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The Drive & Control Company

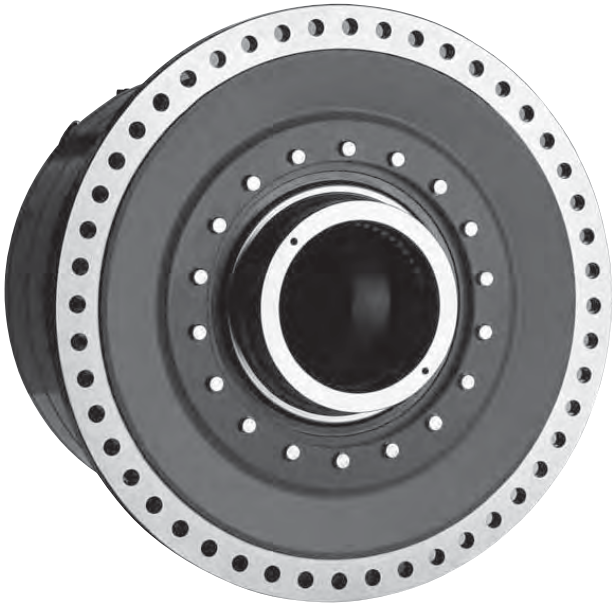
Rexroth Bosch Group

Hägglunds CBP

Radial piston hydarulic motor

Installation and maintenance manual
EN818-6BR/2011

Supersedes:
EN818-6H/2011
English



The data specified above only serve to describe the product. No statements concerning a certain condition or suitability for a certain application can be derived from our information. The information given does not release the user from the obligation of own judgment and verification. It must be remembered that our products are subject to a natural process of wear and aging.

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Changes in the equipment may occur. We therefore reserve the right to introduce amendments in the manual as we deem necessary without notice or obligations.

This Installation and Maintenance Manual is valid for motors manufactured after 2006-06-01. For older motors please contact your nearest Bosch Rexroth representative.

The cover shows an example configuration. The product supplied may therefore differ from the figure shown.

The original operating instructions were prepared in English.

Content

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Company Registered in England No: 4167649 VAT Registration No: 732 5692 25 BS EN ISO 9001:2008 No: LRQ 0964389

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1 General

1.1 Safety precautions

It is of high importance that the Safety precautions are always followed, if you are unsure about something, please do not hesitate to contact your nearest Hägglunds Drives office for advice.

- **Warning signs.** In this manual you will find the following signs which indicate a potential hazard, which can or will cause personal injury or substantial property damage. Depending on the probability of the hazard, and how serious the injury or property damage could be, there are three levels of classification.

Warning sign, signal word	Meaning
⚠ DANGER	Indicates a dangerous situation which may cause death or severe personal injuries if not avoided.
⚠ WARNING	Indicates a dangerous situation which may cause death or severe personal injuries if not avoided.
⚠ CAUTION	Indicates a dangerous situation which may cause minor or medium personal injuries if not avoided.
NOTICE	Damage to property: The product or the environment could be damaged.

- **Application area.** All new and rebuild applications, should always be approved and supervised by Hägglunds personnel.
- **Mounting.** Carefully follow the instructions and be aware of the high weights and forces during lifting.
- **Before starting up.** Before starting up new, rebuild or just worked on applications, all accessories and safety arrangements functions, should be controlled/tested.
- **Periodic maintenance.** Notice the intervals in maintenance chart (4.4) and keep a record.
- **Dismounting.** Carefully follow the instructions and be aware of the high weights and forces during lifting.

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1.2 Motor data

Table 1: 1

Metric	Displace-ment	Specific torque	Rated * speed	Max.**** speed	Max. ** pressure
	V_i $\frac{cm^3}{rev}$	T_s $\frac{Nm}{bar}$	n $\frac{rev}{min}$	n $\frac{rev}{min}$	p bar
CBP 140 80	5 024	80	320	400	***350
CBP 140 100	6 280	100	270	390	***350
CBP 140 120	7 543	120	230	320	***350
CBP 140	8 800	140	210	275	***350
CBP 280 160	10 100	160	170	170	***350
CBP 280 200	12 600	200	170	170	***350
CBP 280 240	15 100	240	170	170	***350
CBP 280	17 600	280	150	170	***350
CBP 400 240	15 100	240	170	170	***350
CBP 400 280	17 600	280	170	170	***350
CBP 400 320	20 100	320	170	170	***350
CBP 400 360	22 600	360	170	170	***350
CBP 400	25 100	400	170	170	***350
CBP 560 440	27 600	440	135	135	***350
CBP 560 480	30 200	480	135	135	***350
CBP 560 520	32 700	520	135	135	***350
CBP 560	35 200	560	135	135	***350
CBP 840 600	37 700	600	110	135	350
CBP 840 640	40 200	640	100	135	350
CBP 840 680	42 700	680	100	135	350
CBP 840 720	45 200	720	95	135	350
CBP 840 760	47 800	760	90	125	350
CBP 840 800	50 300	800	85	120	350
CBP 840	52 800	840	80	115	350

* Related to a required charge pressure of 12 bar/175 psi for motors in braking mode. (Special considerations regarding charge pressure, cooling and choice of hydraulic system for speeds above rated, 8 ports must be used).

** The motors are designed according to DNV-rules. Test pressure 420 bar/6000 psi. Peak/transient pressure 420 bar/6000 psi maximum, allowed to occur 10000 times.

*** Alternating torque direction is not allowed for front mounting flange.

**** For speed above 280 rpm max permitted continues case pressure is 2 bar.

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Table 1.2:

US	Displacement V_i $\frac{in^3}{rev}$	Specific torque T_s $\frac{lbf\text{-}ft}{1000\ psi}$	Rated * speed n $\frac{rev}{min}$	Max.**** speed n $\frac{rev}{min}$	Max. ** pressure p psi
CBP 140 80	306.6	4 068	320	400	***5 000
CBP 140 100	383.2	5 085	270	390	***5 000
CBP 140 120	460.3	6 102	230	320	***5 000
CBP 140	537	7 119	210	275	***5 000
CBP 280 160	610	8 100	170	170	***5 000
CBP 280 200	760	10 200	170	170	***5 000
CBP 280 240	920	12 200	170	170	***5 000
CBP 280	1 070	14 200	150	170	***5 000
CBP 400 240	920	12 200	170	170	***5 000
CBP 400 280	1 070	14 200	170	170	***5 000
CBP 400 320	1 230	16 300	170	170	***5 000
CBP 400 360	1 380	18 300	170	170	***5 000
CBP 400	1 530	20 300	170	170	***5 000
CBP 560 440	1 690	22 400	135	135	***5 000
CBP 560 480	1 840	24 400	135	135	***5 000
CBP 560 520	1 990	26 400	135	135	***5 000
CBP 560	2 150	28 500	135	135	***5 000
CBP 840 600	2 300	30 500	110	135	5 000
CBP 840 640	2 450	32 500	100	135	5 000
CBP 840 680	2 610	34 600	100	135	5 000
CBP 840 720	2 760	36 600	95	135	5 000
CBP 840 760	2 910	38 700	90	125	5 000
CBP 840 800	3 070	40 700	85	120	5 000
CBP 840	3 220	42 700	80	115	5 000

* Related to a required charge pressure of 12 bar/175 psi for motors in braking mode. (Special considerations regarding charge pressure, cooling and choice of hydraulic system for speeds above rated, 8 ports must be used).

** The motors are designed according to DNV-rules. Test pressure 420 bar/6000 psi. Peak/transient pressure 420 bar/6000 psi maximum, allowed to occur 10000 times.

*** Alternating torque direction is not allowed for front mounting flange.

**** For speed above 280 rpm max permitted continues case pressure is 2 bar.

1.3 Functional description

The hydraulic industrial motor Hägglunds CBP from Bosch Rexroth is of the radial-piston type with a rotating cylinder block/hollow shaft and a stationary housing. The cylinder block is mounted in fixed roller bearings in the housing. An even number of pistons are radially located in bores inside the cylinder block, and two valve plate directs the incoming and outgoing oil to and from the working pistons. Each piston is working against a cam roller.

When the hydraulic pressure is acting on the pistons, the cam rollers are pushed against the slope on the cam ring that is rigidly connected to the housing, thereby producing a torque. The cam rollers transfer the reaction force to the piston which

are guided in the rotating cylinder block. Rotation therefore occurs, and the torque available is proportional to the pressure in the system.

Oil main lines are connected to ports A and C in the connection blocks and drain lines to ports D1, D2, D3 or D4 in the motor housing.

The motor is connected to the shaft of the driven machine through the hollow shaft of the cylinder block. The torque is transmitted by splines.

Valid patents
US 4522110, US 005979295A, SE 456517, EP 0102915, JP 83162704, GB 1385693, EP No 0524437.

Quality
To assure our quality we maintain a Quality Assurance system, certified to standard ISO 9001, EN 29001 and BS 5750; Part 1.

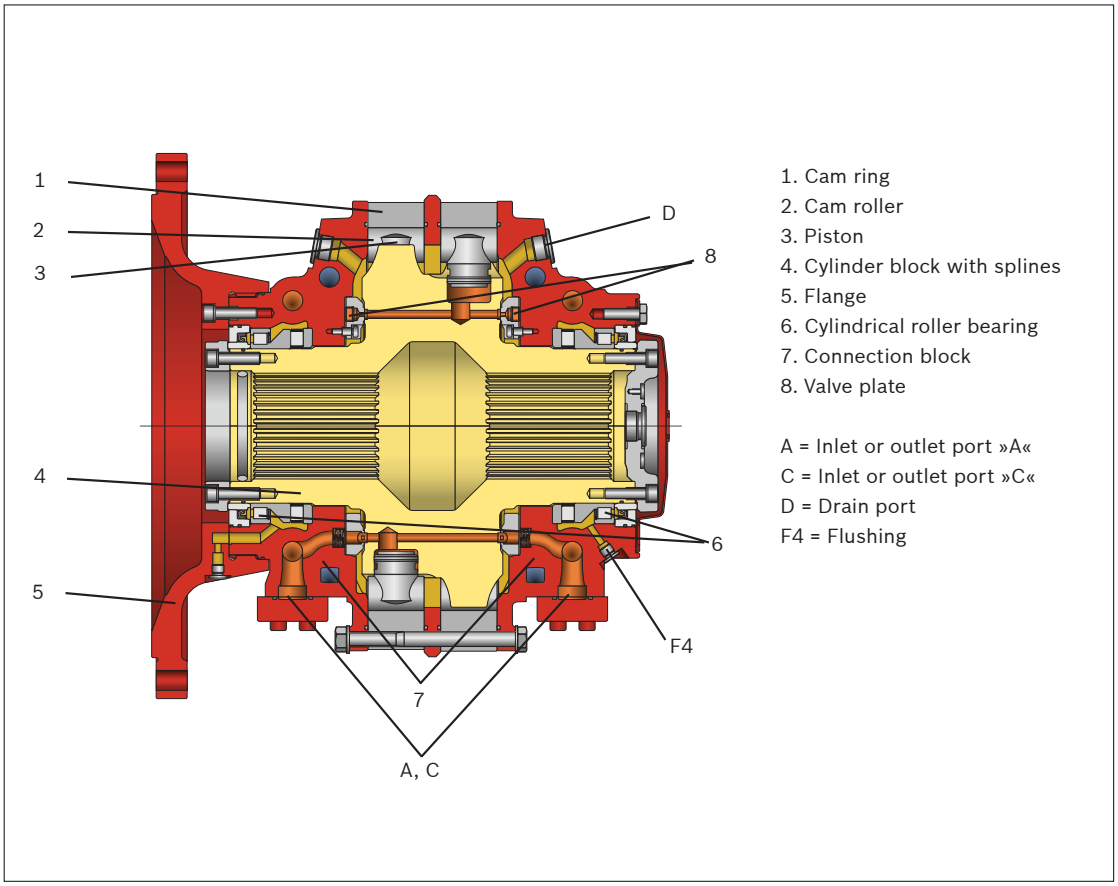


Fig. 1: The Compact CBP 140

2 Technical data

2.1 Recommended charge pressure

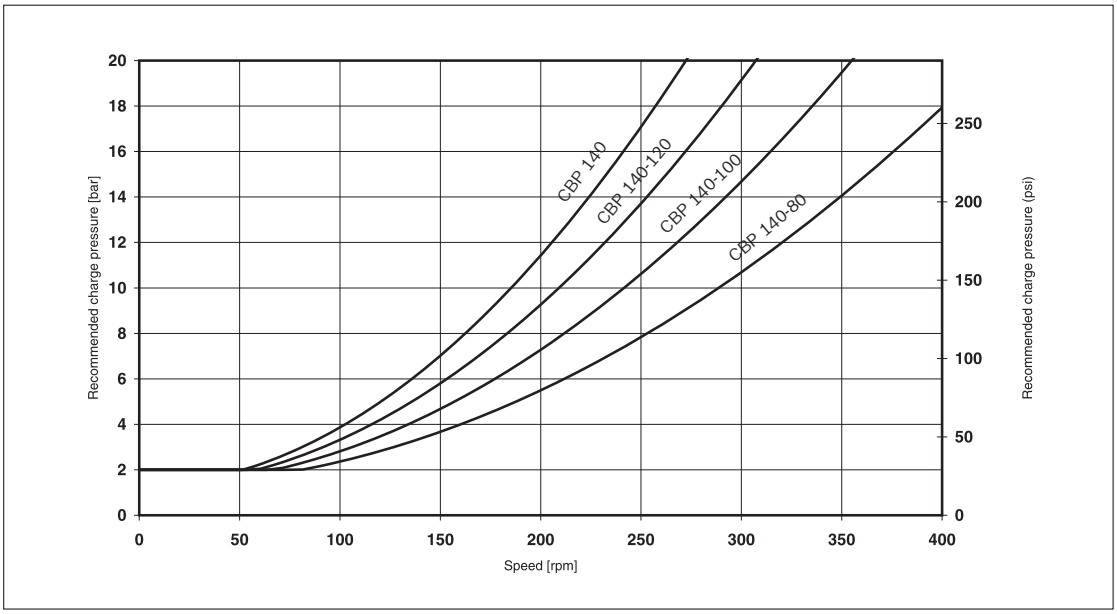
The hydraulic system must be such that the motor will receive sufficient charge pressure at the low-pressure port. This applies to all types of installations.
There are three distinct cases:
Case 1: The motor works in braking mode. Required charge pressure at the inlet port is according to diagram below.
Case 2: The motor works in driving mode only. Required back pressure at the outlet port corresponds to 30% of value given in diagram below, but may not be lower than 2 bar (29 psi).
Case 3: The motor is used with 2-speed valve. Required charge pressure at inlet port for valve is according to AC-3.1 Accessories.

