

# Product catalogue Häggglunds CBm

Radial piston hydraulic motor





# Empowering possibilities

When it comes to production, everyone wants more. But these days there's less of everything else: from available time to the energy and resources for the job. With the Hägglunds CBm direct drive from Bosch Rexroth, the equation is easier to solve.

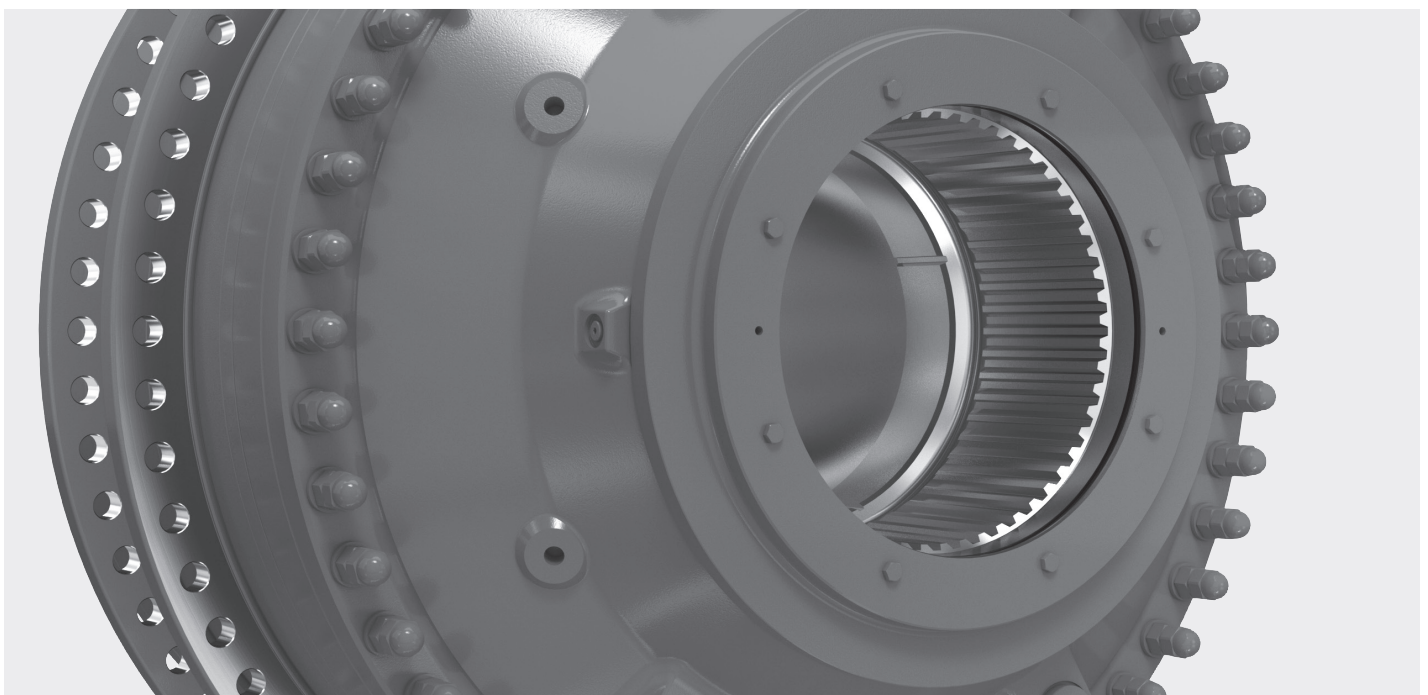
The Hägglunds CBm packs 50 % more torque into a motor that's smaller and 50 % lighter than its predecessor. That gives it the world's highest torque-to-weight ratio. Even so, it has all the advantages you'd expect from a direct drive. Full torque from zero speed, protection from shock loads and four-quadrant operation are part of the same small package.

Put simply, the Hägglunds CBm does more with less – and lets you do the same. From industry to offshore, you can handle more work with less space, less energy and less weight on the driven shaft.

That means greater productivity with a smaller footprint. And that's an ingenious solution.

## Features

- ▶ The most powerful direct drive in the world.
- ▶ 50 % more torque - now torque up to 1970 kNm
- ▶ High torque density
- ▶ High power density
- ▶ Modular design
- ▶ Small footprint
- ▶ Wide range of accessories
- ▶ Retrofit possibility
- ▶ Low moment of inertia
- ▶ Free-wheeling possibility
- ▶ Tandem mounting possibility



# The drive behind your success

A Hägglunds hydraulic direct drive is a drive system beyond the ordinary. In far less space than other drives – and with far less weight and complexity – it delivers flexible, reliable power.

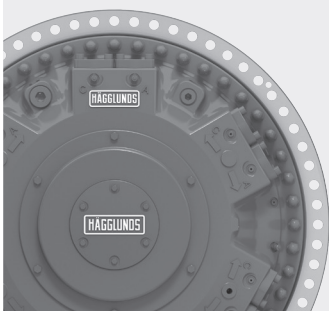
With a Hägglunds drive, your machine has unlimited access to high torque. Yet it's also protected from torque stresses. You get the power and stamina to do more, but with less strain, less wear and less maintenance hassle.

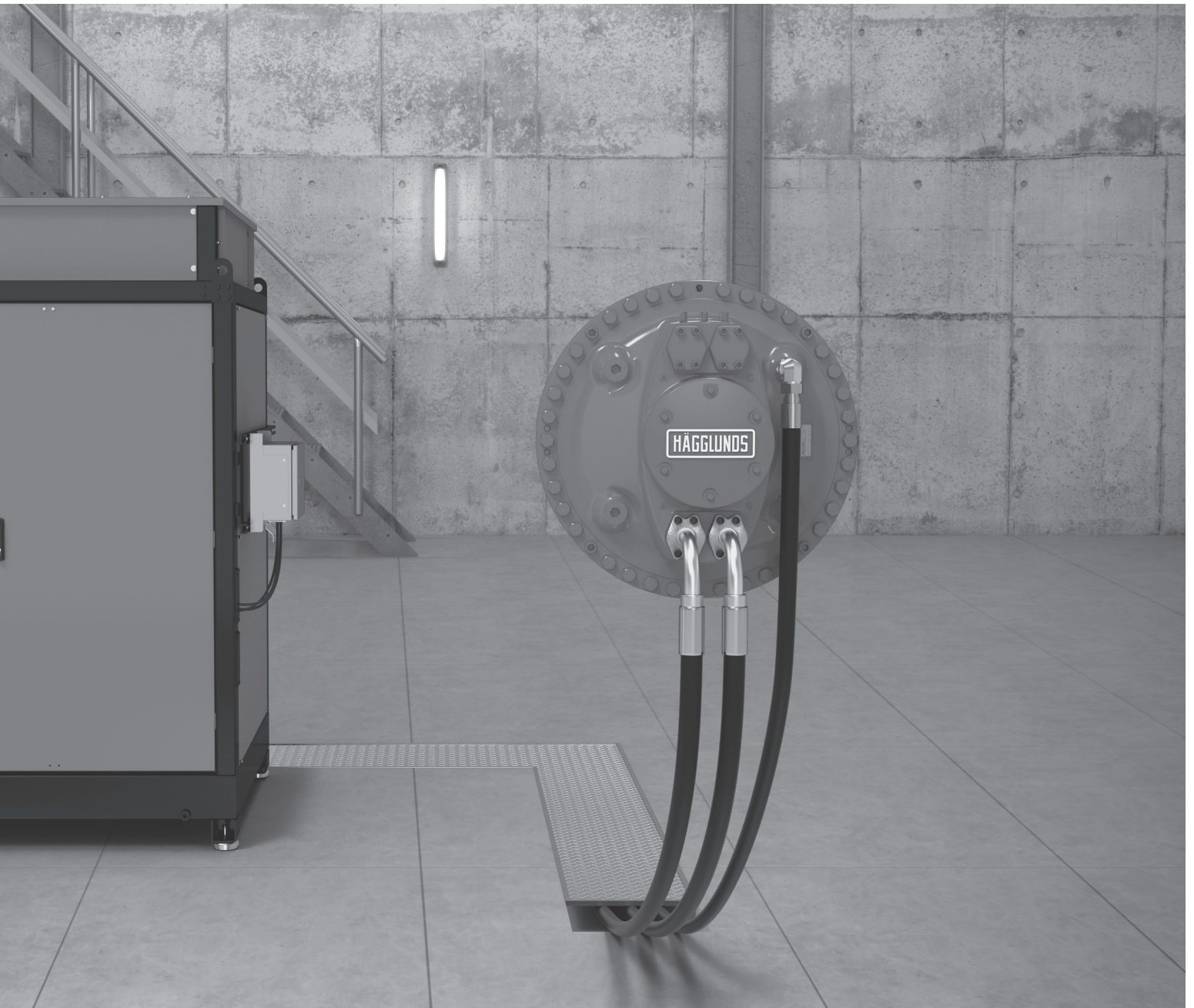
Put simply, you get a drive that goes the distance. And behind it is a company that goes the distance with you.



## Benefits of a hydraulic direct drive

- ▶ Robust design without gearbox or couplings
- ▶ Compact installation with the motor on the driven shaft
- ▶ Full torque throughout the speed range – without oversizing
- ▶ High starting torque that can be sustained indefinitely
- ▶ Infinite variations within the speed range
- ▶ Smooth acceleration and deceleration
- ▶ Unlimited starts and stops without overheating
- ▶ Nearly instantaneous emergency stops
- ▶ Built-in protection against shock loads
- ▶ Perfect load sharing between multiple motors





## Powerful simplicity

A Hägglunds direct drive system comprises a hydraulic motor and a flexibly placed drive unit, overseen by a control and monitoring system. This simple configuration withstands the challenges of virtually any application or environment.

Mounted directly on the driven shaft, the compact motor supplies reliable power. The force and direction of the motor's rotation is determined by the fast-acting hydraulic pumps in the drive unit, while the control and monitoring

▲ From the bitter cold of Siberia to the blistering heat of Africa, Hägglunds direct drive systems withstand the challenges of any environment and any type of industry. The drive units can be supplied in a wide range of power levels and configurations, and are function-tested before delivery.

system provides information and advanced functionality. Supporting these components is a wide range of valves and accessories, creating even greater flexibility in installation and operation.

# Your path to performance



A Hägglunds solution is a total solution – of which the drive system itself is only one part. It's a complete answer to your needs, built as much on knowledge, experience and commitment as it is on drive technology.

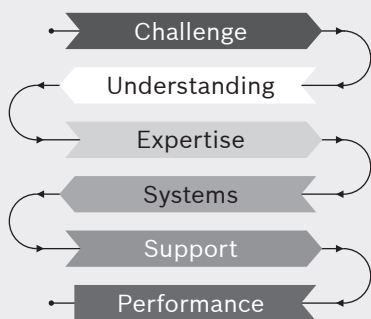
It begins with listening, as we work to understand the nature of your challenge. Our vast experience gives us the insight required, but also the knowledge that every challenge is unique. That's why we put all our skills, equipment and innovation to work in solving yours.

The drive you receive is built with quality, delivered with confidence and supported with dedication. What you experience is full peace of mind, supplied not just by our drive technology, but also by the people behind it.

