

**MANNESMANN  
REXROTH****External gear motor**  
**type G2, - series 4X and G3, -series 3X****RE**  
**14 040/09.97**

Replaces: 11.94

sizes 8 to 38

up to 275 bar

up to 37.6 cm<sup>3</sup>

up to 90 Nm

**Features:**

- Simple and robust design
- Start-up at low flows
- Direction of rotation optionally clockwise or anti-clockwise, with or without back pressure
- Single block bearing
- Plain bearings for high loads



Type G2 - External gear motor

**Contents:****Description**

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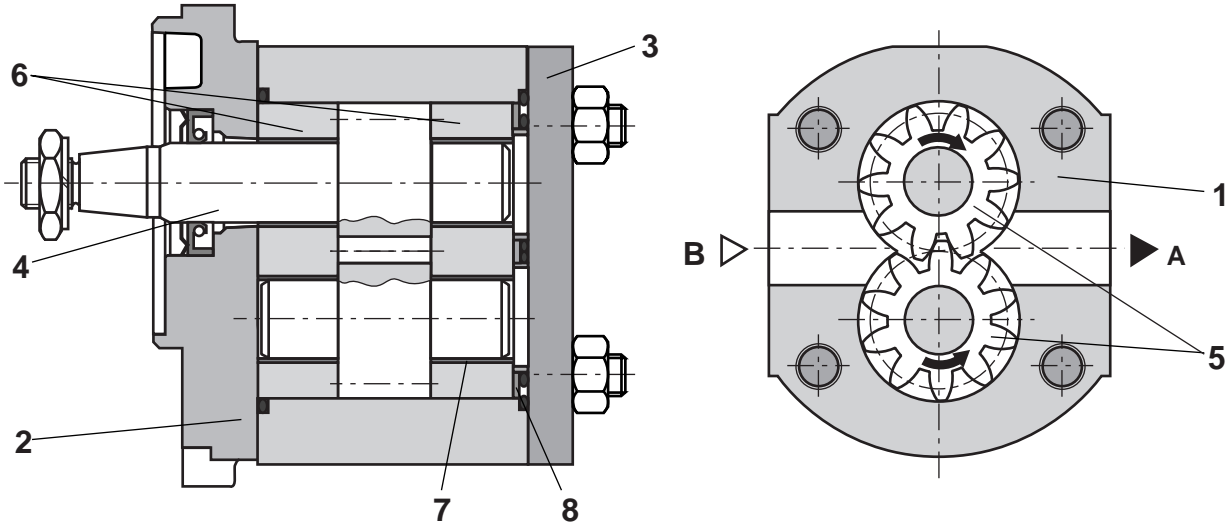


Type G3 - External gear motor with front bearing



Type G3 - External gear motor

**Section, functional description**



Hydraulic motors types G2 and G3 are gear motors with external gears.

**Design**

The gear motors basically consist of housing (1), mounting flange (2), cover (3), drive shaft (4), a pair of gears (5), bearing blocks (6), bearing bush (7) and discs (8) for the hydro-static clearance compensation.

**Drive speed**

The drive speed is dependent on the volume of the supplied flow.

**Leakage flow**

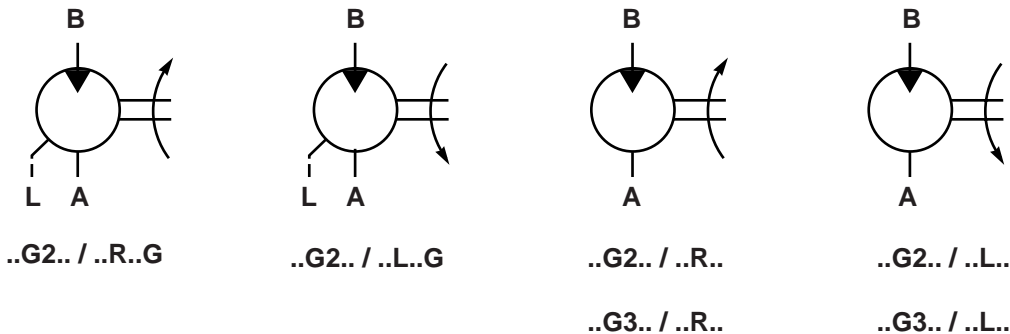
Gear motors with back pressure require a leakage port (L).

**Displacement process, torque production**

The operating medium fluid is supplied to the motor via port (B) and flow to the tank via port (A).

The transition of the hydraulic energy into mechanical energy is carried out through the transformation of the operating pressure into a torque via the effective gear surfaces. With this the pressure results from the motor resistance (load resistance). This motor resistance equals the necessary torque at the output shaft. The pressure and the volume are the deciding factors for the resulting torque value.

**Symbols**



### Ordering details G2

1 MF2	G2-4X /					M		*
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**Model**

Motor G2

= G2

Further details  
in clear text

**Series number**

Series 40 to 49 (G2)  
(40 to 49: unchanged installation  
and connection dimensions)

= 4X

**No code =** G2 clockwise  
or anti-clockwise without  
back pressure

**G =** G2 clockwise or anti-  
clockwise with  
back pressure

**Flow / nominal size (size)**

**Model G2**

8.2 cm <sup>3</sup>	= size 8	= 008
11 cm <sup>3</sup>	= size 11	= 011
14.1 cm <sup>3</sup>	= size 14	= 014
16.2 cm <sup>3</sup>	= size 16	= 016
19 cm <sup>3</sup>	= size 19	= 019
22.4 cm <sup>3</sup>	= size 22	= 022

**Mounting flange**

**Model G2**

**A =** mounting flange with front  
bearing, centering  
Ø 80 mm

**B =** mounting flange,  
centering Ø 80 mm

**Direction of rotation**

(viewed on the output shaft)

Clockwise = R

Anti-clockwise = L

**Seals**

**M =** NBR seals suitable for  
mineral oil HLP to DIN 51 524

**Line connections**

**Model G2**

**20 =** square flange, metric  
fixing threads

**Shaft end**

**Model G2**

Conical shaft end 1:5 Ø 17 with M12x1.5 = C

Conical shaft end 1:5 Ø 20  
(only with front bearing ... A...)  
with M14x1.5 = S

### Ordering details G3

1 MF2	G3-3X /					M		*
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**Model**

Motor G3

= G3

Further details  
in clear text

**Series number**

Series 30 to 39 (G3)  
(30 to 39: unchanged installation  
and connection dimensions)

