

Prepared by:-	M.Davies	Approved by:-		Date: 16/09/14
REV NO:-	1			
ECO:-	4282			

**INSPECTION UPON RECEIPT OF GOODS**

On initial receipt of goods visually check for transit damage. If found contact the carrier immediately. Hi-Force does not necessarily know the circumstances of use of a particular tool. Always refer to operating instructions for pumps, valves etc. used with the tool. If in doubt consult your Hi-Force distributor.

**SAFETY**

Read these instructions and safety warnings fully. Failure to do so could result in Death, Personal injury or equipment damage.

- Wear suitable personal protection equipment when operating hydraulic equipment. Keep all body parts away from tool and work piece / load.
- Do not use this tool on glass, plastic, wood or any other materials which could shatter.
- Do not exceed rated capacity of the tool. Hi-Force PB10 tools are designed for 700 bar maximum working pressure. Do not connect to a pump with a higher rated pressure.
- Ensure that all components in the system are rated for 700 bar.
- Use a pressure gauge in the system whenever possible.
- Do not handle pressurised hoses. Oil escaping under pressure from a ruptured hose can penetrate the skin. If oil is injected under the skin it is a serious medical emergency. See a doctor immediately.
- Avoid damaging hydraulic hoses. Always route hoses to ensure they are free from sharp bends and kinks.
- For further safety information and typical connection diagrams, consult the Hi-Force catalogue or website. [www.hi-force.com](http://www.hi-force.com)

**CARE & MAINTENANCE**

Always use genuine Hi-Force hydraulic oil. The use of other fluids may invalidate your warranty. After use, always fully retract the tool. When hoses are disconnected always fit dust caps to couplers.

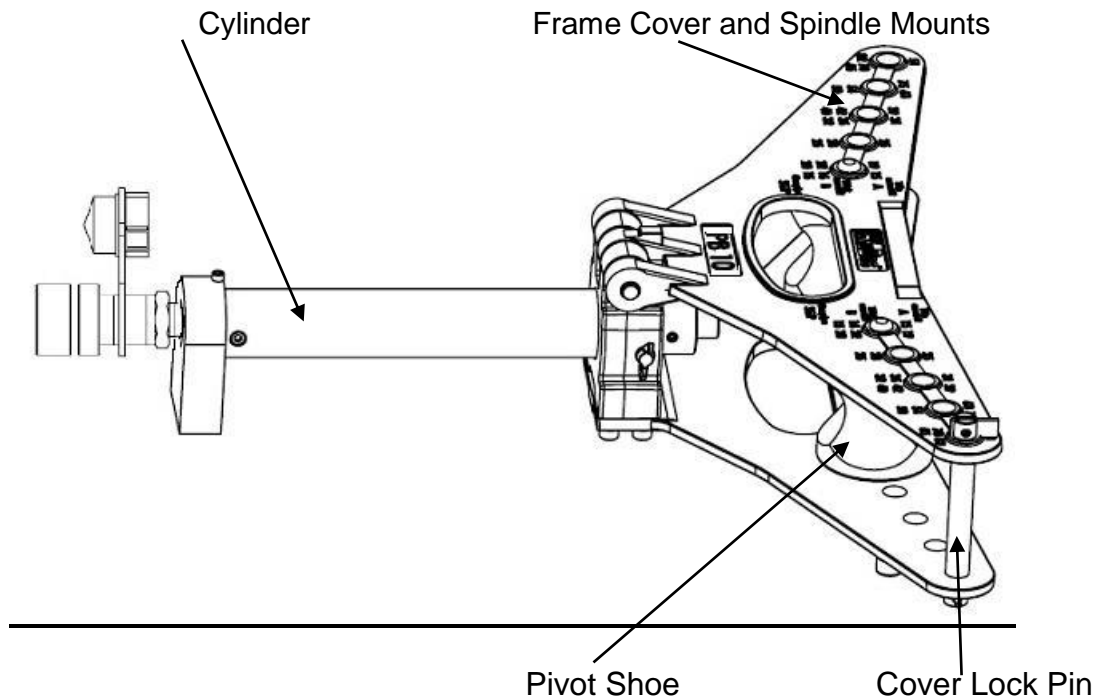
Keep the tool head free of dirt and metal chips. Use a lubricant to clean the tool when necessary. Protect tools from the elements when not in use. If storing for prolonged periods, grease exposed metal parts. Never store the tool in an expanded condition.

Suggested working temperatures : -10°C ~ 40°C. Check hydraulic fluid specifications.

Hydraulic fluid temperatures over 65°C might soften the packings and seals and cause fluid leaks.

