

OPERATOR INSTRUCTION MANUAL

HLW18T, HLW18TC

HYDRAULIC LIFTING WEDGES

INDEX

SECTION	CONTENTS	PAGE NO.
1	INTRODUCTION	1
2	SAFETY INFORMATION	2-3
3	TECHNICAL DATA	4
4	HLW18T HYDRAULIC LIFTING WEDGE	5
	4.1 KIT COMPONENTS/KIT OPTIONS	5
	4.2 HOW THE HLW18T WORKS	6
	4.3 STANDARD INSTALLATION AND OPERATION	7-8
	4.4 USING THE STEPPED BLOCK ACCESSORY	9
	4.5 EXAMINATION, MAINTENANCE AND STORAGE	10
	4.6 PARTS LISTS	11
	4.7 WEIGHTS AND DIMENSIONS	12
	4.8 TROUBLESHOOTING	13-14
5	HLW18TC INTEGRAL HYDRAULIC LIFTING WEDGE	15
	5.1 KIT COMPONENTS	15
	5.2 HOW THE HLW18TC WORKS	16
	5.3 STANDARD INSTALLATION AND OPERATION	17-18
	5.4 USING THE STEPPED BLOCK ACCESSORY	19
	5.5 EXAMINATION, MAINTENANCE AND STORAGE	20
	5.6 PARTS LISTS	21-22
	5.7 WEIGHTS AND DIMENSIONS	23
	5.8 TROUBLESHOOTING	24

1. INTRODUCTION

The HLW18T/TC Hydraulic Lifting Wedge is an aid for assisting with the lifting and installation of plant and heavy equipment.

- **Access gap required:** 9.5 mm (0.37")
- **Lifting force:** 10,000 psi (700 bar) = 18 T (180 kN)

2. SAFETY INFORMATION

The operator MUST read this manual prior to using the tools.

Failure to comply with the following cautions and warnings could cause equipment damage and personal injury; read the manual fully!

Read all the following instructions, warnings and cautions carefully. Follow all safety precautions to avoid personal injury or property damage during system operation.

We cannot be responsible for damage or injury resulting from unsafe product use, lack of maintenance or incorrect product and/or system operation. To protect your warranty, use only good quality hydraulic oil of the grade 15cSt.

Only people competent in the use of hydraulic equipment should use these tools.

In all installations the site safety requirements must be adhered to. ALSO the safety of the operator, and when present, any assisting personnel, is of paramount importance along with the safety of others including, when present, the general public.

These instructions are only to cover the safe operation of THE HLW18T/TC HYDRAULIC LIFTING WEDGE during normal maintenance/installation operations.
All other safety aspects must be controlled by the operation supervisor.

A **CAUTION** is used to indicate correct operating or maintenance procedures and practices to prevent damage to, or destruction of equipment or other property.

A **WARNING** indicates a potential danger that requires correct procedures or practices to avoid personal injury.

A **DANGER** is only used when your action or lack of action may cause serious injury or even death.



IMPORTANT: Operator must be competent in the use of hydraulic equipment. The operator must have read and understood all instructions, safety issues, cautions and warnings before starting to operate the equipment.



WARNING: To avoid personal injury and possible equipment damage, make sure all hydraulic components are rated to a safe working pressure of 700 bar (10,000 psi).



WARNING: Do not overload equipment. Overloading causes equipment failure and possible personal injury. The risk of overloading can be avoided by using the Hand Pump, which has its safety valve set to 700 bar by the factory. If alternative pumps are used, ensure they are rated at a safe working pressure of 700 bar (10,000 psi).



CAUTION: Make sure that all system components are protected from external sources of damage, such as excessive heat, flame, moving machine parts, sharp edges and corrosive chemicals.



CAUTION: Avoid sharp bends and kinks that will cause severe back-up pressure in hoses. Bends and kinks lead to premature hose failure. Do not drop heavy objects onto hoses. A sharp impact may cause internal damage to hose wire strands; applying pressure to a damaged hose may cause it to rupture. Do not place heavy weights on the hoses, or allow vehicles to roll over the hoses; crush damage will lead to premature hose failure.



WARNING: Immediately replace worn or damaged parts with genuine parts. parts are designed to fit properly and withstand rated loads. For repair or maintenance service contact your distributor or service centre.



DANGER: To avoid personal injury keep hands and feet away from the tool and workpiece during operation.



WARNING: Always wear suitable clothing and Personal Protective Equipment (PPE).



DANGER: Do not handle pressurised hoses. Escaping oil under pressure can penetrate the skin, causing serious injury. If oil is injected under the skin, seek medical attention immediately.



WARNING: Never pressurize unconnected couplers. Only use hydraulic equipment in a connected system.



IMPORTANT: Do not lift hydraulic equipment by the hoses or couplers. Use the carrying handle or other means of safe transport.

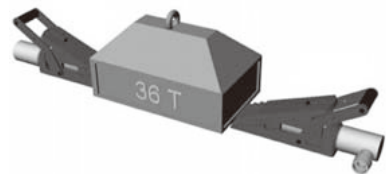


CAUTION: Do not operate the equipment without lubricating all moving parts as in sections 4.5 & 5.5. Use only high pressure molybdenum disulphide grease.

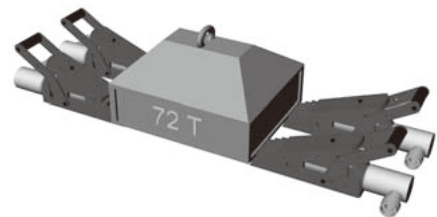
3. TECHNICAL DATA

The HLW18T and HLW18TC hydraulic lifting wedges will generate 18 Tons (180 kN) lifting force from 10,000 psi (700 bar) of hydraulic pressure. The tools require a minimum access gap of 9.5 mm (0.37") on the first step and will lift vertically.

Using two HLW18T/TC wedges will allow a lift of 36 Tons



Using four HLW18T/TC wedges will allow a lift of 72 Tons



4. HLW18T HYDRAULIC LIFTING WEDGE

4.1 KIT COMPONENTS/KIT OPTIONS

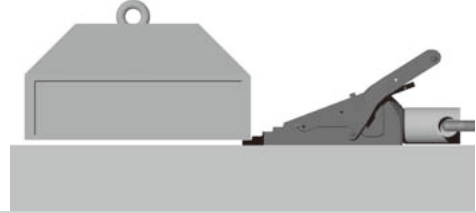
KIT COMPONENTS

- 1 x Wedge head
- 1 x 10,000 psi (700 bar) Hydraulic Cylinder
- 1 x Safety Block
- 1 x Stepped Block
- 1 x Handle Rod
- 1 x Hex Key
- 1 x Countersunk Screw
- 1 x Cardboard Packaging

