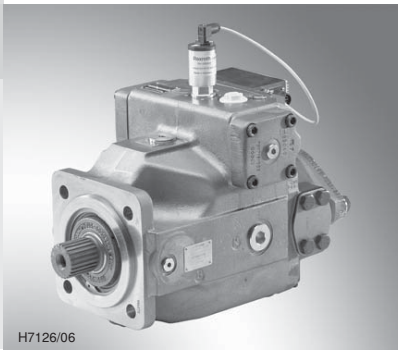
Variable-speed pressure and flow control system Sytronix DFEn 5000

RE 62242/12.11 1/26
Replaces: 30035, only Type SYHDFEn

Type SYHDFEn-1X

With axial piston variable displacement pump A4VSO
Size 125 to 355
Component series 1X
Maximum operating pressure 350 bar


H7126/06

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Features

An SYHDFEn-1X control system is used for the electro-hydraulic control of swivel angle, pressure and power/torque of an axial piston variable displacement pump.

The control system consists of the following components:

- A4VSO axial piston variable displacement pump optimized for the operation in the control system
- VT-DFPn-2X proportional valve as pilot valve with integrated electronics including inductive position transducer for valve position sensing
- Position transducer for sensing the swivel angle
- Pressure transducer with suitable signal level and dynamics (separate order)

Ordering code: Pump of the Sytronix DFEn 5000 control system

SYHDFEn-1X/	125	R	-	V	Z	B	25	U99	-	0000	-	...
1	2	3		4	5	6	7	8		9		See following pages

	Series					
1	Control system with internal digital electronics, variable-speed, DFEn 5000					**SYHDFEn-1X**
	Size	**125**	**180**	**250**	**355**	
2	Displacement cm³	125	180	250	355	
	Direction of rotation looking at the drive shaft					
3	Clockwise	●	●	●	●	R
	Counterclockwise	●	●	●	●	L
	Hydraulic fluid					
4	Mineral oil according to DIN 51524 (HL/HLP)	●	●	●	●	V
	HFC	●	●	●	●	F
	Drive shaft variant					
5	Cylindrical with key DIN 6885	●	●	●	●	P
	Splined shaft profile DIN 5480	●	●	●	●	Z
	Connection flange					
6	ISO 4-hole	●	●	●	●	B
	Connection for working lines					
7	Port B and S: SAE, laterally displaced by 90 °, metric mounting thread, 2nd pressure port B1 vis-à-vis B – upon delivery closed by means of flange plate	●	●	●	●	25
	Through-drive (see table page 17/18)					
8	Universal through-drive, convertible, without hub, without intermediate flange closed by means of cover	●	●	●	●	U99
	Base pump variant					
9	Standard (internal pilot oil)	●	●	●	●	0000
	External supply	●	●	●	●	0576

● = available - = not available Preferred program

Ordering code: Pilot valve of the SYHDFEn control system

SYHDFEn-1X/	125	R	-	V	Z	B	25	U99	-	0000	-	A	0	A	0	V	-	*
1	2	3		4	5	6	7	8		9		10	11	12	13	14		15

Spool design

10	Standard	A
	4-groove spool (e.g. for HFC fluids)	C

Valve installation orientation

11	Integrated electronics parallel to the pump axis direction subplate	0

Additional functions

12	Teach-in version for cyclic operation	A
	Real-time version (speed calculation without teach-in)	R

Electronic assembly, options

13	Standard	0

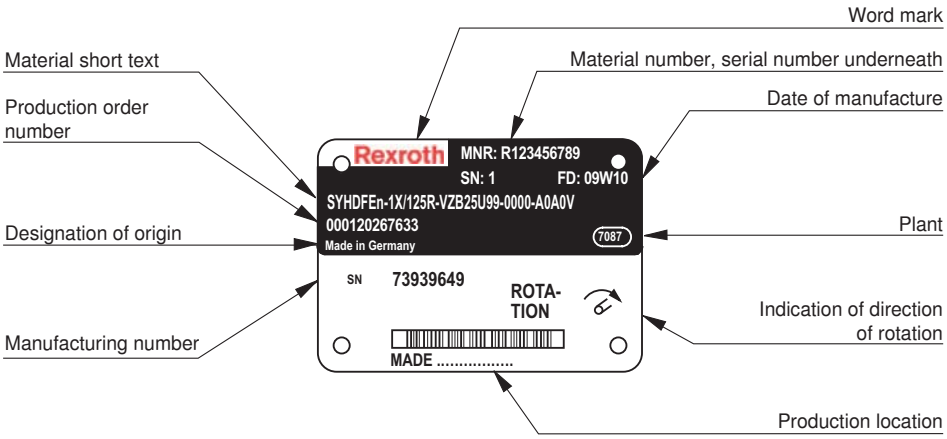
Actual pressure value input

	Parameter setting ex factory (description of the plug-in connectors on page 12/13)	Plug-in connector	
14	Current input 4...20 mA	X1	C
	Voltage input 0...10 V	X1	V
	Voltage input 1...10 V	X1	E
	Voltage input 0.5...5 V [1]	X2	F

15	Further details in the plain text e.g. SO variant	

[1] With the SYDFEn control system with the additional function (feature 12 of the ordering code) "Teach-in version for cyclic operation" and with analog interfaces, the plug-in connector X2 cannot be used as actual pressure value input. Thus, a separate pressure transducer has to be used and connected to plug-in connector X1 in this case.

Example of a name plate



Notice:

For enquiries regarding the control system, material number, production order number, serial number, and date of manufacture are necessary.

