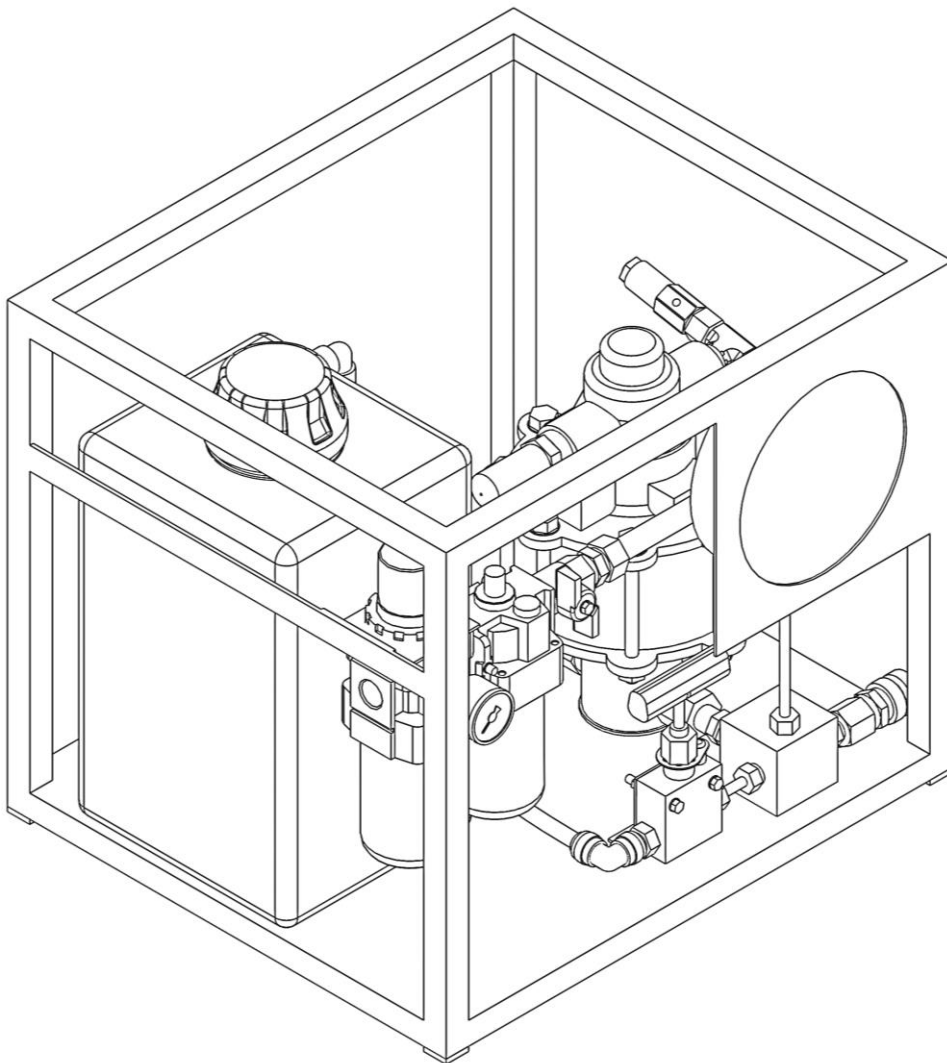


This 'Original instructions' document assumes that the operator carrying out any operation with this product is trained and competent to do so. This manual does not attempt to cover all details or variations in the equipment. Nor does this manual claim to provide for every possible contingency met in connection with the installation, operation, or maintenance thereof. Should further information be desired, or should a particular problem arise which is not covered in sufficient detail, the matter should be referred to Hi-Force.

OPERATING INSTRUCTION MANUAL

AHP-BTU SERIES | AIR DRIVEN HYDRAULIC PUMPS



Hi-Force AHP-BTU series Air Driven hydraulic pumps are compatible for use with Hi-Force STS, SBT and STU bolt tensioners as well as HTN hydraulic nuts. The pump unit is easy to operate and supplied complete with a glycerine filled vibra-gauge and quick release outlet coupling. The complete system, including an air inlet filler, regulator and lubricator unit is fitted in a robust stainless steel frame. The AHP-BTU pumps operate from a standard 7 bar air supply with an operating pressure of 1500 bar. It contains the latest product information available at the time of publication and approval. Hi-Force reserves the right to make changes to this document at any time without notice.

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1.0 Inspection upon Receipt

Upon receipt of the product, visually inspect the item for any evidence of shipping damage. Please note: the warranty does not cover shipping damage. Notify the courier immediately if shipping damage is found and refrain from putting the product into service. The carrier is responsible for repair and replacement costs resulting from damage that occurred in transit.

2.0 Safety Precautions

2.1 Introduction



Read and follow all the instructions and safety warnings carefully before handling, installation or use of any hydraulic equipment. Failure to do so could lead to equipment damage, equipment failure, personal injury or even death. Hi-Force will not be held responsible for any damage to the equipment, injury or death resulting from the unsafe use of, lack of maintenance to, or incorrect operation of the product. If in doubt on the correct use of any Hi-Force equipment, contact your nearest Hi-Force office or distributor. Only qualified personnel should be allowed to operate hydraulic equipment. If an operator has not been trained on high-pressure hydraulic equipment and its safe usage, consult your local Hi-Force sales office or distributor who can offer training courses for operators.

2.2 Work Area Safety

- Keep work areas clean and well lit. Cluttered spaces and inadequate lighting can result in unnecessary accidents.
- Keep bystanders clear of any hydraulic tool activity. Personnel working in close-range should be made aware of all high-pressure work before commencing.

2.3 General Hydraulic System Safety Precautions



WARNING! Failure to observe and obey the following safety precautions could result in property damage, significant personal injury or death;



- When operating any hydraulic equipment, all operators should ensure that all necessary personal protective equipment (PPE) is worn, as specified by their employer. Steel toe-cap safety shoes, safety glasses/visor, ear protection, and protective gloves should be worn at all times. All relevant risk assessments should be completed before the use of the equipment.
- Keep hydraulic equipment away from open flames and direct heat.
- **NEVER** use a coupler as a tool handle, especially if the system is pressurised.
- Inspect hoses regularly for damage and wear.
- **NEVER** use hoses that are frayed, kinked, abraded or leaking.
- **NEVER** handle a pressurised hydraulic hose. Hydraulic fluid escaping under pressure from a ruptured hose can penetrate the skin and lead to a significant medical emergency, and in some cases, death. Should this incident occur, seek out medical attention immediately.