= 3X

**Mounting flange**

**Model G3**

**A =** mounting flange with  
front bearing, centering  
Ø 80 mm

**S =** mounting flange,  
centering Ø 80 mm

**Flow / nominal size (size)**

**Model G3**

20.9 cm <sup>3</sup>	= size 20	= 020
23.4 cm <sup>3</sup>	= size 23	= 023
25.9 cm <sup>3</sup>	= size 26	= 026
30.1 cm <sup>3</sup>	= size 29	= 029
32.6 cm <sup>3</sup>	= size 32	= 032
37.6 cm <sup>3</sup>	= size 38	= 038

**Seals**

**M =** NBR seals suitable for  
mineral oil to HLP nach DIN 51 524

**Line connections**

**Model G3**

**07 =** SAE connection flange

**Direction of rotation**

(viewed on the output shaft)

Clockwise = R

Anti-clockwise = L

**Shaft end**

**Model G3**

**A =** cylindrical shaft end - Ø 18 mm  
**C =** conical shaft end 1:5 Ø 20 with M14 x 1.5  
(not for motor with front bearing)

**Technical data** (for applications outside these parameters, please consult us!)**General**

Description	gear motor, with external gears													
Type description	G2 and G3													
Mounting style	flange													
Line connections	flanges													
Installation	optional													
Shaft loading	see pages 10 and 12													
Direction of rotation	clockwise, anti-clockwise (viewed on the output shaft)													
Model	<b>G2</b>							<b>G3</b>						
Nominal size	size	<b>8</b>	<b>11</b>	<b>14</b>	<b>16</b>	<b>19</b>	<b>22</b>	<b>20</b>	<b>23</b>	<b>26</b>	<b>29</b>	<b>32</b>	<b>38</b>	
Flow	$V$ cm <sup>3</sup>	8.2	11	14.1	16.2	19	22.4	20.9	23.4	25.9	30.1	32.6	37.6	
Continuous torque	$T$ Nm	28.5	38.8	51	49.5	49	49.3	76	86	83.5	88	82	86	
Output drive speed														
– drive speed min.	$n$ min <sup>-1</sup>	500	500	500	500	500	500	500	500	500	500	500	500	
– drive speed max.	$n$ min <sup>-1</sup>	4000	4000	3500	3000	3000	2500	3600	3200	2900	3900	3600	3100	
Output power ( $n_{max}$ )														
– continuous output	$P$ KW	11.3	15.8	18	15	14.2	12.3	32.3	32.5	29.5	41	35.5	32	
Weight without front bearing	$m$ Kg	2.7	2.8	2.9	3	3.2	3.4	4	4	4	4.4	4.4	4.4	
Weight with front bearing	$m$ Kg	3.7	3.8	3.9	4	4.2	4.4	7	7	7	7.4	7.4	7.4	

**Hydraulic**

Input pressure													
– cont. 1) max.	$p$ bar	250	250	250	210	175	150	260	260	260	240	220	210
– peak pressure 2)	$p$ bar	275	275	275	250	200	200	275	275	275	260	240	240
Return pressure	clockwise or anti-clockwise without back pressure	2 bar						2 bar					
	clockwise or anti-clockwise with back pressure	input pressure											
Max. leakage fluid pressure	$p_{max}$ bar	2											
Pressure fluid		HLP mineral oil to DIN 51 524 please take the specifications stated in our catalogue sheet RE 07 075 into account											
Pressure fluid temperature range	$\vartheta$ °C	–20 to +80											
Viscosity range	$\nu$ mm <sup>2</sup> /s	10 to 1000											
Degree of contamination		maximum permissible degree of contamination of the pressure fluid is to NAS 1638 class 10. We, therefore, recommend a filter with a minimum retention rate of $\beta_{20} \geq 100$ . To ensure a long service life we recommend class 9, attainable with filter $\beta_{10} \geq 100$ .											

1) Cont. = continuous operation.

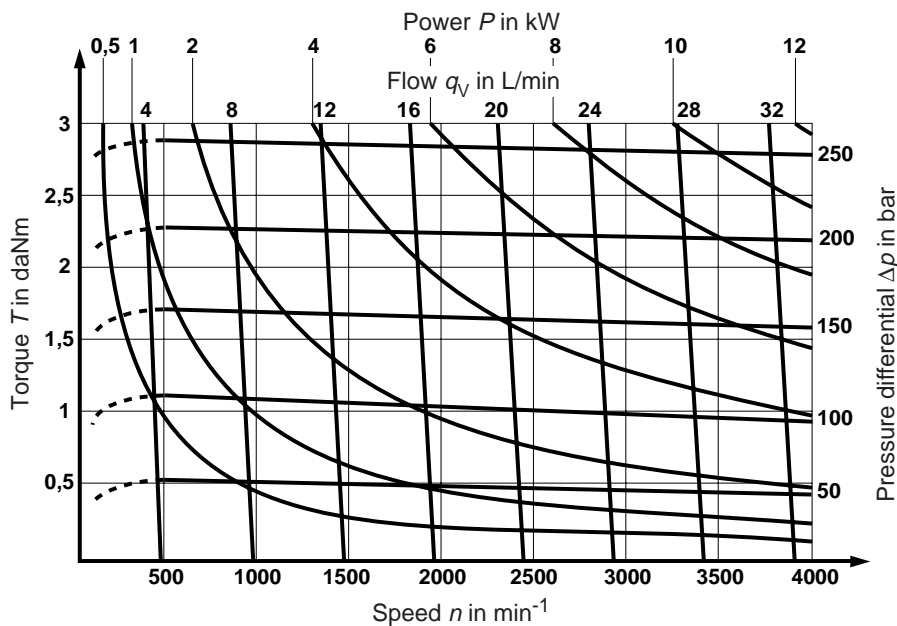
2) Peak pressure at  $5 \times 10^5$  switch-on pressure peaks.

For higher values please consult us!