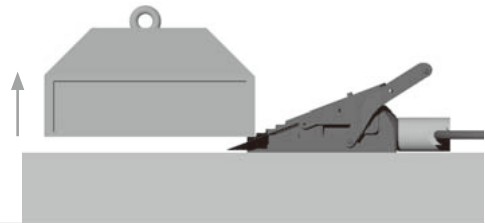
Product Code: HLW18T

4.2. HOW THE HLW18T WORKS

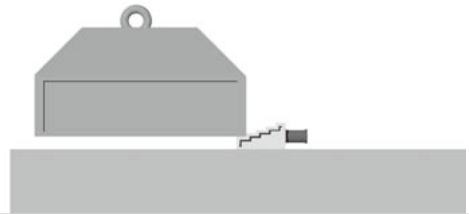
1. The hydraulic hose and hand pump are attached to the tool and the tool is inserted into the access gap



2. The hand pump is primed which powers the hydraulics that lift the load



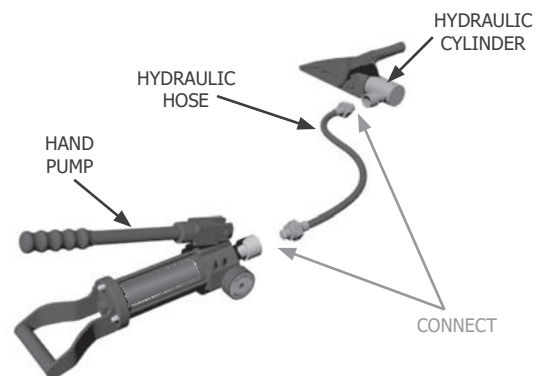
3. The load is secured using the safety block



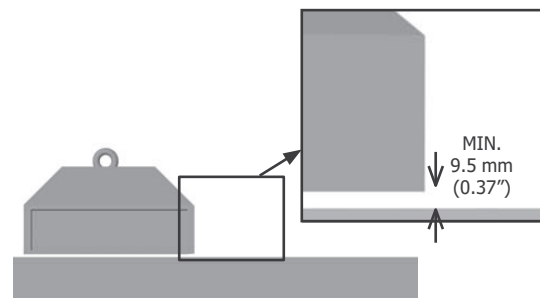
4.3 STANDARD INSTALLATION AND OPERATION

The operation procedure is exactly the same for both the HLW18T Mini and Standard Kits. The HLW18T Mini Kit does not contain either a 10,000 psi (700 bar) hydraulic hand pump or a 10,000 psi (700 bar) hydraulic hose. These items will come from the user's inventory.

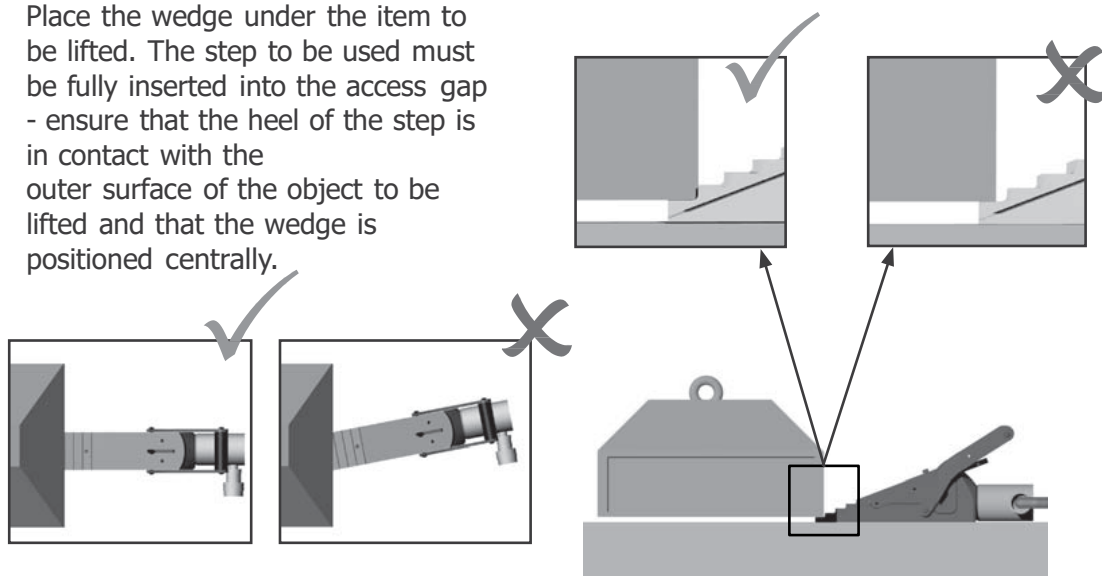
1. Assemble the kit by connecting one end of the hydraulic hose to the hand pump, and the other end to the hydraulic cylinder.



2. Ensure the access gap under the item to be lifted measures 9.5 mm (0.37") or greater.

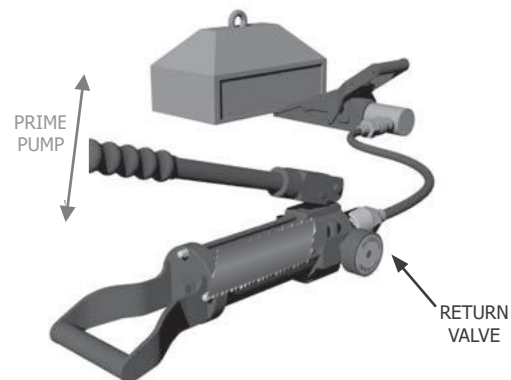


3. Place the wedge under the item to be lifted. The step to be used must be fully inserted into the access gap - ensure that the heel of the step is in contact with the outer surface of the object to be lifted and that the wedge is positioned centrally.

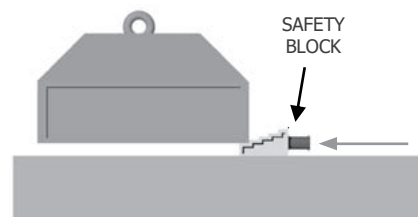


4. Close the return valve on the hand pump (by turning clockwise) and advance the wedge by priming the pump.

N.B. The HP350S Hand Pump has a self contained non-vented oil system. This means that the pump will function without the need for an air vent to be opened. This allows the pump to be used vertically, horizontally or upside down should the situation require. Having no open vent eliminates the risk of hydraulic oil spillage during use.



5. Once the item has been lifted to the desired height, or to the maximum height on the step used, the safety block should be inserted into the gap. Secure the load by releasing the pressure onto the block.



6. If required, the wedge should then be re-inserted on the next step and steps 3 - 5 repeated to lift the item further.



Never place fingers under an item being lifted.

Always ensure that both the wedge and the safety block are inserted under the item until the heel of the step is in contact with the side of the item to be lifted and the step is positioned centrally (see Installation and Operation step 3)

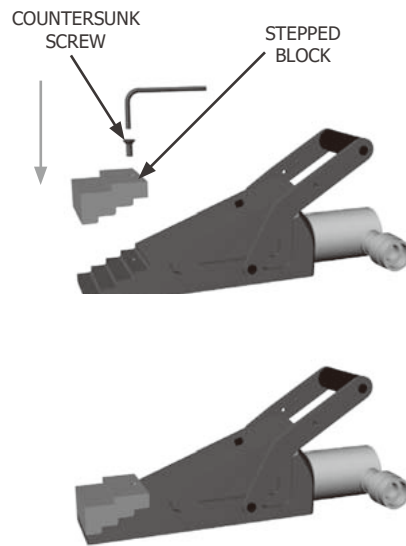


Care should be taken not to drop any of the component parts when removing them from the lifted load. This action will prevent injuries to either the operator's lower limbs, or to passers by.

