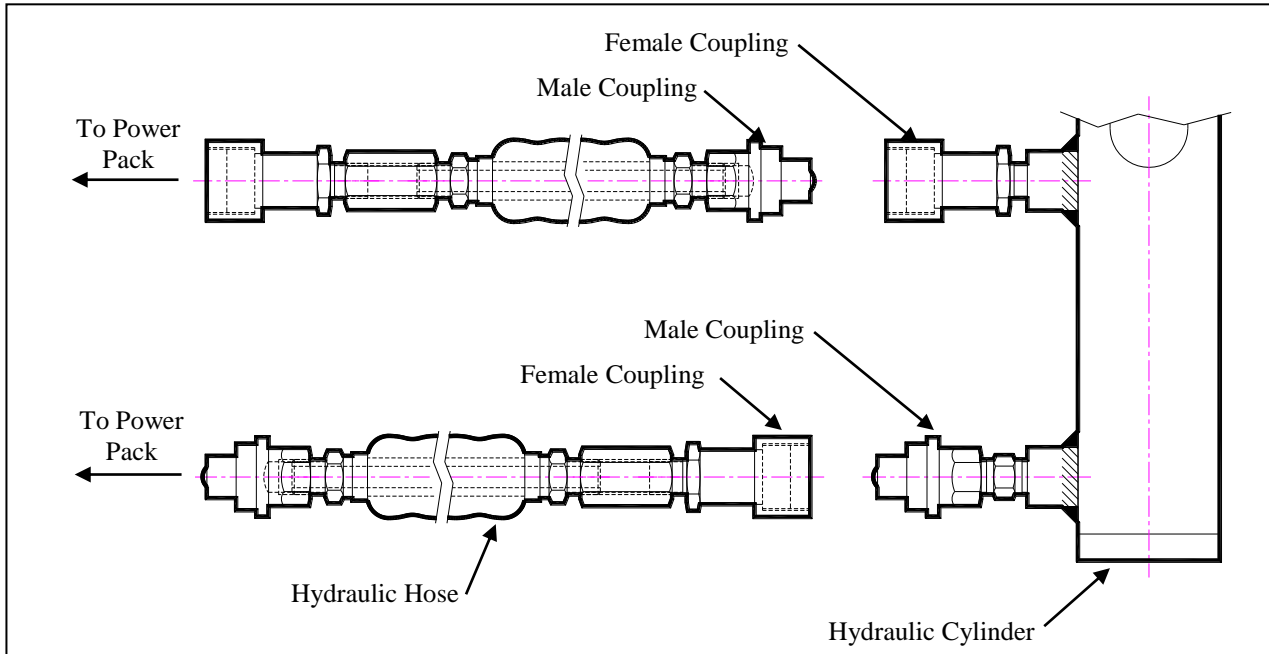
- Alternative static lever arm sizes available.
- Alternative Ratchet lever arm sizes available.

LH HYDRAULIC TOOL FEATURES



ASSEMBLY

1. Before connection ensure the following:-
 - (i) The hexagon or bi-hexagon ratchet or static lever arm fits comfortably on the application i.e. no restrictions to the fastening operation.
 - (ii) Hydraulic couplings and hoses are compatible, clean and in good condition.
2. Connect the power packs hoses to the hydraulic couplings on the LH tool ensuring the screw collar on each female coupling screws fully up to the shoulder on the male coupling.



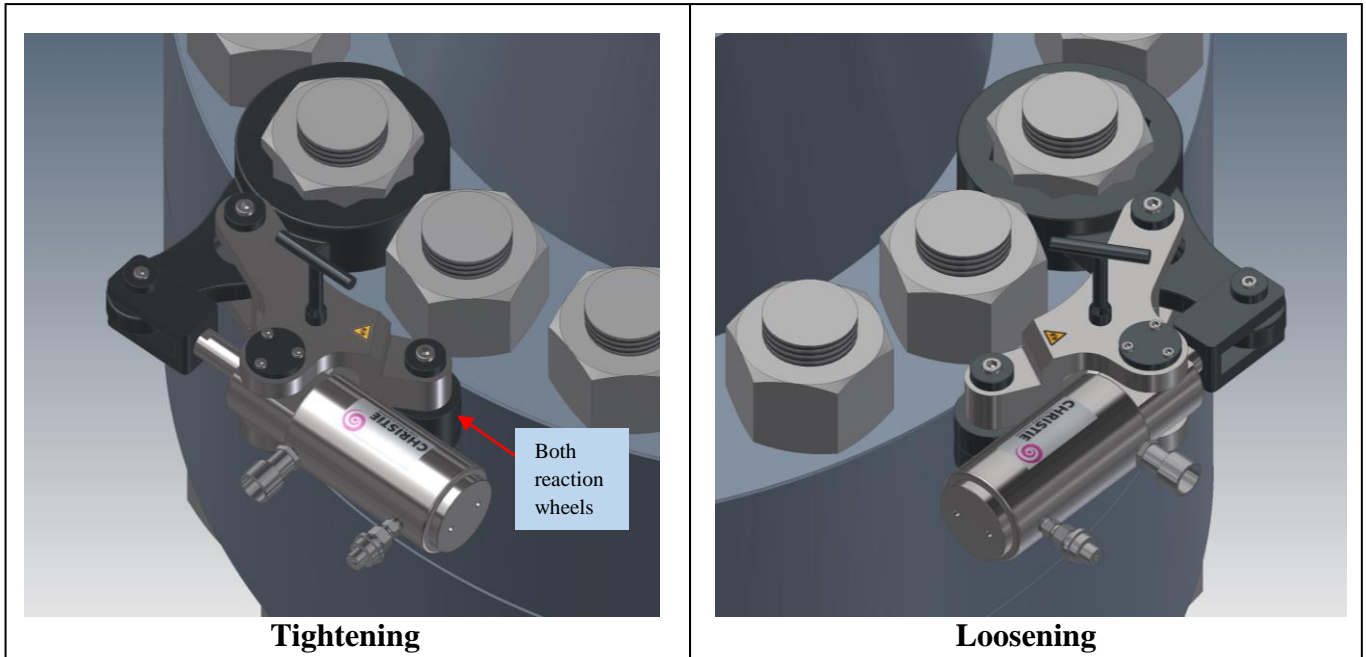
The LH tool and power pack are connected by a 10,000 psi (700 bar) operating pressure, twin-line hose assembly. Each end of the hose will have one male and one female connector to ensure proper interconnection between the pump and wrench.