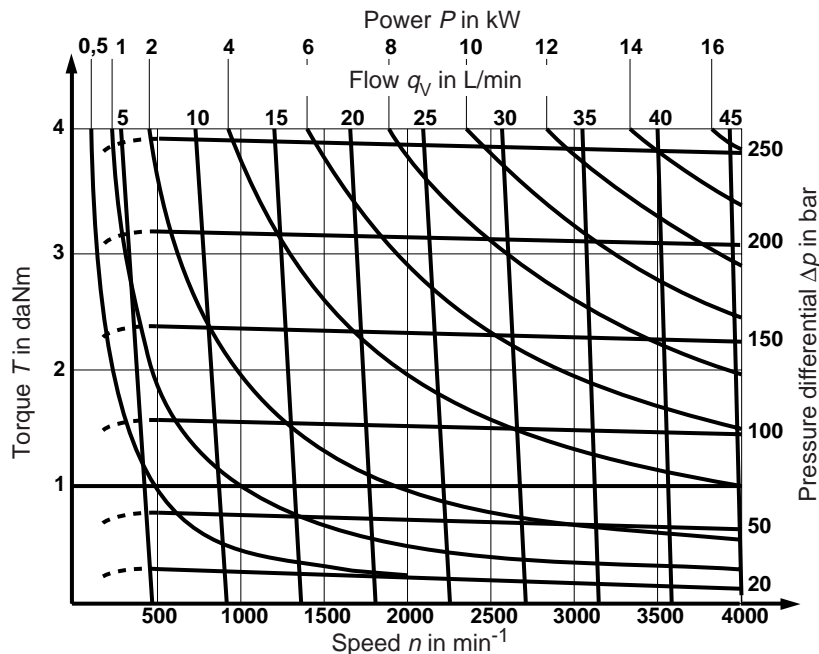
**Characteristic curves (average values) measured at  $v = 36 \text{ mm}^2/\text{s}$ ;  $\vartheta = 50 \text{ }^\circ\text{C}$**

**Model G2**

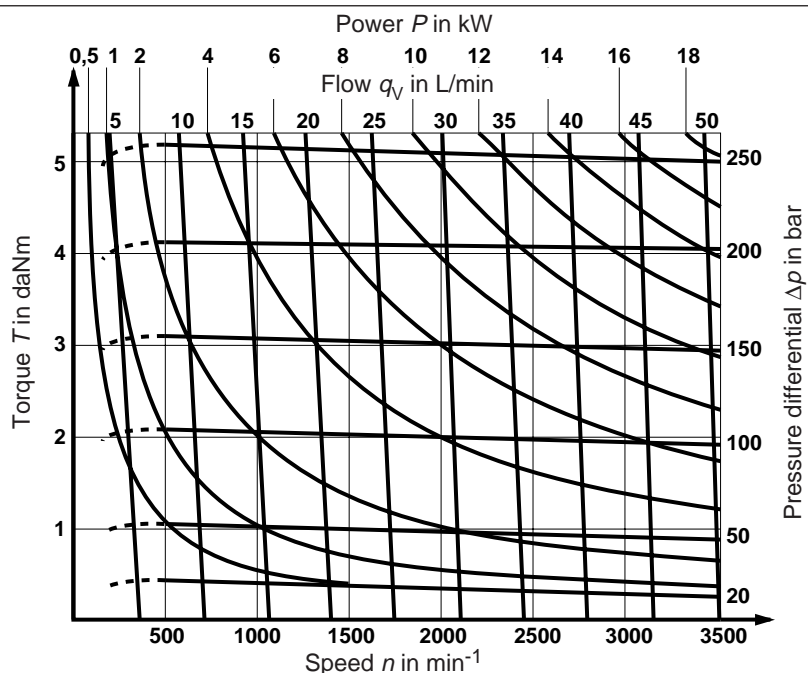
**Size 8**



**Size 11**



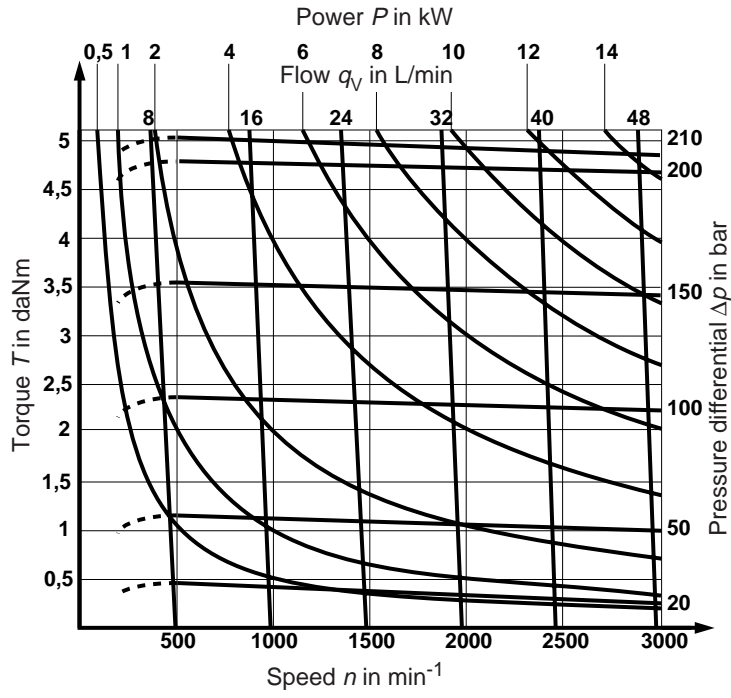
**Size 14**



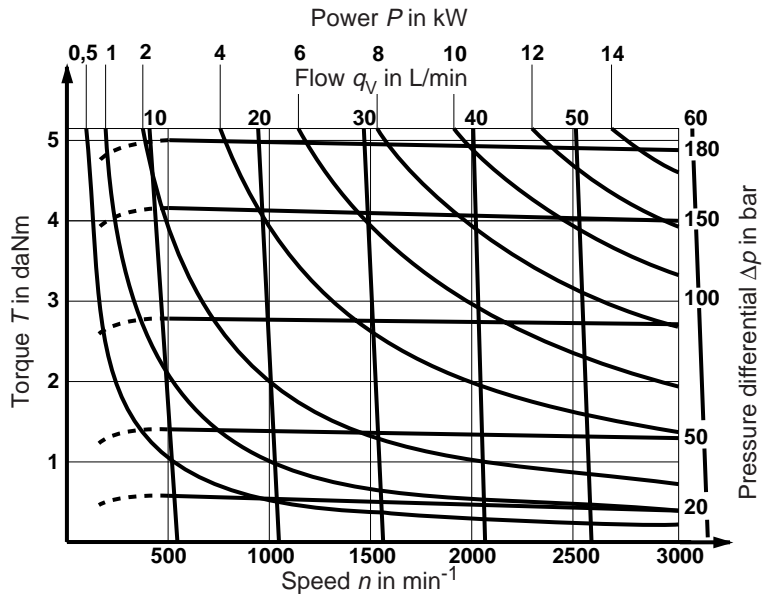
**Characteristic curves (average values) measured at  $v = 36 \text{ mm}^2/\text{s}$ ;  $\vartheta = 50 \text{ }^\circ\text{C}$**