NOTE: Images contained within this document are for illustrative purposes **ONLY**.

- The system operating pressure **MUST NOT** exceed the pressure rating of the lowest-rated component in the system.

Good Practice: Use a pressure gauge to monitor the entire system.

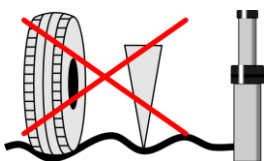
- Only use hydraulic tools/cylinders in a complete and tested, coupled system. **NEVER** attempt to use a tool/cylinder that is not correctly coupled to its operational pump.
- **NEVER** pressurise an unconnected male coupler/s.
- **NEVER** attempt to disconnect a hose from a hydraulic system until the system's pressure has been completely released. Doing so can result in that pressure becoming trapped within the system and relieving trapped pressure can be dangerous.
- **NEVER** try to relieve trapped hydraulic pressure in the system by loosening or attempting to remove the coupler. Trapped hydraulic pressure can cause a loosened coupler to dislodge unexpectedly with great force. This action could result in serious personal injury or death.
- Loosening a coupler under pressure can result in the escape of hydraulic oil at high pressure, which can penetrate the skin and cause significant injury or death.
- **NEVER** use a hammer and punch to unseat a coupler check valve that is under pressure. Doing so could result in the sudden, uncontrolled release of hydraulic oil at high pressure, which could cause significant injury or death.
- **NEVER** attempt to solve, or clean-up leaks in the system while the system is pressurised.
- Immediately replace any worn or damaged parts using genuine Hi-Force parts only.
- **DO NOT** use any hydraulic equipment if you are under the influence of alcohol, drugs or medication. Lack of attention whilst operating high-pressure hydraulic tools can result in personal injury or death.



CAUTION!

Failure to observe and obey the following safety precautions could result in property damage, equipment damage or minor/moderate personal injury;

- **NEVER** lift, carry, or move any hydraulic components by the hose or hoses connected to them.
- Avoid damaging hydraulic hoses. **ALWAYS** route hoses to ensure that they are free from sharp bends and kinks. Using a sharply bent or kinked hose will result in severe back-pressure, which can lead to hose failure.
- **NEVER** use a coupler/s to lift, carry or position a tool.
- Servicing of hydraulic equipment must only be undertaken by a qualified technician.



- **DO NOT** drop or place heavy objects on a hydraulic hose, as this may cause internal damage, which could result in rupture of the pressurised hose. A ruptured hose could cause significant damage to components and possible severe injury to personal operating nearby.

- **DO NOT** let familiarity gained with any hydraulic tools allow you to become complacent. Complacency with any tooling can result in a lack of discipline toward working guidelines and safety principles.

- **DO NOT** remove any labels from the product. Replace any damaged or unreadable labels immediately.
- Avoid loose clothing and jewellery that could get caught in moving parts, tie back long hair.

2.4 Hydraulic Pump Specific Safety Precautions



WARNING! Failure to observe and obey the following safety precautions could result in property damage, serious personal injury or death;

- **NEVER** exceed the maximum rated pressure of any hydraulic equipment. Hi-Force manufactures its AHP-BTU air driven hydraulic pumps to operate at a maximum working pressure of 1500 bar (21,755 psi).
DO NOT connect hydraulic torque equipment with a lower pressure capacity rating to any Hi-Force pump of this model series.
- Make sure all equipment connected to the pump is in good working condition.
- **NEVER** invert the unit or lay it on its side, either in use, in transport or in storage.
- **DO NOT** weld any items to the pump unit or modify it in any way from its delivered condition. Your warranty may be invalidated, and it could lead to serious personal injury.
- **ALWAYS** ensure there is clear communication between the pump operator and the tool operator. **DO NOT** operate the pump unless the tool operator indicates it is safe to do so.

Take extra care when multiple tools are being operated by a single pump. Make sure all tool operators have given the go-ahead before operating the pump.

- **NEVER** attempt to connect or disconnect a tool/hose/component while the system/pump is under pressure.
- **NEVER** leave a pressurised system unattended. If you must leave the area, release the pressure and ensure the hydraulic release valve on the pump is fully open.



CAUTION! Failure to observe and obey the following safety precautions could result in property damage, equipment damage or minor/moderate personal injury;

- **ALWAYS** stand the pump on a stable, level surface during operation.
- To protect your warranty, only use the hydraulic oil grade specified in Section 5.2.

3.0 Declaration of Incorporation/Conformity

Hi-Force declares that this product has been tested and complies with the standards set out in the relevant EU directives. The EU Declaration of Incorporation/Conformity is included as Annex A to this instruction document and is supplied with all shipments of this product.

4.0 Component Identification

1	Frame	5	Air Stop/Control Valve
2	Oil Reservoir	6	High Pressure/Pressure Release Valve
3	Oil Filler Cap	7	FRL unit (See Fig 4.3)
4	Oil Pressure Gauge		