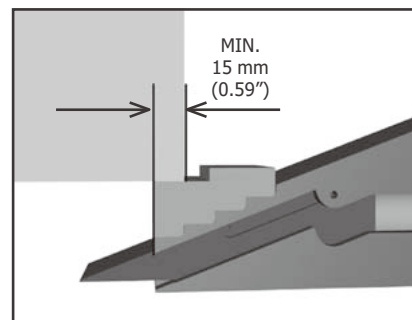
4.4 USING THE STEPPED BLOCK ACCESSORY

The Stepped Block enables the HLW18T Hydraulic Lifting Wedge to be used to lift an item with a larger gap, and will lift the item further with less penetration

1. Attach the stepped block to the tool using the M6 countersunk screw



2. Insert the tool under the item to be lifted. Ensure there is a minimum hold of 15 mm (0.59") and that the full width of the block is used



4.5 EXAMINATION, MAINTENANCE AND STORAGE

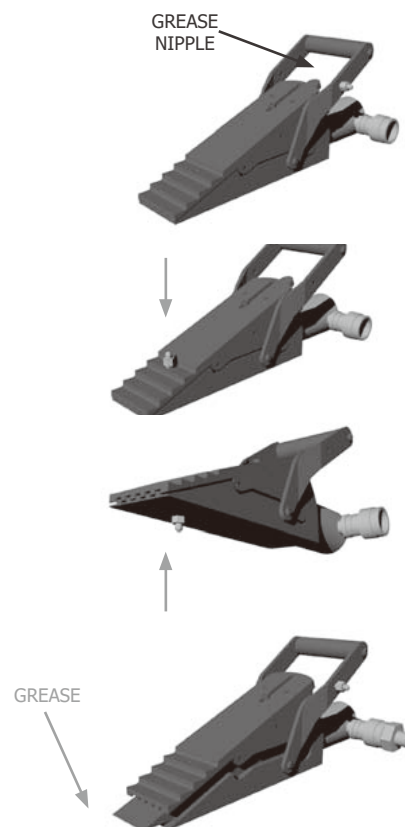
- On return from each job and before allocation against subsequent work the completeness of the HLW18T kit must be established and items examined to ensure that they are serviceable.
 - Any missing or damaged items are to be replaced as soon as possible and prior to the tool being used again.
 - Store the tool in a cool dry place and ensure all machined surfaces are greased
 - Grease all moving parts each and every time the tool is used:
-

Greasing the wedge:

- Remove the grease nipple from the handle of the tool
- Screw the grease nipple into the jaw, attach the grease gun and squeeze grease into the wedge
- Screw the grease nipple into the base of the tool, attach the grease gun and squeeze grease into the wedge

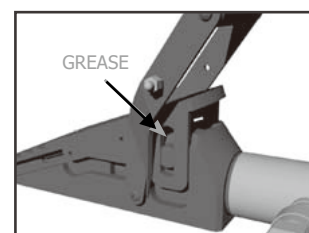
OR

- Connect the hose to the wedge and advance the wedge forward, smear grease onto the surfaces of the wedge



Greasing the slide pins:

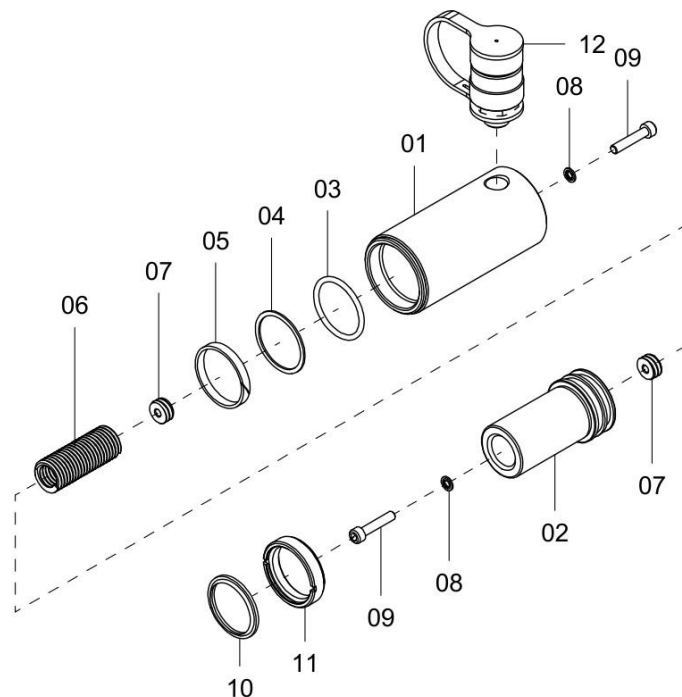
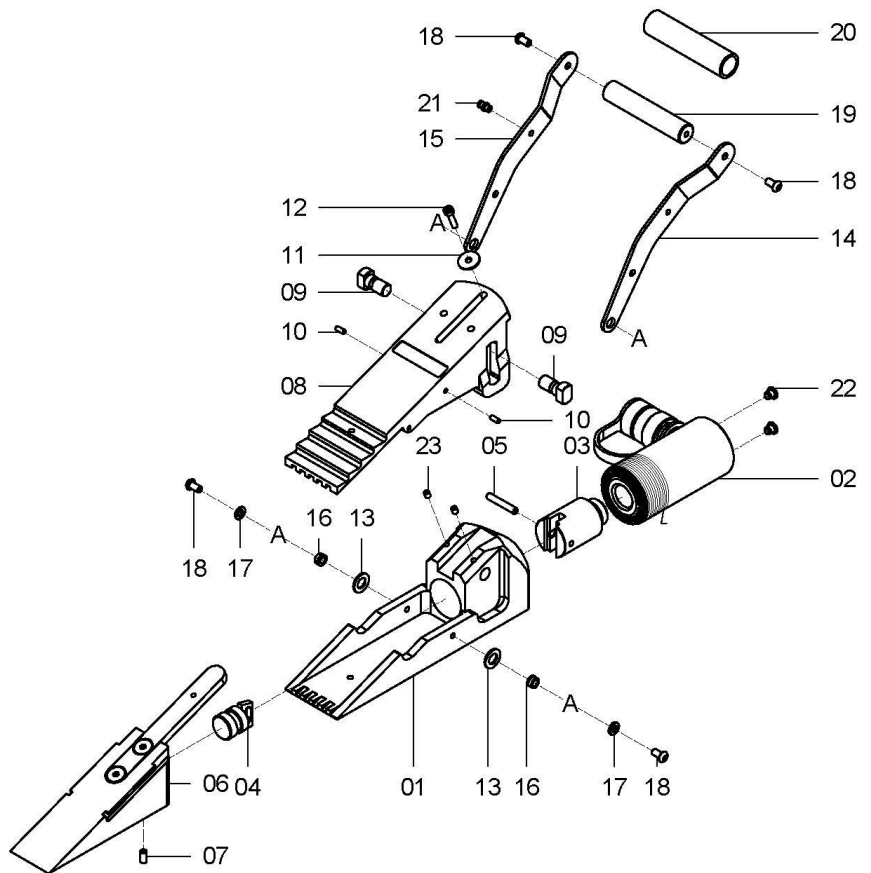
- Simply smear some grease into the slots. Also ensure the slide pins are free from grit.



