DURAPAC
ENGINEERED FOR RELIABILITY

Instruction Manual

Hydraulic Lifting Wedges
Model – DLW-18

Maximum Operating Pressure – 700 bar

ABSOLUTE EQUIPMENT PTY LTD – 73 Northlink Place, VIRGINIA QLD 4014 – Australia
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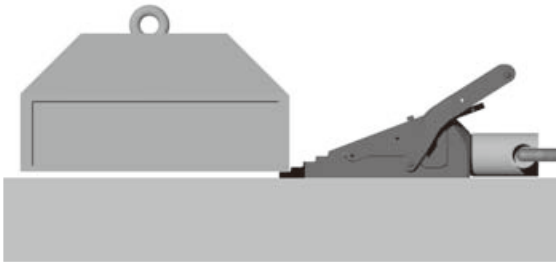
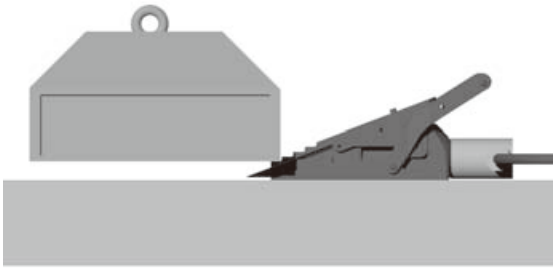
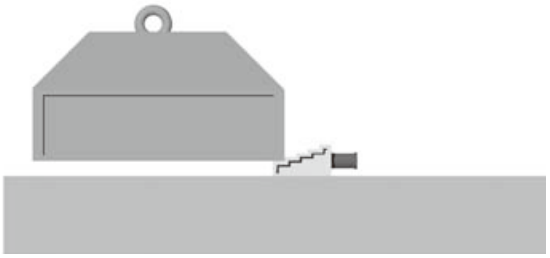
This is a safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid injury or death

1.0 Product Information

DURAPAC – Hydraulic Lifting Wedges are engineered to meet Industrial Standards for Performance and Safety. The DLW-18 Lifting Wedge will generate 180 kN (18 Tons) lifting force from 700 bar of hydraulic pressure. The tool requires a minimum access gap of 9.5 mm on the first step and will lift vertically.

Note – using two DLW Wedges will allow a lift of 360 kN and using four will allow a lift of 720 kN.

How the DLW Hydraulic Lifting Wedge works:

1. The hydraulic hose and hand pump are attached to the tool. 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.	

Special skill, knowledge and training may be required for a specific task and the product may not be suitable for all jobs. The user must ultimately make the decision regarding suitability of the product for any given task and assume the responsibility of safety for all in the work area. Contact a Durapac representative if you are unsure of your Lifting Wedge's suitability for a particular application.

2.0 Receiving Instructions

It is recommended prior to use that an inspection be done by qualified personnel and that any missing or damaged parts, decals, warning/safety labels or signs are replaced with Durapac

authorised replacement parts only. Any Lifting Wedge that appears to be damaged in any way, is worn, leaking or operates abnormally should be removed from service immediately until such time as repairs can be made. Any Lifting Wedge that has been or suspected to have been subject to a shock load should be removed from service immediately until inspected by a Durapac authorised service centre. Owners and operators of this equipment should be aware that the use and subsequent repair of this equipment may require specialised training and knowledge.

2.1 Kit Components

1 x Wedge Head

1 x 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

3.0 Safety

Save these instructions. For your safety, read and understand the information contained within. The owner and operator should understand this product and safe operating procedures before attempting to use this product. Instructions and safety information should be conveyed in the operator's native language before use of this product is authorised. Make certain that the operator thoroughly understands the inherent dangers associated with the use and misuse of the product. If any doubt exists as to the safe and proper use of this product as outlined in this factory authorised manual, remove from service immediately.

DANGER:

- To avoid personal injury, keep hands and feet away from work area during operation
- **Do NOT** handle pressurised hoses. Escaping oil under pressure can penetrate the skin causing serious injury. If oil is injected under the skin, see a doctor immediately
- Stay clear of loads supported by hydraulics. A cylinder, when used as a load lifting device, should never be used as a load holding device. After the load has been raised or lowered, it must always be supported mechanically

WARNING:

- The system operating pressure must not exceed the pressure rating of the lowest rated component in the system. Install a pressure gauge in the system to monitor operating pressure. It is your window to what is happening in the system
- Always wear appropriate personal protective equipment (PPE) when operating hydraulic equipment. The operator must take precaution against injury due to failure of the tool or work piece(s)

- **Do NOT** hold or stand directly in line with any hydraulic connections while pressurising
- **Do NOT** attempt to disconnect hydraulic connections under pressure. Release all line pressure before disconnecting hoses
- All personnel must be clear before lowering load or depressurising the system
- **Do NOT** attempt to lift a load weighing more than the capacity of the cylinder

IMPORTANT:

- If at any stage, the safety related decals become hard to read, these must be replaced
- Minimum age of the operator must be 18 years. The operator must have read and understood all instructions, safety issues, cautions and warnings before starting to operate the equipment. The operator is responsible for this activity towards other persons
- **Do NOT** lift hydraulic equipment by the hoses or couplers. Use the carrying handle or other means of safe transport
- Hydraulic equipment must only be serviced by a qualified hydraulic technician. For repair service, contact the Durapac authorised service centre in your area. To protect your warranty, use only high-quality hydraulic oil

