SCHAEFFLER

Precision planetary gearboxes

PSC

Technical Product Information

Foreword

Ultra Precision Drives

In drive systems intended for robots, machine tools and use in industrial automation, for example, gears are a key component that have a significant influence on positioning and repeat accuracy, service life and the dynamics of the overall solution.

Increased precision, reduced cycle times and extended machine runtimes are of global importance for industrial automation across all sectors. With this in mind, Schaeffler has consolidated its development expertise, production technology, products and services in the field of precision gears under the umbrella of Ultra Precision Drives.

Products with this label surpass the current state of the art and, in some cases, set the benchmark in the market. We seek to achieve nothing less.

Our Ultra Precision Drives cover a rated torque range of 10 Nm to over 5000 Nm with two gear types – precision strain wave gears and precision planetary gears. This gives the industry a choice of precision gears for small cobots through to industrial robots as well as precision gears for secondary and main axes in machine tools, and positioning drives for a wide variety of automation tasks.

Precision planetary gearboxes

Our precision planetary gearboxes of series PSC are designed for a particularly broad range of industrial applications, achieved in part by a wide variety of variants comprising nine sizes with a solid and hollow shaft design, mounting kits and complete gear units with different motor attachment variants. The combination of planetary stage and spur gear stage permits extensive matching to the required torque and speed range. Gearboxes of series PSC are designed for a life of 20000 operating hours. As a result of their combined properties, such as minimal torsional backlash (≤ 0,1 arcmin), maximum torsional and tilting rigidity and a particularly long operating life, gearboxes of series PSC are extremely suitable for use in all industrial precision drives. Thanks to the helical spur gear stage at the input and our unique tooth technology, an unobtrusive running noise of just 65 dB(A) is achieved. The high overall efficiency in excess of 90% under full load ensures stable temperature behaviour and low energy consumption.

Contents

1 Technical principles

1.1 Design

The gearbox series are designed as precision planetary gearboxes with an integrated helical gear stage at the gear input and have unique tooth technology, which ensures an extremely low and constant torsional backlash for the duration of the operating life.

Rigid bearing arrangements ensure high torsional and tilting rigidity. The main bearing arrangement is integrated into the planetary gearbox and is designed to support large forces and tilting moments. This results in a particularly compact design envelope and a high torque density.

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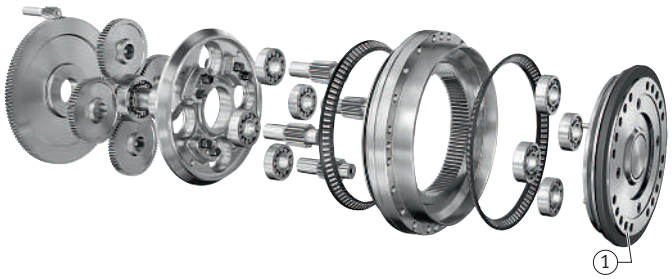

1 Output side

1	Output side

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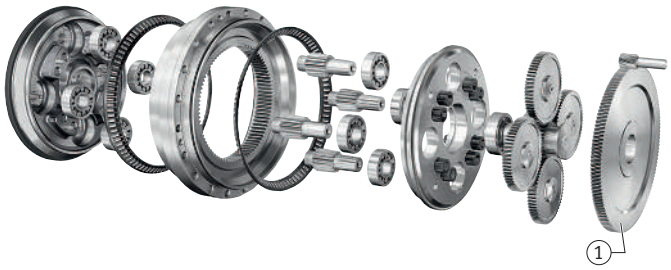

2 Input side

1	Input side

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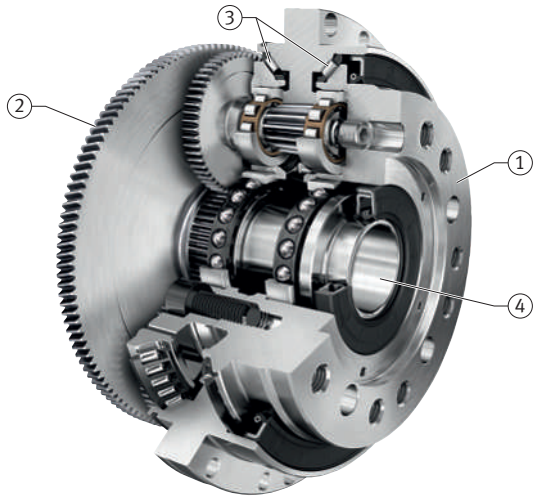


3 Cross section Gearbox of series PSC

1	Output flange	2	Input
3	Main bearing arrangement	4	Hollow shaft

The ground gear teeth offer the following advantages:

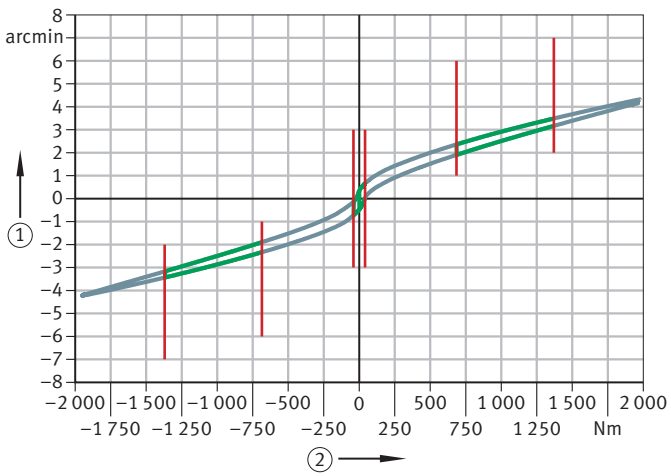
- low torsional backlash
- high precision
- low noise generation
- high synchronous running accuracy

The hollow shaft is suitable for the passage of supply cables and is also available with a protective sleeve.

1.2 Torsional rigidity

Torsional rigidity is the quotient of the torsional torque acting on the gearbox from the outside and the resulting torsion angle at the output.

Torsional rigidity is given in Nm/arcmin. With the input shaft locked without backlash, the gearbox is loaded bidirectionally at the output with a continuously increasing torque up to the nominal value, in order to determine the torsional rigidity. The measurement sensors record the torsional torque and the torsion angle at the output flange (hysteresis curve). The values range between 50 % and 100 % of the nominal load is evaluated in order to determine the torsional rigidity.