4.6 PARTS LISTS

HLW18T TOOL

ITEM NO.	DESCRIPTION	QTY
01	Main Body	1
02	Cylinder	1
03	Push Pin	1
04	Slot Plug Assy	1
05	Screw	1
06	Wedge C-W Tail-Screw	1
07	Screw	1
08	Top Plate	1
09	Guide Pin	2
10	Roll Pin	4
11	Washer	1
12	Screw	1
13	Washer	2
14	Handle Left	1
15	Handle Right	1
16	Spacer	2
17	Washer	2
18	Screw	4
19	Handle Bar	1
20	Black Handle Sleeve	1
21	Grease Fitting	1
22	White Plastic Cap	2
23	Screw	2



RC201HU

ITEM NO.	PART NO.	DESCRIPTION	QTY
01	E4201	Cylinder Base	1
02	E2822	Piston Rod	1
03	G4100	O-Ring	1
04	G5100	Back-Up Ring	1
05	G5430	Split Ring	1
06	J5420	Retracting Spring	1
07	E0611	Spring Lock	2
08	G6450	Gasket Seal	2
09	H2420	Screw	2
10	G0630	Wiper	1
11	D8670	Fasten Nut	1
12	CP133	Quick Coupler	1

4.7 WEIGHTS AND DIMENSIONS

WEIGHTS

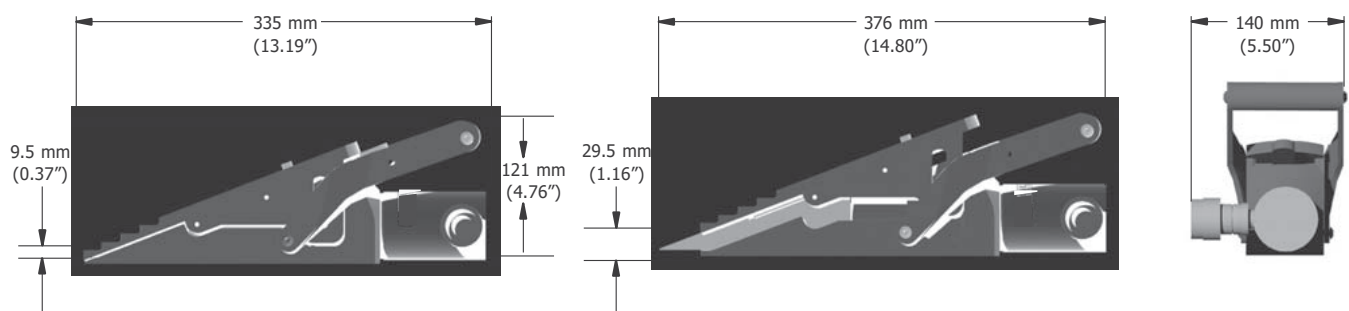
HLW18T Wedge with Hydraulic Cylinder
Carry-Case

= 8.5 kg (18.7 lbs)
= 6 kg (13.2 lbs)

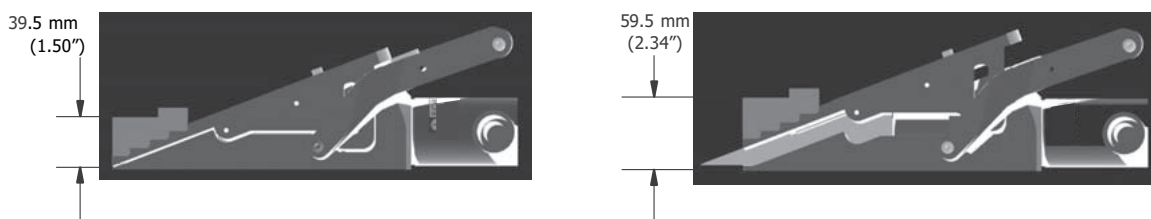
GROSS KIT WEIGHT

= 9.8 kg (21.5 lbs)

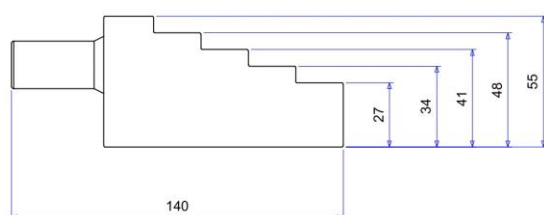
MINIMUM EXTENSION



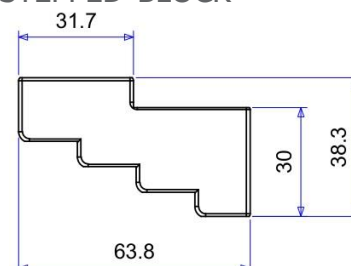
MAXIMUM EXTENSION (USING STEPPED BLOCK)



SAFETY BLOCK



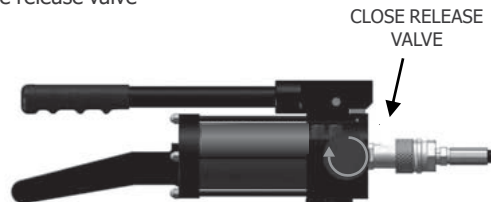
STEPPED BLOCK



4.8 TROUBLESHOOTING

Problem: Hoses are connected but the tool does not advance. The pressure on the pump handle is minimal.

- The release valve is in the retract (open) position → Close the release valve



Problem: Hoses are connected and the pump quickly reaches maximum pressure but the tool has not advanced

- One or more of the connectors are not fully tightened and the hydraulic oil cannot pass through from the pump to the cylinder → Check all connectors are fully tightened and the release valve is in the fully closed position

Problem: Hoses are connected and the tool advances with maximum pressure on the pump handle but the load will not lift

- The pressure required to lift the load is greater than that of the tools you are using → Add another tool and try again

Problem: Hoses are connected and the tool advances but there is minimal pressure on the pump handle and the handle is rising back of its own accord

