

# Installation and Maintenance Manual



Compact CA Motors

**HÄGGLUNDS**

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## 2.3 Choice of hydraulic fluid

The Hågglunds hydraulic motors are primarily designed to operate on conventional petroleum based hydraulic oils. The hydraulic oil can be chosen in consultation with the oil supplier of your local sales office, bearing the following requirements in mind:

### GENERAL

The oil shall have FZG (90) fail stage minimum 11 described in IP 334 (DIN 51354). The oil must also contain inhibitors to prevent oxidation, corrosion and foaming. The viscosity of mineral oil is highly dependent of the temperature. The final choice of oil must depend on the operating temperature that can be expected or that has been established in the system and not in the hydraulic tank.

High temperatures in the system greatly reduce the service life of oil and rubber seals, as well as resulting in low viscosity, which in turn provides poor lubrication.

Content of water shall be less than 0,1%.

In Industrial applications with high demands for service life, the content of water shall be less than 0,05%.

**RECOMMENDED VISCOSITY AT  
OPERATING TEMPERATURE  
40-150 cSt/187-720 SSU.**

**FOR SPEED BELOW 5 RPM, COATED  
PISTONS OR HIGH VISCOSITY SHALL  
BE USED.**

Viscosity limits		Temperature limits	
Viscosity index	= 100 recommended = 150* for operation with large temperature difference	Normal operating temperature should be less than +50°C (122°F)	
Min. permitted in continuous duty	40 cSt/187 SSU	Nitrile seals (std motor)	-35°C to +70°C
Min. permitted in intermittent duty	20 cSt/98 SSU**	Viton seals	-20°C to +100°C
Max. permitted	10000 cSt/48000 SSU	Nitrile seals (std motor)	-31°F to +158°F
		Viton seals	-4°F to +212°F

\* Many hydraulic fluids with VI-improvers are subject to temporary and permanent reductions of the viscosity.

**\*\* Low viscosity gives reduced service life for the motors and  
reduction of max. allowed power for "COMPACT CA".**

### Fire resistant fluids

#### OPERATING WITH FIRE RESISTANT FLUIDS

The following fluids are tested for Hågglunds motors: (ISO/DP 6071)

Fluid	Approved	Seals	Internal paint
HFA: Oil (3-5%) in water emulsion	No	-	-
HFB: Inverted emulsion 40-45% water in oil	Yes	Nitrile (std motor)	Not painted*
HFC: Water-glycol	Yes	Nitrile (std motor)**	Not painted*
<b>HFD synthetic fluids</b>			
HFD:R - Phosphate esters	Yes	Viton	Not painted*
HFD:S - Chlorinated hydrocarbons	Yes	Viton	Not painted*
HFD:T - Mixture of the above	Yes	Viton	Not painted*
HFD:U - Other compositions	Yes	Viton	Not painted*

\* Must be specified in the order.

\*\*The motor must have synthetic oil for the axial bearing.

### IMPORTANT!

**Down rating of pressure data and service life must be considered when using fire resistant fluid. The Hågglunds company or its authorised representative must always be contacted for approval in the case of these types of fluids.**

### 3.1.3b Fitting the double ended torque arm

The torque arm is fitted to the motor before the motor is mounted on to the driven shaft. See 3.1.3a "Fitting the torque arm to the motor".

Check and adjust the rod end (pos 1) according to the drawing. Mount the rod to the torque arm, use the shaft (pos 2) and lock them with circlips. Tighten the 4 pcs of screw (pos 3) on the rod end, Torque according to table 3.7b.

Mount the hydraulic cylinder. The piston rod has to be mounted upwards, and on the right hand viewed from the motors main connection side. Cylinders oil connection A, B and C must point in the direction to the motor. Mount the hoses. The hose mounted to the high pressure connection (C) has to be mounted to the hydraulic cylinders connection B, and the hose from connection (A) has to be mounted to the cylinders connection A.

This is valid with the cylinder on the right side hand-side of the the motor, and a single speed motor.

#### Remark!

Start the system and run it for some minutes. Vent the cylinder from air. Use the vent screws on the cylinder (pos 4).

