

Quick guide for hydraulic motors

INSTALLATION POSITIONS
ROTATION
CONNECTION
BEFORE START-UP

Non Ex



MODELS:
Truck Master Series

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Note: Hydraulic motor is not Ex marked!

1 Digital services

Samson Pumps offers a number of digital services to help our customers gain the best possible output from our products.

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2 Bosch Rexroth

2.1 Installation positions

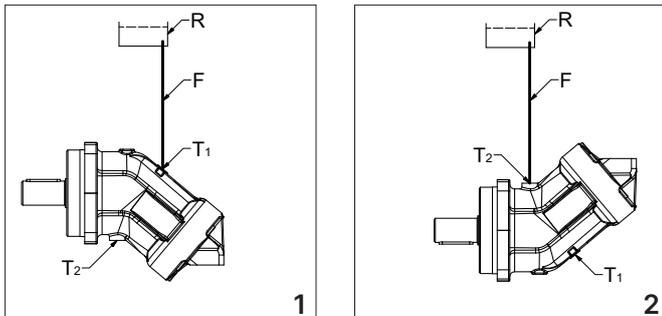
The leakage in the housing area must be directed by a drain line (F) to the reservoir (R) via the highest drain port (T1, T2). Filling/air bleeding on above-reservoir installation by port L1 placed on highest point on drain line (F).

Important to completely drain the hydraulic motor before installation in order not to mix the internal motor oil with oil inside the installed hydraulic system.

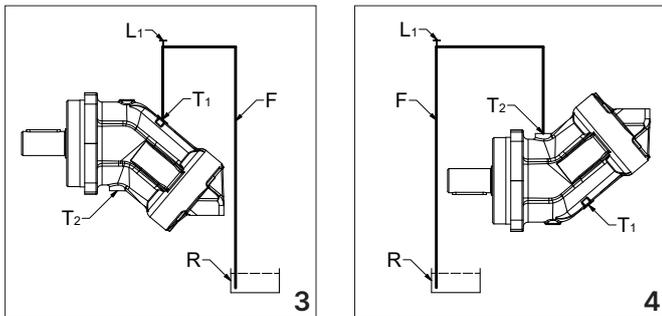
Only use hydraulic fluids rated by Bosch Rexroth, refer to document RE 90245 (download from link below).

Further information regarding hydraulic fluids from link below:
www.boschrexroth.com/en/xc/products/product-support/hydraulic-fluids/index

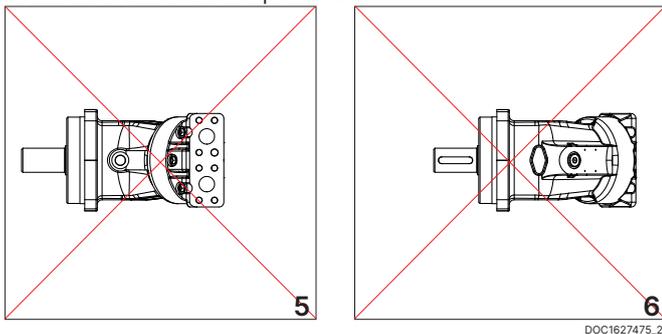
Installation positions 1 to 4 are permissible. Positions 1 and 2 shows installation of hydraulic motor below the minimum fluid level of the reservoir (R).



Positions 3 and 4 shows installation of hydraulic motor above the minimum fluid level of the reservoir (R).



Positions 5 and 6 are not permitted.



2.2 Rotation

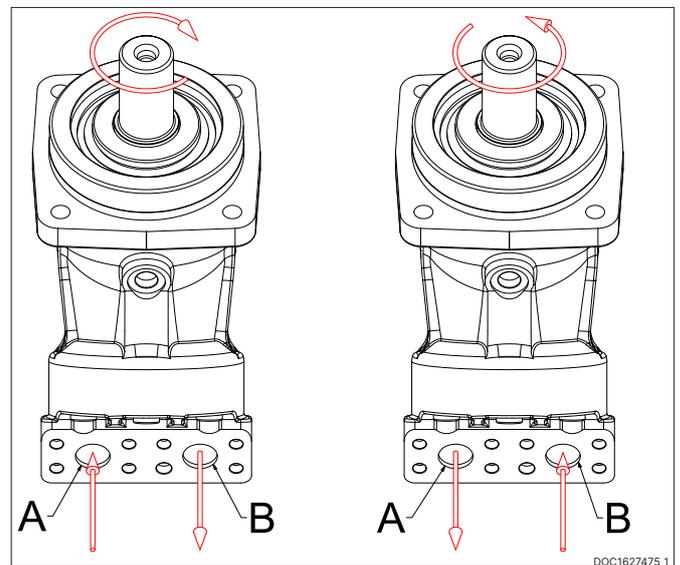
Direction of rotation and flow direction:

