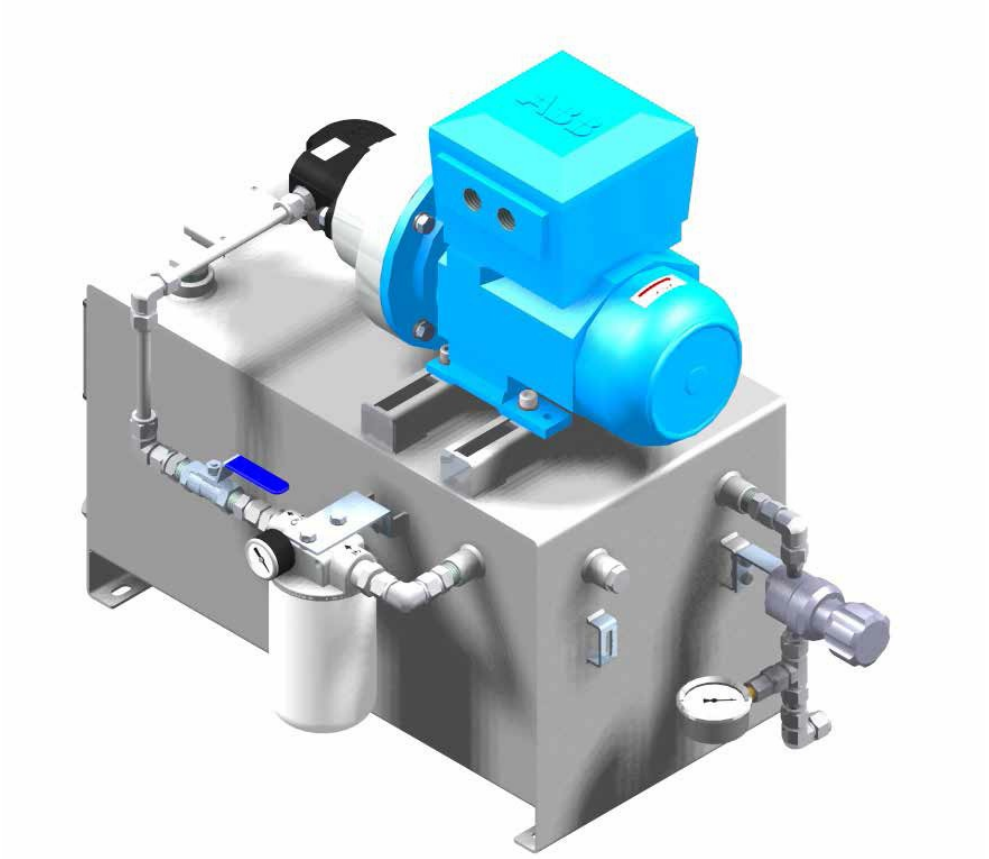
# OIL PUMPPAC

## Installation Operations & Maintenance Instructions



AESSEAL®

EXPERIENCE THE EXCEPTIONAL

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## Health and Safety

- This system has been designed for use only as a barrier fluid system for mechanical seals using a suitable non-hazardous barrier fluid.
- Isolate the process and power on installation, maintenance and decommissioning and ensure that the system pressure has been relieved before undertaking maintenance.
- The system should only be installed by competent engineering personnel
- Electrical connections must be made in compliance with applicable legislation and / or local requirements by a competent / qualified electrician.
- If there is any risk of FIRE the system must be fitted with a suitable pressure relief device to prevent over-pressurisation.
- Pipe relief valves discharge to safe area (when fitted).
- Pressure test the complete system assembly at 1.1x maximum working pressure (duration 5 minutes) and ensure the system is completely leak free before full operation.
- Do not over-pressurise the system beyond the maximum design pressure. If there is any possibility of over-pressurisation, the system must be fitted with a suitable protection device.
- Do not exceed the operating limits of the system. Not designed for cyclic loading.
- The system may get hot in operation with risk of burn injury, and suitable engineering controls or guarding should be adopted where necessary. The risk from Legionella bacteria should be assessed with water barrier fluids at temperatures between 20°C to 45°C (68°F to 115°F).
- If the barrier fluid becomes contaminated it is recommended that the barrier fluid is replaced taking necessary precautions. If the contamination is potentially corrosive or damaging to the system remove from service and contact AESSEAL for technical advice.