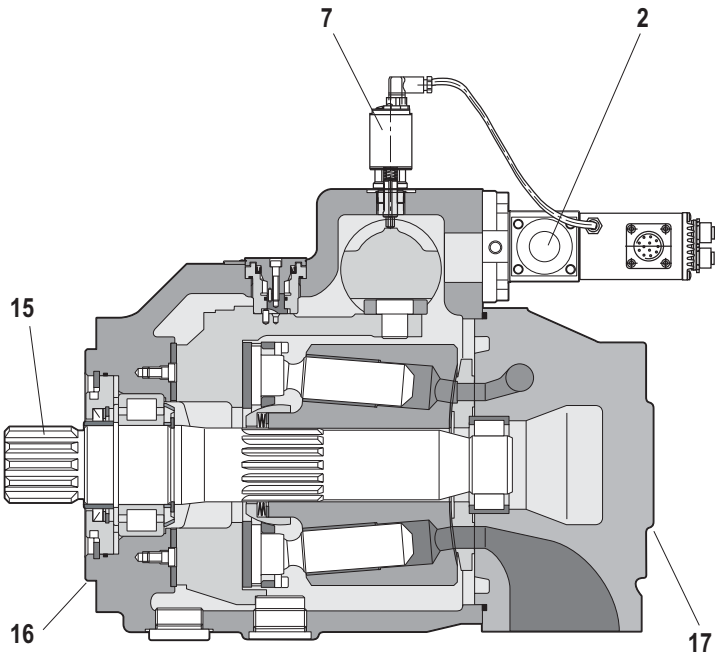
Ordering code: Accessories

Version 10/2011, enquire availability

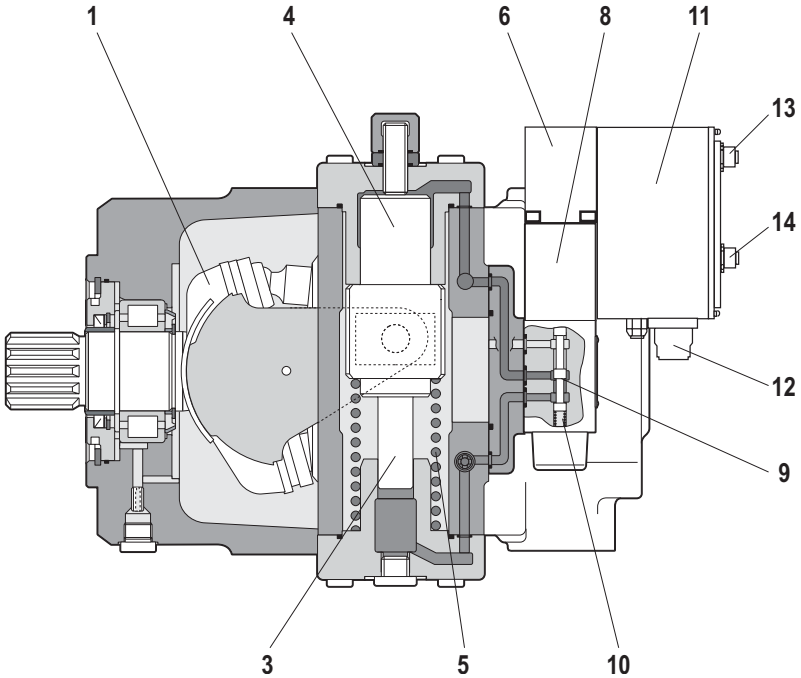
Accessories for Sytronix DFEn 5000	**Material number**	**Data sheet**
Mating connector 12-pin for central connection X1 without cable (assembly kit)	R900884671	08006
Mating connector 12-pin for central connection X1 with cable set 2 x 5 m	R900032356	
Mating connector 12-pin for central connection X1 with cable set 2 x 20 m	R900860399	
Mating connector for interface X3, M12, straight, can be connected independently, 5-pin, shielded, A-coded, cable diameter 6...8 mm	R901076910	
Pressure transducer HM 12-1X measurement range 315 bar (4...20 mA)	R900199871	29933
Pressure transducer HM 13-1X measurement range 315 bar (0...10 V)	R900174374	29933
Pressure transducer HM 17-1X measurement range 315 bar (4...20 mA)	R900773065	30269
Pressure transducer HM 17-1X measurement range 315 bar (0.1...10 V)	R900773124	30269
Test device VT-PDFE-1-1X/V0/0	R900757051	29689-B
Compact power supply unit VT-NE32-1X	R900080049	29929
Converter USB/serial for laptops without serial interface VT-ZKO-USB/S-1-1X/V0/0	R901066684	
Cable for connecting a Win-PED PC (RS232) to the X2 interface length 3 m	R901156928	
T connector for the simultaneous connection of a Win-PED PC (RS232) and a pressure transducer at plug-in connector X2 (only necessary with actual pressure value input 0.5...5 V (feature 14 = F)	R901117164	

More accessories	**Page**	
Hubs for through-drives	18	
Hubs for standard electric motor coupling	25	

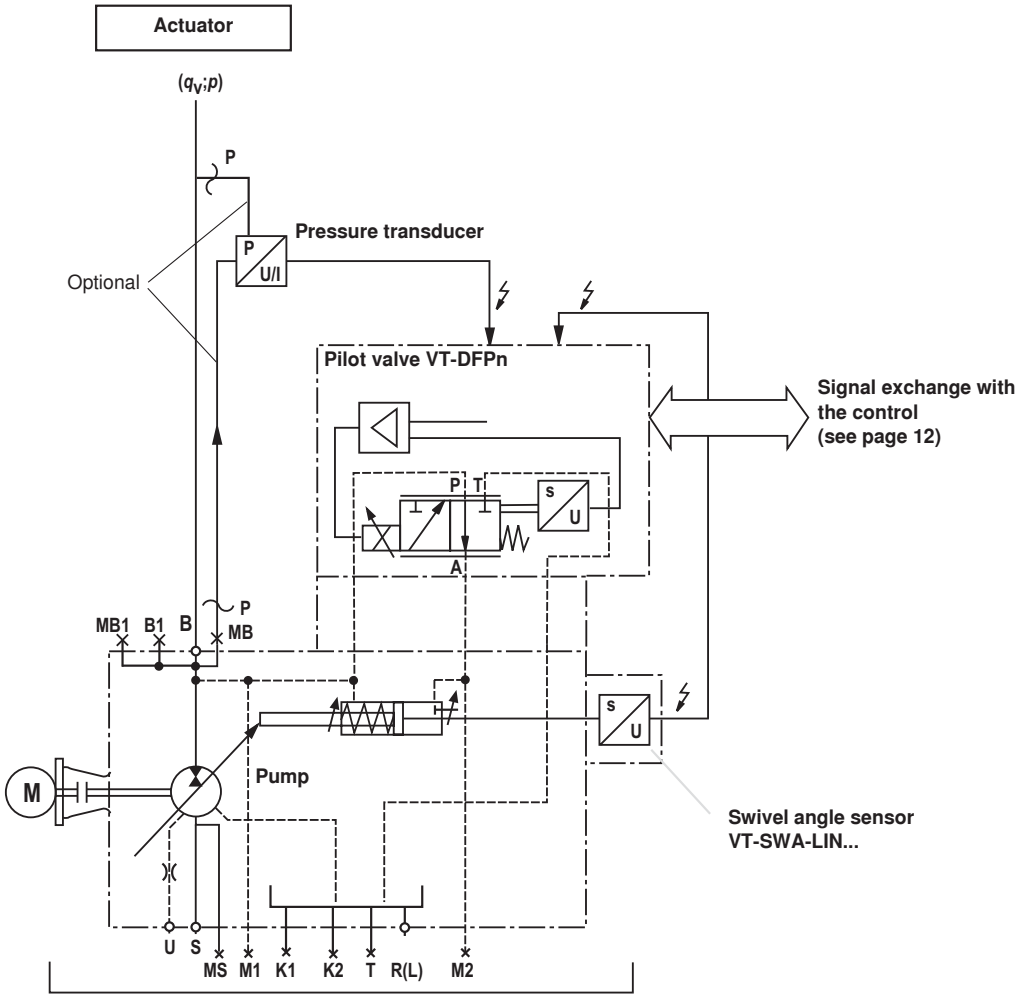
Cross section



1 Swash plate
2 Pilot valve
3 Counter piston
4 Actuating piston
5 Spring
6 Inductive position transducer
7 Swivel angle position sensor with integrated electronics VT-SWA-LIN
8 Proportional solenoid
9 Valve spool
10 Spring
11 Integrated electronics
12 Connector X1
13 Connector X2
14 Mating connector X3 for connecting the CAN bus
15 Drive shaft
16 Connection flange
17 Subplate with through-drive U99, without hub, without intermediate flange



Schematic diagram: Actuating system supplied internally



S	Suction port
K1, K2	Flushing port
T	Fluid drain
MB	Measuring port operating pressure
MS	Measuring port suction pressure
M1, M2	Measuring port control chamber pressure
R(L)	Fluid filling + bleeding (leakage port)
U	Flushing port
B	Pressure port
B1	2nd pressure port/additional port
MB1	Measuring port operating pressure Size 250/355: G1/4 Size 125/180: Blind flange 1 ¼ ″ with pressure measuring port G1/4 attached to B1

When using the HM16-1X/...C13 pressure transducer:

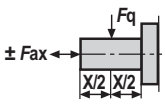
- Installation in MB (pump) in connection with electronic version "actual pressure value input F".
- For attaching an HM16-1X/…C13, an adapter from M14x1.5 to G1/4 (Mat. no. R900695665) is necessary.
- Due to the installation position, the HM16 cannot be used for all sizes without restrictions (replacement: HM17-1X/…-F… with extension cable).

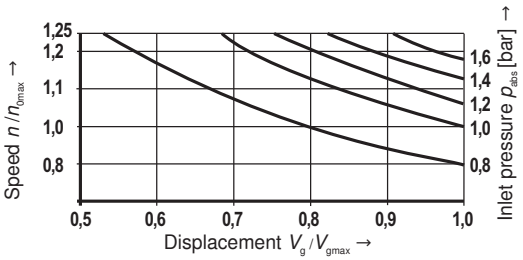
When using an external pressure transducer:

Installation in the B line (preferably close to the actuator) and electrical connection via the central connector X1

Explanation in the operating instructions (see page 25)

Technical data (For applications outside these parameters, please consult us!)

mechanical and hydraulic					
Size / displacement	$V_{g\,max}$ [cm³]	125	180	250	355
Maximum speed [1]	$n_{0\,max}$ [min⁻¹]	1800	1800	1800	1500
Minimum speed	n_{min}	50 min⁻¹			
Max. flow (displacement)					
at max. speed	$q_{v0\,max}$ [l/min]	225	324	450	533
with n_E = 1500 min⁻¹	[l/min]	186	270	375	533
Max. power (Δp = 350 bar)					
at max. speed	$P_{0\,max}$ [kW]	131	189	263	311
with n_E = 1500 min⁻¹	[kW]	109	158	219	311
Max. torque (Δp = 350 bar)	T_{max} [Nm]	696	1002	1391	1976
Max. admissible drive torque					
Key	T_{Total} [Nm]	1392	1400	2300	3557
Splined shaft Z overall torque	T_{Total} [Nm]	1392	2004	2782	3952
Max. admissible through-drive torque	T_D [Nm]	696	1002	1391	1976
 Drive shaft load					
– Max. admissible axial force	$F_{ax\,max}$ [N]	1000	1400	1800	2000
– Max. admissible radial force [2]	F_q [N]	1600	2000	2000	2200
Weight without filling quantity	m [kg]	88	102	184	207
Moment of inertia around drive axis	[kgm²]	0.03	0.055	0.0959	0.19
Filling quantity, housing	[l]	5	4	10	8
Maximum admissible operating pressure [3]	p_{max}	350 bar			
Minimum operating pressure	p_{min}	≥ 20 bar			
Admissible inlet pressure	p	0.8…30 bar			
Hydraulic fluid		Mineral oil (HL, HLP) according to DIN 51524 HFC optional (see ordering code)			
Hydraulic fluid temperature range	ϑ	–20...+70 °C			
Maximum admissible degree of contamination of the hydraulic fluid according to ISO 4406		Class 18/16/13 (for particle size ≤ 4/6/14 µm)			



[1] The values are applicable at an absolute pressure of 1 bar in suction port S. With a reduction of the displacement or an increase in the inlet pressure, the speed can be increased according to the following characteristic curve. With a reduced inlet pressure, the speed is to be reduced.