⚠ WARNING

In hanging load applications, charge pressure at motors connection must be according to graph below under all conditions.

Recommended charge pressure – Hägglunds CBP motors 8-port connection
Valid for oil viscosity 40 cSt / 187 SSU

Table 2: Charge pressure



Notice! The diagram is valid for 1 bar (15 psi) case pressure. With increasing case pressure the charge pressure must be increased accordingly. The graph is valid when 8 ports are used. Max casing pressure is 3 bar (43.5 psi)(for 1% of the operation

time evenly divided, pressure peaks of max 5 seconds up to 8 bar (116 psi) is allowed). Max permitted case pressure at stand-still is 8 bar (116 psi).

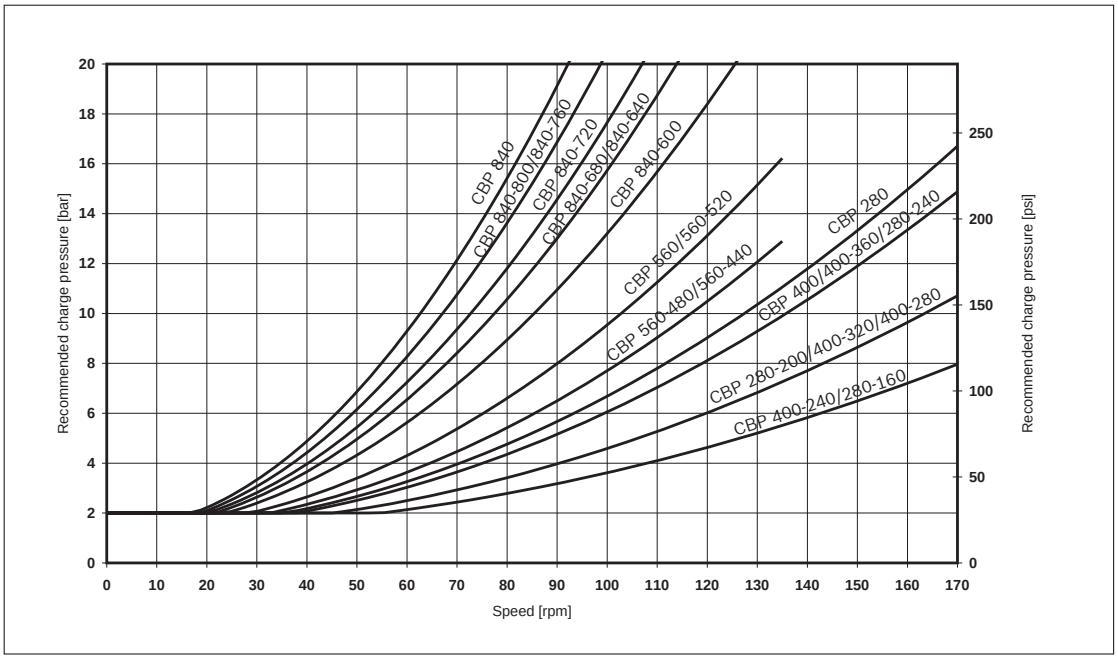
The hydraulic system must be such that the motor will receive sufficient charge pressure at the low-pressure port. This applies to all types of installations.
There are two distinct cases:
Case 1: The motor works in braking mode. Required charge pressure at the inlet port is according to diagram below.
Case 2: The motor works in driving mode only. Required back pressure at the outlet port corresponds to 30% of value given in diagram below, but may not be lower than 2 bar (29 psi).

⚠ WARNING

In hanging load applications, charge pressure at motors connection must be according to graph below under all conditions.

Recommended charge pressure – Hägglunds CBP motors 8-port connection
Valid for oil viscosity 40 cSt / 187 SSU

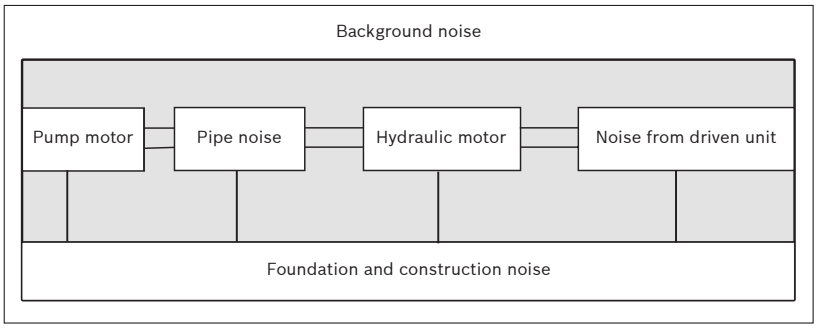
Table 2.1b: Charge pressure



Notice! The diagram is valid for 1 bar (15 psi) case pressure. With increasing case pressure the charge pressure must be increased accordingly. The graph is valid when 8 ports are used. Max casing pressure is 3 bar (43.5 psi)(for 1% of the operation time evenly divided, pressure peaks of max 5 seconds up to 8 bar (116 psi) is allowed). Max permitted case pressure at stand-still is 8 bar (116 psi).

Hägglunds CBP, EN 818-6BR/2011, Intallation and maintenance manual, **Bosch Rexroth Mellansel AB**

2.2 Sound from a complete installation



Remarks:

Background noise

The background noise can not normally be influenced but is usually known or easy to measure.

Pump unit

The pump unit is a known noise level.

Pipe noise

The pipe noise is probably the source of the majority of mistakes in installations: all pipe clamps should be of vibration insulating type secured to concrete ceiling, wall or floor. Securing to non-rigid metal structures or structures is likely to give resonance and should be avoided.

Hydraulic motor

The hydraulic motor is a known noise level. (Tables of sound data - see subsection 4.9 in the Engineering Manual).

Driven unit

The driven unit is an unknown sound source (for us) but can through certain information probably be obtained from the supplier. When securing the torque arm of a hydraulic motor to the foundation or casing of a driven machine, it is highly important to study the construction of the foundation or casing. This may well be the most important factor to consider, since many structures may give rise to resonance, resulting in severe noise problems.

2.3 Choice of hydraulic fluid

The Hägglunds 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%.

Minimum viscosity limits at operating temperature in motor case	
CBP 140 motors type C (coated pistons and coated cam rollers)	10 cSt/ 59 SSU*
CBP 280-840 motors type C (coated pistons and coated cam rollers) up to 80 rpm	10 cSt/ 59 SSU*
CBP 280-840 motors type C (coated pistons and coated cam rollers) up to 170 rpm	30 cSt/ 142 SSU*

*Low viscosity gives reduced service life for the motors.
Max permitted viscosity is 10 000 cSt/48 000 SSU
Viscosity index = 100 is recommended. Viscosity index = 150 can be used for operation with large temperature difference, however many hydraulic fluids with VI-improvers are subject to temporary and permanent reductions of the viscosity. Hägglunds recommendation is always to use the base oil viscosity when calculating the rated life and max allowed power. For heavy-duty applications we recommend synthetic oils.

Temperature limits	
Normal operating temperature should be less than +50 °C (122 °F). When operating with synthetic fluids, temperature should be less than +65 °C (150 °F).	
Viton seals	-20° C to +100° C
Viton seals	-4° F to +212° F

Recommended viscosity in motor case at operating temperature 40-150 cSt/187-720 SSU.

Fire resistant fluids

Operating with fire resistant fluids
The following fluids are tested for Hägglunds 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	N/A	Not painted*
HFC: Water-glycol	Yes	N/A	Not painted*
HFD synthetic fluids			
HFD:R - Phosphate esters	Yes	N/A	Not painted*
HFD:S - Chlorinated hydrocarbons	Yes	N/A	Not painted*
HFD:T - Mixture of the above	Yes	N/A	Not painted*
HFD:U - Other compositions	Yes	N/A	Not painted*
* Must be specified in the order.			

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

Environmentally acceptable fluids

Fluid	Approved	Seals	Internal paint
Vegetable */** Fluid HTG	Yes	N/A	–
Synthetic ** Esters HE	Yes	N/A	–

* Vegetable fluids give good lubrication and small change of viscosity with different temperature. Vegetable fluids must be controlled every 3 months and temperature shall be less than +45 °C (113 °F) to give good service life for the fluid.
** Environmental acceptable fluid gives the same service life for the drive, as mineral oil.

Filtration

The oil in a hydraulic system must always be filtered and also the oil from your supplier has to be filtered when adding it to the system. The grade of filtration in a hydraulic system is a question of service life v.s. money spent on filtration.
In order to obtain stated service life it is important to follow our recommendations concerning contamination level.
When choosing the filter it is important to consider the amount of dirt particles that the filter can absorb and still operate satisfactory. For that reason we recommend a filter with an indicator that gives a signal when it is time to change the filter cartridge.

Filtering recommendations

Before start-up, check that the system is thoroughly cleaned.

1. For industrial applications the contamination level should not exceed ISO 4406:1999 18/16/13 (NAS 1638, class 7).
2. When filling the tank and motor case, we recommend the use of a filter with the grade of filtration ß10=75.

Explanation of “Grade of filtration”

Grade of filtration β10=75 indicates the following:

- β10 means the size of particle ≥10 µm that will be removed by filtration.
- =75 means the grade of filtration of above mentioned size of particle. The grade of filtration is defined as number of particles in the oil before filtration in relation to number of particles in the oil after filtration.
- Ex. Grade of filtration is β10=75.
- Before the filtration the oil contains N number of particles ≥10 µm and after passing the filter once the oil contains $\frac{N}{75}$ number of particles ≥10 µm.
- This means that $N - \frac{N}{75} = \frac{74 \cdot N}{75}$ number of particles have been filtered (=98.6%).

3 Installation

3.1 Mounting instructions

If the motor is to work properly it must be installed with the greatest possible precision. Every item connected to the motor that does not meet the requirements of the following instructions may result in stresses that adversely affect the service life of the motor.

Normally the motor must be completely filled with oil. When the motor is installed with the shaft in the horizontal plane, the drain ports must be positioned vertically. The higher of the two drain ports must be used: see figure in section 3.2.2.
When the motor is mounted with the shaft in the vertical plane, drain outlet D1, D2, D3 or D4 must be connected to the drain hole on the shaft end housing or end cover.
A preloaded check valve must be connected in the drain line to ensure that the motor is filled with oil; see 3.2.2 “Draining and venting the motor”.
The drain line must be dimensioned so that max. 3 bar (43.5 psi) motor housing pressure is not exceeded.
The max housing pressure is 3 bar (43.5 psi). Brief peaks during operation up to 8 bar (116 psi) are permissible. The permitted housing pressure when the motor is stationary is 8 bar (116 psi).
The motor must always be connected in such a way as to give a sufficient boost, make-up flow at the low pressure connection. This is particularly important at high speeds and with rapid reversing, see 2.1 “Recommended charge pressure”.

Spline

The splines shall be lubricated with hydraulic oil, or filled with transmission oil from the connected gearbox, see 3.1.4b. To avoid wear in the splines, the installation must be within the specified tolerances in fig. 3.3. If there is no radial or axial force on the shaft, the shaft can be oiled only.
For production of the shaft, see 078 0150, 078 0162, 078 0163 and 278 5023, 278 5024, 278 5025, 278 5026. For control of spline see table 3.3.

Table 3.3

Motor	**CBP 140**		**CBP 280/400**		**CBP 560/840**	
Tooth profile and bottom form	DIN 5480		DIN 5480		DIN 5480	
Tolerance	8f		8f		8f	
Guide	Flank centring		Flank centring		Flank centring	
Pressure angle	30°		30°		30°	
Module	5		5		5	
Number of teeth	22		38		50	
Pitch diameter	Ø 110		Ø 190		Ø 250	
Minor diameter	$^{0}_{-0.870}$	Ø 109	$^{0}_{-1.201}$	Ø 188	$^{0}_{-1.201}$	Ø 248
Major diameter	$^{0}_{-0.220}$	Ø 119	$^{0}_{-0.290}$	Ø 199	$^{0}_{-0.320}$	Ø 259
Measure over measuring pins	$^{-0.083}_{-0.147}$	129.781	$^{-0.088}_{-0.157}$	210.158	$^{-0.103}_{-0.181}$	270.307
Diameter of measuring pins	Ø 10		Ø 10		Ø 10	
Addendum modification X M	+2.25		+2.25		+2.25	
Unidirectional drives						
Steel with yield strength Rel_{mm}= 450 N/mm²						
Bidirectional drives						
Steel with yield strength Rel_{mm}= 700 N/mm²						

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Thread for mounting tool

To make it easier to mount the motor on the driven shaft end or to remove the motor from the shaft it is recommended that a hole (Table 3.4) should be drilled and tapped in the centre of the shaft for a mounting tool; see fig. 3.3.
The tool has both a UNC thread and a metric thread, so that the hole can be drilled and tapped to conform to one of the two alternatives given in table 3.4.