## Environment

Once the barrier fluid and system have reached the end of its life, it should be disposed of in accordance with local regulations and with due regard to the environment.

**For further information please contact AESSEAL®**



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## Installing & Commissioning

### Typical OIL PUMPPAC

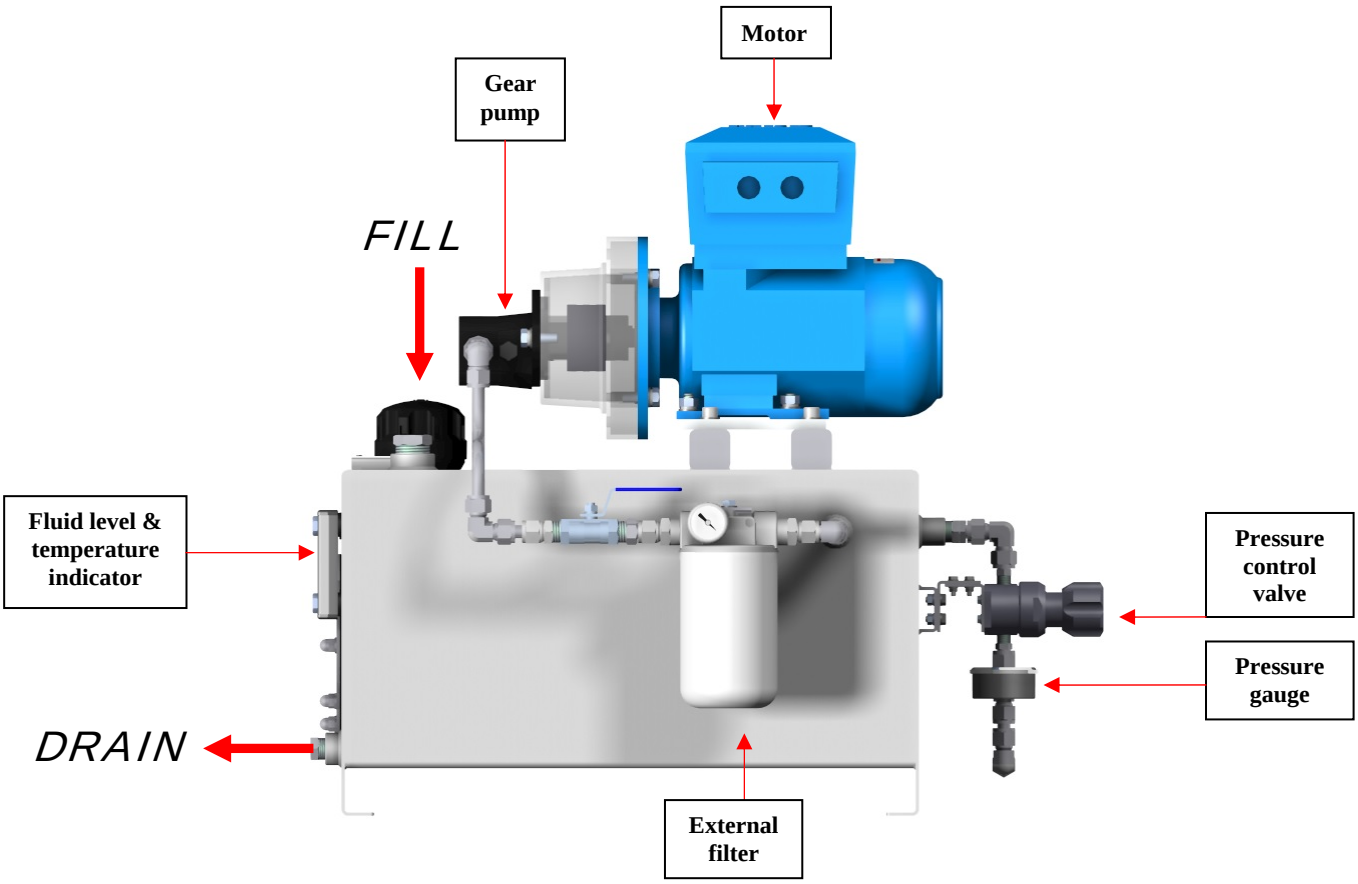


Fig.1 Typical layout