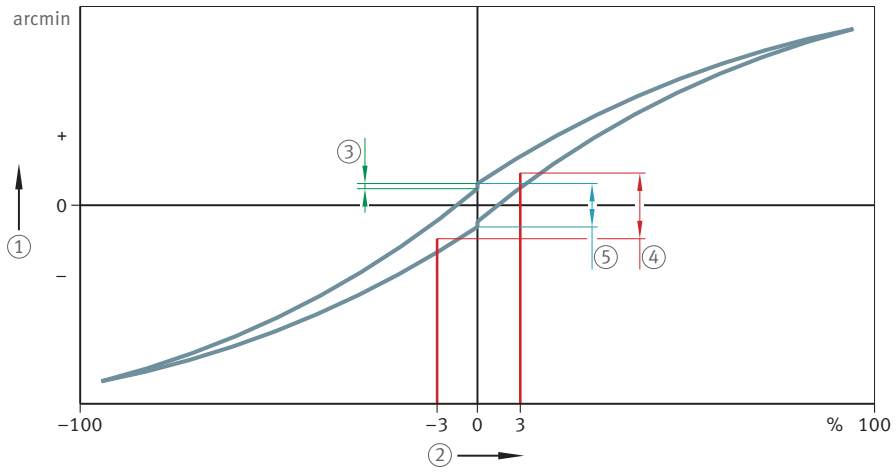
4 Hysteresis curve (example PSC160-V)

1	Torsion angle	2	Torque

1.3 Torsional backlash, Lost Motion

The torsional backlash of a gearbox is the angular tolerance between output and input at a torque of 0 Nm. Lost Motion, also known as position error, refers to the torsion angle at the output within which the gearbox comes to a standstill once all external loads have been removed.

Torsional backlash is given in arcmin. The measurement method for determining Lost Motion is the same as the method used to determine the torsional backlash. However, an evaluation is conducted in a value range of ±3 % of the rated torque.



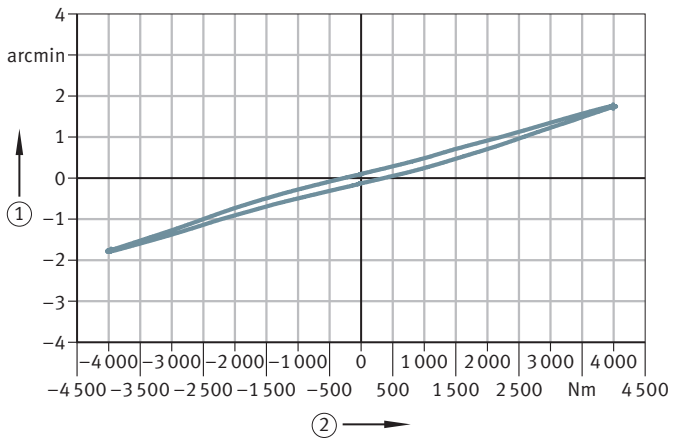
5 Hysteresis curve for torsional backlash, Lost Motion

1	Torsion angle	2	Rated torque
3	Torsional backlash	4	Lost motion
5	Hysteresis loss		

1.4 Tilting rigidity

The tilting rigidity is the quotient of the bending moment resulting from external operating forces and the resulting tilting angle between the output flange and housing flange. The tilting rigidity is given in Nm/arcmin.

To determine the tilting rigidity, the gearbox housing is attached to a sufficiently rigid structure. The output is loaded bidirectionally with a continuously increasing bending moment up to the maximum permissible value. The measurement sensors record the torque and tilt at the output flange (hysteresis curve). The entire value range is evaluated to determine the tilting rigidity.



6 Determining the tilting rigidity (example PSC160-V)

1	Torsion angle	2	Torque

1.5 Synchronous running accuracy

The synchronous running accuracy is the maximum transmission error (maximum amplitude of the fluctuation) of the real output rotary motion, based on the value calculated theoretically using the transmission ratio, and thus represents the transmission error during one revolution at the output. The synchronous running accuracy is given in angular seconds (arcsec).

To determine this parameter, the gearbox is rotated without load in trailing mode. The measurement sensors record the input and output rotary motion. The range of values over one full revolution of the output is evaluated to determine the synchronous running accuracy.

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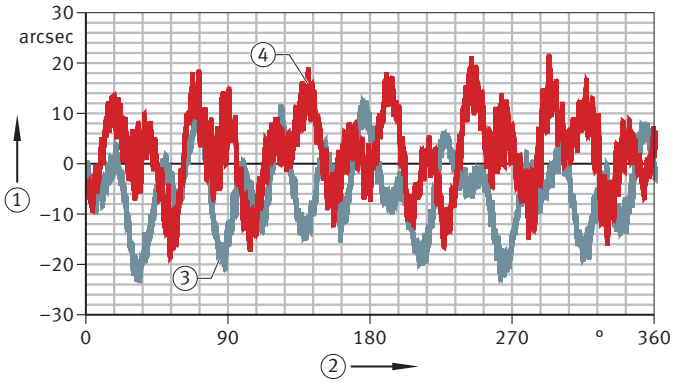

7 Synchronous running accuracy (example PSC160-V)

1	Synchronous running	2	Angle of rotation, output
3	Direction of rotation: CW	4	Direction of rotation: CCW

1.6 Efficiency

The efficiency in % is the ratio of output to input power and describes the efficiency of a technical device or system. Power losses in the form of friction lead to an efficiency which is always less than 1 or less than 100 %. The efficiency of gearboxes of series PSC is ≥90 %.

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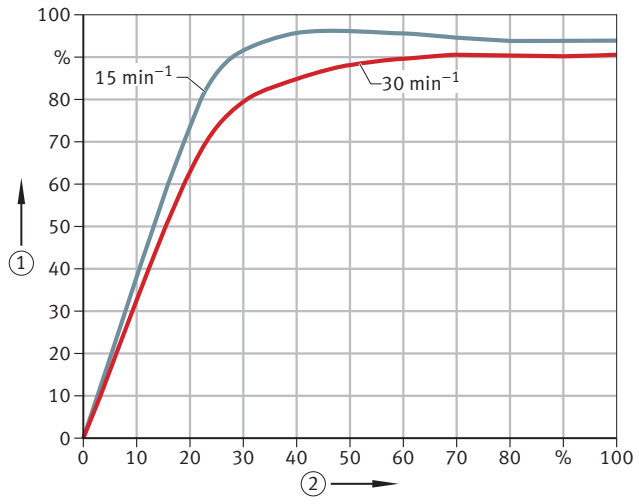

8 Efficiency

1	Efficiency	2	Load moment under full load

2 Precision planetary gearboxes

2.1 Gearbox mounting kits

2.1.1 Product overview

Gearbox mounting kits can be integrated directly into the system. They are available in the following versions (further versions available by agreement):

- solid shaft version V
- hollow shaft version H
- food grade lubrication
- rotary shaft seals:
  - standard NBR
  - optional VITON
- protective sleeve for hollow shaft

Gearbox mounting kits have a separate input pinion as standard, which is supplied loose. The transmission ratio determines whether a plug-in pinion (ER) or slip-on pinion (AR) is used.