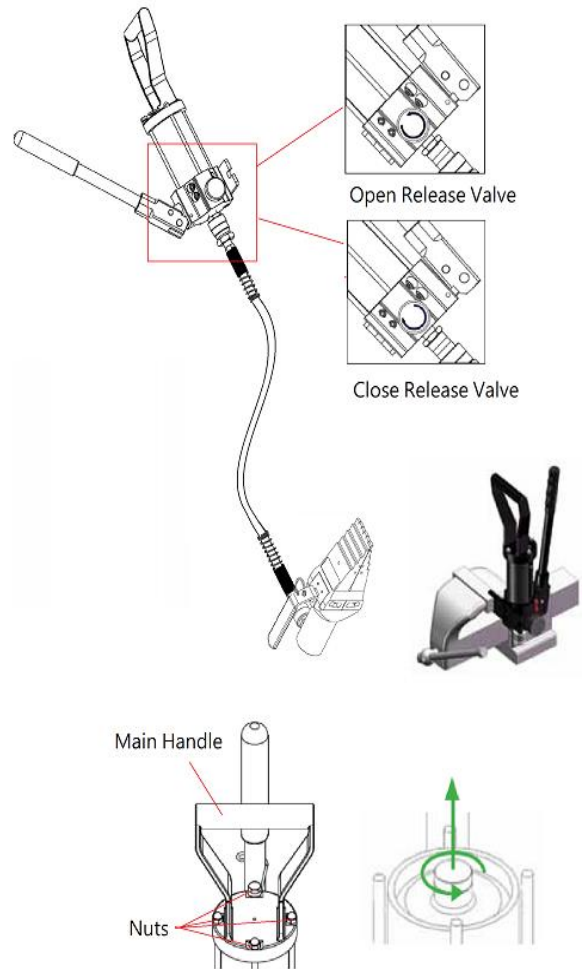
- There is dirt or a damaged valve seat within the pump unit → The pump should be sent to an authorised distributor for repair

Problem: The wedge is advancing but does not reach full pressure

→ Air could be present in the hydraulic system

→ Use the airlock removal procedure as follows:

1. Connect the hand pump to the tool with the hydraulic hose
2. Close the release valve on the pump, and prime the pump until the hydraulic cylinder is fully extended and a small pressure is achieved
3. With the hand pump held above the tool and the tool in an upright position, open the release valve causing any air that is within the system to be forced up through the pump and vented into the oil reservoir
4. Repeat steps 1 - 3 three or four times to ensure that all air is removed from the system and the tool will reach full working pressure
5. Disconnect the hand pump from the hydraulic hose, grip the baseplate of the hand pump body in a vice with the pump body vertical and the main handle at the top
6. Remove the four nuts holding the main handle and lift off
7. Grip the refilling plug with pliers and extract it by pulling and twisting simultaneously. Ensure the reservoir body is held down when removing the refilling plug as pulling up on the reservoir body will release the bladder within, and oil will spill out.
8. Fill the reservoir to the top with a good quality hydraulic oil of the grade 15 cSt
9. Reinsert the refilling plug, wipe away any oil, and reassemble by reversing the disassembly process



5. HLW18TC INTEGRAL HYDRAULIC LIFTING WEDGE

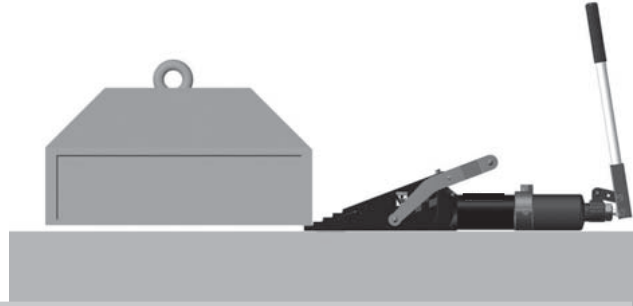
5.1 KIT COMPONENTS

- 1 x Wedge head
- 1 x 10,000 psi (700 bar) Integral Hydraulic Pump/Cylinder
- 1 x Safety Block
- 1 x Stepped Block
- 1 x Hex Key
- 1 x Countersunk Screw
- 1 x Handle Rod
- 1 x Carry-Case

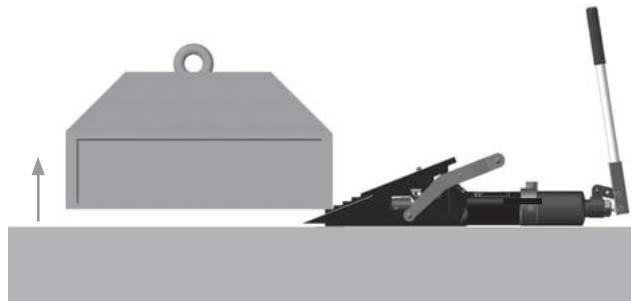
Product Code: HLW18TC

5.2 HOW THE HLW18TC WORKS

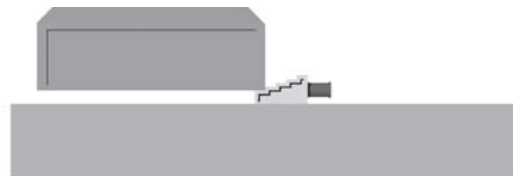
1. The tool is inserted into the access gap



2. The pump is primed which powers the hydraulics that lift the load



3. The load is secured using the safety block



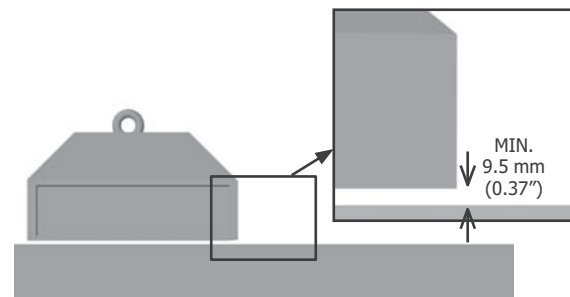
5.3 STANDARD INSTALLATION AND OPERATION

1. Before installing the wedge, ensure that it is fully retracted and tighten the return valve in a clockwise direction to the closed position.

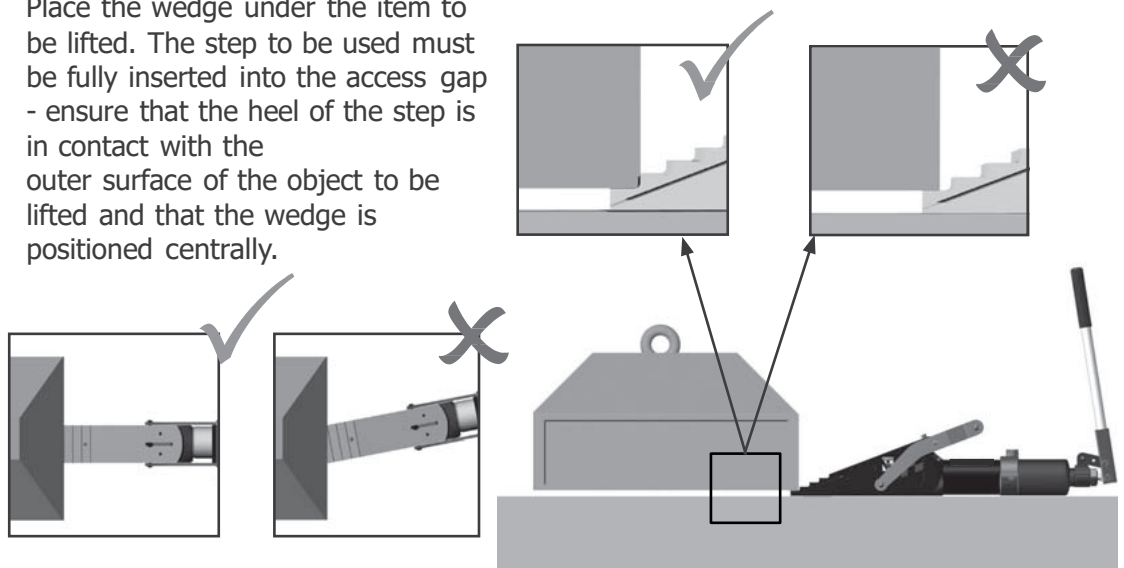
Also ensure the air vent is not obstructed in any way as this will result in a vacuum within the system and the wedge will not advance.