TORQUE REACTION

When the LH tool is in operation the reaction point rotates in the opposite direction to the output drive and under normal operation rests against the bolting flange circumference.

WARNING Always keep hands, fingers and body parts clear of the reaction wheel at all times. Trapping in this area can result in serious personal injury.

TRAPPING Keep hands, fingers and body parts clear of all moving parts, do not operate unless hands are clear of all trapping hazards.



The images above depict the correct reaction of the LH hydraulic tooling.

To improve the reaction area in contact, both reaction wheels can be positioned on the same side (As shown above)

Do not use the LH tool without the reaction wheels fitted.

SETTING THE TORQUE OUTPUT

1. Determine the required hydraulic pressure for the desired torque (using the calibration graph for the tool)
2. With the LH tooling free of its application extend the piston rod fully.
3. When full stroke is achieved, maintain the forward pressure and adjust to required setting by the relieve valve on the power pack, pressure increase or decrease will be indicated on the power pack gauge.

OPERATING – USING RATCHET HEADS

1. Ensure the piston rod is fully retracted.
2. Place the ratchet lever arm over the nut to be tightened / loosened.
3. Ensure the rollers are as near to the reaction point as possible.
4. Extend the cylinder. The lever arm will move forward turning the nut. The rollers will follow around the reaction.
5. Retract the cylinder. This will return the reaction rollers to the start position.
6. The tool is now ready for the next forward stroke.
7. Repeat stages 1 to 6 until the tool stalls in mid forward stroke.
8. Full torque has now been achieved

WARNING: Keep hands, fingers and body parts clear of all moving parts, do not operate unless hands are clear of all trapping hazards.

OPERATING – USING STATIC HEADS

1. Ensure the piston rod is fully retracted.
2. Place the static lever arm over the nut to be tightened / loosened.
3. Ensure the rollers are as near to the reaction point as possible.
4. Extend the cylinder. The lever arm will move forward turning the nut. The rollers will follow around the reaction.
5. Retract the cylinder. This will allow the reaction rollers to detach themselves from the reaction.
6. Remove the tool and relocate for another forward stroke.
7. Repeat stages 1 to 6 until the tool stalls in mid forward stroke.
8. Full torque has now been achieved

WARNING: Keep hands, fingers and body parts clear of all moving parts, do not operate unless hands are clear of all trapping hazards.

TROUBLE SHOOTING GUIDE

TROUBLE	PROBABLE CAUSE	SOLUTION
Piston will not advance or retract	Couplers are not securely attached to the tool or pump	Check the coupler connections and make certain they are connected
	Coupler is defective	Replace the defective Coupler
	Defective remote control unit	Replace the button and/or control pendant
	Dirt in the direction-control valve or the pump unit	Disassemble the pump and clean the direction-control valve
Piston will not retract	Hose connections reversed	Make certain the advance on the pump is connected to the advance on the tool and retract on the pump is connected to the retract on the tool
	Retract hose not connected	Connect the retract hose securely
	Retract pin and/or spring broken	Replace the broken pin and/or spring
Cylinder will not build up pressure	Piston Seal and/or End Plug Seal leaking	Replace any defective o-ring
	Coupler is defective	Replace any defective Coupler
Pump will not build up pressure	Defective relief valve	Inspect, adjust or replace the relief valve
	Electric power source is too low	Make certain the amperage, voltage and any extension cord size comply with the pump manual requirements
	Defective Gauge	Replace the Gauge
	Low oil level	Check and fill the pump reservoir
	Clogged filter	Inspect, clean and/or replace the pump filter



E.C. DECLARATION OF CONFORMITY

MODELS COVERED: LH20K, LH30K, LH60K, LH60KX, LH100K

DESCRIPTION: Low Height Hydraulic Tooling

We hereby declare that the following machinery complies with the essential health and safety requirements of the European Machinery Directive 2006/42/EC published on the 9th June 2006

W Christie (Industrial) Ltd, Meadowbank Road, Rotherham S61 2NF, United Kingdom.

This machinery has been designed and manufactured in accordance with the following transposed harmonised European Standard:-

BS EN ISO 12100-2:2003 Safety of Machinery – Technical Principles

SIGNED: 

NAME: R. G. Askham

POSITION: Senior Applications Engineer

On behalf of W Christie (Industrial) Ltd

FOR MORE INFORMATION PLEASE CONTACT:-



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