Clockwise rotation: A to B
 Counter-clockwise rotation: B to A

Note:

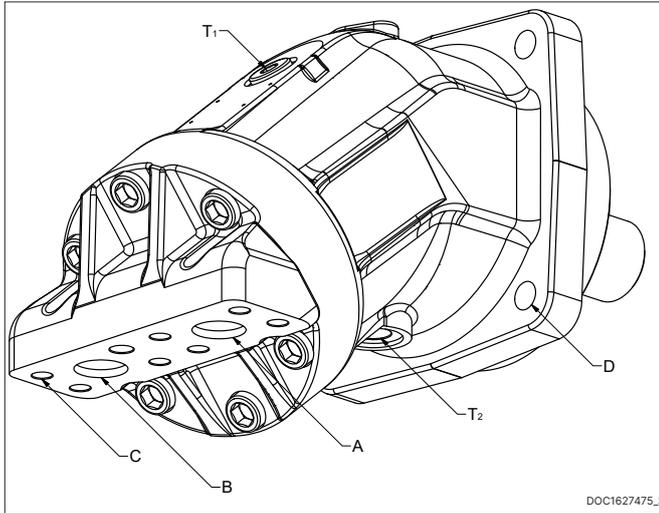
Clockwise rotation hydraulic motor used for counter-clockwise rotation liquid ring pump!

Counter-clockwise rotation hydraulic motor used for clockwise rotation liquid ring pump!



2.3 Connections and tightening torques

Make sure that the respective hydraulic motor is tighten by below given tightening torques:



Pos	Description	Size	Tightening torque
T ₁ / T ₂	Plug / Drain	M16	50 Nm
		M18	60 Nm
		M22	80 Nm
C	Fastening thread A / B	M8	15 Nm
		M10	30 Nm
		M12	50 Nm
		M14	80 Nm
D	Ø11	M10	45 Nm
	Ø13.5	M12	80 Nm
	Ø17.5	M16	190 Nm

2.4 Before start-up

Proceed as follows before start-up of the hydraulik motor:

Place a drip tray under the hydraulic motor to collect any hydraulic fluid that may leak.

The hydraulic motor must be filled with hydraulic fluid and air bled.

Fill and air bleed the axial piston unit via the appropriate ports; see chapter „Installation positions“. Also fill the hydraulic lines of the system.

NOTICE! Contaminated hydraulic fluid!

The cleanliness levels of commercial hydraulic fluid are usually insufficient for Rexroth hydraulic motors. Use a suitable filter system to filter hydraulic fluids during filling to minimize solid particle contamination and water in the hydraulic system.

For additional information about the respective hydraulic motor, see www.boschrexroth.com

3 Parker

3.1 Installation positions

The leakage in the housing area must be directed by a drain line (F) to the reservoir (R) via the highest drain port (T1, T2). Filling/ air bleeding on above-reservoir installation by port L1 placed on highest point on drain line (F).

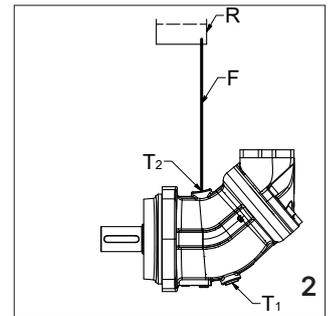
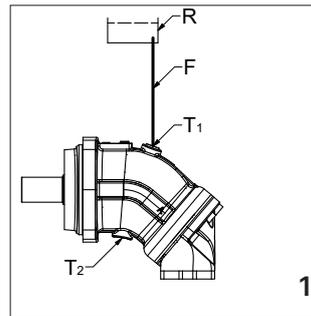
Important to completely drain the hydraulic motor before installation in order not to mix the internal motor oil with oil inside the installed hydraulic system.

Viscosity: The ideal operating range is 15 to 30 mm²/s [cSt]. At operating temperature, the viscosity (of the drain fluid) should be kept above 8 mm²/s [cSt]. At start-up, the viscosity should not exceed 1000 mm²/s [cSt]

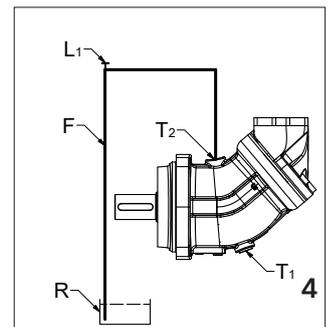
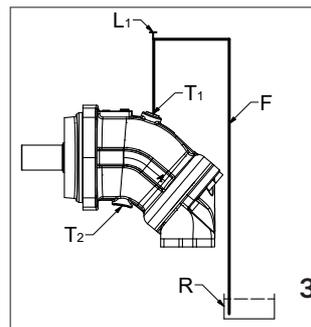
Filtration: To obtain the highest service life of the F11/F12, the fluid cleanliness should meet or exceed ISO code 20/18/13 (ISO 4406). During normal operating conditions, a 10 µm (absolute) filter is recommended.