# Strength through service



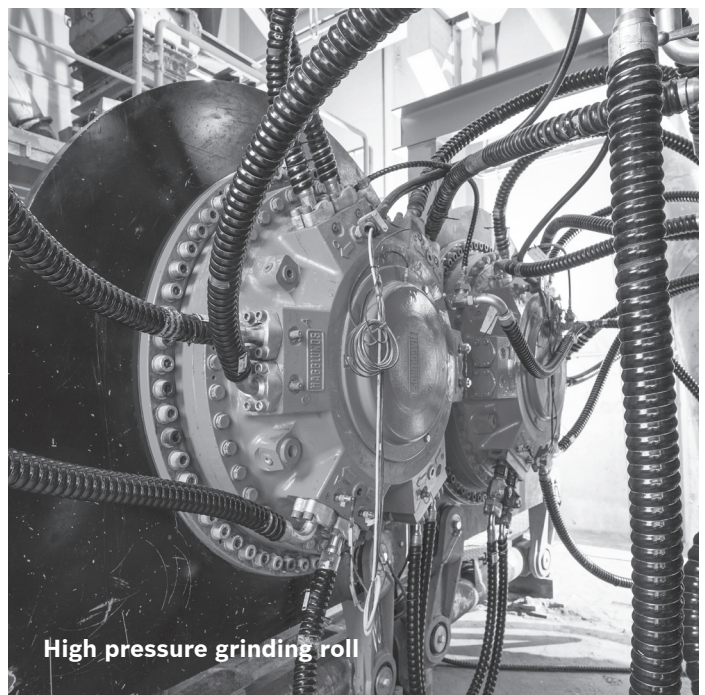
## The journey

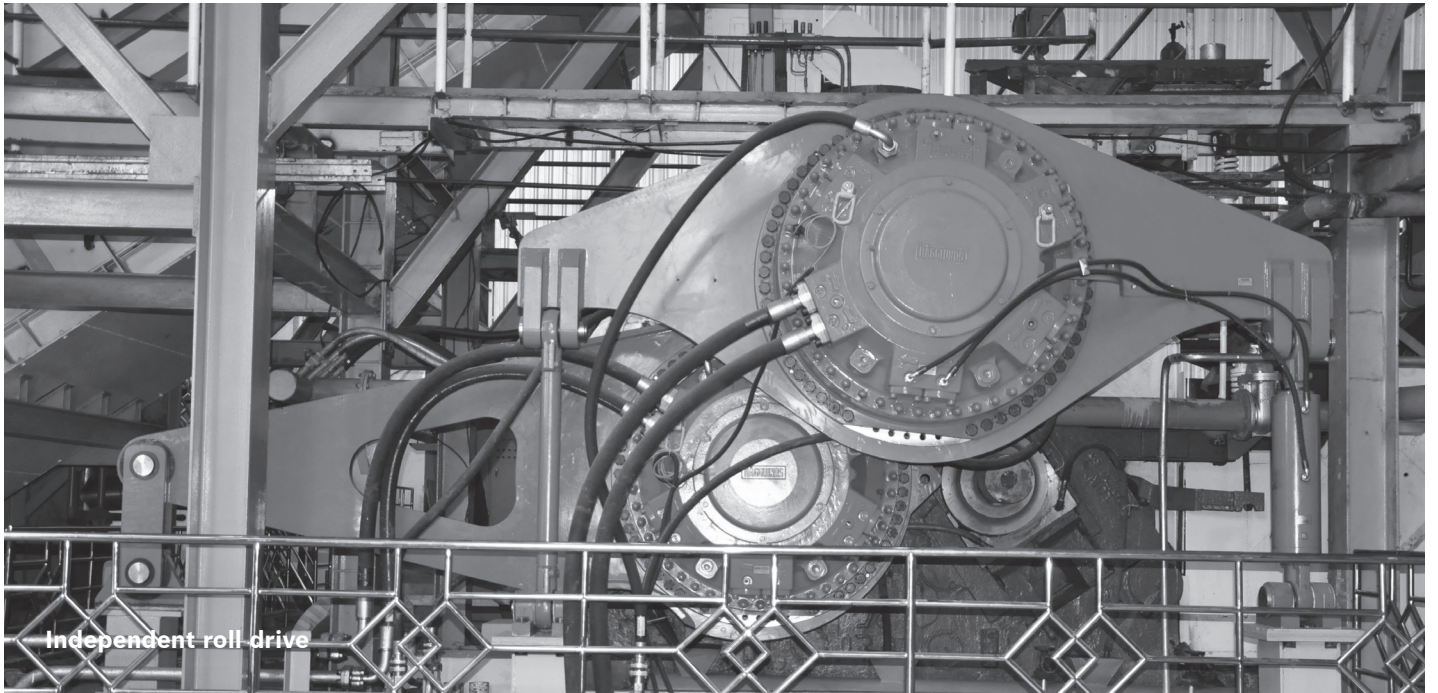


What makes your solution truly complete is the support you receive throughout your drive's life cycle. Everything needed to optimize performance – from original Hägglunds spare parts to expert field service and cutting-edge upgrades – is readily available through Bosch Rexroth's global organization.

In a performance agreement, we can combine the right support and services for your specific needs. Together with our representative, you tailor the agreement that best matches your drive and performance criteria.

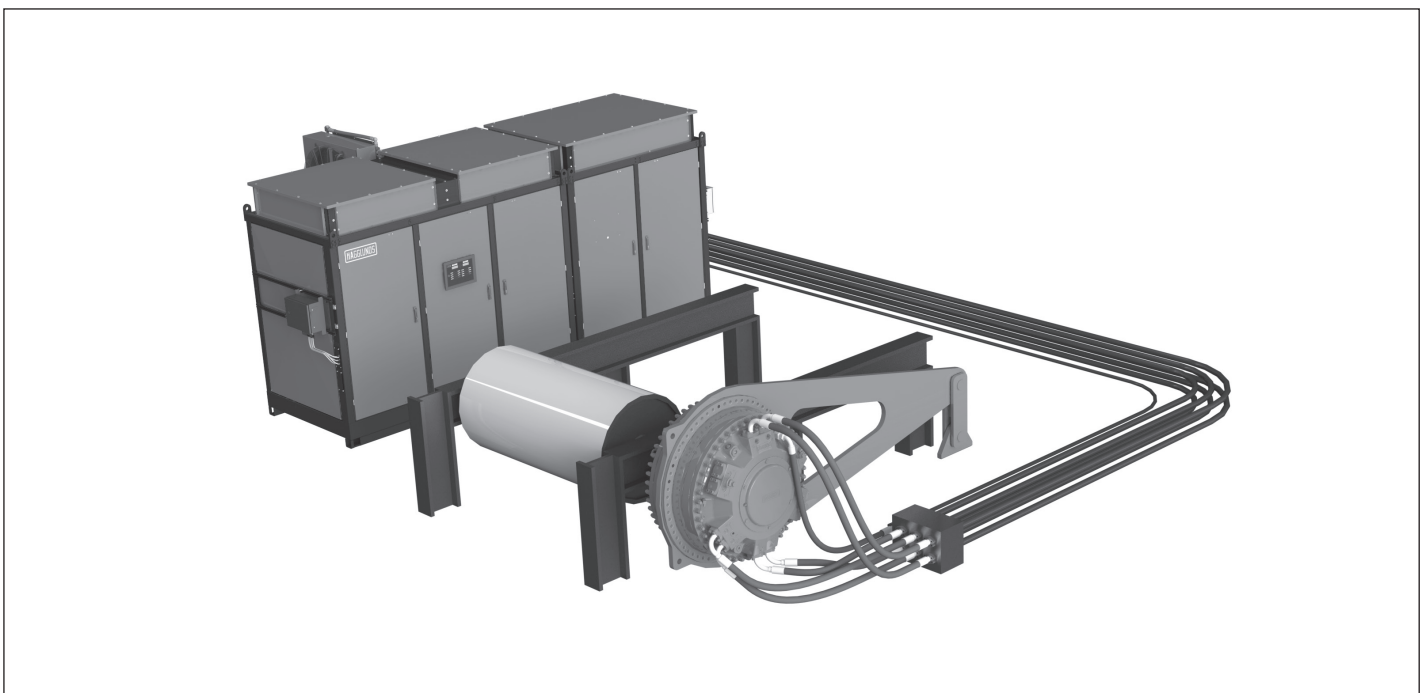
# Application examples

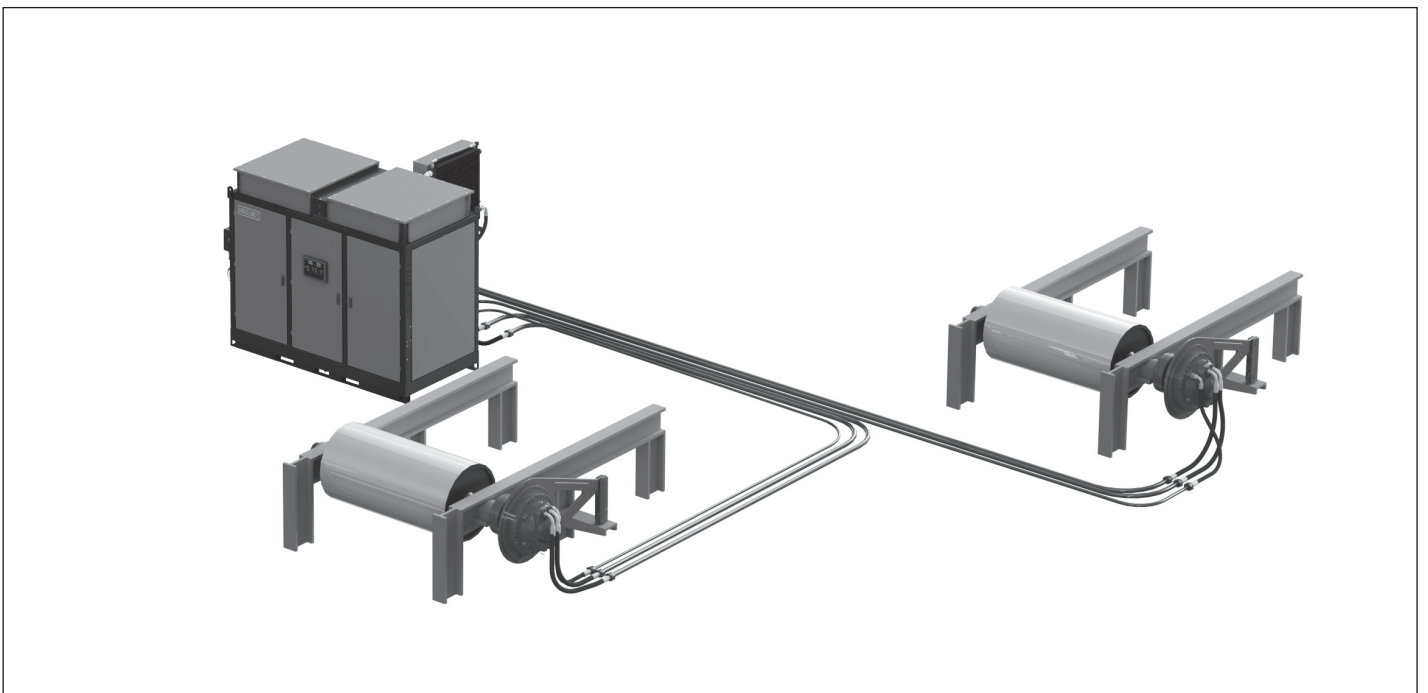
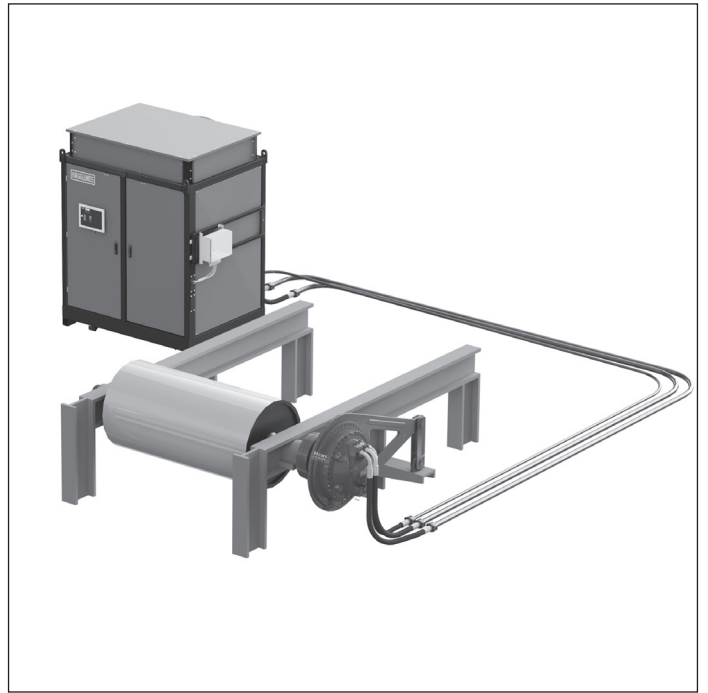
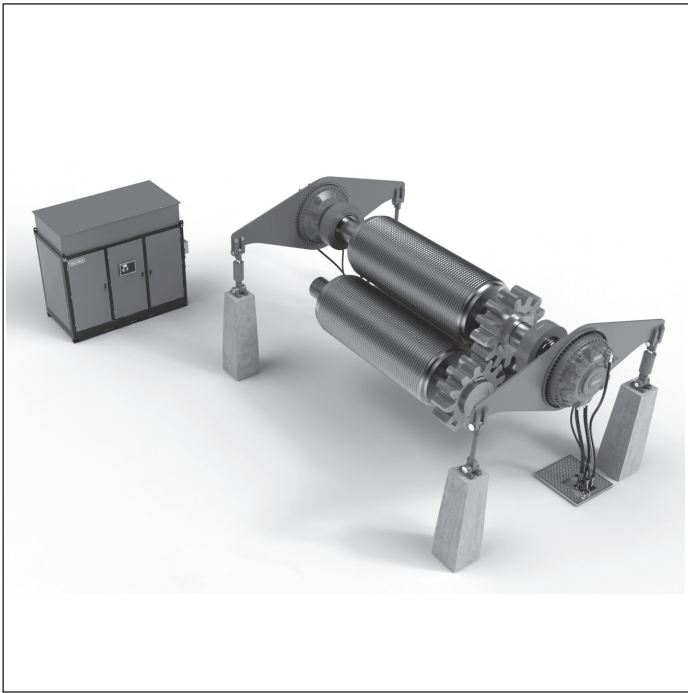




# A truly flexible solution

- ▶ The hydraulic motor needs only a few additional components to form a complete direct drive system. Yet there are unlimited combinations and configurations to produce any solution within the Hägglunds direct drive performance range. Perfect load sharing characteristics enable multi-motor and/or multi-pump combinations to suit the application.
- ▶ Users can simply adjust the torque, speed and hence power provided by the motor by varying the pressure and flow. Load sensing and power limiting enable functionality unavailable from other solutions, and there are system features such as extremely fast pump compensators to provide rapid response and reduce stresses and strains on the machine.
- ▶ The enclosed motor is ideal for work in harsh environments such as dusty mining sites, ship decks, explosive zones at chemical plants and climates with wide temperature variations and the Hägglunds drive unit can be placed at any convenient location, e.g. outside the explosive zone.
- ▶ Mounted directly on the driven shaft, the motor provides compact installation and supplies reliable power to the machine.
- ▶ The motor can be separated from the drive unit, which enables freedom of application. The drive unit can be positioned away from both motor and machine, without foundation requirements.
- ▶ The motor, like the rest of the direct drive system, is fully function-tested before delivery and requires only a short commissioning time. Installation can usually be undertaken during a normal shutdown period so that no production losses are experienced.
- ▶ Our control system, Hägglunds Spider, monitors the health of the motor and provides all the necessary start/stop logic and machine control techniques. It is mounted, wired and fully programmed on the drive unit prior to delivery.