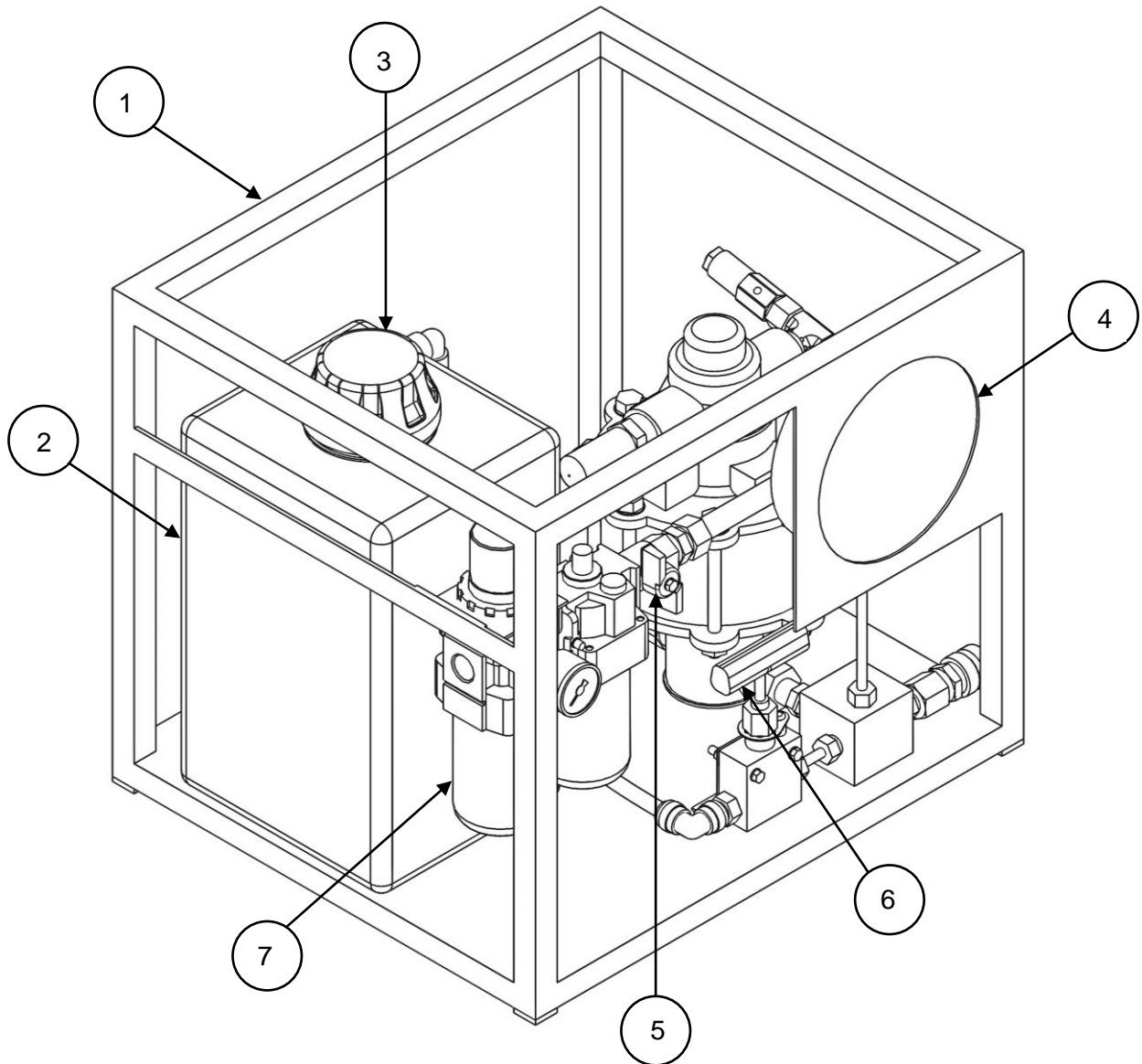


Fig 4.1: AHP Component Identification

8	Open Female Coupler	10	Silencer
9	Air Motor	11	Pressure Relief Valve

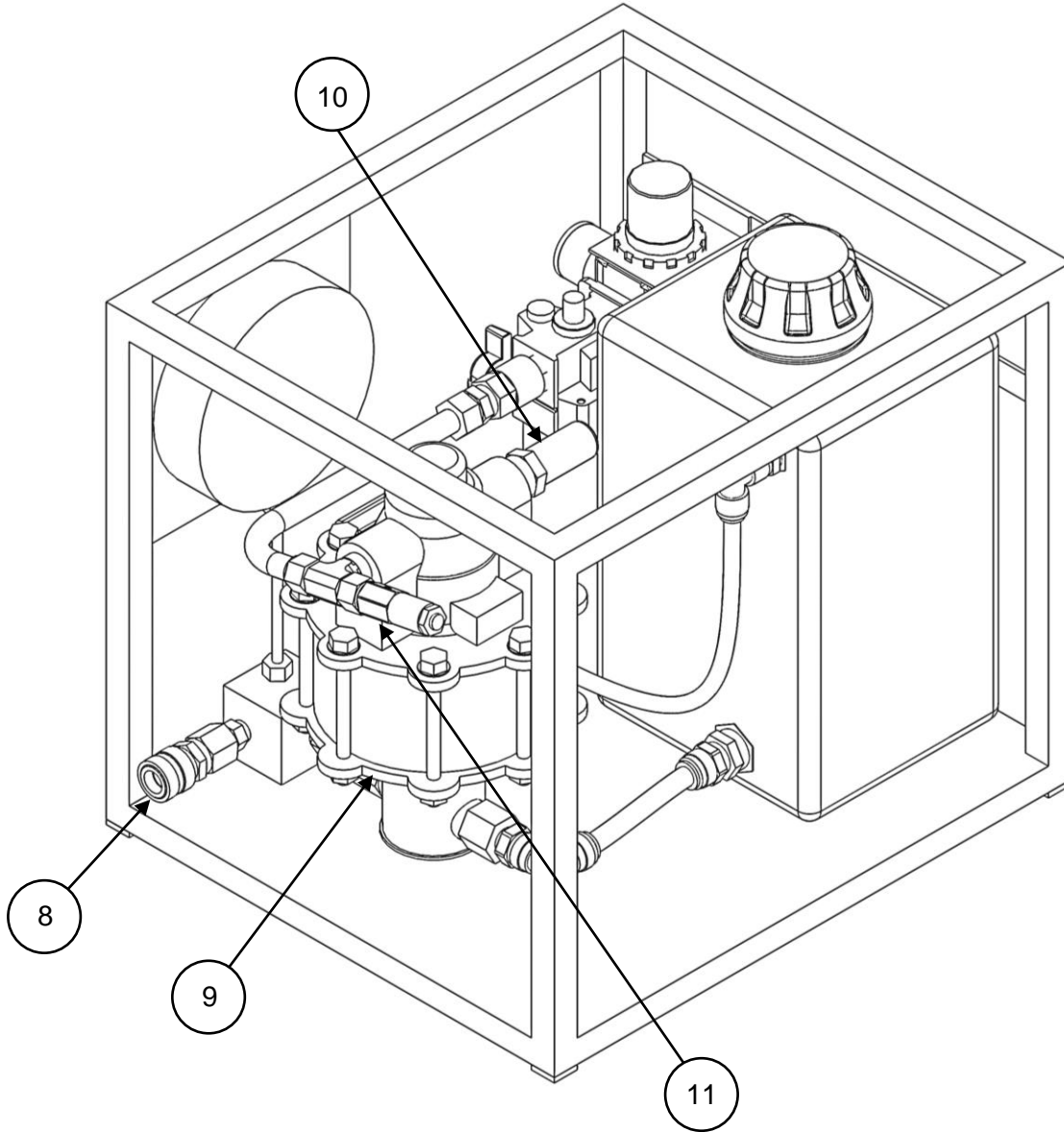


Fig 4.2: AHP Component Identification

12	Air Supply Inlet (3/8" BSP)	17	Air Lubricator Filler Plug
13	Air Regulator Control Knob	18	Air Lubricator Reservoir
14	Air Filter Water Trap	19	Air Pressure Gauge
15	Water Trap Drain Button	20	Water Trap Drain Port
16	Air Lubricator Control Knob		