CAUTION:

- **KEEP HYDRAULIC EQUIPMENT AWAY FROM FLAMES AND HEAT.** Hydraulic fluid can ignite and burn. Excessive heat will soften packings and seals, resulting in fluid leaks. Heat also weakens hose materials and packings. For optimum performance do not expose equipment to temperatures of 65°C (150°F) or higher. Protect all equipment from weld spatter
- No alteration should be made to this device

3.1 Hydraulic Lifting Wedges

- **Do** use a gauge or other load measuring instrument to verify load
- **Do NOT** exceed the rated capacity of the pump or any equipment in the system. Burst hazard exists if connection pressure exceeds rated pressure
- **Do NOT** operate the system with bent or damaged couplers or damaged threads
- **Do NOT** subject the wedge and its components to shock loads
- Use only Durapac approved accessories and components
- **Never** pressurize uncoupled couplers. Use only hydraulic equipment in a coupled system

3.2 Hydraulic Hoses & Fluid Transmission Lines

- Avoid short runs of straight-line tubing. Straight line runs do not provide for expansion and contraction due to pressure and/or temperature changes

- Reduce stress in tube lines. Long tubing runs should be supported by brackets or clips. Before operating the pump, connections should be hand tightened securely and leak-free. Over tightening can cause premature thread failure or high-pressure fittings to burst
- Should a hydraulic hose ever rupture, burst or need to be disconnected, immediately shut off the pump and release all pressure. Never attempt to grasp a leaking pressurised hose with your hands. The force of escaping hydraulic fluid can inflict injury
- **Do NOT** subject the hose to potential hazard such as fire, sharp objects, extreme heat or cold or heavy impact
- **Do NOT** allow the hose to kink, twist, curl, crush, cut or bend so tightly that the fluid flow within the hose is blocked or reduced. Periodically inspect the hose for wear
- Hose material and coupler seals must be compatible with the hydraulic fluid used. Hoses also must not encounter corrosive materials such as battery acid, creosote-impregnated objects and wet paint. Never paint a coupler or hose
- Use only Durapac or equivalent hoses

FAILURE TO HEED THESE WARNINGS MAY RESULT IN PERSONAL INJURY AS WELL AS PROPERTY DAMAGE.

4.0 Installation

⚠ **IMPORTANT:** Always secure threaded port connections with high grade, non-hardening pipe thread sealant. Teflon tape can be used if only one layer of tape is used and it is applied carefully, two threads back, to prevent the tape from being introduced into hydraulic system, which could cause jamming of precision-fit parts

4.1 Familiarise yourself with the specifications and illustrations in this owner's manual. Know your Lifting Wedge, its limitations and how it operates before attempting to use. If in doubt, contact a Durapac representative.

4.2 Make hydraulic connections – Clean all areas around the oil port of pump and cylinder. Clean all hose ends, couplers and union ends. Remove the manifold plug and then connect oil output port to suitable fittings and application/cylinder.

4.3 Check all system fittings and connections to be sure they are tight and leak free.

4.4 Check oil level in reservoir before operating pump.

4.5 Remove air from the system – Position the lifting wedge so that the piston rod is pointed down and the cylinder is lower than the pump. Advance and retract the cylinder several times, avoiding pressure build-up. Air removal is complete when the cylinder motion is smooth.

5.0 Operation

IMPORTANT:

- **Never** place fingers under an item being lifted. 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 Step 5.1.3)
- Care should be taken when removing component parts from the lifted load
- Grease all moving parts each time the tool is used

5.1 Standard Operation

5.1.1 Assemble the kit by connecting one end of the hydraulic hose to (user's own) hand pump and the other end to the hydraulic cylinder.

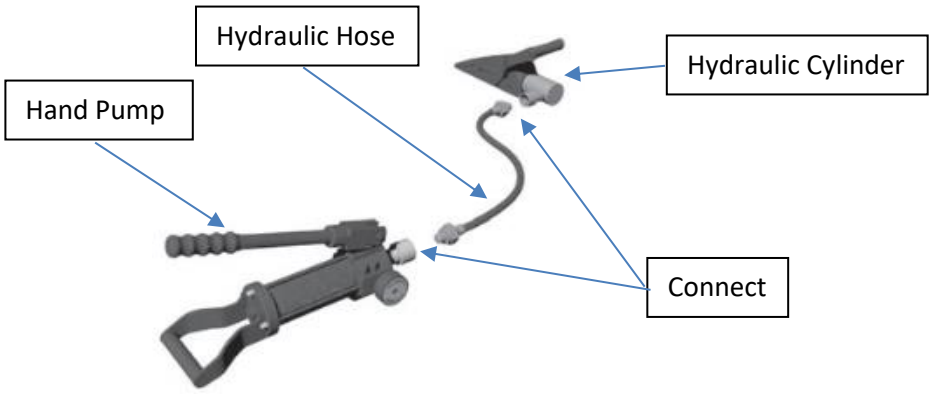


Figure 1 –Kit Assembly

5.1.2 Ensure the access gap, under the item to be lifted, measures 9.5 mm or greater.

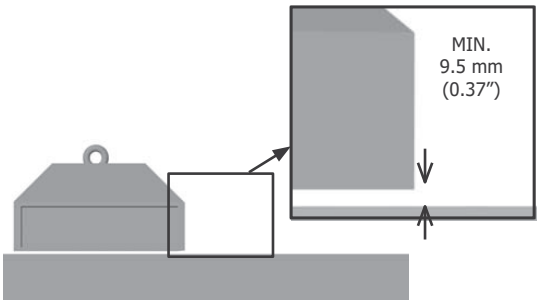


Figure 2 – Access Gap Minimum

5.1.3 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.