# Functional description Hägglunds direct drive system

A complete Hägglunds direct drive system from Bosch Rexroth comprises the drive unit with electric motor, pump and tank, the control system, the hydraulic motor with accessories and the piping system. The hydraulic motor type Hägglunds CBm is described in this publication.

A Hägglunds hydraulic motor from Bosch Rexroth is at the center of a complete direct drive system. The full solution also comprises a drive unit with electric motor, pump and tank, as well as a piping system and control system. The complete direct drive system is a closed hydraulic loop that provides highly dynamic drive characteristics.

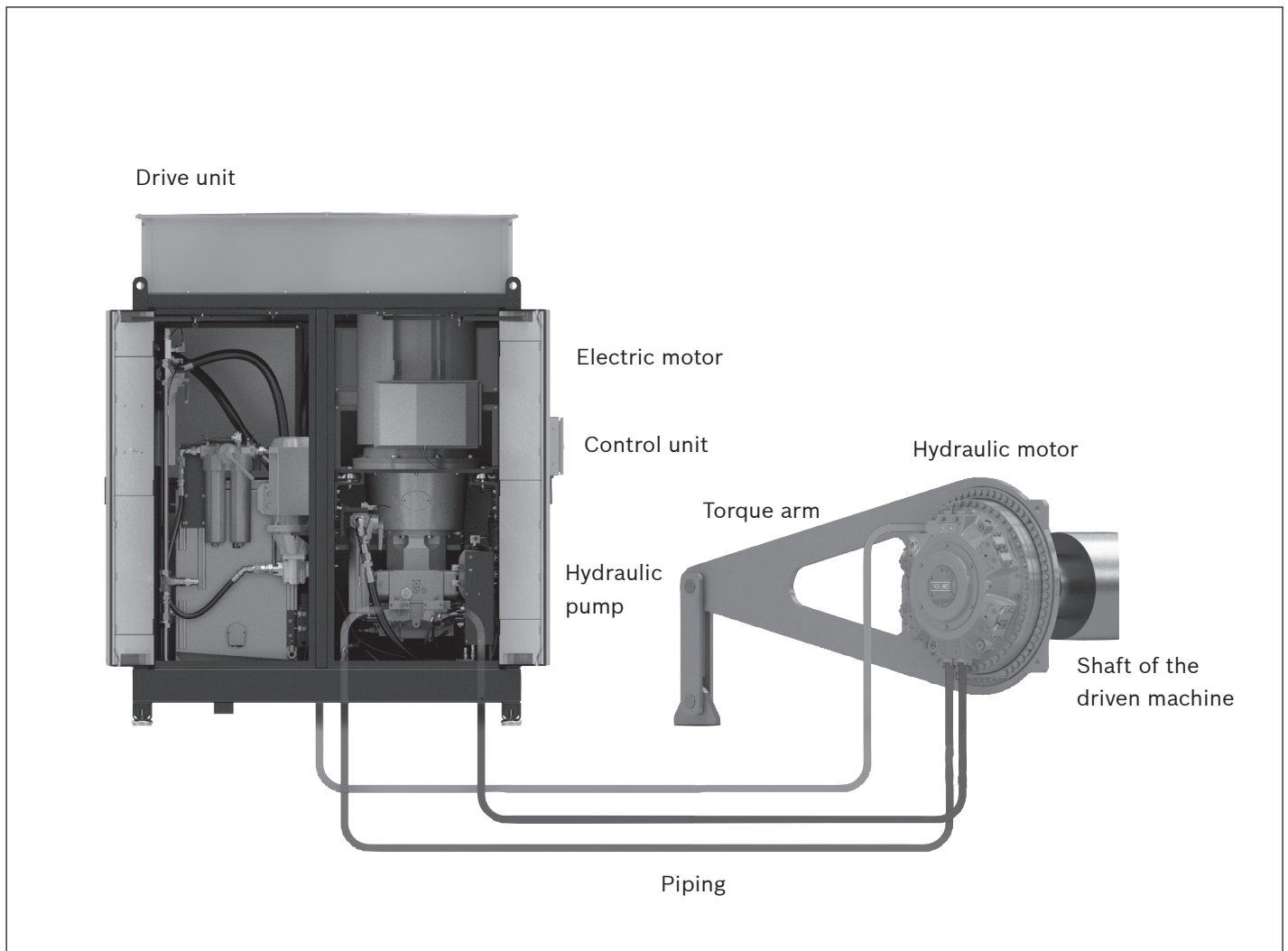
The hydraulic motor supplies the needed torque to the machine and the load sets the pressure level in the system. The motor rotates at the required speed, determined by the oil flow from a hydraulic swash plate pump in the drive unit. The motor is connected to the pump by means of piping and/or hoses in a closed-loop hydraulic system. The drive unit is constructed as a sound-insulated cabinet, with cooler and control system mounted on the outside for easy access.

At the hydraulic motor the oil is distributed through the valve plate to the pistons in the cylinder block, 50% of them with high pressure and 50% with charge pressure. The oil pressure forces the piston assemblies outwards radially against the cam ring. This produces a balanced and smooth rotation with extremely high torque that drives the machine. Because the speed of rotation is controlled by the flow of oil from the pump, it is possible to start the machine with full torque.

The rate and direction of the oil flow are steered by the angle of the pump swash plate, controlled via a signal from the control system. The hydraulic motor's speed is proportional to the swash plate angle. If the swash plate passes over-center, the flow is reversed and so is the direction of the hydraulic motor. Both the hydraulic motor and the pump have a very low moment of inertia, which makes it possible to change speed, stop or reverse direction quickly.

The pump is driven in turn by an electric motor, running efficiently at fixed speed. The electric motor is started in an unloaded, neutral condition to limit the load on the electrical power grid. After start, the system ramps up the flow to the required direction and flow rate.

A proportion of the return flow in the system is exchanged for oil conditioning by means of cooling and filtering. The filtration philosophy in a Hägglunds drive system is a clean tank, which means that all return and drain flow to tank is filtered. The health status in the hydraulic circuit is monitored by the control system, which sets the flow needs and is the communication link to the factory system.



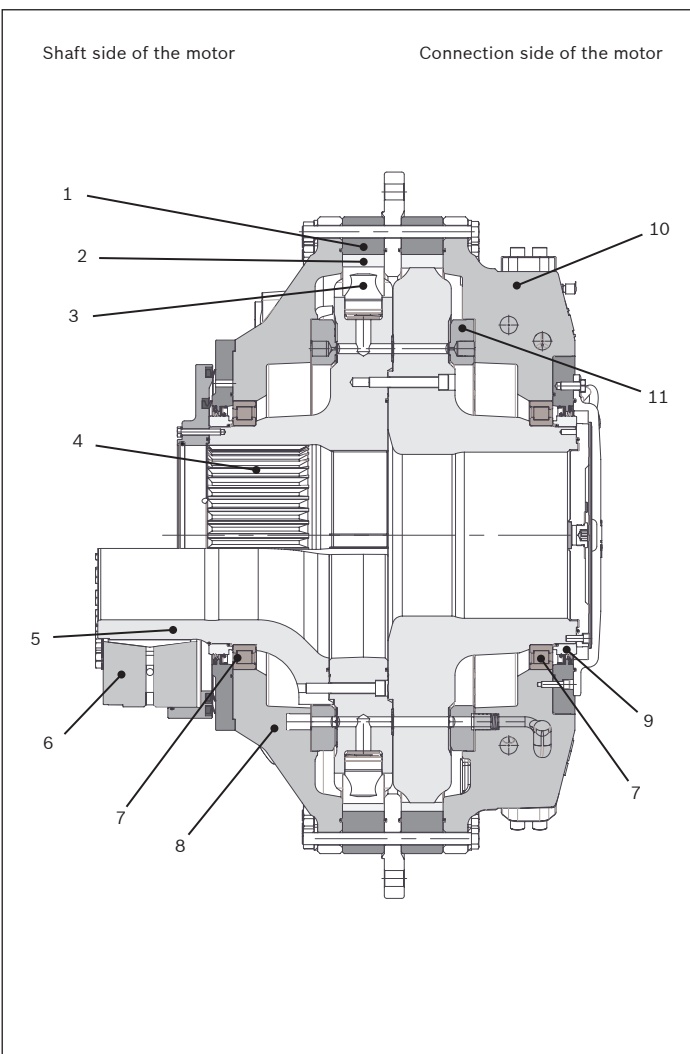
# Functional description Hägglunds CBm motor

Bosch Rexroth's hydraulic industrial motor Hägglunds CBm 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 the 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 pistons which are guided in the 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 block 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.



## Quality

To assure our quality we maintain a Quality Assurance System, certified to standard ISO 9001.

1. Cam ring
2. Cam roller
3. Piston
4. Cylinder block, spline
5. Cylinder block, hollow shaft
6. Shrink disc
7. Cylindrical roller bearing
8. Housing cover
9. Wear ring
10. Distributor
11. Connection housing

# Configuration options

## Standard technical features for Hägglunds CBm

- ▶ Harsh environment
- ▶ Temperature sensor  
The temperature sensor is mounted in the motor case and operates according to the hydraulic fluid temperature variation.
- ▶ Magnetic plug  
By regularly inspecting the magnetic plug a malfunction of the hydraulic system can be detected and corrected. The magnetic plug can also be used for early detection of wear or spall damages in the motor.

## Options for the Hägglunds CBm

- ▶ Configuration for through hole  
Through hole kit makes it possible to flush through the driven shaft or to draw electric cables through the motor.
- ▶ Hot/cold weather configuration
- ▶ Configuration for tandem mounting  
Tandem motor consists of 3 major units: front motor, Tandem kit and rear motor.
- ▶ Submerged application:
  - Valid for CBm 2000 to CBm 4000
  - Max depth 70 meters
  - The motor is designed for flange mounted spline motors and submerged applications.
- ▶ Marine painting
- ▶ A wide range of accessories for increased flexibility

**Motor data**

Specific data, metric

Frame size	Nominal size	Specific torque Nm/bar	Displacement cm <sup>3</sup> /rev	Maximum torque <sup>1)</sup> kNm	Maximum speed rpm	Maximum operating pressure <sup>2)</sup> p bar	Maximum operating power <sup>3)</sup> kW
CBm 2000 S	1000	1000	63108	328	70	350	2393
	1200	1200	75832	394	58	350	2384
	1400	1400	88301	460	48	350	2301
	1600	1600	100770	525	41	350	2247
	1800	1800	113748	591	36	350	2227
	2000	2000	126726	657	32	350	2207
CBm 2000 C	1000	1000	63108	328	70	350	2393
	1200	1200	75832	394	58	350	2384
	1400	1400	88301	460	48	350	2301
	1600	1600	100770	525	41	350	2247
	1800	1800	113748	591	36	350	2227
	2000	2000	126726	657	32	350	2207
CBm 2000 E	1000	1000	63108	328	70	350	2393
	1200	1200	75832	394	58	350	2384
	1400	1400	88301	460	48	350	2301
	1600	1600	100770	525	41	350	2247
	1800	1800	113748	520	36	310 <sup>4)</sup>	1957
	2000	2000	126726	519	32	280 <sup>4)</sup>	1738
CBm 3000 S	2200	2200	138686	722	29	350	2184
	2400	2400	151155	788	26	350	2134
	2600	2600	164133	854	24	350	2137
	2800	2800	177111	919	22	350	2119
	3000	3000	190089	985	20	350	2068
CBm 3000 C	2200	2200	138686	722	29	350	2184
	2400	2400	151155	788	26	350	2134
	2600	2600	164133	777	24	320 <sup>4)</sup>	1942
	2800	2800	177111	782	22	300 <sup>4)</sup>	1797
	3000	3000	190089	779	20	280 <sup>4)</sup>	1628
CBm 4000 S	2000	3200	201540	1051	18	350	1981
	3400	3400	214518	1116	17	350	1991
	3600	3600	227496	1182	16	350	1987
	3800	3800	240474	1248	15	350	1970
	4000	4000	253452	1313	14	350	1939
CBm 5000 S	4600	4600	290859	1510	12	350	1907
	5000	5000	316815	1642	11	350	1903
CBm 6000 S	5600	5600	354222	1838	9	350	1746
	6000	6000	380178	1970	9	350	1871

<sup>1)</sup> Calculated as: Metric= Ts • (350-15) • 0,98<sup>2)</sup> The motors are designed according to DNV-rules. Test pressure 420 bar. Peak pressure 420 bar maximum, allowed up to 10 000 times.<sup>3)</sup> Flushing of motor case is required. See section data sheet RE15300 for more information<sup>4)</sup> **Note!** Max pressure <350 bar