[2] In case of higher radial forces, please consult us.

[3] When using HFC fluids, also see data sheet 92053.

Technical data (For applications outside these parameters, please consult us!)

electric			
Operating voltage		U_B	24 VDC +40 % –5 %
Operating range (short-time operation)			
	Upper limit	$U_B(t)_{max}$	35 V
	Lower limit	$U_B(t)_{min}$	21 V
Current consumption (in static control operation)			
	Rated current	I_{Rated}	0.6 A
	Maximum current	I_{max}	1.25 A
Inputs	Actual pressure value input X1; pin 10 and 11	*U* or *I*	Parameterizable: 0...20 mA; 4...20 mA; 0...10 V; 0…5 V; 0.5…5 V; 0.1...10 V; 1...10 V
	Analog current inputs, load	R_B	100 Ω
	Analog voltage inputs	R_E	≥ 100 kΩ
	Digital inputs	Logic 0	≤ 8 V
		Logic 1	≥ 14 V
Outputs	$n_{command}$ / $U_{OUT}1$ [1)]	U_A I_{max}	±10 V 2 mA
	α_{actual} / $U_{OUT}2$ [2)]	U_A I_{max}	±10 V 2 mA
	Digital outputs	Logic 0	U_a < 1 V
		Logic 1	$U_a \geq U_B$ – 5 V; 10 mA (short-circuit-proof)
Ambient temperature range at the pump		ϑ	0…50 °C
Storage temperature range (pump+electronics)		ϑ	0…70 °C
Electronics design			Integrated in the pilot valve (OBE)
Electrical connection			See page 12
Protection class according to EN 60529	Pump incl. pilot valve		IP 65 with mounted and locked plug-in connectors
Power limitation			Yes

Notice:

For information on the environment simulation testing for the areas of EMC (electromagnetic compatibility), climate and mechanical load, see data sheet 30030-U.

[1, 2)] The outputs are parameterizable, condition as supplied see page 12

Technical data (For applications outside these parameters, please consult us!)

Bearing flushing

With the following operating conditions, flushing of the bearing is necessary for safe continuous operation:

- Applications with special fluids (not mineral fluids) due to limited lubricity and tight operating temperature range
- Operation with boundary conditions of temperature and viscosity with mineral oil operation

With vertical installation (drive shaft upwards), bearing flushing is recommended for lubricating the front bearing and the shaft seal ring.

The bearing is flushed using port "U" in the area at the front flange of the variable displacement pump. The flushing fluid flows through the front bearing and exits with the pump leakage at the leakage port.

For the individual sizes, the following flushing quantities are recommended:

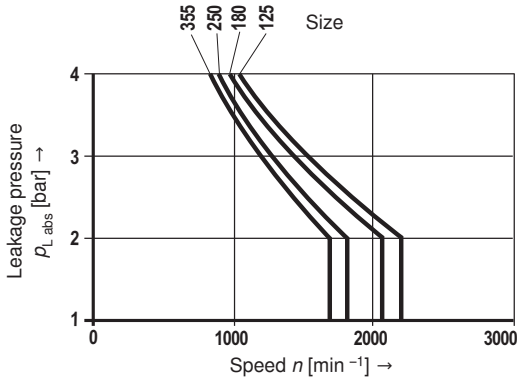
Size		125	180	250	355
Recommended flushing quantity	q_{Sp} [l/min]	5	7	10	15

The specified flushing quantities result in a pressure differential between port "U" (including fitting) and the leakage chamber of approx. 2 bar (series 1) and approx. 3 bar (series 3).

When using the external bearing flushing, the throttle screw in port U has to be screwed-in to the stop.

Leakage pressure

The admissible leakage pressure (housing pressure) depends on the speed (see diagram).



Max. leakage pressure (housing pressure)

$p_{L\ abs\ max}$ = 4 bar absolute

These specifications are guidelines; under special operating conditions, a limitation may become necessary.

Flow direction

S → B

Closed-loop control quality

Notices:

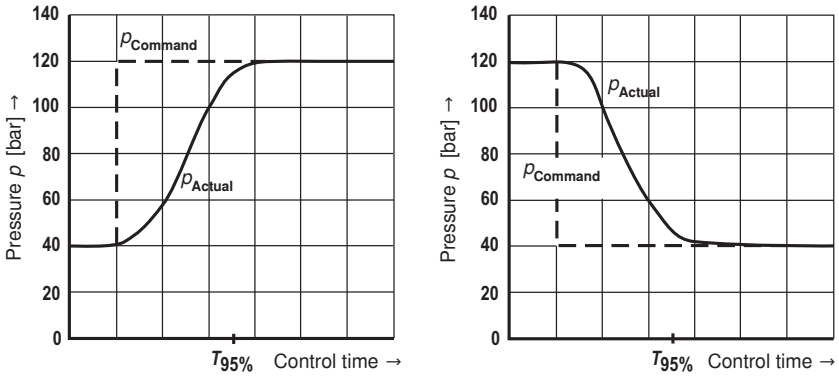
- The specified values are only valid when using the system-related components specified in this data sheet.

	Swivel angle control	Pressure control [1]
Linearity tolerance	≤ 1.0 %	≤ 1.5 %
Temperature error	≤ 0.5 % / 10 K	≤ 0.5 % / 10 K
Hysteresis	Typically 0.3 %	≤ 0.2 %
Repeatability	≤ 0.2 %	≤ 0.2 %

[1] Without considering the pump pulsation

Transition function with pressure command value step with spool design "A"

The specified curve shapes and control times refer to a drive speed of 1500 rpm and are only reached with an optimization of the pressure controller.



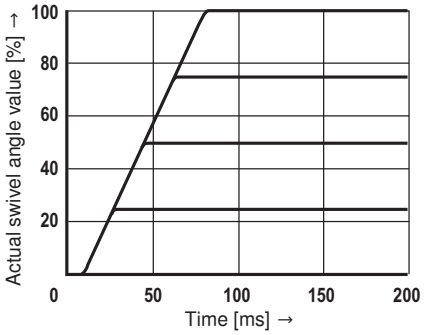
$T_{95\,\%}$ in ms with a connected hydraulic fluid volume (lines and actuators)

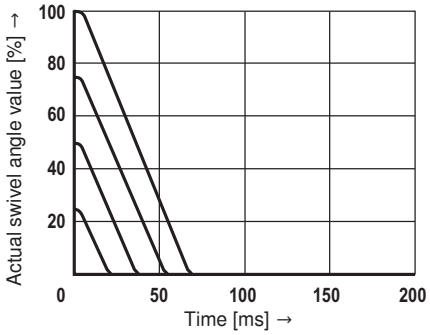
Hydraulic fluid volume	$T_{95\,\%}$
5 – 10 l	200 ms
15 – 25 l	250 ms

For pressures up to 40 bar, the values of the response times are larger.