FRL UNIT

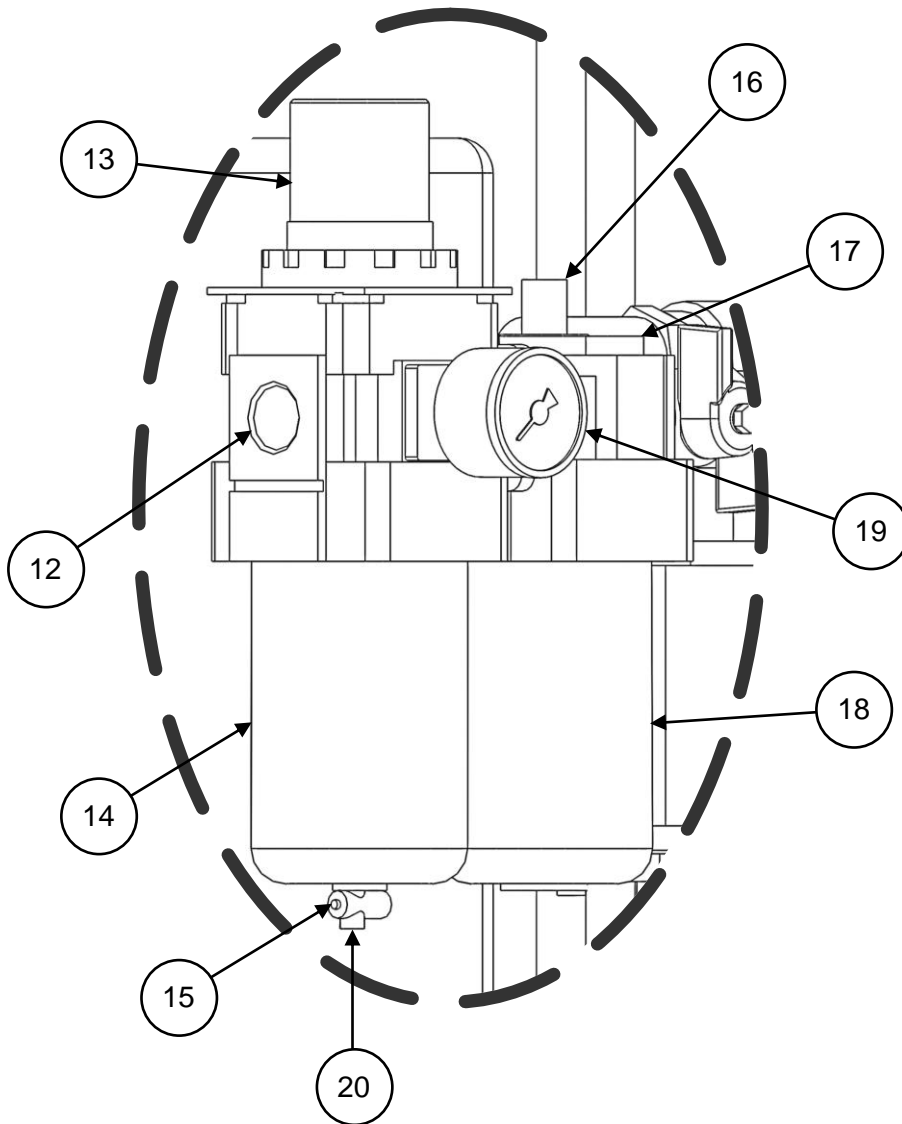


Fig 4.3: FRL Component Identification

5.0 Installation/Setup

5.1 Before First Use / Preparation

1. Immediately after unpacking, examine the unit for signs of transit damage and if found contact the shipping company.
2. Establish the oil level in the oil reservoir (2). Depending on the shipping method used, the reservoir may either be supplied full or empty. If the reservoir is empty, it must be correctly filled before use (See section 5.2). If the reservoir was supplied full of oil, no further action is required.

IMPORTANT: Running the pump without oil will result in damage.

5.2 Filling the Reservoir with Oil

IMPORTANT: The AHP- BTU air driven hydraulic pumps use **ISO46 Grade Hydraulic Oil**.

- Stand the Pump on a firm, level surface.
- Remove the filler cap (3) from the filler breather.
- Fill the reservoir with clean, high-quality ISO46 hydraulic oil via the opening at the top of the reservoir.
- Replace the filler cap (3).

IMPORTANT: Only add oil to the reservoir when the attached tool is fully retracted. Failure to do so may result in the system containing more oil than the reservoir can hold.

5.3 Hydraulic Connections

- **ALWAYS** use Hi-Force XHC hoses to make connections.
- Connection to the hydraulic pump must **ALWAYS** be made to the male coupler on the tensioner/Hydraulic Nut.

5.3.1 Connections

Connections between couplers (see fig 5.1) are made by [1] pulling back the spring collar on the female coupler. [2] Inserting the male coupler into the female coupler and then releasing the female spring collar. [3] Lock the connection by (1) pushing forward on the locking-collar and then (2) twisting it clockwise and releasing. A gentle tug on the hose should be enough to make sure the hose is correctly connected.

Disconnections are the reverse of the above process.

