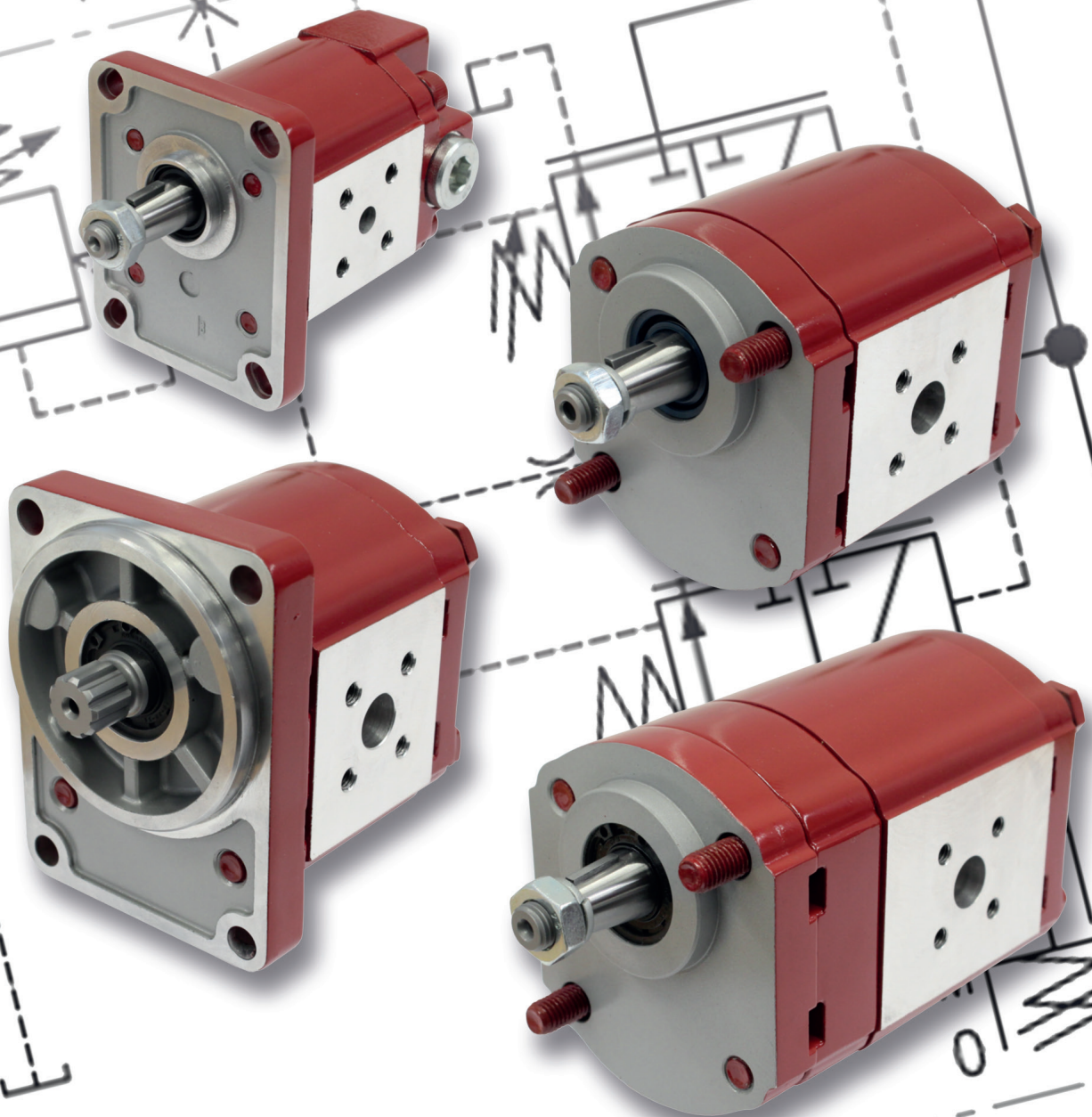


Motor specifications



1. GENERAL INFORMATION

1.1 HYDRAULIC FLUID

	Designation	Standard	Properties	Basic chemical composition	Recommended seal material
Standard hydraulic fluid	HL	DIN 51524 ISO 6743	Improved corrosion protection and anti-oxidation properties	Mineral oil (petroleum-based oil)	NBR FPM
	HLP (HM)		HL + wear protection additives		
	HV (HVLP)		HLP + improved viscosity properties		
	HLPD	–	HLP + detergent and dispersant additives		
Fire resistant fluid	HFA	ISO 6743	Fire resistant, corrosive, reduced nominal pressure and component service life	Oil in water emulsion Water content > 80 %	NBR
	HFC		Improved viscosity properties, environmentally friendly, reduced nominal pressure and component service life	Water-based solutions (water glycols) Water content > 35 %	NBR HNBR AU EU
	HFD		Standard pressure range, increased temperature range, potentially toxic	Water-free synthetic fluids - R: phosphate ester - U: polyolester POE	NBR FPM EPDM
Environmentally-friendly fluid	HETG		Small temperature range Risk of hydrolysis and gumming	Vegetable oil based (triglyceride, rapeseed oil)	NBR FPM AU EU
	HEES	ISO 6743	Good temperature properties, good lubrication and anti-corrosion properties, dissolvable in mineral oil, good ageing resistance	Saturated or unsaturated synthetic fluid based on polyolester POE	NBR FPM AU
	HEPG		Good ageing resistance and lubrication properties, incompatible with mineral oil, polyurethane seals, standard paints and coatings and Plexiglas, problematic water and foaming properties	Polyglycol-based synthetic fluids	NBR FPM
	HEPR		Good ageing resistance and lubrication properties, wide temperature range	Based on polyalphaolefin	

1.2 SEAL MATERIAL

NBR	Nitrile butadiene rubber
HNBR	Hydrogenated nitrile butadiene rubber
FPM (ISO) FKM (ASTM)	Fluorinated propylene monomer rubber
EPDM	Ethylene propylene diene (monomer) rubber
AU	Polyester urethane rubber
EU	Polyester urethane rubber

1.3 FILTRATION

1.3.1 ISO 4406 (International Organisation for Standardisation)

ISO Code	Particles per 100 ml	
	from	to
24	8000000	16000000
23	4000000	8000000
22	2000000	4000000
21	1000000	2000000
20	500000	1000000
19	250000	500000
18	130000	250000
17	64000	130000
16	32000	64000
15	16000	32000
14	8000	16000
13	4000	8000
12	2000	4000
11	1000	2000
10	500	1000
9	250	500
8	130	250
7	64	130
6	32	64

1.3.2 Recommended cleanliness classes for systems and components

Type of system/Area of application/Components	Recommended cleanliness class >4 µm(c) / >6 µm(c) / >14 µm(c)
Systems with servo hydraulics sensitive to fine contamination	15/13/10
Industrial hydraulics ● Proportional technology ● High pressure systems	17/15/12
Industrial and mobile hydraulics ● Solenoid control valve technology ● Medium pressure and low pressure systems	18/15/12 19/16/14
Industrial and mobile hydraulics with low requirement for wear protection	20/18/15
Forced-feed circulatory lubrication on transmissions	18/16/13
New oil	21/19/16
Pumps/motors ● Axial piston pump ● Radial piston pump ● Gear pump ● Vane pump	18/16/13 19/17/13 20/18/15 19/17/14
Valves ● Directional valves ● Pressure valves ● Flow control valves ● Check valves ● Proportional valves ● Servo valves	20/18/15 19/17/14 19/17/14 20/18/15 18/16/13 16/14/11
Cylinders	20/18/15

1.4 FORMULAS

Input flow

$$Q = \frac{V_g * n}{1000 * \eta_{vol}}$$

Q [l/min] input flow
 V_g [cm³/rev] geometrical displacement
 n [rpm] drive speed of pump
 η_{vol} volum. efficiency

Output torque

$$M = \frac{\Delta p * V_g * \eta_{mh}}{20 * \pi}$$

M [Nm] Output torque
 Δp [bar] Moment (drive torque)
 η_{mh} Mech.-hydr. efficiency

Output power

$$P = \frac{Q * \Delta p * \eta_{tot}}{600}$$

P [kW] Output power
 η_{tot} Overall efficiency ($\eta_{vol} * \eta_{mh}$)

INTRODUCTION

With over 8,000 employees worldwide, HYDAC is one of the leading suppliers of fluid technology, hydraulic and electronic equipment.

HYDAC is your expert partner for the supply of all major types of hydraulic pumps.

Designed with application-oriented engineering, developed and fabricated in product-oriented laboratories, testing and production facilities for use in mobile and stationary machines and systems.

With over 45 overseas companies and more than 500 sales and service partners, HYDAC is your reliable partner worldwide.



Germany - Headquarters



HYDAC Drive Center

CONTENTS

PAGE

1.	GENERAL INFORMATION	2
2.	EXTERNAL GEAR MOTORS	
2.1	Introduction	5–6
2.2	Size 1	MGE101 7–18
2.3	Size 2	MGE102 19–32
2.4	Installation instructions	33–38

Note:
In addition to our regional technical sales departments, HYDAC Drive Center is able to provide advice on all hydraulic pump and drive queries.

External gear motors for hydraulic systems

2. EXTERNAL GEAR MOTORS

2.1 SIZE 1

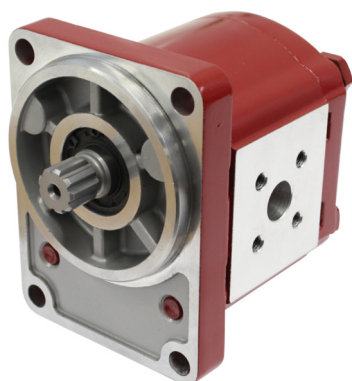
MGE101



Series	Geometrical displacement [cm³/rev]	Operating pressure			Maximum drive speed [rpm]
		Nominal pressure [bar]	Inter-mittent pressure [bar]	Peak pressure [bar]	
MGE101-100	1.07	260	280	290	4000
MGE101-150	1.60				
MGE101-200	2.13				
MGE101-250	2.67				
MGE101-315	3.34	250	270	280	4000
MGE101-400	4.27				
MGE101-500	5.34				
MGE101-630	6.67	230	250	260	3500
MGE101-800	8.51	180	200	210	

2.2 SIZE 2

MGE102



Series	Geometrical displacement [cm³/rev]	Operating pressure			Maximum drive speed [rpm]
		Nominal pressure [bar]	Inter-mittent pressure [bar]	Peak pressure [bar]	
MGE102-400	4.95	250	280	300	4000
MGE102-630	6.61				3500
MGE102-800	8.26				
MGE102-1050	10.90				
MGE102-1120	11.20	200	220	240	3000
MGE102-1400	14.53				
MGE102-1600	16.85				
MGE102-1900	19.09				
MGE102-2000	21.14	170	190	210	2500
MGE102-2500	26.42				
MGE102-2780	28.21				



2.1 SIZE 1 CONTENTS

Ordering Code

2.1.1 External gear motor

Technical Information

2.1.2 Specifications
2.1.3 Hydraulic fluids
2.1.4 Viscosity range
2.1.5 Temperature range
2.1.6 Seals
2.1.7 Filtration
2.1.8 Installation notes

Dimensions

2.1.9 Output shafts
2.1.10 Mounting flange
2.1.11 Ports
2.1.12 Drain port
2.1.13 Housing dimensions
2.1.14 Performance

ORDERING CODE

2.1.1 External gear motor

MGE101 – 250 – R B Q 1 – N – XXXX		
External gear motor		
Size 1		
Displacement		
100	1.07	cm³/rev
150	1.60	cm³/rev
200	2.13	cm³/rev
250	2.67	cm³/rev
315	3.34	cm³/rev
400	4.27	cm³/rev
500	5.34	cm³/rev
630	6.67	cm³/rev
800	8.51	cm³/rev
Direction of rotation (seen from end of shaft)		
R	clockwise	
L	anti-clockwise	
B	bidirectional, eccentric drain port	
Shaft		
B	tapered key shaft 1:8	
Z	special shaft (only on request)	
Mounting flange		
Q	square flange centring 25.4 mm	
Z	special flange (only on request)	
Ports		
1	pipe thread ISO 228-1	
3	thread UN 2B SAE O-ring boss	
5	square flange DIN 3901/ ISO 8435	
9	special design (only on request)	
Seals		
N	NBR (standard)	
V	FPM	
Modification number		
XXXX	Determined by manufacturer	
Not all combinations in the ordering code are possible. Special types possible on request		