## Specific data, US

Frame size	Nominal size	Specific torque lbf-ft/1000 psi	Displacement in <sup>3</sup> /rev	Maximum torque <sup>1)</sup> lbf-ft	Maximum speed rpm	Maximum operating pressure <sup>2)</sup> p psi	Maximum operating power <sup>3)</sup> hp
CBm 2000 S	1000	50853	3851	241920	70	5000	3209
	1200	61024	4628	290599	58	5000	3197
	1400	71194	5388	339278	48	5000	3086
	1600	81365	6149	387219	41	5000	3013
	1800	91536	6941	435899	36	5000	2986
	2000	101706	7733	484578	32	5000	2960
CBm 2000 C	1000	50853	3851	242120	70	5000	3209
	1200	61024	4628	290543	58	5000	3197
	1400	71194	5388	338967	48	5000	3086
	1600	81365	6149	387391	41	5000	3013
	1800	91536	6941	435815	36	5000	2986
	2000	101706	7733	484239	32	5000	2960
CBm 2000 E	1000	50853	3851	242120	70	5000	3209
	1200	61024	4628	290543	58	5000	3197
	1400	71194	5388	338967	48	5000	3086
	1600	81365	6149	387391	41	5000	3013
	1800	91536	6941	383532	36	4500 <sup>4)</sup>	2624
	2000	101706	7733	382794	32	4100 <sup>4)</sup>	2331
CBm 3000 S	2200	111877	8463	532519	29	5000	2929
	2400	122047	9224	581198	26	5000	2862
	2600	132218	10016	629877	24	5000	2866
	2800	142389	10808	677819	22	5000	2842
	3000	152559	11600	726498	20	5000	2773
CBm 3000 C	2200	111877	8463	532519	29	5000	2929
	2400	122047	9224	581198	26	5000	2862
	2600	132218	10016	573085	24	4600 <sup>4)</sup>	2604
	2800	142389	10808	576773	22	4400 <sup>4)</sup>	2410
	3000	152559	11600	574560	20	4100 <sup>4)</sup>	2183
CBm 4000 S	3200	162730	12299	775176	18	5000	2657
	3400	172901	13091	823118	17	5000	2670
	3600	183071	13883	871630	16	5000	2665
	3800	193242	14675	920476	15	5000	2642
	4000	203412	15467	968418	14	5000	2600
CBm 5000 S	4600	233924	17749	1113717	12	5000	2557
	5000	254266	19333	1211075	11	5000	2552
CBm 6000 S	5600	284777	21616	1355637	9	5000	2341
	6000	305119	23200	1452995	9	5000	2509

<sup>1)</sup> Calculated as:  $US = Ts \cdot (5076-215) \cdot 0,98$

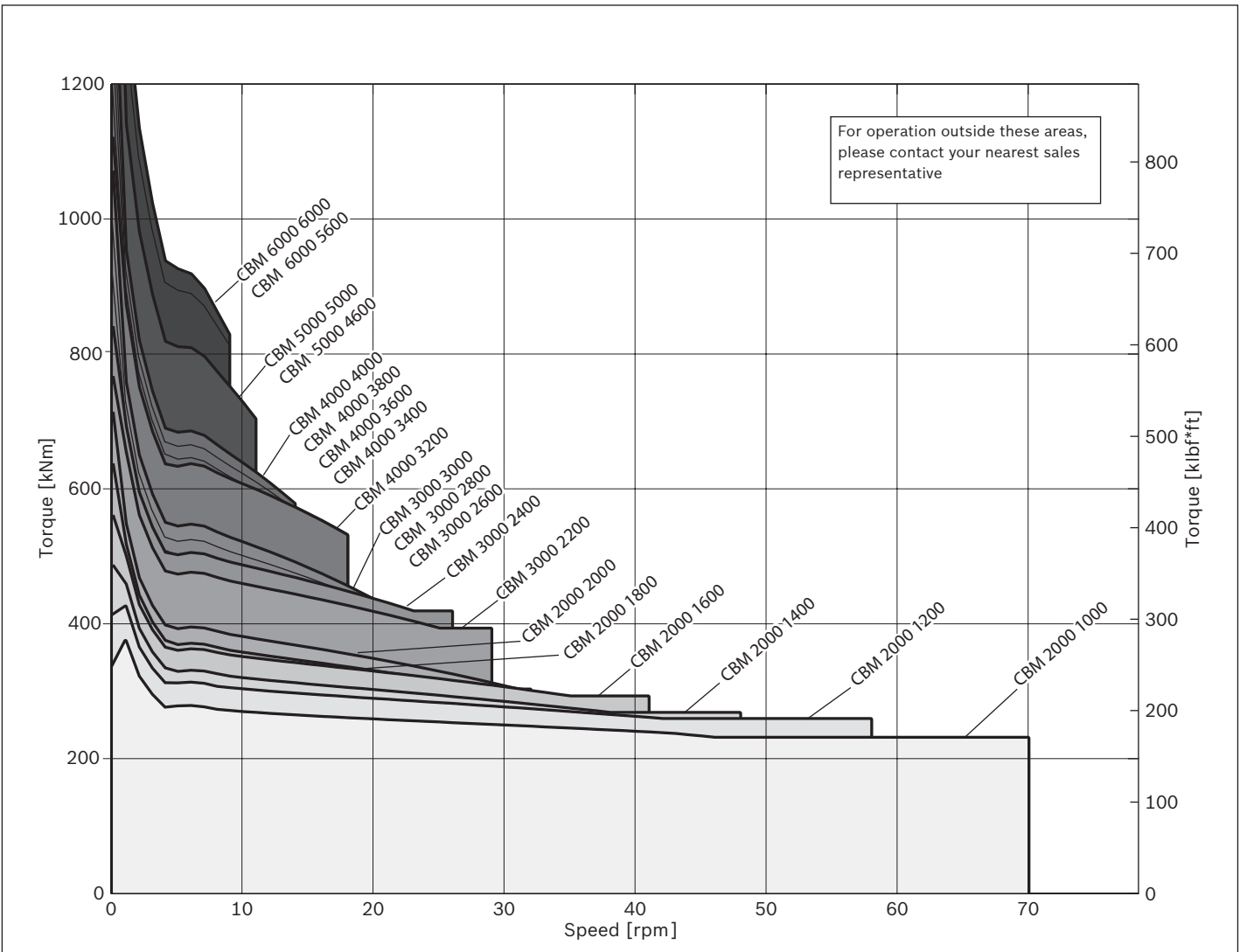
<sup>2)</sup> The motors are designed according to DNV-rules. Test pressure 6000 psi. Peak pressure 6000 psi maximum, allowed up to 10 000 times.

<sup>3)</sup> Flushing of motor case is required. See data sheet RE15300 for more information

<sup>4)</sup> **Note!** Max pressure <5000 psi

**Quick selection diagram for Hägglunds CBm motors**

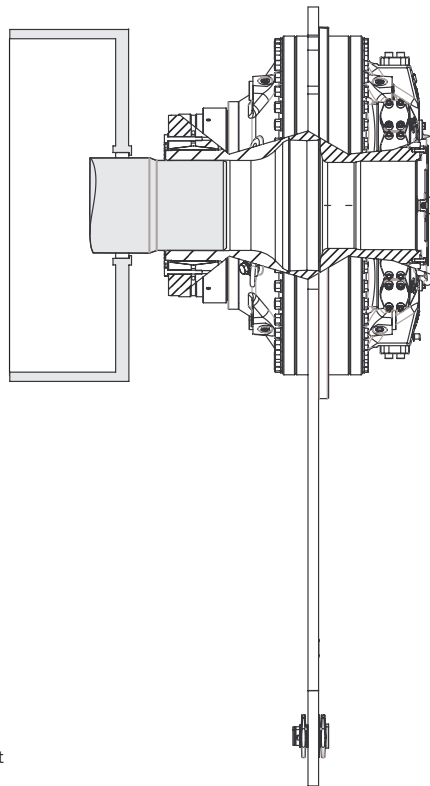
The diagram below represents the torque and speed, corresponding to a modified rating life  $L_{10} = 40\,000$  h. Oil viscosity in motor case 40 cSt. Contamination level not exceeding ISO 4406:1999 18/16/13 (NAS 1638, class 7). The diagram is based on a charge pressure of 15 bar (218 psi).