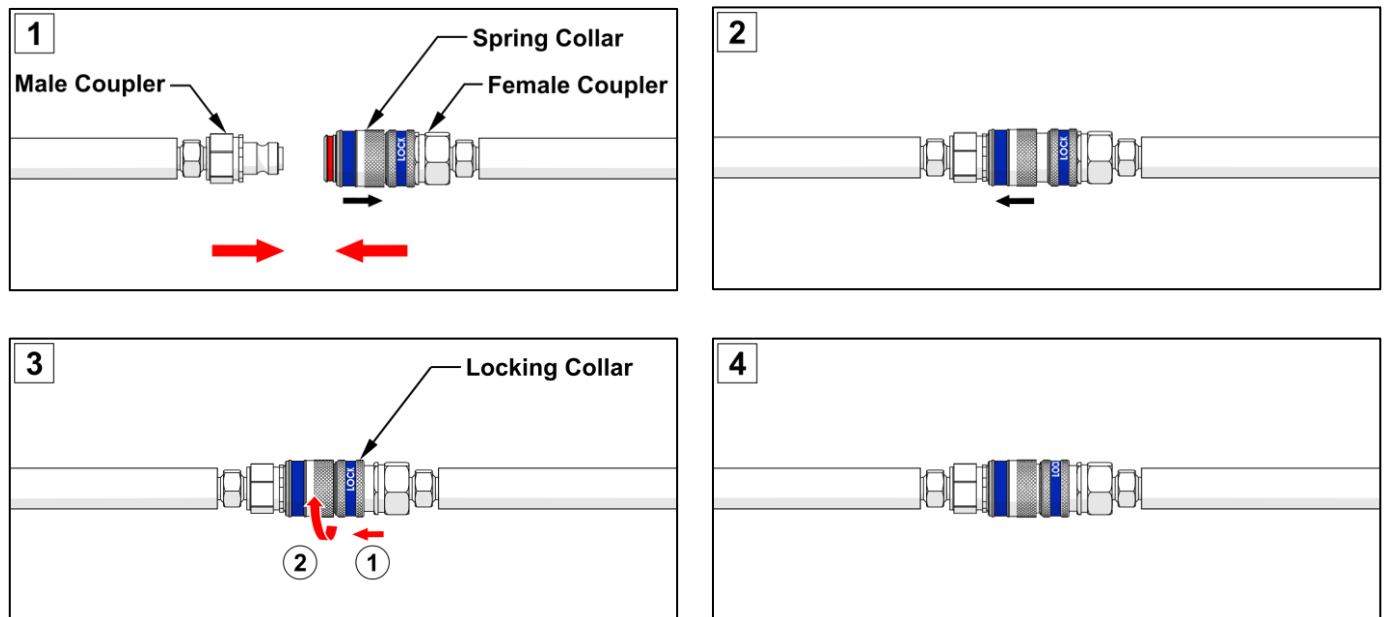


Fig 5.1: Hydraulic Connections

5.3.3. Connecting a Bolt Tensioner / Hydraulic Nut to the Pump

NOTE: For full details on how to connect a bolt tensioner/ hydraulic nut to the pump, refer to the operating manual of the tool being used.

5.4 Filling the Air Supply Lubricant Reservoir

IMPORTANT: The AHP-BTU Series Air Motors require **ISO VG 32 (SAE10) Oil**.

- Turn Off or Disconnect from the Air Supply.
- Remove the Air Lubricator Filler Plug (17).
- Fill the Air Lubricator Reservoir (18) with **ISO VG 32 (SAE10) Oil** to the fill line marked on the reservoir.
- Replace the Air Lubricator Filler Plug (17).

5.5 Air Supply Requirements

- The air supply must be delivered via a suitably rated air hose of at least 1/2" (13mm) diameter.
- The air supply pressure must be at least 5.5 bar (80 psi), but preferably 7 bar (100 psi).
- The compressor must be able to maintain a minimum flow rate of 50 cfm (24 l/sec).

5.6 Airline Connection

The air supply must be connected (via a suitable fitting) to the 3/8" BSP inlet port (12) on the FRL Unit.

5.7 Air Lubricant Setting

Adjust the air lubricant control knob (16) such that 1 drop of lubricant is added to the air supply approximately every minute. The lubricant drops can be seen through the lubricant control knob (16) on the top of the FRL unit.

NOTE: Allowing more oil than this into the motor can lead to contamination of the exhaust flow.

5.8 Priming the Pump

The pump is self-priming and will not need to be primed before use.

6.0 Operation

Hi-Force AHP-BTU pumps are designed for use with STS, SBT & STU bolt tensioners as well as HTN hydraulic nuts. Ensure the operator has fully read and understood this manual in conjunction with the chosen bolt tensioner/hydraulic nut operating manual to ensure correct and safe operation of all hydraulic equipment in the system.

Before applying pressure to the system make sure you observe the following points

- You are aware of the correct operation of the pump unit.
- You are aware of the maximum working pressure of the bolt tensioners/hydraulic nuts.
- You are aware of the maximum piston movement of the bolt tensioners/hydraulic nuts.
- You are aware of the required working pressure/s that must be applied to the bolt tensioners/hydraulic nuts.
- You have read and fully understood the tensioning/de-tensioning procedure.
- You have performed the relevant risk assessment/s and have a method statement (safe system of work) for all operators to follow.
- You have read and fully understood the tensioning sequence and procedure.