TECHNICAL INFORMATION

2.1.2 Specifications

Motor size			100	150	200	250	315	400	500	630	800
Geometrical displacement		[cm³/rev]	1.07	1.60	2.13	2.67	3.34	4.27	5.34	6.67	8.51
Pressure	Nominal pressure P1	[bar]	260					250		230	180
	Intermittent pressure P2		280					270		250	200
	Peak pressure P3		290					280		260	210
Shaft speed	min.	[rpm]	650								
	max.		4000						3500		
Approx. weight		[kg]	1.0	1.0	1.0	1.0	1.1	1.1	1.2	1.3	1.3

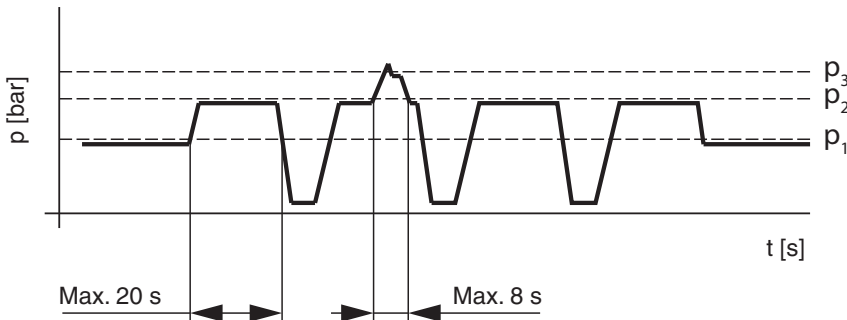
The values given in the table apply for motors with one direction of rotation!
For motors with two directions of rotation, the pressure is 15% less in each case!

Pressure in drain line maximum 5 bar

Pressure motor output
 P_1 nominal pressure (constant) max. 5 bar
 P_2 intermittent pressure (20 s) max. 8 bar
 P_3 peak pressure (8 s) max 15 bar

Pressure motor output reversible $<P_1 < 150$ bar

Pressure definition



2.1.3 Hydraulic fluids

HL Hydraulic oil
(normal mineral oil)
and

HLP Hydraulic oils of the R&O type
(rust and oxidation inhibitor)

2.1.4 Viscosity range

Normal viscosity

12–100 cSt (mm²/s)

Permitted viscosity (after previous test)
up to 750 cSt (mm²/s)

2.1.5 Temperature range

Ambient temperature range

-22 to 55 °C

Fluid temperature range

NBR

-25 to 80 °C

Viton

-25 to 110 °C

2.1.6 Seals

The motor series is equipped with NBR seals.

For use with special fluids, the sealing material may need to be changed. For further information, please contact HYDAC.

2.1.7 Filtration

For maximum service life of the motor and system components, the system should be protected from contamination by effective filtration. The contamination level should be within

21/ 18/ 15 to ISO 4406:1999

or

Class 9 to NAS 1638 or cleaner.

At system pressures above 160 bar cleanliness class:

19/17/14 to ISO 4406:1999

or

Class 8 to NAS 1638 is required.

2.1.8 Installation notes

A. Mounting

The motor can be installed horizontally or vertically with the shaft pointing upwards.

B. Output pressure

The output pressure for motors with no drain line must not exceed the max. permitted pressure of the shaft seal.

Standard: max. 5 bar

For higher pressures, the shaft seal must be exchanged. For further information, please contact HYDAC.

The output pressure for motors with a drain line must not exceed the nominal input pressure (max. 150 bar).

C. Input pressure

See TECHNICAL INFORMATION

D. Output

Use a flexible coupling whenever possible. There must not be any radial or axial forces on the shaft. The maximum permitted misalignment of the shafts is 0.2 mm and the angular deviation must be less than 0.2°.

For indirect outputs (with gear, chain or belt drives) please consult HYDAC.

E. Drain port

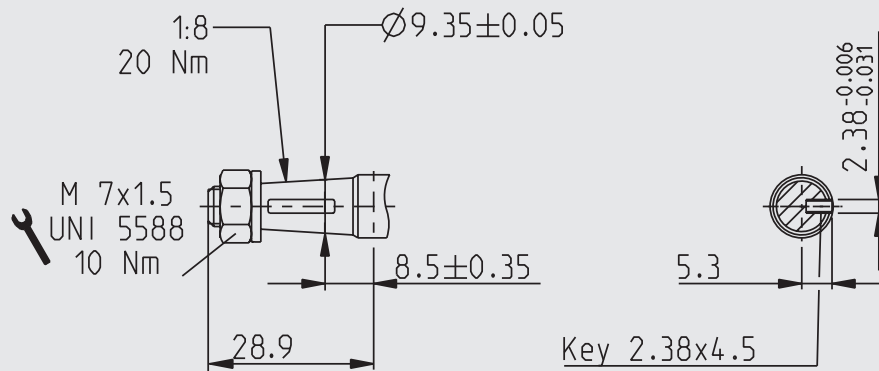
It must be ensured that the pressure in the drain port does not exceed 5 bar.

DIMENSIONS

2.1.9 Output shafts

B

Tapered keyed
shaft 1:8



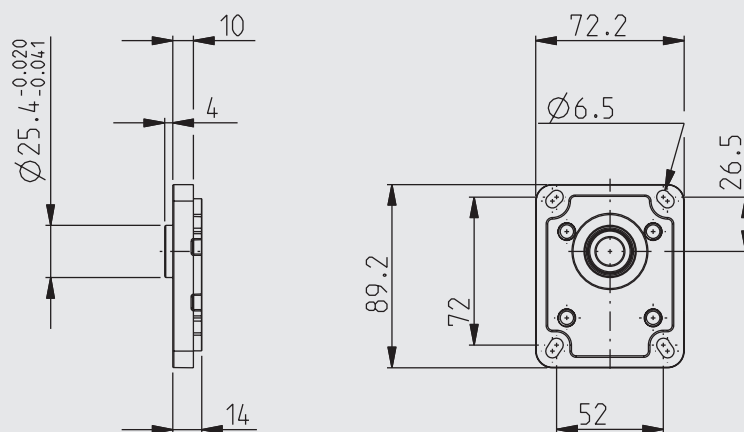
relevant mounting
flange

Q

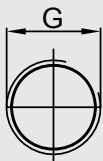
2.1.10 Mounting flange

Q

Square flange
centering $\varnothing 25.4$ mm

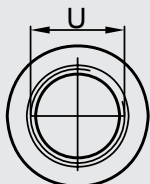


2.1.11 Ports



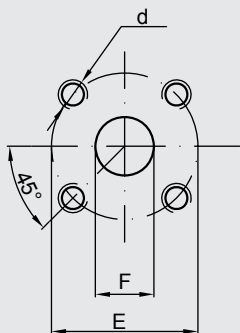
1 Pipe thread ISO 228/1

Ordering code	Displacement	Input G	Output G
1	1 to 4 cm ³	G 3/8	G 3/8
	5 to 8 cm ³	G 1/2	G 1/2



3 Pipe thread UN 2B SAE O-ring boss

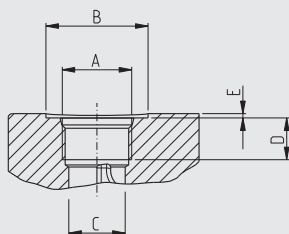
Ordering code	Displacement	Input U	Output U
3	1 to 6.3 cm ³	3/4-16 UNF-2B	9/16-18 UNF-2B
	8.0 cm ³	7/8-14 UNF-2B	3/4 16 UNF-2B



5 Square flange DIN 3901/ ISO 8435

Ordering code	Displacement	Input			Output		
		F	E	d	F	E	d
5	1 to 8.0 cm ³	13	30	M6	8	30	M6

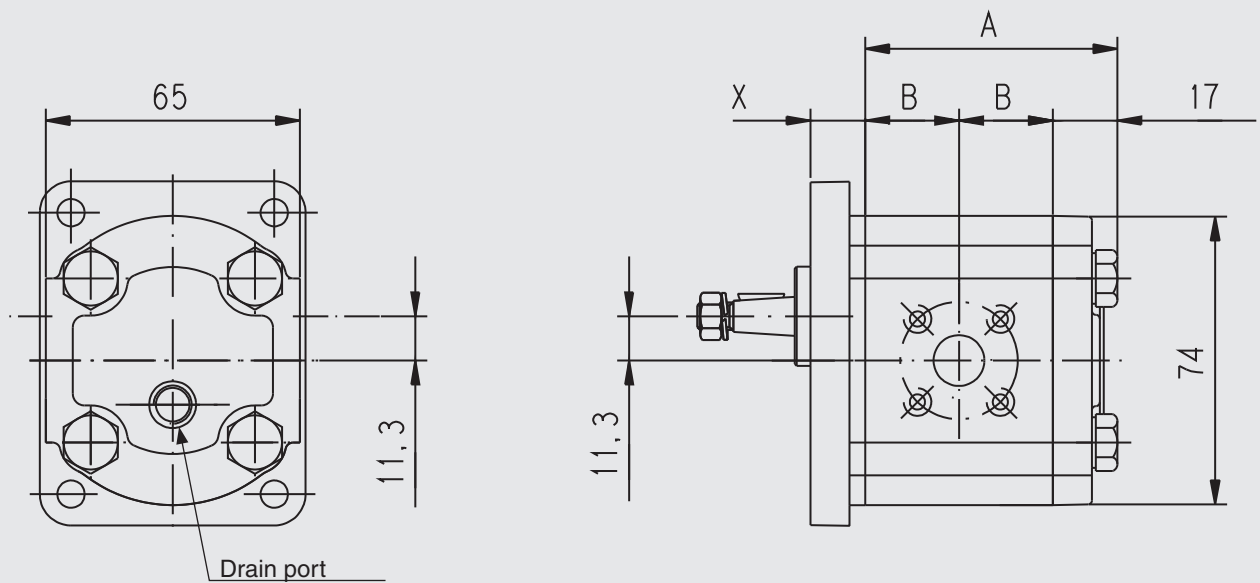
2.1.12 Drain port



Pipe thread, metric ISO6149

Displacement					
	A	ØB	ØC	D	E
1.0 to 8.0 cm ³	M10	22	9	13	0.5

2.1.13 Housing dimensions



Type	Displacement [cm³/rev]	Flow		Nominal pressure [bar]	Max. speed n [rpm]	Dimension		
		at 1500 rpm [l/min]	at max. rpm [l/min]			A [mm]	B [mm]	X [mm]
MGE101-100-. BQ5-N	1.07	1.50	4.0	260	4000	52.2	17.6	14
MGE101-150-. BQ5-N	1.60	2.30	6.0			53.8	18.4	14
MGE101-200-. BQ5-N	2.13	3.00	8.0			55.4	19.2	14
MGE101-250-. BQ5-N	2.67	3.80	10.0			57.0	20.0	14
MGE101-315-. BQ5-N	3.34	4.40	11.8			59.0	21.0	14
MGE101-400-. BQ5-N	4.27	6.00	16.1	250	3500	61.8	22.4	14
MGE101-500-. BQ5-N	5.34	7.50	20.1			65.0	24.0	14
MGE101-630-. BQ5-N	6.67	9.40	21.9	230		69.0	26.0	14
MGE101-800-. BQ5-N	8.51	12.00	28.0	180		74.5	28.75	14