The hollow shafts are suitable for the passage of supply cables.

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9 Three-stage construction with solid shaft (PSC..-V-E)

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10 Three-stage construction with hollow shaft (PSC..-H-E)

Three-stage construction with solid shaft

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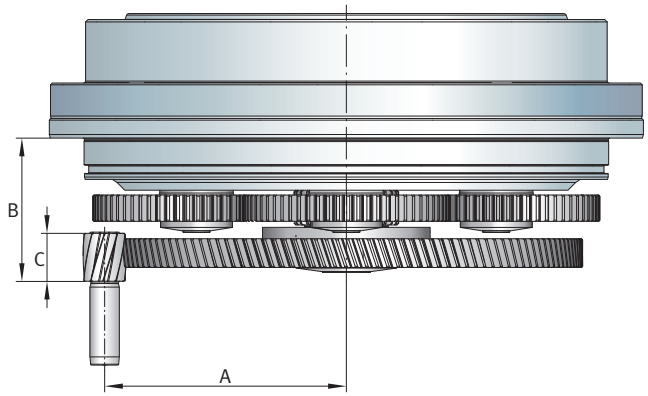


11 Gearbox with solid shaft and plug-in pinion (ER)

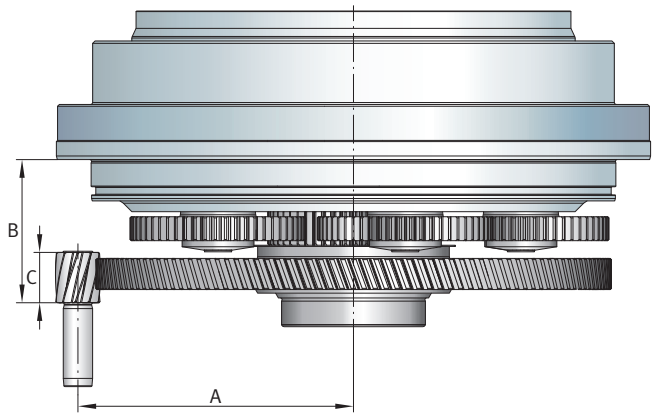
A	Centre distance between input shaft and middle of gearbox	B	Distance between housing locating face and input shaft surface
C	Gear tooth width of the pinion		

1 Transmission ratios for gearbox mounting kits with solid shaft

Gearbox	i_{nom}	i_{ex}	Input pinion	A	Minimum A	Maximum A	B	C
			mm	mm	mm	mm	mm	mm
PSC030-V-E	50	$^{337183}/_{6630}$	AR16	60	+0,022	+0,037	44,5	14,5
PSC030-V-E	63	$^{359078}/_{5525}$	AR16	60	+0,022	+0,037	44,5	14,5
PSC030-V-E	80	$^{376594}/_{4641}$	AR16	60	+0,022	+0,037	44,5	14,5
PSC030-V-E	100	$^{389731}/_{3978}$	ER12	60	+0,022	+0,037	44,5	14,5
PSC030-V-E	125	$^{402868}/_{3315}$	ER12	60	+0,022	+0,037	44,5	14,5
PSC030-V-E	160	$^{416005}/_{2652}$	ER12	60	+0,022	+0,037	44,5	14,5
PSC030-V-E	200	$^{424763}/_{2210}$	ER9	60	+0,022	+0,037	44,5	14,5
PSC056-V-E	50	$^{564788}/_{11745}$	AR16	75	+0,022	+0,037	42,25	14,5
PSC056-V-E	63	$^{85946}/_{1305}$	AR16	75	+0,022	+0,037	42,25	14,5
PSC056-V-E	80	$^{116641}/_{1450}$	ER12	75	+0,022	+0,037	42,25	14,5
PSC056-V-E	100	$^{239421}/_{2465}$	ER12	75	+0,022	+0,037	42,25	14,5
PSC056-V-E	125	$^{3508}/_{29}$	ER12	75	+0,022	+0,037	42,25	14,5
PSC056-V-E	160	$^{251699}/_{1595}$	ER12	75	+0,022	+0,037	42,25	14,5
PSC056-V-E	200	$^{153475}/_{783}$	ER9	75	+0,022	+0,037	42,25	14,5
PSC080-V-E	50	$^{754}/_{15}$	AR16	85	+0,022	+0,037	49,5	14,5
PSC080-V-E	63	$^{33176}/_{525}$	AR16	85	+0,022	+0,037	49,5	14,5
PSC080-V-E	80	$^{57304}/_{735}$	ER16	85	+0,022	+0,037	49,5	14,5
PSC080-V-E	100	$^{1508}/_{15}$	ER12	85	+0,022	+0,037	49,5	14,5
PSC080-V-E	125	$^{12818}/_{105}$	ER12	85	+0,022	+0,037	49,5	14,5
PSC080-V-E	160	$^{1508}/_{9}$	ER12	85	+0,022	+0,037	49,5	14,5
PSC080-V-E	200	$^{107068}/_{525}$	ER9	85	+0,022	+0,037	49,5	14,5
PSC112-V-E	50	$^{325367}/_{6525}$	AR16	95	+0,027	+0,042	55,75	17
PSC112-V-E	63	$^{227143}/_{3625}$	AR16	95	+0,027	+0,042	55,75	17
PSC112-V-E	80	$^{6139}/_{75}$	ER16	95	+0,027	+0,042	55,75	17
PSC112-V-E	100	$^{42973}/_{435}$	ER12	95	+0,027	+0,042	55,75	17
PSC112-V-E	125	$^{834904}/_{6525}$	ER12	95	+0,027	+0,042	55,75	17
PSC112-V-E	160	$^{853321}/_{220}$	ER12	95	+0,027	+0,042	55,75	17
PSC112-V-E	200	$^{288533}/_{1450}$	ER12	95	+0,027	+0,042	55,75	17
PSC160-V-E	50	$^{354928}/_{6975}$	AR18	105	+0,027	+0,042	58	20
PSC160-V-E	63	$^{3169}/_{50}$	AR18	105	+0,027	+0,042	58	20
PSC160-V-E	80	$^{386618}/_{4725}$	ER18	105	+0,027	+0,042	58	20
PSC160-V-E	100	$^{15845}/_{162}$	ER15	105	+0,027	+0,042	58	20

