Rexroth Sytronix
Motor-Pump Unit MPES2
PGF/PGH - MOT-FC

Mounting Instruction

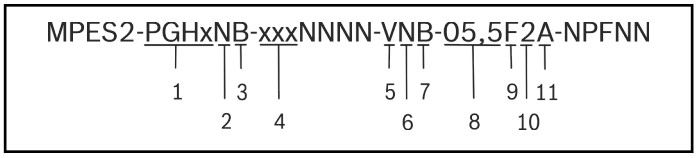
R911345047
Edition 01

Validity of this Documentation

This documentation is valid for the following motor-pump units consisting of:

- MOT-FC (1.5 ... 90 KW) design IC411, IC416
  and
- PGF2 (nominal size 006 ... 022) or
  PGH2 (nominal size 005 ... 008) or
  PGH3 (nominal size 011 ... 016) or
  PGH4 (nominal size 020 ... 050) or
  PGH5 (nominal size 063 ... 250)
  and
- couplings, bellhousing, (optionally with foot flange)

Identification



1 Pump type
2 Pump option
3 Pump generation
4 Nominal size of pump (3-digit)
5 Sealing material (V = FKM)
6 Assembly/pump orientation (N = not assembled, B = suction port below; L = suction port left; R = suction port right, T = suction port top)
7 Fastening (A = foot fastening; B = flange fastening horizontal, foot on flange, V = flange fastening vertically, without foot)
8 Motor power (4-digit in kW)
9 Nominal voltage / number of pins (B = 230 V / 400 V 4 pole, F = 400 V / 690 V 4 pole)
10 Efficiency class (2 = IE2)
11 Cooling mode (A = IC416 forced ventilation 1 x 230 V AC 50/60 Hz; S = IC411 self-ventilation)

General Safety Instructions

- Observe the valid regulations about accident prevention and environmental protection.
- Heed the safety regulations and instructions of the country in which the product is used.
- Use Rexroth products only in proper state.
- Please observe all notes on the product.
- Only use accessories and spare parts which are permitted by the manufacturer to prevent from risk of injury due to unsuitable spare parts.

Qualified Personell

Mounting and installing of motor-pump units MPES2 must be done by qualified personell or competent persons. A person is qualified, if knowledge or experiences of respective standards and regulations exists. Assigned work must be evaluated and possible danger be recognized.

Tools and Auxiliary Materials

Keep the following tools and auxiliary materials ready for assembly:

- For torque wrench for internal hexagon screws refer to list
- For torque wrench for hexagon head screws refer to list
- Screw lock (e.g. Loctite 243®)

Mounting Instruction

Description Assembly Procedure

The assembly procedure is standardized for various motor-pump combinations. Optional components are indicated in the assembly pictures with (x). Use mounting screws (amount, size, tightening torque) acc. to the tables for motor-pump units to be assembled. Assemble the components according to the drawing and observe all assembly steps. Tolerance of the specified tightening torque (M_A) ±10%.
For screw connections use screw lock, e.g. Loctite 243 when proceeding the following working steps 1 to 5 and observe the specified tightening torques.

NOTICE

Motor damage due to beats onto the motor shaft
Do never beat onto the shaft end and do not exceed the allowed axial and radial forces of the motor.

By heating the hubs (approx. 80 °C), it is easier to draw it on onto the shaft.

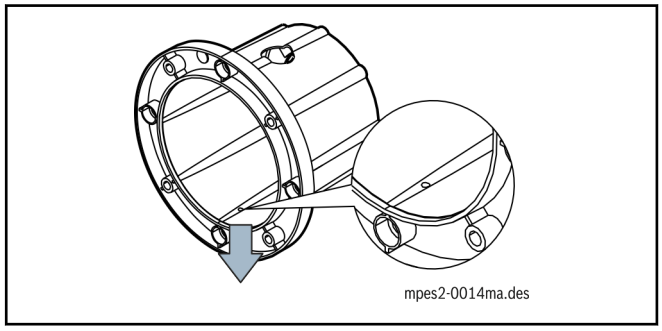
⚠ CAUTION

Burns by touch of hot hubs!
Wear protective gloves if you assemble heated coupling elements.

1. **Assemble pump hub onto the pump shaft**
   If provided, insert the distance sleeve 6.1 onto the shaft of the pump.