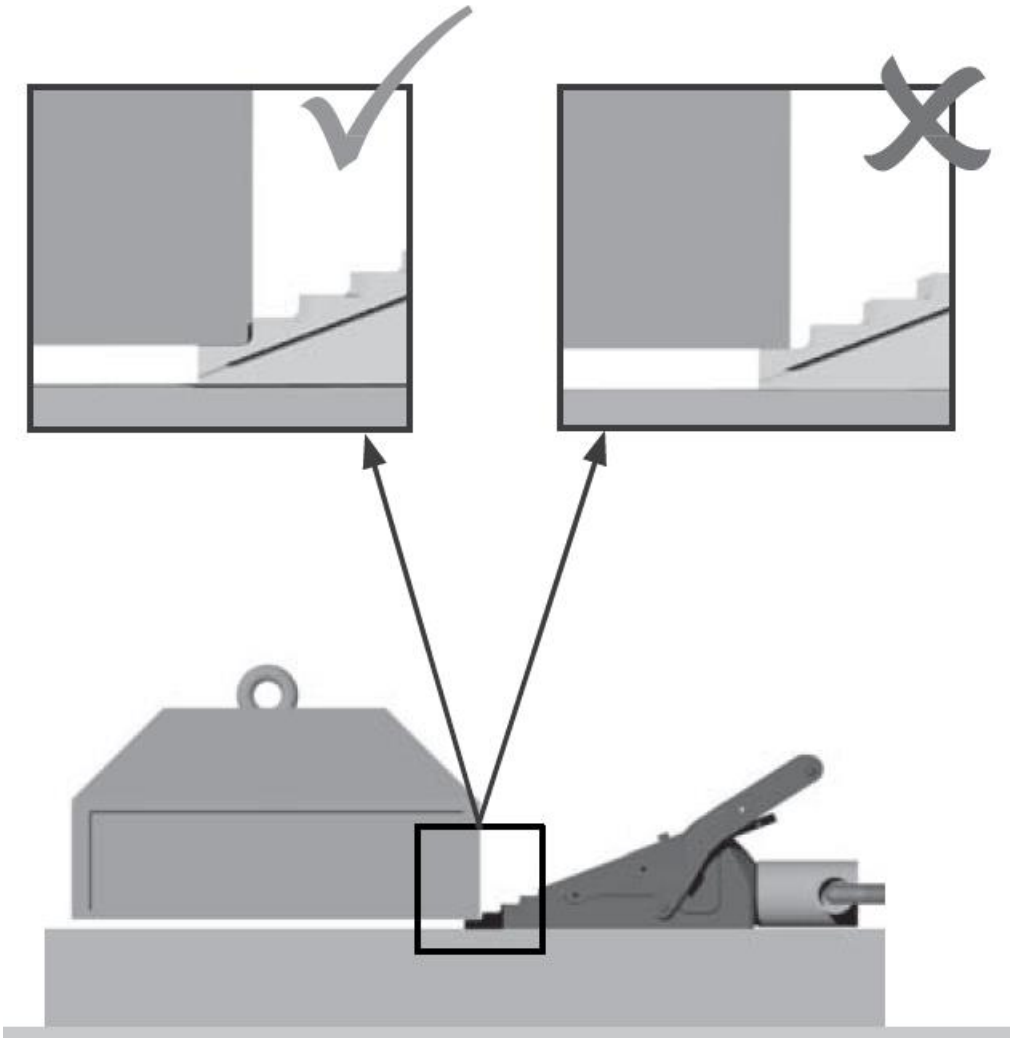


Figure 3 – Wedge Placement

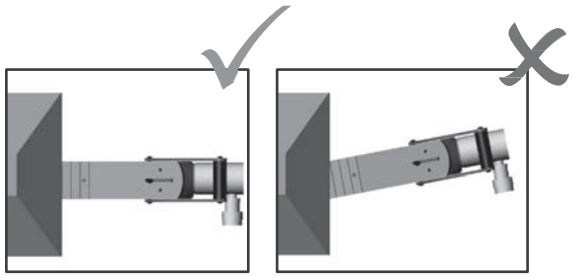


Figure 4 – Central Position

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

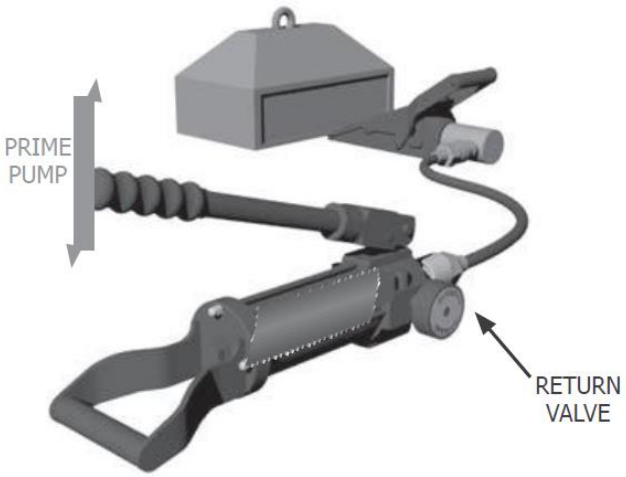


Figure 5 – Advance the Wedge

5.1.5 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.