Gearbox	i_{nom}	i_{ex}	Input pinion	A	Minimum A	Maximum A	B	C
			mm	mm	mm	mm	mm	mm
PSC160-V-E	125	$^{136267}/_{1050}$	ER15	105	+0,027	+0,042	58	20
PSC160-V-E	160	$^{415139}/_{2700}$	ER15	105	+0,027	+0,042	58	20
PSC160-V-E	200	$^{44366}/_{225}$	ER12	105	+0,027	+0,042	58	20
PS224-V-E	50	$^{3531}/_{70}$	AR22	115	+0,027	+0,042	62,75	21
PS224-V-E	63	$^{1584}/_{25}$	AR22	115	+0,027	+0,042	62,75	21
PS224-V-E	71	$^{11286}/_{161}$	AR22	115	+0,027	+0,042	62,75	21
PS224-V-E	80	$^{3828}/_{49}$	AR22	115	+0,027	+0,042	62,75	21
PS224-V-E	100	$^{11880}/_{119}$	ER18	115	+0,027	+0,042	62,75	21
PS224-V-E	140	$^{4125}/_{28}$	ER15	115	+0,027	+0,042	62,75	21
PS224-V-E	200	$^{2079}/_{10}$	ER12	115	+0,027	+0,042	62,75	21
PSC300-V-E	50	$^{6338}/_{125}$	AR22	125	+0,030	+0,045	70,25	22,5
PSC300-V-E	63	$^{358097}/_{5625}$	AR22	125	+0,030	+0,045	70,25	22,5
PSC300-V-E	80	$^{186971}/_{2250}$	AR22	125	+0,030	+0,045	70,25	22,5
PSC300-V-E	100	$^{383449}/_{3825}$	ER18	125	+0,030	+0,045	70,25	22,5
PSC300-V-E	125	$^{129929}/_{1050}$	ER18	125	+0,030	+0,045	70,25	22,5
PSC300-V-E	160	$^{434153}/_{2700}$	ER18	125	+0,030	+0,045	70,25	22,5
PSC300-V-E	200	$^{440491}/_{2250}$	ER15	125	+0,030	+0,045	70,25	22,5
PSC400-V-E	50	$^{354928}/_{6975}$	AR26	140	+0,030	+0,045	73,5	25
PSC400-V-E	63	$^{3169}/_{50}$	AR26	140	+0,030	+0,045	73,5	25
PSC400-V-E	80	$^{34859}/_{450}$	AR26	140	+0,030	+0,045	73,5	25
PSC400-V-E	100	$^{9507}/_{95}$	ER22	140	+0,030	+0,045	73,5	25
PSC400-V-E	125	$^{72887}/_{600}$	ER22	140	+0,030	+0,045	73,5	25
PSC400-V-E	160	$^{224999}/_{1350}$	ER18	140	+0,030	+0,045	73,5	25
PSC400-V-E	200	$^{25352}/_{125}$	ER18	140	+0,030	+0,045	73,5	25

Three-stage construction with hollow shaft



12 Gearbox with hollow shaft and plug-in pinion (ER)

A	Centre distance between input shaft and middle of gearbox	B	Distance between housing locating face and input shaft surface
C	Gear tooth width of the pinion		

2 Transmission ratios for gearbox mounting kits with hollow shaft

Gearbox	i_{nom}	i_{ex}	Input pinion	A	Minimum A	Maximum A	B	C
			mm	mm	mm	mm	mm	mm
PSC057-H-E	35,5	$^{2422}/_{65}$	AR16	85	+0,022	+0,037	42,25	14,5
PSC057-H-E	45	$^{15224}/_{325}$	AR16	85	+0,022	+0,037	42,25	14,5
PSC057-H-E	56	$^{26296}/_{455}$	AR16	85	+0,022	+0,037	42,25	14,5
PSC057-H-E	71	$^{22836}/_{325}$	ER12	85	+0,022	+0,037	42,25	14,5
PSC057-H-E	90	$^{5882}/_{65}$	ER12	85	+0,022	+0,037	42,25	14,5
PSC057-H-E	125	$^{4844}/_{39}$	ER12	85	+0,022	+0,037	42,25	14,5
PSC057-H-E	131,5	$^{97572}/_{715}$	ER12	85	+0,022	+0,037	42,25	14,5
PSC080-H-E	35,5	$^{21614}/_{611}$	AR16	95	+0,022	+0,037	49,5	17
PSC080-H-E	45	$^{82012}/_{1833}$	AR16	95	+0,022	+0,037	49,5	17
PSC080-H-E	56	$^{169882}/_{3055}$	AR16	95	+0,022	+0,037	49,5	17
PSC080-H-E	71	$^{43935}/_{611}$	ER12	95	+0,022	+0,037	49,5	17
PSC080-H-E	90	$^{401273}/_{4277}$	ER12	95	+0,022	+0,037	49,5	17
PSC080-H-E	125	$^{820120}/_{6721}$	ER12	95	+0,022	+0,037	49,5	17
PSC080-H-E	131,5	$^{8787}/_{65}$	ER12	95	+0,022	+0,037	49,5	17
PSC112-H-E	35,5	$^{25422}/_{725}$	AR18	105	+0,027	+0,042	49,5	20
PSC112-H-E	45	$^{26537}/_{600}$	AR18	105	+0,027	+0,042	49,5	20
PSC112-H-E	56	$^{27429}/_{500}$	AR18	105	+0,027	+0,042	49,5	20
PSC112-H-E	71	$^{28321}/_{400}$	ER15	105	+0,027	+0,042	49,5	20
PSC112-H-E	90	$^{446}/_{5}$	ER15	105	+0,027	+0,042	49,5	20
PSC112-H-E	125	$^{3122}/_{25}$	ER12	105	+0,027	+0,042	49,5	20
PSC160-H-E	35,5	$^{218327}/_{6188}$	AR22	115	+0,027	+0,042	58	21
PSC160-H-E	45	$^{228342}/_{5083}$	AR22	115	+0,027	+0,042	58	21
PSC160-H-E	50	$^{232348}/_{4641}$	AR22	115	+0,027	+0,042	58	21
PSC160-H-E	56	$^{236354}/_{4199}$	ER18	115	+0,027	+0,042	58	21
PSC160-H-E	71	$^{244366}/_{3315}$	ER18	115	+0,027	+0,042	58	21
PSC160-H-E	90	$^{250375}/_{2652}$	ER15	115	+0,027	+0,042	58	21
PSC160-H-E	125	$^{292438}/_{2431}$	ER15	115	+0,027	+0,042	58	21
PSC160-H-E	131,5	$^{294441}/_{2210}$	AR12	115	+0,027	+0,042	58	21
PS224-H-E	35,5	$^{206719}/_{5733}$	AR22	125	+0,027	+0,042	62,75	22,5
PS224-H-E	45	$^{324046}/_{7007}$	AR22	125	+0,027	+0,042	62,75	22,5
PS224-H-E	56	$^{94979}/_{1729}$	ER18	125	+0,027	+0,042	62,75	22,5
PS224-H-E	71	$^{681614}/_{9555}$	ER18	125	+0,027	+0,042	62,75	22,5
PS224-H-E	90	$^{698375}/_{7644}$	ER18	125	+0,027	+0,042	62,75	22,5
PS224-H-E	125	$^{776593}/_{6370}$	ER15	125	+0,027	+0,042	62,75	22,5
PSC300-H-E	35,5	$^{228342}/_{6409}$	AR26	140	+0,030	+0,045	70,25	25
PSC300-H-E	45	$^{14021}/_{312}$	AR26	140	+0,030	+0,045	70,25	25
PSC300-H-E	56	$^{246369}/_{4420}$	AR26	140	+0,030	+0,045	70,25	25
PSC300-H-E	71	$^{274411}/_{3757}$	ER22	140	+0,030	+0,045	70,25	25
PSC300-H-E	90	$^{20030}/_{221}$	ER22	140	+0,030	+0,045	70,25	25
PSC300-H-E	125	$^{2003}/_{17}$	ER18	140	+0,030	+0,045	70,25	25
PSC300-H-E	131,5	$^{144216}/_{1105}$	ER18	140	+0,030	+0,045	70,25	25
PSC400-H-E	35,5	$^{12544}/_{351}$	AR26	155	+0,030	+0,045	73,5	25
PSC400-H-E	45	$^{504}/_{11}$	AR26	155	+0,030	+0,045	73,5	25
PSC400-H-E	56	$^{13440}/_{247}$	AR26	155	+0,030	+0,045	73,5	25
PSC400-H-E	71	$^{4592}/_{65}$	ER22	155	+0,030	+0,045	73,5	25
PSC400-H-E	90	$^{1176}/_{13}$	ER22	155	+0,030	+0,045	73,5	25
PSC400-H-E	125	$^{4816}/_{39}$	ER22	155	+0,030	+0,045	73,5	25
PSC500-H-E	150	$^{1440628}/_{9711}$	Special	190	+0,035	+0,070	72,75	25