**Model G2**

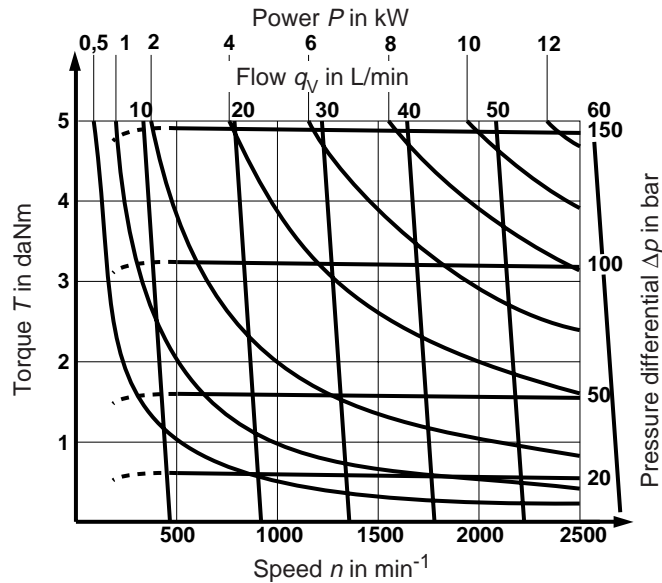
**Size 16**



**Size 19**



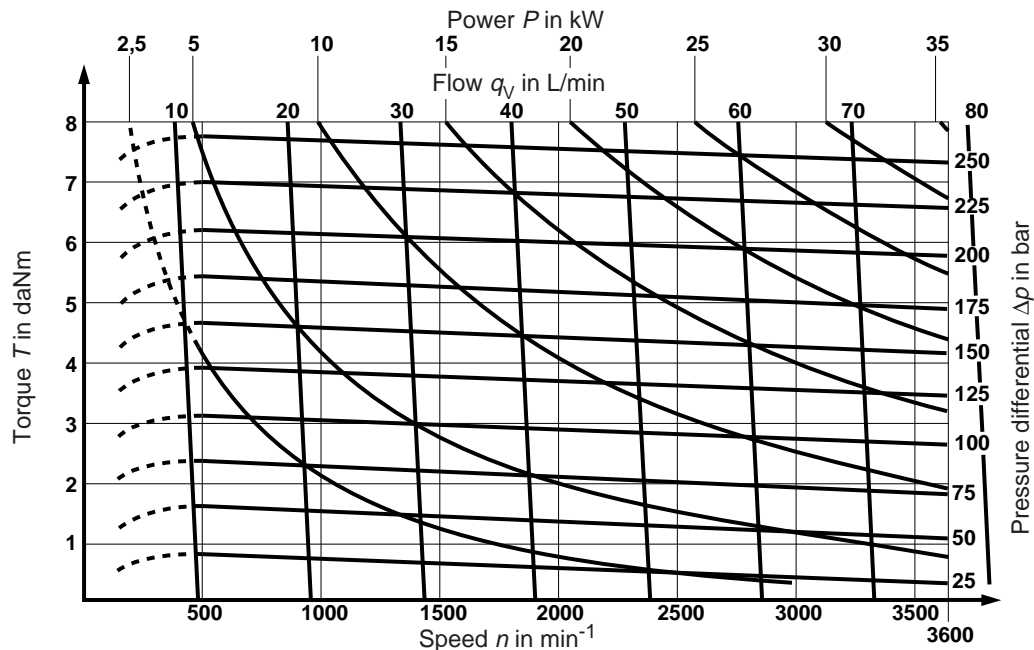
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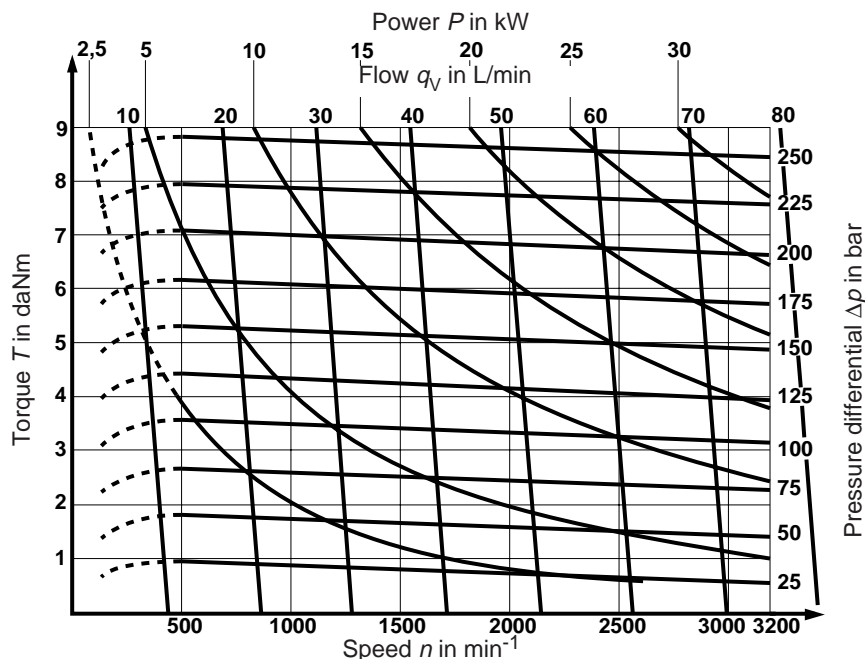
Characteristic curves (average values) measured at  $v = 36 \text{ mm}^2/\text{s}$ ;  $\vartheta = 50 \text{ }^\circ\text{C}$