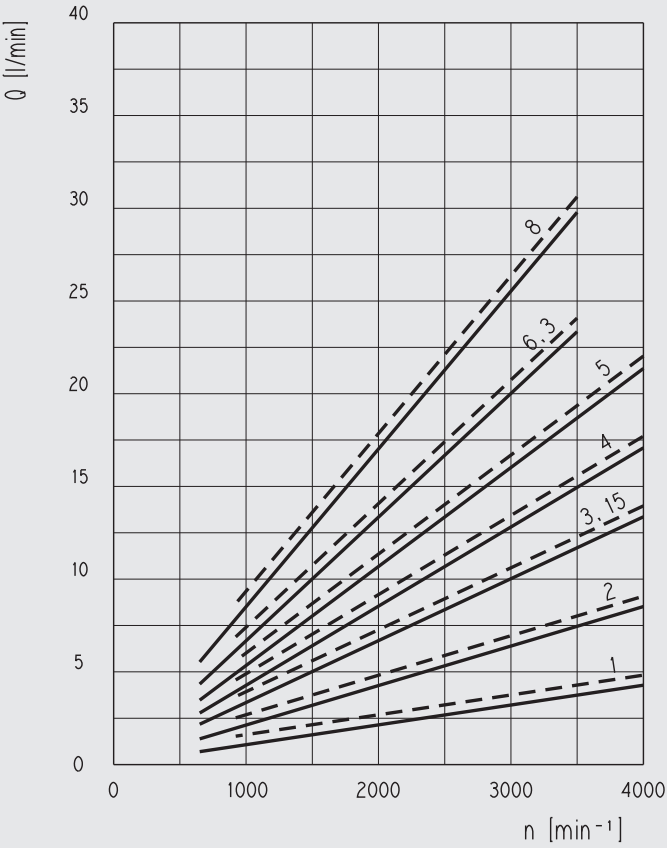
PERFORMANCE

2.1.14 MGE101

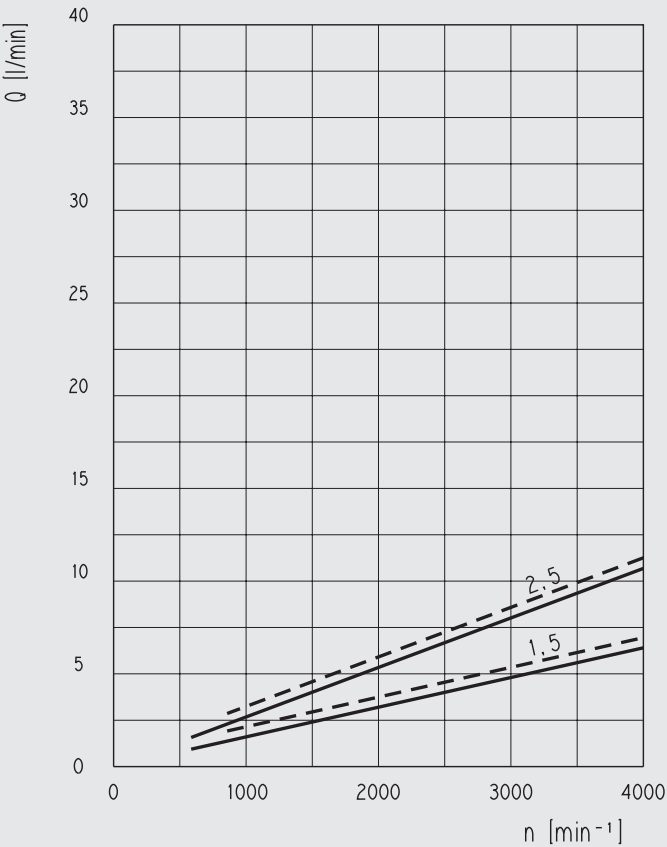
Motor characteristics

The following graphs show how flow varies with speed for group 1 motors. The curves were measured at a temperature of 50 °C. A hydraulic oil with a viscosity of 36 cSt and temperature of 40 °C was used for the pressures given in the table.

Input flow



Type	Pressure [bar]	
MGE101-100	_____	20
	— —	260
MGE101-200	_____	20
	— —	260
MGE101-315	_____	20
	— —	260
MGE101-400	_____	20
	— —	250
MGE101-500	_____	20
	— —	250
MGE101-630	_____	20
	— —	230
MGE101-800	_____	20
	— —	180

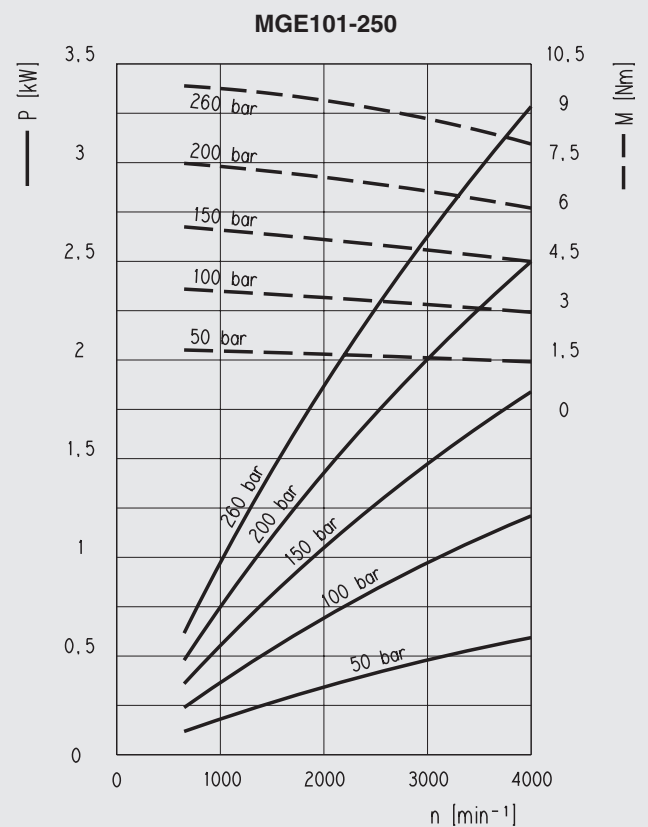
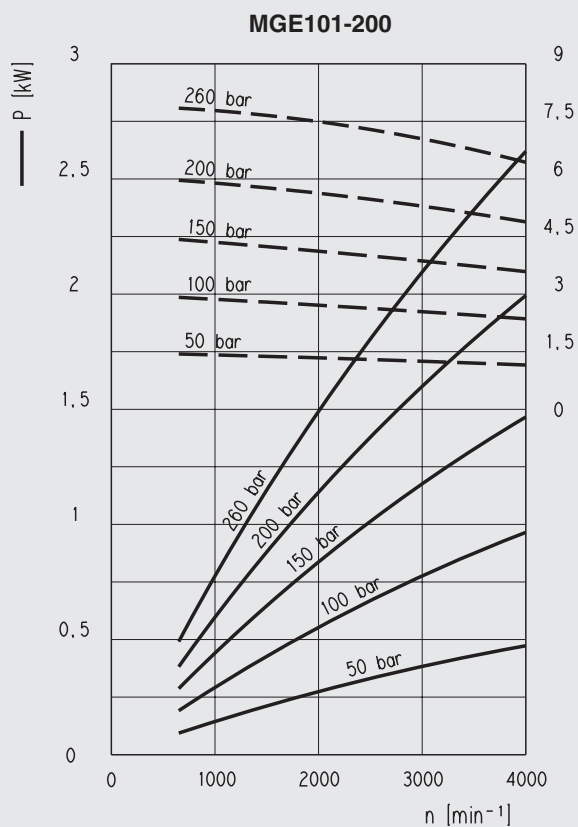
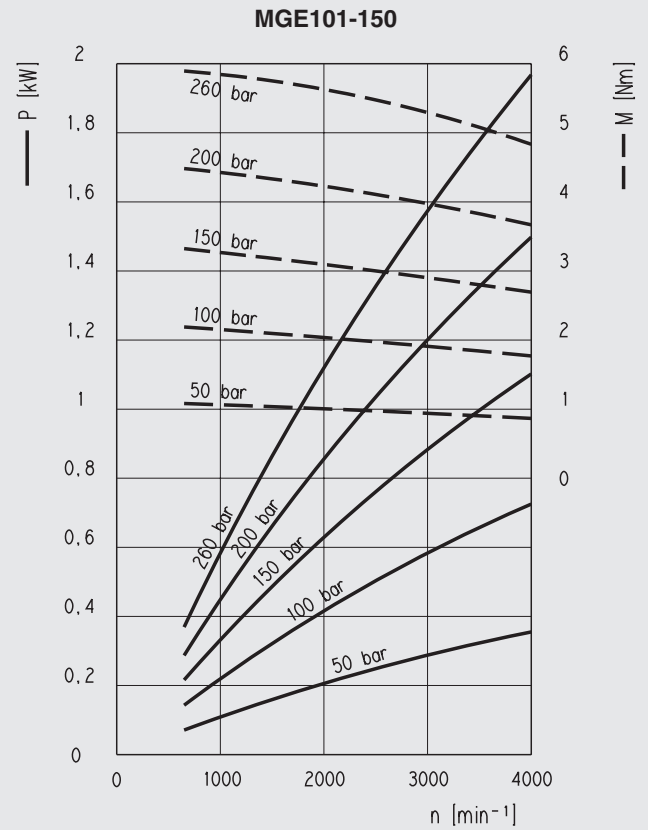
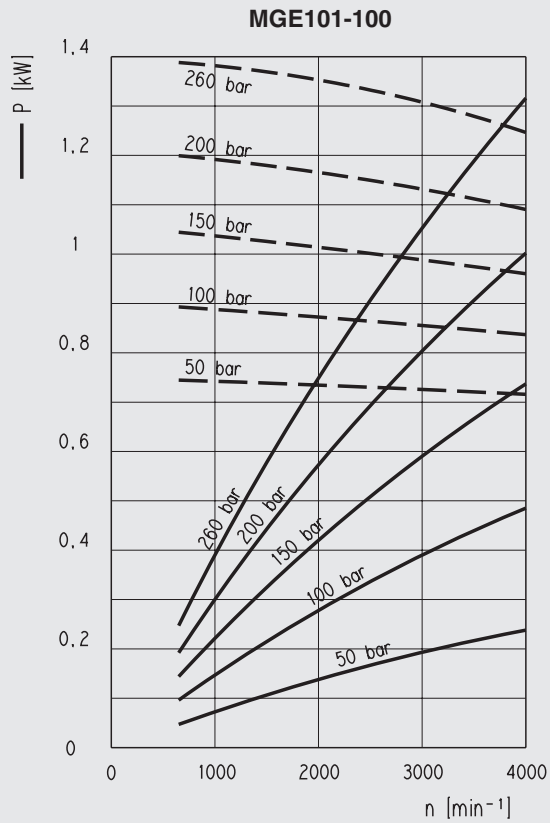


Type	Pressure [bar]	
MGE101-150	_____	20
	— —	260
MGE101-250	_____	20
	— —	260

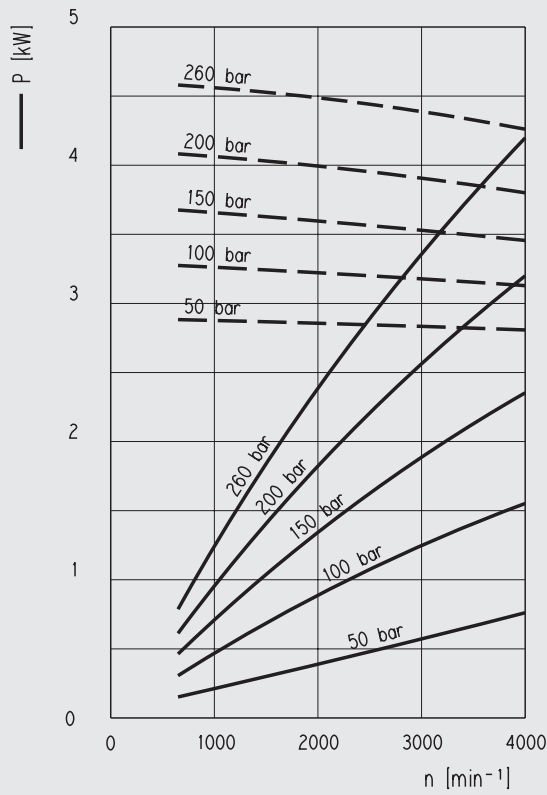
Motor characteristics

The following graphs show how performance and output torque vary with speed for group 1 motors at various operating pressures.