2.1.2 Performance data

2.1.2.1 Explanations

C_t	Nm/arcmin	Torsional rigidity at 50 % to 100 % of the rated torque (+5 %/–10 %)
F_{0a}	kN	Max. static axial force
		Max. axial force for load case continuous tilting moment = 0 and $F_r = 0$.
F_{0r}	kN	Max. static radial force
		Max. radial force for load case continuous tilting moment = 0 and $F_a = 0$.
F_a	kN	Max. dynamic axial force
		Max. axial force for load case continuous tilting moment = 0 and $F_r = 0$.
F_r	kN	Max. dynamic radial force
		Max. radial force for load case continuous tilting moment = 0 and $F_a = 0$.
i_{ex}	–	Exact transmission ratio
i_{nom}	–	Nominal transmission ratio
J_i	$kg \cdot cm^2$	Mass moment of inertia at input
m	kg	Mass
		The specified mass relates in each case to gearbox mounting kits with a nominal transmission ratio of 50. The weights of gear units vary depending on the motor attachment variant and design and, for this reason, are not listed.
M_{acc}	Nm	Acceleration moment
		Based on 6 million times during the operating life.
M_{bend}	Nm	Continuous tilting moment
		Tilting moment for load case $F_a = 0$ and $F_r = 0$.
$M_{bend\ estop}$	Nm	Max. e-stop tilting moment
		PSC500-H: User must provide proof of screw connection (permissible strength class 12.9 for housing flange and output flange).
		All other gearbox mounting kits: User must provide proof of screw connection (permissible strength class 12.9 for housing flange and output flange and 10.9 for cover flange).
M_{estop}	Nm	E-stop moment
		Based on 3000 times during the operating life.
M_{nom}	Nm	Rated torque at output
		Based on 12 million times during the operating life.
M_{perm}	Nm	Continuous torque at output
$n_{max\ out}$	min^{-1}	Max. output speed
		Higher max. output speeds are possible, please contact us.
$n_{max\ per\ in}$	min^{-1}	Max. permissible input load
		Higher max. input speeds are possible, please contact us.
$n_{per\ in}$	min^{-1}	Permissible mean input speed
		At rated torque and ambient temperature of 20 °C.
t_K	mm	Radial runout
t_S	mm	Axial runout
Ups_{sync}	arcsec	Synchronous running accuracy
ρ_P	Nm/kg	Power density
$\varphi_{a\ lost}$	arcmin	Lost Motion at output
$\varphi_{a\ ct}$	arcmin	Torsional backlash at output

NOTICE

Calculations are based on an output speed of n_2 = 15 min^{-1}. Calculations are valid for intermittent operation; for continuous operation, please contact us.

a) Other transmission ratios available by agreement.

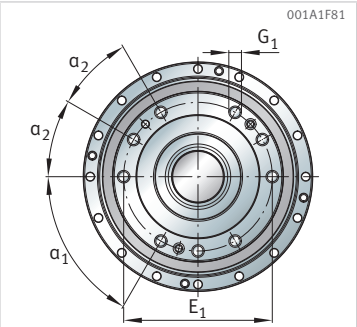
2.1.2.2 Performance data overview

3 Performance data – Overview

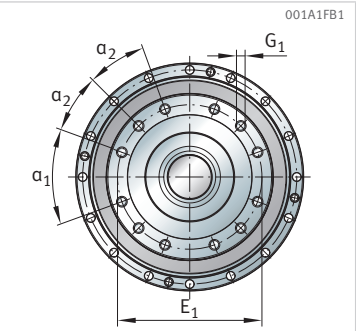
Designation	M_{acc}	M_{estop}	C_{bend}	C_t	F_a	F_r
	Nm	Nm	Nm/arcmin	Nm/arcmin	kN	kN
PSC030-V	327	800	580	85	16,5	10,3
PSC056-V	625	1545	1170	165	18	11
PSC080-V	1075	2530	1560	260	18,5	11,5
PSC112-V	1630	3780	2230	430	29,5	18
PSC160-V	2030	4800	2300	570	31	19
PSC224-V	2550	6090	2620	680	32	20
PSC300-V	3765	8990	5490	1130	42,5	26,5
PSC400-V	4905	11980	6260	1350	46	29
PSC057-H	625	1545	1300	185	18	11
PSC080-H	1075	2530	2730	305	18,5	11,5
PSC112-H	1630	3780	3315	480	29,5	18
PSC160-H	2030	4800	3670	690	31	19
PSC224-H	2550	6090	4100	820	32	20
PSC300-H	3765	8990	8810	1240	42,5	26,5
PSC400-H	4905	1980	10250	1460	46	29
PSC500-H	5110	12480	12500	2100	58	37