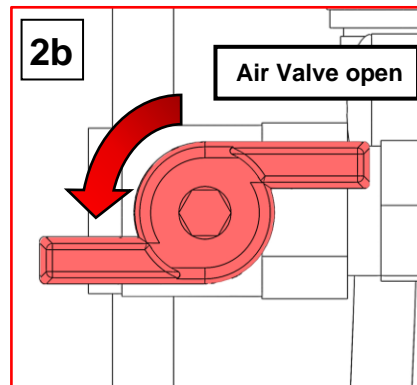
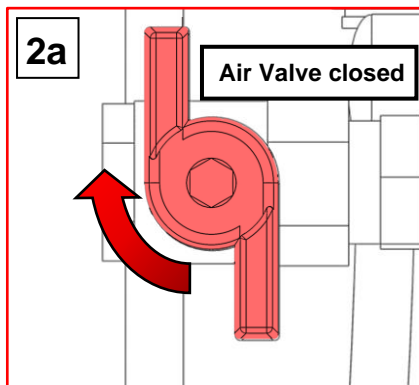
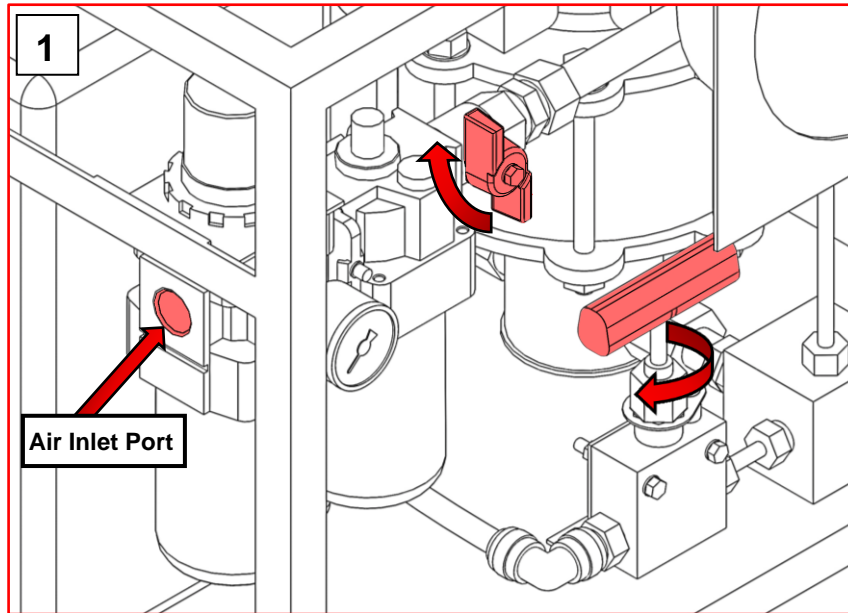
6.1. Preparing the Pump for Operation

1. Fit a suitable air inlet fitting to the 3/8" BSP inlet port (12) on the FRL Unit [1].

NOTE: It is recommended to use a suitable whip check safety cable to secure the air inlet hose to the air inlet fitting.

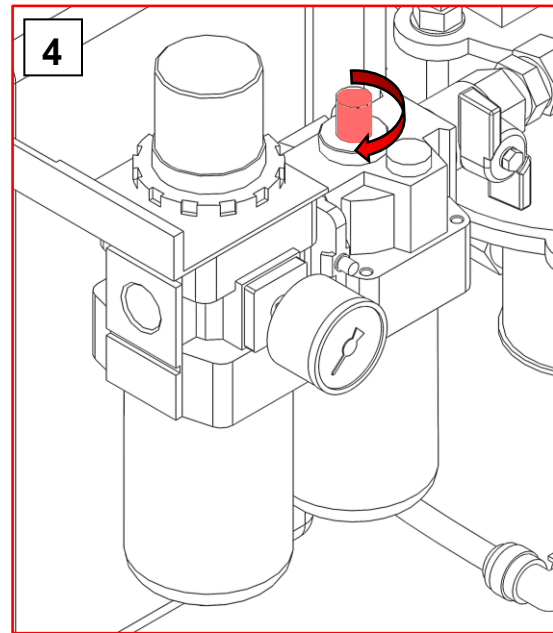
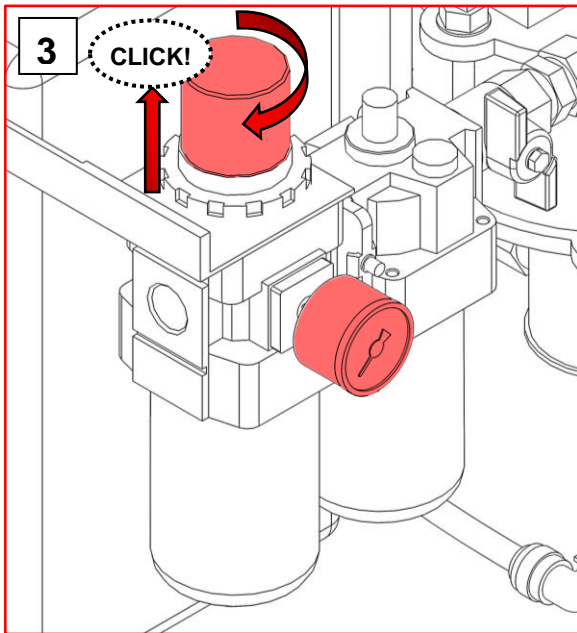
2. Twist and turn the High-pressure hydraulic valve handle (6) anti clockwise to open the valve, then turn the Air valve handle (5) ¼ turn clockwise to close the valve [1] [2a].

3. Turn the Air supply on from the mains.



4. Lift the air regulator control knob (13) (the control knob will click securely in position), then twist and turn the knob clockwise until roughly 2 bar of air pressure is achieved on the air gauge (19) [3].
5. Twist and turn the air lubricator control knob (16) until roughly 1 droplet per minute is achieved [4].
NOTE: Allowing more oil than this into the motor can lead to contamination of the exhaust flow.
6. Open the Air stop/control valve (5) [2b].
7. Close the High pressure/Pressure release valve (6) clockwise.

NOTE: close valve to finger tight only.