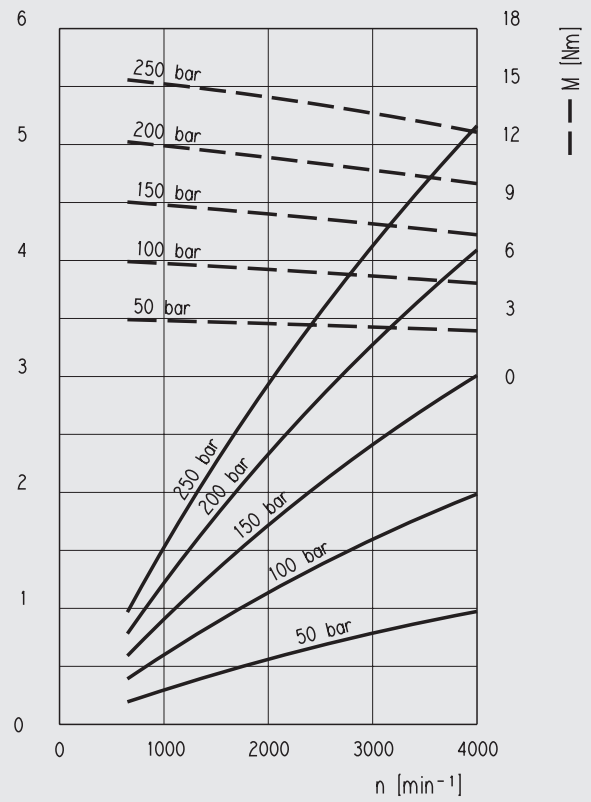
Output power



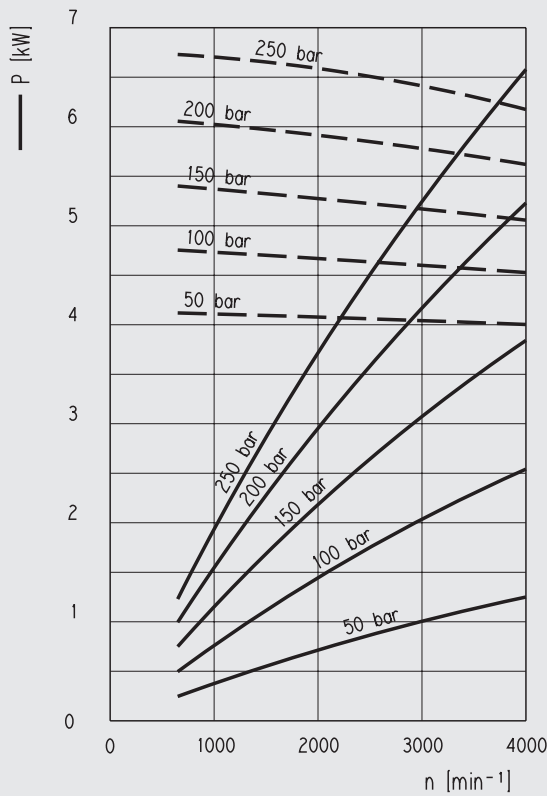
MGE101-315



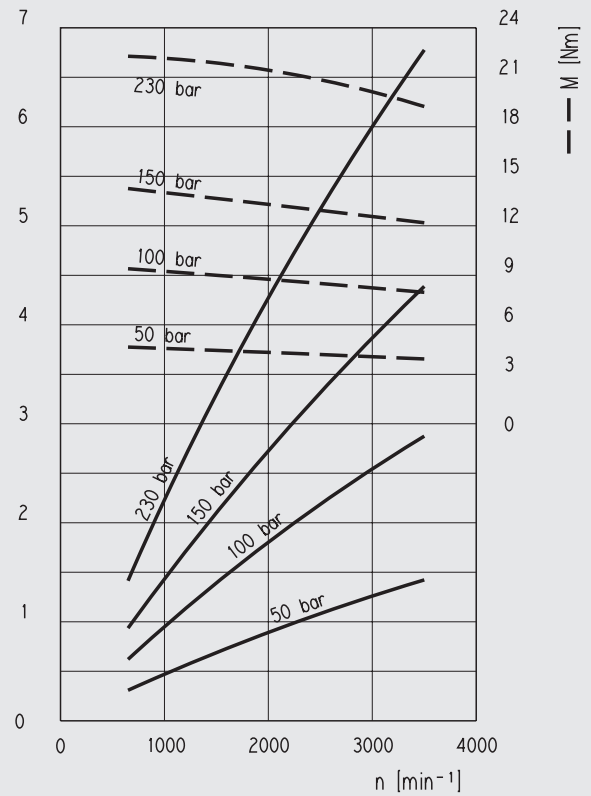
MGE101-400

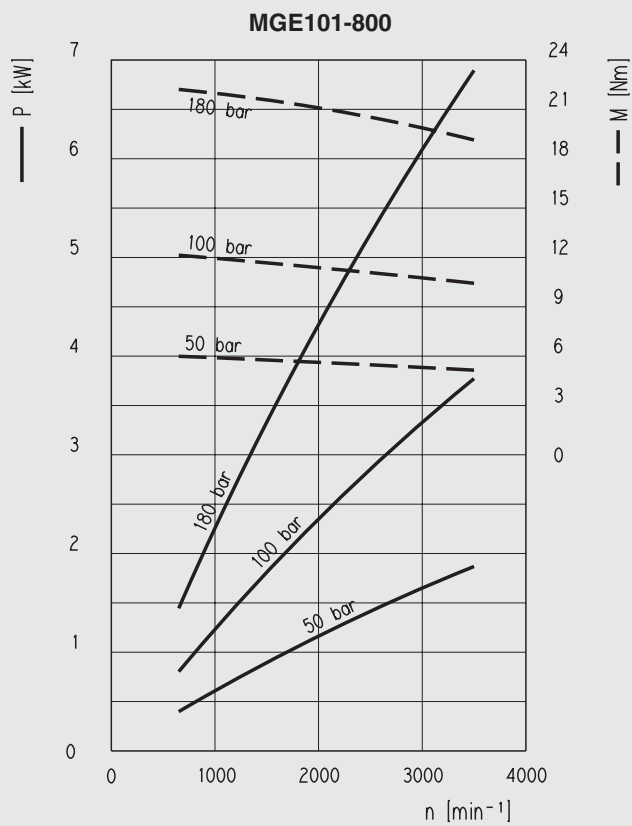


MGE101-500



MGE101-630







2.2 SIZE 2

CONTENTS

Ordering Code	2.2.1 External gear motor
Technical Information	2.2.2 Specifications 2.2.3 Hydraulic fluids 2.2.4 Viscosity range 2.2.5 Temperature range 2.2.6 Seals 2.2.7 Filtration 2.2.8 Installation notes
Dimensions	2.2.9 Output shafts 2.2.10 Mounting flange 2.2.11 Ports 2.2.12 Drain port 2.2.13 Housing dimensions 2.2.14 Performance

ORDERING CODE

2.2.1 External gear motor

MGE102 – 1050 – R B R 1 – N – XXXX

External gear motor

Size 2

Displacement

400	4.95 cm³/rev
630	6.61 cm³/rev
800	8.26 cm³/rev
1050	10.90 cm³/rev
1120	11.23 cm³/rev
1400	14.53 cm³/rev
1600	16.85 cm³/rev
1900	19.09 cm³/rev
2000	21.14 cm³/rev
2500	26.42 cm³/rev
2780	28.21 cm³/rev

Direction of rotation (viewed from the shaft end)

R	clockwise
L	anti-clockwise
B	bidirectional, eccentric drain port

Shaft

A	tapered key shaft 1:5
B	tapered key shaft 1:8
E	splined shaft SAE A - J 498B 9T
G	splined shaft SAE J 498B 11T
Z	special shaft (only on request)

Mounting flange

N	2-hole mounting centring Ø 50 mm
R	square flange centring Ø 36.5 mm
T	square flange centring Ø 80 mm
W	SAE J 744 82-2 A Ø 82.55 mm
J	outboard bearing square flange Ø 36.5 mm
K	outboard bearing square flange Ø 80 mm
Z	special flange (only on request)

Ports

1	pipe thread ISO 228-1
3	thread UN 2B SAE O-ring boss
4	square flange (ital. design)
5	square flange DIN 3901/ ISO 8435
7	SAE flange metric thread
8	SAE flange UNC thread
9	special design (only on request)

Seals

N	NBR (standard)
V	FPM

Modification number

XXXX Determined by manufacturer

Not all combinations in the ordering code are possible.
Special types possible on request

TECHNICAL INFORMATION

2.2.2 Specifications

Motor size			400	630	800	1050	1120	1400	1600	1900	2000	2500	2780
Geometrical displacement		[cm³/rev]	4.95	6.61	8.26	10.90	11.20	14.53	16.85	19.09	21.14	26.42	28.21
Pressure	Nominal pressure P1	[bar]	250							200		170	130
	Intermittent pressure P2		280							220		190	150
	Peak pressure P3		300							240		210	170
Shaft speed	min.	[rpm]	600					500					
	max.		4000		3500			3000			2500	2000	
Approx. weight		[kg]	3.3	3.3	3.3	3.5	3.6	3.7	43.3	4.4	4.5	4.6	4.6

The values given in the table apply for motors with one direction of rotation!

For motors with two directions of rotation, the pressure is 15% less in each case!

Pressure in drain line maximum 5 bar

Pressure motor output

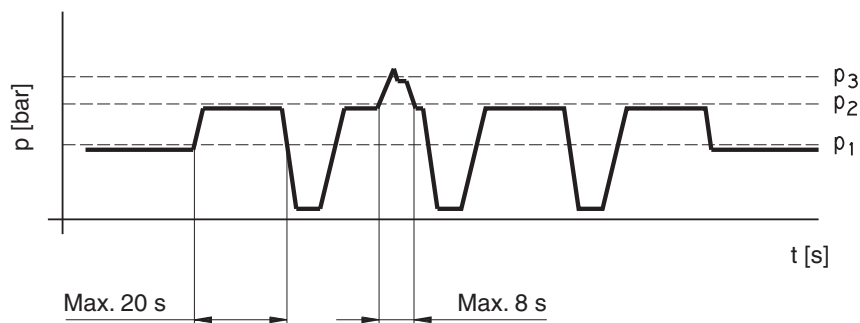
P_1 operating pressure (constant) max. 5 bar

P_2 intermittent pressure (20 s) max. 8 bar

P_3 peak pressure (8 s) max 15 bar

Pressure motor output reversible $< P_1 < 150$ bar

Pressure definition



2.2.3 Hydraulic fluids

HL Hydraulic oil
(normal mineral oil)
and

HLP Hydraulic oils of the R&O type
(rust and oxidation inhibitor)

2.2.4 Viscosity range

Normal viscosity

12–100 cSt (mm²/s)

Permitted viscosity (after previous test)

up to 750 cSt (mm²/s)

2.2.5 Temperature range

Ambient temperature range

-22 to 55 °C

Fluid temperature range

NBR

-25 to 80 °C

FPM

-25 to 110 °C

2.2.6 Seals

The motor series is equipped with NBR seals.

For use with special fluids, the sealing material may need to be changed. For further information, please contact HYDAC.

2.2.7 Filtration

For maximum service life of the motor and system components, the system should be protected from contamination by effective filtration. The contamination level should be within

21/ 18/ 15 to ISO 4406:1999

or

Class 9 to NAS 1638 or cleaner.

At system pressures above 160 bar cleanliness class:

19/17/14 to ISO 4406:1999

or

Class 8 to NAS 1638 is required.

2.2.8 Installation notes

A. Mounting

The motor can be installed horizontally or vertically with the shaft pointing upwards.

B. Output pressure

The output pressure for motors with no drain line must not exceed the max. permitted pressure of the shaft seal.

Standard: max. 5 bar

For higher pressures, the shaft seal must be exchanged. For further information, please contact HYDAC.

The output pressure for motors with a drain line must not exceed the nominal input pressure (max. 150 bar).