2.1.2.3 Specific performance data

2.1.2.3.1 PSC030-V, PSC056-V



PSC030-V



PSC056-V

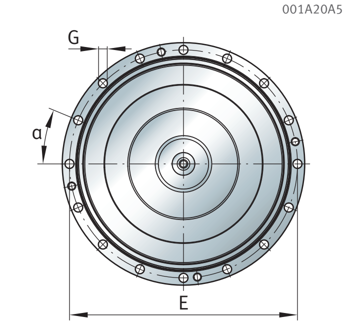
Designation	m	i_{nom}	i_{ex}	J_i	$n_{max\ out}$	$n_{max\ per\ In}$	$n_{per\ In}$	C_{bend}	C_t	M_{perm}	M_{nom}
	kg			kg · cm²	min^{-1}	min^{-1}	min^{-1}	Nm/arcmin	Nm/arcmin	Nm	Nm
PSC030-V	5,2	50	$^{337183}/_{6630}$	0,50	118	6000	4000	580	85	300	235
PSC030-V	5,2	63	$^{359078}/_{5525}$	0,36	92	6000	4000	580	85	300	235
PSC030-V	5,2	80	$^{376594}/_{4641}$	0,26	74	6000	4000	580	85	300	235
PSC030-V	5,2	100	$^{389731}/_{3978}$	0,20	61	6000	4000	580	85	300	235
PSC030-V	5,2	125	$^{402868}/_{3315}$	0,15	49	6000	4000	580	85	300	235
PSC030-V	5,2	160	$^{416005}/_{2652}$	0,10	38	6000	4000	580	85	300	235
PSC030-V	5,2	200	$^{424763}/_{2210}$	0,07	31	6000	4000	580	85	300	235
PSC056-V	7,7	50	$^{564788}/_{11745}$	1,01	120	5771	4000	1170	165	575	445
PSC056-V	7,7	63	$^{85946}/_{1305}$	0,75	91	6000	4000	1170	165	575	445
PSC056-V	7,7	80	$^{116641}/_{1450}$	0,51	75	6000	4000	1170	165	575	445
PSC056-V	7,7	100	$^{239421}/_{2465}$	0,35	62	6000	4000	1170	165	575	445
PSC056-V	7,7	125	$^{3508}/_{29}$	0,24	50	6000	4000	1170	165	575	445
PSC056-V	7,7	160	$^{251699}/_{1595}$	0,16	38	6000	4000	1170	165	575	445
PSC056-V	7,7	200	$^{153475}/_{783}$	0,12	31	6000	4000	1170	165	575	445

Dimensions

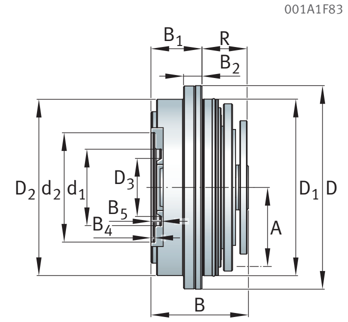
Designation	G_1	α_2	α_1	E_1	B_1	R	B_2
		°	°	mm	mm	mm	mm
PSC030-V	M8×14	30	60	100	38,75	34,25	14
PSC056-V	M8×12	25	40	114	38,5	37,25	16

CAD download:

- https://cdn.schaeffler-ecommerce.com/downloads/robotics/PSC030-V-E.STEP
- https://cdn.schaeffler-ecommerce.com/downloads/robotics/PSC056-V-E.STEP



PSC030-V, PSC056-V



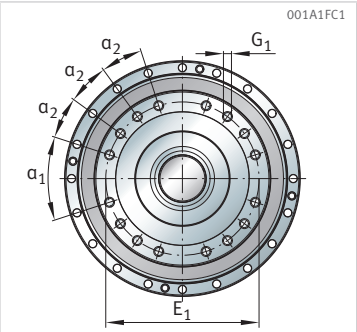
PSC030-V, PSC056-V

M_{acc}	M_{estop}	M_{bend}	$M_{bend\ estop}$	F_a	F_{0a}	F_r	F_{0r}	t_S	t_K	ρ_P	$\varphi_{\alpha\ tol}$	$\varphi_{\alpha\ lost}$	Ups_{sync}
Nm	Nm	Nm	Nm	kN	kN	kN	kN	mm	mm	Nm/kg	arcmin	arcmin	arcsec
327	800	720	2650	16,5	80	10,3	26,5	0,032	0,029	45,2	1,2	1,2	90
327	800	720	2650	16,5	80	10,3	26,5	0,032	0,029	45,2	1,2	1,2	90
327	800	720	2650	16,5	80	10,3	26,5	0,032	0,029	45,2	1,2	1,2	90
327	800	720	2650	16,5	80	10,3	26,5	0,032	0,029	45,2	1,2	1,2	90
327	800	720	2650	16,5	80	10,3	26,5	0,032	0,029	45,2	1,2	1,2	90
327	800	720	2650	16,5	80	10,3	26,5	0,032	0,029	45,2	1,2	1,2	90
327	800	720	2650	16,5	80	10,3	26,5	0,032	0,029	45,2	1,2	1,2	90
625	1545	1070	3645	18,0	152	11,0	55	0,035	0,029	57,8	0,1	0,6	70
625	1545	1070	3645	18,0	152	11,0	55	0,035	0,029	57,8	0,1	0,6	70
625	1545	1070	3645	18,0	152	11,0	55	0,035	0,029	57,8	0,1	0,6	70
625	1545	1070	3645	18,0	152	11,0	55	0,035	0,029	57,8	0,1	0,6	70
625	1545	1070	3645	18,0	152	11,0	55	0,035	0,029	57,8	0,1	0,6	70
625	1545	1070	3645	18,0	152	11,0	55	0,035	0,029	57,8	0,1	0,6	70
625	1545	1070	3645	18,0	152	11,0	55	0,035	0,029	57,8	0,1	0,6	70