Table 3.4 Alternative thread (Fig. 3.1 and 3.2)

CBP 140 - 840		
D	M20	UNC 5/8“
E	>17 (0.67)	>13.5 (0.53)
F	25 (0.98)	22 (0.87)
G	50 (1.97)	30 (1.18)

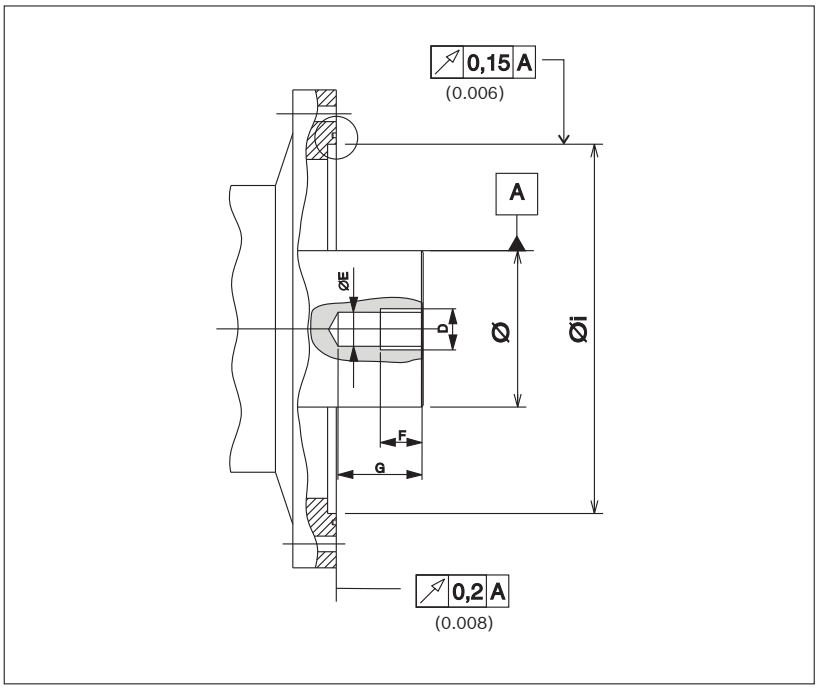

Fig. 3.3

3.1.1 Lifting methods

Always make sure where the centre of gravity is before any lifting.

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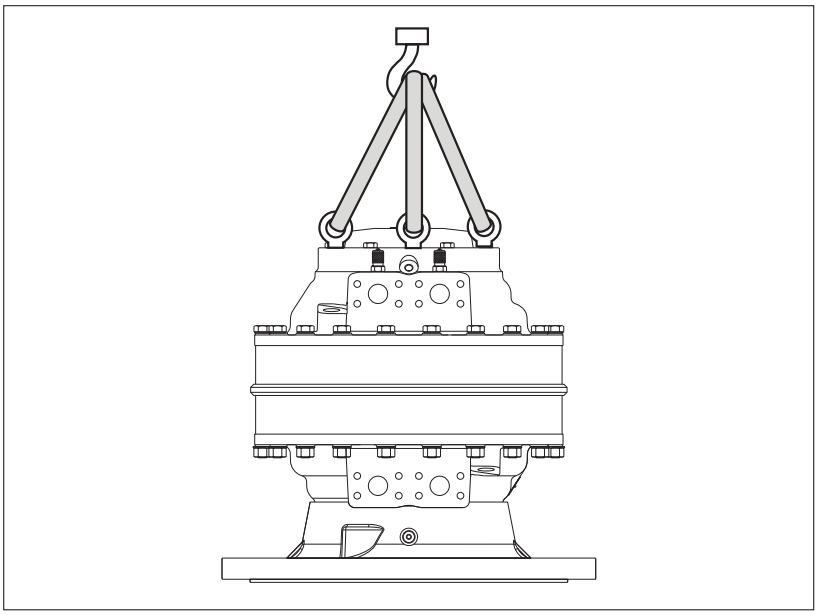

Fig. 3.4a CBP 140

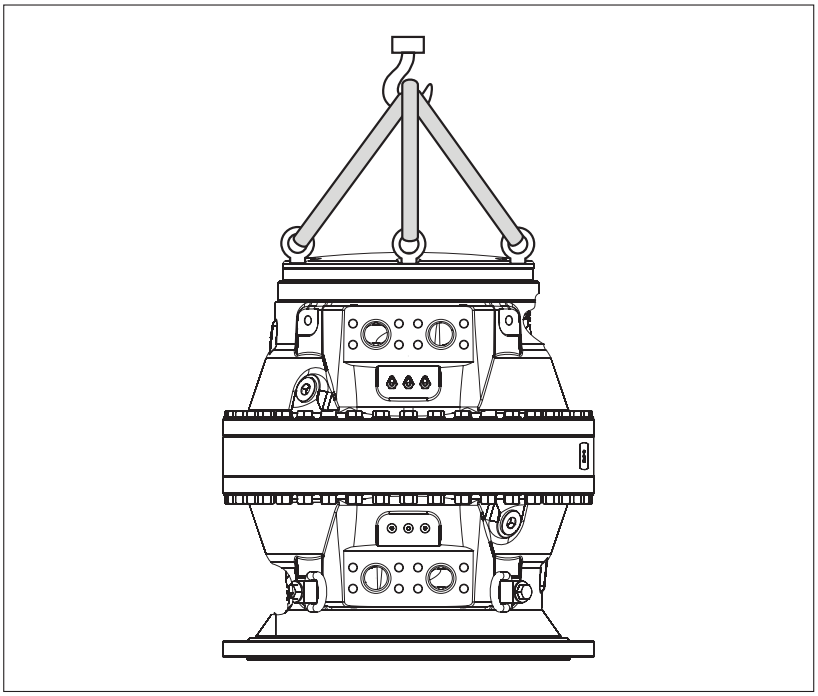

Fig. 3.4b CBP 280

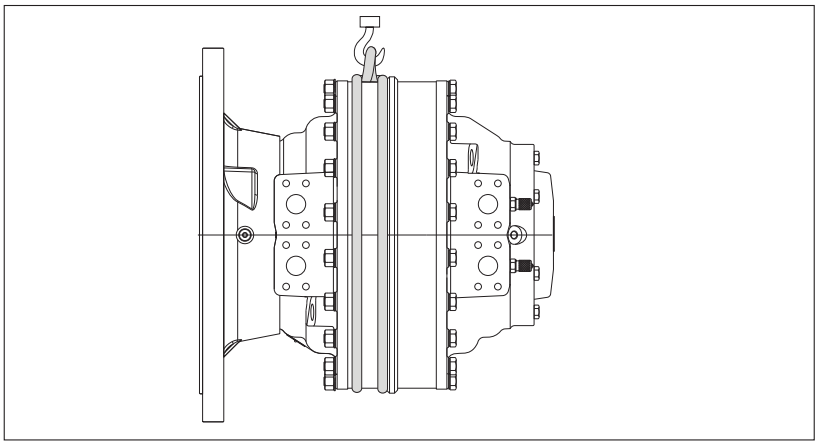

Fig. 3.4c CBP 140

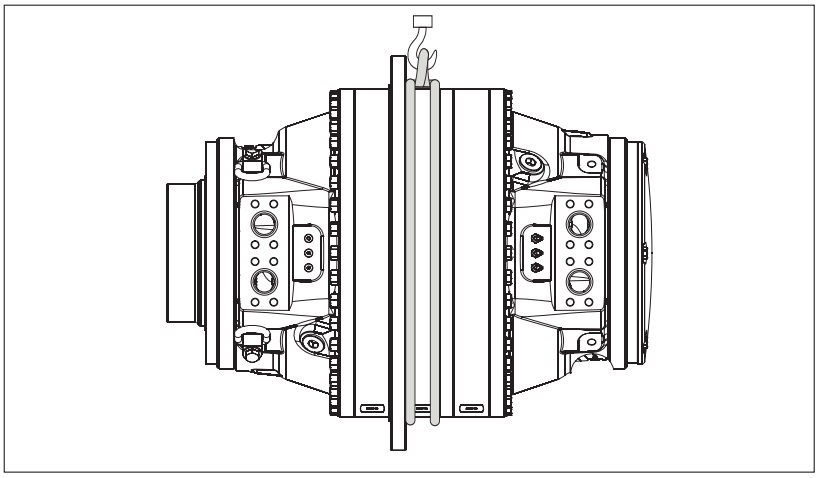

Fig. 3.4d CBP 840

Lifting the torque arm

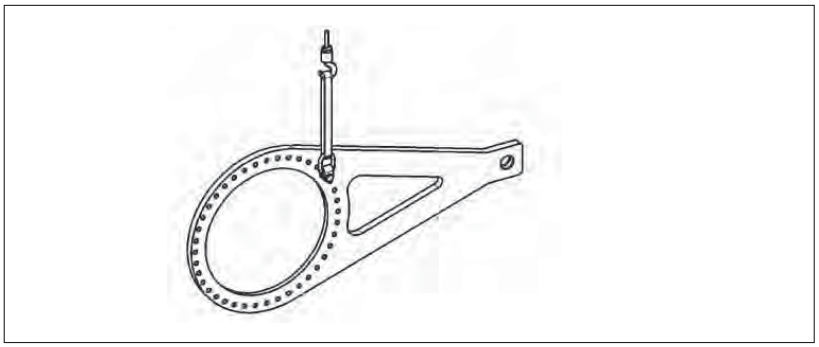

Fig. 3.5

Bosch Rexroth Mellansel AB, Intallation and maintenance manual, Hägglunds CBP, EN 818-6BR/2011

DANGER

Always make sure where the centre of gravity is before any lifting. Never stand below a hanging motor or torque arm.

Table 3.5

Motor	Centre kg (lb)	Front kg (lb)
CBP 140	360 (780)	410 (900)
CBP 280	N/A	1 580 (3 480)
CBP 400	1 880 (4 150)	1 930 (4 250)
CBP 560	1 900 (4 180)	2 000 (4 400)
CBP 840	2 170 (4 780)	N/A

Table 3.6

Torque arm	Weight kg	Weight lb
TCA 14	65	143
TCA 40	128	282
TCA 84	224	493

WARNING

Avoid lifting straps to part!
Lifting straps must be chosen with reliable safety margin over the total weight of the lifted object.

Lifting CBP tandem motor
Use attachment points on the motors.

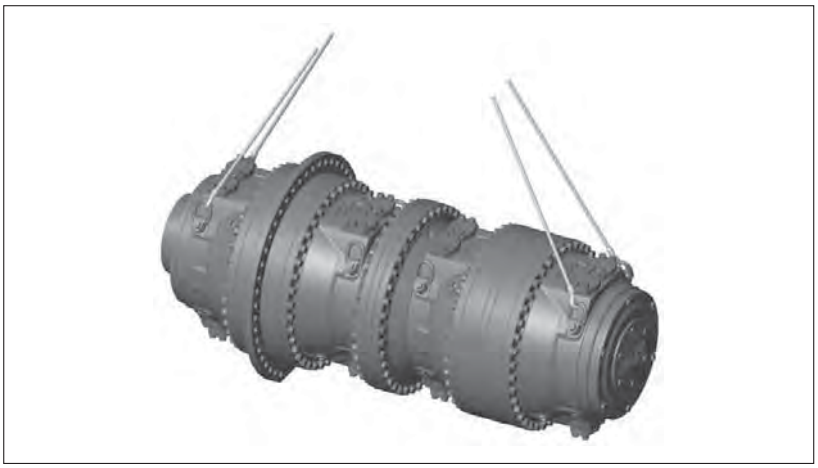

Fig. 3.6 CBP 560 + TBP 40 + CBP 400

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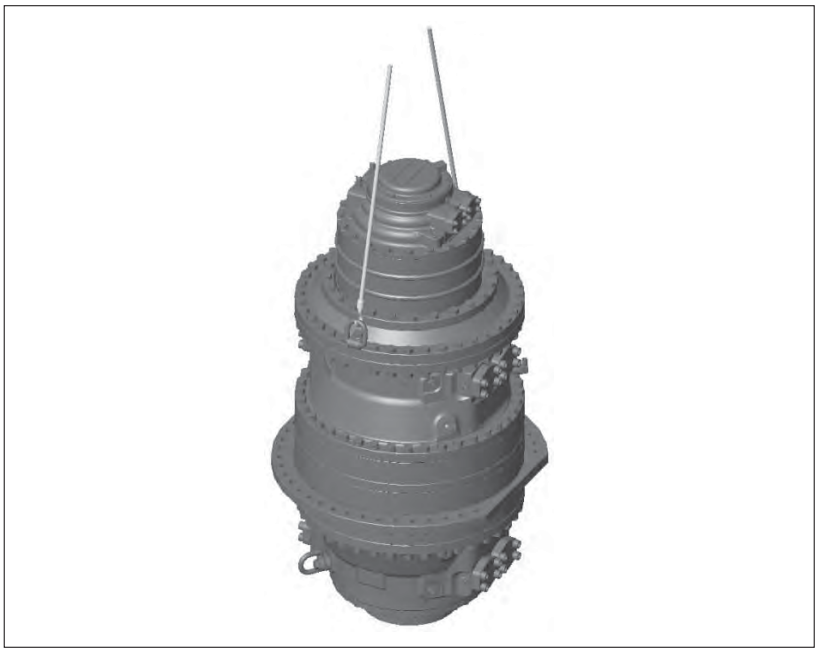

Fig. 3.7 CBP 840 + TBP 21 + CA 210 S28

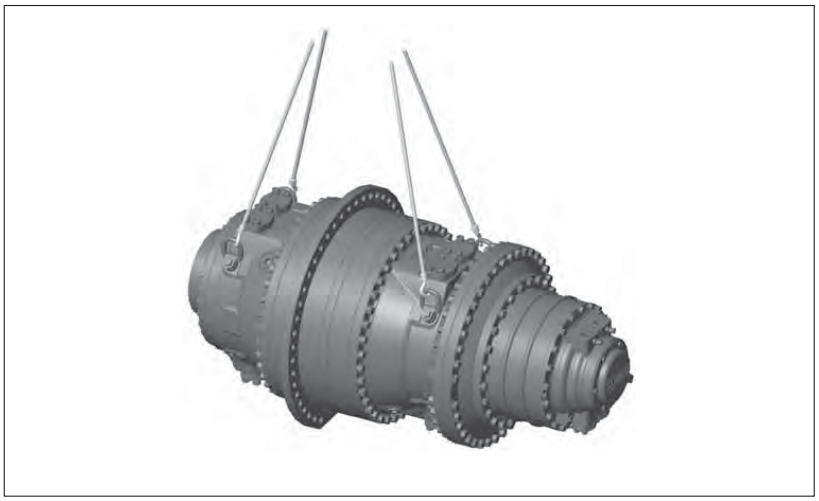

Fig. 3.7b CBP 840 + TBP 21 + CA 210 S28

Bosch Rexroth Mellansel AB, Intallation and maintenance manual, Hägglunds CBP, EN 818-6BR/2011

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Installation

See 3.1 Mounting instructions.