C. Input pressure

See TECHNICAL INFORMATION

D. Output

Use a flexible coupling whenever possible. There must not be any radial or axial forces on the shaft. The maximum permitted misalignment of the shafts is 0.2 mm and the angular deviation must be less than 0.2°.

For indirect outputs (with gear, chain or belt drives) please consult HYDAC.

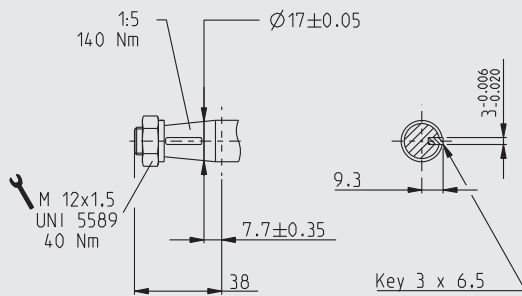
E. Drain port

It must be ensured that the pressure in the drain port does not exceed 5 bar.

DIMENSIONS

2.2.9 Output shafts

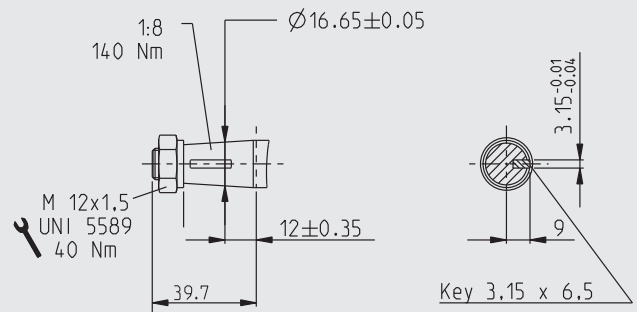
A Tapered keyed shaft 1:5



relevant
mounting flange



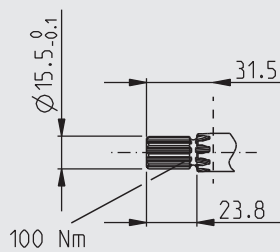
W Tapered keyed shaft 1:8



relevant
mounting flange



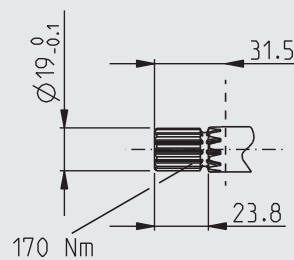
E Spline shaft
SAE A - J 498B 9T



relevant
mounting flange



G Spline shaft
SAE J 498B 11T



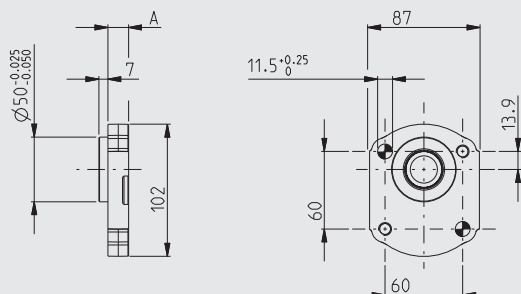
relevant mounting
flange



2.2.10 Mounting flange

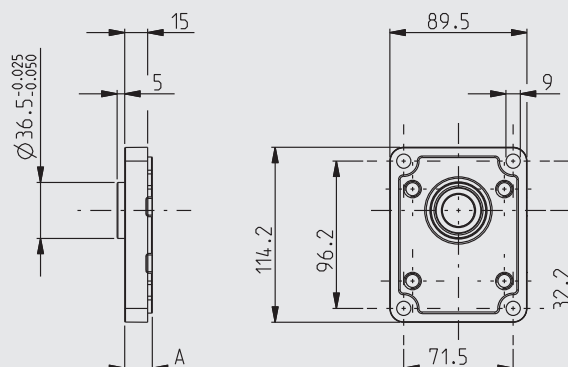
N

2-hole mounting
centering Ø 50 mm



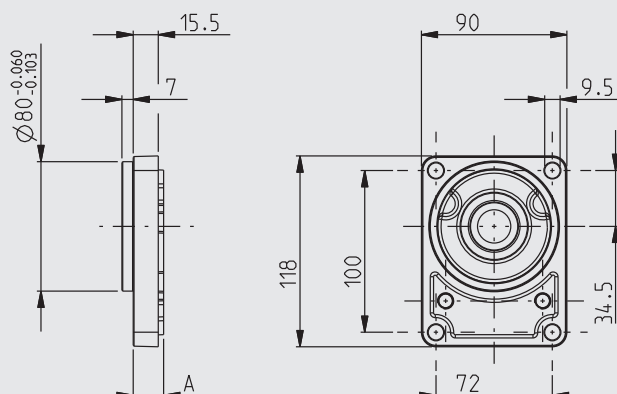
R

Square flange
centering Ø 36.5 mm



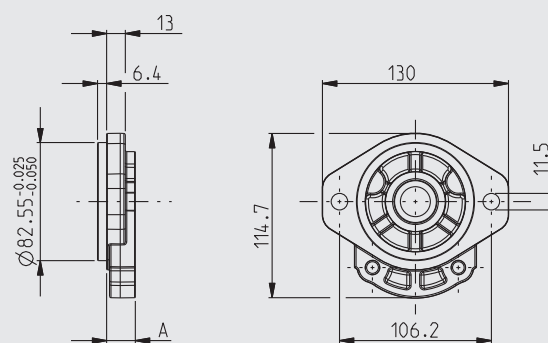
T

Square flange
centering Ø 80 mm



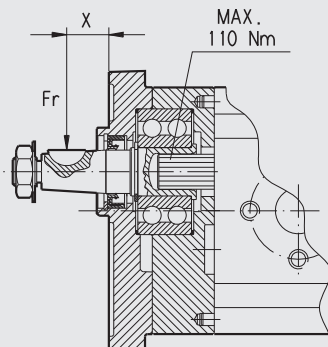
W

SAE J 744 82-2 A
Ø 82.55 mm



J Outboard bearing, square flange
 Ø 36.5 mm

**Outboard bearings are needed
 if the axial load is >200 N.**



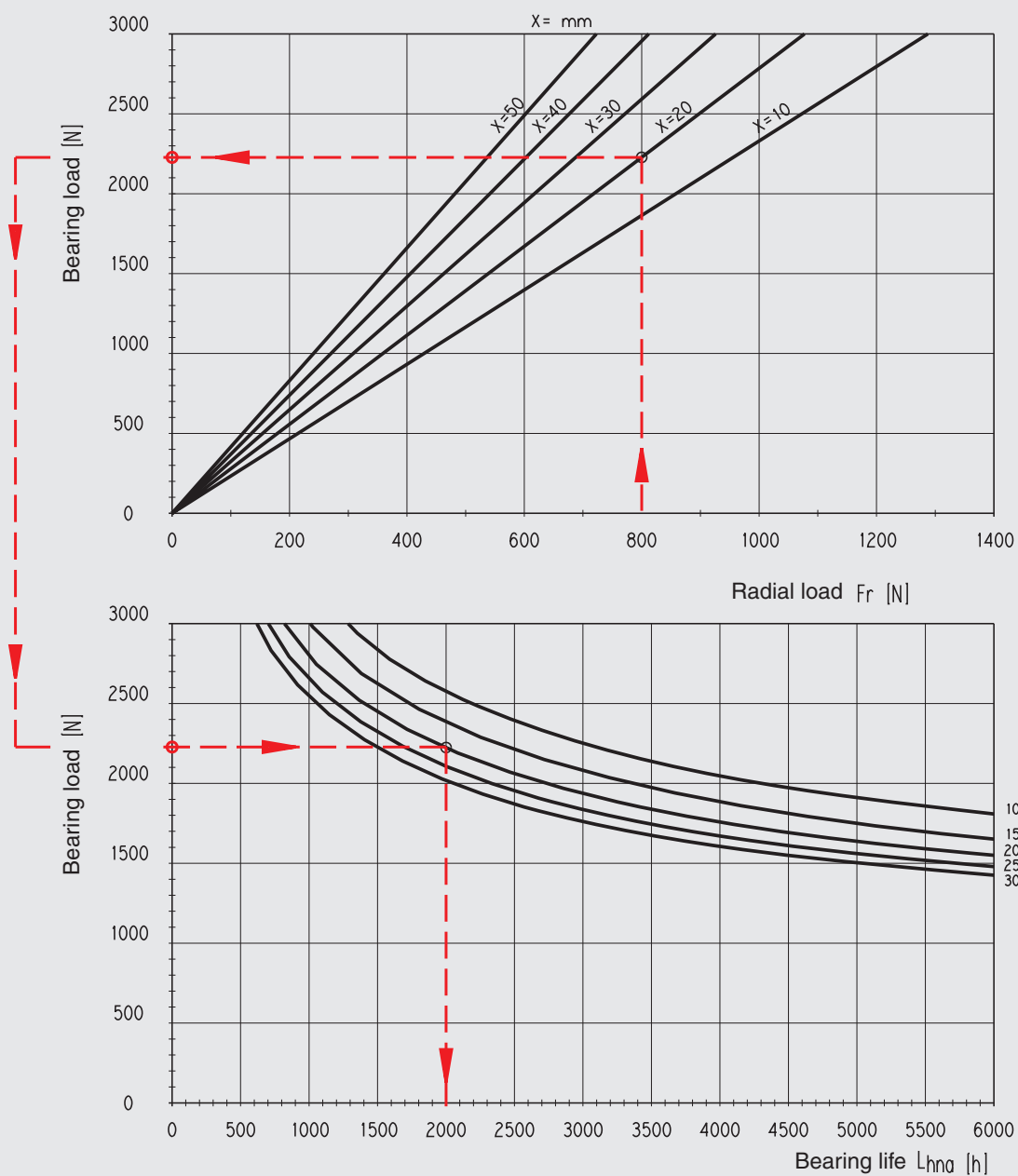
K Support bearing, square flange
 Ø 80 mm

X = distance of radial load of mounting flange [mm]

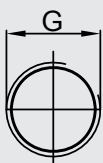
All curves were created with:
 Hydraulic oil ISO VG 46
 Temperature 60 °C
 With no, or very little, axial load

Example:

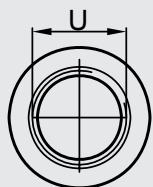
Fr radial load	800 N
X	20 mm
Revolutions	2000 rpm
Bearing life	≈ 2000 h



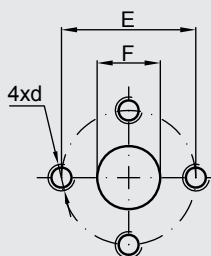
Support bearing **J** and **K** in combination with shafts A and B, size MGE102, possible.