**Model G3**

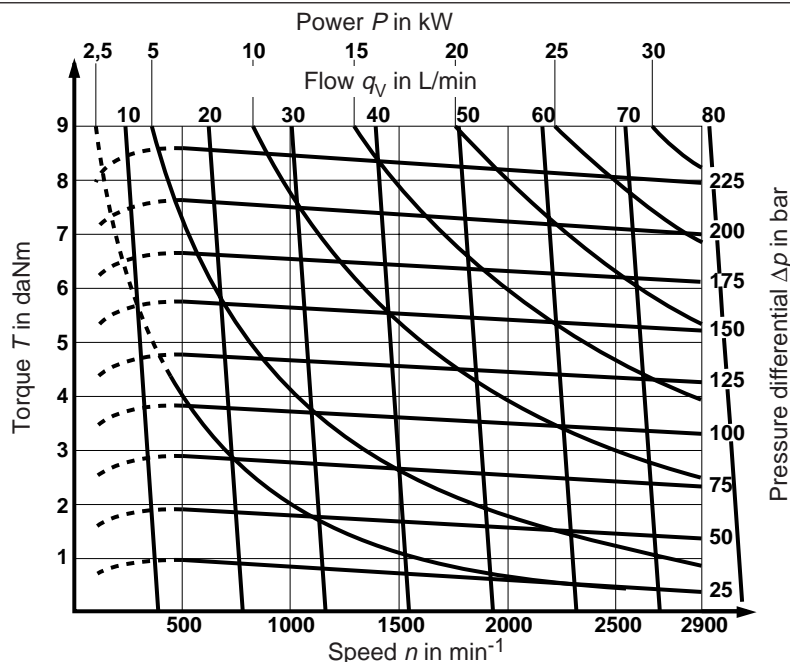
**Size 020**



**Size 023**



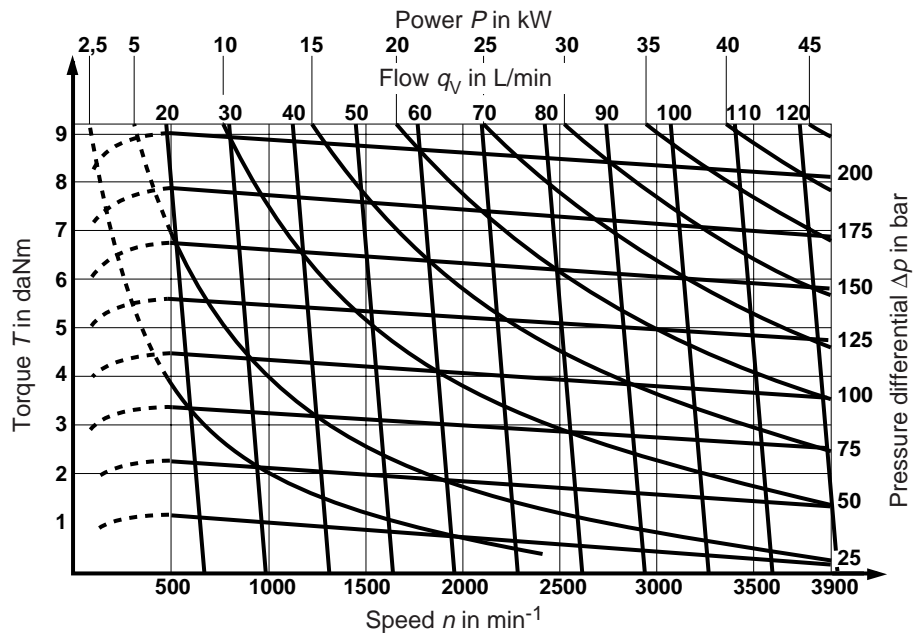
**Size 026**



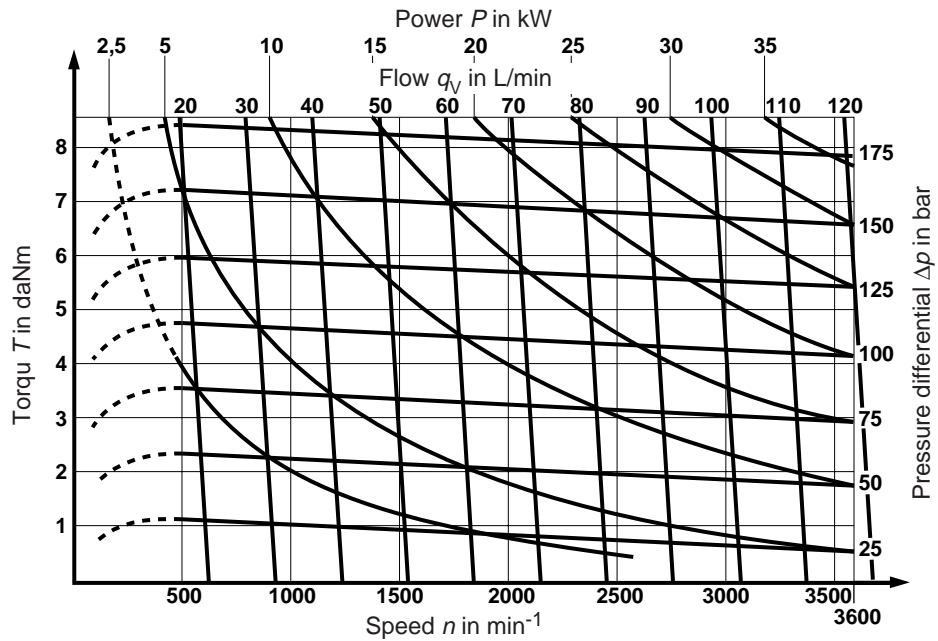
**Characteristic curves (average values) measured at  $v = 36 \text{ mm}^2/\text{s}$ ;  $\vartheta = 50 \text{ }^\circ\text{C}$**