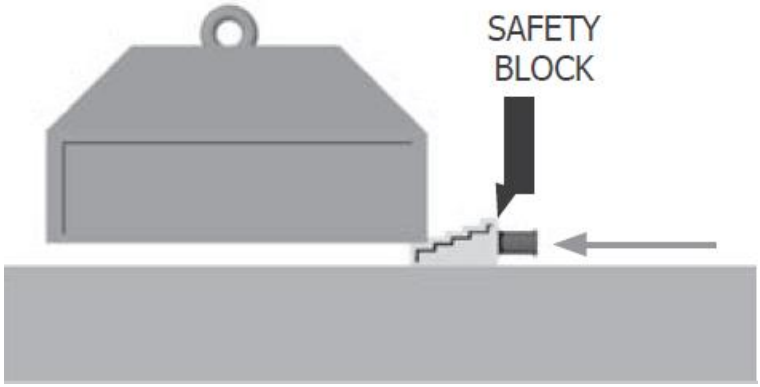


Figure 6 – Insert Safety Block

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

5.2 Using the Stepped Block Accessory

The Stepped Block enables the DLW-18 Hydraulic Lifting Wedge to be used to lift an item with a larger gap and will lift the item further with less penetration.

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

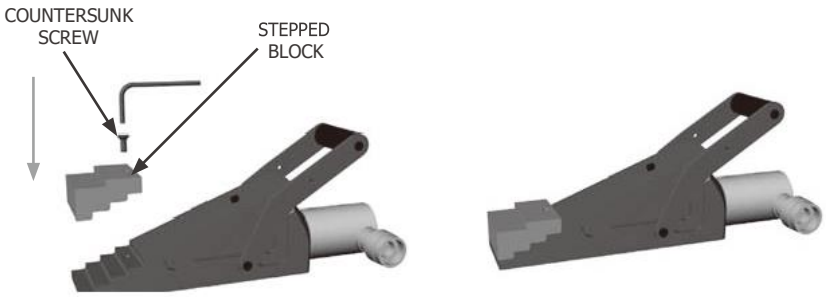


Figure 7 & 8 – Stepped Block Attachment

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

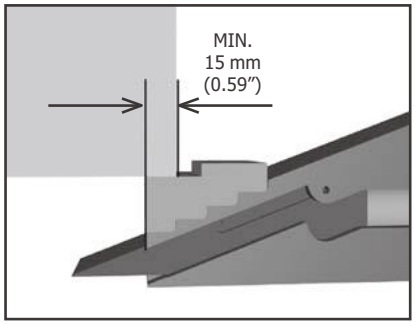


Figure 9 – Minimum Hold

6.0 Maintenance

IMPORTANT:

- Check oil level regularly
- Use only good quality hydraulic fluid. **Do NOT** use brake fluid, transmission fluid, turbine oil, motor oil, alcohol, glycerine etc. Use of anything other than good quality hydraulic oil will void warranty and damage the pump, hose, and application. We recommend Durapac Hydraulic Oil or equivalent
- On return from each job and before allocation against subsequent work, the completeness of the DLW-18 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
- Ensure all machined surfaces are greased
- Equipment must only be serviced by a qualified hydraulic technician. For repair service, contact your local Durapac authorised service centre
- Damage to hydraulic hoses may not be detected during visual inspections. For this reason, Durapac recommends that hydraulic hoses be replaced on a regular basis
- Tighten connections as needed. Use non-hardening pipe thread compound when servicing connections

Dirt, sand, etc. will quickly ruin any hydraulic system. Ensure that couplings are clean and free of foreign matter. After each use, clean couplings and attach dust caps.

Maintenance is required when wear or leakage is noticed. Periodically inspect all components to detect any problem that may require service and maintenance.