Table 3.7 Data for the Tandem motor

Tandem motor	Max. pressure bar (psi)	Total weight kg (lb)	Length mm (in)	Diameter mm (in)	Max. torque to driven shaft* Nm (lbf·ft)
CBP280 F + TBP 14 + CBP140	350 (5 000)	2 080 (4 586)	1 387 (54.6)	782 (30.8)	147 000 (108 422)
CBP400 F + TBP 14 + CBP140	350 (5 000)	2 430 (5 357)	1 505 (59.3)		189 000 (139 399)
CBP400 C + TBP 14 + CBP140	350 (5 000)	2 380 (5 247)	1 494 (58.8)	940 (37.0)	
CBP560 F + TBP 14 + CBP140	350 (5 000)	2 500 (5 512)	1 505 (59.3)		245 000 (180 703)
CBP560 C + TBP 14 + CBP140	350 (5 000)	2 400 (5 291)	1 571 (61.9)		
CBP840 C + TBP 14 + CBP140	350 (5 000)	2 670 (5 886)	1 689 (66.5)		343 000 (252 984)
CBP840 C + TBP 21 + CA210 S28	350 (5 000)	2 860 (6 305)	1 664 (65.5)		367 500 (271 054)
CBP560 C + TBP 40 + CBP280	350 (5 000)	3 690 (8 135)	1 929 (75.9)		294 000 (216 843)
CBP560 C + TBP 40 + CBP400	350 (5 000)	4 040 (8 907)	2 047 (80.6)		392 000 (289 124)

* See Engineering Manual ACBP-3.10

Standing the motor on a flat surface

When the motor is placed on a flat surface such as a floor, it must stand either on its outer diameter or on the suitably protected end face of the hollow shaft (see fig. 3.8 and 3.9).

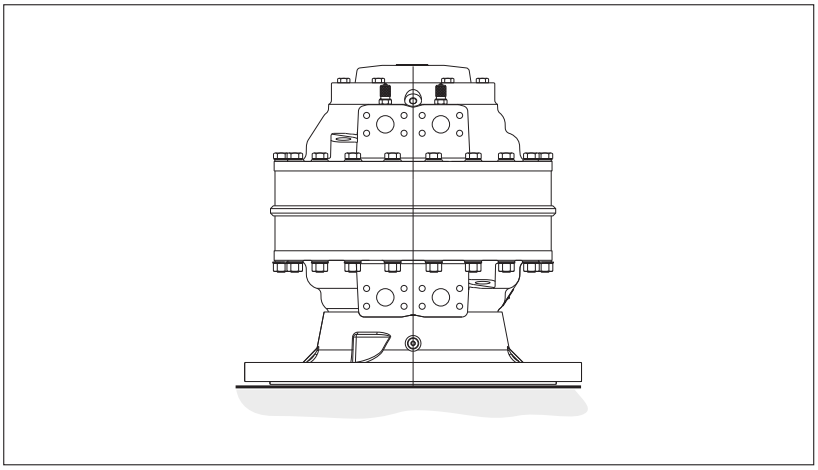

Fig. 3.8

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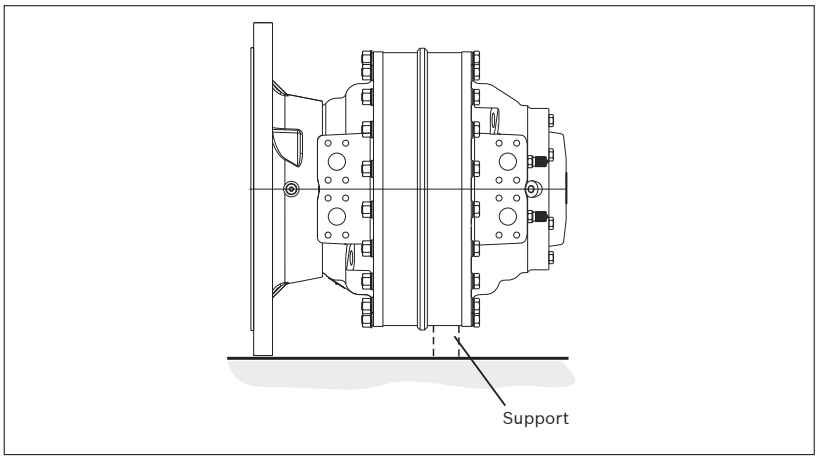

Fig. 3.9

Notice! When in storage, the motor must always be placed on the end face to the hollow shaft. It is also advisable to provide supports at the mounting surface of the motor; see fig. 3.9.

3.1.1 Mounting the coupling onto the shaft adapter

Before the motor is mounted there are some preconditions which must be fulfilled:

- You should note that the couplings are from the factory lubricated with MoS2 (Molykote) on the conical surfaces and the bolts, see fig. 3.13. This lubricants shall remain on those surfaces but:

⚠ CAUTION

Molykote must under no circumstances be transferred to the surfaces between the driven shaft and the shaft adapter.

It is therefore important that you clean your hands free from Molykote. If those conditions are fulfilled you may start the mounting.

- Clean the driven shaft and the out- and inside of the hollow shaft.
- Remove the spacers between the two clamping rings of the coupling.
- Mount the coupling on the hollow shaft. The coupling must be pushed right up to the stop of the shaft. Use a screwdriver to open the coupling ring for easier mounting.

⚠ CAUTION

Never tighten the coupling screws until the hollow shaft has been mounted onto the driven shaft.

- Mount the hollow shaft onto the driven shaft by following the instruction in the section 3.1.4. (With or without using the mounting tool).

Remember:

- The conical surface between the coupling ring and the clamping rings + the bolts shall be coated with MoS2 (Molykote), see fig. 3.10. This is done from the factory at delivery! When a motor has been in for overhaul or service and shall be reassembled it may be necessary to relubricate those surfaces with Molykote again but remember only the specified surfaces!
- Absolutely no Molykote on the surfaces between shaft-motor. Clean the driven shaft and the inside of the motor hollow shaft.
- Alignment of the hollow shaft on the shaft. (Dimensional check).
- Minimum variation in the gap between the clamping rings. (Dimensional check).
- Right torque on the bolts. (Use torque wrench).

⚠ CAUTION

Before starting the motor, check that the rotating coupling can not cause damage.

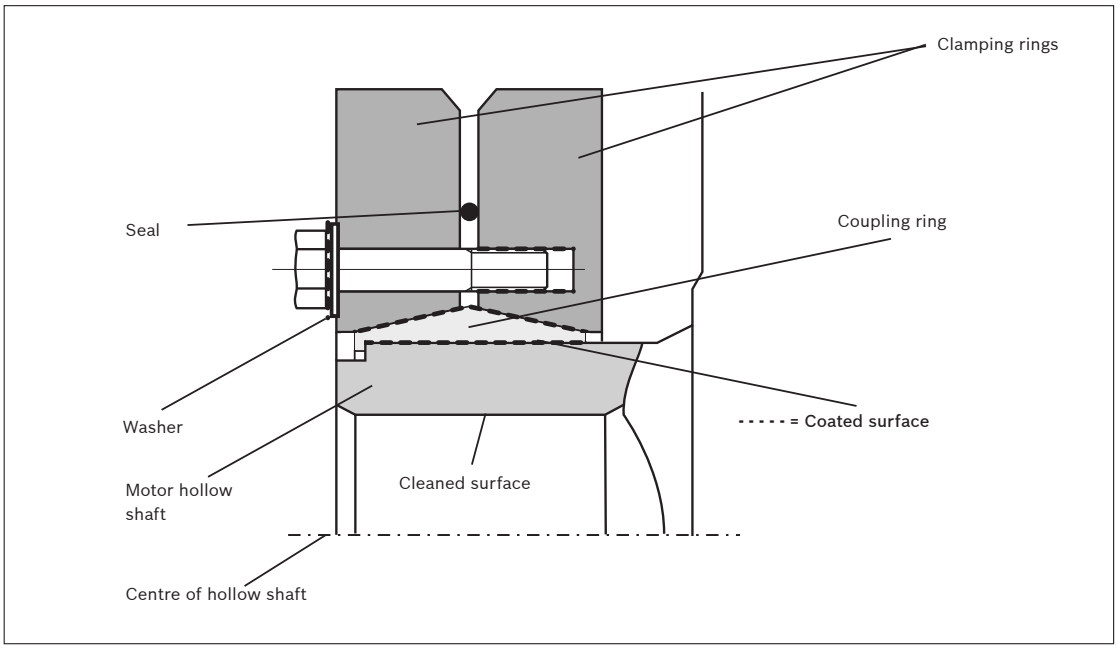

Fig. 3.10

3.1.1 a Fitting the torque arm to the motor

The torque arm is fitted to the motor before the motor is mounted on the driven shaft.

- Clean the spigot surface on the torque arm and motor.
- Oil the screws.
- Make sure that the torque arm will be pointing in the right direction when the motor is mounted in place on the machine. To achieve the highest possible oil level in the motor housing, the motor must be turned until the drain outlets are positioned according to figures in section 3.2.2.
- Line up the torque arm on the motor by using the screws with washers.
- Mount screws according to fig. 3.11.
- Tighten the screws to the torque stated in the table below.

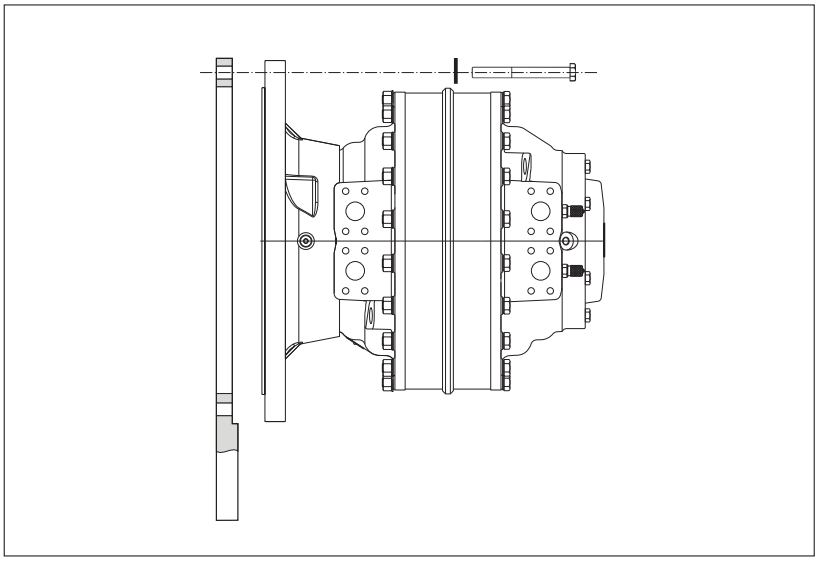

Fig. 3.11 CBP 140

⚠ CAUTION

Do not weld, drill, grind or carry out any similar work on the torque arm without approval from Bosch Rexroth.

Table 3.8a

Motor/Torque arm	Screw dimension	Number of screws	Tightening torque Nm	Tightening torque lbf·ft
CBP 140/ TCA 14	M20 Strength class 10.9	21 or 24	540	400
CBP 280 CBP 400 Front/ TCA 40	M20 Strength class 10.9	40	540	400
CBP 400 Centre CBP 560 Centre CBP 840 Centre/ TCA 84	M24 Strength class 10.9	41	900	660
CBP 560 Front/ TCA 84	M24 Strength class 10.9	48	900	660
Notice! Use torque wrench and oiled screws!				

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 3.8
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 motor, and a single speed motor.