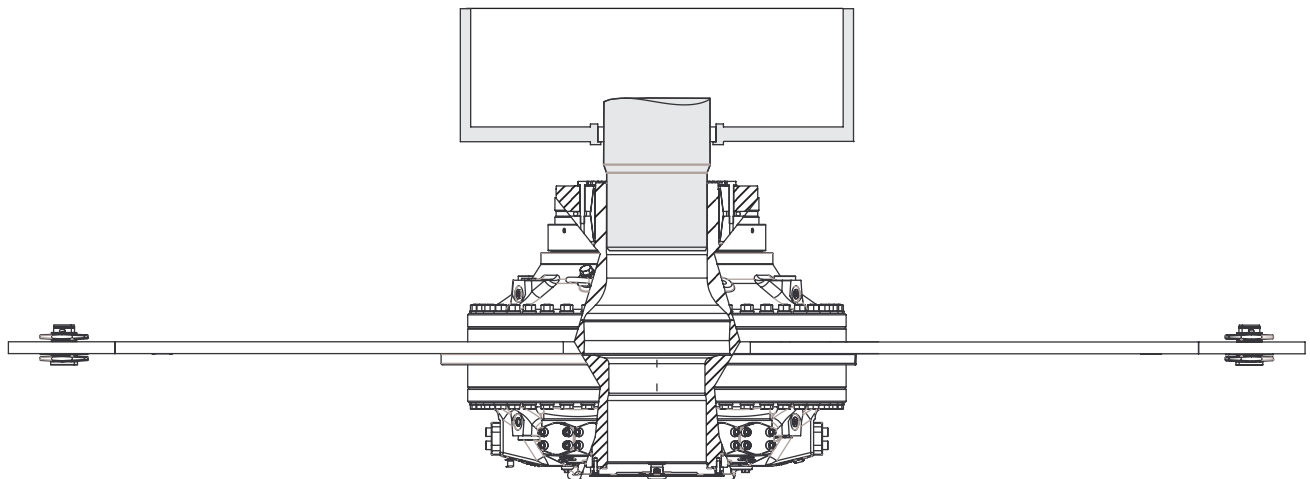
Quick selection diagram

# Installation examples

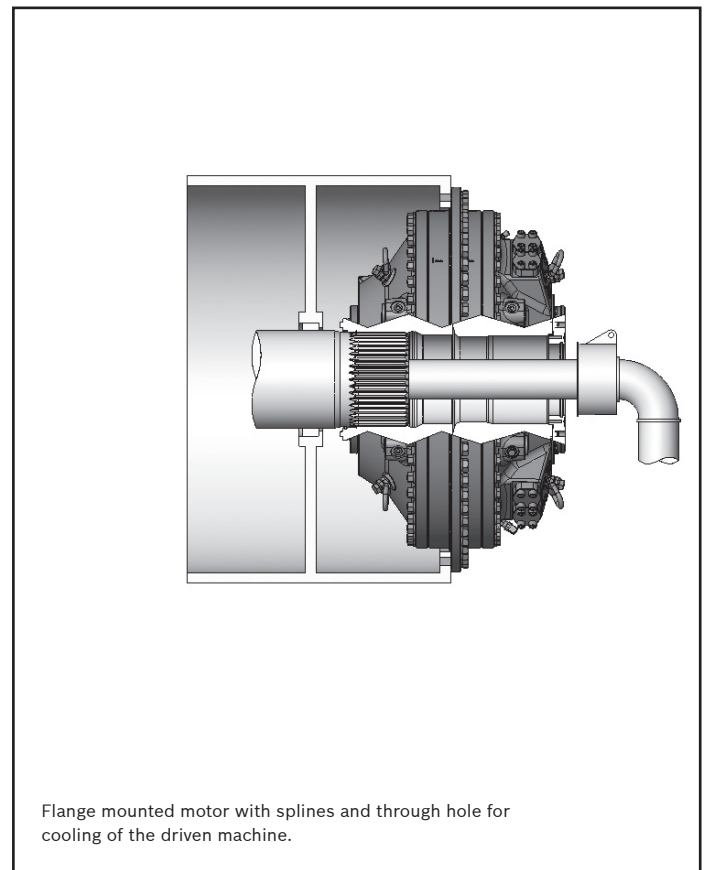
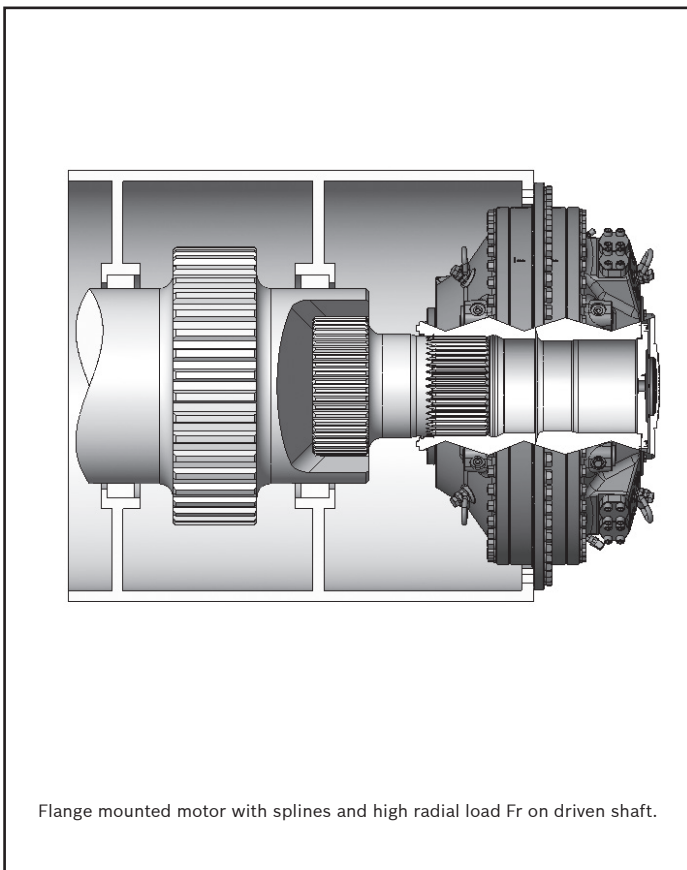
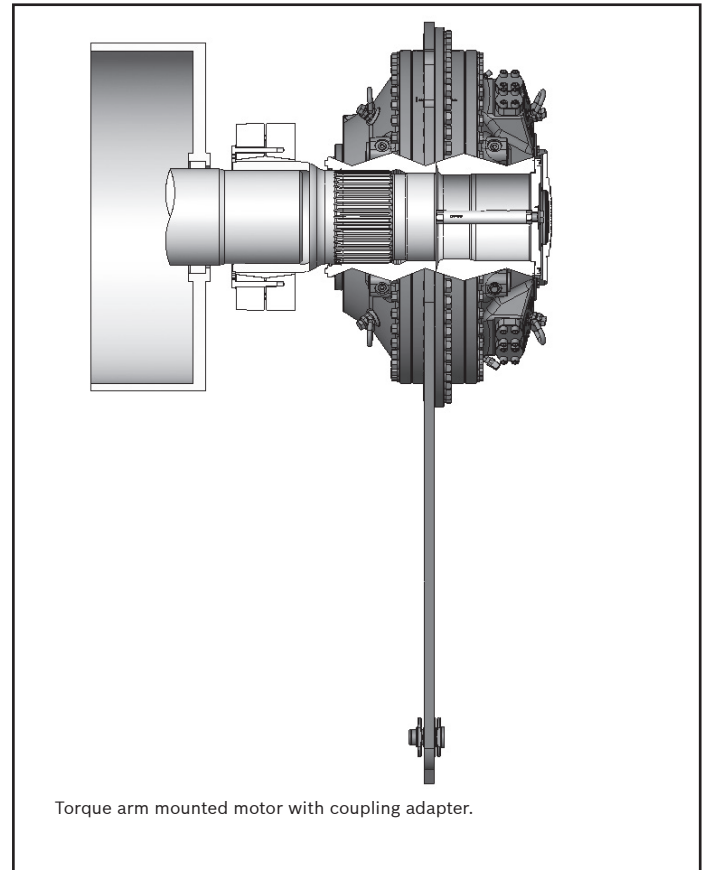
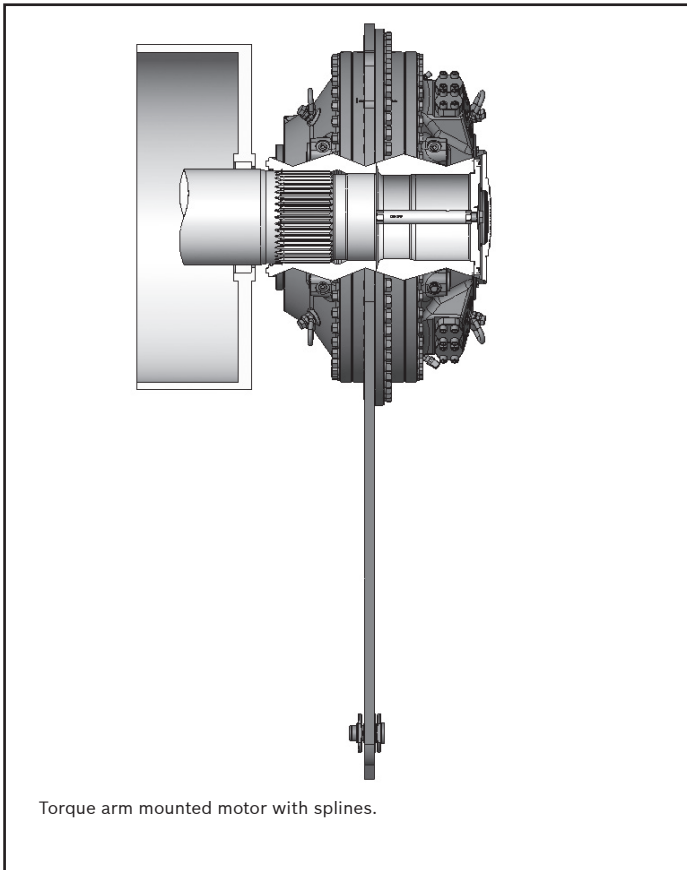
The tough radial piston hydraulic motors are weight and space saving and offers versatile mounting possibilities

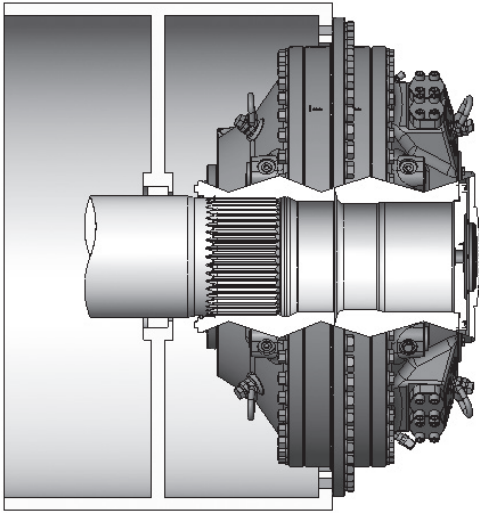


Torque arm mounted motor with coupling shaft

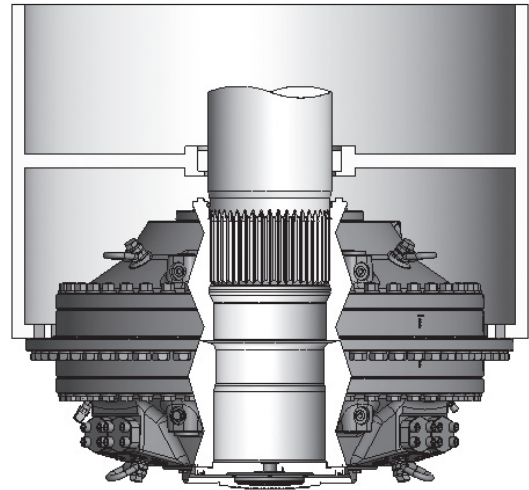


Vertical torque arm mounted motor with coupling shaft

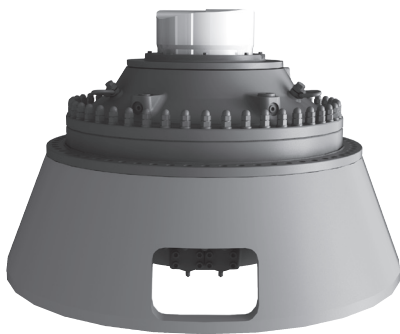




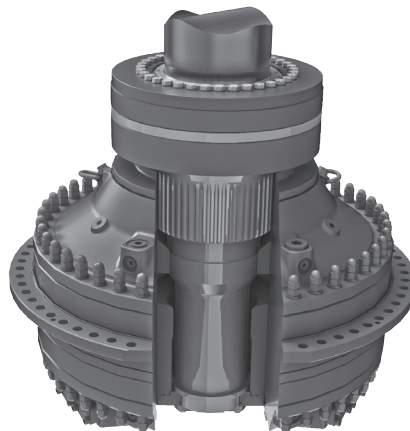
Flange mounted motor with splines and low radial load from driven shaft.



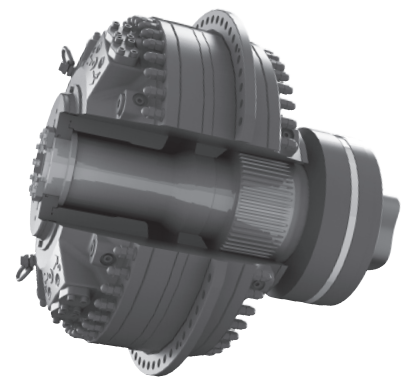
Vertical, flange mounted motor with splines



Flange mounted vertical mounting with shaft pointing upwards



Under-up – vertical mounting with shaft pointing upward



Bucketwheel reclaimer mounting

# Accessories

A compact and efficient design can be achieved by means of our standard Hägglunds accessories program.

## Hägglunds torque arms

Features:

- ▶ Easy mounting - couplings and bed plates eliminated
- ▶ Space saving - close mounting to the driven machine
- ▶ Reduction of external force on driven shaft with double ended torque arm type DTC.

### Single ended torque arms Hägglunds TCA

A shaft mounted gearless drive is achieved by utilizing the standard Hägglunds torque arm. Spline shaft for external load, or shaft for shaft coupling can be used.

### Double ended torque arms Hägglunds DTCBM

If the driven machine or the driven shaft can not stand the forces generated by a single ended torque arm arrangement. In such a case a double ended torque arm is the solution.

For more information see datasheet 15355.

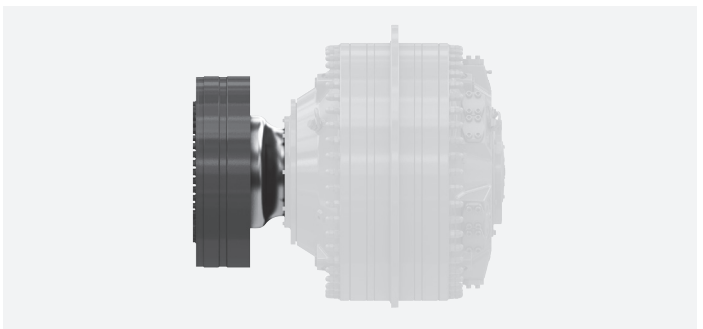
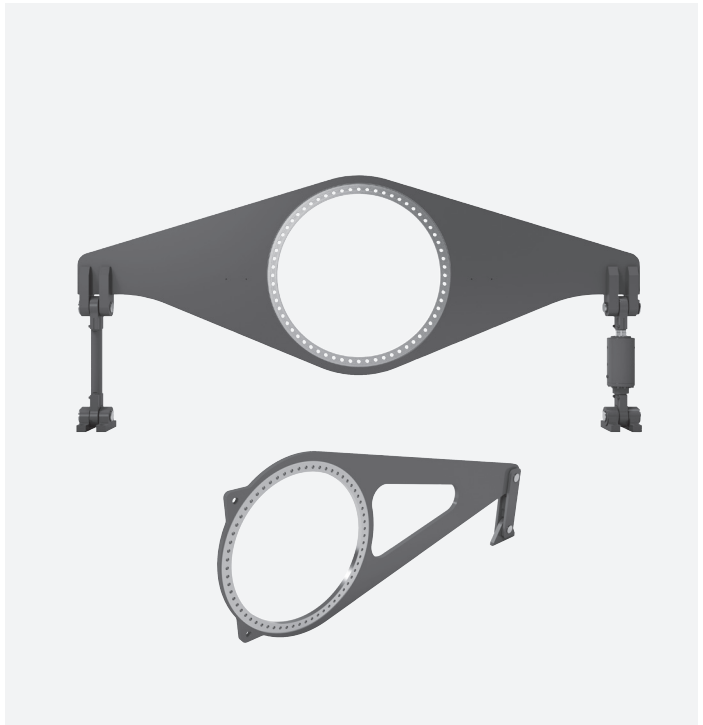
### Coupling adapter

The coupling adapter includes shaft coupling and shaft adapter and is designed only for torque arm mounting.

Features:

- ▶ Easy and fast mounting/dismounting of motor
- ▶ Oil lubrication give no wear of splines

For more information see datasheet for motor 15300.



## Hägglunds speed sensors

### Hägglunds SPDC

Speed sensing unit, Hägglunds SPDC, is a digital incremental encoder using magnetic sensing technology. The sensor generates two square wave signals with 90° phase shift for detection of speed and direction of rotation.

Features:

- ▶ Slim design fully integrated in motors
- ▶ Magnetic sensor
- ▶ Non-contact, wear free sensing system
- ▶ Radial sensor positioning
- ▶ Frequency to analogue converter is available as option
- ▶ 4544 pulses per revolution for good speed control possibility
- ▶ Protection class IP67
- ▶ Through hole version available

For more information see datasheet 15350.

### Atex approved speed sensor Hägglunds SPDB2

Digital incremental hollow shaft sensor with torque arm mounting.

Features:

- ▶ ATEX/IECEX approved
- ▶ 1000 and 3600 pulses per revolution for good speed control possibility.
- ▶ Possibility to read directions of rotation from sensor
- ▶ Sensor is equipped with zero pulse
- ▶ Protection class IP65
- ▶ Optional cable set with junction box to simplify connection

For more information see datasheet 15352.

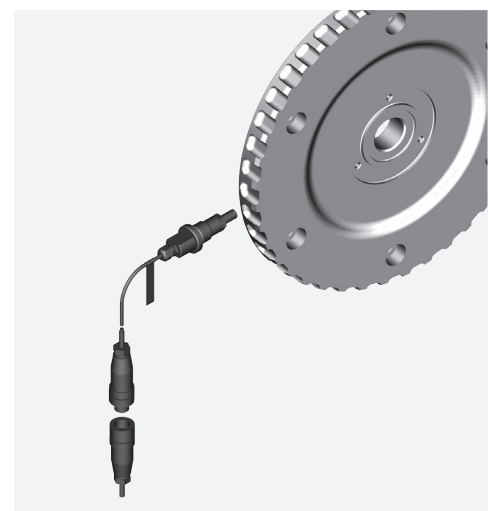
### Inductive speed sensor Hägglunds SPDE with through hole kit

The Hägglunds SPDE speed sensor are available in two types, the standard type has a PNP output for direct driving of load or digital input and the ATEX/IECEX type (explosion proof) needs an isolation amplifier outside explosive area.