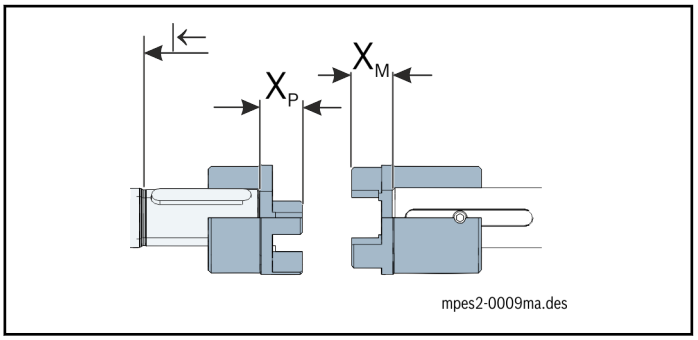
Insert the pump hub 3.1 onto the shaft of the pump by considering the adjustment dimensions and fasten the hub with the clamping screw 3.5a.

2. **Assemble the motor hub onto the motor shaft**
   If provided, insert the distance sleeve 6.2 onto the shaft of the pump.
   Insert the motor hub 3.3 onto the shaft of the motor by considering the adjustment dimensions and fasten the hub with the clamping screw 3.4.
3. **Screw on pump on bellhousing**
   Fasten the pump 1 with screws 1.2 and washers 1.1 onto the bellhousing 2. The leakage hole within the bellhousing must show down in the case of horizontal assembly.
4. **Screw on motor on bellhousing.**
   Fasten the motor 5 with the screws 5.1 onto the bellhousing 2. When joining the coupling heed the correct seat of the ring gear 3.2.
   In the case of fastening A and B acc. to the type code, the leakage hole must be at the bottom that escaping oil can flow out.



Leakage hole

5. **Screw on pump foot**
   Fasten the optional pump foot 4 with the screws 4.1, washers 4.2 and hesagon nuts 4.3 on the motor-pump unit.



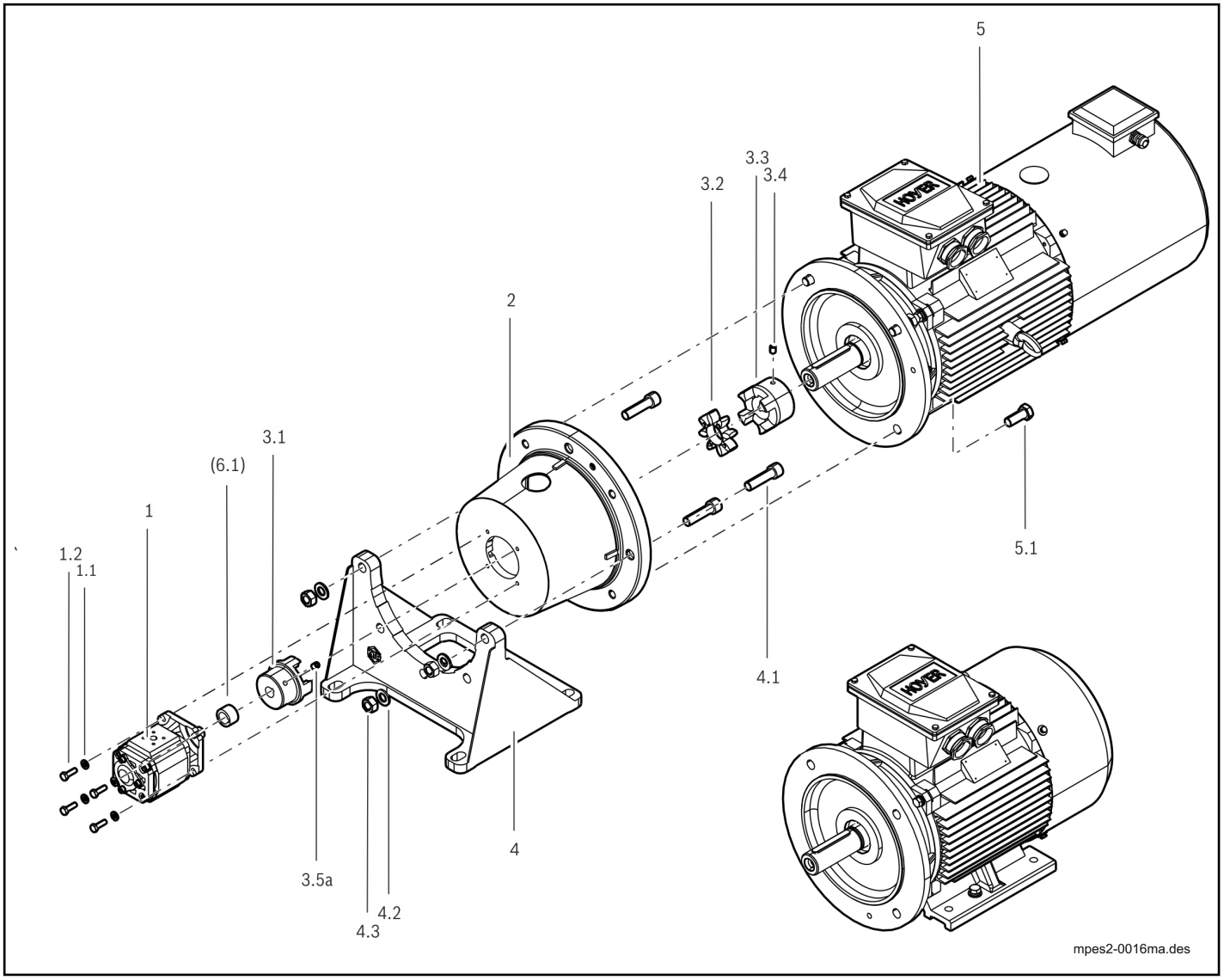
X_P Assembly dimension pump hub: Front face of hub to front face of the shaft of pump
X_M Assembly dimension motor hub: Front face of hub to front face of the shaft of motor
|← Assembly of hub as far as it will go
Assembly dimension