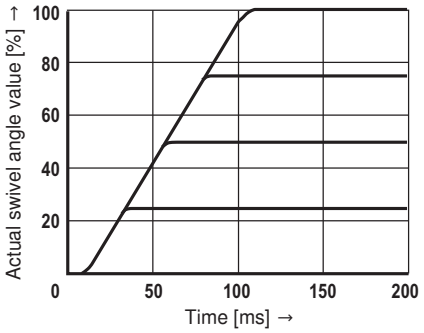
Transition function with swivel angle command value step with spool design "A"

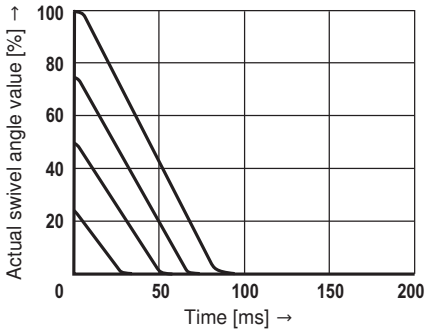
Size 125 p = 100 bar



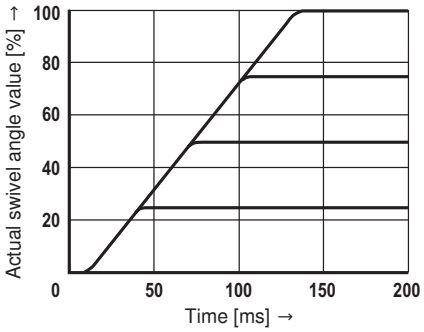


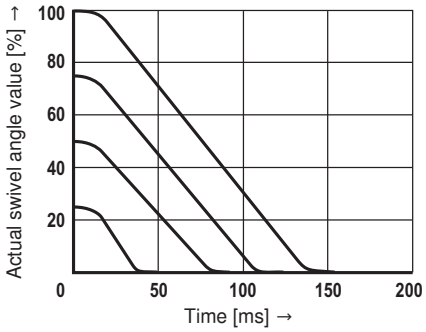
Size 180 p = 100 bar



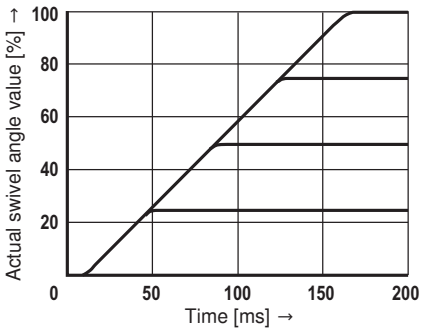


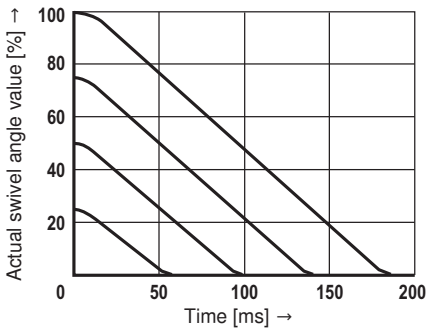
Size 250 p = 100 bar





Size 355 p = 100 bar

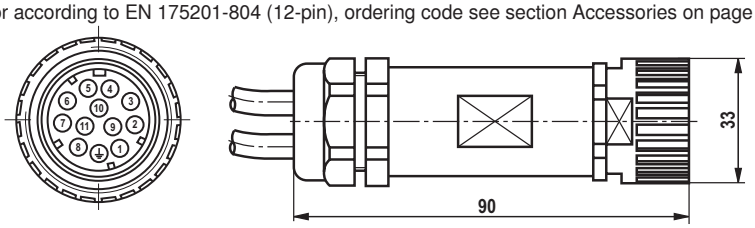




Electrical connection

X1: Central connection

Mating connector according to EN 175201-804 (12-pin), ordering code see section Accessories on page 4



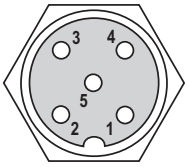
Assignment of connector or mating connector and cable set

Pin	Signal	Description	Signal direction	Type of signal	Assignment in the cable set (accessories)	
1	$+U_B$	Voltage supply	IN	24 V DC	1	Supply line 3 x 1.0 mm²
2	0 V = L0	Reference potential for the voltage supply	-		2	
PE	Earth	Earthing connection for the electronics	-		Green/yellow	
3	Fault	Signals failures, e.g. cable break command / actual values, controller monitoring (logic 0 = error)	OUT	Logic 24 V	White	Supply line 10 x 0.14 mm² shielded (one end of the shield must be connected to the control!)
4	M0	Reference potential for analog signals	-		Yellow	
5	AI2	Analog input AI2 Standard: Swivel angle command value	IN	Analog ±10 V	Green	
6	U_{OUT2}	Analog output Standard: Actual swivel angle value normalized	OUT	Analog ±10 V	Violet	
7	AI1	Analog input AI1 Standard: Pressure command value	IN	Analog 0...10 V	Pink	
8	U_{OUT1}	Analog output Standard: Speed command value	OUT	Analog ±10 V	Red	
9	DI1	Digital input DI1 Depending on additional function (feature 12 of the ordering code): – Teach-in version: Synchronization bit DI1 – Real-time version: Activate real-time operation	IN	Logic 24 V	Brown	
10	Actual pressure value H	Actual pressure value input: Signal level depends on feature 14 in the ordering code.	IN	Analog	Black	
11	Actual pressure value L		-	Analog	Blue	
n.c.					Gray	

Electrical connection (continued)

X2: Serial interface RS232 and a selectable digital input S1/pressure transducer input for HM 16 (mating connector M12)

Pin	Signal input	Pin	Signal RS232
1	OUT, $+U_B$	2	RxD
3	Reference L0		
4	Analog input 0.5...5 V for HM 16 or digital input 0 V low, 10 V high (max. 12 V) Depending on additional function (feature 12 of the ordering code): – Teach-in version: Digital input "Variable-speed operation ON, S1" – Real-time version: Input as analog input for pressure transducer HM 16	5	TxD



Top view
Mating connector

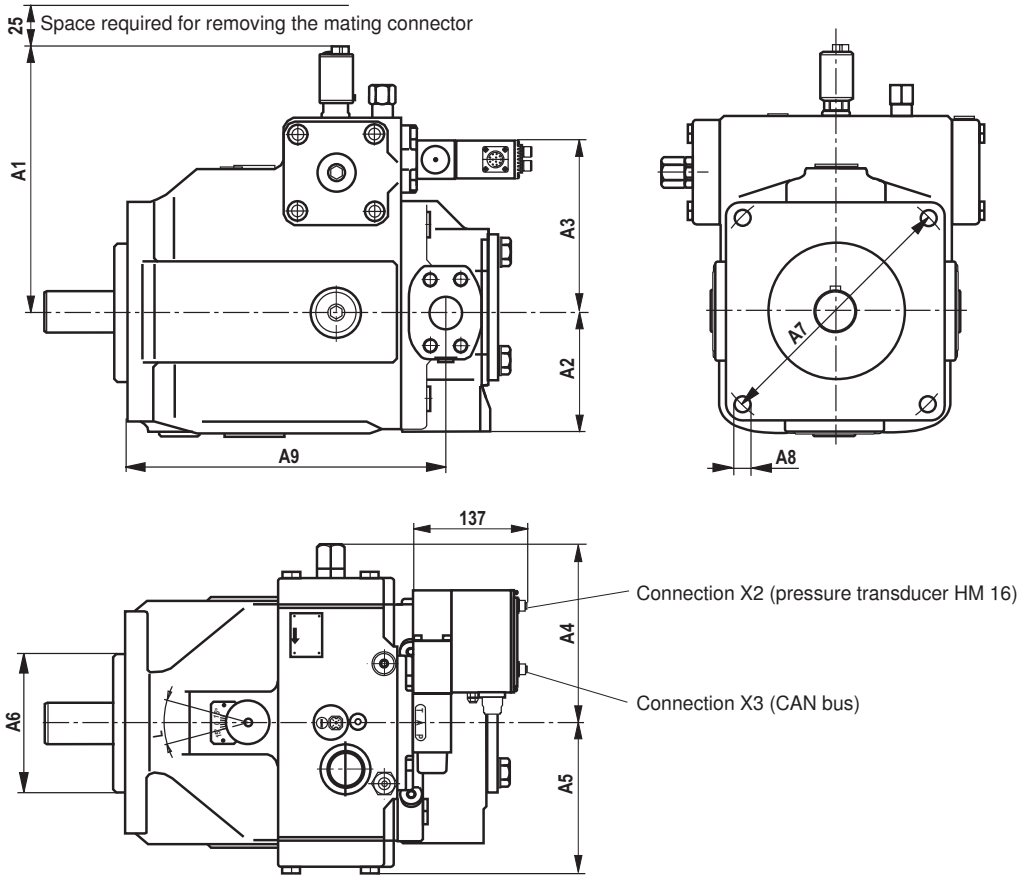
X3: CAN bus and digital input 2 (connector M12)

Pin	Signal input	Pin	Signal CAN
1	n.c.	**3**	CAN GND
2	IN, digital IN2 (DI2) Depending on additional function (feature 12 of the ordering code): – Teach-in version: Start teach-in, S2 – Real-time version: Manual speed provision active, speed is accepted according to the real-time operation status and the setting of the R parameters.	**4**	CAN-HIGH
		5	CAN-LOW

Top view
Connector

Unit dimensions: SYHDFE. (dimensions in mm)

The unit dimensions of the base pump (axial piston variable displacement pump A4VSO) are contained in data sheet 92050.