6.1 Greasing the Wedge

6.1.1 Remove the grease nipple from the handle of the tool.

6.1.2 Screw the grease nipple into the jaw, attach the grease gun and squeeze into the wedge.

6.1.3 Screw the grease nipple into the base of the tool, attach the grease gun and squeeze grease into the wedge.

OR

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

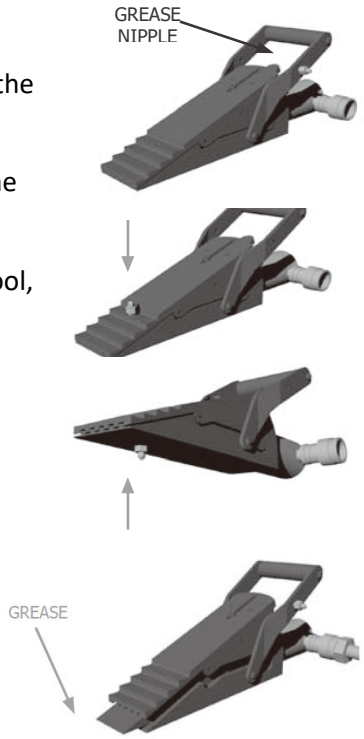


Fig 10-13 – Greasing the Wedge

6.2 Greasing the Slide Pins

6.2.1 Simply smear some grease into the slots. Also ensure the side pins are free from grit.

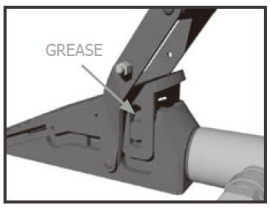


Fig 14 – Greasing the Slide Pins

6.3 Storage

6.3.1 Wipe clean thoroughly and ensure all machined surfaces are greased.

6.3.2 Store in a clean, dry environment. Avoid temperature extremes.

7.0 Troubleshooting

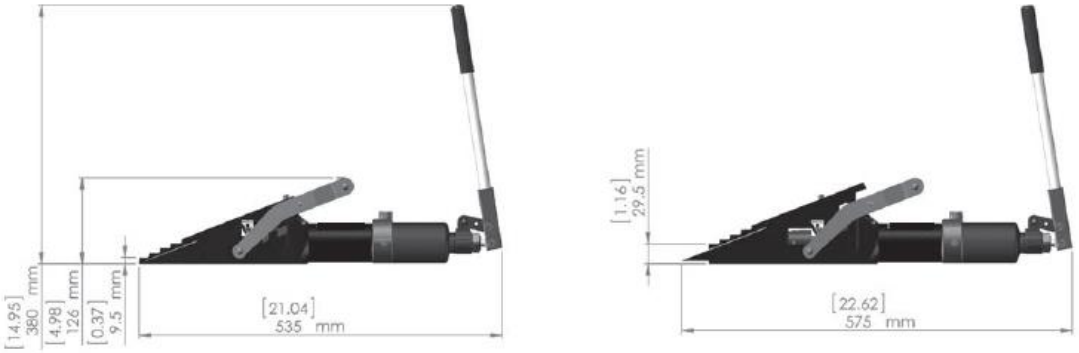
Problem	Cause	Solution
Hoses are connected but the tool does not advance. The pressure on the pump handle is minimal.	The release valve is in the retract (open) position.	• Close the release valve
Hoses are connected and the pump quickly reaches maximum pressure but the tool has not advanced.	One or 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 • Check the release valve is in the fully closed position

Problem	Cause	Solution
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
Hoses are connected and the tool advances but there is minimal pressure on the pump handle and 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
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. 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 so any air that is within the system is 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.

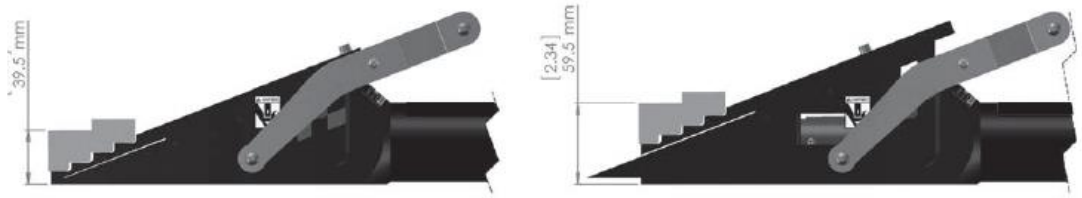
8.0 Weight and Dimensions

WEIGHT - DLW-18 Wedge with Hydraulic Cylinder = 8.5 kg

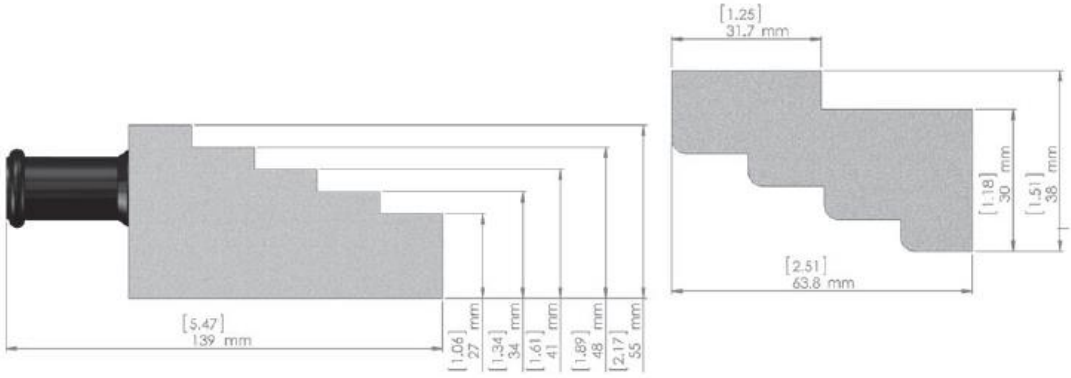
MINIMUM EXTENSION



MAXIMUM EXTENSION (USING STEPPED BLOCK)