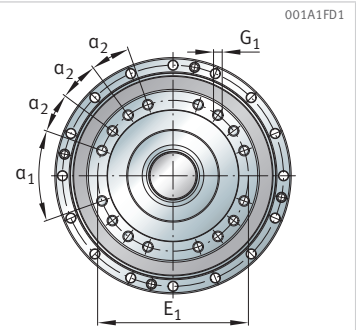
Dimensions

Designation	D_2	d_2	d_1	D_3	B_5	B_4	h	D_1	D	B	G	α	E
								h7	h8	±1			
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	°	mm
PSC030-V	134	83 H7	58	44,04	8	3	60	134	154,5	74	5,5	22,5	145
PSC056-V	158	98	70 H7	48,5	–	5,25	75	159	180	80,85	6,6	22,5	169

2.1.2.3.2 PSC080-V, PSC112-V



PSC080-V



PSC112-V

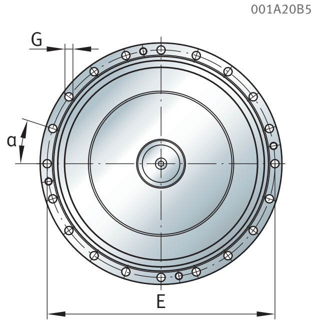
Designation	m	i_{nom}	i_{ex}	J_i	$n_{max\ out}$	$n_{max\ per\ In}$	$n_{per\ In}$	C_{bend}	C_t	M_{perm}	M_{nom}
	kg			kg · cm²	min^{-1}	min^{-1}	min^{-1}	Nm/arcmin	Nm/arcmin	Nm	Nm
PSC080-V	11,2	50	$^{754}/_{15}$	1,92	99	5000	3500	1560	260	980	770
PSC080-V	11,2	63	$^{33176}/_{525}$	1,43	79	5000	3500	1560	260	980	770
PSC080-V	11,2	80	$^{57304}/_{735}$	0,96	64	5000	3500	1560	260	980	770
PSC080-V	11,2	100	$^{1508}/_{15}$	0,67	50	5000	3500	1560	260	980	770
PSC080-V	11,2	125	$^{12818}/_{105}$	0,45	41	5000	3500	1560	260	980	770
PSC080-V	11,2	160	$^{1508}/_{9}$	0,31	30	5000	3500	1560	260	980	770
PSC080-V	11,2	200	$^{107068}/_{525}$	0,22	25	5000	3500	1560	260	980	770
PSC112-V	15,9	50	$^{325367}/_{6525}$	3,37	100	4986	3500	2230	430	1480	1165
PSC112-V	15,9	63	$^{227143}/_{3625}$	2,52	80	5000	3500	2230	430	1480	1165
PSC112-V	15,9	80	$^{6139}/_{75}$	1,69	61	5000	3500	2230	430	1480	1165
PSC112-V	15,9	100	$^{42973}/_{435}$	1,19	51	5000	3500	2230	430	1480	1165
PSC112-V	15,9	125	$^{834904}/_{6525}$	0,80	39	5000	3500	2230	430	1480	1165
PSC112-V	15,9	160	$^{853321}/_{5220}$	0,54	31	5000	3500	2230	430	1480	1165
PSC112-V	15,9	200	$^{288533}/_{1450}$	0,39	25	5000	3500	2230	430	1480	1165

Dimensions

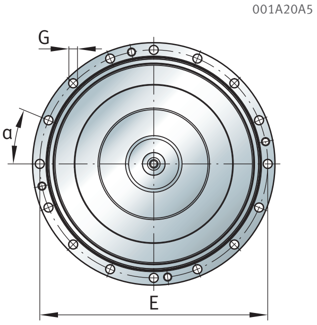
Designation	G_1	α_2	α_1	E_1	B_1	R	B_2
		°	°	mm	mm	mm	mm
PSC080-V	M8×13	18	36	130	42,5	44,5	19
PSC112-V	M10×15	17	39	148	48,75	50,25	21,5

CAD download:

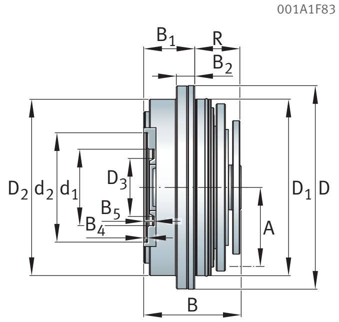
- https://cdn.schaeffler-ecommerce.com/downloads/robotics/PSC080-V-E.STEP
- https://cdn.schaeffler-ecommerce.com/downloads/robotics/PSC112-V-E.STEP



PSC080-V



PSC112-V



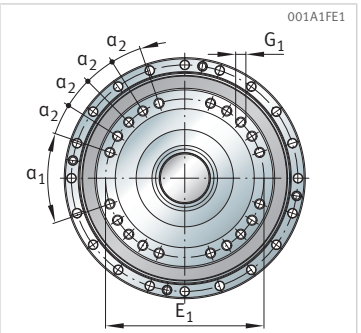
PSC080-V, PSC112-V

M_{acc}	M_{estop}	M_{bend}	$M_{bend\ estop}$	F_a	F_{0a}	F_r	F_{0r}	t_S	t_K	ρ_P	$\varphi_{\alpha\ tol}$	$\varphi_{\alpha\ lost}$	Ups_{sync}
Nm	Nm	Nm	Nm	kN	kN	kN	kN	mm	mm	Nm/kg	arcmin	arcmin	arcsec
1075	2530	1280	4345	18,5	168	11,5	57	0,035	0,029	88,0	0,1	0,6	50
1075	2530	1280	4345	18,5	168	11,5	57	0,035	0,029	88,0	0,1	0,6	50
1075	2530	1280	4345	18,5	168	11,5	57	0,035	0,029	88,0	0,1	0,6	50
1075	2530	1280	4345	18,5	168	11,5	57	0,035	0,029	88,0	0,1	0,6	50
1075	2530	1280	4345	18,5	168	11,5	57	0,035	0,029	88,0	0,1	0,6	50
1075	2530	1280	4345	18,5	168	11,5	57	0,035	0,029	88,0	0,1	0,6	50
1075	2530	1280	4345	18,5	168	11,5	57	0,035	0,029	88,0	0,1	0,6	50
1630	3780	2410	5910	29,5	270	18,0	85	0,035	0,032	73,3	0,1	0,6	50
1630	3780	2410	5910	29,5	270	18,0	85	0,035	0,032	73,3	0,1	0,6	50
1630	3780	2410	5910	29,5	270	18,0	85	0,035	0,032	73,3	0,1	0,6	50
1630	3780	2410	5910	29,5	270	18,0	85	0,035	0,032	73,3	0,1	0,6	50
1630	3780	2410	5910	29,5	270	18,0	85	0,035	0,032	73,3	0,1	0,6	50
1630	3780	2410	5910	29,5	270	18,0	85	0,035	0,032	73,3	0,1	0,6	50
1630	3780	2410	5910	29,5	270	18,0	85	0,035	0,032	73,3	0,1	0,6	50

