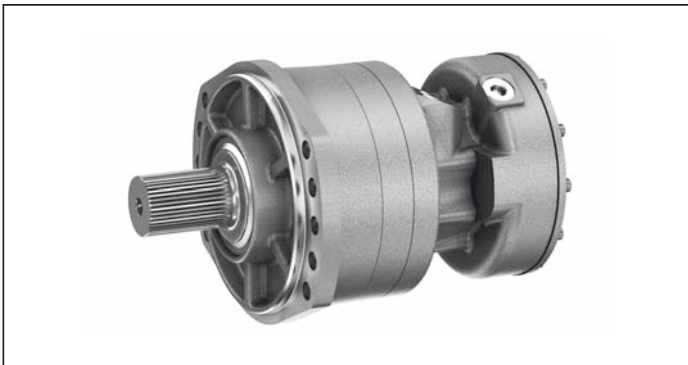


Radial piston motor for frame integrated drives

MCR-A

RE 15195

Edition: 12.2013



- ▶ Frame size MCR3, MCR5, MCR10
- ▶ Displacement 160 cc to 1340 cc
- ▶ Differential pressure up to 450 bar
- ▶ Torque output up to 8530 Nm
- ▶ Speed up to 875 rpm
- ▶ Open and closed circuits

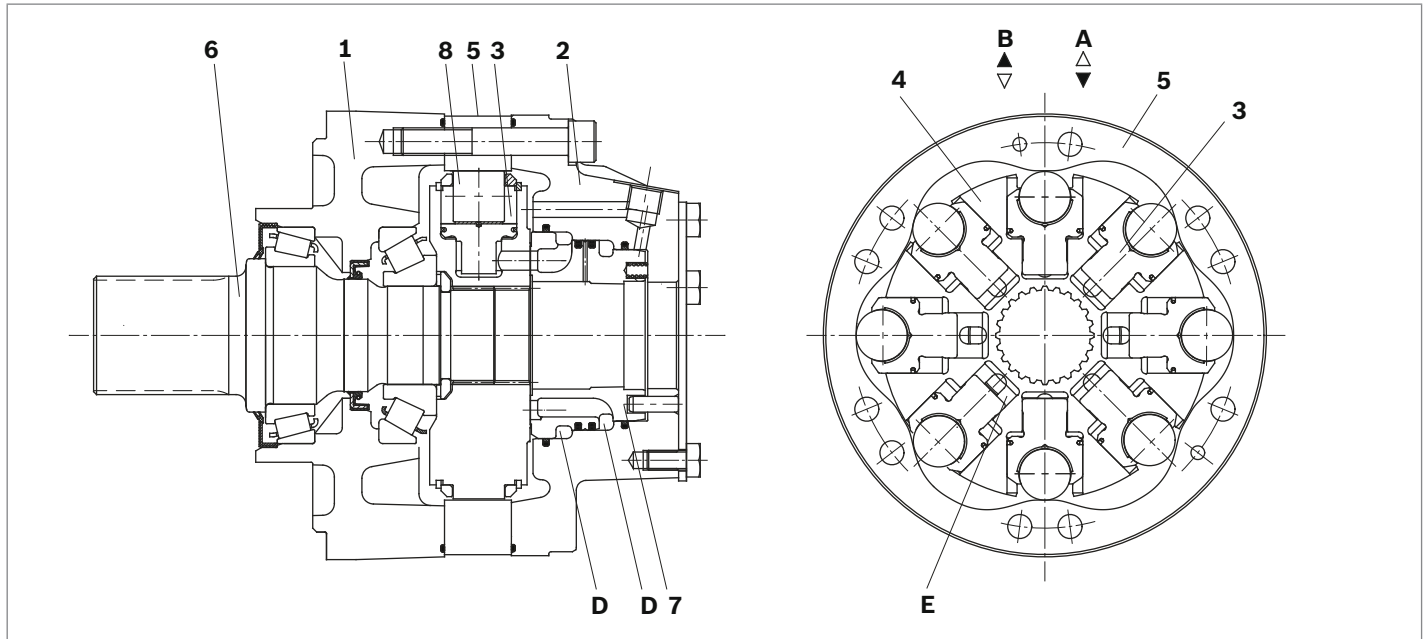
Features

- ▶ Compact robust construction
- ▶ High volumetric and mechanical efficiencies
- ▶ Front case mount
- ▶ Splined drive shaft
- ▶ High reliability
- ▶ Low maintenance
- ▶ Smooth running at very low speeds
- ▶ Low noise
- ▶ Bi-directional
- ▶ Sealed tapered roller bearings
- ▶ Freewheeling possible
- ▶ Available with:
 - Holding brake (multi-disc)
 - Bi-directional two speed
 - Integrated flushing valve
 - Speed sensor

Contents

| | |
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| Ordering code | 5 |
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| Efficiencies | 8 |
| Permitted loading on drive shaft | 9 |
| Dimensions | 10 |
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Functional description



Hydraulic motors of the type MCR-A are radial piston motors with front case mounting and splined drive shaft. The MCR-A motors are intended for open or closed circuit operations as drive motors for the chain drive function primarily on skid steer loaders. A-type motors can be used for a variety of applications depending on the attachment that can be mounted on the spline shaft of the motor (e. g. gear drive, sprocket, chain drive).

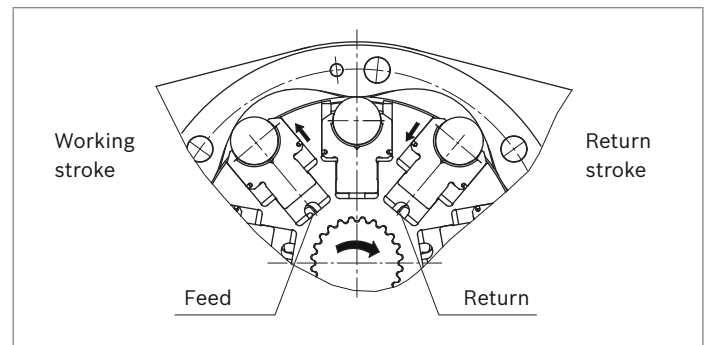
Construction

Two part housing (**1, 2**), rotary group (**3, 4, 8**), cam (**5**), drive shaft (**6**) and flow distributor (**7**)

Transmission

The cylinder block (**4**) is connected to the shaft (**6**) by means of splines. The pistons (**3**) are arranged radially in the cylinder block (**4**) and make contact with the cam (**5**) via rollers (**8**).

Torque generation



The number of working and return strokes corresponds to the number of lobes on the cam multiplied by number of pistons in the cylinder block.