Fig. 3.9b

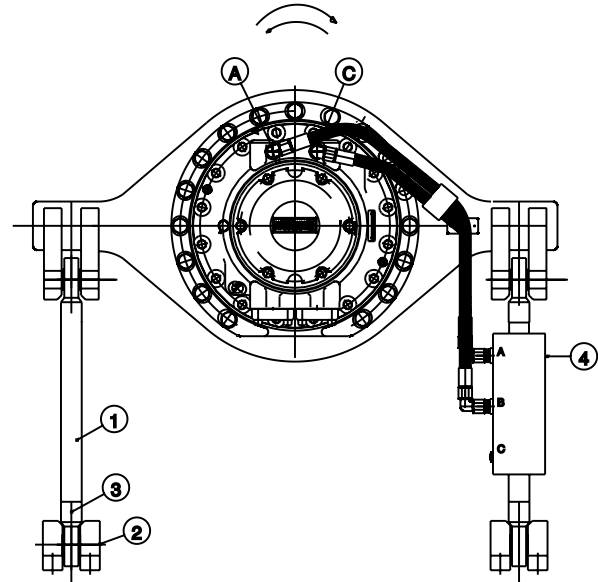
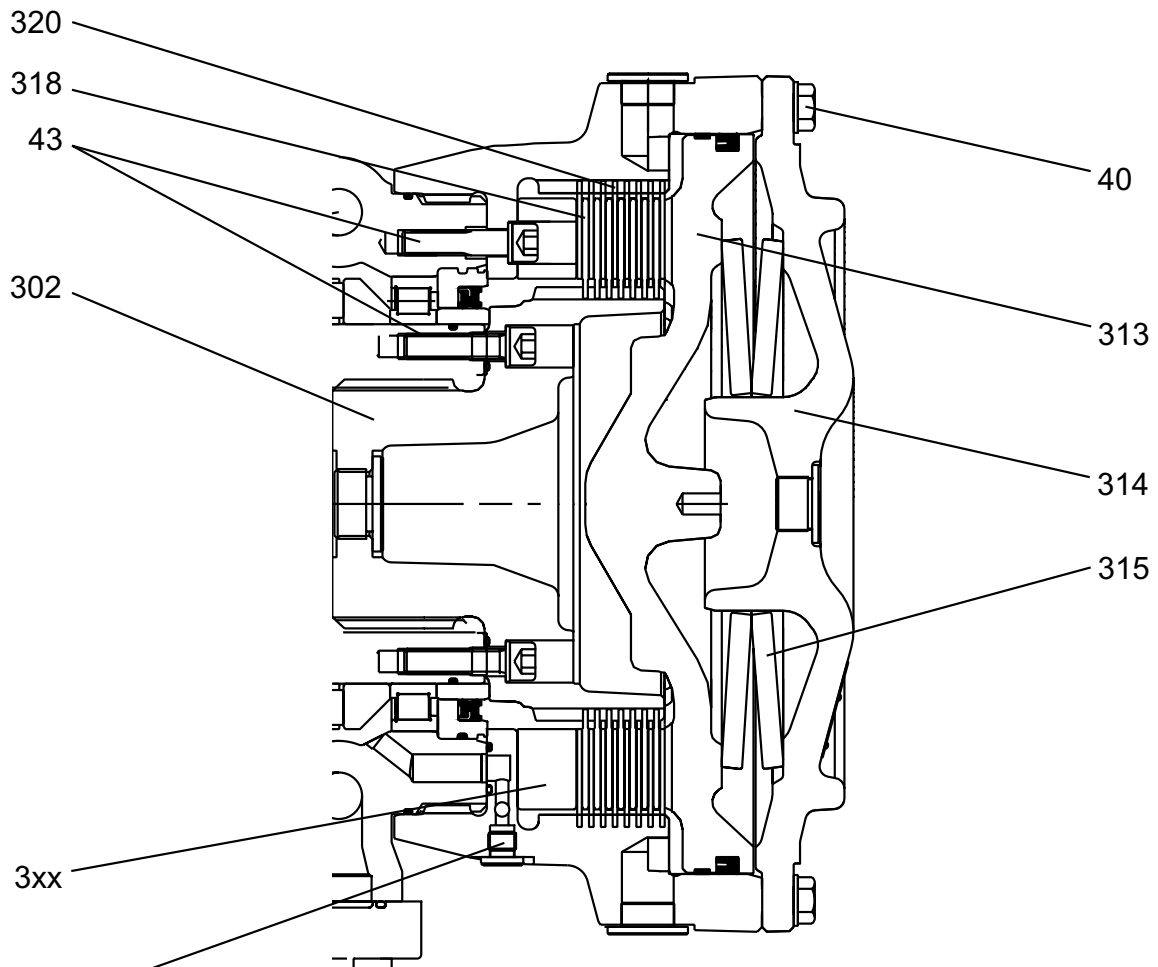