1 Pipe thread
ISO 228/1

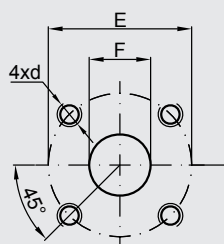
Ordering code	Displacement	Input G	Output G
1	4.0 to 11.2 cm ³	G 1/2	G 1/2
	14 to 27.8 cm ³	G 1/2	G 3/4


3 Pipe thread
UN 2B SAE
O-ring boss

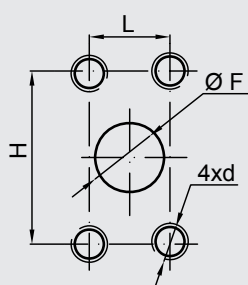
Ordering code	Displacement	Input U	Output U
3	4.0 to 11.2 cm ³	7/8" -14 UNF-2B	7/8" -14 UNF-2B
	14 to 27.8 cm ³	7/8" -14 UNF-2B	1 1/16" -14 UNF-2B


4 Square flange
(Italian design)

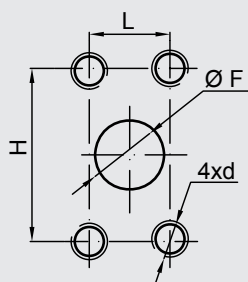
Ordering code	Displacement	Input			Output		
		E	F	d	E	F	d
4	4.0 to 11.2 cm ³	30	13	M6	30	13	M6
	14 to 27.8 cm ³	30	13	M6	40	19	M8


5 Square flange
DIN 3901/ ISO 8435

Ordering code	Displacement	Input			Output		
		E	F	d	E	F	d
5	4.0 to 27.8 cm ³	35	15	M6	40	20	M6

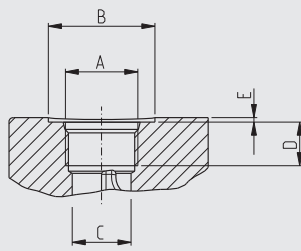

7 SAE flange with metric threads

Ordering code	Displacement	Input				Output			
		F	H	L	d	F	H	L	d
7	4.0 to 11.2 cm ³	12.5	38.1	17.5	M8	12.5	38.1	17.5	M8
	14 to 27.8 cm ³	12.5	38.7	17.5	M8	19	47.6	22.2	M10


8 SAE flange with UNC threads

Ordering code	Displacement	Input				Output			
		F	H	L	d	F	H	L	d
8	4.0 to 11.2 cm ³	12.5	38.1	17.5	5/16 - 18 UNC-2B	12.5	38.1	17.5	5/16 - 18 UNC-2B
	14 to 27.8 cm ³	14.5	38.1	17.5	5/16 - 18 UNC-2B	19	47.6	22.2	3/8 - 16 UNC-2B

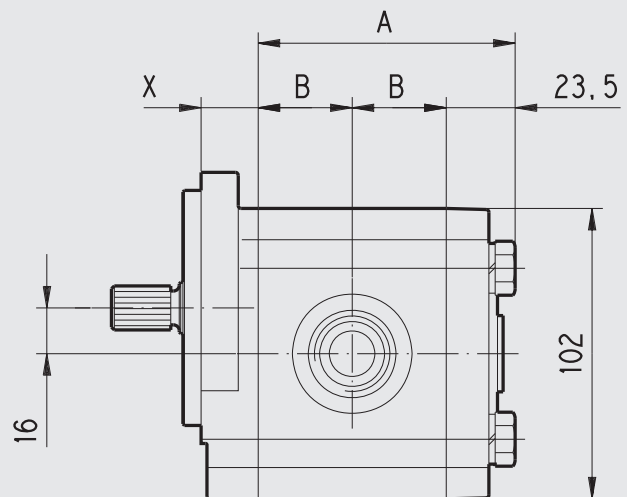
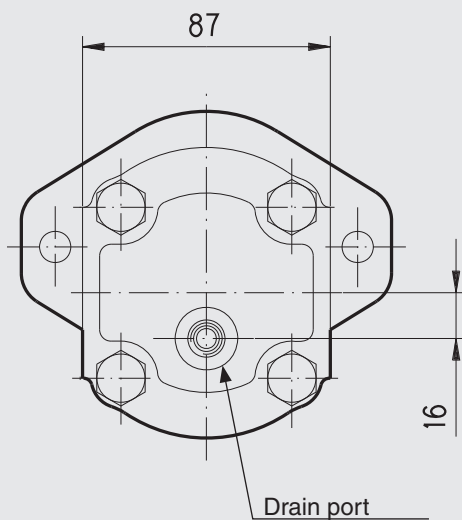
2.2.12 Drain port



Pipe thread, metric
ISO 6149

Displacement	A	ØB	ØC	D	E
4.0 to 27.8 cm ³	M10	22	9	13	0.5

2.2.13 Housing dimensions



Designation	Displacement [cm ³ /rev]	Dimension	
		A [mm]	B [mm]
PGE102-450	4.95	75.00	25.75
PGE102-630	6.61	77.50	27.00
PGE102-820	8.26	80.00	28.25
PGE102-1050	10.90	84.00	30.25
PGE102-1130	11.23	84.50	30.50
PGE102-1400	14.53	89.50	33.00
PGE102-1600	16.85	93.00	34.75
PGE102-1900	19.09	96.40	36.45
PGE102-2000	21.14	99.50	38.00
PGE102-2500	26.42	107.50	42.00
PGE102-2780	28.21	110.20	43.35

Mounting flange		X [mm]
R	Square flange Ø36.5 mm	18.0
A	Square flange Ø80 mm	18.8
W	SAE A Ø82.55 mm	20.0
N	2-hole mounting Ø50 mm	16.0

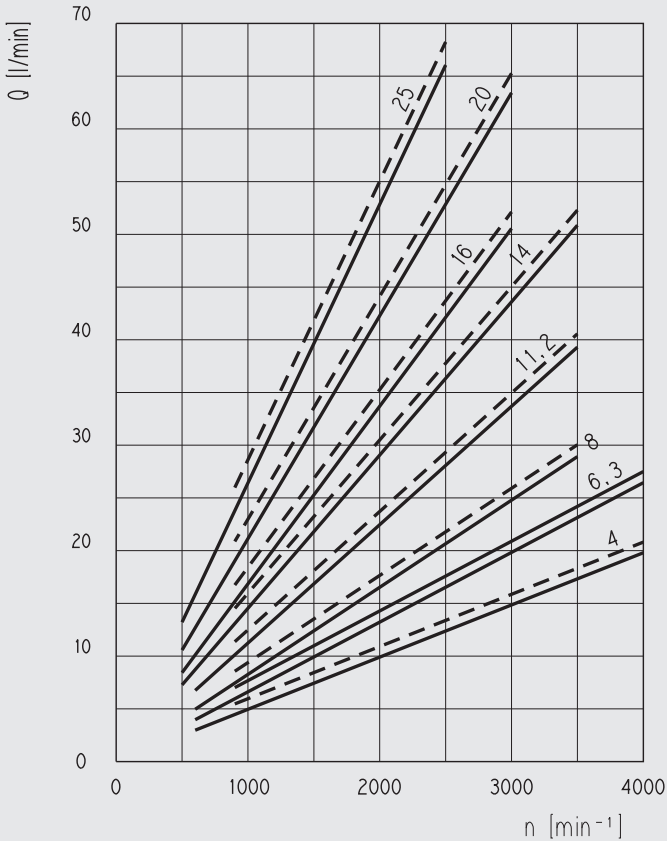
PERFORMANCE

2.2.14 MGE102

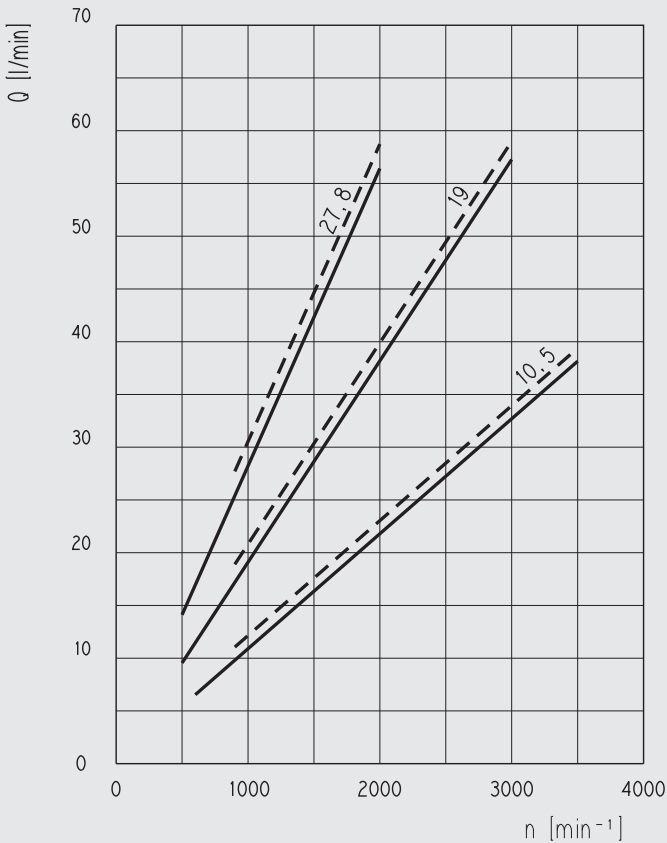
Motor characteristics

The following graphs show how flow varies with speed for group 2 motors. The curves were measured at a temperature of 50 °C. A hydraulic oil with a viscosity of 36 cSt and temperature of 40 °C was used for the pressures given in the table.

Input flow



Type	Pressure [bar]	
MGE102-400	_____	20
	— —	250
MGE102-630	_____	20
	— —	250
MGE102-800	_____	20
	— —	250
MGE102-1120	_____	20
	— —	250
MGE102-1400	_____	20
	— —	250
MGE102-1600	_____	20
	— —	250
MGE102-2000	_____	20
	— —	200
MGE102-2500	_____	20
	— —	170

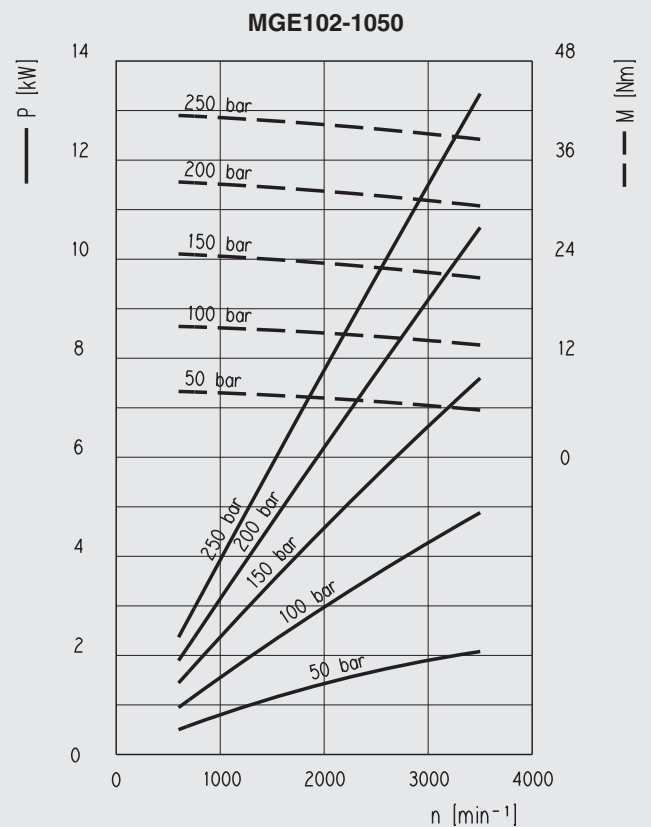
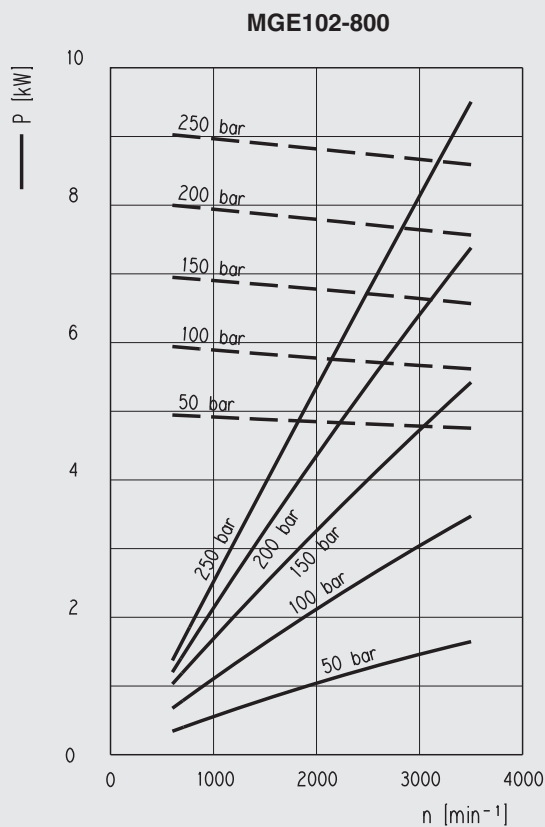
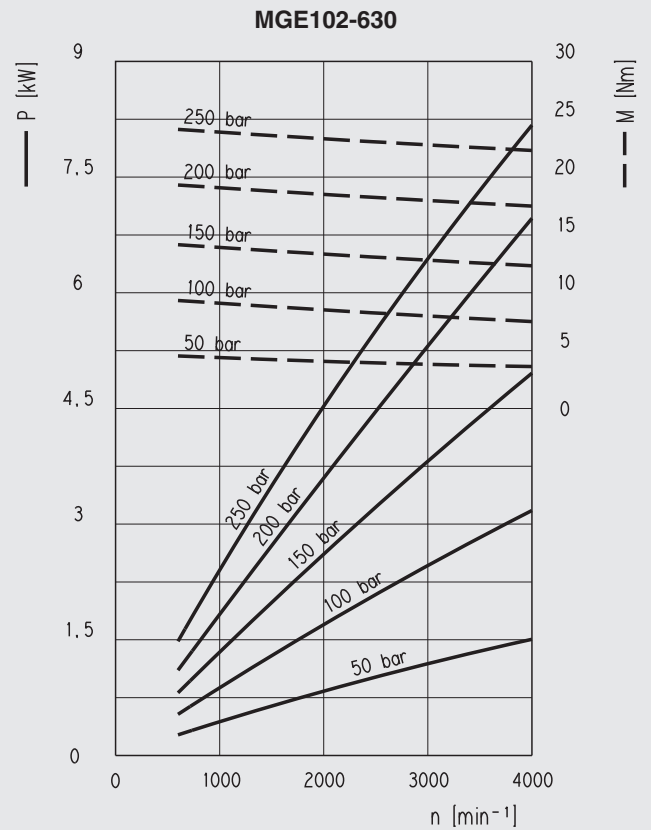
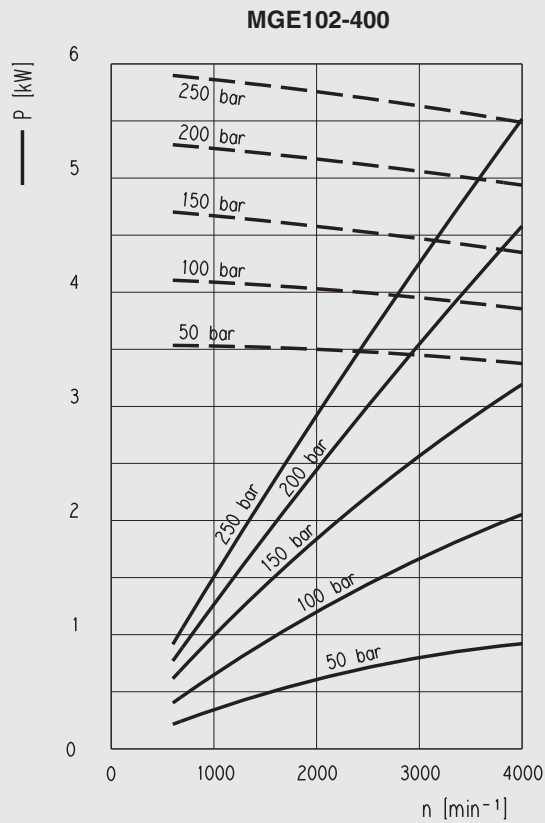