Flow paths

The ports **A** and **B**, which are located in the rear case, carry oil through the distributor to the cylinder chambers (**E**).

Bearings

Tapered roller bearings capable of transmitting high axial and radial forces are fitted as standard.

Freewheeling

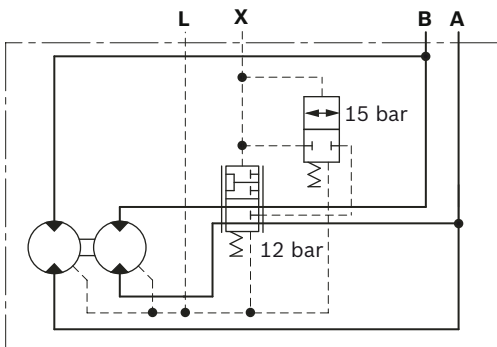
In certain applications there may be a requirement to free-wheel the motor. This may be achieved by connecting ports **A** and **B** to zero pressure and simultaneously applying a pressure of 2 bar to the housing through port **L**. In this condition, the pistons are forced into the cylinder block which forces the rollers to lose contact with the cam thus allowing free rotation of the shaft.

Two speed operation (2W)

In mobile applications where vehicles are required to operate at high speed with low motor loads, the motor can be switched to a low-torque and high-speed mode. This is achieved by operating an integrated valve which directs hydraulic fluid to only one half of the motor while continuously re-circulating the fluid in the other half. This “reduced displacement” mode reduces the flow required for a given speed and gives the potential for cost and efficiency improvements. The motor maximum speed remains unchanged.

Bosch Rexroth has developed a special spool valve to allow smooth switching to reduced displacement whilst on the move. This is known as “soft-shift” and is a standard feature of 2W motors. The spool valve requires either an additional sequence valve or electro-proportional control to operate in “soft-shift” mode.

▼ **Schematic**

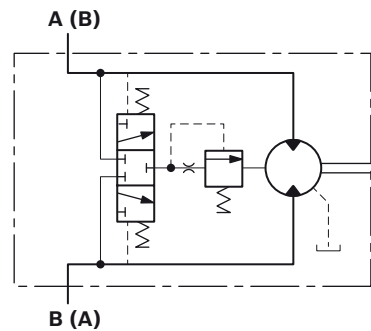


Flushing valve

In a closed circuit, the same hydraulic fluid continuously flows between the pump and the motor. This could therefore lead to overheating of the hydraulic fluid. The function of the flushing valve option is to replace hydraulic fluid in the closed circuit with that from the reservoir. When the hydraulic motor is operated under load, either in the clockwise or anti-clockwise direction, the flushing valve opens and takes a fixed flow of fluid through an orifice from the low pressure side of the circuit. This flow is then fed to the motor housing and back to the reservoir normally via a cooler. In order to charge the low pressure side of the circuit, cool fluid is drawn from the reservoir by the boost pump and is fed to the pump inlet through the check valve. Thus the flushing valve ensures a continuous renewal and cooling of the hydraulic fluid. The flushing feature incorporates a relief valve which is used to maintain a minimum boost pressure and operates at a standard setting of 14 bar (other options available on request).

Different orifice sizes may be used to select varying flows of flushing fluid. The following table gives flushing rate values based on a boost / charge pressure of 25 bar.

▼ **Schematic**



Flushing flow rates

| Flushing code | Orifice size (mm) | Flow (l/min) at 25 bar ¹⁾ | |
|---------------|-------------------|--------------------------------------|------|
| | | min | max |
| F1 | Ø1 | 2.2 | 2.7 |
| F2 | Ø1.5 | 5.0 | 6.1 |
| F7 | Ø1.7 | 6.4 | 7.8 |
| F4 | Ø2 | 8.2 | 10.7 |
| F6 | Ø2.3 | 8.8 | 11.4 |

1) 0.6 mm Shim (Standard), Cracking pressure = 11±3 bar

Holding brake (multi-disc brake)

Mounting

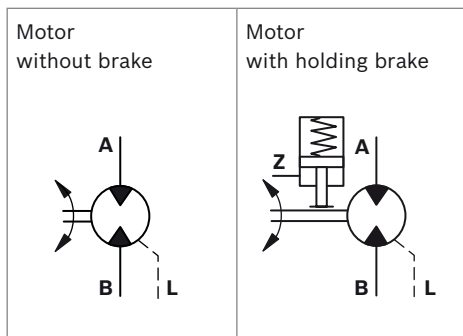
By way of rear housing (2) and brake shaft (14).

Brake application

As a safety requirement in mobile applications a parking brake may be provided to ensure that the motor cannot turn when the machine is not in use. The parking brake provides holding torque by means of discs (11) that are compressed by a disc spring (10). The brake is released when oil pressure is applied to brake port “Z” and the pressure in the annular area (9) compresses the disc spring using brake piston (12) thus allowing the brake discs (11) to turn independently.

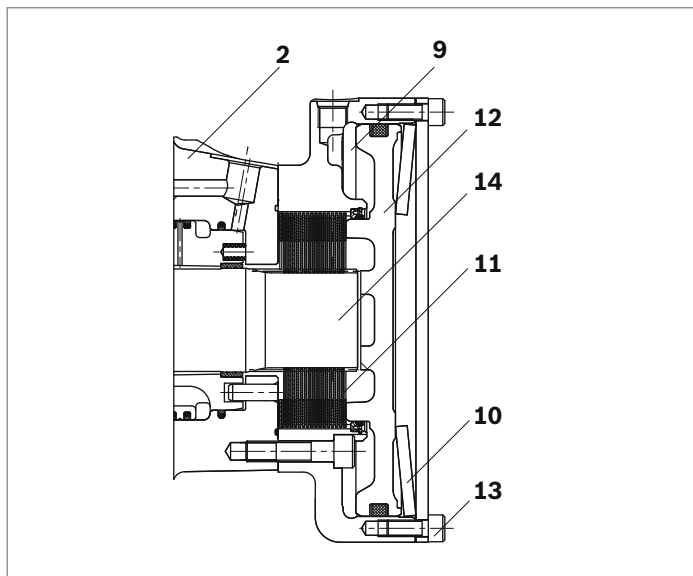
Note
This brake is provided solely for static use - not to be used dynamically.

▼ **Schematic diagrams**



Manual release of holding brake

The brake may also be released manually by loosening screws (13).