Size	A1	A2	A3	A4	A5	A6	A7	A8	A9
125	276	112.5	159	177	137	160	200	20	310
180	276	116	159	177	137	160	200	20	318
250	323	144	206	212	172	224	280	24	380
355	323	144	206	212	172	224	280	24	393

Shaft ends:

Size	Shaft Ø	= P [1]	= Z [2]
125	50	AS 14x9x80	W 50x2x30x24x9g
180	50	AS 14x9x80	W 50x2x30x24x9g
250	60	AS 18x11x100	W 60x2x30x28x9g
355	70	AS 20x12x100	W 70x3x30x22x9g

[1] Cylindrical with key DIN 6885
[2] Splined shaft profile DIN 5480

Through-drives: Torques

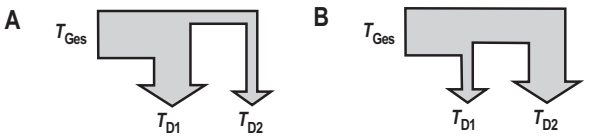
The control systems are supplied with universal through-drives U99.
Their advantage is that the through-drive can be subsequently converted.

By simply exchanging the intermediate flange and the hub, the through-drive can be adjusted to the on-site requirements. The assemblies as exchange kits can be ordered separately, see "Accessories for through-drives" on page 17 as well as data sheet 95581.

Admissible drive and through-drive torques

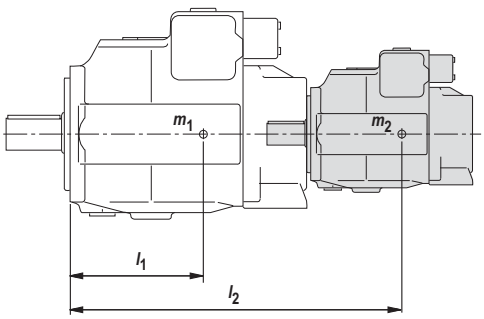
Size			125	180	250	355
Splined shaft						
Maximally admissible total drive torque at the shaft of pump 1 (Pump 1 + Pump 2)	$T_{Total\ max}$	[Nm]	1392	2004	2782	3952
A Admissible through-drive torque	$T_{D1\ max}$	[Nm]	696	1002	1391	1976
	$T_{D2\ max}$	[Nm]	696	1002	1391	1976
B Admissible through-drive torque	$T_{D1\ max}$	[Nm]	696	1002	1391	1976
	$T_{D2\ max}$	[Nm]	696	1002	1391	1976

Distribution of the torques



Admissible inertial torque

Related to connection flange of the main pump



m_1, m_2 [kg] Weight of the pump

l_1, l_2 [mm] Distance of the center of gravity

$$T_m = m_1 \bullet l_1 \bullet \frac{1}{102} + m_2 \bullet l_2 \bullet \frac{1}{102} \text{ [Nm]}$$

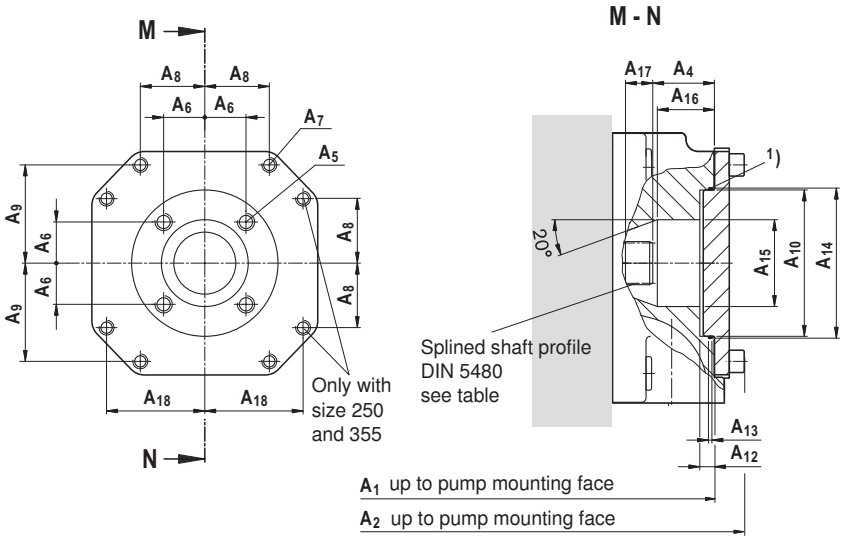
Size			125	180	250	355
Admissible inertial torque	$T_{m\ adm.}$	[Nm]	4200	4200	9300	9300
Admissible inertial torque with dynamic mass acceleration of 10 g = 98.1 m/sec^2	$T_{m\ adm.}$	[Nm]	420	420	930	930
Weight (SYHDFE or A4VSO...DR)	m	[kg]	88	102	184	207
Distance of the center of gravity	l_1	[mm]	170	180	210	220

Unit dimensions: Through-drive U99 (dimensions in mm)

Before determining your construction, please request a binding installation drawing.

U99 **Size 125 to 355**
with through-drive shaft, without hub, without intermediate flange, closed by means of a pressure-tight cover in a fluid-tight way

Drawn without cover



Size Main pump	A_1	A_2	A_4	A_5	A_6	A_7	A_8	A_9	A_{10}	A_{12}	A_{13}
125	347	368	$49.7^{\pm1}$	M14; 15 deep	$33.2^{+0.15}$	M12; 18 deep	–	$79.2^{+0.15}$	$ø118^{H7}$	9	$2.8^{+0.2}$
180	371	392	$49.7^{\pm1}$	M14; 15 deep	$33.2^{+0.15}$	M12; 18 deep	–	$79.2^{+0.15}$	$ø118^{H7}$	9	$2.8^{+0.2}$
250	431	455	$61.4^{\pm1}$	M20; 22 deep	$44.5^{+0.15}$	M10; 15 deep	$58.15^{+0.15}$	$86.2^{+0.15}$	$ø160^{H7}$	9	$2.8^{+0.2}$
355	460	487	$61.4^{\pm1}$	M20; 22 deep	$44.5^{+0.15}$	M10; 15 deep	$58.15^{+0.15}$	$86.2^{+0.15}$	$ø160^{H7}$	9	$2.8^{+0.2}$

Size Main pump	A_{14}	A_{15}	A_{16}	A_{17}	A_{18}	Splined shaft profile DIN 5480	[1] O-ring for subsequent attachment (is also supplied)
125	$ø121^{+0.1}$	ø70	46	22	–	W35x1.25x26x9g	118 x 2
180	$ø121^{+0.1}$	ø70	46	25	–	W35x1.25x26x9g	118 x 2
250	$ø163^{+0.1}$	ø87	64	30.5	$86.2^{+0.15}$	W42x1.25x32x9g	160 x 2
355	$ø163^{+0.1}$	ø87	64	34	$86.2^{+0.15}$	W42x1.25x32x9g	160 x 2

Accessories for through-drives

Mounting kits for axial piston variable displacement pumps and SYHDFE control systems

The order numbers for the combination of pumps are contained in the table shown below and in the data sheet 95581.

Components Universal through-drive	Main pump SYHDFE.-1X		Attachment pump			
	Size 125 Size 180	Size 250 Size 350	Size and type		Through-drive Centering Hub	Flange designation
Mounting kit	R902447035	R902447037	Size 18	SYDFE.-2X A10VSO / BR31 Shaft S or R	U52 82.55 mm 3/4 ″	SAE J744 82-1 (A-B)
Flange kit	R902446836	R902446850				
Hub	R902446823	R902446843				
Mounting kit	R902446996	R902446998	Size 28		UB3 100 mm 7/8 ″	ISO 3019-2 100B2HW
Flange kit	R902446808	R902446809				
Hub	R902446824	R902446844				
Mounting kit	R902447001	R902447003	Size 45		UB4 100 mm 1 ″	ISO 3019-2 100B2HW
Flange kit	R902446808	R902446809				
Hub	R902446825	R902446845				
Mounting kit	R902447014	R902447016	Size 71	SYDFE.-3X A10VSO / BR32 Shaft S or R	UB8 160 mm 1 ¼ ″	ISO 3019-2 160B4HW
Flange kit	R902446816	R902446817				
Hub	R902446826	R902443227				
Mounting kit	R902447021	R902447022	Size 100		UB9 180 mm 1 ½ ″	ISO 3019-2 180B4HW
Flange kit	R902446818	R902446820				
Hub	R910943555	R910921237				
Mounting kit	R902447025	R902447026	Size 140		UB7 180 mm 1 ¾ ″	ISO 3019-2 180B4HW
Flange kit	R902446818	R902446820				
Hub	R910904588	R902446849				
Mounting kit	R902447019	R902447020	Size 125 Size 180	SYHDFE-1X A4VSO / BR30 Shaft Z	U34 160 mm W 50x2x24x9g	ISO 3019-2 160B4HW
Flange kit	R902446816	R902446817				
Hub	R902446848	R902446830				
Mounting kit		R902447028	Size 250		U35 224 mm W 60x2x28x9g	
Flange kit		R902446822				
Hub		R910902972				
Mounting kit		R902447029	Size 355		U77 224 mm W 70x3x22x9g	
Flange kit		R902446822				
Hub		R910941327				