**Model G3**

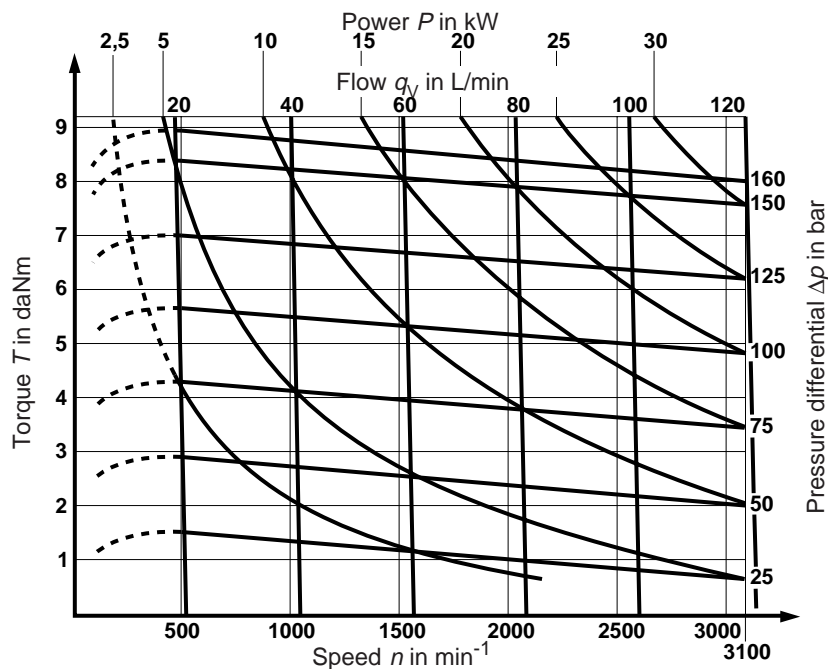
**Size 029**



**Size 032**



**Size 038**



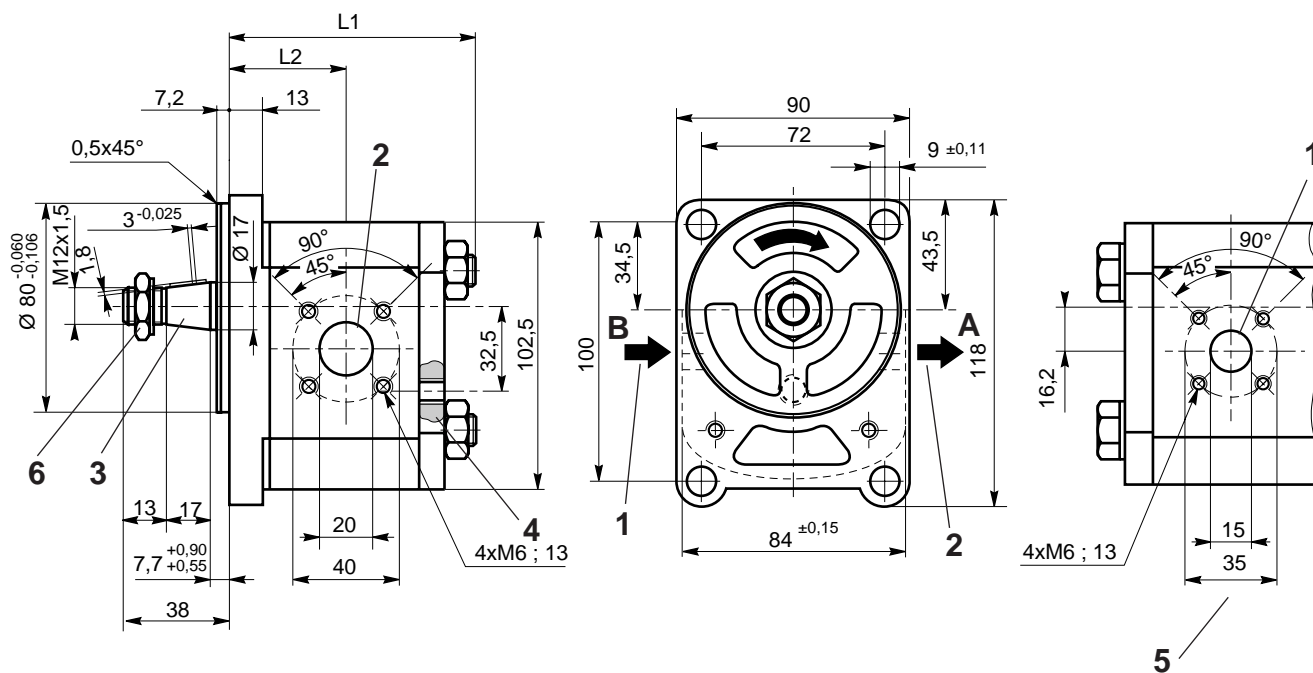


**Unit dimensions: type G2**

(Dimensions in mm)

**1MF2G2-4X/...RC20MB (G)**

\* Illustrated is a motor with clockwise rotation (viewed on the output shaft) for a motor with anti-clockwise rotation the inlet and outlet are reversed!



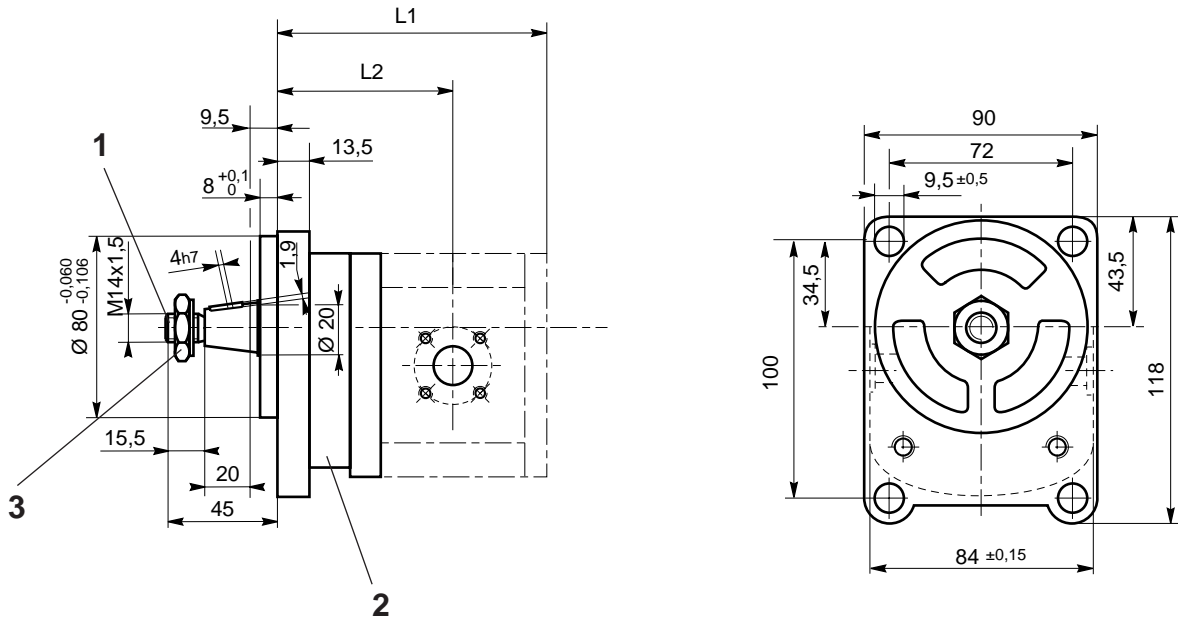
- 1 Inlet
- 2 Outlet
- 3 Output shaft  
Cone 1:5, ordering detail ...C...
- 4 Leakage port G 1/4, only for motor with back pressure, ordering detail **G**
- 5 Motor with back pressure:  
inlet and outlet are the same
- 6 Tightening torque  $70^{+10}_0$  Nm

Dim. \ Size	8	11	14	16	19	22
L1	98	98	103	108	113	118
L2	45.3	47.3	49.5	49	51	55.5

Unit dimensions: type G2

(Maßangaben in mm)