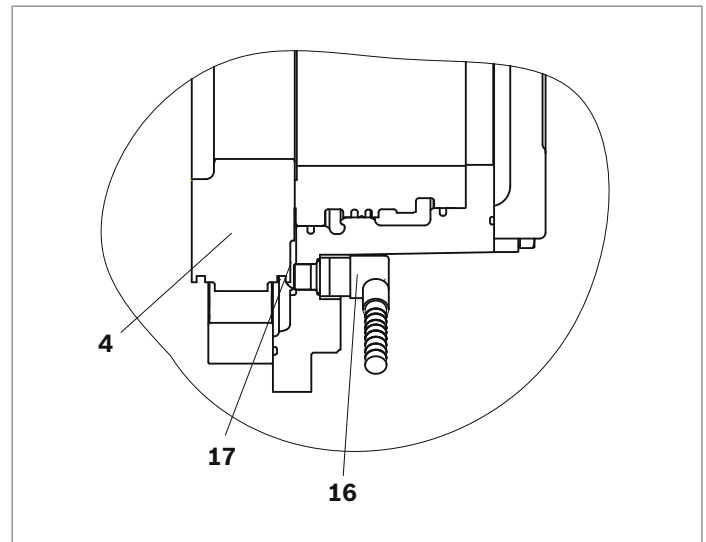


Speed sensor

A Hall-effect speed sensor (16) may be fitted as an option, giving a two-channel output of phase-displaced square waves, and enabling detection of speed and direction. A toothed target disc (17) is fitted to the motor cylinder block (4), and the sensor, fitted to a port in the rear case, produces a pulse on each channel as each tooth passes in front of it. The frequency of the pulses is proportional to the rotational speed.

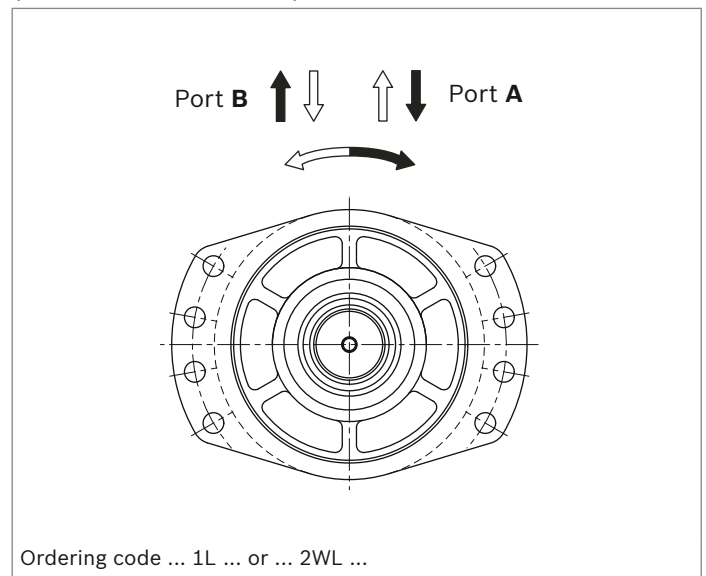
Versions are available for use with regulated supplies 10 V (Code P1) and for direct connection to a 12 V or 24 V unregulated supply (Code P2).

The motor can also be supplied fitted with a target disc and with a speed sensor port machined, but covered and sealed with a blanking plate (Code P0). These “sensor-ready” motors may be fitted with a sensor at a later date.



Direction of shaft rotation with flow

(viewed from drive shaft)



Ordering code

| | | | | | | | | | | | | | | | |
|------------|----|----------|----|----|----------|----------|-----------|----|----|----|----|----|----|----|----|
| 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| MCR | | A | | | Z | / | 33 | | | | | | | | |

Radial piston motor

| | | |
|----|--|------------|
| 01 | Radial-piston type, low-speed, high-torque motor | MCR |
|----|--|------------|

Frame size

| | | |
|----|--------------|-----------|
| 02 | Frame size 3 | 3 |
| | 5 | 5 |
| | 10 | 10 |

Housing type

| | | |
|----|--------------------|----------|
| 03 | Front case flanged | A |
|----|--------------------|----------|

Nominal size, displacement V_g in cm^3/rev

| | | | | | | | | | | |
|---------------|---|----|------------|------------|------------|-------------|-------------|-------------|------------|------------|
| 04 | Frame size 3 | | 160 | 225 | 255 | 280 | 325 | 365 | 400 | |
| | Low displacement: motors use standard cylindrical pistons | LD | ● | ● | ● | ● | - | - | - | |
| | High displacement: motors use stepped pistons | HD | - | - | - | - | ● | ● | ● | |
| Frame size 5 | | | 380 | 470 | 520 | 565 | 620 | 680 | 750 | 820 |
| | Low displacement: motors use standard cylindrical pistons | LD | ● | ● | ● | ● | - | - | - | - |
| | High displacement: motors use stepped pistons | HD | - | - | - | - | ● | ● | ● | ● |
| Frame size 10 | | | 780 | 860 | 940 | 1120 | 1250 | 1340 | | |
| | Low displacement: motors use standard cylindrical pistons | LD | ● | ● | ● | - | - | - | | |
| | High displacement: motors use stepped pistons | HD | - | - | - | ● | ● | ● | | |

Drive shaft

| | | | |
|----|--------------------------|-------|------------|
| 05 | Splined shaft ANSI B92.1 | MCR3 | A45 |
| | | MCR5 | A60 |
| | | MCR10 | A75 |

Rear shaft

| | | |
|----|--------------------|----------|
| 06 | Without rear shaft | Z |
|----|--------------------|----------|

Series

| | | |
|----|-----------|------------------------|
| 07 | Series 33 | 33¹⁾ |
|----|-----------|------------------------|

Brake

| | | | | | | |
|----|---|---------|-------------|-------------|--------------|-----------|
| 08 | Without brake | | MCR3 | MCR5 | MCR10 | A0 |
| | Hydraulic release spring applied multi-disc holding brake | 2200 Nm | ● | ● | - | B2 |
| | | 4400 Nm | - | ● | - | B4 |
| | | 4400 Nm | - | - | ● | B5 |
| | | 7000 Nm | - | - | ● | B7 |

Seals

| | | |
|----|-------------------------------|----------|
| 09 | NBR (nitrile rubber) | M |
| | FKM (fluoroelastomer / Viton) | V |

Single/two-speed operation

| | | |
|----|--|------------|
| 10 | Single speed, standard direction of rotation | 1L |
| | Bi-directional two speed, standard direction of rotation ²⁾ | 2WL |

Ports

| | | |
|----|--|-----------|
| 11 | Tapped with UNF thread (SAE J514) | 12 |
| | Tapped with UNF thread (SAE J514) (A and B ports SAE split flange metric bolt holes) | 42 |