Type	Pressure [bar]	
MGE102-1050	_____	20
	— —	250
MGE102-1900	_____	20
	— —	200
MGE102-2780	_____	20
	— —	130

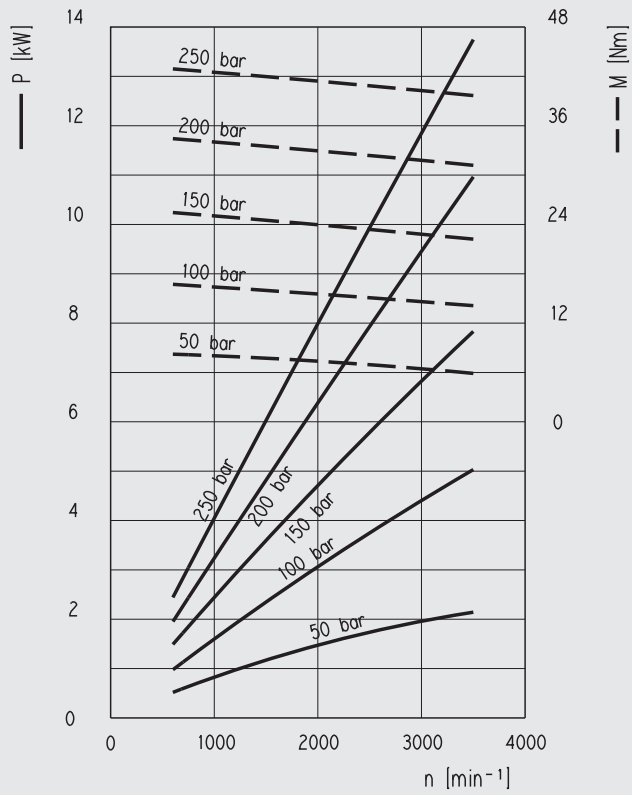
Motor characteristics

The following graphs show how performance and output torque vary with speed for group 2 motors at various operating pressures.

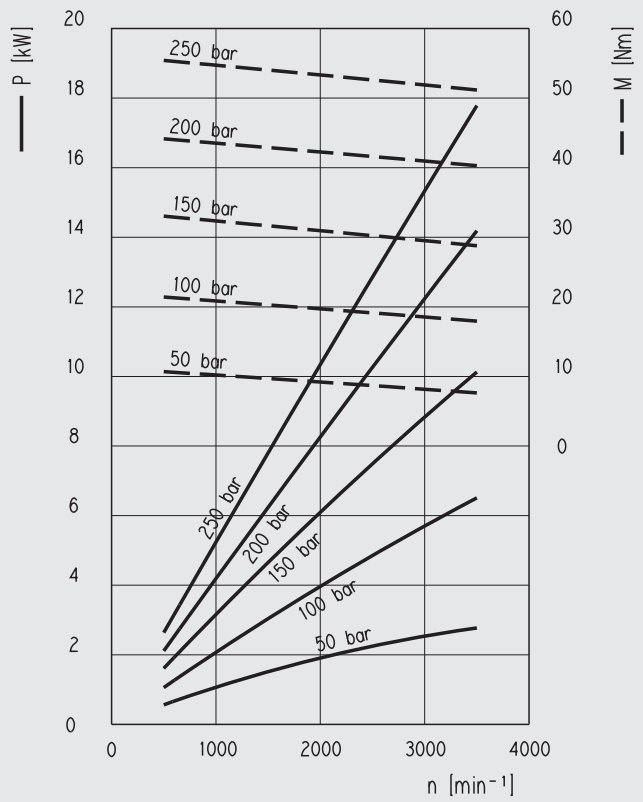
Output power



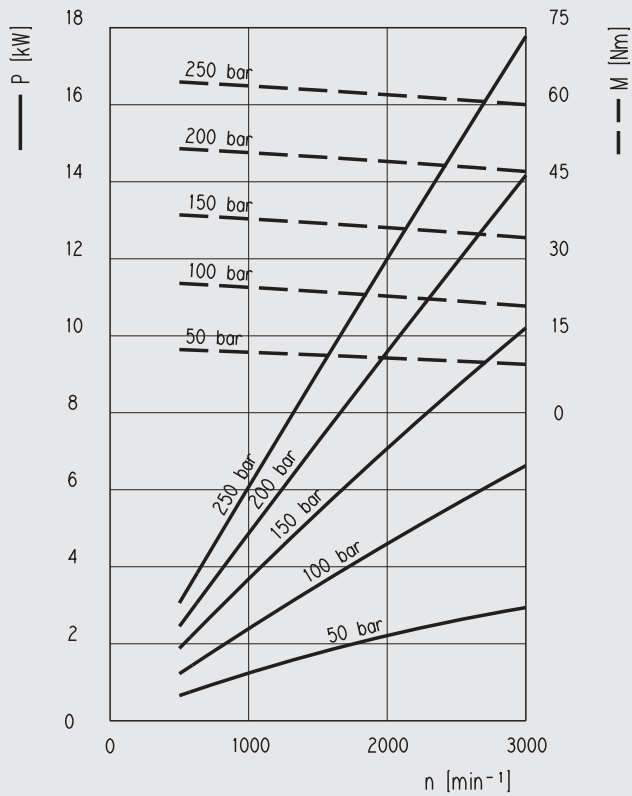
MGE102-1120



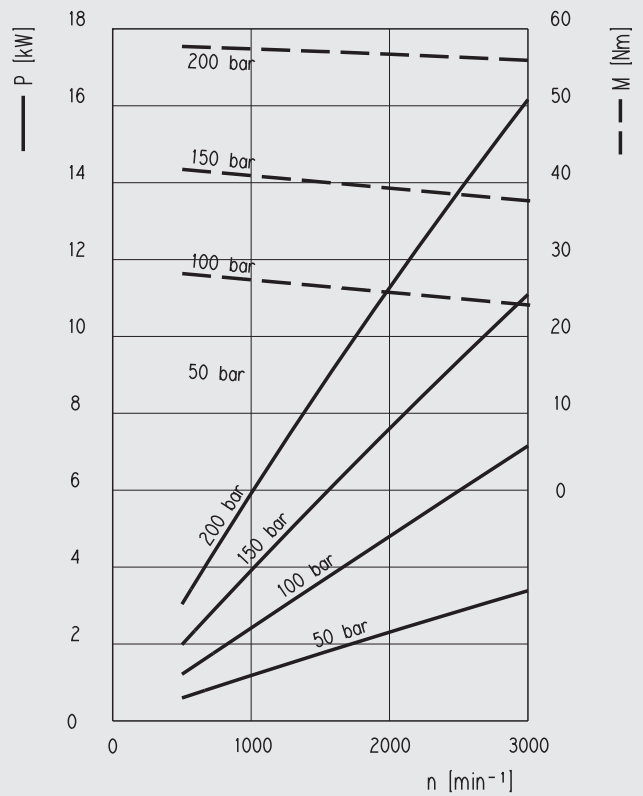
MGE102-1400

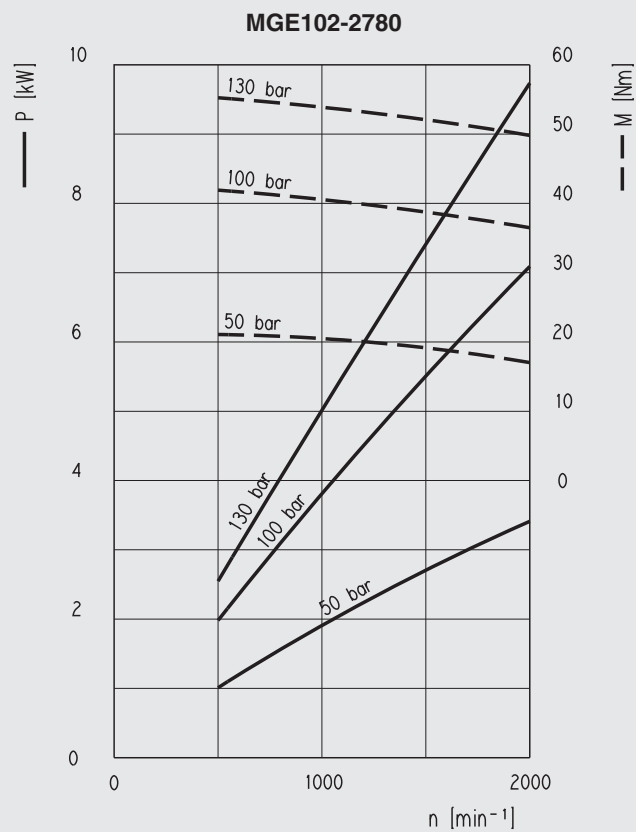
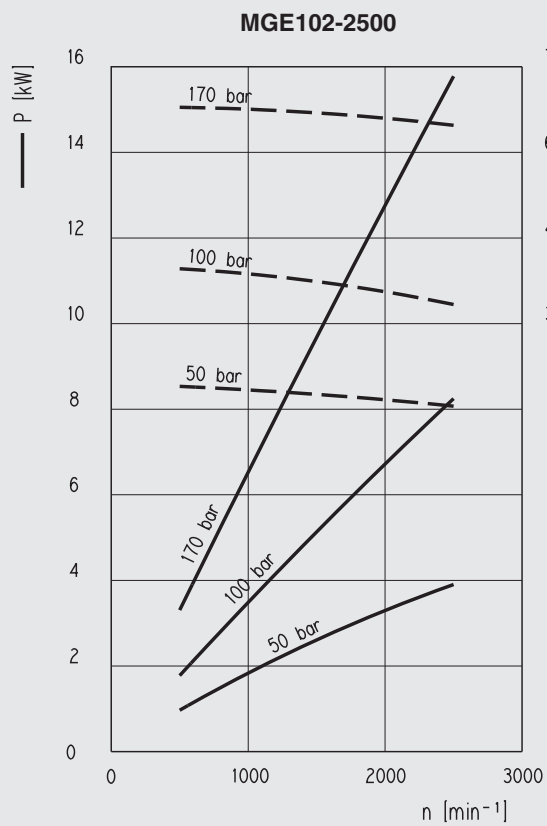


MGE102-1600



MGE102-1900





External gear motors **Installation manual**



SIZE 1

MGE101-100
MGE101-150
MGE101-200
MGE101-250
MGE101-315
MGE101-400
MGE101-500
MGE101-630
MGE101-800



SIZE 2

MGE102-400
MGE102-630
MGE102-820
MGE102-1050
MGE102-1120
MGE102-1400
MGE102-1600
MGE102-1900
MGE102-2000
MGE102-2500
MGE102-2780

To prevent serious accidents, equipment damage and other property damage, please observe the following precautions, as well as all related regulations regarding safety.