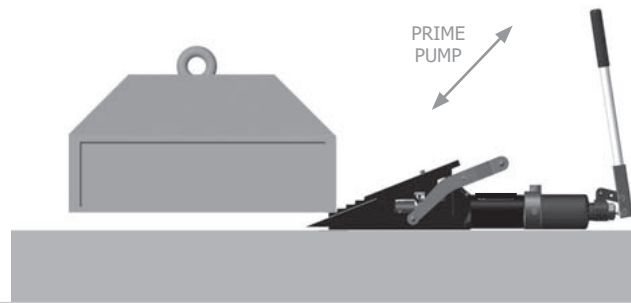
2. Ensure the access gap under the item to be lifted measures 9.5 mm (0.37") or greater.



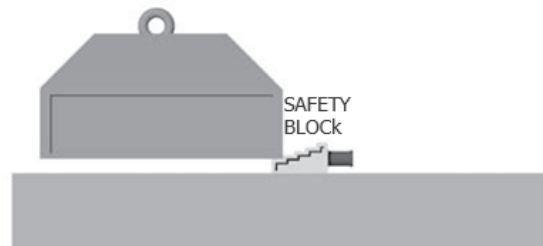
3. Place the wedge under the item to be lifted. The step to be used must be fully inserted into the access gap - ensure that the heel of the step is in contact with the outer surface of the object to be lifted and that the wedge is positioned centrally.



- 4.** Advance the wedge by priming the pump.



- 5.** Once the item has been lifted to the desired height, or to the maximum height on the step used, the safety block should be inserted into the gap. Secure the load by releasing the pressure onto the block.



- 6.** If required, the wedge should then be re-inserted on the next step and steps 3 - 5 repeated to lift the item further.



Never place fingers under an item being lifted.

Always ensure that both the wedge and the safety block are inserted under the item until the heel of the step is in contact with the side of the item to be lifted and the step is positioned centrally (see Installation and Operation step 3)



Care should be taken not to drop any of the component parts when removing them from the lifted load. This action will prevent injuries to either the operator's lower limbs, or to passers by.

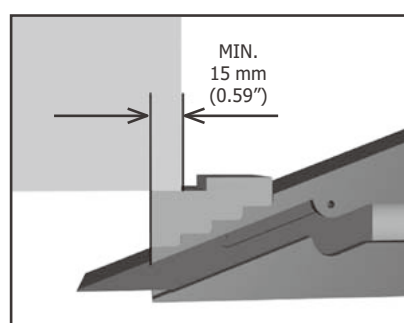
5.4 USING THE STEPPED BLOCK ACCESSORY

The Stepped Block enables the HLW18TC Integral Hydraulic Lifting Wedge to be used to lift an item with a larger gap, and will lift the item further with less penetration

1. Attach the stepped block to the tool using the M6 countersunk screw



2. Insert the tool under the item to be lifted. Ensure there is a minimum hold of 15 mm (0.59") and that the full width of the block is used



5.5 EXAMINATION, MAINTENANCE AND STORAGE

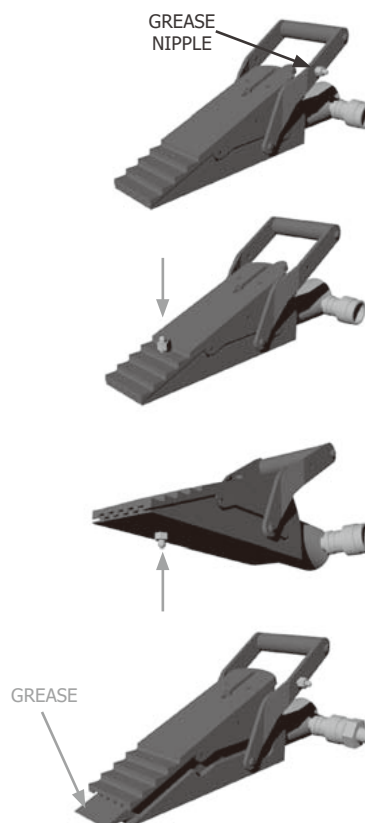
- On return from each job and before allocation against subsequent work the completeness of the HLW18TC kit must be established and items examined to ensure that they are serviceable.
 - Any missing or damaged items are to be replaced as soon as possible and prior to the tool being used again.
 - Store the tool in a cool dry place and ensure all machined surfaces are greased
 - Grease all moving parts each and every time the tool is used:
-

Greasing the wedge:

- Remove the grease nipple from the handle of the tool
- Screw the grease nipple into the jaw, attach the grease gun and squeeze grease into the wedge
- Screw the grease nipple into the base of the tool, attach the grease gun and squeeze grease into the wedge

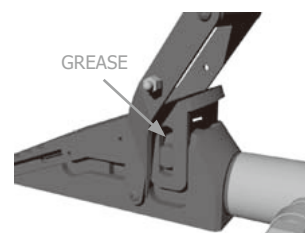
OR

- Advance the wedge forward, smear grease onto the surfaces of the wedge



Greasing the slide pins:

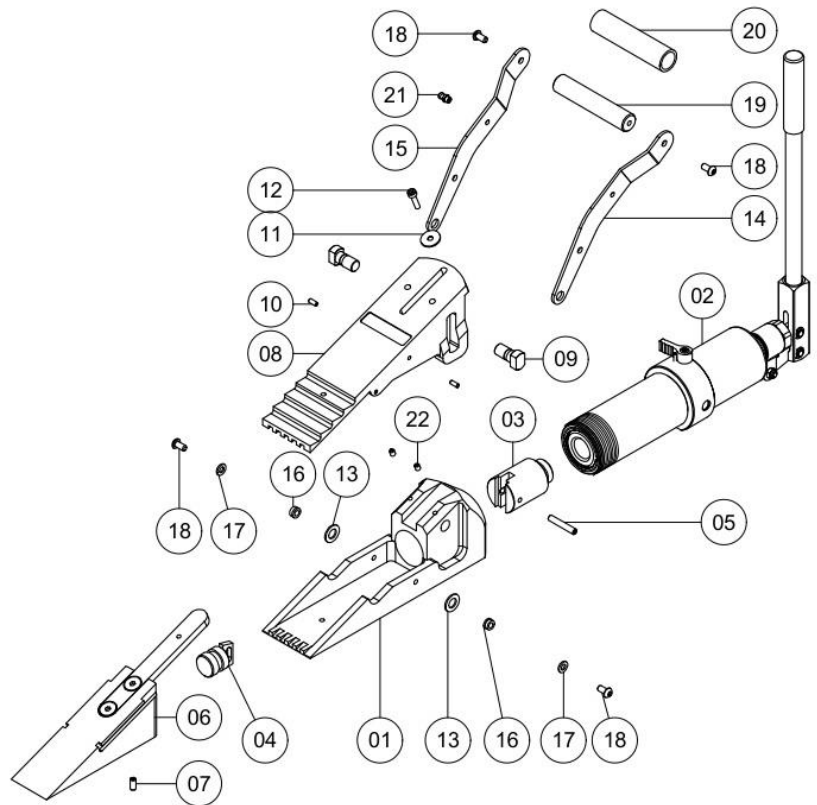
- Simply smear some grease into the slots. Also ensure the slide pins are free from grit.