SAFETY BLOCK STEPPED BLOCK



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Model – DLW-18S

Maximum Operating Pressure – 700 bar

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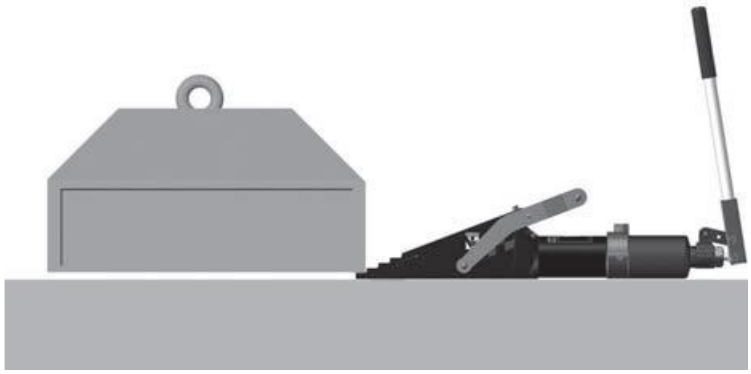
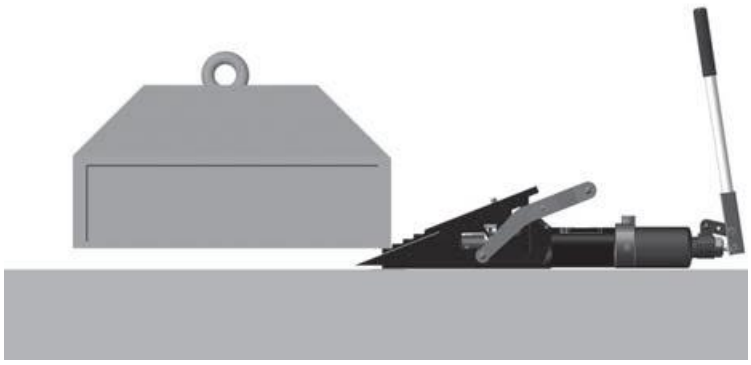
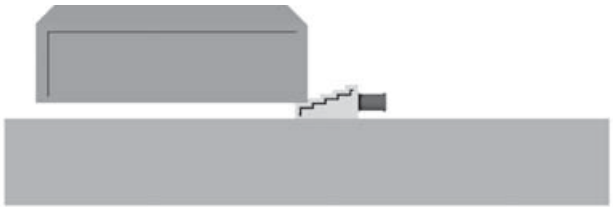
1. The tool is inserted into the access gap.	
2. The pump is primed which powers the hydraulics that lift the load.	
3. The load is secured using the safety block.	

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1 x Carry Case

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4.4 Check oil level in reservoir before operating pump.

4.5 Remove air from the system – Position the lifting wedge so that the piston rod is pointed down and the cylinder is lower than the pump. Advance and retract the

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IMPORTANT:

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- Care should be taken when removing component parts from the lifted load
- Grease all moving parts each time the tool is used

5.1 Pre-Operation

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

5.1.2 Ensure the air vent is not obstructed as this will result in a vacuum within the system and the wedge will not advance.

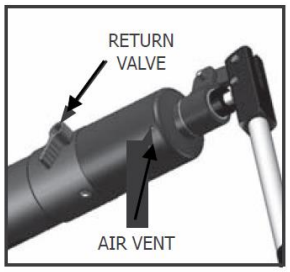


Figure 1 – Retracted, Closed & Clear

5.2 Standard Operation

5.2.1 Ensure the access gap, under the item to be lifted, measures 9.5 mm or greater.

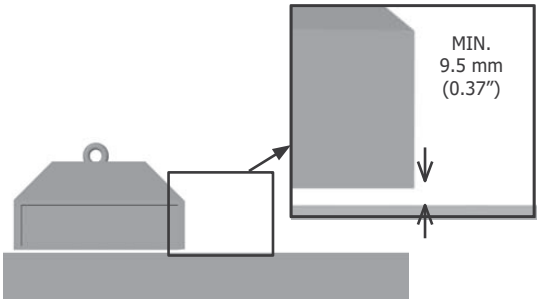


Figure 2 – Access Gap Minimum

5.2.2 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.