Table 3.8b

CBP 140			
Cylinder	**Screw dimension**	**Tightening torque Nm**	**Tightening torque lbf·ft**
50/36	M8x25	25	15
80/56	M10x30	49	36
100/70	M12x40	86	63
125/90	M16x30	210	155

Table 3.8c

CBP 280-840			
Cylinder	**Screw dimension**	**Tightening torque Nm**	**Tightening torque lbf·ft**
63/45	M10 x 30	49	36
63/50	M10 x 30	49	36
70/45	M10 x 30	49	36
80/50	M10 x 30	49	36
80/56	M10 x 30	49	36
80/63	M10 x 30	49	36

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

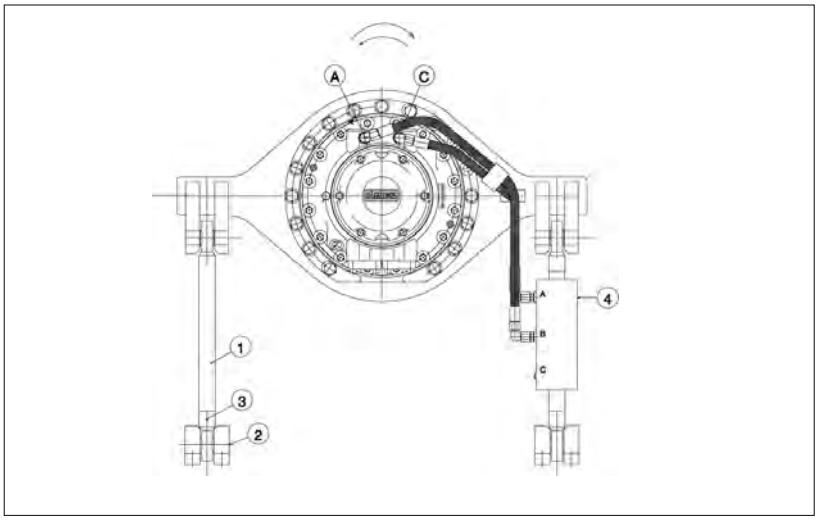

Fig. 3.11b

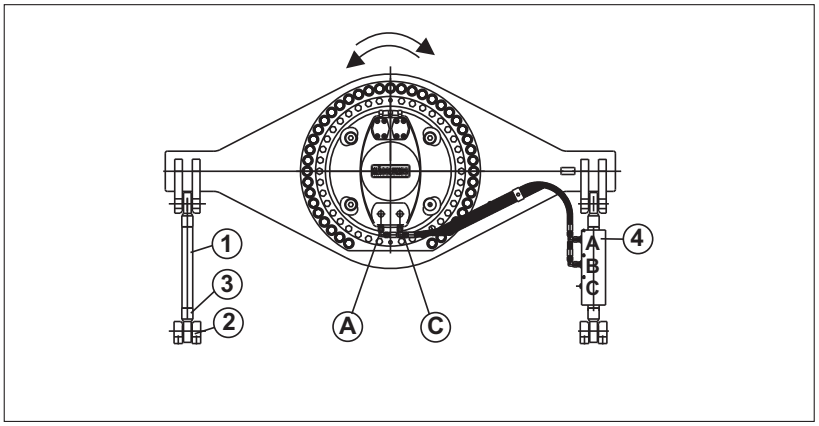

Fig. 3.11c

3.1.1 Mounting the motor onto the driven shaft

The motor can be mounted onto the driven shaft with or without a mounting tool, but the use of a mounting tool is recommended since it makes the work easier.
It is important to arrive at the correct clamping length between the driven shaft and the hollow shaft of the shaft adapter.
Ensure that the full clamping length is used by, for example, measuring and marking the driven shaft. This is of particular importance if the duty is so severe that a stress relieving groove has been made on the driven shaft. See fig. 3.13, 3.13a and the table 3.9.

Mounting the motor with a mounting tool (Fig. 3.12)

- Remove the End cover together with screws and washers.
- Align the motor with the driven shaft.
- Locate the existing plastic washer between the nut on the mounting tool and the bearing retainer. Pass the mounting tool through the centre of the motor, and screw it into the driven shaft to stated depth by using the key handle in the end of the tool.
- Pull the motor onto the shaft by turning the nut on the mounting tool.
- Remove the mounting tool.
- Refit the plug.
- Refit the end cover and tighten the screws together with washers. Torque 81 Nm (59 lbf·ft) for CBP 140, and torque 125 Nm (91 lbf·ft) for CBP 280-840.

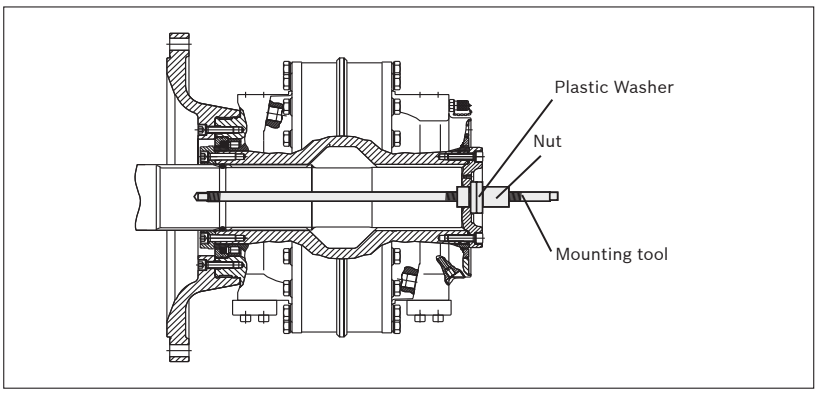

Fig. 3.12 Mounting the CBP

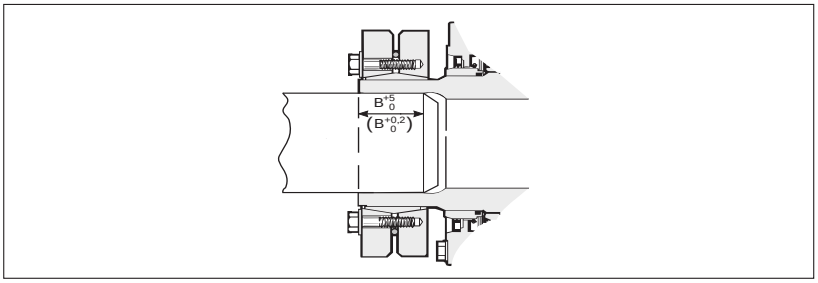

Fig. 3.13 Without stress relieving groove

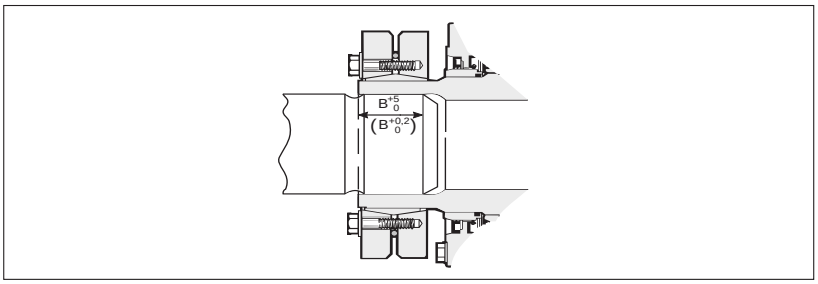

Fig. 3.13a With stress relieving groove

Hägglunds CBP, EN 818-6BR/2011, Intallation and maintenance manual, **Bosch Rexroth Mellansel AB**

Table 3.9

Motor	Lenght B mm	Lenght B in
CBP 280	106	4,17
CBP 400	117	4,61
CBP 560	153	6,02
CBP 840	153	6,02

Tightening of shaft coupling

However for the tightening of the coupling screws the following must be observed:

Keep tension in your lifting wires to avoid a skew setting of the motor on the shaft during the tightening of the screws. Wobbling caused by a skew setting of the motor gives extra forces on the main bearings.

In order to avoid the misalignment of the two clamping rings during the screw tightening, the gap between the rings must be measured in several places during the process, see fig. 3.14. The difference between the measured gaps must never vary more than 1 mm (0,04”) during any stage of the tightening process.
Pre-set the coupling screws in opposite pairs (12-6-3-9 o’clock) until you reach max. 50% of the torque specified for the screws. It is very important that when you reach this stage the misalignment is controlled as described above.

Mark the screw heads at 12 o’clock with a pen or paint so that you can follow the turning sequence of the screws.
Set the torque wrench for the specified maximum torque. Tightening torque of the coupling screws; see the sign on the coupling, or table 3.10.
Now start tightening the screws in sequence shown in fig. 3.14a.
Keep on doing this until you have reached the stated torque. Several passes are required before the screws are tightened to specified torque. Keep checking the alignment of the coupling. (15-20 passes may be necessary).
When the specified torque is reached it is important that all screws are tightened with specified torque and that no further movement can be observed.

Table 3.10

Motor type	No of screws	Screw dim	Strength class	Tightening torque Nm	Tightening torque lbf·ft	Type of head
CBP 280	12	M20 x 80	10.9	490	362	Hexagon
CBP 400	15	M20 x 90				
CBP 560	20	M20 x 100				
CBP 840	20	M20 x 100				

Note 1 Uncoated screws greased with Molykote, MoS2.
Note 2 There is a metallic sign on every coupling with a tightening torque stamped on it. This torque is always to be used.
Note 3 Tightening torque value is critical. Use calibrated torque wrench.

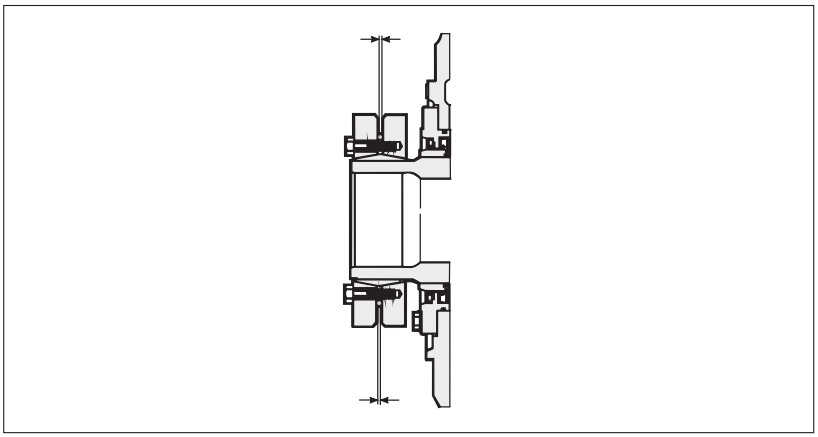

Fig. 3.14

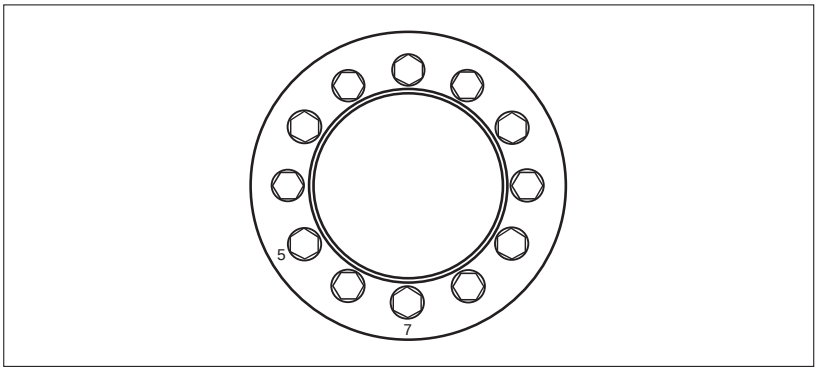

Fig. 3.14a

3.1.4b Mounting the motor onto the driven shaft – splines

Flange mounted motors

For flange mounted motors, the spline shall normally not be subject to radial load. With no radial load, the spline shaft can be oiled before mounting the motor. If the motor is subject to radial load, the splines shall be filled up with oil.

- Mount the motor on to the shaft.
- Bolt the motor to the flange.
- Fill up hydraulic oil to the G1 plug.
- Torque the G1 plug. MV=125 Nm/90 lbf.ft.
- Mount the cover. MV=81 Nm/59 lbf.ft for CBP 140, Mv=125 Nm/91 lbf·ft for CBP 280-840

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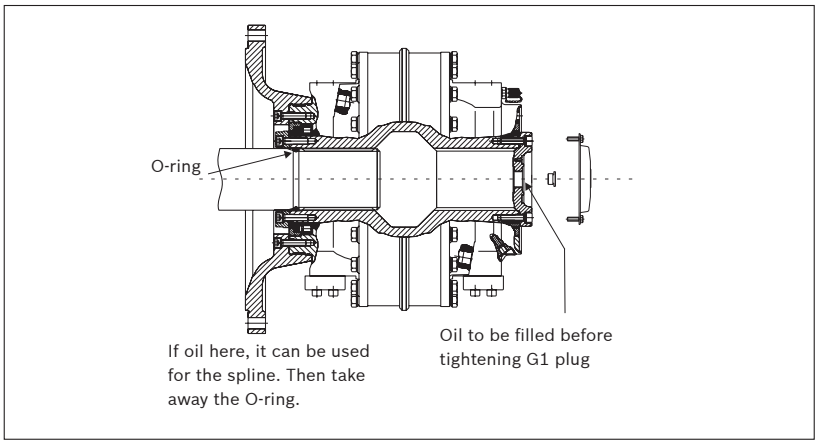

Fig. 3.15

Torque arm mounted motors CBP 140

Motors that carry radial load, must have the splines filled with oil. The motor can be used for horizontal mounting and mounting with motor shaft pointing downwards.

- Mount the motor on to the shaft.
- Fill up hydraulic oil to the G1 plug.
- Mount washer and bolt.
- Torque the bolt. MV=385 Nm/280 lbf.ft.
- Mount the cover. MV=81 Nm/59 lbt.ft.

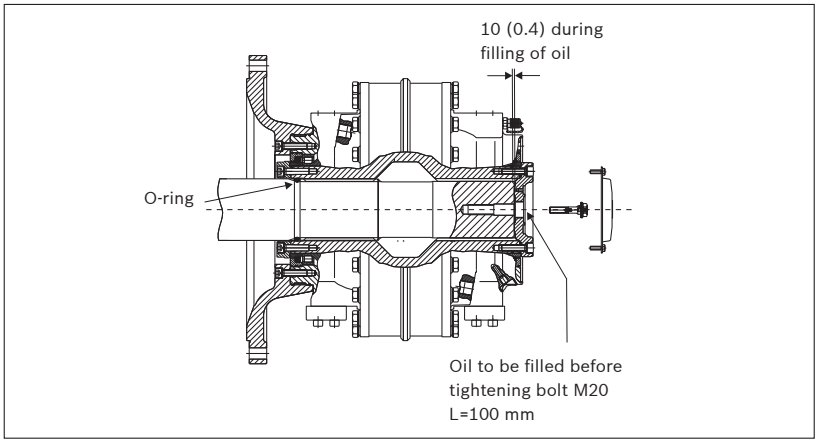

Fig. 3.16

Torque arm mounted motors CBP 280-840

Motors that carry radial load, must have the splines filled with oil. The motor can be used for horizontal mounting and mounting with motor shaft pointing downwards.