Accessories for through-drives

Mounting kits for gear pumps

To the attachment pumps listed in the table, the following conditions apply:

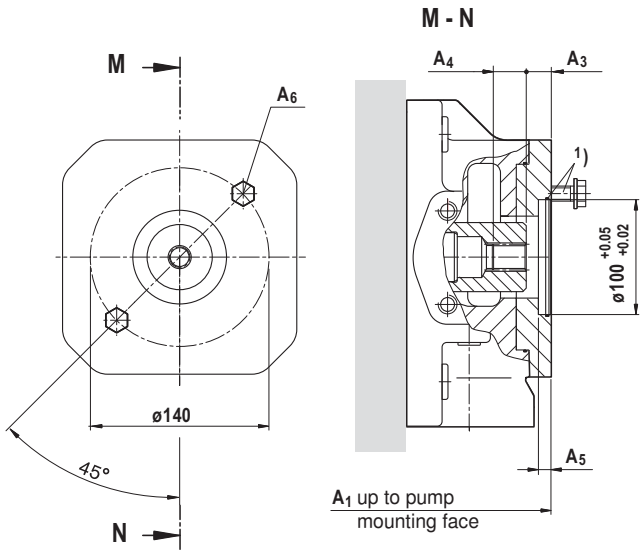
– PGH with shaft R, flange U2, see data sheet 10223
– PGF3 with shaft J, flange U2, see data sheet 10213
– AZPF with shaft R, front cover R, see data sheet 10089

Also observe that the flange and the through-drive (see ordering code page 2 are identical. Check in the current data sheet of the gear pump whether the shaft ends have the specified dimensions.

Components Universal through-drive	Main pump SYHDFE.-1X		Attachment pump		
	Size 125 Size 180	Size 250 Size 350	Size and type	Through-drive Centering Hub	Flange designation
Mounting kit	R902447030	R902447032	PGF2, PGH2, PGH3, AZPF	U01 82.55 5/8 ″	SAE J744 82-2(A-B)
Flange kit	R902446836	R902446850			
Hub	R902446831				
Mounting kit	R902447040	R902447042	PGF 3	U 68 101.6 mm 7/8 ″	SAE J744 101-2(B)
Flange kit	R902446837	R902446851			
Hub	R902446824	R902446844			
Mounting kit	R902447045	R902447047	PGH 4	U04 101.6 mm 1 ″	SAE J744 101-2(B)
Flange kit	R902446837	R902446851			
Hub	R902446825	R902446845			
Mounting kit	R902447052	R902447053	PGH 5	U24 127 mm 1 ½ ″	SAE J744 127-2(B)
Flange kit	R902446838	R902446852			
Hub	R910943555	R910921237			

Unit dimensions: Through-drives (dimensions in mm)

UB3 **Flange** ISO 3019-2 100, 2-hole
Hub for splined shaft, 22-4 SAE B, 7/8 ″, 16/32 DP; 13T [3]
for attaching an A10VSO 28/31 splined shaft S (see data sheet 92711)

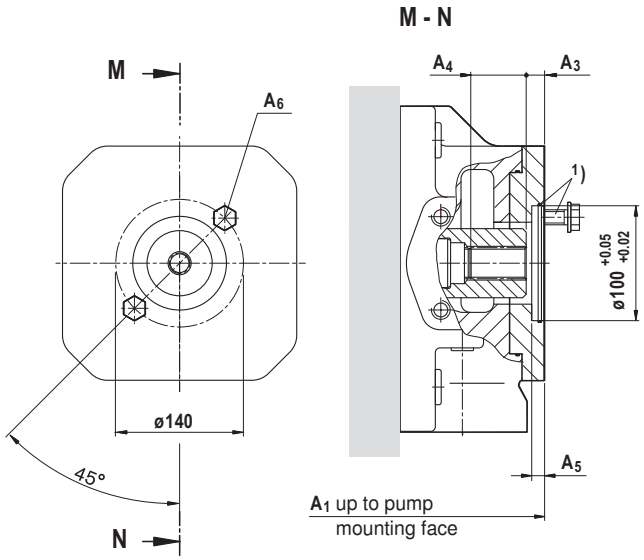


Size	A1	A3	A4	A5	A6 [2]
125	369	20.5	24.9	10	M12
180	393	20.5	24.9	10	M12
250	In preparation				
355	In preparation				

Before determining your construction, please request a binding installation drawing.

[1] 2 mounting screws and O-ring seal are included in the scope of delivery
[2] Thread according to DIN 13, for the max. tightening torques, the installation information on page 25 is to be observed
[3] According to ANSI B92.1a-1976, 30° pressure angle, flatt root, side fit, tolerance class 5

UB4 **Flange** ISO 3019-2 100, 2-hole
Hub for splined shaft, 25-4 SAE B-B, 1 ″, 16/32 DP; 15T [3]
for attaching an A10VSO 45/31 splined shaft S (see data sheet 92711)



Size	A1	A3	A4	A5	A6 [2]
125	369	18.9	29.5	10	M12
180	393	18.9	29.5	10	M12
250	453	20.9	29.5	10	M12
355	482	20.9	29.5	10	M12

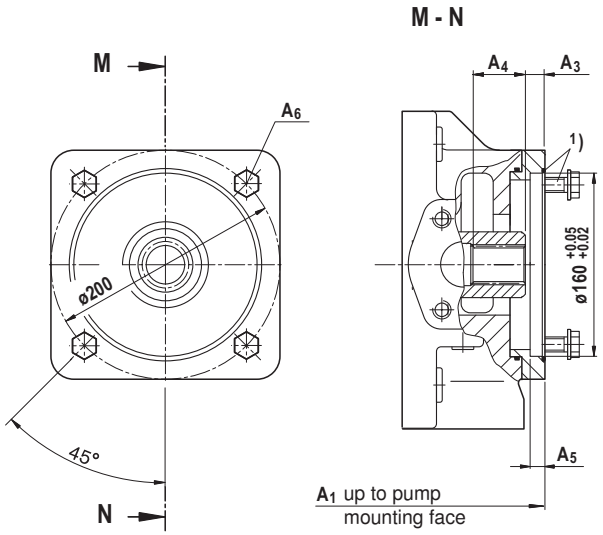
Before determining your construction, please request a binding installation drawing.

[1] 2 mounting screws and O-ring seal are included in the scope of delivery
[2] Thread according to DIN 13, for the max. tightening torques, the installation information on page 25 is to be observed
[3] According to ANSI B92.1a-1976, 30° pressure angle, flatt root, side fit, tolerance class 5

Unit dimensions: Through-drives (dimensions in mm)

UB8

Flange ISO 3019-2 160, 4-hole
Hub for splined shaft, 32-4 SAE C, 1 1/4 ″, 12/24 DP; 14T [3)]
for attaching an A10VSO 71/32 splined shaft S (see data sheet 92714)



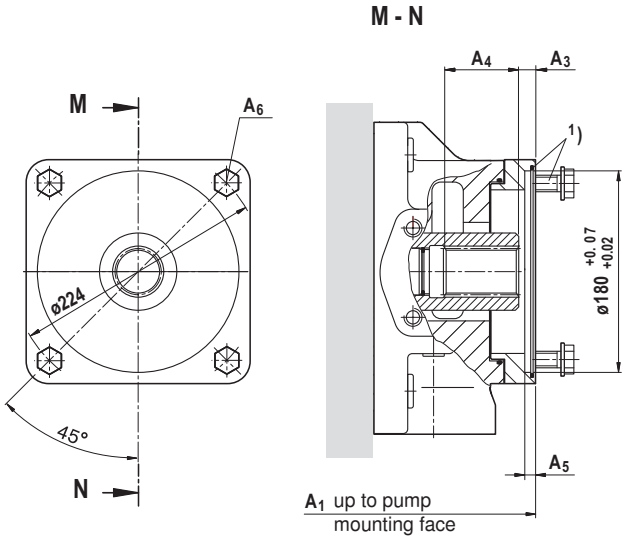
Size	A1	A3	A4	A5	A6 [2)]
125	In preparation				
180	In preparation				
250	453	20.9	38	9	M16
355	In preparation				

Before determining your construction, please request a binding installation drawing.