Installation positions 1 to 4 are permissible.

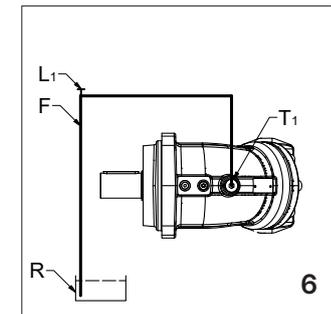
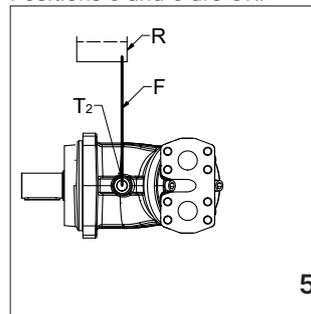
Positions 1 and 2 shows installation of hydraulic motor below the minimum fluid level of the reservoir (R).



Positions 3 and 4 shows installation of hydraulic motor above the minimum fluid level of the reservoir (R).



Positions 5 and 6 are OK.



3.2 Speed sensor

The sensor consists of a ferrostat differential (Dual Channel) speed sensor and a seal nut. The sensor installs in a threaded hole in the F10, F12, V12 or V14 bearing housing, and in the F11 barrel housing. The sensor output is a 2 phase shifted square wave signal within a frequency range of 0 Hz to 15 kHz. The sensor detects both speed and direction of rotation. The sensor withstands high as well as low temperatures and is highly moisture protected (IP68).

* - Speed sensor is not included in hydraulic motor set. It must be ordered separately.

3.3 Technical data

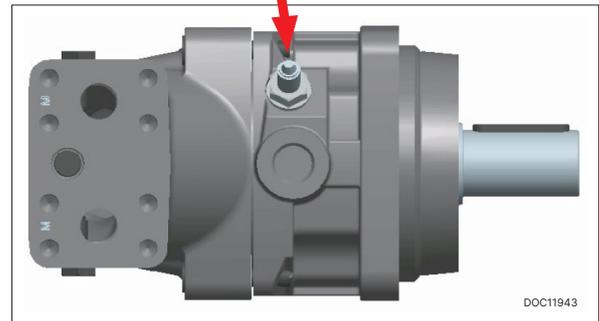
Power supply	10V to 30V protected against reverse polarity.
Current consumption	Max 20 mA. (without load)
Signal output signals	<ul style="list-style-type: none"> 2 phase shifted square waves Open collector outputs with 10 Kohm pull-up, $I_{max} = -20$ mA.
Frequency	Min 0 Hz max 15 kHz
Insulation	Housing and electronics galvanically separated (500V/50Hz/1 min)
Operating temperature	-40 to +125 °C [-40 to +255 °F]
Protection class	IP68 (DIN 40050)



The outputs are short circuit proof and protected against reverse polarity.

Frame Size	No. of pulses/rev.
F10/F11-6, -10, -12, -14, -19	5
F10/F12 (30-125)	35
F12 (152-182)	40
F12-250 Up to serial no. 201602230409	64
F12-250 From serial no. 201602230410	36
V12/V14 (ISO, SAE and Cartridge)	36
V12 -060 Cartridge	9

Speed sensor *



Location shown on illustration is for hydraulic motor range F12-40 to F12-125.

The location of the sensor differs on other models. A consistent aspect across all of them is the threaded hole (M12x1)

Sensor head pressure	Max 25 bar [360 psi]
Weight (incl. cable)	0.15 kg [0.33 lb]
Sensing distance	0.1 to 2.0 mm; 1.0 recom. [0.004 to 0.08 in; 0.04 recom.]
Transistor	NPN
Amplifier variant	Variant; .02 SHW Output 1: Speed Output 2: Speed Output type: Open Col.
Cable	
Material	PUR casting
Length	1.0 m
No. of wires	4 (plus screen; transparent) Wire area 4 × 0.34 mm ²
Screen	Stranded metal net (insulated from housing)
Bending radius	Min 25 mm [1 in]



NOTE: Screen must be connected to 0 V (zero volt) power supply.