Fig.1a Typical layout

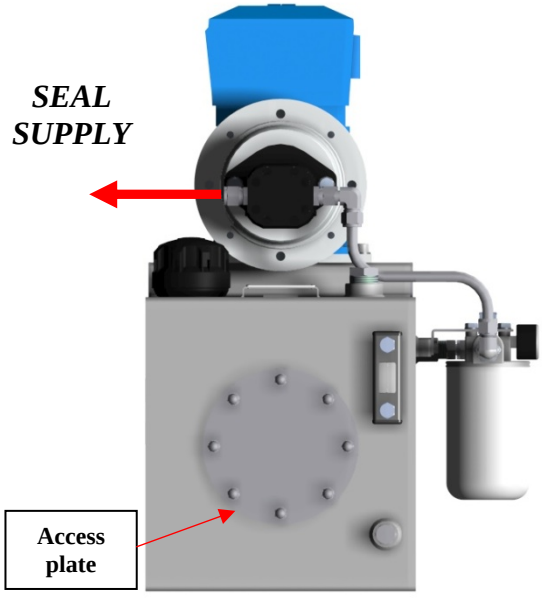


Fig.1b Typical layout

**Please also refer to the drawing contained in the document pack whilst reading these instructions!**



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Fig. 2 Typical P&ID Configuration

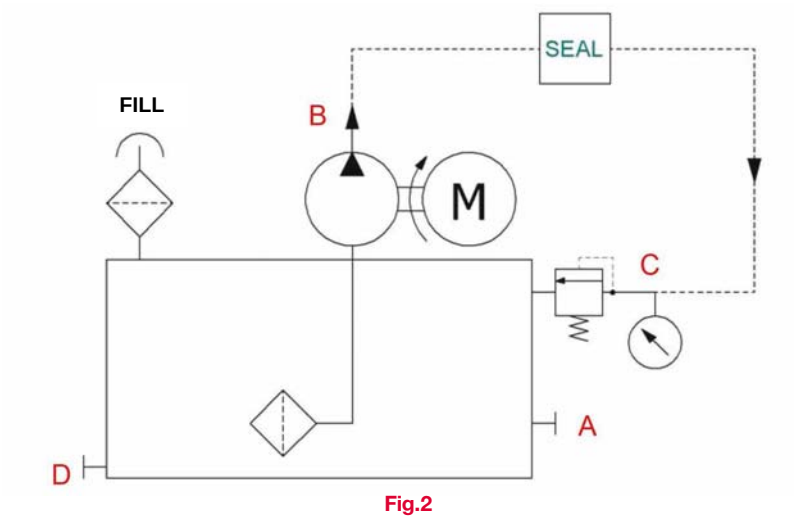


Fig.2

## Installing & Commissioning

### Connections

**Ensure all connections are made:**

A Spare (plugged)