● = Available - = Not available

1) This data sheet also applies to series 32

2) Not available for MCR10A

6 **MCR-A** | Radial piston motor for frame integrated drives
Ordering code

| | | | | | | | | | | | | | | | |
|------------|----|----------|----|----|----------|----------|-----------|----|----|----|----|----|----|----|----|
| 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| MCR | | A | | | Z | / | 33 | | | | | | | | |

Studs

| | | |
|----|-------------------------|--|
| 12 | Without studs (no code) | |
|----|-------------------------|--|

Speed sensor

| | | |
|----|--------------------------|-----------|
| 13 | Without sensor (no code) | |
| | Sensor ready | P0 |
| | Sensor without regulator | P1 |
| | Sensor with regulator | P2 |

Flushing

| | | |
|----|-------------------------------------|--------------|
| 14 | Without flushing (no code) | |
| | With flushing (see table on page 3) | F1-F7 |

Special order

| | | |
|----|-----------------|--------------|
| 15 | Special feature | SOXXX |
|----|-----------------|--------------|

Other

| | | |
|----|-------------------|---|
| 16 | Mark in text here | * |
|----|-------------------|---|

Footer from page 7

- 1) Ensure motor case is filled with oil prior to start-up.
- 2) For installation and maintenance details, please see instruction manual 15215-B.
- 3) For use with environmentally acceptable fluids HEES, HEPG, HETG, fluoroelastomer / Viton seals must be specified.
- 4) Extension of the allowable temperature range may be possible depending on specification. Please consult Bosch Rexroth Engineering Department in Glenrothes for further details.
- 5) Maximum values should only be applied for a small portion of the duty cycle. Please consult Bosch Rexroth Engineering Department in Glenrothes for motor life calculations based on particular operating cases.
- 6) When operating motors in series, please consult Bosch Rexroth Engineering Department in Glenrothes.
- 7) For continuous operation at speeds <5 rpm please consult Bosch Rexroth Engineering Department in Glenrothes.
- 8) Based on nominal no-load Δp of 20 bar in full-displacement mode.
- 9) Warning! During the running in period of the motor (min. 20 hrs) it should not be run unloaded at >100 rpm.
- 10) Guide values for up to 5000 hours of motor operation (ISO VG46 at 50 °C).

Note

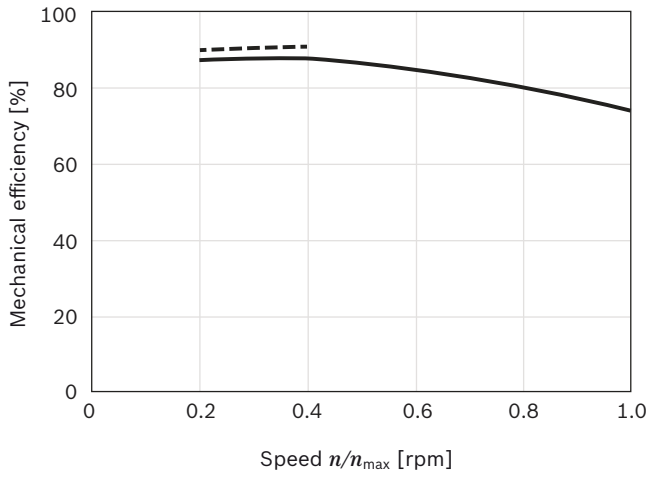
- ▶ Motor performance values are based on theoretical calculations.
 - ▶ Efficiencies are not taken into consideration for theoretical calculations.
 - ▶ Brake torque accounts for tolerances. Values are based when used with standard mineral oil (HLP)
- Please refer the related foot notes for more details.

