

Installation:

- Installation must be carried out in accordance with the circuit or piping diagram.
- Always cover or cap all HMF-02 case drain and high pressure hydraulic lines during the installation of a new or replacement HMF-02 motor.
- Always insure that all connections to the HMF-02 replacement motor are capped or covered during the initial installation.
- Connect and tighten each hydraulic line one at a time removing caps or covers just before each connection is made.
- During the initial start-up, additional care must be taken to vent entrapped air from the motor rear head (if the motor is mounted vertically) via the highest available port.

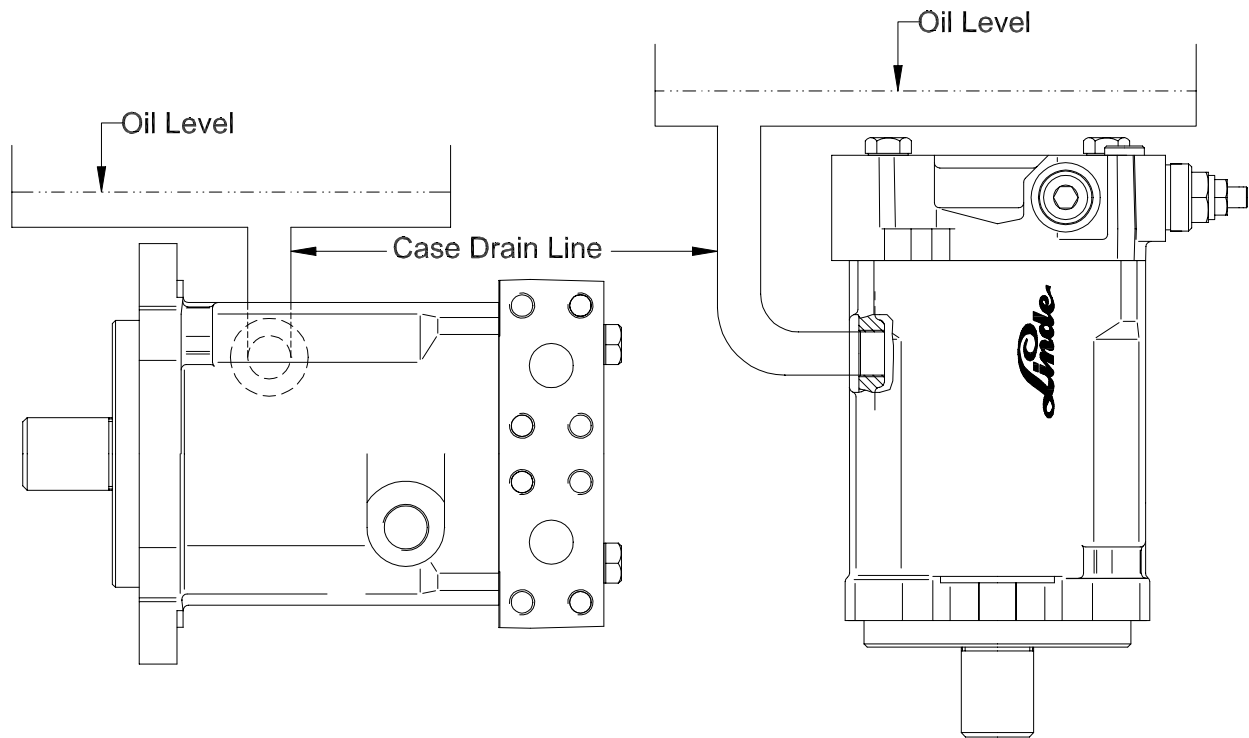
Venting (Case Drain):

- Positive venting is vital for the correct operation of the hydraulic system.
- All case drain lines must be mounted continuously rising towards the reservoir. This allows any entrapped air to escape freely from the motor housing.
- The highest case drain port of the motor housing must be connected to the reservoir and should be below the oil level in the reservoir, as illustrated on the next page.
- The case drain line has to be sized and the reservoir has to be installed in such a way as to limit the maximum case pressure to 30 psig.

Piping:

- Pipe work should be seamless drawn precision steel tube or hoses of suitable pressure rating.
- During installation, attention should be paid to cleanliness. The pipes must be deburred, washed and blown through.
- Scaled or rusted pipes must be scoured and then neutralized - Hoses must be brushed and flushed through when contaminated.