To protect your warranty, have your cylinder serviced and repaired by an authorised Hi-Force repairer. Only use genuine Hi-Force spare parts. Spare parts sheets can be downloaded from our website [www.hi-force.com](http://www.hi-force.com)

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### Specifications:

- Width: 755mm
- Weight: 18.6 kg
- Max. Pressure: 700 bar / 10,000 psi
- Oil Required: 0.4 litres
- Max. Output: 10 tonnes
- Ram Stroke: 250 mm
- Max. Bending: 90°
- Bending Capacity

Thin Steel Conduit: 15mm-75mm (5/8")-(3")

Thick Steel Conduit: 16mm-82mm (1/2")-(3")

Gas Pipe: 15mm-65mm (1/2")-(2 1/2")

### Features

Compatible with all bending shoes designed to bend JIS standardised conduit pipe and gas pipe. Refer to catalogue, website [www.hi-force.com](http://www.hi-force.com) or your Hi-Force distributor for bending shoe range.

- Designed to bend various sizes and thicknesses of steel pipe
- Bending frame and pivot shoes are lightweight, heat-treated aluminium.
- Operated by any hydraulic pump rated at 700bar/ 10,000 psi.

### OPERATING INSTRUCTIONS

#### Before operation:

1. Make sure all parts of the product are clean and rustless, and that no loose parts exist.

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2. Ensure the hydraulic pump and hose are working properly and rated at 700 bar / 10,000psi. Ensure the hose is straightened and the couplers securely attached.
3. Ensure that there are no oil leakages occurring whilst tool is idol or under test without a pipe section in position.

□ **NOTE:** Lightly apply grease to the Bending Shoe for easy pipe removal.

**During operation:**

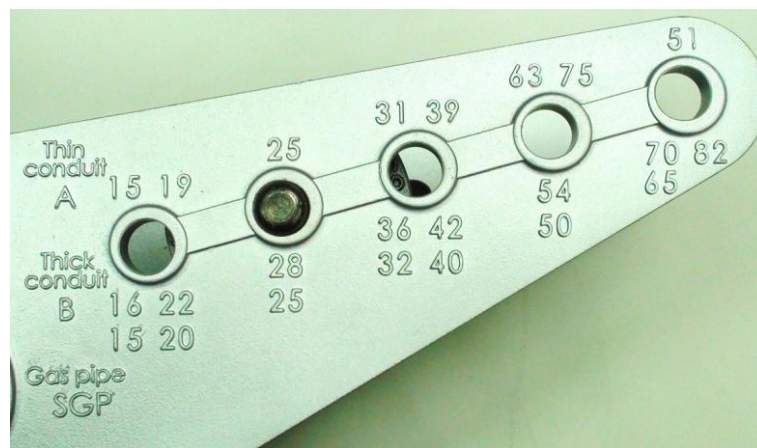
1. Always use pipes which fit the specifications listed in this manual. No over specification materials can be used.
2. Stop operating immediately if any abnormalities occur. Refer to the **Trouble-Shooting** section of this manual.

**After operation:**

1. Clean the product and ensure that all pieces are in working condition.
2. Always store this tool with the cylinder piston fully retracted.

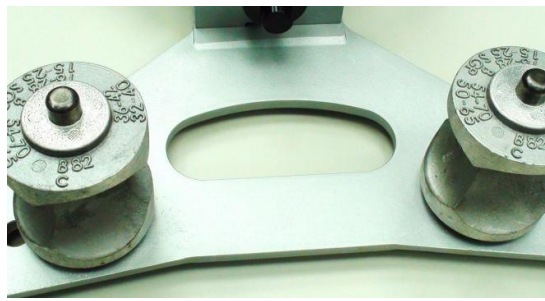
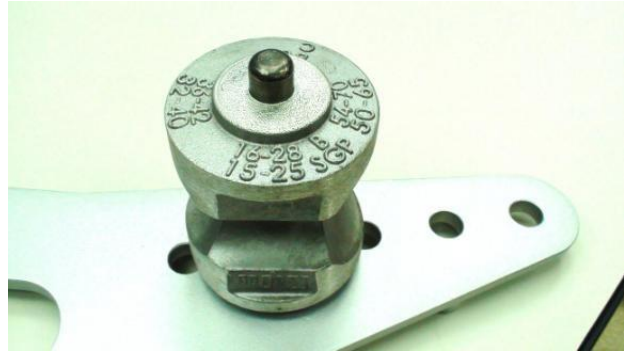
**OPERATING INSTRUCTIONS**

1. Attach the hose coupler firmly to the tool head coupler. Make sure they are well connected so oil flow is unobstructed.
2. Advance and retract the cylinder piston several times to remove air trapped in the tool, hose or pump. Retract the piston to the starting position.
3. Lift the Frame Cover and connect the bending shoe to the hydraulic cylinder.
4. Check pipe specification guidelines for the pipe you will be bending. Use the guidelines marked on the Frame Cover as reference.