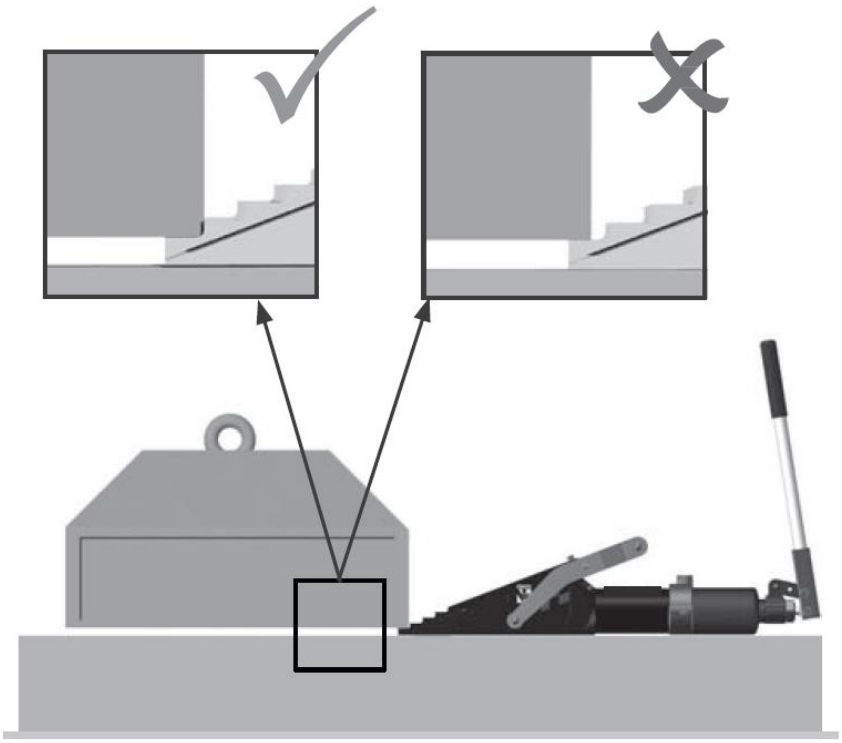


Figure 3 – Wedge Placement

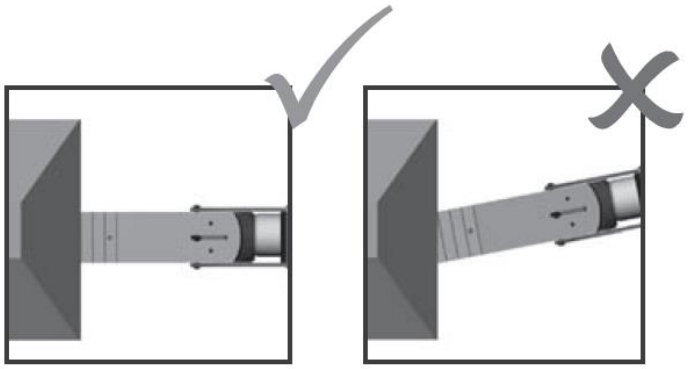


Figure 4 – Central Position

5.2.3 Advance the wedge by priming the pump.

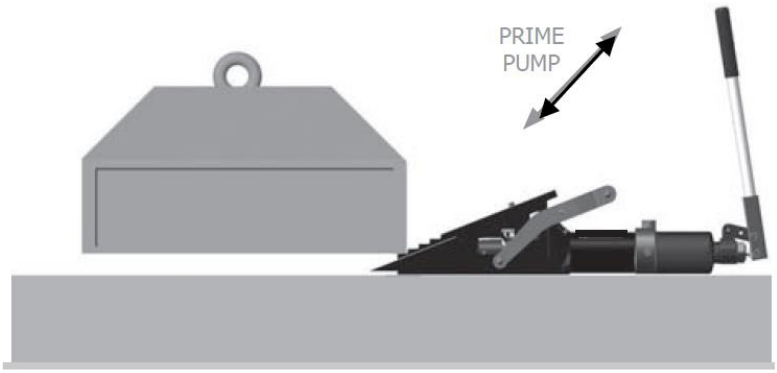


Figure 5 – Advance the Wedge

5.2.4 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.

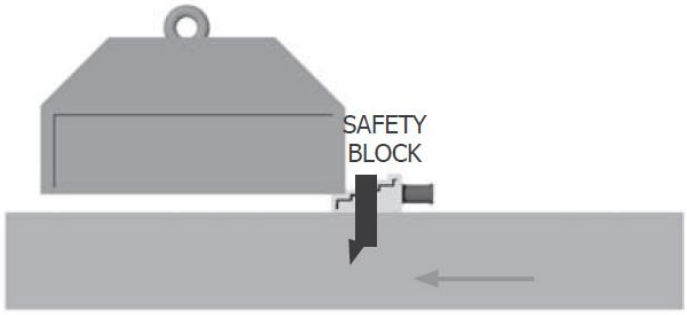


Figure 6 – Insert Safety Block

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

5.3 Using the Stepped Block Accessory

The Stepped Block enables the DLW-18S Hydraulic Lifting Wedge to be used to lift an item with a larger gap and will lift the item further with less penetration.

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

Figures 7 & 8 – Stepped Block Attachment

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

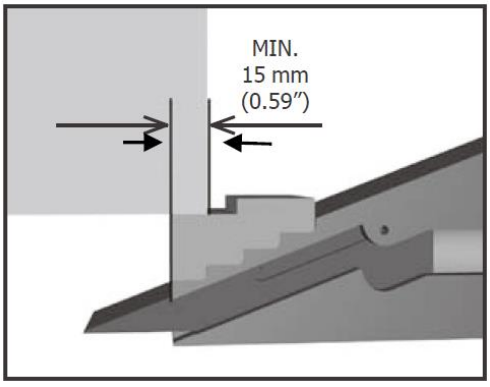


Figure 9 – Minimum Hold

6.0 Maintenance

IMPORTANT:

- Check oil level regularly
- Use only good quality hydraulic fluid. **Do NOT** use brake fluid, transmission fluid, turbine oil, motor oil, alcohol, glycerine etc. Use of anything other than good quality hydraulic oil will void warranty and damage the pump, hose, and application. We recommend Durapac Hydraulic Oil or equivalent
- On return from each job and before allocation against subsequent work, the completeness of the DLW-18S 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
- Ensure all machined surfaces are greased
- Equipment must only be serviced by a qualified hydraulic technician. For repair service, contact your local Durapac authorised service centre
- Damage to hydraulic hoses may not be detected during visual inspections. For this reason, Durapac recommends that hydraulic hoses be replaced on a regular basis
- Tighten connections as needed. Use non-hardening pipe thread compound when servicing connections

Dirt, sand, etc. will quickly ruin any hydraulic system. Ensure that couplings are clean and free of foreign matter. After each use, clean couplings and attach dust caps.

Maintenance is required when wear or leakage is noticed. Periodically inspect all components to detect any problem that may require service and maintenance.