Clamping screws coupling hub

KD	Grub screw 3.4 / 3.5a		Hexagon socket head cap screw 3.5b	
	G	M_A[Nm]	G	M_A[Nm]
24	M5	2	M6	14
28, 38	M8	10	M8	35
42	M8	10	M10	69
48	M8	10	M12	120
55, 65	M10	17	M12	120
75	M10	17	M16	295

KD Coupling size
Tightening torque clamping screws of coupling hub

Assembly MPES2 PGF-MOT-FC



1 Internal gear pump (PGF)
2 Bellhousing
3.1 - 3.5 Coupling elements
4 Pump foot (option)
Mounting
5 Asynchronous motor
6.x Distance flat washers (partly necessary)
x.x Assembly accessory see table

Assembly accessory

Distance sleeve

A03	AB33-35/ 20.1/ 32X 7

Washer

B01	Washer ISO7089-8-200HV
B02	Washer ISO7089-10-200HV
B03	Washer ISO7089-12-200HV
B04	Washer ISO7089-16-200HV

Hexagon nut

C01	ISO4032-M10-8 (M_A 54 Nm)
C02	ISO4032-M12-8 (M_A 93 Nm)
C03	ISO4032-M16-8 (M_A 230 Nm)

Hexagon bolt

D01	ISO4017-M8X25-8.8 (M_A 27.3 Nm)
D02	ISO4017-M10X25-8.8 (M_A 54 Nm)
D04	ISO4017-M12X30-8.8 (M_A 93 Nm)
D06	ISO4017-M16X40-8.8 (M_A 230 Nm)

Cylinder head screw

E01	ISO4762-M10X30-8.8
E02	ISO4762-M12X40-8.8
E03	ISO4762-M16X60-8.8

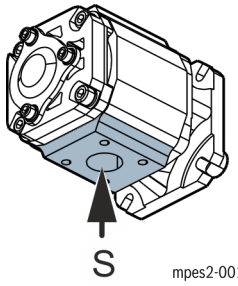
MPES2-..		KD	X_P	X_M	n	1.1	n	1.2	n	6.1	n	6.2	n	4.1	n	4.2	n	4.3	n	5.1
Pump	MOT-Fc		[mm]	[mm]																
..PGF2NB..	..-01,5..	24	16	14	4	**D01**	4	**B01**	1	**A03**	-	-	3	**E01**	3	**B02**	3	**C01**	4	**D02**
..PGF2NB..	..-02,2..	24	16	18									3	**E02**	3	**B03**	3	**C02**	4	**D04**
..PGF2NB..	..-0003..	24	16	18																
..PGF2NB..	..-0004..	24	16	18																
..PGF2NB..	..-05,5..	28	|←	18,5					-	-										
..PGF2NB..	..-07,5..	28	|←	18,5																
..PGF2NB..	..-0011..	38	|←	22									3	**E03**	3	**B04**	3	**C03**	4	**D06**