1) Mounting screws and O-ring seal are included in the scope of delivery
2) Thread according to DIN 13, for the max. tightening torques, the installation information on page 25 is to be observed
3) According to ANSI B92.1a-1976, 30° pressure angle, flatt root, side fit, tolerance class 5

UB7

Flange ISO 3019-2 180, 4-hole
Hub for splined shaft, 44-4 SAE D, 1 3/4 ″, 8/16 DP; 13T [3)]
for attaching an A10VSO 140/31(32) splined shaft S (see data sheet 92711 (92714))



Size	A1	A3	A4	A5	A6 [2)]
180	406	10.6	62	9	M16
250	453	10.6	64	9	M16
355	482	10.6	64	9	M16

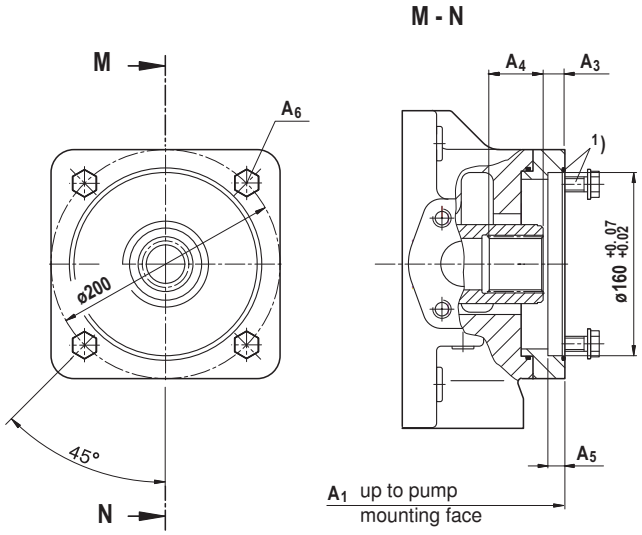
Before determining your construction, please request a binding installation drawing.

1) Mounting screws and O-ring seal are included in the scope of delivery
2) Thread according to DIN 13, for the max. tightening torques, the installation information on page 25 is to be observed
3) According to ANSI B92.1a-1976, 30° pressure angle, flatt root, side fit, tolerance class 5

Unit dimensions: Through-drives (dimensions in mm)

U34

Flange ISO 3019-2 160, 4-hole
Hub according to DIN 5480 N50x2x24x8H
for attaching an A4VSO/G 125 or 180 splined shaft



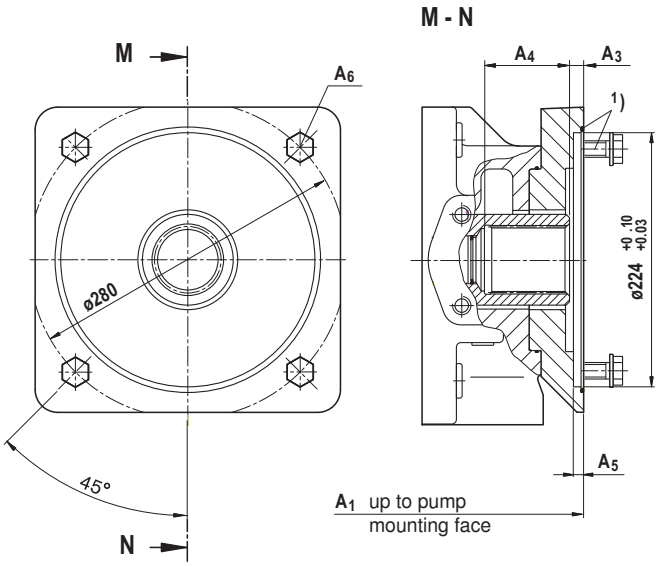
Size	A1	A3	A4	A5	A6 2)
125	369	12.5	51.6	9	M16
180	393	12.5	51.6	9	M16
250	453	12.5	54	9	M16
355	482	12.5	54	9	M16

Before determining your construction, please request a binding installation drawing.

1) Mounting screws and O-ring seal are included in the scope of delivery
2) Thread according to DIN 13, for the max. tightening torques, the installation information on page 25 is to be observed

U35

Flange ISO 3019-2 224, 4-hole
Hub according to DIN 5480 N60x2x28x8H
for attaching an A4VSO/G or A4CSG 250 splined shaft



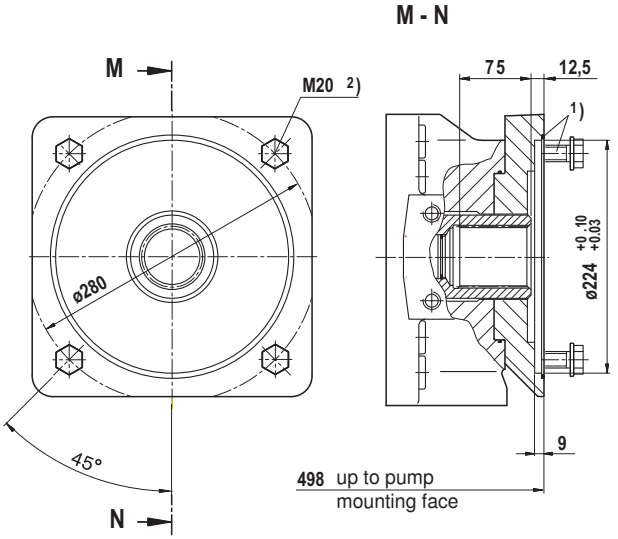
Size	A1	A3	A4	A5	A6 2)
250	469	12.5	75	9	M20
355	498	12.5	75	9	M20

Before determining your construction, please request a binding installation drawing.

1) Mounting screws and O-ring seal are included in the scope of delivery
2) Thread according to DIN 13, for the max. tightening torques, the installation information on page 25 is to be observed

Unit dimensions: Through-drives (dimensions in mm)

U77 **Flange** ISO 3019-2 224, 4-hole
Hub according to DIN 5480 N70x3x22x8H
for attaching an A4VSO/G or A4CSG 355 splined shaft

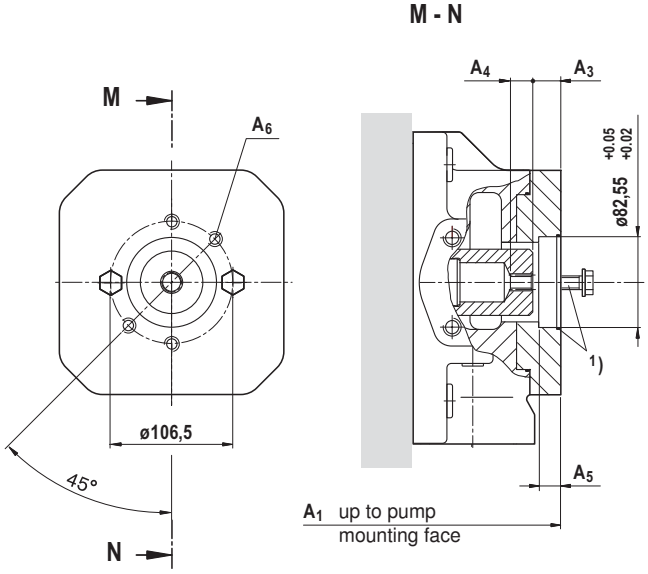


Size 355

Before determining your construction, please request a binding installation drawing.