IMPORTANT: The cleanliness of the circuit **before** commissioning has a crucial influence on the operation and life expectancy of the hydraulic components.



Filling the Hydrostatic Transmission:

- The initial filling of the system must be carried out in such a way that all of the air can escape from the high pressure circuit and from the pump/motor housings before the hydraulic units are operated.
- Manually fill the pump housing at the most accessible case drain port with filtered oil. Manually fill the high pressure line(s) with filtered oil. Fill the oil reservoir to the maximum level with filtered oil and fill the HMF-02 housing to the maximum level via the most accessible case drain port with filtered oil.

Initial Start-Up:

- The initial operation of the HMF-02 should permit it to rotate freely without load.
- The HMF-02 should initially be operated slowly.
- As the system purges itself of air and as the hydraulic oil warms up, steadily increase the load on the HMF-02 motor and increase the speed of the motor.

Routine Maintenance:

- Maintenance of the hydraulic system is limited to changing the hydraulic fluid and system filtration.
- In order to guarantee the proper function and efficiency of the HMF-02, the purity of the hydraulic oil over the entire operating period must comply to at least class 18/13 according to ISO 4406.
- With modern filtration technology, however, much better values can be achieved which contributes significantly to extending the life and durability of the HMF-02 and the complete system.

Changing the Filters:

- It is recommended that the filters be changed after the initial start-up or at least 100 hours from the initial operation. Additional filter changes should be made after 500 hours of operation from the previous filter change.

Note:

These recommendations are provided for guidance to insure long service life and proper operation of the HMF-02 motor. However, depending on the operating conditions of the HMF-02, it may not be necessary to adhere to these recommendations as long as the oil cleanliness level and oil viscosity specifications are strictly adhered to.

Changing the Hydraulic Fluid:

- Oil changes are carried out by first draining the reservoir, cooler, pump, and motor housings. The high-pressure fluid must be changed after 1000-2000 hours of operation, according to the application.
- High working temperatures and frequent cooling-down phases with low temperatures condense water and will shorten the life of the hydraulic fluid.
- The oil remaining in the high-pressure circuit itself need not be changed. **Do not open up the high pressure lines if possible.** The instructions regarding initial filling must be adhered to when changing the hydraulic fluid. In some applications, a complete oil change may not be necessary. The oil lost during each filter change must be replaced by fresh filtered oil.

Cleaning:

- Cleaning of the hydraulic system when changing oil is normally not necessary. If the system becomes contaminated due to unusual circumstances (defect, etc.), then it must be thoroughly cleaned before recommissioning. Housings and pipelines must be flushed. If necessary, the pipelines and hydraulic units must be disassembled.

Service:

- Maintenance and repairs should be undertaken only by skilled personnel who are familiar and trained with the equipment. Linde offers an excellent after-sales service capable of carrying out the work of repair and overhaul if required.
- Only spare parts specified in the Linde spare parts catalogs should be used. The serial number stamped on the unit name tag is relevant to the configuration of the unit. Therefore, the serial number should be quoted when ordering spare parts.

Oil Selection and Viscosity Recommendations:

Suitable hydraulic oils are:

- Mineral oil HLP to DIN 51524
- Biodegradeable fluids upon request
- Other pressure fluids upon request

Linde recommends only using hydraulic oils which are confirmed by the producer as suitable for use in high pressure hydraulic installations. For the correct choice of suitable hydraulic oils, it is necessary to know the working temperature in the hydraulic circuit. The hydraulic oil chosen must allow the working viscosity to be within the optimum viscosity range (as shown below).

Attention: Due to pressure and speed influences, the temperature of the leakage fluid is always higher than the circuit temperature. The temperature must not exceed 194°F (90°C) in any part of the system. Under special circumstances, if the stated conditions cannot be observed then please consult Linde.

- Recommended viscosity range for optimum performance: 15 cSt to 30 cSt
- Maximum allowable working viscosity range: 10 cSt to 80 cSt
- Viscosity limitations: 6 cSt minimum viscosity
1000 cSt maximum viscosity (**Intermittent** for cold starts)
- Oil temperature limitations: (-68)°F to 194°F
(-20) °C to 90°C