mpes2-0007xl.des

KD Coupling size
X_P Assembly dimension pump hub
X_M Assembly dimension motor hub
Assembly accessories and setting dimensions

n Number
Pump Designation pump acc. to MPES2 type code
MOT-FC Designation motor acc. to MPES2 type code

Assembly alignment PGFx on MOT-FC



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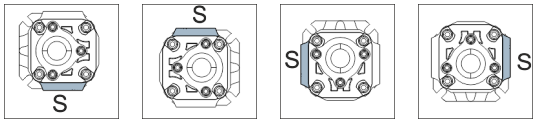
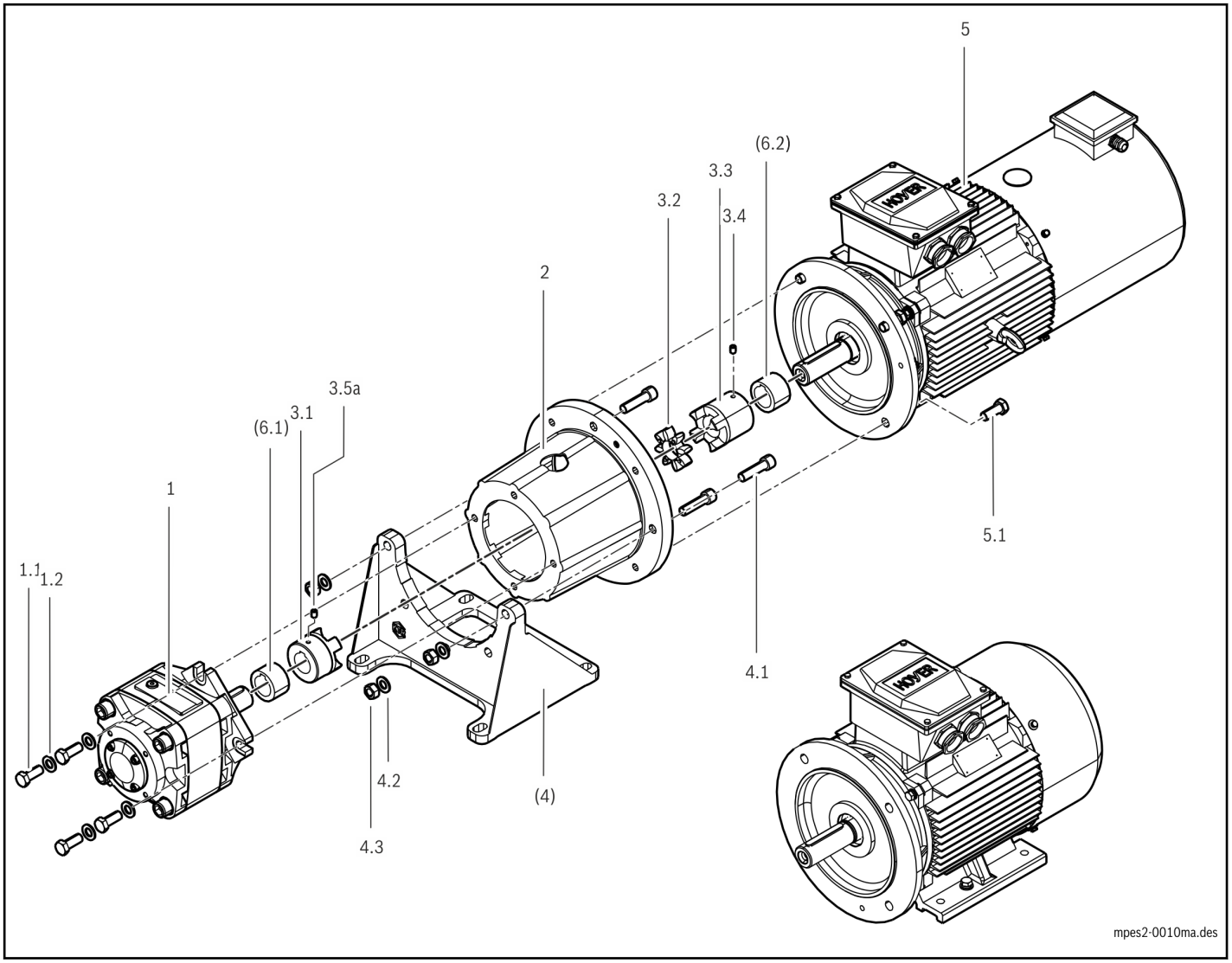
Suction port