B TO seal supply point

C FROM seal return point

D Drain connection

- The Pumppac™ should be situated on any convenient, flat and level surface such as a concrete floor or a specially constructed framework, as close to the mechanical seal to which it is being connected as possible.
- The pressure control valve is fitted as standard on the tank return connection. If the barrier fluid supplied to the seal is to be unpressurised, then the valve should be removed to prevent accidental operation.
- If the Pumppac™ is to be switched off automatically when the equipment is not in use, then care must be taken to ensure that it is restarted either before or at the same time as the equipment.
- On hot applications, the Pumppac™ should be left running after the equipment stops, to prevent residual overheating of the seal. This can be achieved automatically by fitting a suitable timer on the power supply.
- Pipe runs should be as short and straight as possible, and should not be positioned close to any heat source such as steam lines etc. We recommend that ½" OD steel tube or suitable flexible hoses are used. Ensure that all connections are assembled and tightened correctly to the manufacturer's instructions.
- The pipe run should be suitably supported and secured, avoiding potential hazards, such as steam pipes, walkways with due regard to access and maintenance etc.
- The reservoir should be filled with a suitable oil based barrier fluid at the FILL point by removing the filler breather cap until the level is approximately one inch from the top of the sight glass. Take care to avoid spillage of barrier fluid.
- The unit should be left switched off for approximately 60 minutes in order to allow any entrapped air to escape from the barrier fluid.



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- After the electrical connection is complete, start the Pumppac™ motor momentarily to check the direction of rotation (indicated by an arrow on the motor fan cover). If necessary, correct the direction of rotation by transposing the electrical connections on the motor.

  NB. An Oil PUMPPAC™ is designed to rotate Clockwise in normal operation when viewed from the motor end.
- Open the back pressure valve to its fully open position.
- Allow fluid to circulate through the seal and back to the tank to prime the system. Check for any leaks, and rectify before continuing.
- Adjust the back pressure control valve to give the desired seal barrier pressure, as shown by the pressure gauge fitted to the return line. Check again for any leaks, and rectify before continuing. The Pumppac™ must not be over- pressurized beyond system limits.
- It is recommended to monitor the static system pressure for several hours whilst carrying out visual checks at all connection points for signs of leakage and checking remote instrumentation is functioning correctly.
- Once satisfied the system is pressure tight, the equipment can be run up in accordance with the operating instructions. Monitor the seal and system for several hours paying close attention to seal inlet and outlet temperatures, vibration, noise, visible leakage and pressure loss.
- For potentially explosive atmospheres an ATEX PUMPPAC™ is available.

## Operation

- The “heart” of the system is a motor driven gear pump. This is a “positive displacement” type of pump, and its fluid output remains largely constant over a wide range of system-pressures. This makes it extremely versatile and easy to set up. The Pumppac’s™ intended use is for the provision of pressurised barrier fluid to support mechanical seals fitted to rotating equipment.
- In normal use, the full flow from the pump is fed directly to the quench connection on the seal. From the drain connection, the flow returns via a pressure control valve back into the tank. By adjusting the control valve, the barrier fluid pressure in the seal can be precisely set to the recommended value of 1 bar / 14.5 psi above stuffing box pressure. The tank is not pressurised - only that part of the system from the pump delivery, through the seal to the control valve contains pressurised fluid.
- An adjustable bypass valve is built into the pump head, to ensure that any pipe blockage or other flow restriction does not lead to uncontrolled pressure increases at the pump outlet. For further information please consult the manufacturer’s data sheet.

**For system specifications and design limits, please see drawing.**

## Noise Emission Declaration

In accordance with BS EN ISO 20361:2009 (Grade 2) and BS EN ISO 3744 the A-weighted emission sound pressure level, LpA, does not exceed 70 dB (A). The noise measurements were taken at a distance of 1 metre from the surface of the Pumppac™ at a height of 1.6 metres from the floor and measurement uncertainty is 2.5 dBA.



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## Maintenance

- The system should be maintained in accordance with site standards, or local regulations.
- One week after system operation, the condition of the barrier fluid and suction filter must be checked, or after any major maintenance i.e. Mechanical seal change.

### Daily

- Check and record the system pressure reading, any change may be a sign of a developing problem, such as a blockage/advanced seal leakage.
- Check for signs of leakage from seal, system, and pipe work.
- Check barrier fluid level/temperature and top-up/adjust as necessary.
- Check the water supply to cooling coil (if fitted) is on. Record and monitor flow, and the inlet and outlet temperatures.
- Check any alarms on the pressure and level switches or transmitters if fitted.