Technical data

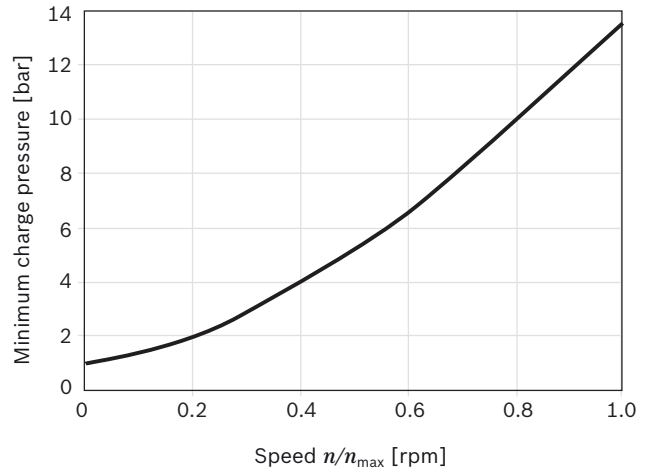
| Frame size | | | MCR3 | MCR5 | MCR10 | | | | | |
|---|--|-------------------------|---|------------|-------|-------------|-------------------|--------------|-----------|-------------|
| Type of mounting | | | Front case flange mounting | | | | | | | |
| Pipe connections ¹⁾²⁾ | | | Threaded per SAE J514; Flanged per SAE J518 | | | | | | | |
| Shaft loading | | | see page 9 | | | | | | | |
| Weight | | | | | | | | | | |
| Single speed (1L) | | <i>m</i> | kg | 23 | 43 | 70 | | | | |
| Two speed (2WL) | | <i>m</i> | kg | 28 | 50 | - | | | | |
| Hydraulic fluid ³⁾ | | | | | | | | | | |
| Fluid cleanliness | | | ISO 4406, Class 20/18/15 | | | | | | | |
| Fluid viscosity range | | $v_{\min/\max}$ | mm ² /s | 10 to 2000 | | | | | | |
| Fluid temperature range ⁴⁾ | | $\theta_{\min/\max}$ | °C | -20 to +85 | | | | | | |
| Pressure | | | Low displacement | | | | High displacement | | | |
| Operating pressure | | p_{nom} | bar | 250 | | | 250 | | | |
| Maximum differential pressure ⁵⁾⁶⁾ | | Δp_{max} | bar | 450 | | | 400 | | | |
| Maximum pressure at port A or B ⁵⁾⁶⁾ | | p_{max} | bar | 470 | | | 420 | | | |
| Maximum case drain pressure | | $p_{\text{case max}}$ | bar | 10 | | | 10 | | | |
| Motor performance MCR3 | | | | | | | | | | |
| Displacement | | V_g | cm ³ /rev | 160 | 225 | 255 | 280 | 325 | 365 | 400 |
| Specific torque | | | Nm/bar | 3 | 4 | 4 | 4 | 5 | 6 | 6 |
| Maximum torque ⁵⁾ | | T_{max} | Nm | 1146 | 1611 | 1826 | 2005 | 2069 | 2324 | 2546 |
| Minimum speed for smooth running ⁷⁾ | | n_{min} | rpm | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 |
| Maximum speed (1L) ⁸⁾⁹⁾ | | n_{max} | rpm | 670 | 475 | 420 | 385 | 330 | 295 | 270 |
| Maximum speed (2WL) ⁸⁾⁹⁾ | | n_{max} | rpm | 875 | 620 | 550 | 500 | 430 | 385 | 350 |
| Continuous operating power ¹⁰⁾ | | P | kW | 11.64 | 15.34 | 15.17 | 17.48 | 11.61 | 11.38 | 14.99 |
| Motor performance MCR5 | | | | | | | | | | |
| Displacement | | V_g | cm ³ /rev | 380 | 470 | 520 | 565 | 620 | 680 | 750 820 |
| Specific torque | | | Nm/bar | 6 | 7 | 8 | 9 | 10 | 11 | 12 13 |
| Maximum torque ⁵⁾ | | T_{max} | Nm | 2722 | 3366 | 3724 | 4047 | 3947 | 4329 | 4775 5220 |
| Minimum speed for smooth running ⁷⁾ | | n_{min} | rpm | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 0.5 |
| Maximum speed (1L) ⁸⁾⁹⁾ | | n_{max} | rpm | 475 | 385 | 350 | 320 | 290 | 265 | 240 220 |
| Maximum speed (2WL) ⁸⁾⁹⁾ | | n_{max} | rpm | 570 | 465 | 420 | 385 | 350 | 320 | 290 265 |
| Continuous operating power ¹⁰⁾ | | P | kW | 38.01 | 38.14 | 37.86 | 42.42 | 26.52 | 25.85 | 24.42 31.98 |
| Motor performance MCR10 | | | | | | | | | | |
| Displacement | | V_g | cm ³ /rev | 780 | 860 | 940 | | 1120 | 1250 | 1340 |
| Specific torque | | | Nm/bar | 12 | 14 | 15 | | 18 | 20 | 21 |
| Maximum torque ⁵⁾ | | T_{max} | Nm | 5586 | 6159 | 6732 | | 7130 | 7958 | 8531 |
| Minimum speed for smooth running ⁷⁾ | | n_{min} | rpm | 0.5 | 0.5 | 0.5 | | 0.5 | 0.5 | 0.5 |
| Maximum speed (1L and 2WL) ⁸⁾⁹⁾ | | n_{max} | rpm | 215 | 195 | 178 | | 150 | 134 | 125 |
| Continuous operating power ¹⁰⁾ | | P | kW | 50.21 | 55.67 | 52.82 | | 38 | 42.34 | 38.81 |
| Brake | | | MCR3 | | | MCR5 | | MCR10 | | |
| Holding brake (disc brake) | | | B2 | | | B2 | B4 | B5 | B7 | |
| Minimum holding torque | | $t_{\min/\max}$ | Nm | 2200 | | | 2200 | 4400 | 4400 | 7000 |
| Release pressure (min) | | $p_{\text{rel min}}$ | bar | 11 | | | 11 | 11 | 11 | 11 |
| Release pressure (max) | | $p_{\text{rel max}}$ | bar | 15 | | | 15 | 15 | 15 | 15 |
| Maximum pressure at brake port „Z“ | | p_{max} | bar | 40 | | | 40 | 40 | 40 | 40 |
| Oil volume to operate brake | | V_{rel} | cm ³ | 23 | | | 23 | 46 | 17 | 36 |

Efficiencies

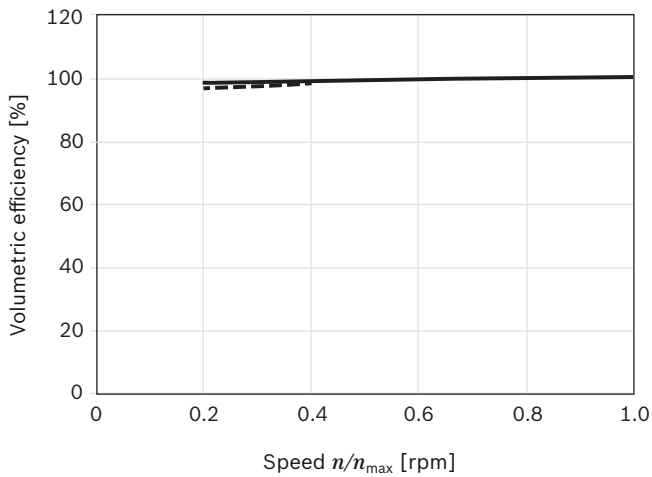
▼ Mechanical efficiency



▼ Charge pressure



▼ Volumetric efficiency



— 100 bar / 1450 psi
- - - 300 bar / 4350 psi

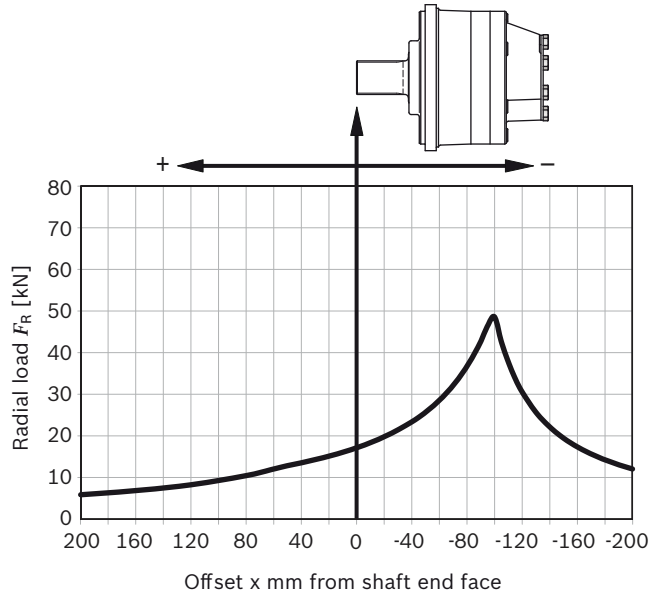
Note:

For specific performance information or operating conditions contact the Engineering Department at Bosch Rexroth, Glenrothes.

Permitted loading on drive shaft

Drive shaft ...3A A45...