- Mount the spacer on the shaft. MV=450 Nm/300 lbf.ft.
- Mount the motor on to the shaft.
- Fill up hydraulic oil to the G1 plug.
- Mount washer and bolt.
- Torque the bolt. MV=385 Nm/280 lbf.ft.
- Mount the cover. MV=125 Nm/91 lbt.ft.

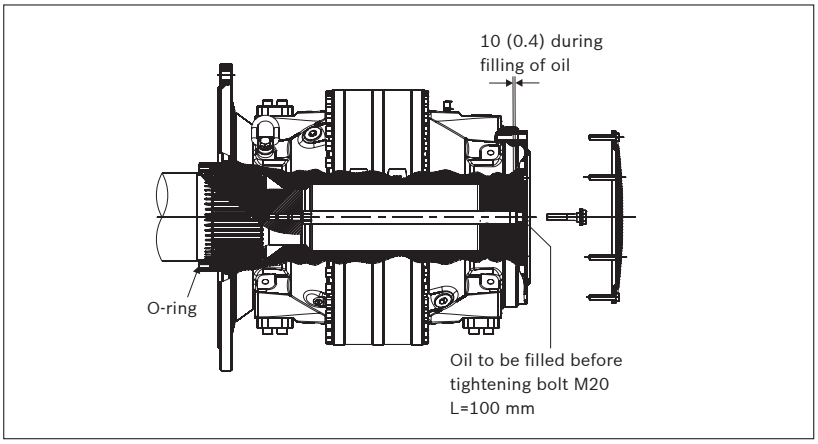

Fig. 3.17

3.1.4c Removing the shaft adapter from the shaft

Before dismounting the shaft adapter from the driven shaft the motor must be removed.

Removal by using the mounting tool

Slacken the shaft coupling screws gradually; see fig. 3.14 and 3.14a. Each screw should be slackened only about a quarter of a turn each time. Thus tilting and jamming of the collars or thread stretching will be avoided. The screws must be slackened until the coupling ring is fully released.

⚠ DANGER

Never stay below the motor during disassembly

⚠ WARNING

Always make sure that the lifting equipment is strong enough to handle the weight of the motor

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3.1.1 Mounting the reaction point

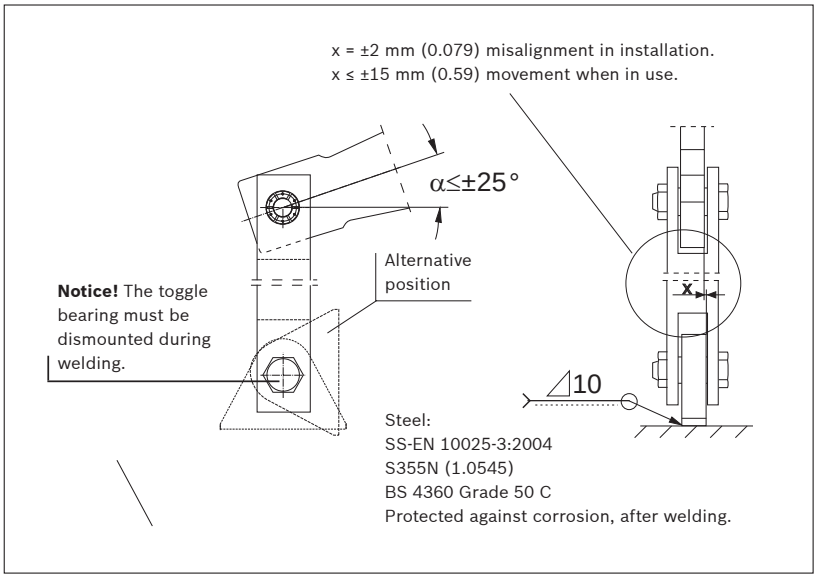

Fig. 3.18 Mounting of pivoted attachment

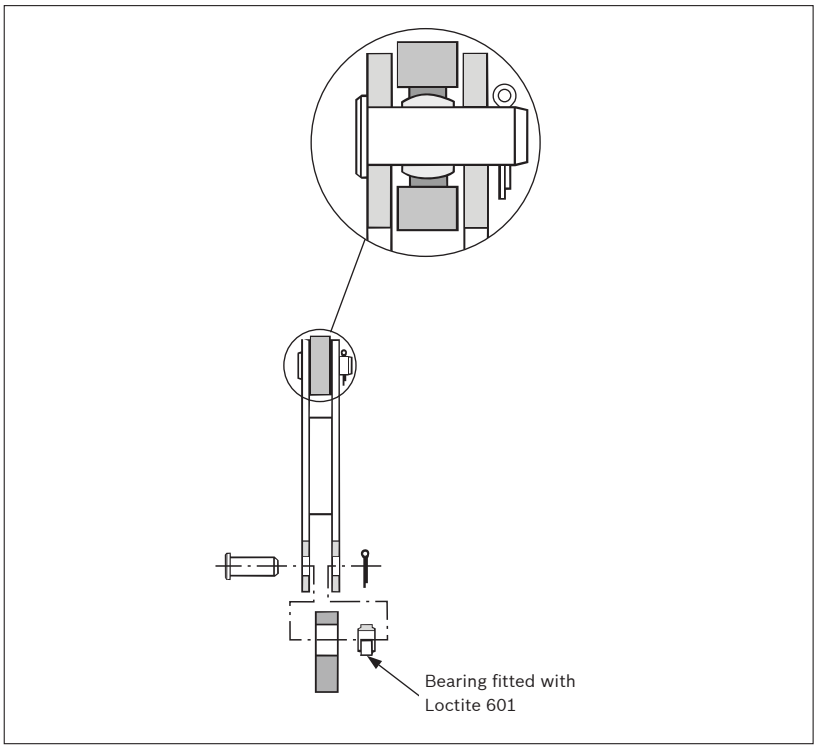

Fig. 3.19

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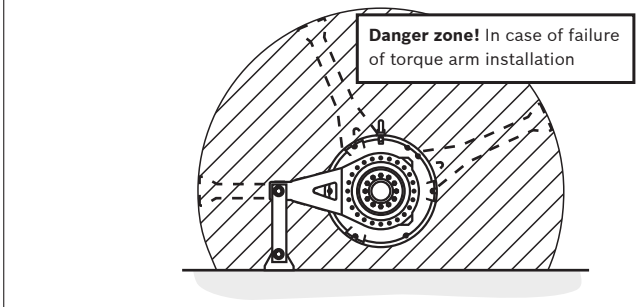

Fig. 3.20

DANGER

Make sure that the foundation can withstand the forces from the torque arm.

3.2 Oil connections

When using (heavy wall) piping and in frequent reversal drives, it is recommended to fit flexible hoses between the motor and piping to avoid damage due to vibration and to simplify installation of the motor. The length of the hoses should be kept fairly short.

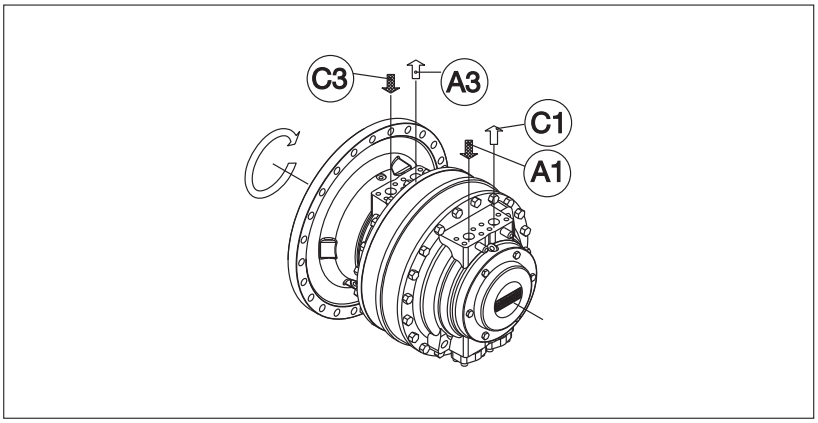

Fig. 3.21 CBP 140

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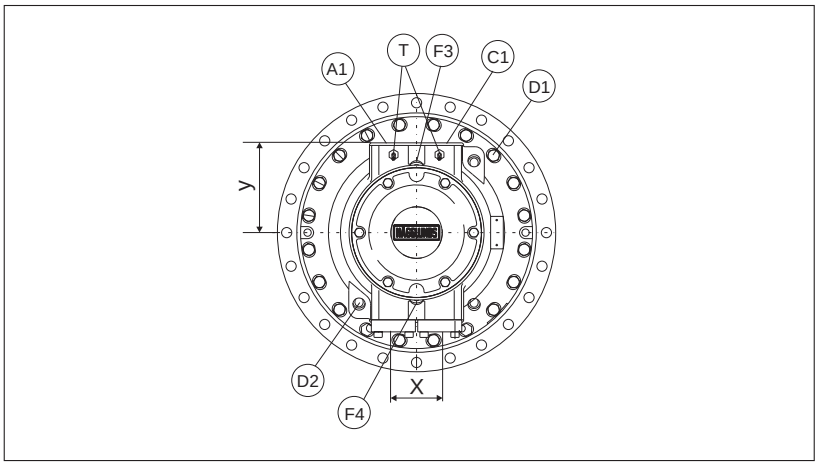

Fig. 3.22a CBP 140

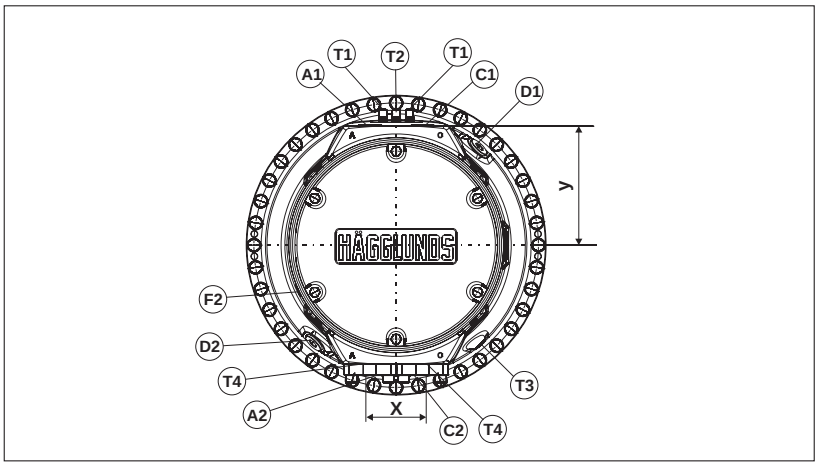

Fig. 3.22b CBP 280-840

Table 3.11

Connection	Description	Remarks
C1, A3	Main connection	If C1 and A3 is used as the inlet, the motor shaft rotates clockwise, viewed from the motor shaft side.
A1, C3	Main connection	If A1 and C3 is used as the inlet, the motor shaft rotates counterclockwise, viewed from the motor shaft side.
D1	Drain outlet	Normally plugged at delivery.
D2, D3, D4	Alternative drain outlets	Normally plugged at delivery.
F2, F3, F4, F5, F6	Flushing connection	For flushing of motor case.
T	Test connections	Used to measure pressure and/or temperature at the main connections.

Table 3.12

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Motor	A*	C*	D1, D2, D3, D4	F3, F4, F5, F6	y mm	y in	x mm	x in
CBP 140	1 1/4"	1 1/4"	G 3/4"	G 1/4"	188	7.40	99	3.90
CBP 280-840	2"	2"	G 1 1/4	G 1/4"	310	12.20	137	5.39

*SAE coupling J 518 C, code 62, 414 bar (6 000 psi).

Main connection A, C

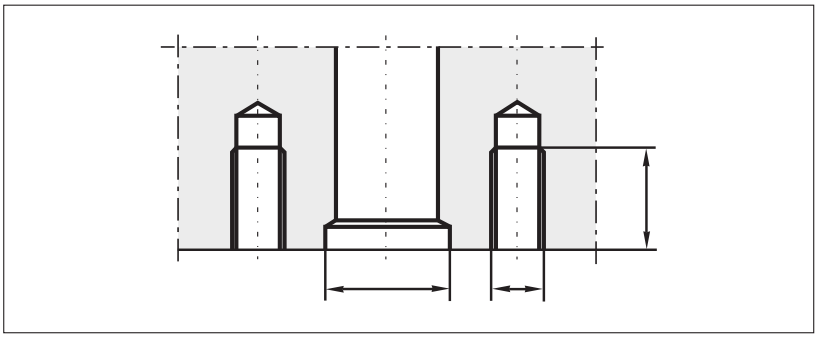

Fig. 3.23

Table 3.13

Motor	a mm (in)	b	c mm (in)
CBP 140	31 (1.22)	1/2 UNC	25 (0.98)
CBP 280-840	48 (1.89)	3/4 UNC	38 (1.496)

Drain connection D1, D2, D3, D4

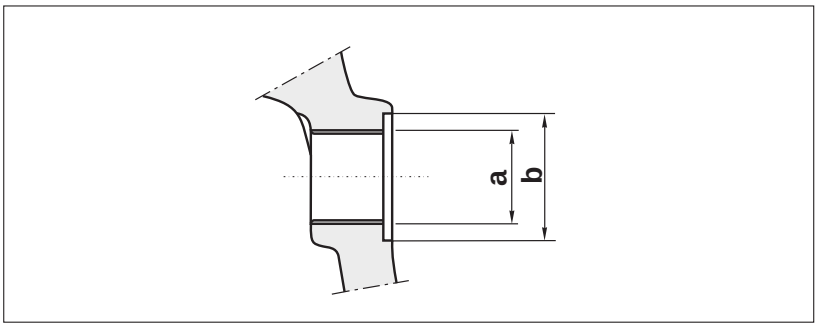

Fig. 3.24

Table 3.14

Motor	a	b
CBP 140	BSP 3/4“	50 (2.0)
CBP 280-840	BSP 1 1/4“	60 (2.36)

Test connection T

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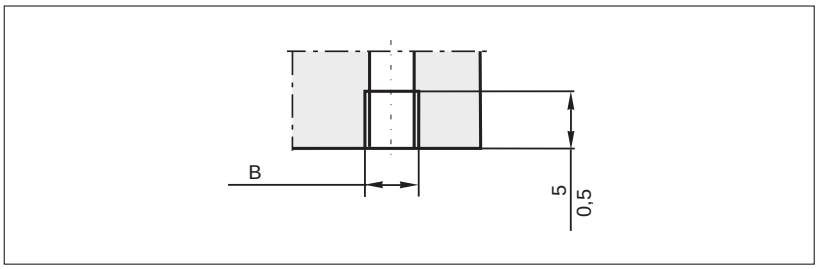

Fig. 3.25

3.2.1 Direction of rotation of motor shaft

With the inlet pressure supply connected to A1 and C3 port, the motor shaft rotates in the direction shown by the arrow, anti-clockwise viewed from the motor shaft side.