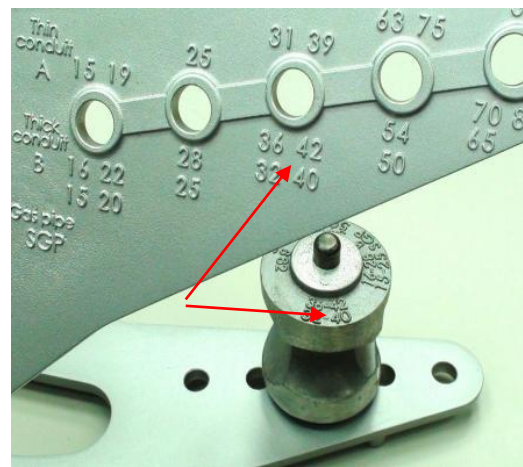
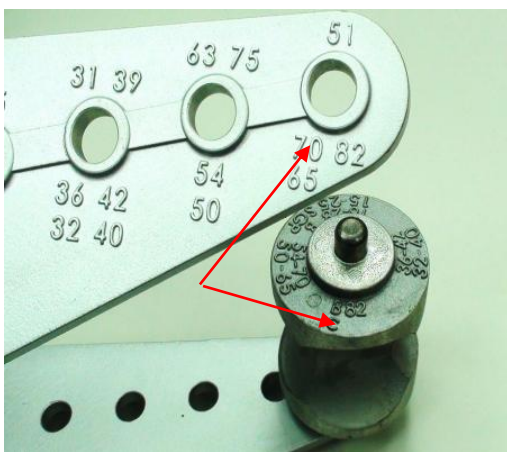


5. Place the Pivot shoes into the fixed frame. Ensure the Pivot shoes located in matching positions. Use the guidelines marked on the Frame Cover.

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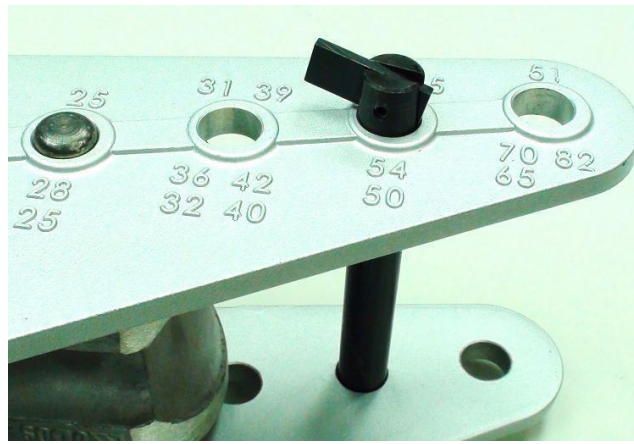
6. Turn the Pivot shoe to the correct position to match the pipe dimensions. The **Pivot shoes should be facing inwards** where they will be meeting the pipe.



7. Place the pipe through the frame, and resting against the Pivot. Ensure the area to be bent is positioned directly between the Pivot shoes.

8. Close the Frame Cover. Insert the lock-pin to secure the frame cover closed. Ensure the pin does not interfere with the bar when the tool is in operation.

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9. Hold the pipe in place and start the pump. Keep pumping until the desired bending angle is obtained.

10. After bending, release the pump pressure to retract the piston. Remove the lock-pin, lift the frame cover, and remove the pipe.

**Note:** Measure the bending angle to ensure it hasn't straightened. Repeat steps 7-10 to reach the desired bending angle, if necessary.

11. Disconnect the couplers. If the couplers cannot be disconnected, restart the pump to release the internal pressure. Replace the dust-caps on the couplers.

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**TROUBLESHOOTING.**

Refer to the following table to help identify the most common faults

**POSSIBLE CAUSE**

Tool will not advance

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- Coupler not fully tightened.
- Pump release valve open.
- Pump oil level too low.
- Pump malfunctioning.
- Pump pressure relief valve set too low
- Load too great for tool.
- Tool already at full stroke.

Tool only advances part way i.e. the bending operation cannot be complete.

- Pump oil capacity insufficient.
- External obstruction.
- Leakages of pump oil: Please contact your Hi-Force distributor.
- Applied pipe is over specification.

Tool does not advance smoothly.

- Air in system.

Insufficient operating pressure

- Couplers not secure: Secure the couplers to prevent restricted oil flow.
- Possible pressure losses: Inspect pump output for leaks. Never use your fingers when looking for fluid leaks.

Tool leaking

- Cylinder damage
- Seal damage.
- Loose connection

Tool slow to retract/does not retract

- Broken retract spring
- Valve malfunction.
- Coupler not fully tightened.

Cover lock-pin cannot be set in place or removed

- The tool frame might be deformed after attempting to bend an over specification pipe or other material.
- The tool is still under high pressure: Release pressure from the cylinder and retract the shoe before opening.

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**NOTES:**

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