Before using the product, make sure you read and understand all the instructions in the Operator's Manual entirely.

In this catalogue, safety precautions are classified under three headings:

DANGER, WARNING, and CAUTION.

These words are defined as follows:



DANGER

Indicates an imminent danger that is very likely to cause death or severe injury unless the situation is avoided.



Warning

Indicates a potential danger that may cause death or severe injury unless the situation is avoided.



Caution

Indicates a potential danger that may cause a minor or moderate injury or that may result in property damage.



INFORMATION

Indicates useful hints and system tips. They are necessary for correct installation and safe use of the product.



PRECAUTIONS FOR USE

Caution

1. To avoid possible injury when handling the products, wear protective safety equipment in accordance with the instructions in the Operator's Manual.



Caution

2. Failure to support the weight of the product or lifting the product with incorrect posture may result in injury to the hands or back. Be sure to follow the instructions in the Operator's Manual.



CAUTION

3. Do not climb on, strike, drop or exert unnecessary force on the product. This may lead to injury or fire due to incorrect operation, damage or oil leakage.



CAUTION

4. Oil on the product or floor must be cleaned up thoroughly. Oil could cause you to drop the product or slip on the floor.

PRECAUTIONS FOR INSTALLATION, REMOVAL, AND MAINTENANCE



Warning

1. All installation, removal, maintenance, piping or wiring work should be carried out by properly trained personnel.



Warning

2. Before beginning any installation, removal, maintenance, piping or wiring work, the following procedures must be carried out. Failure to carry out these procedures may cause the equipment to move suddenly or oil to spill during the work, which may result in serious accidents.

- Shut off the power supply to the equipment and make sure that all the electrical motors or machines cannot restart unintentionally.
- Secure the cylinder rods before installing/removing the cylinder.
- Reduce the pressure in the pipes and cylinders in the hydraulic system to zero pressure.



Warning

3. Before working on any electrical wiring, be sure to shut off the power supply. Failure to do this may cause an electric shock.



CAUTION

4. Keep all installation holes and surfaces clean. Failure to do this may cause insufficient tightening of the bolts which may lead to a fire due to oil leakage.



CAUTION

5. Before commissioning the device, make sure that all bolts are tightened with the specified torque. Failure to comply with the specifications may cause incorrect operation, damage, oil leakage, etc.

PRECAUTIONS FOR OPERATION



DANGER

1. Never operate any device in an environment where there is danger of explosion or fire, unless the device is fully protected.
This may lead to major and serious accidents including explosion or fire.



WARNING

2. Do not approach pumps or motors when in operation. Hands or clothes can be caught up and wound into the pumps and motors which can lead to serious injury.



WARNING

3. In event of abnormal operation (unusual sounds, oil leakage, smoke, etc.), immediately stop operation and take appropriate corrective measures.



WARNING

4. Completely discharge air from the cylinder at low pressure. Failure to do so may result in unexpected movement of the cylinder, which in turn may cause injury.



WARNING

5. To adjust the damping, gradually increase the cylinder speed from a low speed (50 mm/s or less). Rapidly accelerating the cylinder may produce an abnormal pressure surge, resulting in damage to the cylinder or the machinery and causing a serious accident.



WARNING

6. Before operating this device for the first time, check that hydraulic and electrical circuits are properly connected and that adjoining surfaces are tightly aligned.



WARNING

7. Do not use the product outside of the specifications described in the catalogue, related data sheets, drawings, etc.
Failure to adhere to them may cause incorrect operation, damage or injury.



WARNING

8. During operation, high temperatures in the hydraulic system or solenoid valves may occur. Wear protective gloves and clothing when in the vicinity of these devices.



WARNING

9. Always operate the device with clean oil, and within established ranges for temperature, viscosity and cleanliness. Failure to adhere to the specified limits may result in incorrect operation or fire due to oil leakage.

GENERAL PRECAUTIONS



Warning

1. Never modify the device.
If any alterations are made, unexpected machine movement may cause injury.



CAUTION

2. Do not disassemble the products without prior consent of the manufacturer. Failure to adhere to this can cause the products to operate incorrectly which can lead to accidents or damage.



CAUTION

3. For transportation / storage of the product, pay attention to environmental conditions, such as ambient temperature and humidity, and implement anti-dust / anti-corrosion measures.



CAUTION

4. The seals may need to be replaced if the product is used after long-term storage.



CAUTION

5. Read the manual thoroughly and ensure that the seals are replaced properly.



RELATED REGULATIONS

CAUTION

To ensure that this product is used in a safe manner, it is essential to observe the above precautions, as well as all related regulations regarding safety.



EXTERNAL GEAR MOTORS

Technical details

Size 1

Series	Geometrical displacement [cm ³ /rev]	Operating pressure		Maximum drive speed [rpm]
		Nominal pressure [bar]	Peak pressure [bar]	
MGE101-100	1.07	260	290	4000
MGE101-150	1.60			
MGE101-200	2.13			
MGE101-250	2.67			
MGE101-315	3.34			
MGE101-400	4.27	250	280	3500
MGE101-500	5.34			
MGE101-630	6.67	230	260	
MGE101-800	8.51	180	210	

Size 2

Series	Geometrical displacement [cm ³ /rev]	Operating pressure		Maximum drive speed [rpm]
		Nominal pressure [bar]	Peak pressure [bar]	
MGE102-400	4.95	250	300	4000
MGE102-630	6.61			3500
MGE102-800	8.26			
MGE102-1050	10.90			
MGE102-1120	11.20			
MGE102-1400	14.53			
MGE102-1600	16.85	200	240	3000
MGE102-1900	19.09			
MGE102-2000	21.14			
MGE102-2500	26.42	170	210	2500
MGE102-2780	28.21	130	170	2000

Documentation

Check the product's model code and compare it with your paper work.

HYDAC DRIVE CENTER	
Neuankündigung HYDAC INTERNATIONAL GmbH Postfach Münchener Str. 81 81 D-42443 Solingen	Liefererschein Lieferantennummer E100000001 / 11.02.2016 Lieferadresse: HYDAC International / Postfach 101 / D-42443 Solingen Bestellnummer E100000001 E100000001 / 11.02.2016 Anfrage/Bestellungsdatum E100000001 / 11.02.2016 Feststellungsdatum E100000001 / 11.02.2016 Feststellungsdatum E100000001 / 11.02.2016
Auftraggeberadresse HYDAC INTERNATIONAL GmbH Postfach Münchener Str. 81 81 D-42443 Solingen	Bestellnummer E100000001 / 11.02.2016 Bestellnummer E100000001 / 11.02.2016 Bestellnummer E100000001 / 11.02.2016 Bestellnummer E100000001 / 11.02.2016
Erklärung des Herstellers Hiermit erklären wir, dass die auf diesem Liefererschein aufgeführten Produktsysteme in der von uns gelieferten Ausführung den in diesen Systemen festgelegten Anforderungen entsprechen und dass die Ausführung der Installationen in der von uns gelieferten Ausführung den in diesen Systemen festgelegten Anforderungen entsprechen. Die Verantwortung für die Bestimmung der Schnittstellen, die Funktionen sowie der Gesamtsystemzustand (z.B. Produktanwendung für andere vorgeschaltete Komponenten) verbleibt beim Kunden.	
Transportdaten Transportart: LKW Transportweg: LKW Transportweg: LKW Transportweg: LKW	
Produkt Produktname: HYDAC INTERNATIONAL GmbH / Postfach 101 / D-42443 Solingen	Bestellnummer E100000001 / 11.02.2016 Bestellnummer E100000001 / 11.02.2016 Bestellnummer E100000001 / 11.02.2016 Bestellnummer E100000001 / 11.02.2016
Produkt Produktname: HYDAC INTERNATIONAL GmbH / Postfach 101 / D-42443 Solingen	Bestellnummer E100000001 / 11.02.2016 Bestellnummer E100000001 / 11.02.2016 Bestellnummer E100000001 / 11.02.2016 Bestellnummer E100000001 / 11.02.2016

Pos.	Material	Bezeichnung	Menge
1	KARTONVIEL 1.000 / 1.700 KG 65 107	RF70 21.04 10	1 BT

Produkt	Bestellnummer	Bestellnummer	Bestellnummer
Produktname: HYDAC INTERNATIONAL GmbH / Postfach 101 / D-42443 Solingen	E100000001 / 11.02.2016	E100000001 / 11.02.2016	E100000001 / 11.02.2016

Delivery note and/or sales acknowledgement.

Operating fluid:

Hydraulic oils with viscosities between 12 and 100 mm²/s (cSt), at 40 °C. A viscosity of up to 750 mm²/s is possible during start-up. Different types/brands of oil must never be mixed, since this can result in loss of lubrication qualities. The operating oil must be changed periodically. The interval between changes will depend on the operating conditions and must be determined by the operator. At oil change, the reservoir and the filters must also be cleaned.

Temperature range: -25 °C to +80 °C

Recommended filtration rating: 25 µm or cleaner. Drive speed range: from 500 rpm to the maximum value for the motor.

Direction of rotation:

Clockwise or anti-clockwise rotation as seen from the shaft end of the motor.

For motors with one direction of rotation, rotation in the wrong direction is not permitted as this will damage the shaft seal.

Output pressure:

The output pressure for motors with no drain line must not exceed the max. permitted pressure of the shaft seal.

For motors with a drain line, the output pressure must not exceed 150 bar.

Output shaft:

Radial and axial forces on the output shaft are not permitted.

Output:

Ensure that elastic connection pieces are used. The radial spacing should be less than 0.2 mm. The axial displacement of motor shaft and pump shaft must be less than 0.1 mm. Indirect transmission drives with belt or chain that transmit vibrations or that are not balanced are not permitted.

Mounting:

The motor must be aligned centrally to the diameter of the mounting flange.

Connection lines must be connected the right way round and the direction of rotation must be checked.

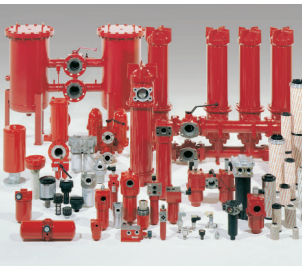
Initial start-up:

Check that the motor is mounted correctly. Operate the motor in jog mode initially, until the motor is filled with oil. This is necessary to ensure bearing lubrication and to vent all air from the hydraulic system to prevent erratic operation. After lines are full, the pressure may be increased gradually to the required operating pressure. Never exceed the maximum operating pressure for the relevant motor type.

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