Features:

- ▶ Non-contact, wear free system
- ▶ Robust design
- ▶ ATEX/IECEX -version available
- ▶ Protection class IP67
- ▶ Through hole version available

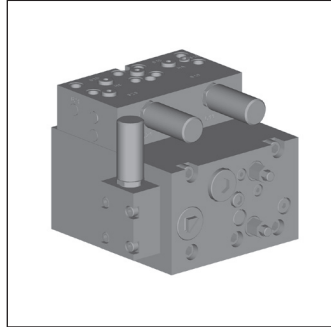
For more information see datasheet 15351.



## Valves

### Cross over valve Hägglunds COCB 1000

The cross over valve COCB is designed for use with Hägglunds CA, CB and CBm motors and provides cross line relief and cavitation protection.



Features:

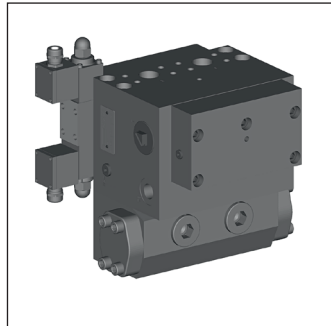
- ▶ Compact and robust design
- ▶ Mounted directly on Hägglunds motors
- ▶ Oil exchange system for closed loop (COCB 1000-3)
- ▶ Protects the motor from high pressure peaks
- ▶ Provides cavitation protection

For more information see datasheet 15376

### Free circulation valve with free-wheeling Hägglunds VFCCA 1000

The free-circulation valve with freewheeling function is designed for use with Hägglunds CA, CB and CBm motors and provides a means of putting the motor safely into free circulation mode.

The valve is also suitable for free-wheeling mode by disengaging the pistons and allowing the cylinder block to freely rotate on its bearings. The valve is normally mounted on the motor via an adapter.



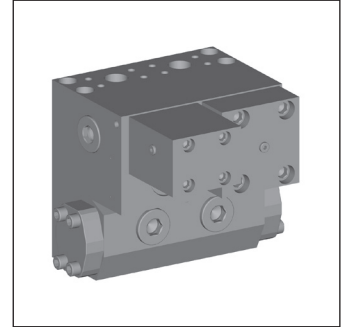
Features:

- ▶ Compact and robust design
- ▶ Mounted directly on Hägglunds motors
- ▶ Free circulation function with minimal pressure drop
- ▶ Free circulation shift allowed up to 40 rpm
- ▶ Free-wheeling function
- ▶ Shifting from drive operation into free-wheeling allowed up to 10 rpm

For more information see datasheet 15381

### Counter balance valve Hägglunds VCBCA 1000

The counter balance valve is designed for use with Hägglunds CA, CB and CBm motors and provides a counter balance function on the motor high pressure line. The valve is normally mounted on an adapter which is included with the valve.



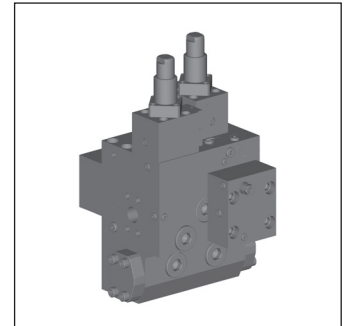
Features:

- ▶ Compact and robust design
- ▶ Mounted directly on Hägglunds motors
- ▶ Counter balance function with low pilot pressure
- ▶ Pilot pressure independent of load pressure

For more information see datasheet 15379

### Four-way valve Hägglunds V4WCA 1000

The valve is designed for use with Hägglunds CA, CB and CBm motors and provides four way directional and flow control of the motor.



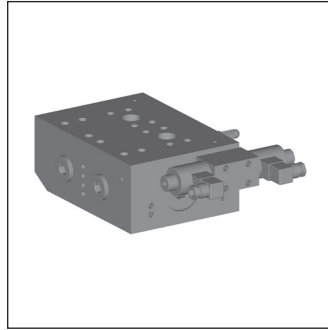
Features:

- ▶ Compact and robust design
- ▶ Mounted directly on Hägglunds motors
- ▶ Four way directional and flow control of motor
- ▶ Proportionally controlled flow of the motor
- ▶ Counter balance function on motor pressure line

For more information see datasheet 15382

### Free-wheeling valve Hägglunds VFWCB 600

All Hägglunds motors in the compact series can be operated in freewheeling mode by retracting the pistons and allowing the cylinder block to freely rotate on its bearings. The valve is designed for use with Compact motors CA, CB and CBm and provides free-wheeling of the motor by means of disconnecting the motor from the main lines and connecting both motor ports to T which has to be drained to tank



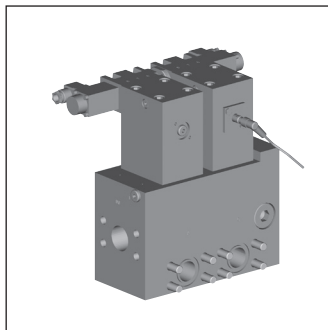
Features:

- ▶ Compact and robust design
- ▶ Multifunctional
- ▶ Mounted directly on Hägglunds motors
- ▶ Detent function on pilot valve
- ▶ Possible for remote control

For more information see datasheet 15380

### Hydraulic Quick stop valve hägglunds VQCB 800

The hydraulic quick stop valve VQCB is designed to stop a roll mill rolls without stopping the electric motor and without any need of a mechanical brake. The stop is done by blocking the oil flow from the Hägglunds hydraulic motor.

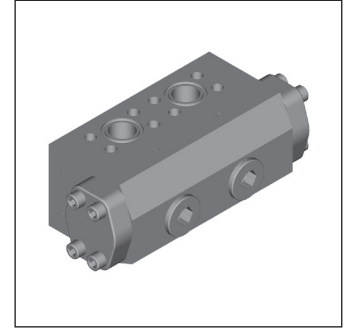


- ▶ Compact and robust design
- ▶ Mounted directly on Hägglunds motors
- ▶ Together with control box QECB for Hägglunds DUE drive unit, the Hägglunds VQCB valve makes Quick stop unit for your drive system

For more information see datasheet  
 15375 (Hägglunds VQCB 800 valve)  
 15365 (Hägglunds quick stop unit)  
 15370 (Hägglunds QECB electronic control)

### Valve adapters Hägglunds VA 1000

A range of valve adapters are available as accessories to the range of Hägglunds valves and motors.

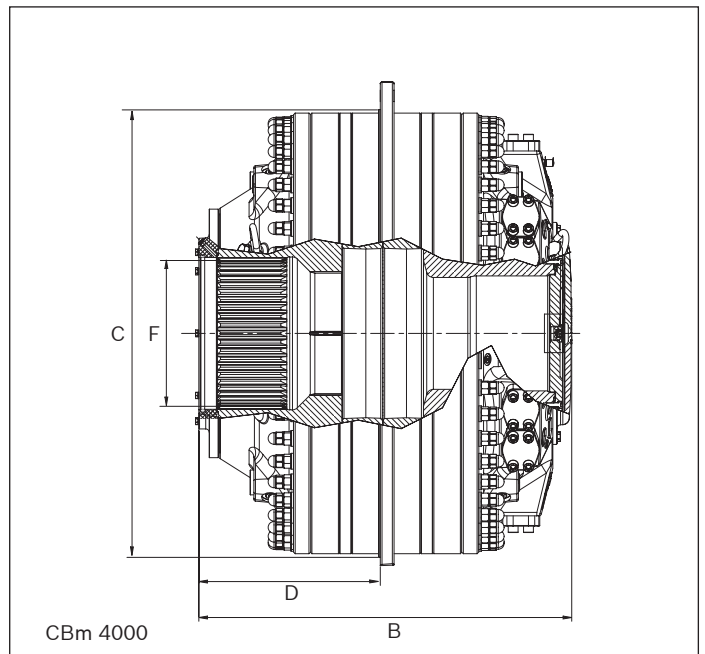
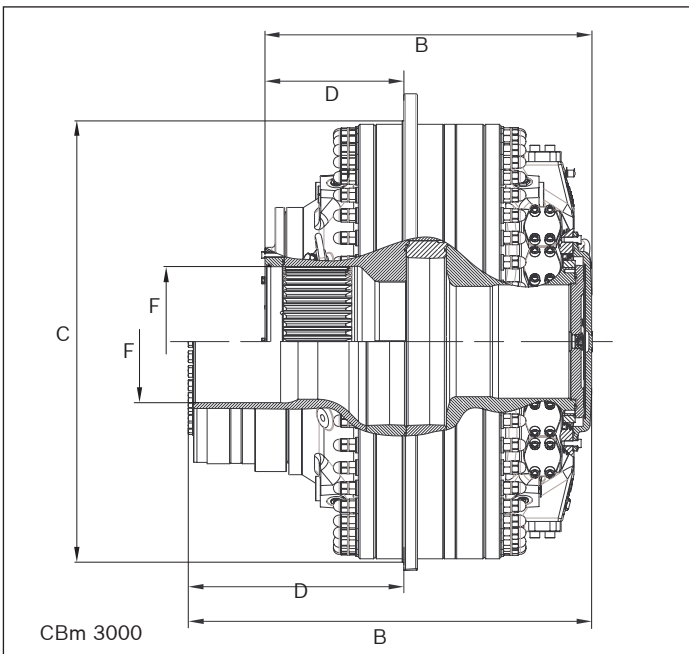
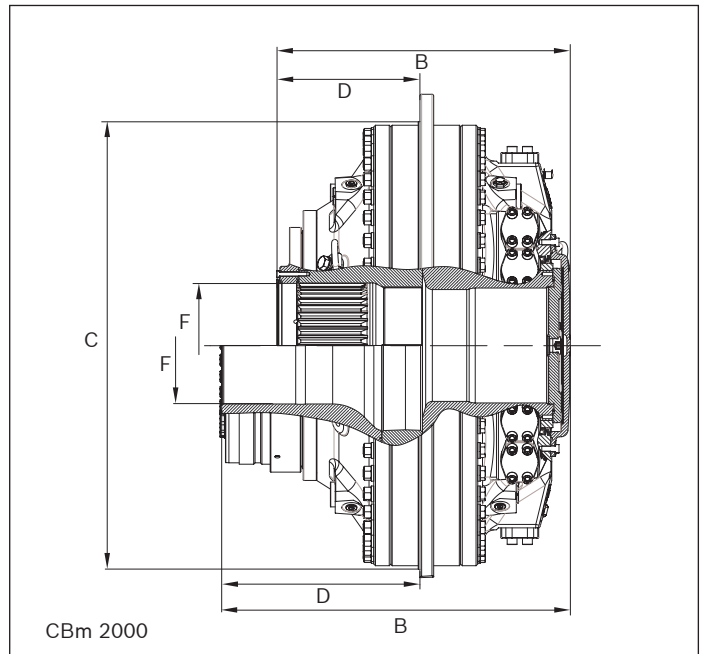
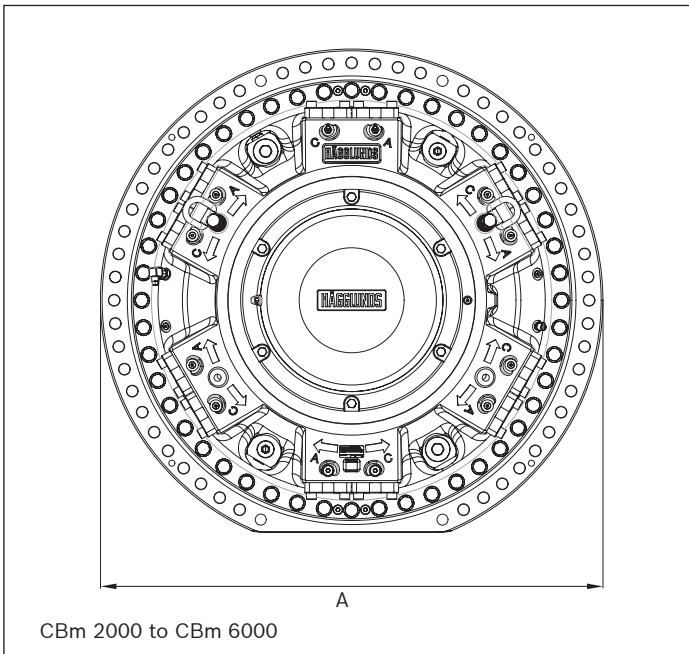