Maximum radial load $F_{R \max}$ (with axial load $F_{ax} = 0$)



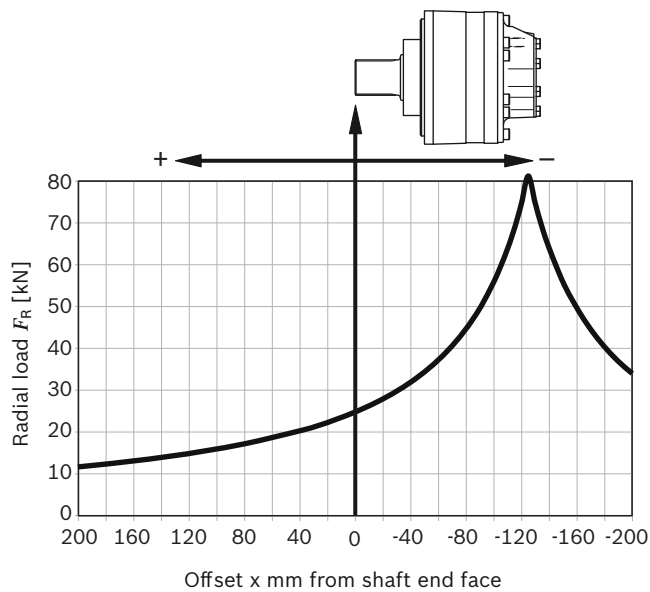
Maximum axial load $F_{ax \max}$ (with radial load $F_R = 0$):

$$F_{ax \max} = 30700 \text{ N} \leftarrow +$$

$$F_{ax \max} = 25200 \text{ N} \rightarrow -$$

Drive shaft ...5A A60...

Maximum radial load $F_{R \max}$ (with axial load $F_{ax} = 0$)



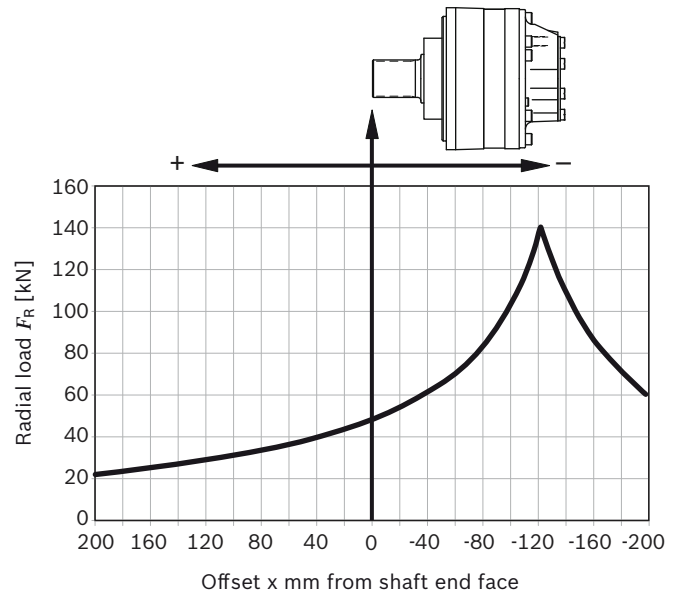
Maximum axial load $F_{ax \max}$ (with radial load $F_R = 0$):

$$F_{ax \max} = 49000 \text{ N} \leftarrow +$$

$$F_{ax \max} = 35400 \text{ N} \rightarrow -$$

Drive shaft ...10A A75...

Maximum radial load $F_{R \max}$ (with axial load $F_{ax} = 0$)



Maximum axial load $F_{ax \max}$ (with radial load $F_R = 0$):

$$F_{ax \max} = 68000 \text{ N} \leftarrow +$$

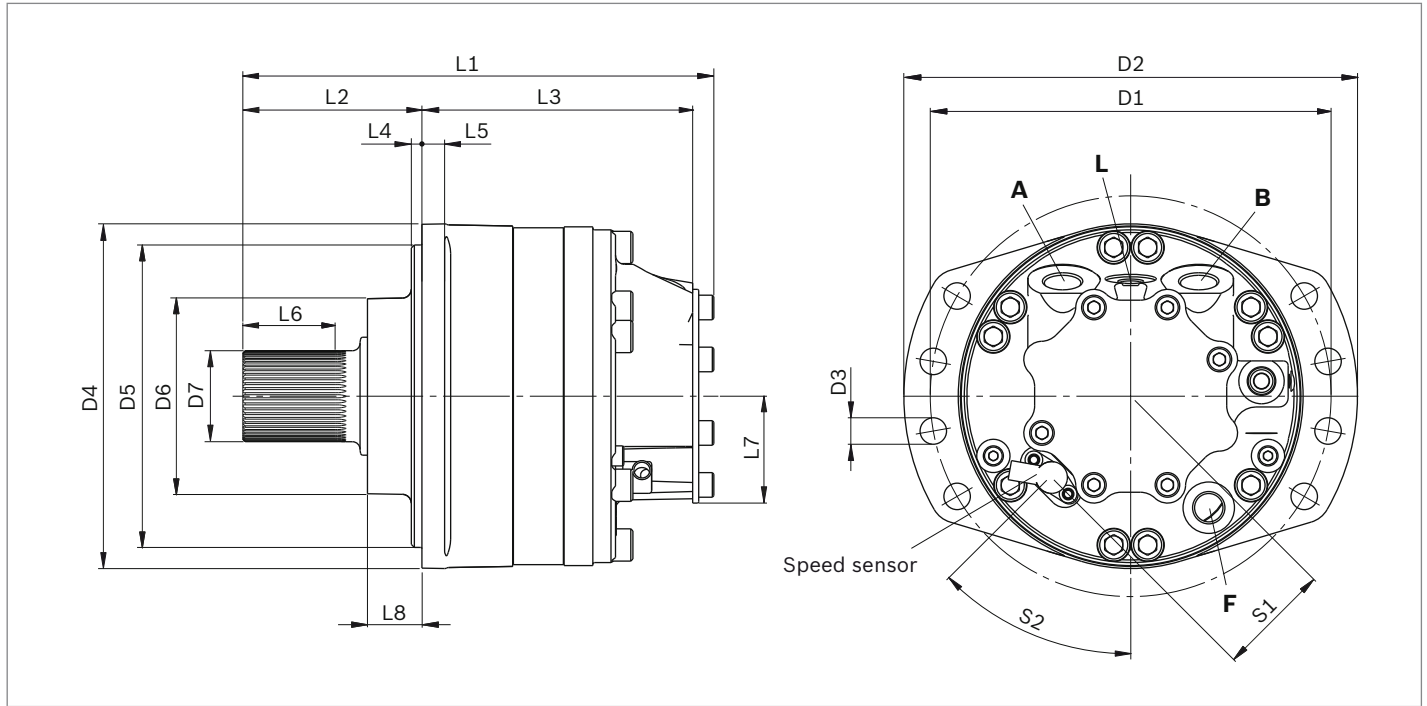
$$F_{ax \max} = 63400 \text{ N} \rightarrow -$$