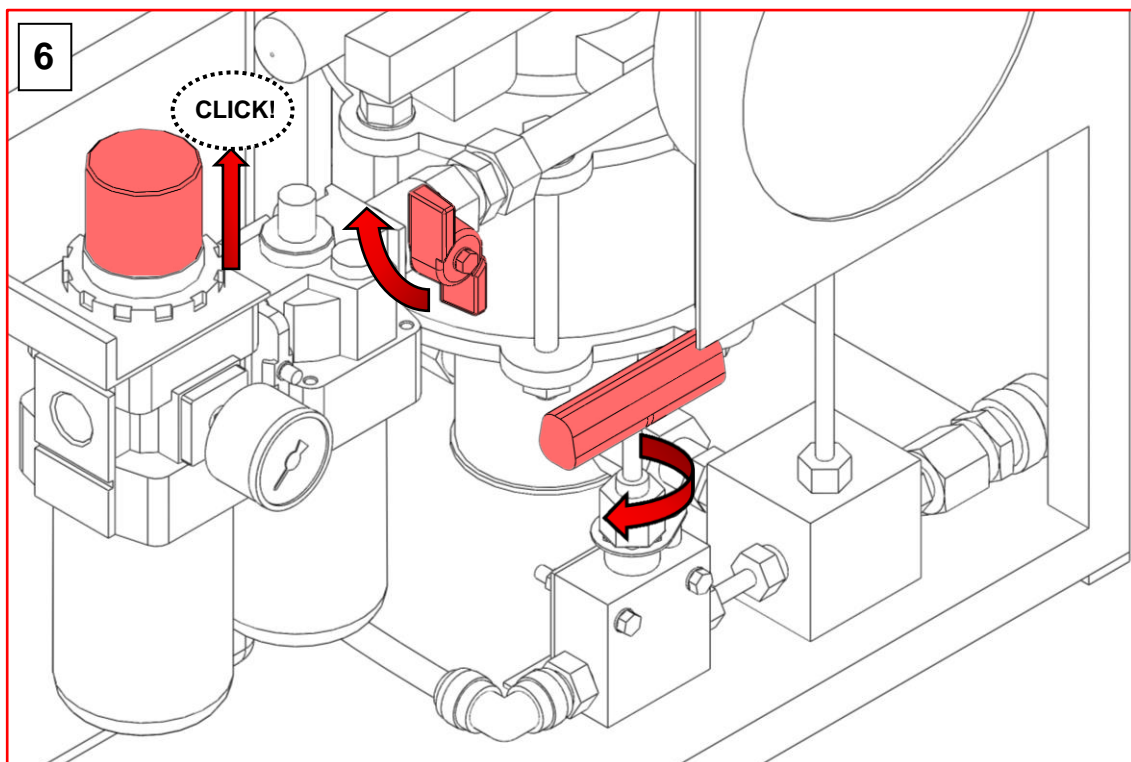
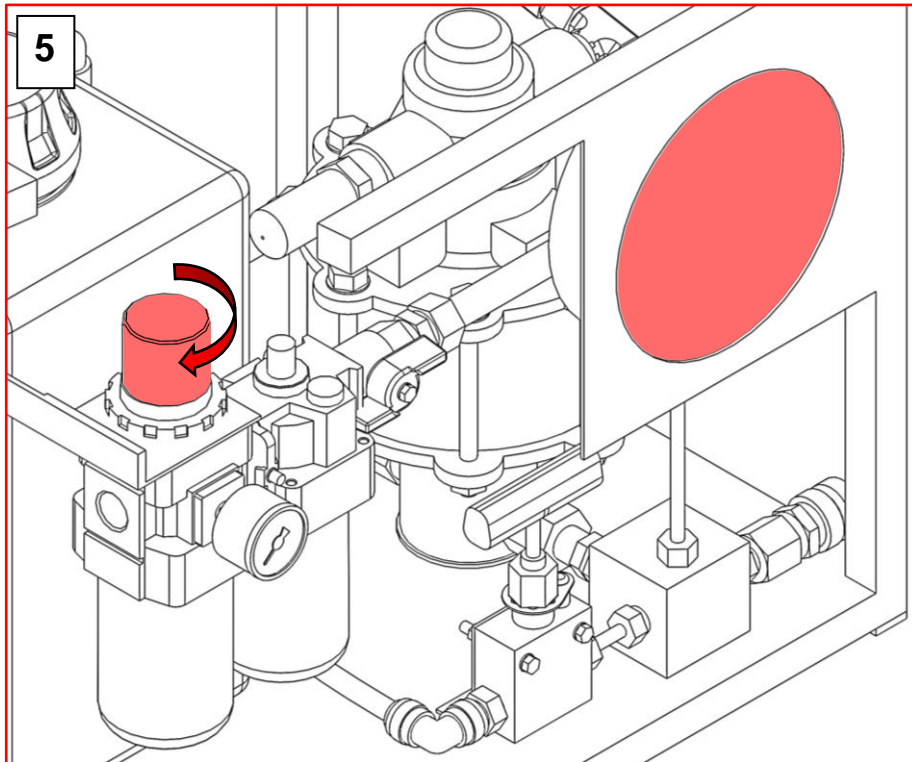
6.2 Setting Hydraulic Pressure on the Pump Operation

1. Twist and turn the Air Regulator control knob (13) clockwise to build hydraulic pressure on the Hydraulic Pressure Gauge (4) [5].
2. Once the desired pressure is reached, next slowly open the high pressure/pressure release valve (6), by twisting and turning the handle clockwise, to release the pressure and then close the valve again (6) (anticlockwise) and check the hydraulic pressure reading on the hydraulic gauge (4). If the Pressure reading has changed, readjust the pressure again (repeating step 1 followed by step 2 again).

⚠ WARNING! If the pressure reading has dropped below the required pressure. Simply use the air regulator control valve (13) to build the pressure back up to the desired pressure. However, if the pressure reading has gone above the required pressure, you **MUST** release the hydraulic pressure using the high pressure/pressure release valve (6). Then reduce the air pressure using the air regulator control knob (13). To build hydraulic pressure back up again, close the high pressure/pressure release valve and adjust the hydraulic pressure again using the air regulator control knob (13), until the desired hydraulic pressure (4) is achieved, (repeat this process again, if necessary, until the desired pressure has been achieved).

3. Once the hydraulic pressure is set, open the high pressure/pressure release valve (6), close the air stop/control valve (5) and press down on the air regulator control knob [6]
4. The pump is now ready to be connected to the Bolt tensioner/Hydraulic nut via the Female coupler (8).

IMPORTANT: ENSURE all the above steps have been completed before connecting to the tool. For full details on how to connect the tool to the pump please read the tools operating manual.