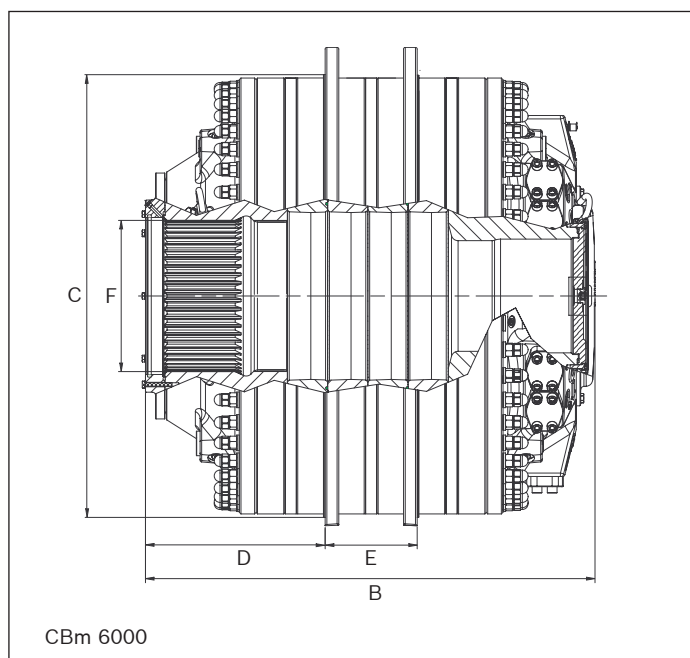
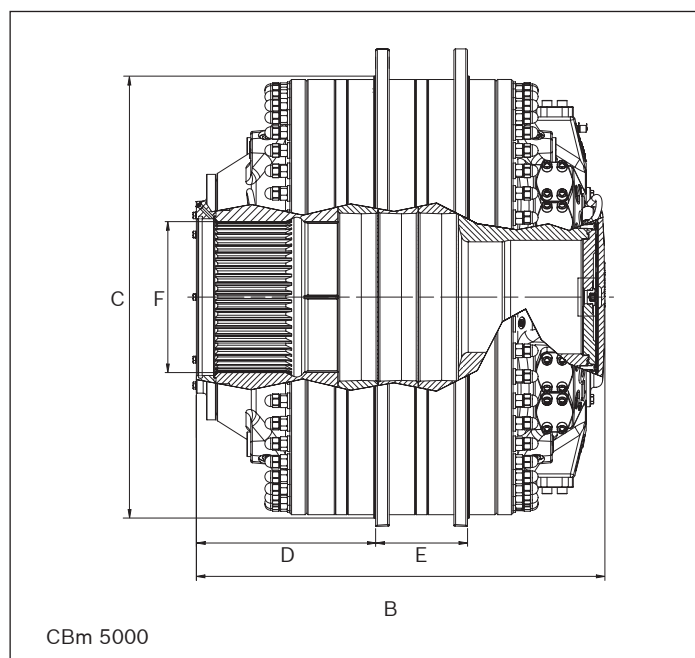
- ▶ Compact and robust design
- ▶ Possibility to combine the valves and functions with each other
- ▶ Mounted directly on Hägglunds motors

For more information see datasheet 15383

# Dimensions

## Dimensions, motor with splines for torque arm mounting

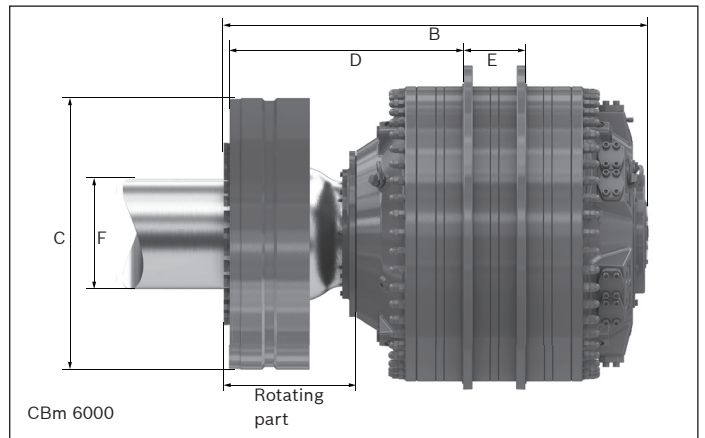
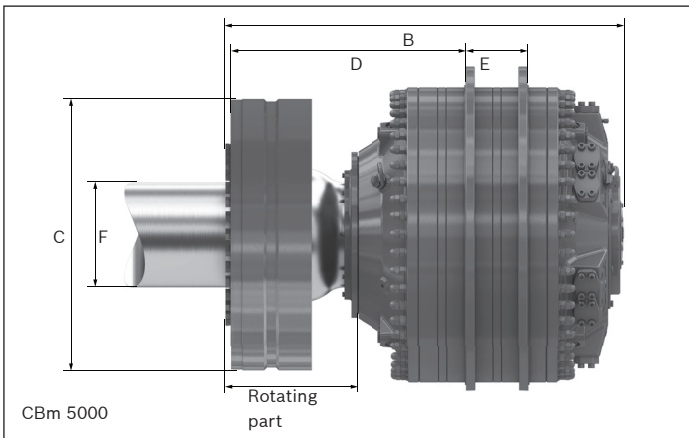
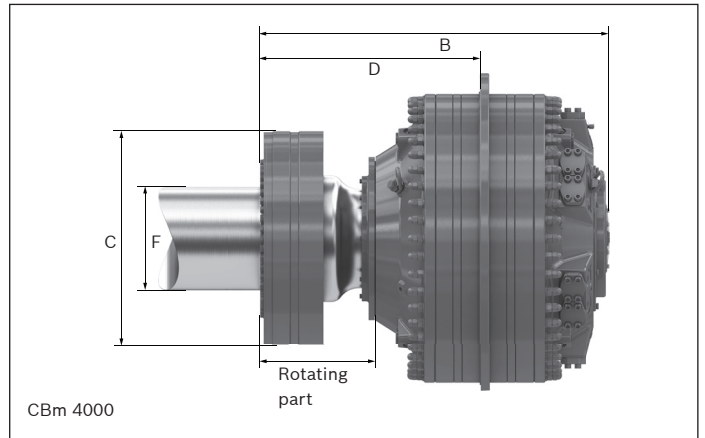
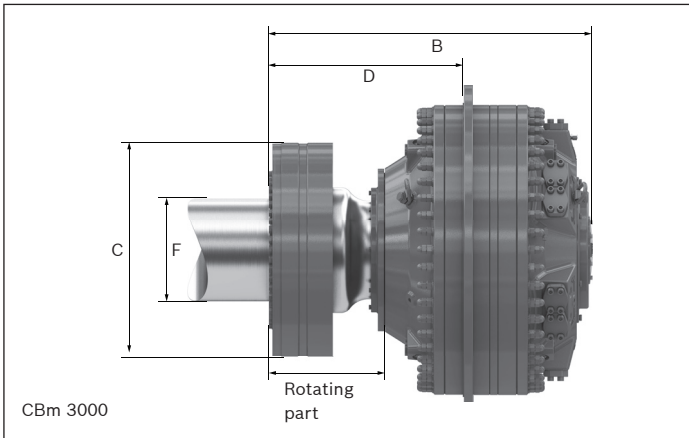
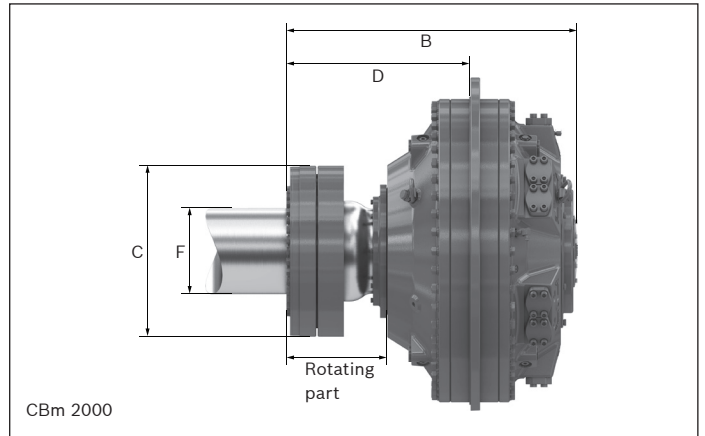
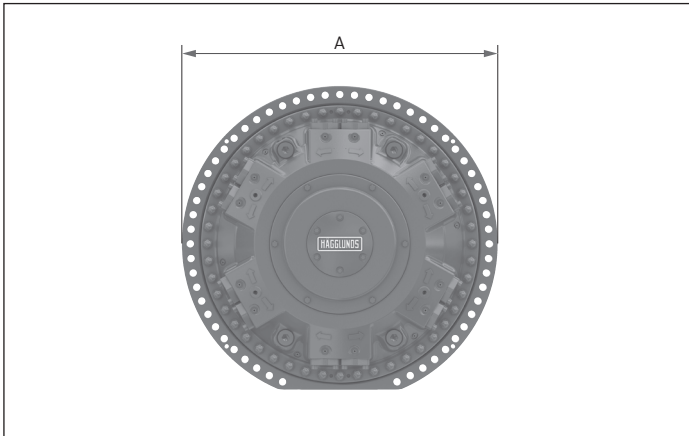




Dimensions, motor with splines for torque arm mounting

Motor type		A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	Weight (kg)	Main conn.	Drain conn.	
CBm 2000	Splines	1 460	855	1 300	416	-	N360x8x30x44x9H	4 100	SAE 2"	BSP 1 1/4" and 2"	
	Shrink disk	C	1 460	1 072	1 300	620	-	-	4650	SAE 2"	BSP 1 1/4" and 2"
		S	1 460	1 018	1 300	576	-	-	4500	SAE 2"	BSP 1 1/4" and 2"
CBm 3000	Splines	1 460	965	1 300	409	-	N440x8x30x54x9H	5 000	SAE 2"	BSP 1 1/4" and 2"	
	Shrink disc	1460	1 190	1 300	620	-	-	5500	SAE 2"	BSP 1 1/4" and 2"	
CBm 4000		1 460	1 083	1 300	527	-	N440x8x30x54x9H	5 800	SAE 2"	BSP 1 1/4" and 2"	
CBm 5000		1 460	1 201	1 300	526.5	270	N460x8x30x56x9H	6 700	SAE 2"	BSP 1 1/4" and 2"	
CBm 6000		1 460	1 320	1 300	526.5	270	N460x8x30x56x9H	7 500	SAE 2"	BSP 1 1/4" and 2"	

**Dimensions, motor with hollow shaft, coupling adapter**



Dimensions motor with hollow shaft, shaft coupling

Motor	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	Weight (kg)	Main conn.	Drain conn.
CB 2000	1 460	1 211	720	773	-	360	4 850	SAE 2"	BSP 1 1/4" och 2"
CB 3000	1 460	1 419	950	863	-	460	6 600	SAE 2"	BSP 1 1/4" och 2"
CB 4000	1 460	1 537	950	981	-	460	7 450	SAE 2"	BSP 1 1/4" och 2"
CB 5000	1 460	1 739	1 180	1 030	270,2	480	9 700	SAE 2"	BSP 1 1/4" och 2"
CB 6000	1 460	1 857	1 180	1 030	270,2	480	10 500	SAE 2"	BSP 1 1/4" och 2"

# Technical data

Quantity	Symbol	Metric	US
Power	P	= kW	hp
Output torque	T	= Nm	lbf-ft
Specific torque	Ts	= Nm/bar	lbf-ft/1000 psi
Rotational speed	n	= rpm	rpm
Required pressure	p	= bar	psi
Pressure loss	$\Delta p$	= bar	psi
Charge pressure	pc	= bar	psi
Flow rate required	q	= l/min	gpm
Total volumetric loss	ql	= l/min	gpm
Displacement	Vi	= cm <sup>3</sup> /rev	in <sup>3</sup> /rev
Mechanical efficiency	$\eta_m$	= 0.98*	

\*Not valid for starting efficiency

## Definitions

### Rated speed<sup>1)</sup>

Rated speed is the highest allowed speed for a charge pressure of 12 bar (174 psi) above case pressure. When a closed loop system is used, a minimum of 15% of oil is to be exchanged in the main loop.

### Max speed

Maximum speed is the maximum allowed speed. Special considerations are necessary regarding charge pressure, cooling and choice of hydraulic system for speeds rated above.

<sup>1)</sup> Operating above rated conditions requires approval from Bosch Rexroth.

### Accepted conditions for standard type of motor:

1. Oil viscosity 15 - 40 - 10000 cSt. See page 21.
2. Temperature -35 °C to +70 °C (-31 °F to +158 °F).
3. Running case pressure 0-3 bar (0-43,5 psi) Max case pressure 8 bar (116 psi)
4. Charge pressure (see diagram).
5. Volumetric losses (see diagram).

## Sound

### 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:

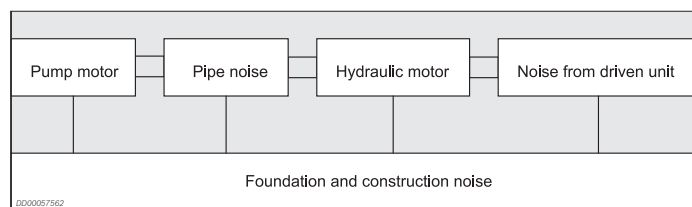
The pipe noise is probably the source of the majority of mistakes in installations: all pipe clamps should be of vibration insulating type secured to concrete ceiling, wall or floor. Securing to non-rigid metal structures or structures is likely to give resonance and should be avoided.

### Hydraulic motor:

The hydraulic motor is a known noise level. Tables of sound data are according to subsection in the product-specific data sheet.

### 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.



# Hägglunds direct drive systems for explosion-risk areas

When operating technical equipment in potentially volatile areas, special precautions must be taken to protect both people and machines. Hägglunds direct drive systems from Bosch Rexroth are a versatile way to meet explosion protection requirements.

## Solutions for safe productivity

Where gas, steam, solvent mist or dust pose an explosion hazard, Hägglunds direct drive systems provide vital protection – not only of equipment, but also of life and limb. Yet these rugged drives from Bosch Rexroth do more than comply with legislated standards. Their ultra-reliable component performance ensures productivity throughout the machine life cycle.