Note:

- ▶ These values and graphs are for initial guidance only
- ▶ For actual motor life calculations under typical or specified duty cycles, contact Bosch Rexroth Engineering Department in Glenrothes

Dimensions

MCR-A single speed (1L)



| Motor | D1 | D2 | D3 | D4 | D5 | D6 | D7 |
|--------------|------|------|-------|------|------|------|--------|
| MCR3 | ø210 | ø237 | ø14 | ø198 | ø180 | ø100 | ø45.52 |
| MCR5 | ø265 | ø300 | ø17.5 | ø228 | ø200 | ø130 | ø60.2 |
| MCR10 | ø300 | ø335 | ø17.5 | ø264 | ø224 | ø160 | ø77.6 |

| Motor | L1 | L2 | L3 | L4 | L5 | L6 | L7 | L8 | S1 | S2 |
|--------------|--------|--------|-----|----|----|------|----|------|------|-----|
| MCR3 | 260.1 | 93 | 167 | 6 | 15 | 53.5 | 62 | 23.4 | 63.5 | 30° |
| MCR5 | 308.5 | 118.5 | 179 | 7 | 15 | 61 | 75 | 36 | 75 | 45° |
| MCR10 | 352.05 | 110.05 | 223 | 12 | 25 | 47 | 90 | 31.6 | 89 | 45° |

Ports

| Motor | Designation | Port function | Code | Size | p_{max} [bar] | State ²⁾ |
|--------------|-------------|---------------|------------------------|---------------|-----------------------|---------------------|
| MCR3 | A, B | Inlet, outlet | SAE J514 | 7/8-14 UNF | 470/420 ¹⁾ | O |
| | L | Case drain | SAE J514 | 9/16-18 UNF | 10 | O |
| | F | Filler port | SAE J514 | 3/4-16 UNF | 10 | X |
| MCR5 | A, B | Inlet, outlet | SAE J514 | 1 1/16-12 UNF | 470/420 ¹⁾ | O |
| | L | Case drain | SAE J514 | 3/4-16 UNF | 10 | O |
| | F | Filler port | SAE J514 | 3/4-16 UNF | 10 | X |
| MCR10 | A, B | Inlet, outlet | SAE J518 ³⁾ | 3/4 in | 470/420 ¹⁾ | O |
| | L | Case drain | SAE J514 | 3/4-16 UNF | 10 | O |
| | F | Filler port | SAE J514 | 3/4-16 UNF | 10 | X |

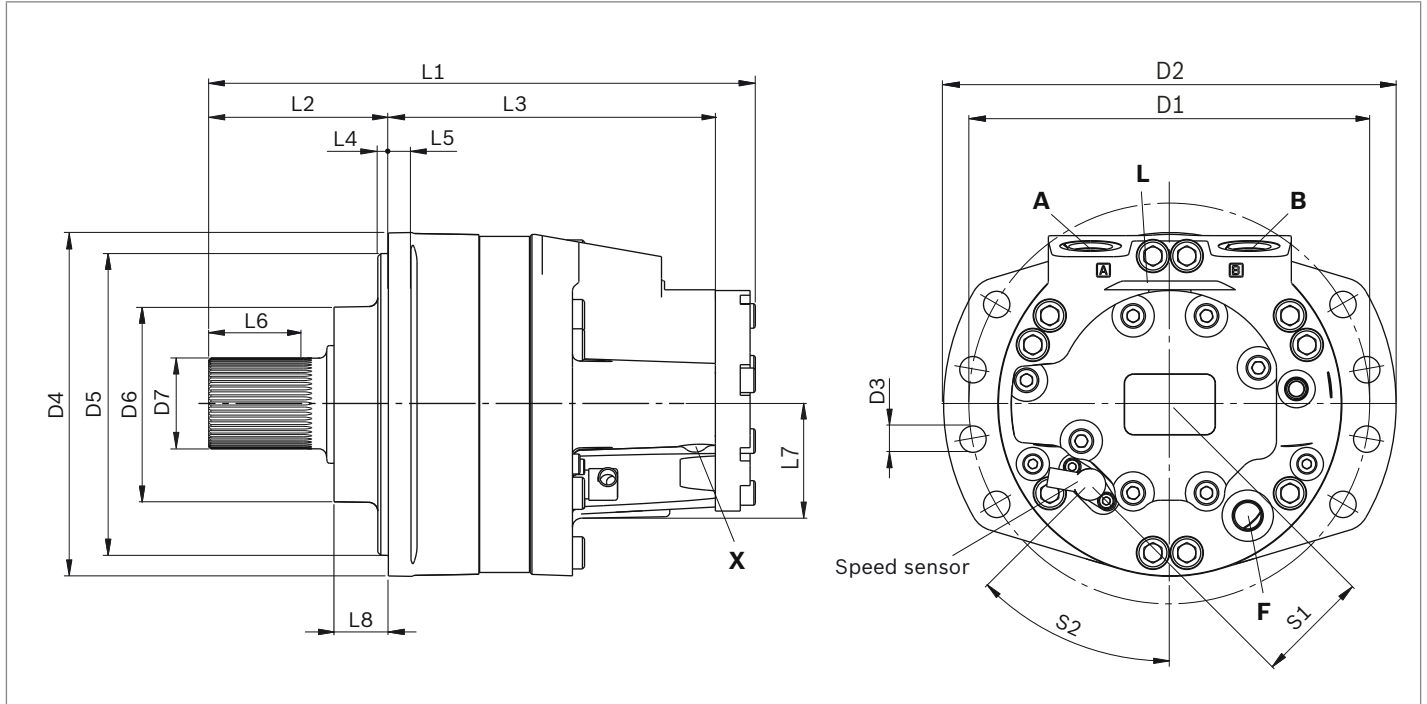
1) Depends on nominal size

2) O = Must be connected (plugged on delivery)
X = Plugged (in normal operation)

3) Only dimensions according to SAE J518
(Code 62 - high pressure series)

Before finalizing your design, request a binding installation drawing.
Dimensions in mm.