With the inlet pressure supply connected to C1 and A3 port, the motor shaft rotates clockwise viewed from the motor shaft side.

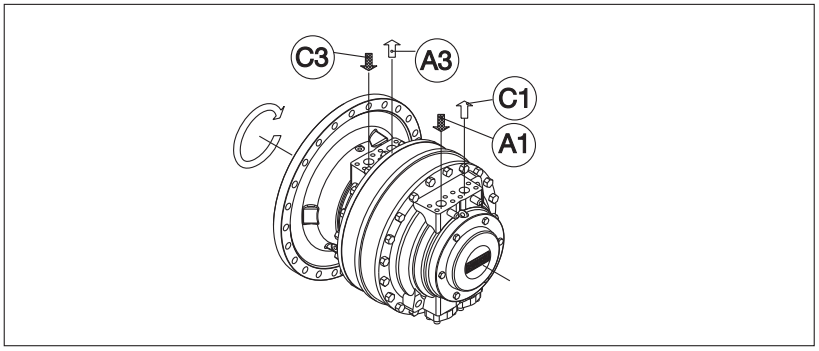

Fig. 3.26a

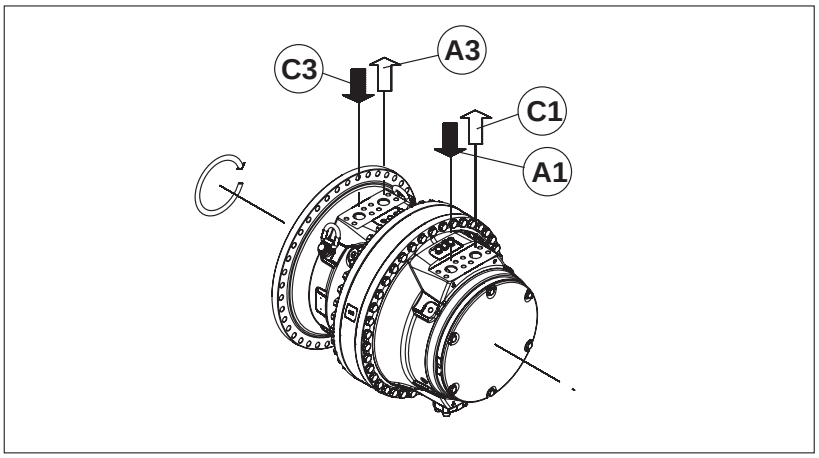

Fig. 3.26a

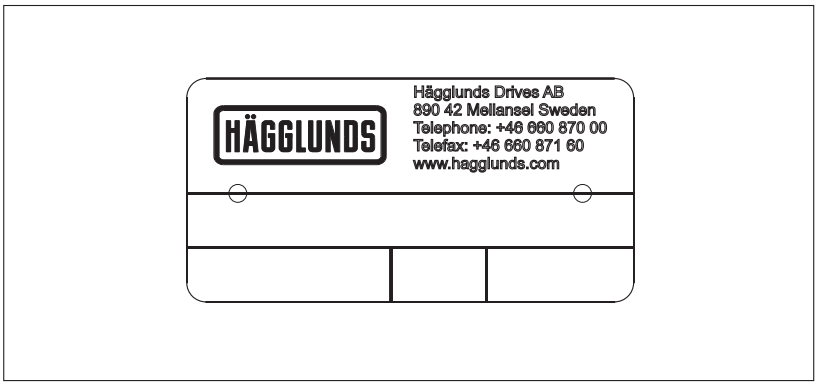

Fig. 3.26b Motor sign

3.2.1 Draining and venting the motor

Horizontal mounting

When the motor is installed with the shaft in the horizontal plane, it can be drained without special provisions for venting. The highest of the three drain outlets D1, D2 or D3 must always be used; see fig. 3.27.
Drain line must be connected direct to the tank with a minimum of restrictions, to ensure that the maximum housing pressure is not exceeded.

Vertical mounting

When the motor is mounted vertically, one or the other of the vent holes must be connected to the drain line. Which of the holes that is to be used depends on whether the motor shaft is pointing upwards or downwards.

Motor shaft pointing downwards

The motor must be connected to the drain connection in D1 or D2 and F2, F3 or F4. See figure 3.28.

Motor shaft pointing upwards

The motor must be connected to the drain line connection on the connection block; see fig. 3.29.
The flushing connection F on the connection block should be connected to the low pressure connection. With bidirectional drives, use the connection with lowest average pressure. (Connection to high pressure will increase the motor drain flow). This gives flushing of the radial lip seal. It is advisable to fit the nipple and the hose to the motor before fitting the torque arm.

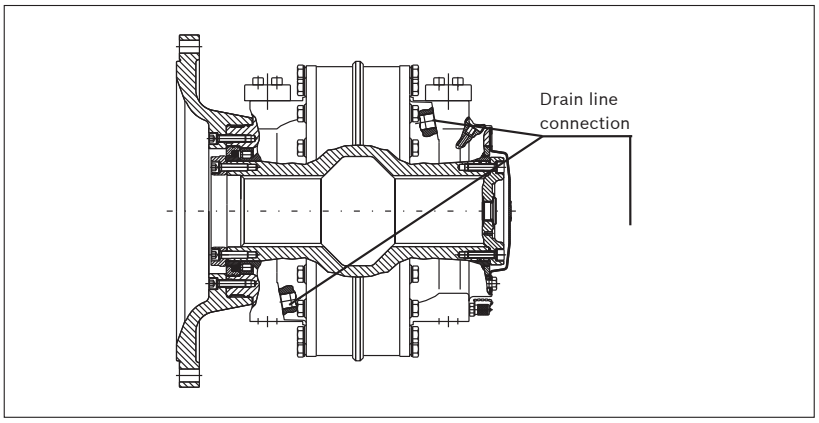

Fig. 3.27

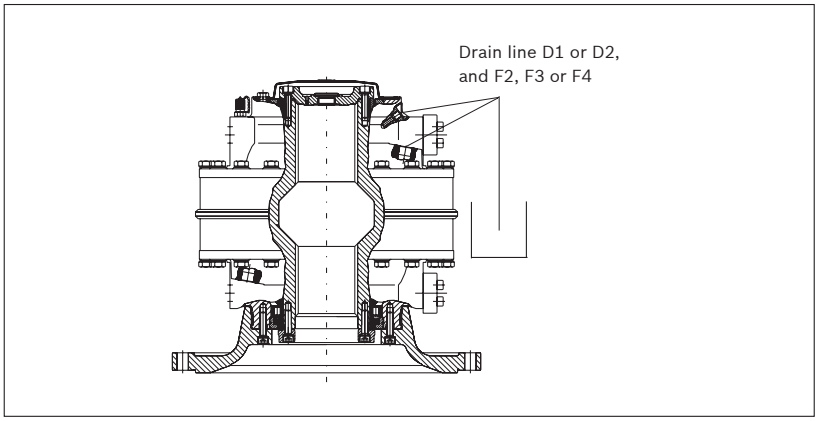

Fig. 3.28

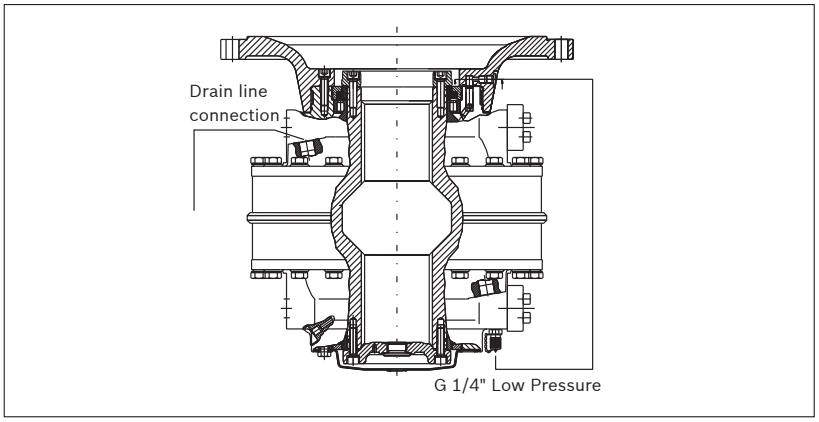

Fig. 3.29

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3.2.1 Flushing

Flushing of motor case

To avoid high temperature in the motor case the heat must be removed, because high temperature gives lower viscosity and that gives reduction in basic rating life/ service life. Low viscosity also means reduced permitted output power from the motor.

- The motor case must be flushed when the output power exceeds the values shown below.

Max. power without flushing		
CBP 140-280	120 kW	(160 hp)
CBP 400-840	170 kW	(227 hp)

⚠ CAUTION

When working above 120/170 kW, viscosity must be kept under control by flushing the motor case. Lost flushing gives risk to destroy the motor.

4 Operating instructions

4.1 Storage

The motor is delivered with internal protection in the form of an oil film and external protection in the form of an anti-rust film. This provides sufficient protection for indoor storage in normal temperatures for about 12 months.

Notice! the anti-rust protection must be touched-up after transport and handling.

If the motor is stored for more than 3 months in uncontrolled environment or more than 12 months in controlled environment, it must be filled with oil and positioned as shown in fig. 3.8.
For calculation of required flushing, please contact your Hägglunds representative.
The flushing oil shall be drained in the normal drain line. See 3.2.2.
Connect the input line for flushing in the lowest flushing F3 or F4, see fig. 4.1a.

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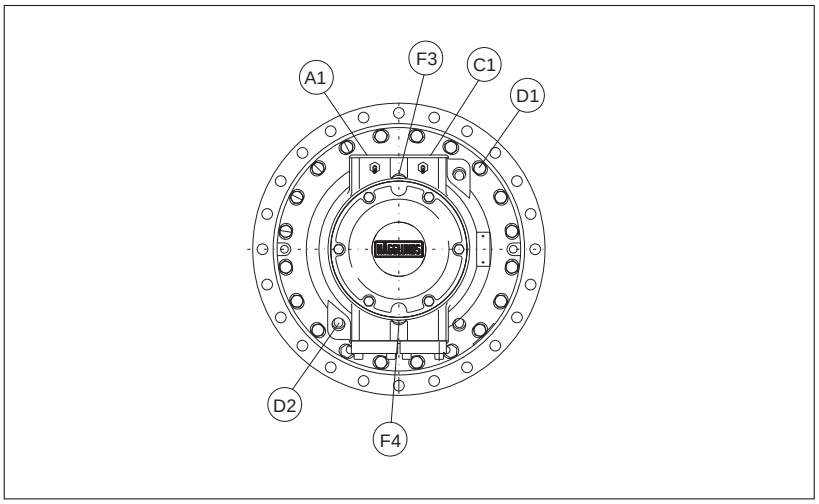

Fig. 4.1a CBP 140

Connection G 1/4". Max allowed flushing 20 l/min. (55 gpm)
Connect the input line for flushing in the lowest flushing D1 or D2, see fig. 4.1b.

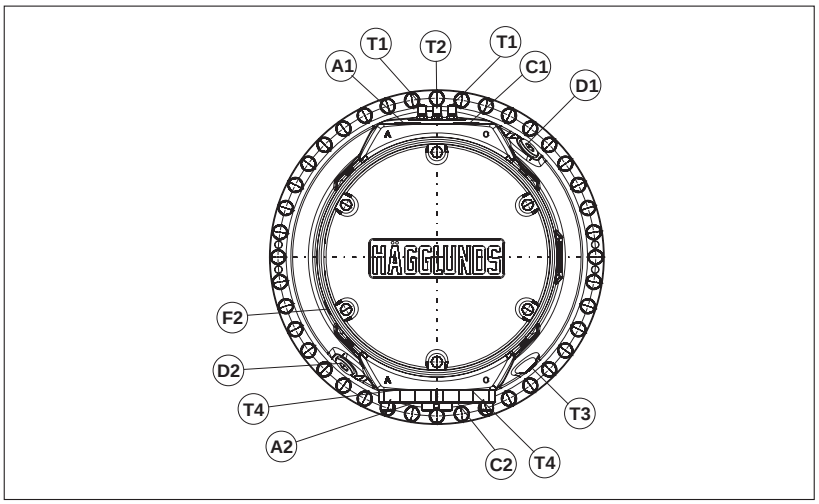

Fig. 4.1b CBP 280-840

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.