Hägglunds direct drive systems comprise a wide range of components and solutions that meet national and international directives for explosion protection. In particular, they are approved for use in explosive areas according to the ATEX Directive 2014/34/EU.

A Hägglunds direct drive system consists of a Hägglunds hydraulic motor and a Hägglunds hydraulic drive unit. Because the main components of the drive system can be separated and have individual approvals, there is high flexibility in the design and placement of the installation.

## Explosion protection for your industry

Each industry has its own special requirements, both for safety and performance. Bosch Rexroth's global expertise is coordinated accordingly, so that we can offer you tailor-made solutions for your specific applications.

Explosive atmospheres involving zone 1 and zone 2 gas/air mixtures are particular areas of focus. However, Bosch Rexroth can offer proven performance and reliable explosion protection in a much wider range of applications all over the world.

## Component approvals

Hägglunds hydraulic motors of the CA, CB, CBp and CBm series are possible to use in explosive areas. The hydraulic motors are limited to gas (zone 1, category 2G and temperature class T4), dust (zone 21, category 2D and maximum surface temperature 135°C) and mining (category M2). This approval is also valid for some of the hydraulic motor accessories, including the non-electric valves and torque arms. Other motor accessories, such as brakes and speed encoders, have approvals of their own.

The Hägglunds DUE drive unit has options for usage in explosive areas. The standard configuration is limited to the gas area of zone 2 and temperature class T4. Extended classification within the gas area is possible on request, as is explosion-proof classification for geographical regions outside Europe. The drive unit's modular assembly provides high flexibility for adapting to customer function requirements, despite the limitations set by the ATEX directive. The Hägglunds standard control system can be used if located outside the explosive zone, as long as the interface signals are handled via energy-limiting barriers. To communicate with the master PLC, RIO (Remote Input Output) via fieldbus is available upon request.

## Sample industries and applications

Hägglungs direct drive systems from Bosch Rexroth can be tailored and installed to meet ATEX requirements in industries and applications such as:

### Chemical production

- ▶ Chemical reactors
- ▶ Kneader systems
- ▶ Extruder systems
- ▶ Agitators
- ▶ Gear pumps

### Mining

- ▶ Feeder units
- ▶ Bucket wheel excavators
- ▶ Clamping systems for conveyor belts

### Drilling

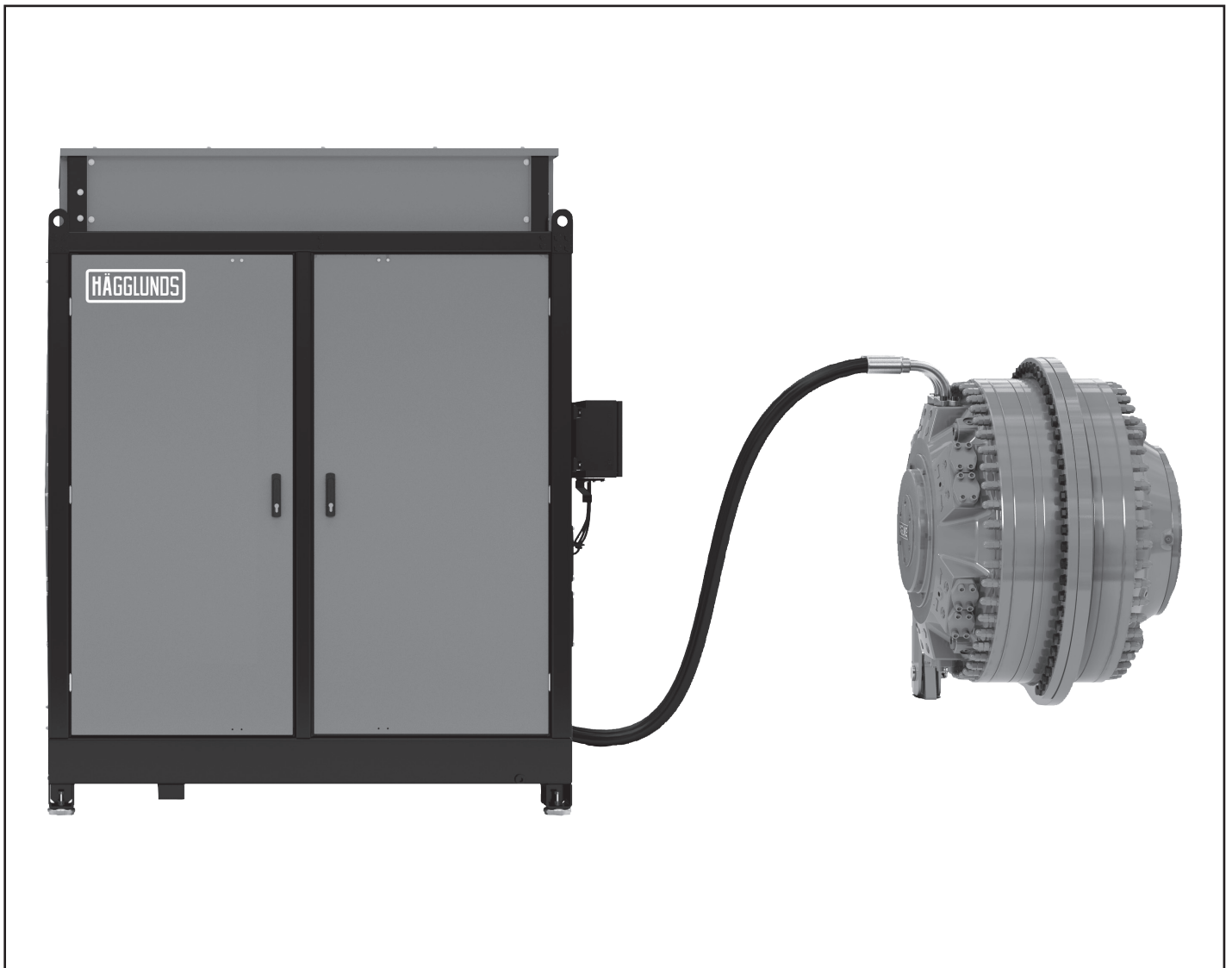
- ▶ Land-based drilling platforms
- ▶ Flushing pumps (drilling fluid)
- ▶ Lifting equipment for drilling rigs

### Offshore

- ▶ Drilling platforms
- ▶ Oil refinery ships

### Oil production

- ▶ Crude oil pumps



# Ordering code

In order to identify Hägglunds equipment exactly, the following ordering code is used. These ordering codes should be stated in full in all correspondence e.g. when ordering spare parts.  
Example Hägglunds CBm motor:

<b>CB</b>	<b>M</b>	<b>2000</b>	<b>1200</b>	<b>S</b>	<b>A</b>	<b>0</b>	<b>N</b>	<b>0</b>	<b>A</b>	<b>00</b>	<b>00</b>
01	02	03	04	05	06	07	08	09	10	11*	12*

01	<b>Motor series</b>	
	Compact	<b>CB</b>

02	<b>Type</b>	
	Magnum	<b>M</b>

03	<b>Frame size</b>	
	CBM 2000	<b>2000</b>
	CBM 3000	<b>3000</b>
	CBM 4000	<b>4000</b>
	CBM 5000	<b>5000</b>
	CBM 6000	<b>6000</b>

04	<b>Nominal size , specific torque, Nm/bar (see section 4.3)</b>						
	Frame size 2000	<b>1000</b>	<b>1200</b>	<b>1400</b>	<b>1600</b>	<b>1800</b>	<b>2000</b>
		•	•	•	•	•	•
	Frame size 3000		<b>2200</b>	<b>2400</b>	<b>2600</b>	<b>2800</b>	<b>3000</b>
			•	•	•	•	•
	Frame size 4000		<b>3200</b>	<b>3400</b>	<b>3600</b>	<b>3800</b>	<b>4000</b>
			•	•	•	•	•
	Frame size 5000					<b>4600</b>	<b>5000</b>
						•	•
	Frame size 6000					<b>5600</b>	<b>6000</b>
					•	•	

05	<b>Mounting alternatives, shaft</b>	<b>E</b>	<b>C</b>	<b>S</b>
		<b>Shrink disc coupling Ø 340 mm</b>	<b>Shrink disc coupling Ø 360 mm</b>	<b>Splines DIN 5480 N</b>
	CBM 2000	•	•	•
	CBM 3000	-	•	•
	CBM 4000	-	-	•
	CBM 5000	-	-	•
CBM 6000	-	-	•	

06	<b>Prepared for brake or tandem kit</b> (see section 10.3)		
	Motor not prepared for TA kit	●	A
	Motor prepared for TA kit	●	B
07	<b>Displacement shift valve</b>		
	Motor not prepared for displacement shift		0
08	<b>Type of seal</b> (see section 5)		
	NBR (Nitrile)	●	N
	FPM (Viton)	●	V
09	<b>Through hole kit</b> (see section 7)		
	No	●	0
	Yes	●	H
10	<b>Increased robustness</b> (see section 6)		
	No	●	A
	Yes	●	C
11	<b>Modification</b> *)		
			01
12	<b>Design</b>		
	Standard		00
	Special index *)		01-99

● = Available      - = Not available

\*) To be filled in by Bosch Rexroth DC-IA/ENG

# Hägglunds Original Service

Experts in drive system service, worldwide and close by



Hägglunds Original Service from Bosch Rexroth is the only true choice for service of your Hägglunds drive system. Ever since Hägglunds Drives became part of Bosch Rexroth, Rexroth has been the source for Hägglunds service, Hägglunds spare parts and Hägglunds drive system repairs. Only at Bosch Rexroth will you find the knowledge and insights that come from a half-century of servicing Hägglunds drive systems.

## Why choose Hägglunds Original Service?

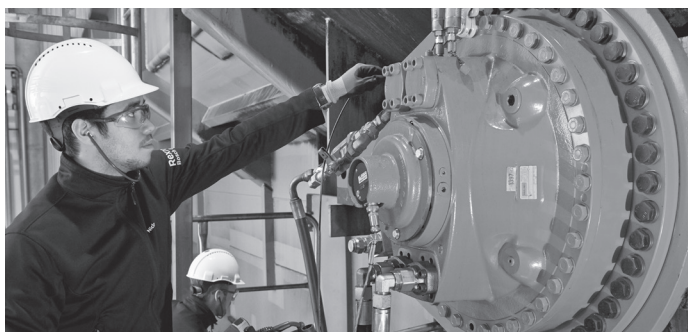
High-performance drive systems need high-quality service. Bosch Rexroth is home to certified Hägglunds service specialists, whose expert training is specific to Hägglunds drive systems. Not only do they service Hägglunds motors, they take a complete drive system approach to securing your uptime.

Hägglunds service experts are supported by dedicated workshops with specialized tools and the latest technology. Everything needed to service, repair, modernize or upgrade

Hägglunds drive systems is at their fingertips, including genuine Hägglunds spare parts direct from the factory.

## Serving you globally and locally

As a truly global company, Bosch Rexroth can maximize uptime and ensure drive system performance anywhere in the world. Hägglunds Original Service is available locally wherever you are, with everything from commissioning and repairs to preventive maintenance, field service and beyond.



## A full range of services for your Häggglunds drive system

As the source of Häggglunds drive systems, only Bosch Rexroth can bring you the full range of Häggglunds service options, based on the latest knowledge and technology.

### Häggglunds field service

From inspections to preventive maintenance, Rexroth field service engineers are ready to meet your needs on site – wherever you happen to be. Our local Häggglunds service specialists have a complete understanding of your Häggglunds drive system, as well as your situation. With their unique training and equipment, they resolve your drive issues quickly and completely.

Examples of our field service include **start-up support, condition-based maintenance, fitness checks and emergency support.**

### Häggglunds drive repairs

The rugged design and leading-edge technology of Häggglunds products are the result of world-class workmanship. That same workmanship is found in the unique tools and processes used by Rexroth experts to repair Häggglunds motors and drive systems. Our skilled Häggglunds service specialists are factory-certified to repair Häggglunds products, which gives you solid assurance that the work will be done right.

Our repair offering includes **fixed-price repairs, preferred repair lead times, reman exchange, product upgrades and more.**

### Häggglunds spare parts

Only genuine Häggglunds spare parts deliver the same world-class performance as the Häggglunds drive systems you depend on. Our spare parts program, which can be combined with discounts and extended warranty options, gets Häggglunds parts to you quickly and reliably. Strategically located parts inventories, found at Rexroth service centers worldwide, ensure it.

Beyond Häggglunds parts themselves, we can offer **inventory management, dedicated spares and kits, and stocking of emergency units.**

### Extended Häggglunds services

Rexroth can also provide a wide range of other services related to the Häggglunds drives and drive systems, incl:

- **Remote technical support**

You can turn to our Häggglunds experts for support by phone, e-mail, etc. Support time can be arranged by the hour or incorporated into a Service Agreement.

- **Modernization**

After a discussion of your needs, we can propose ways to upgrade your Häggglunds drive equipment and application, for example to reduce energy consumption or increase power density.

- **Customer training**

We can provide you with customized training packages, focused on maintaining your Häggglunds drive and getting maximum performance from your system.

**Bosch Rexroth AB**

SE-895 80 Mellansel, Sweden

Phone: +46 (0)660-870 00

hagglunds@boschrexroth.se

www.boschrexroth.com/hagglunds

**Your local contact person can be found at:**

[www.boschrexroth.com/contact](http://www.boschrexroth.com/contact)