1) Mounting screws and O-ring seal are included in the scope of delivery
2) Thread according to DIN 13, for the max. tightening torques, the installation information on page 25 is to be observed

U01 **Flange** ISO 3019-1 82-2 (SAE A)
Hub for splined shaft, 16-4 SAE A, 5/8 ″, 16/32 DP; 9T 3)
for attaching an external gear pump AZ-PF-1X-004 ... 022 (see data sheet 10089)
Rexroth recommends a special version of the gear pumps, please contact us



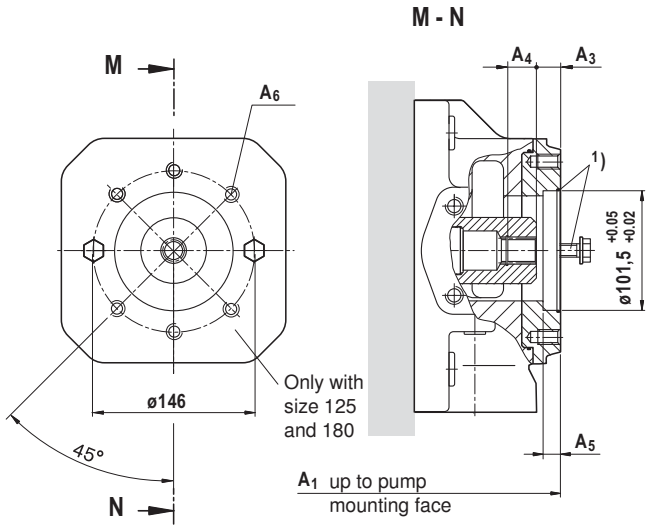
Size	A1	A3	A4	A5	A6 2)
125	369	16	19.4	13	M10
180	393	16	19.4	13	M10
250	453	16	19.4	13	M10
355	482	16	19.4	13	M10

Before determining your construction, please request a binding installation drawing.

1) 2 mounting screws and O-ring seal are included in the scope of delivery
2) Thread according to DIN 13, for the max. tightening torques, the installation information on page 25 is to be observed
3) According to ANSI B92.1a-1976, 30° pressure angle, flatt root, side fit, tolerance class 5

Unit dimensions: Through-drives (dimensions in mm)

U68 **Flange** ISO 3019-1 101-2 (SAE B), **Hub** for splined shaft 22-4 SAE B, 7/8 ″, 16/32 DP; 13T [3] for attaching an external gear pump AZ-PN-1X020...032 (see data sheet 10091 or an A10VO 28/31 and 52(53) splined shaft S (see data sheets 92701 and 92703) Rexroth recommends special versions of the gear pumps, please contact us



Size	A1	A3	A4	A5	A6 [2]
125	369	28	25	13	M12
180	393	28	25	13	M12
250	453	19.5	23.1	13	M12
355	482	19.5	23.1	13	M12

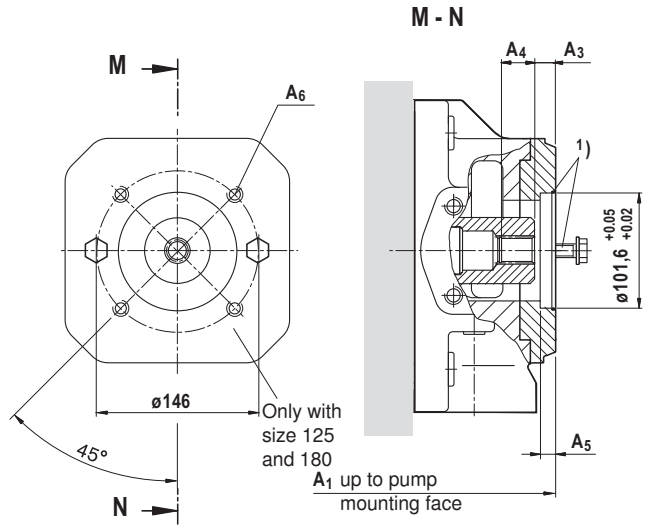
Before determining your construction, please request a binding installation drawing.

[1] 2 mounting screws and O-ring seal are included in the scope of delivery

[2] Thread according to DIN 13, for the max. tightening torques, the installation information on page 25 is to be observed

[3] According to ANSI B92.1a-1976, 30° pressure angle, flatt root, side fit, tolerance class 5

U04 **Flange** ISO 3019-1 101-2 (SAE B), **hub** for splined shaft 25-4 SAE B-B, 1 ″, 16/32 DP; 15T [3] for attaching an A10VO 45/31 and 52 (53) splined shaft S (see data sheets 92701 and 92703) or an internal gear pump PGH4 (see data sheet 10223)



Size	A1	A3	A4	A5	A6 [2]
125	369	18.9	29.4	13	M12
180	393	18.9	29.4	13	M12
250	453	18.9	29.4	13	M12
355	482	18.9	29.4	13	M12

Before determining your construction, please request a binding installation drawing.

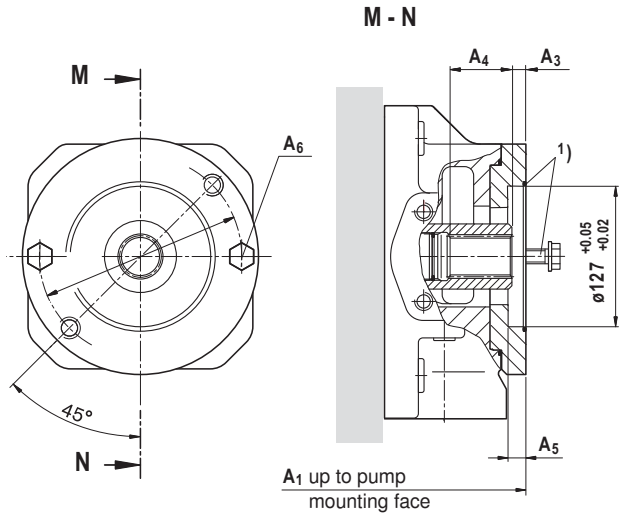
[1] 2 mounting screws and O-ring seal are included in the scope of delivery

[2] Thread according to DIN 13, for the max. tightening torques, the installation information on page 25 is to be observed

[3] According to ANSI B92.1a-1976, 30° pressure angle, flatt root, side fit, tolerance class 5

Unit dimensions: Through-drives (dimensions in mm)

U24 **Flange** ISO 3019-1 127-2 (SAE C)
Hub for splined shaft 38-4 SAE C-C, 1 1/2 ″, 12/24 DP; 17T [3)]
for attaching an A10VSO 100/31 splined shaft S (see data sheet 92701) or an A10VO 85/52(53) splined shaft S (see data sheet 92703) or an internal gear pump PGH5 (see data sheet 10223)



Size	A1	A3	A4	A5	A6 [2)]
125	369	10.4	50	13	M16
180	393	10.4	50	13	M16
250	453	12.4	55	13	M16
355	482	12.4	55	13	M16

Before determining your construction, please request a binding installation drawing.

[1)] 2 mounting screws and O-ring seal are included in the scope of delivery
[2)] Thread according to DIN 13, for the max. tightening torques, the installation information on page 25 is to be observed
[3)] According to ANSI B92.1a-1976, 30° pressure angle, flatt root, side fit, tolerance class 5

Hubs for standard electric motor coupling

Motor		SYHDFE.-1X		
Frame size/ Characteristic	Shaft diameter	Size 125/180 Shaft 50 mm	Size 100 Shaft 60 mm	Size 140 Shaft 70 mm
225/0	60	R900026055		
250/0	65	R900026059		
280/0	75	R900026063	R900714636	
315/0	80	R901076760	R900088584 [1)]	R900210961[1)]
315/1	80	R900026068	R900783295	R900210960

[1)] up to 40 °C

Project planning information

- Command values may only be switched via relays with gold contacts (low voltage, low currents).
- Always shield command and actual value lines. Observe the notices in the instructions 30014-B, section 7.6.
- The distance to aerial lines or radios must be at least 1 m.
- Do not lay signal lines close to power cables.
- Supplementary notices on the SYHDFEn control system can be found in the operating instructions (See section "More information about this control system" on this page).

Installation information

- Tightening torques:
  - The tightening torques specified in this data sheet are maximum values and must not be exceeded (maximum values for screw-in threads).
    Manufacturer's specifications on the max. admissible tightening torques of the fittings used are to be observed!
  - For mounting screws according to DIN 13, we recommend checking the tightening torque case by case according to VDI 2230 version 2003.

More information about this control system

Operating instructions for SY(H)DFEn	30014-B
User manual CANopen interface for SY(H)DFEn	30014-02-Z
Data sheet for universal through-drive for connecting two pumps into one combination	95581
Data sheet for axial piston variable displacement pump A4VSO	92050
Data sheet for axial piston variable displacement pump A4VSO for HFC	92053
Data sheet for pilot valve VT-DFP.-2X	29016
Data sheet for swivel angle sensor VT-SWA-LIN-1X	30263
Data sheet for pressure transducer HM 12-1X and HM 13-1X	29933
Data sheet for pressure transducer HM 16-1X	30266
Data sheet for pressure transducer HM 17-1X	30269
Operating instructions for test device VT-PDFE	29689-B
Current information is also available on the Internet at the address http://www.boschrexroth.com/sydfe (English) or http://www.boschrexroth.de/sydfe (German).	

Notes