	Bottom	Top	Left	Right
PGF2	✔	✔	✔	✔

Allowed assembly variants (suction port)

Assembly MPES2 PGH-MOT-FC



1 Internal gear pump (PGH)
2 Bellhousing
3.1 - 3.5 Coupling elements
4 Pump foot (option)
Mounting

5 Asynchronous motor
6.x Distance flat washers (partly necessary)
x.x Assembly accessory see table

Assembly accessory

Distance sleeve

A01	AB33-35/ 18.1/ 30X 6
A02	AB33-35/ 20.1/ 32X 11
A03	AB33-35/ 20.1/ 32X 7
A04	AB33-35/ 25.1/ 40X 10
A05	AB33-35/ 25.1/ 40X 15
A06	AB33-35/ 25.1/ 40X 25
A07	AB33-35/ 25.1/ 40X 30
A08	AB33-35/ 40.1/ 60X 7
A09	AB33-35/ 40.1/ 60X 17
A10	AB33-35/ 40.1/ 60X 25
A11	AB33-35/ 40.1/ 60X 32
A12	AB33-35/ 40.1/ 60X 38
A15	AB33-35/ 65.1/ 85X 63
A18	AB33-35/ 75.1/100X 55

Washer

B02	Washer ISO7089-10-200HV
B03	Washer ISO7089-12-200HV
B04	Washer ISO7089-16-200HV

Hexagon nut

C01	ISO4032-M10-8 (M_A 54 Nm)
C02	ISO4032-M12-8 (M_A 93 Nm)
C03	ISO4032-M16-8 (M_A 230 Nm)

Assembly accessory

Hexagon bolt

D02	ISO4017-M10X25-8.8 (M_A 54 Nm)
D03	ISO4017-M10X30-8.8 (M_A 54 Nm)
D04	ISO4017-M12X30-8.8 (M_A 93 Nm)
D06	ISO4017-M16X40-8.8 (M_A 230 Nm)