5.6 PARTS LISTS

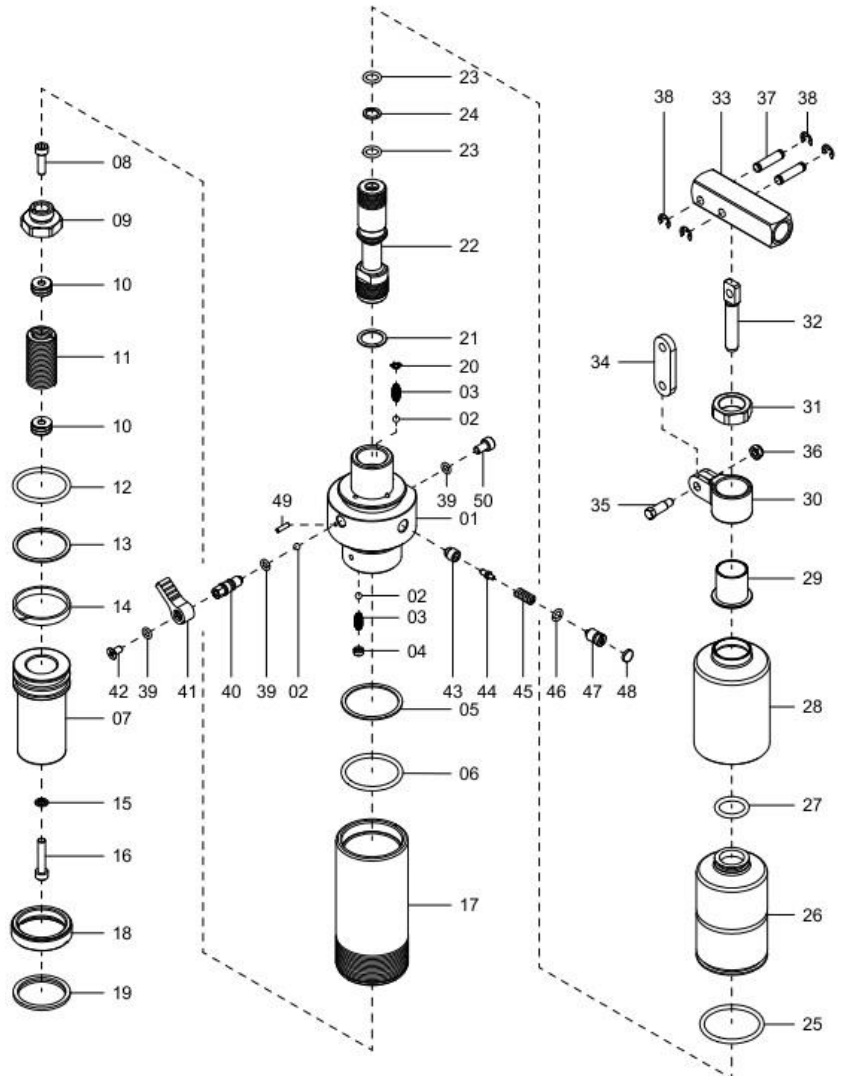
HLW18TC TOOL

ITEM NO.	DESCRIPTION	QTY
01	Main Body	1
02	Integral Pump And Cylinder	1
03	Push Pin	1
04	Slot Plug Assy	1
05	Screw	1
06	Wedge C-W Tail-Screw	1
07	Screw	1
08	Top Plate	1
09	Guide Pin	2
10	Roll Pin	4
11	Washer	1
12	Screw	1
13	Washer	2
14	Handle Left	1
15	Handle Right	1
16	Spacer	2
17	Washer	2
18	Screw	4
19	Handle Bar	1
20	Black Handle Sleeve	1
21	Grease Fitting	1
22	Screw	2



INTEGRAL HYDRAULIC PUMP/CYLINDER PM4001TC

ITEM NO.	PART NO.	DESCRIPTION	QTY
01	E1681	Cylinder Base	1
02	K4000	Steel Ball	3
03	J5400	Inlet Ball Spring	2
04	E9720	Screw	1
05	G9420	Back-Up Ring	1
06	F3120	O-Ring	1
07	E2822	Piston Rod	1
08	H5900	Screw	1
09	E3822	Stop Collar	1
10	E0611	Spring Lock	2
11	J0540	Spring	1
12	G4100	O-Ring	1
13	G5100	Back-Up Ring	1
14	G5430	Split Ring	1
15	G6450	Gasket Seal	1
16	H2420	Screw	1
17	D0490	Puller Body	1
18	D8670	Fasten Nut	1
19	G0630	Wiper	1
20	I9700	Circular Internal Ring	1
21	J1300	Copper Washer	1
22	E2681	Pump Piston Housing	1
23	GA981	O-Ring	2
24	G9130	Back-Up Ring	1
25	G6810	O-Ring	1
26	G1030	Reservoir Bladder	1
27	G7920	O-Ring	1
28	D9260	Bladder Housing	1
29	E3141	Piston Housing Cap	1
30	D0460	Swivel Clevis	1
31	E6680	Retaining Nut	1
32	E4680	Pump Piston Rod	1
33	C7111	Handle Clevis	1
34	C4170	Link Connector	1
35	E0670	Clevis Screw	1
36	H8910	Anti-Loosen Nut	1
37	I6500	Clevis Pin	2
38	I1500	E-Ring	4
39	G8610	O-Ring	3
40	H3120	Relief Valve Screw	1
41	L6800	Relief Valve Knob	1
42	H0420	Screw	1
43	E9471	Cone Seat	1
44	E8471	Cone	1
45	J9830	H.P. Spring	1
46	GA632	O-Ring	1
47	E4971	Overload Cover Screw	1
48	E5971	Cap	1
49	I4010	Roll Pin	1
50	H6300	Screw	1