3.4 Connection

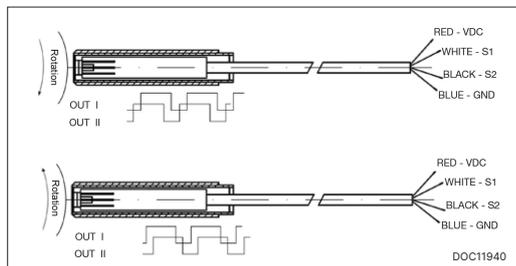
Sensor wires are susceptible to radiated noise. Therefore, the following should be noted:

- Uninterrupted screened 4 wire cable must be used and the screen only connected to the appropriate instrument screen input terminal or 0V. Connections to power earth are not advisable.
- The sensor wires must be installed as far away as possible from electrical machines and must not run in parallel with power cables in the vicinity. The maximum cable length that can be utilized is dependent on sensor voltage, how the cable is installed, and cable capacitance and inductance. It is, however, always advantageous to keep the distance as short as possible.
- The sensor cable supplied can be lengthened via a terminal box located in an IP20 protected connection area (per DIN 40050). Contact Pump & Motor Division Europe for recommendations.

3.5 Connections and Pulse diagram:

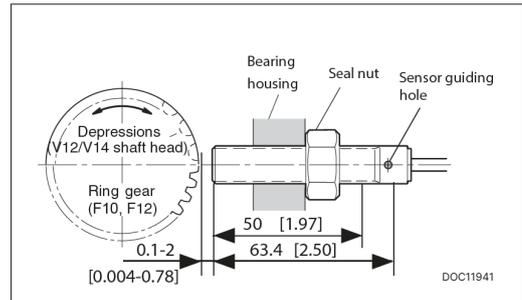
Make sure that the respective hydraulic motor is tightened by below given tightening torques:

Direction of rotation



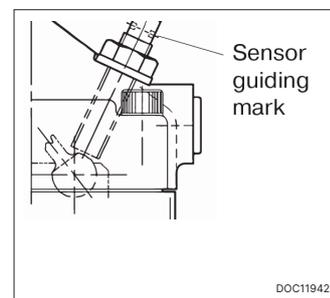
3.6 Installation information

As the sensor has a built-in differential Hall effect device, the sensor housing must be aligned according to the drawing of the Speed Sensor Installation picture. If it is not, the sensor may not function properly and noise immunity decreases. The sensor is non-sensitive to oil and the stainless steel housing withstands hazardous environment conditions.



3.7 Installation procedure

- Install the sensor in the threaded hole (M12×1) of the F10/ F12/V12/V14 bearing housing; turn the sensor until its head just touches the ring gear teeth (F10/12) or the shaft head (F12-250/V12/V14); refer to the installation drawing above.
- On *F10/11 the pistons positions must be known before mounting the sensor. Install the sensor in the threaded hole (M12×1) of the F11 barrel housing; turn the sensor until its head just touches the piston.
- When mounting the sensor in the threaded hole be sure that you also rotate the cable so the cable not get twisted.
- Back off the sensor one turn (counter clockwise).
- If required, back it off further until the sensor guiding hole centerline is either as shown in Fig. above & below or 180° opposite.
- Tighten the seal nut; max 12 Nm (100 lb in). Be sure that the position of the guiding hole centerline still is correct.
- Connect the electrical wires as shown in the schematic. Please note the instructions on page 1 regarding screening.
- If you only use one signal, we recommend you to use S2 cable. Cut S1 cable and isolate.



3.8 Rotation

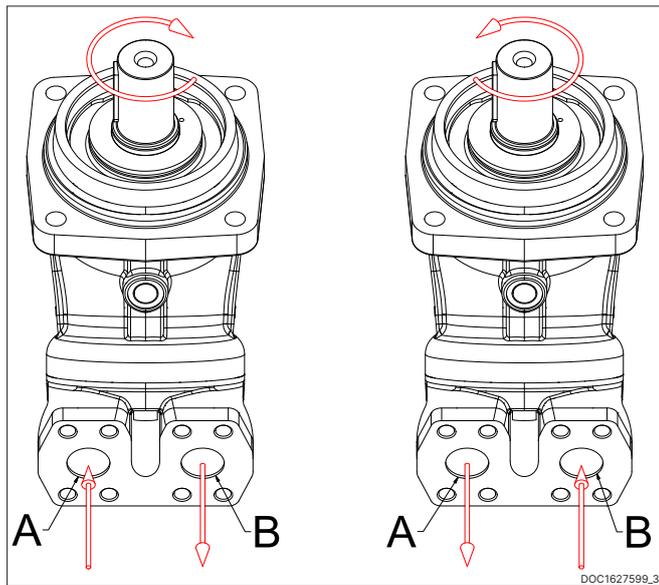
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Note:

Clockwise rotation hydraulic motor used for counter-clockwise rotation liquid ring pump!

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3.10 Before start-up

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