Cylinder head screw

E01	ISO4762-M10X30-8.8
E02	ISO4762-M12X40-8.8
E03	ISO4762-M16X60-8.8

MPES2-.. Pump	MOT-FC	KD	X_P [mm]	X_M [mm]	n 1.1	n 1.2	n 6.1	n 6.2	n 4.1	n 4.2	n 4.3	n 5.1
..PGH2NB..	..01,5..	24	16	17	2 **D03**	2 **B02**	1*) **A01**	- -	3 **E01**	3 **B02**	3 **C01**	4 **D02**
..PGH2NB..	..02,2..	24	16	17					3 **E02**	3 **B03**	3 **C02**	4 **D04**
..PGH2NB..	..0003..	24	16	17								
..PGH2NB..	..0004..	24	16	17								
..PGH2NB..	..05,5..	28	|←	20,5			- -					
..PGH3NB..	..02,2..	24	16	17	2 **D04**	2 **B03**	- -	- -	3 **E02**	3 **B03**	3 **C02**	4 **D04**
..PGH3NB..	..0003..	24	16	17			1*) **A02**					
..PGH3NB..	..0004..	24	16	17								
..PGH3NB..	..05,5..	28	17,5	20,5			1*) **A03**					
..PGH3NB..	..07,5..	28	17,5	20,5								
..PGH3NB..	..0011..	38	|←	29					3 **E03**	3 **B04**	3 **C03**	4 **D06**
..PGH4ND..	..0004..	24	16	16	4 **D03**	4 **B02**	1*) **A07**	- -	3 **E02**	3 **B03**	3 **C02**	4 **D04**
..PGH4ND..	..05,5..	28	17,5	15,5			1*) **A06**					
..PGH4ND..	..07,5..	28	17,5	15,5								
..PGH4ND..	..0011..	38	21	21			1*) **A05**		3 **E03**	3 **B04**	3 **C03**	4 **D06**
..PGH4ND..	..0015..	38	21	21								
..PGH4ND..	..18,5..	42	23	21			1*) **A04**		- -	- -	- -	- -
..PGH4ND..	..0022..	42	23	21								
..PGH4ND..	..0030..	42	23	21								
..PGH4ND..	..0037..	48	|←	24,5			- -					
..PGH5ND..	..0015..	38	21	23	4 **D06**	4 **B04**	1*) **A12**	- -	3 **E03**	3 **B04**	3 **C03**	4 **D06**
..PGH5ND..	..18,5..	42	23	23			1*) **A11**		- -	- -	- -	- -
..PGH5ND..	..0022..	42	23	23								
..PGH5ND..	..0030..	42	23	23								
..PGH5ND..	..0037..	48	24,5	26,5			1*) **A10**					
..PGH5ND..	..0045..	55	26	26			1*) **A09**					
..PGH5ND..	..0055..	65	30,5	28,5			1 **A08**	1 **A15**				
..PGH5ND..	..0075..	75	|←	35			- -	1 **A18**				
..PGH5ND..	..0090..	75	|←	35								

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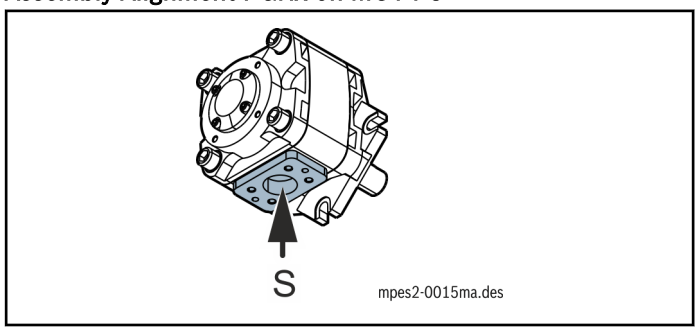
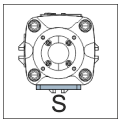
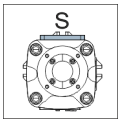
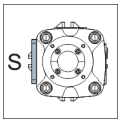
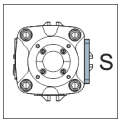
KD Coupling size
X_P Assembly dimension pump hub
X_M Assembly dimension motor hub
n Number
Assembly accessories and setting dimensions

***)** only necessary for vertical flange mounting, without foot
Pump Designation pump acc. to MPES2 type code
MOT-FC Designation motor acc. to MPES2 type code

Assembly Alignment PGHx on MOT-FC



Suction port

	Bottom	Top	Left	Right
				
PGH2	✔	✔	✖	✖
PGH3	✔	✔	✖	✖
PGH4	✔	✔	✔	✔
PGH5	✔	✔	✔	✔

Allowed assembly variants (suction port)

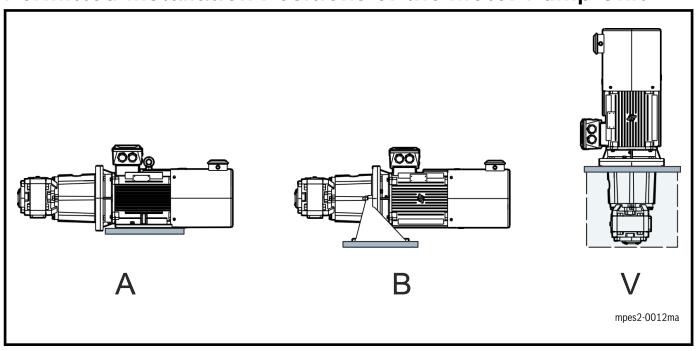
Transport the Motor-Pump Unit with Cranes or Lifting Tools

The transport with cranes or lifting tools may only be done with suitable lifting means, like e.g. lifting belts, belts and chains. The components are provided with lifting points for ring screws DIN 580.
For further information about carrying capacity of the ring screws refer to the DIN 580 standard.