Front bearing - ordering detail : 1MF2G2-4X / ...  $\frac{R}{L}$  S20MA

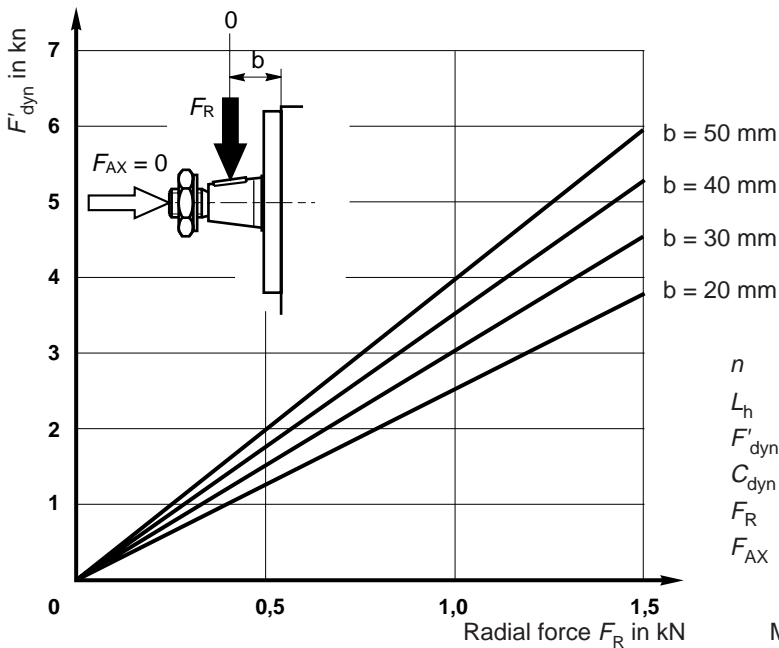


- 1 Output shaft, cone 1:5 Ø 20  
ordering detail ... S ...
- 2 Front bearing  
ordering detail ... A ...
- 3 Tightening torque 70<sup>+10</sup><sub>0</sub> Nm

Dim. \ Size	8	11	14	16	19	22
L1	127.5	127.5	132.5	137.5	142.5	147.5
L2	74.8	77	79	78.5	80.5	85

Front bearing, theoretical bearing service life

1MF2G2-4X/...  $\frac{R}{L}$  S20MA



$$L_h = \frac{10^6}{n \cdot 60} \left( \frac{C_{dyn}}{F'_{dyn}} \right)^3 \text{ in hours}$$

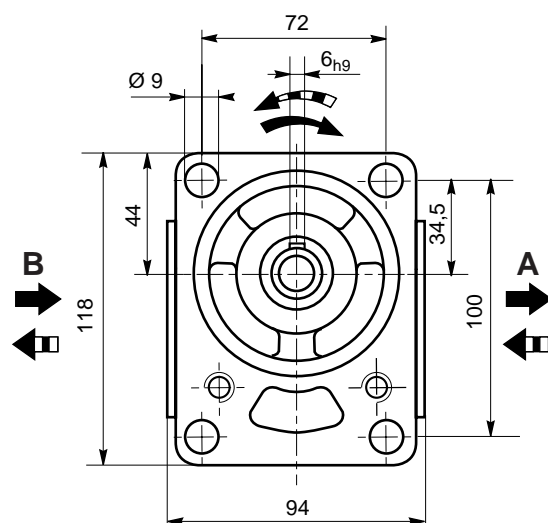
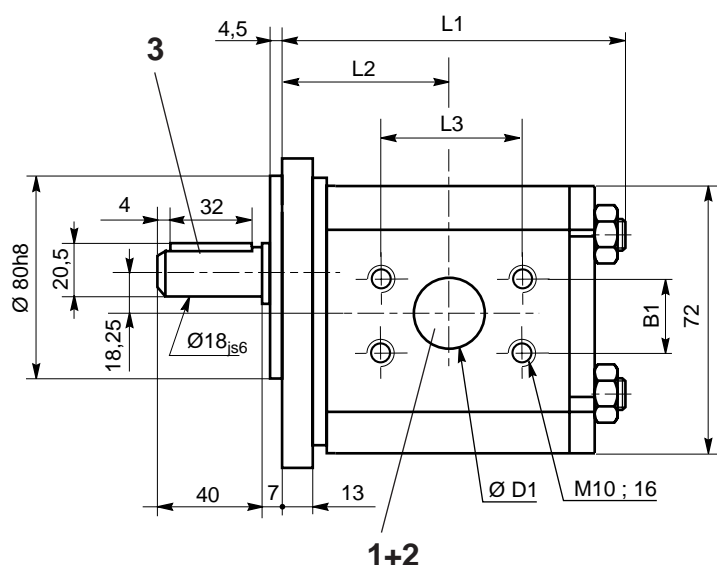
- $n$  = Speed  $n$  in  $\text{min}^{-1}$
- $L_h$  = theoretical bearing service life  $L_h$  in h
- $F'_{dyn}$  = dynamic equivalent load  $F'_{dyn}$  in KN
- $C_{dyn}$  = dynamic load capacity 19.3 kN
- $F_R$  = radial force
- $F_{AX}$  = axial force

Max. permissible torque at shaft end with front bearing :  $T_{max} = 70 \text{ mN}$

**Unit dimensions: type G3**

(Dimensions in mm)

**1MF2G3-3X/...<sup>R</sup><sub>L</sub> A07MS**

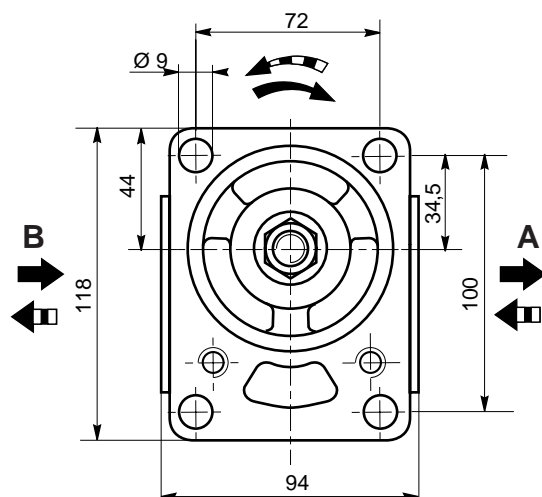
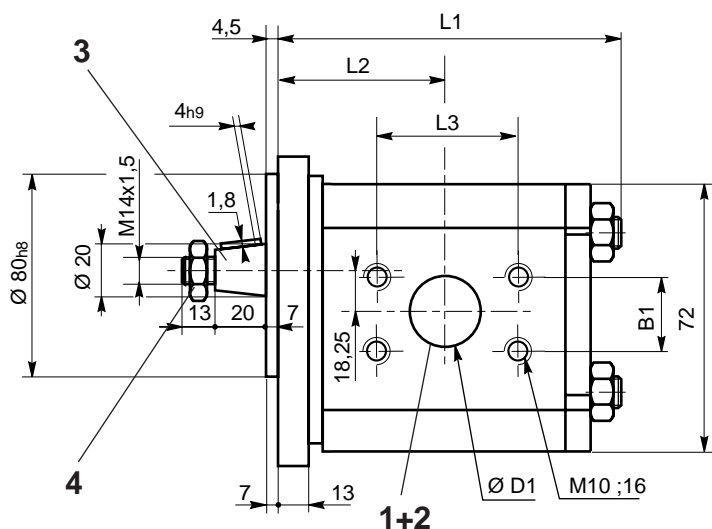