6.3 Disconnecting/storage of Pump Operation

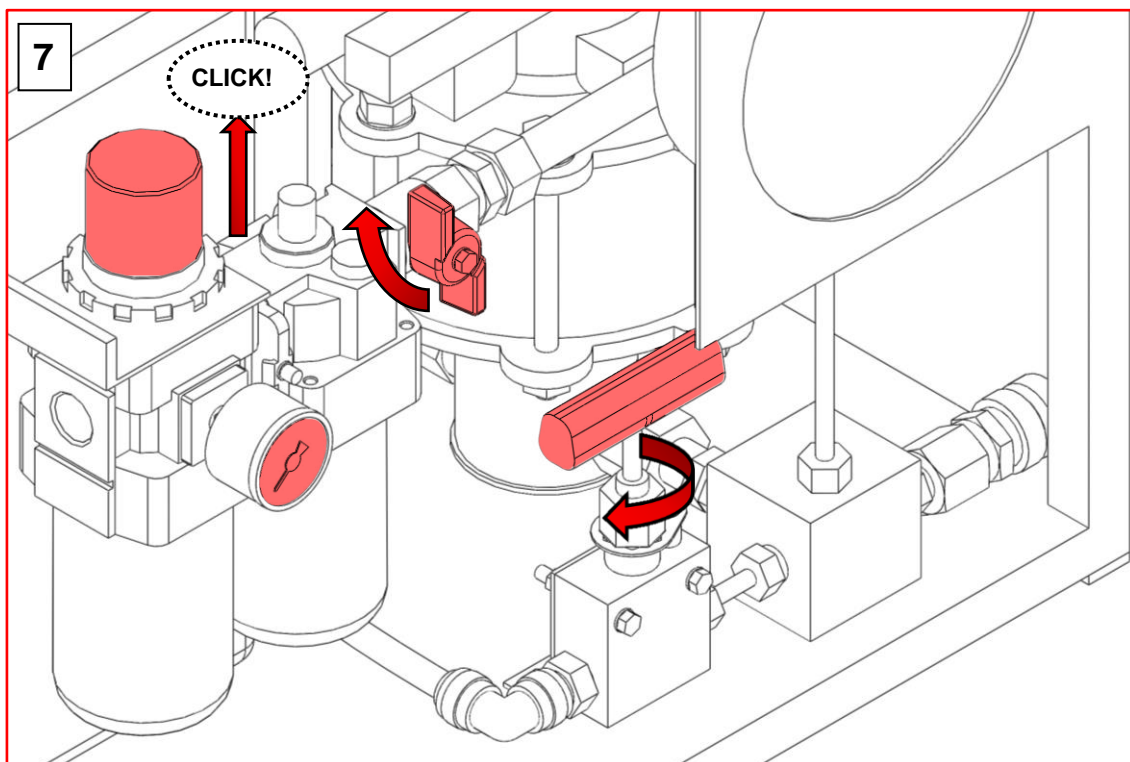
1. Once the operation/use of the pump has been completed. Open the High Pressure/pressure release valve (6), close the air stop/control valve (5), pull up the Air regulator control knob and unwind the knob (13) until 0 bar of air pressure is reading on the air pressure gauge (19) [7].
2. Switch the air supply from the mains off.

⚠ WARNING! Even with the air supply being switched off there will still be air pressure trapped in the hose between the mains air supply and the pump.

3. Turn the Air stop/control valve into the open position [2b].
4. Twist and turn the air regulator control knob (13) to build up air pressure. Just enough to be able to release the trapped air pressure.

NOTE: You should be able to hear the air pressure being released.

5. Once the trapped air pressure is released, switch the air stop/control valve (5) into the closed position [2a]. then fully turn (anticlockwise) the air regulator control knob (13) and push down on the knob, to lock it in place.
6. Air supply hose is now ready to be discounted and the pump can now be safely put away and stored.



7.0 Specifications

Refer to the nameplate on the pump for model identification.

AHPTBTU Air Driven Hydraulic Pumps					
Model Number	Usable Oil Capacity [Litres]	Oil Flow Per Stroke [cm ³]	Outlet Coupler	Air Consumption	Weight (including oil) (kg)
AHP275BTU	7.5	1.6	STFC4	28 scfm (0.79 m ³ /min)	32
AHP2-237BTU	7.5	6.1	STFC4	56 scfm (0.79m ³ /min)	24

8.0 Troubleshooting

Hi-Force AHP-BTU air driven hydraulic pumps should be serviced and repaired only by authorised Hi-Force repair centres. The following table gives possible causes and solutions for common problems.

TROUBLESHOOTING GUIDE		
Problem	Possible Cause	Solution
1. Air motor / Pump will not start.	a. Air supply not connected.	Connect air supply.
	b. Low air pressure / volume.	check the regulated air pressure is available via the air pressure gauge (19) mounted on the FRL unit.
	c. Air supply restricted	check the air stop/control (5) valve is in the open position [2b].
	d. Air motor is damaged, seized or worn.	Contact your local Hi-Force office / distributor.
2. Air motor stalls or struggles to create pressure.	a. Low air pressure / volume.	Check air supply, including regulator setting and the size of the connecting hoses to ensure the correct airflow / pressure requirements are met. (See section 5.5-5.6)
	b. Inadequately lubricated air supply.	Check air lubricator levels and make sure the oil drip rate is correct. (See section 5.7)
3. Pump struggles to build pressure or maintain pressure under load.	a. Oil level too low	Check unit for visible leaks. Add oil as per section 5.2.
	b. External oil leak in the system.	Contact your local Hi-Force office / distributor.
	c. insufficient air pressure causing pump to stall	Check air supply, including regulator setting and the size of the connecting hoses to ensure the correct airflow / pressure requirements are met. (See section 5.5-5.6)
	d. high pressure/pressure release valve not closed	close high pressure/pressure release valve (6) to build up pressure.
	e. tube connections loose in the system.	check tub connections in the system and rectify.
	f1. hydraulic check valves have developed a leak. f2. fluid bleeding past the seals in the hydraulic tensioners.	Contact your local Hi-Force office / distributor
4. Pump running incorrectly	a. pump appears to be short stroking and running too fast without pumping correctly	usually, indicates the air check assembly is not working as it should be. Contact your local Hi-Force office/distributor
	b. excessive amount of oil or water is coming through the pump air exhaust	1. the lubricating unit on the air supply is delivering too much oil. Adjust accordingly (see section 5.7) 2. the filtering unit in the air supply is not functioning correctly. The bowl should be cleaned periodically to ensure delivery of clean air to the pump. 3. the fluid being pumped may be leaking past the seals in the hydraulic cylinder into the air motor. The unit will require inspection and repair.
5. Noisy Operation	a. Air leaking into the hydraulic system.	Visually inspect all areas where air might leak into the hydraulic system.

TROUBLE SHOOTING GUIDE CONTINUED...

Problem	Possible Cause	Solution
	b. Oil level too low.	Check unit for visible leaks. Add oil as per section 5.2.
6. Gauge displays no pressure reading.	a. Faulty gauge.	replace gauge
	b. Pump will not build pressure.	See problems 2 & 3 above.

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