Weight of components

Designation	Weight [kg]	Designation	Weight [kg]
PGF2-2X/006	3.6	MOT-FC-1.5 kW	18
PGF2-2X/008	3.7	MOT-FC-2.2 kW	26
PGF2-2X/011	3.9	MOT-FC-3 kW	28
PGF2-2X/013	4.0	MOT-FC-4 kW	37
PGF2-2X/016	4.2	MOT-FC-5.5 kW	51
PGF2-2X/019	4.4	MOT-FC-7.5 kW	62
PGF2-2X/022	4.6	MOT-FC-11 kW	123
PGF2-2X/005	6.0	MOT-FC-15 kW	153
PGH2-2X/006	6.2	MOT-FC-18.5 kW	204
PGH2-2X/008	6.5	MOT-FC-22 kW	215
PGH3-2X/011	7.1	MOT-FC-30 kW	243
PGH3-2X/013	7.4	MOT-FC-37 kW	305
PGH3-2X/016	7.7	MOT-FC-45 kW	328
PGH4-3X/020	14.0	MOT-FC-55 kW	452
PGH4-3X/025	14.6	MOT-FC-75 kW	592
PGH4-3X/032	15.4	MOT-FC-90 kW	672
PGH4-3X/040	16.2	-	-
PGH4-3X/050	17.3	-	-
PGH5-3X/063	40.8	-	--
PGH5-3X/080	42.6	-	-
PGH5-3X/100	45.0	-	-
PGH5-3X/125	47.4	-	-
PGH5-3X/160	51.0	-	-
PGH5-3X/200	55.0	-	-
PGH5-3X/250	60.6	-	-

Permitted Installation Positions of the Motor-Pump Unit



Assembly variants

Assembly of the motor-pump unit can be done in design

- A (foot fastening horizontally)
- B (flange fastening horizontally, foot on flange)
- V (vertical flange fastening, without foot)

Vertical installation (motor under the pump) is not permitted.

Installation MPES2

The screw connection must be adjusted to the installation situation (screw-length, property class, screw-in depth, material, ...). The dimensioning of the screw connection is in the responsibility of the customer.

MOT-FC [kW]	Installation position (A)		Installation position (B)		Installation position (V)	
	Screw / drilling Ø		Screw / drilling Ø		Screw / drilling Ø	
01.5	-	-	4 x M10	11	4 x M10	11
02.2	-	-	4 x M12	13	4 x M12	14
0003	-	-				
0004	-	-				
05.5	-	-	4 x M12	13	4 x M12	14
07.5	-	-				
0011	4 x M12	14.5	4 x M16	18	4 x M16	17
0015						
18.5			-	-		
0022			-	-		
0030	4 x M16	18.5	-	-	4 x M16	17
0037			-	-	8x M16	17
0045			-	-		

MOT-FC [kW]	Installation position (A)		Installation position (B)		Installation position (V)	
	Screw / drilling Ø		Screw / drilling Ø		Screw / drilling Ø	
0055	4x M20	24	-	-	8x M16	17
0075			-	-		
0090			-	-		

Drilling Ø mm (details in millimeter)
Fastening screws for motor-pump unit

- Assemble in dry, dust free environment.
- Ensure a clean and burr-free machine-side contact surface.
- Securely screw the motor-pump-unit with the machine construction.

Dismantling

For dismantling, proceed in reverse order. Proceed carefully and avoid damages on the components. Only components in proper state can be reused.

Additional Documentation

We reserve the right to change products and documentation due to technical development. The latest version of this documentation and the listed ones, which are important for the whole system are available in the Bosch Rexroth Media Directory,
http://www.boschrexroth.com/various/utilities/mediadirectory/index.jsp

Title	Material number (R911...) Documentation Type (Dok-...)
Rexroth Sytronix Safety Notes and Instructions on Use Motor-Pump Unit	R911339831 DOK-SYTROX-SAFETY*MP**-SARS-EN-P
Rexroth Sytronix Mounting and Commissioning Internal Gear Pump PGH/PGM/PGF	R911340908 DOK-SYTROX-PG**-******-ASRS-EN-P

Applicable Documentation

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