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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.
CBP 140	5.0	1.32
CBP 280	29.0	7.6
CBP 400	35.0	9.2
CBP 560	35.0	9.2
CBP 840	41.0	10.8

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.

Notice! It is important that the pressure is limited to 250 bar (3626 psi) when starting up the motor.
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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4.4 Periodic maintenance

When a hydraulic system has been in service for some time, it must undergo periodic maintenance and servicing at intervals which depend on the equipment and the type of duty.

This periodic maintenance must include the following operations:

- Check the hydraulic system for leakage. Tighten the screws, replace faulty seals and keep the drive clean.
- Inspect and clean all air, oil and magnetic filters; replace all filter cartridges for which a filter clogged indication has been given; inspect tank, pump, filters etc. and clean if necessary.
- Check the pressure and temperature of the hydraulic fluid and carry out routine operations. Adjust valves etc. if necessary.
- Check the hydraulic fluid; see the Section headed “Oil”.
- Check that no dirt or other contaminations enter the system during inspection. Check that the outside of the hydraulic motor in an installation is kept free of dirt; thus leakage and faults will be detected earlier.
- We recommend that a running log be kept and that planned inspections are carried out at set intervals.
- Maintenance checks and operations are as follows:

Maintenance chart

In operation	Oil filters	Oil	Torque arm
After the first 100 hours	Rpl.	–	Insp.
After 3 months or 500 hours	Rpl.	–	–
Once every 6 months	Rpl.	Insp.	Insp.
Once every 12 months	–	–	–

Rpl = Replacement Insp = Inspection

4.4.1 Cleaning and care

⚠ CAUTION

Damage to the surface caused by solvents and aggressive detergents!

Aggressive detergents may damage the seals on the hydraulic motor and cause them to age faster.

- Never use solvents or aggressive detergents.
- If in doubt, check the compatibility of the detergent with the seal type (Nitrile or Viton) specified in the hydraulic motor.

⚠ CAUTION

Damage to the hydraulic system and the seals!

Using a high-pressure cleaner could damage the speed encoder and the seals of the hydraulic motor.

- Do not point the high-pressure cleaner at sensitive components, e. g. shaft seal, seals in general, electrical connections and speed encoder.

- For cleaning and care of the hydraulic motor, observe the following:
- Plug all openings with suitable protective caps/devices.
- Check whether all plugs and plug seals are securely seated to ensure that no moisture can penetrate into the hydraulic motor during cleaning.
- Use only water and, if necessary, a mild detergent to clean the hydraulic motor.
- Remove coarse dirt from the outside of the machine and keep sensitive and important components, such as sensors and valve blocks clean.

4.4.1 Motor

If the motor is to be stored stationary for a longer period than about 1 month, it must be protected from internal rust. This can be done as follows:

1. Mix anti-rust additive with the hydraulic fluid of the system. Use 5% of Rust Veto Concentrate (manufactured by E F Houghton & Co, Philadelphia, USA). This additive gives rust protection for up to about 1 year, after which time the motor must be turned a few revolutions.
2. If no additives are used, the motor must be regularly turned a few revolutions.
3. If it is not possible to turn the motor, plug all connections, open drain outlet D1 or D2 on the port end housing (or if the motor is mounted vertically, Flushing connection F on the connection block) and fill the motor with hydraulic fluid. (See Fig. 4.3).

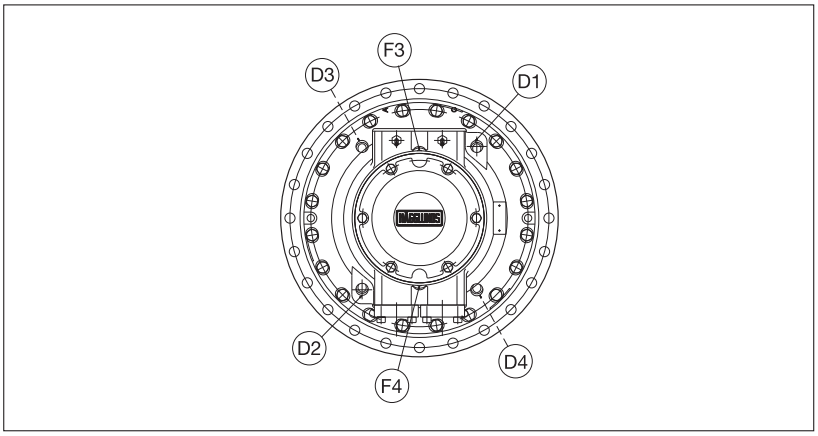

Fig. 4.3a CBP140

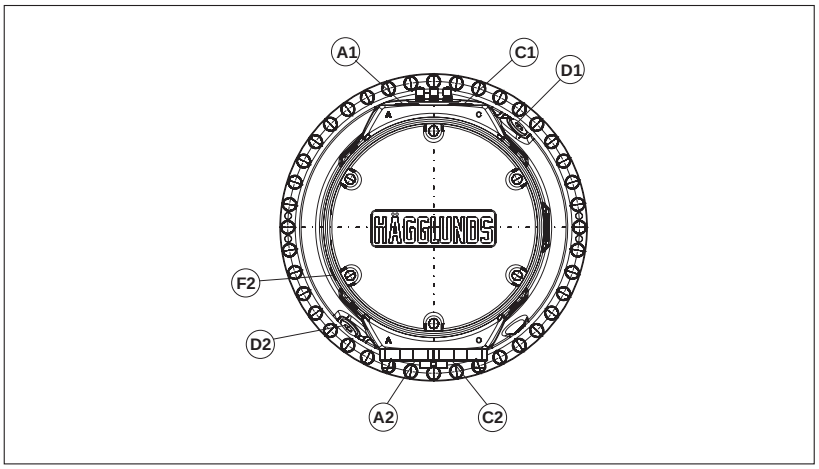

Fig. 4.3b CBP280-840

4.4.1 Filters

Filters must be changed after the first 100 working hours and the second change is to be carried out after 3 months or 500 working hours whichever is earlier. They must then be changed at regular intervals of 6 months or 4000 working hours.

4.4.1 Oil (Se also 2.3)

Analysis

It is recommended that the oil should be analysed every 6 months. The analysis should cover viscosity, oxidation, water content, additives and contamination. Most oil suppliers are equipped to analyse the state of the oil and to recommend appropriate action. The oil must be replaced immediately if the analysis shows that it is exhausted.

Viscosity

Many hydraulic oils become thinner with increasing use, and this means poorer lubrication. The viscosity of the oil in service must never fall below the minimum recommended viscosity.

Oxidation

Hydraulic oil oxidizes with time of use and temperature. This is indicated by changes in colour and smell, increased acidity or the formation of sludge in the tank. The rate of oxidation increases rapidly at surface temperatures above 60 °C (140 °F), and the oil should then be checked more often.
The oxidation process increases the acidity of the fluid; the acidity is stated in terms of the “neutralisation number”. Typical oxidation is slow initially and increases rapidly later.
A sharp increase (by a factor of 2 and 3) in the neutralisation number between inspections is a signal that the oil has oxidized too much and should be replaced immediately.

Water content
Contamination of the oil by water can be detected by sampling from the bottom of the tank. Most hydraulic oils repel the water, which then collects at the bottom of the tank. This water must be drained off at regular intervals. Certain types of transmission oils and engine oils emulsify the water; this can be detected by coatings on filter cartridges or a change in the colour of the oil. Obtain the advice of your oil supplier in such cases.

Degree of contamination
Heavy contamination of the oil causes increased wear of the hydraulic system components. The cause of the contamination must be immediately investigated and remedied.

⚠ CAUTION

All hydraulic fluids are affected differently. Obtain the advice of your oil supplier or by nearest Hägglunds representative.

4.5 Oil inspection

Purpose
The purpose to take an oil sample is to check the condition of the oil.
With scheduled oil analysis, wear products can be identified and corrective action can be taken before failure occurs. Oil analysis can indicate when an oil change is required, point out shortcomings in maintenance and keep repair cost to a minimum. Using oil analysis can create a “window of opportunity”, allowing the user to schedule re-fittings or overhauls, maintenance or repairs, thus saving money on equipment repairs and downtime.
The most used method is to take samples in a special bottle and send it to a fluid laboratory for an analysis and from the laboratory you get a report, which follow a specific international standard.

You have to select what analysis the laboratory should take, but the most used analysis are particle count, water content, oxidation and viscosity.
Another method is to install an inline particle counter direct in your hydraulic system which give you the contamination level according to the international rules, the disadvantage with this method is that you only get the contamination level in the oil.

General
- The intention is to verify the condition of the oil during operation. The motors should be running at normal operation while the sample is taken.
- The cleanliness is extremely important during sampling.
- Always use bottles adapted to oil samples, they can be ordered from any fluid analysis laboratory.
- Never try to clean your own bottle if you want a true value of the result.
- The sample should be taken by using a mini-mess hose connected to a mini-mess coupling.

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- Always clean the connections carefully before you connect the mini-mess hose to the coupling.
- Be careful when connecting the mini-mess hose because the oil beam can be dangerous and should never point against any person or other sensible object.
- Check and be aware of the pressure you may have on the connection before you connect.

How to do
Bottle samples
- The sample shall be taken at the mini-mess coupling on the charge pressure side of the motor in the closed loop system. Never out of the tank using the ball valves.
- Clean the coupling and the hose carefully.
- Connect the mini-mess hose to the coupling but be careful and be aware of the direction of the oil beam.
- Let minimum 2 litres (0.6 US gallon) of oil flush into a bucket before you fill the bottle.

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- Remove the cap of the bottle as late as possible and don't let any contamination be in touch with the cap, bottle or the mini-mess hose when the sample is taken.
- In dirty air area, use a soft plastic foil (normal as protection in laboratory bottles between bottle and cap).
- Do not remove the foil, prick the end of your mini-mess hose through the foil into the bottle and fill.
- To get a reliable result the system must run without moving any valves and the mini-mess hose should not touch the bottle.
- Only ¾ of the bottle shall be filled because the laboratory has to shake the sample to get a mixed fluid when they analyse it. Minimum 200 ml are needed for a good analysis.
- When the bottled is filled close the cap as soon as possible to prevent contamination from the air that might enter the bottle and give you a wrong result.

Inline measure

The sample shall be taken at the mini-mess coupling on the charge pressure side of the motor in of the closed loop system. Clean the coupling and the hose carefully. Connect the hoses according to the particle counters manual.
To get a true value the contamination readings have to be stable about 10 min before you stop to measure.

5 Fault finding

Fault	Probable cause	Action
The motor does not run.	Mechanical stop in the drive.	Check system pressure. If the pressure has risen to the relief valve setting, remove the load from the drive.
	The motor does not deliver enough torque because the pressure difference across the motor is not great enough for the load.	Investigate the pressure level in the system and correct the setting of the pressure limiting valve if necessary.
	Insufficient or no oil being supplied to motor.	Check the hydraulic system. Check the external leakage of the motor. (The D connection).
Motor rotates in wrong direction.	Oil supply connections to motor incorrectly connected.	Connect the oil supply correctly.
Motor runs jerkily.	Pressure or flow fluctuations in the hydraulic system.	Find the cause in the system or in the driven unit.
Noise in the motor.	The motor is being operated with the charge pressure too low.	Adjust the charge pressure to the correct level. See 2.1 „Recommended charge pressures".
	Internal faults in the motor.	Investigate the drain oil, if necessary. Put a magnetic plug in the oil flow and check the material that sticks to the magnet. Steel particles indicate damage. Note that fine material from the castings may be deposited and does not mean internal damage in the motor.
External oil leakage on the motor.	The radial lip seal is worn.	Replace the radial lip seal.

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6 Declaration of incorporation

HÄGGLUNDS

Declaration of Incorporation of partly completed machinery
As defined by the EC Machinery Directive 2006/42/EC, Appendix II B

The manufacturer

Hägglunds Drives AB

hereby declares that the partly completed machinery

Name: Compact CBP
Function: Hydraulic motor
Model: Compact
Type: CBP
Trade name: Compact CBP

satisfies the following essential requirements of Machinery Directive 2006/42/EC in accordance with the chapter numbers in Appendix I:

General principle no. 1.									
1.1.3	1.1.5	1.2.1	1.3.1	1.3.2	1.3.3	1.3.4	1.3.6	1.3.7	1.5.3
1.5.4	1.5.5	1.5.6	1.5.8	1.5.13	1.6.1	1.6.3	1.7.2	1.7.3	1.7.4

The requirements are fulfilled provided that the data in the product documentation (fitting instructions, operating instructions, project management and configuration documents) are implemented by the product user. The requirements of Appendix I to Machinery Directive 2006/42/EC not mentioned here are not applied and have no relevance for the product.

It is also declared that the special technical documents for this partly completed machinery have been compiled in accordance with Appendix VII, Part B. These are transferred on request to the market surveillance body in paper-based/electronic format.

Conformity with the provisions of further EU Directives, Standards or Specifications:

SS-EN 982
SS-EN ISO 12100-1
SS-EN ISO 12100-2

The partly completed machinery may only be put into operation when it has been established that the machine into which the partly completed machinery is to be incorporated conforms to the provisions of EC Machinery Directive 2006/42/EC, where relevant according to this directive.

The individual below is authorized to compile the relevant technical files:

Name: Björn Leidelöf
Address: Hägglunds Drives AB, S-890 42 Mellansel

Björn Leidelöf Mellansel, 2009-12-29

We reserve the right to make changes to the content of the Declaration of Incorporation. Current issue on request.

The Declaration of incorporation above is available on request for deliveries from Hägglunds Drives AB. Translations into other languages are also available.

NOTES

The Drive & Control Company

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We reserve the right to make changes
Printed in Sweden
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