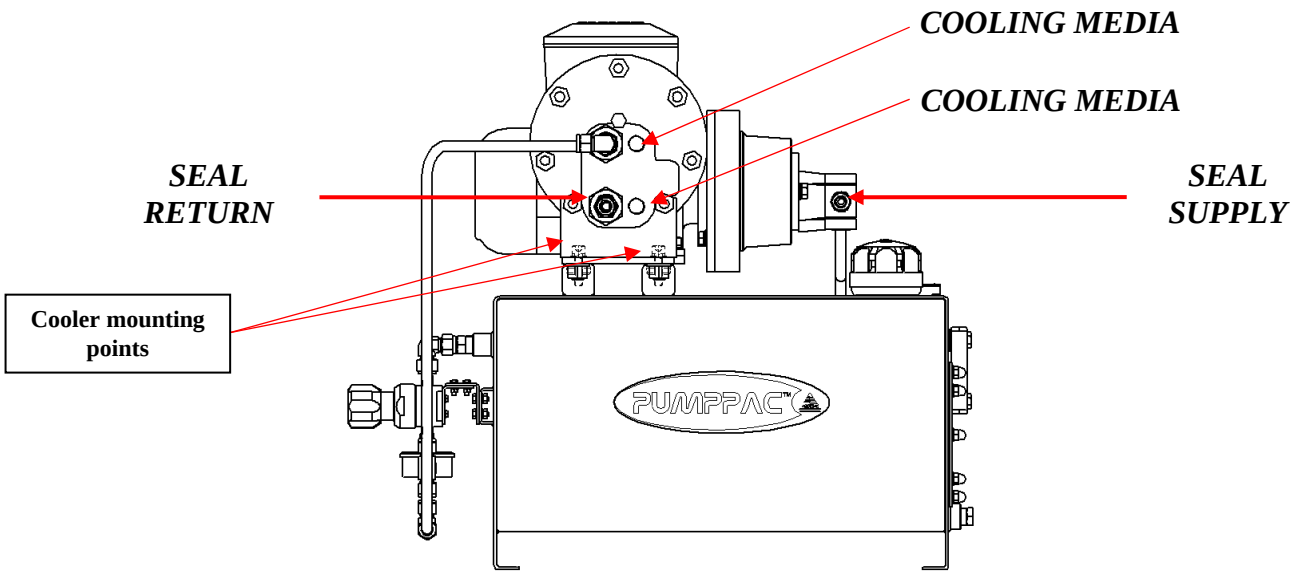
### Monthly

- Any filters (If fitted), should be inspected every month and changed if contaminated/blocked, see filter integral vacuum gauge if fitted.
- Any discolouration of the barrier fluid or contamination of the filter may be an indication of leakage of the inboard mechanical seal, and should be investigated immediately.

## Optional extras

### Cooler

- If a Cooler is used with the PUMPPAC™, then please use the installation instructions provided from the manufacturer.
- Check for any leaks on the cooler, connections and pipe work and rectify before continuing.
- Allow the system to stabilise and warm-up, checking that pressures remain stable and that no leaks appear.



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## Plate Heat Exchangers

- If a Plate Heat Exchanger is used with the PUMPPAC™, then please use the installation instructions provided from the manufacturer.

## Multiple Seals Option

- It is an option for the oil supply from the pump to be split to provide flow to 2 or more seals. This is generally achieved by fitting flow orifice plates in the feed line to each seal. The return line to the tank will be fitted with the correct number of back pressure valves, which will ensure that the pressure is maintained to each seal.
- Nb. Extra care should be taken during installation, commissioning, and decommissioning of the pumppac to ensure control to the seal is constantly maintained. For further information, please contact your local AESSEAL representative.

## Pressure & Level Transmitters/Switches

- Adjust the pressure and level transmitter/switch until desired working settings are reached; consult manufacturers operating manuals for any technical information.
- If you have purchased other optional extras, please refer to the installation instructions supplied by the manufacturer

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