Table 3.7b

Cylinder	Screw dimension	Tightening torque	
		Nm	lbf-ft
50/36	M8x25	25	15
80/56	M10x30	49	36
100/70	M12x40	86	63
125/90	M16x30	210	155

## Disassembly of MDA 5, 7 & 10.

Fig. 3.22



Connection 1/4" BSP for flushing of axial bearing

18 Nm / 13 lbf-ft



**Please read this instruction carefully before starting the disassembly!**

1. Start the disassembly by slightly loosening the screws (40). Not more than 1 turn each. Continue with 1 turn of each screw around the cover until the pre-load of the Belleville springs (315) (Cup springs) is zero. After that the screws can be removed and the Brake cover (314) lifted off.
2. The Brake piston (313) can be removed by installing an M12 screw in the centre hole and lifted off by using the screw.

**Note: The M12 screw can not be used to hold the Brake cover (314) while removing the screws (40). There is a risk that the threaded part in the Brake piston (313) can fail due to big forces when removing the screws.**

3. Inner and outer discs (318, 320) can be removed and the screws (43) holding the spacer (3xx) in place can be removed.
4. Loosen the screws (43) holding the Disc centre (302) in place.

**Please note that the motor cannot be pressurised when the brake assembly is removed.**

Place the motor as shown in fig 4.1, fill the motor with filtered oil in the following order: D1, A1, B, C1. See 2.3, "Filtration".

Take extreme care to ensure that no contamination enters the motor.

Seal connections A and C with the cover plate fitted to the connection surface at delivery. Check that the O-rings or rubber seals are in position in the cover plate.

Fit the plug to D1, D2 and D3, the table below states the amount of oil needed to fill the various types of motors.

### 4.2 Before commissioning

Check the following points before commissioning the motor, i.e. before starting the first time:

- Check that the motor is connected to give the correct direction of rotation (see 3.2 "Oil connections" and 3.2.1 "Direction of rotation of motor shaft").
- Select the hydraulic fluid in accordance with the recommendations (see 2.3 "Choice of hydraulic fluid").
- Fill the motor housing with hydraulic fluid via a filter into the drain outlets D1, D2 or the vent hole (depending on how the motor is mounted).
- Check the drain line to ensure that excessive pressure does not build up in the motor housing; see 3.1 "Mounting instructions" and 3.2.2. "Draining and venting the motor".
- Check that the motor is protected from overloads (see 1.1 "Motor data").- Check that the charge pressure conforms to the charge pressure curve (see 2.1 "Recommended charge pressure").
- Check that all hydraulic couplings and plugs are properly tightened to prevent leakage.
- Make sure that the torque arm is sufficiently fastened, see 3.1.3.

Table 4.1

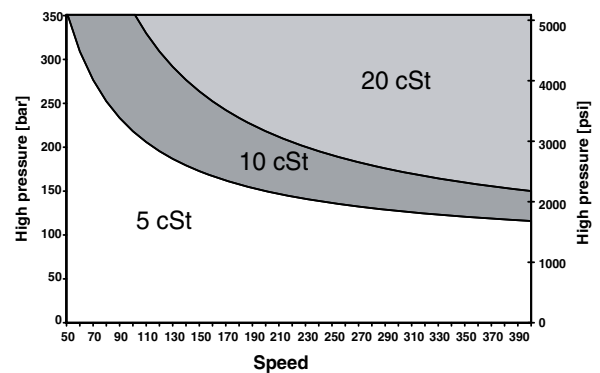
Motor	Oil volume approx.	
	Litres	US gal.
CA 50	2,0	0,53
CA 70	2,5	0,66
CA 100	3,7	0,98
CA 140	5,0	1,32
CA 210	6,8	1,80

### 4.3 Commissioning

- During initial starting and the period immediately after it, any hydraulic installation must be regularly and carefully checked at frequent intervals.
- The working pressure and charge pressure must be checked to ensure that they correspond to the contracted values.
- The pressure in the drain line measured at the motor must be less than 3 bar (43,5 psi). This pressure limit is important for the life of the motor seals.
- If leakage occurs, correct the fault and carry out new measurements.
- Check all lines, connections, screws, etc. and correct if necessary.
- Check other possible leakage points and replace faulty parts.
- During the start up period, dirt particles in the system are removed by the filters. The filter cartridges have to be changed after the first 100 working hours and after that according to the maintenance chart. see 4.4 note to check the "filter clogged" indicators.

**NOTE:**

**- When starting up the motor it is important that the motor output power is limited to 75% of max power according to these technical data.**



A not run-in motor in combination with dirt particles in the oil can badly affect the sliding surfaces in the motor. This is valid during the first 100 working hours.

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