6.1 Greasing the Wedge

6.1.1 Remove the grease nipple from the handle of the tool.

6.1.2 Screw the grease nipple into the jaw, attach the grease gun and squeeze into the wedge.

6.1.3 Screw the grease nipple into the base of the tool, attach the grease gun and squeeze grease into the wedge.

OR

6.1.4 Advance the wedge forward and smear grease onto the surfaces of the wedge.

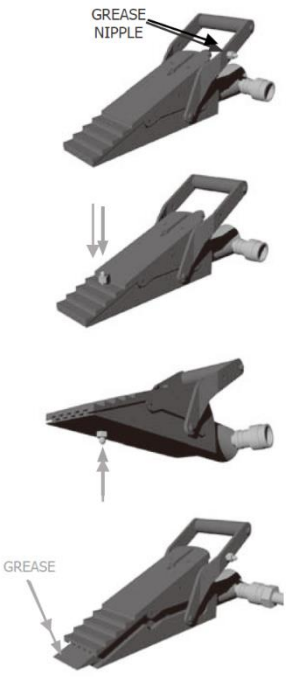


Fig 10-13 – Greasing the Wedge

6.2 Greasing the Slide Pins

6.2.1 Simply smear some grease into the slots. Also ensure the side pins are free from grit.

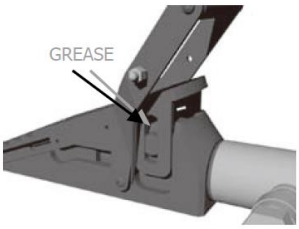


Fig 14 – Greasing the Slide Pins

6.3 Storage

6.3.1 Wipe clean thoroughly and ensure all machined surfaces are greased.

6.3.2 Store in a clean, dry environment. Avoid temperature extremes.

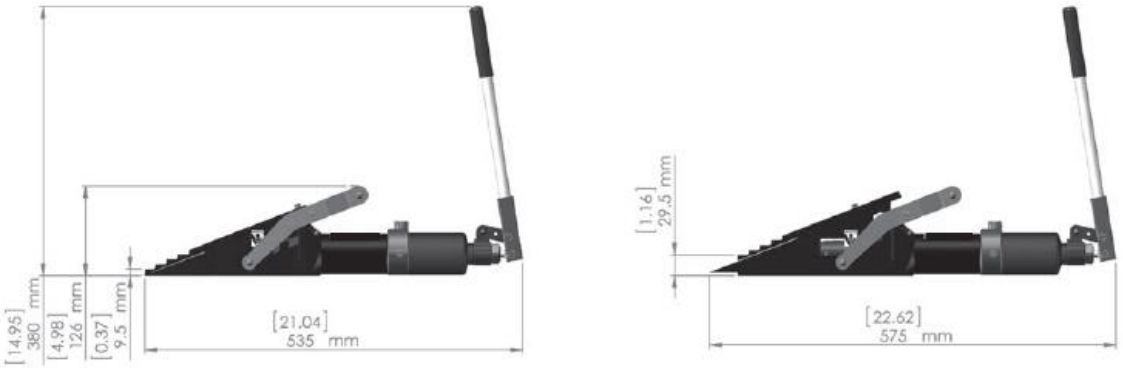
7.0 Troubleshooting

Problem	Cause	Solution
Wedge advances 50% and then stops functioning.	Air vent is obstructed.	• Remove obstruction • During operation, one hand should be on the handle of the tool while the other hand operates the pump handle so hands/fingers do not obstruct the vent
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 the system
	Release valve is open.	• Close release valve
	Air has accumulated around the pump inlet when used upside down.	• Bleed out air from reservoir
	Oil leaks on reservoir.	• May indicate a perished bladder • Refer to a Durapac authorised service centre for repair/further instructions
	Inlet check or intermediate valve ball stuck.	• Dismantle check valve, free and clean balls • Refer to a Durapac authorised service centre for repair/further instructions
Wedge moves but does not reach full pressure under load.	Intermediate valve not seating / relief valve leaking.	• Check ball for dirt then re-seat using a hammer and punch • Refer to a Durapac authorised service centre for repair/further instructions
Pressure leaks and handle rises of its own accord.	Outlet check valve is leaking.	• Check ball for dirt then re-seat using a hammer and punch • Refer to a Durapac authorised service centre for repair/further instructions
Pressure leaks and handle remains static.	Release valve is leaking.	• Release lever may not be tight enough • Refer to a Durapac authorised service centre for further instructions
	Piston seal is leaking.	• Look for oil leaking from cylinder bearing • Refer to a Durapac authorised service centre for further instructions
	Leaks on cylinder or pump body.	• Check blanking plugs for leaks, tighten • Refer to a Durapac authorised service centre for further instructions
Spongy action.	Air in system.	• Bleed system • Refer to a Durapac authorised service centre for repair/further instructions

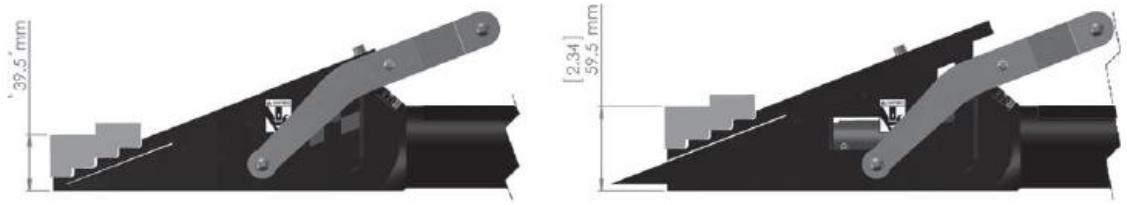
8.0 Weight and Dimensions

DESCRIPTION	WEIGHT
DLW-18S WEDGE	10 kg
CARRY CASE	2.5 kg
GROSS KIT WEIGHT	**14.5 kg**

MINIMUM EXTENSION



MAXIMUM EXTENSION (USING STEPPED BLOCK)



SAFETY BLOCK

STEPPED BLOCK