MCR-A two speed (2WL)



| Motor | D1 | D2 | D3 | D4 | D5 | D6 | D7 |
|-------------|------|------|-------|------|------|------|--------|
| MCR3 | ø210 | ø237 | ø14 | ø198 | ø180 | ø100 | ø45.52 |
| MCR5 | ø265 | ø300 | ø17.5 | ø228 | ø200 | ø130 | ø60.2 |

| Motor | L1 | L2 | L3 | L4 | L5 | L6 | L7 | L8 | S1 | S2 |
|-------------|-------|-------|-------|----|----|----|----|------|------|-----|
| MCR3 | 219.5 | 93.1 | 208.5 | 6 | 15 | 54 | 62 | 23.4 | 63.5 | 30° |
| MCR5 | 357.5 | 118.5 | 219 | 5 | 15 | 61 | 75 | 36 | 75 | 45° |

Ports

| Motor | Designation | Port function | Code | Size | p_{max} [bar] | State ²⁾ |
|-------------|-------------|---------------|----------|---------------|-----------------------|---------------------|
| MCR3 | A, B | Inlet, outlet | SAE J514 | 7/8-14 UNF | 470/420 ¹⁾ | O |
| | L | Case drain | SAE J514 | 9/16-18 UNF | 10 | O |
| | F | Filler port | SAE J514 | 3/4-16 UNF | 10 | X |
| | X | 2 speed port | SAE J514 | 9/16-18 UNF | 35 | O |
| MCR5 | A, B | Inlet, outlet | SAE J514 | 1 1/16-12 UNF | 470/420 ¹⁾ | O |
| | L | Case drain | SAE J514 | 3/4-16 UNF | 10 | O |
| | F | Filler port | SAE J514 | 3/4-16 UNF | 10 | X |
| | X | 2 speed port | SAE J514 | 9/16-18 UNF | 35 | O |

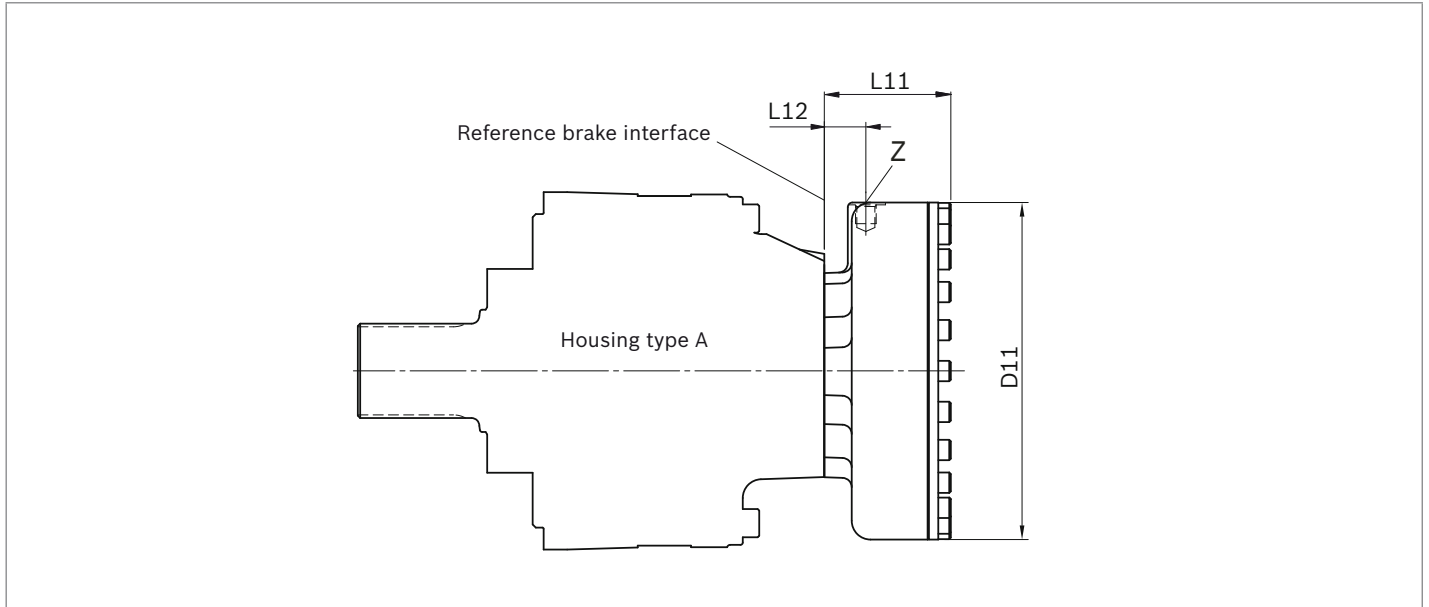
1) Depends on nominal size

2) O = Must be connected (plugged on delivery)

X = Plugged (in normal operation)

Before finalizing your design, request a binding installation drawing.
Dimensions in mm.

Holding brake (multi-disc brake)













| Motor | Brake | L11 | L12 | D11 |
|-------|-------|------|------|------|
| MCR3 | B2 | 67.3 | 22 | ø174 |
| MCR5 | B2 | 67.3 | 22 | ø174 |
| | B4 | 80.7 | 26.5 | ø215 |
| MCR10 | B5 | 84.7 | 26.5 | ø215 |
| | B7 | 97.8 | 29 | ø251 |

| Motor | Designation | Port function | Code | Size | p_{max} [bar] | State ¹⁾ |
|-------|-------------|---------------|----------|-------------|-----------------|---------------------|
| MCR3 | Z | Brake port | SAE J515 | 9/16-18 SAE | 30 | O |
| MCR5 | Z | Brake port | SAE J515 | 9/16-18 SAE | 30 | O |
| MCR10 | Z | Brake port | SAE J515 | 9/16-18 SAE | 30 | O |

1) O = Must be connected (plugged on delivery)

Before finalizing your design, request a binding installation drawing.
Dimensions in mm.

Selection guide

| Data sheet | Motor type Application | | Frame size | | | | | |
|------------|--|---|------------------|------------------|------------------|--------------------|---------------------|---------------------|
| | | | 3 160..400 cc | 5 380..820 cc | 6 820..920 cc | 10 780..1340 cc | 15 1130..2150 cc | 20 1750..3000 cc |
| 15198 | MCR-F Wheel drives |  | • | • | - | • | • | - |
| 15200 | MCR-W Heavy duty wheel drives |  | • | • | - | • | - | - |
| 15195 | MCR-A Frame integrated drives |  | • | • | - | • | - | - |
| 15199 | MCR-H Integrated drives |  | • | • | - | • | • | • |
| 15221 | MCR-T Track drives |  | - | • | • | • | - | - |
| 15223 | MCR-R Series 40 Hydraulic drive assist |  | - | - | - | • | - | - |
| 15214 | MCR-X Slew drives |  | • | • | - | - | - | - |
| 15197 | MCR-C Compact drives |  | - | - | - | - | - | • |
| 15196 | MCR-D Industrial applications |  | • | • | - | • | - | - |
| | MCR-E Industrial applications |  | - | • | - | - | - | - |

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