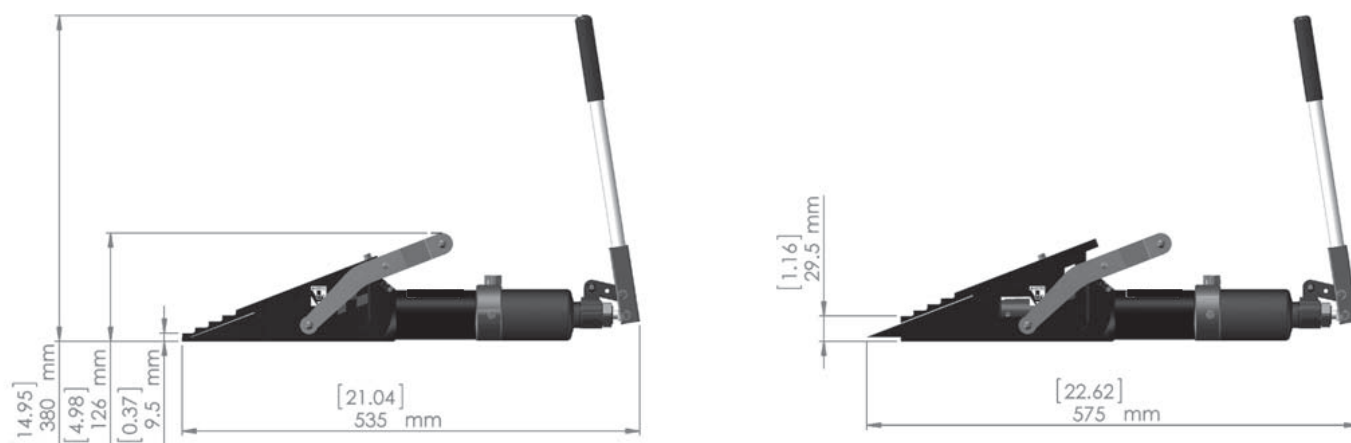
5.7 WEIGHTS AND DIMENSIONS

WEIGHTS

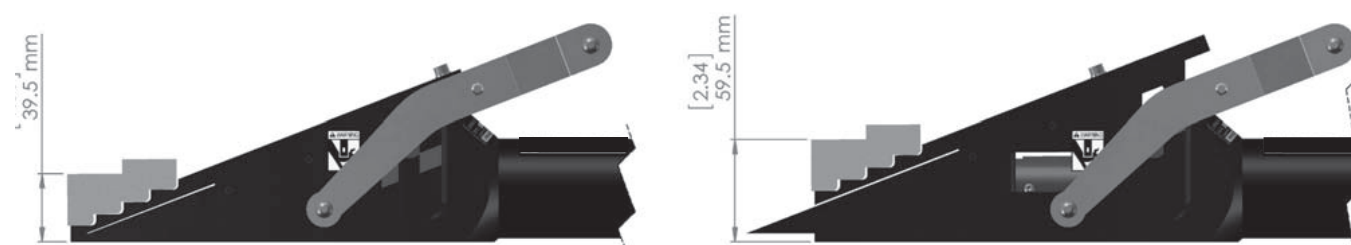
HLW18TC Wedge = 10 kg (22 lbs)
 Carry-Case = 2.5 kg (5.5 lbs)

GROSS KIT WEIGHT = 14.5 kg (31.9 lbs)

MINIMUM EXTENSION

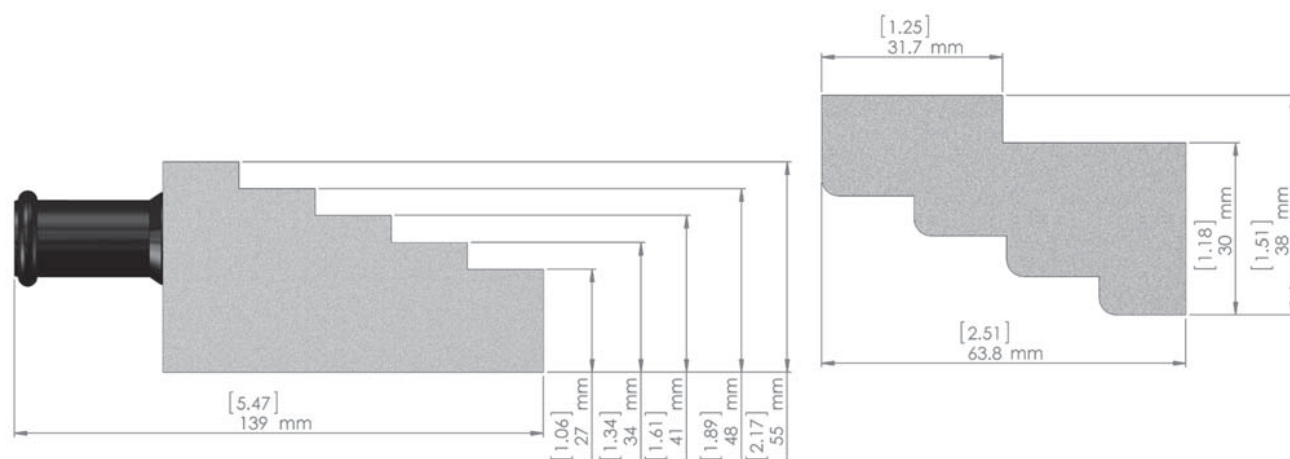


MAXIMUM EXTENSION (USING STEPPED BLOCK)



SAFETY BLOCK

STEPPED BLOCK



5.8 TROUBLESHOOTING

Problem: Wedge advances 50% and then stops functioning

- | | |
|--|--|
| → A sticker has been placed over the air vent | → Remove sticker |
| → The operator is covering the air vent with his finger while operating the pump | → One hand should be on the handle of the tool while the other hand operates the pump handle |
| → The air vent has become blocked with dirt | → Carefully unblock the air vent using a small blunt object |

Problem: No wedge movement

- | | |
|---|---|
| → Air lock within system | → Open release valve and prime pump to circulate oil around the system |
| → Insufficient oil | → Refill with clean oil and bleed system |
| → Release valve open | → Close release valve |
| → Air accumulates around pump inlet when used upside down | → Bleed out air from reservoir. Look for any oil leaks on reservoir which may indicate a perished bladder. Refer to an approved distributor for further instructions. |
| → Inlet check or intermediate valve ball stuck | → Dismantle check valve, free and clean balls. Refer to an approved distributor for further instructions. |

Problem: Wedge moves but under load feels as if it is not reaching full pressure

- | | |
|---|---|
| → Intermediate valve not seating / relief valve leaking | → Check ball for dirt then re-seat using a hammer and punch. Refer to an approved distributor for further instructions. |
|---|---|

Problem: Pressure leaks away, handle rises of its own accord

- | | |
|------------------------------|---|
| → Outlet check valve leaking | → Check ball for dirt then re-seat using a hammer and punch. Refer to an approved distributor for further instructions. |
|------------------------------|---|

Problem: Pressure leaks away, handle remains static

- | | |
|----------------------------------|--|
| → Release valve leaking | → Release lever may not be tight enough. Refer to an approved distributor for further instructions. |
| → Piston seal leaking | → Look for oil leaking from cylinder bearing. Refer to an approved distributor for further instructions. |
| → Leaks on cylinder or pump body | → Check blanking plugs for leaks, tighten. Refer to an approved distributor for further instructions. |

Problem: Spongy action

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| → Air in system | → Bleed system. Refer to an approved distributor for further instructions. |
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