**1+2** Inlet or outlet  
SAE connection flange

**3** Output shaft,  
cylindrical,  
ordering detail ... A ...

Nominal size	B1	Ø D1	L1	L2	L3	Connection flange
20 ; 23 ; 26	26.2	25.4	128.5	61.5	52.5	SAE 1"
29 ; 32 ; 38	30.2	31.75	143.5	68.5	58.8	SAE 1 1/4"

**1MF2G3-3X/...<sup>R</sup><sub>L</sub> C07MS**



**1+2** Inlet or outlet  
SAE connection flange

**3** Output shaft, conical  
cone 1 : 5  
ordering detail ... C ...

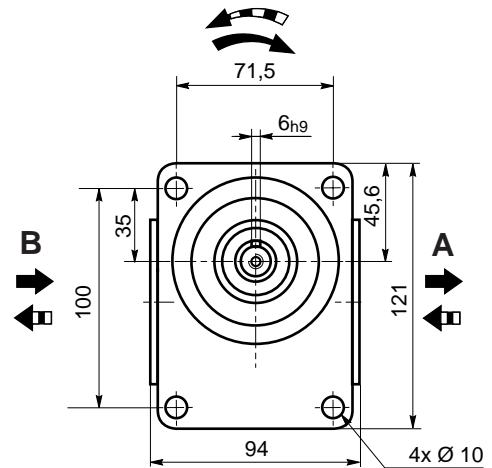
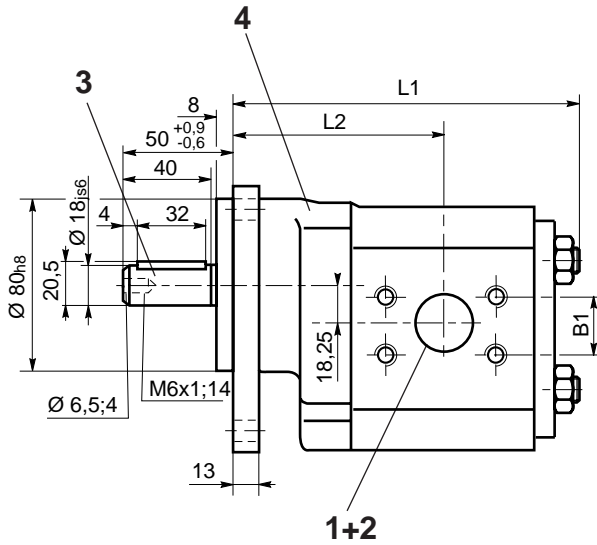
**4** Tightening torque 70<sup>+10</sup><sub>0</sub> Nm

Nominal size	B1	Ø D1	L1	L2	L3	Connection flange
20 ; 23 ; 26	26.2	25.4	128.5	61.5	52.5	SAE 1"
29 ; 32 ; 38	30.2	31.75	143.5	68.5	58.8	SAE 1 1/4"

**Unit dimensions: type G3 with front bearing**

(Dimensions in mm)

1MF2G3-3X/...<sup>R</sup>A07MA  
L

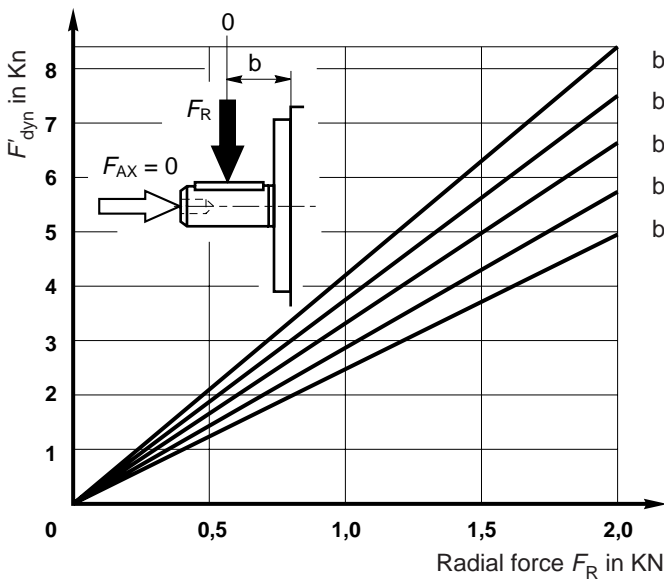


- 1+2 inlet or output SAE connection flange
- 3 Output shaft cylindrical ordering detail ... A ...
- 4 Front bearing ordering detail ... A ...

Nominal size	B1	$\varnothing D1$	L1	L2	L3	Connection flange
20 ; 23 ; 26	26.2	25.4	181	114	52.5	SAE 1"
29 ; 32 ; 38	30.2	31.75	196	121	58.8	SAE 1"1/4

**Front bearing, theoretical bearing service life**

1MF2G3-3X/...<sup>R</sup>A07MA  
L



- $b = 60$  mm
- $b = 50$  mm
- $b = 40$  mm
- $b = 30$  mm
- $b = 20$  mm

$$L_h = \frac{10^6}{n \cdot 60} \left( \frac{C_{dyn}}{F'_{dyn}} \right)^3$$

- $n$  = speed in  $\text{min}^{-1}$
- $L_h$  = theoretical bearing service life in h
- $C_{dyn}$  = dynamic load capacity 29.4 kN
- $F_R$  = radial force
- $F_{AX}$  = axial force

Max. permissible torque at shaft end:  
- cylindrical shaft  $\varnothing 18$  mm = A:  $T_{max} = 80$  Nm



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