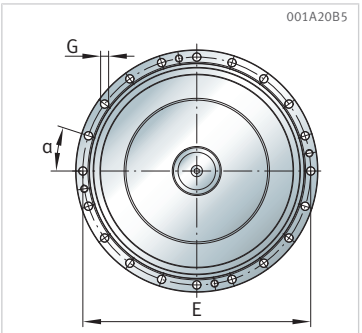
Dimensions

Designation	D_2	d_2	d_1	D_3	B_4	h	D_1	D	B	G	α	E
			H7				h7	h8	±1			
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	°	mm
PSC080-V	177	113	80	54,5	4,5	85	178	200	89,1	6,6	18	188
PSC112-V	202	128,5	90	60,5	5,25	95	203	232	101	9	22,5	217

2.1.2.3.3 PSC160-V, PSC224-V



PSC160-V, PSC224-V



PSC160-V, PSC224-V

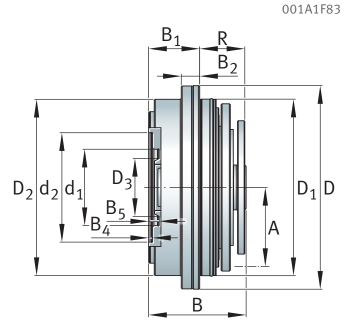
Designation	m	i_{nom}	i_{ex}	J_i	$n_{max\ out}$	$n_{max\ per\ In}$	$n_{per\ In}$	C_{bend}	C_t	M_{perm}	M_{nom}
	kg			kg · cm²	min^{-1}	min^{-1}	min^{-1}	Nm/arcmin	Nm/arcmin	Nm	Nm
PSC160-V	19,9	50	$^{354928}/_{6975}$	3,37	98	5000	3500	2300	570	1850	1450
PSC160-V	19,9	63	$^{3169}/_{50}$	2,52	79	5000	3500	2300	570	1850	1450
PSC160-V	19,9	80	$^{386618}/_{4725}$	3,30	61	5000	3500	2300	570	1850	1450
PSC160-V	19,9	100	$^{15845}/_{162}$	2,31	51	5000	3500	2300	570	1850	1450
PSC160-V	19,9	125	$^{136267}/_{1050}$	1,56	39	5000	3500	2300	570	1850	1450
PSC160-V	19,9	160	$^{415139}/_{2700}$	1,05	33	5000	3500	2300	570	1850	1450
PSC160-V	19,9	200	$^{44366}/_{225}$	0,76	25	5000	3500	2300	570	1850	1450
PSC224-V	27,7	50	$^{3531}/_{70}$	10,29	89	4500	3000	2620	680	2325	1820
PSC224-V	27,7	63	$^{1584}/_{25}$	7,69	71	4500	3000	2620	680	2325	1820
PSC224-V	27,7	71	$^{11286}/_{161}$	6,48	64	4500	3000	2620	680	2325	1820
PSC224-V	27,7	80	$^{3828}/_{49}$	5,16	58	4500	3000	2620	680	2325	1820
PSC224-V	27,7	100	$^{11880}/_{119}$	3,62	45	4500	3000	2620	680	2325	1820
PSC224-V	27,7	125	$^{12177}/_{98}$	2,44	36	4500	3000	2620	680	2325	1820
PSC224-V	27,7	160	162	1,64	28	4500	3000	2620	680	2325	1820
PSC224-V	27,7	200	$^{2079}/_{10}$	1,18	22	4500	3000	2620	680	2325	1820

Dimensions

Designation	G_1	α_2	α_1	E_1	B_1	R	B_2
		°	°	mm	mm	mm	mm
PSC160-V	M10×18	13	38	163	52	53	23
PSC224-V	M10×16,5	13	38	175	56,5	57	25

CAD download:

- https://cdn.schaeffler-ecommerce.com/downloads/robotics/PSC160-V-E.STEP
- https://cdn.schaeffler-ecommerce.com/downloads/robotics/PSC224-V-E.STEP



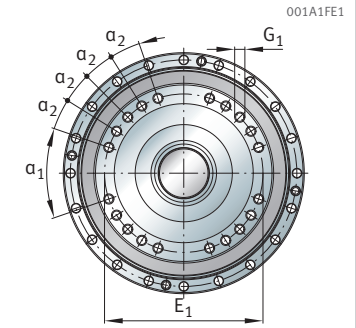
PSC160-V, PSC224-V

M_{acc}	M_{estop}	M_{bend}	$M_{bend\ estop}$	F_a	F_{0a}	F_r	F_{0r}	t_S	t_K	ρ_P	$\varphi_{\alpha\ tol}$	$\varphi_{\alpha\ lost}$	Ups_{sync}
Nm	Nm	Nm	Nm	kN	kN	kN	kN	mm	mm	Nm/kg	arcmin	arcmin	arcsec
2030	4800	2750	7800	31,0	292	19,0	97	0,039	0,032	72,9	0,1	0,6	90
2030	4800	2750	7800	31,0	292	19,0	97	0,039	0,032	72,9	0,1	0,6	90
2030	4800	2750	7800	31,0	292	19,0	97	0,039	0,032	72,9	0,1	0,6	90
2030	4800	2750	7800	31,0	292	19,0	97	0,039	0,032	72,9	0,1	0,6	90
2030	4800	2750	7800	31,0	292	19,0	97	0,039	0,032	72,9	0,1	0,6	90
2030	4800	2750	7800	31,0	292	19,0	97	0,039	0,032	72,9	0,1	0,6	90
2030	4800	2750	7800	31,0	292	19,0	97	0,039	0,032	72,9	0,1	0,6	90
2550	6090	3060	9280	32,0	315	20,0	100	0,039	0,032	65,7	0,1	0,6	50
2550	6090	3060	9280	32,0	315	20,0	100	0,039	0,032	65,7	0,1	0,6	50
2550	6090	3060	9280	32,0	315	20,0	100	0,039	0,032	65,7	0,1	0,6	50
2550	6090	3060	9280	32,0	315	20,0	100	0,039	0,032	65,7	0,1	0,6	50
2550	6090	3060	9280	32,0	315	20,0	100	0,039	0,032	65,7	0,1	0,6	50
2550	6090	3060	9280	32,0	315	20,0	100	0,039	0,032	65,7	0,1	0,6	50
2550	6090	3060	9280	32,0	315	20,0	100	0,039	0,032	65,7	0,1	0,6	50
2550	6090	3060	9280	32,0	315	20,0	100	0,039	0,032	65,7	0,1	0,6	50

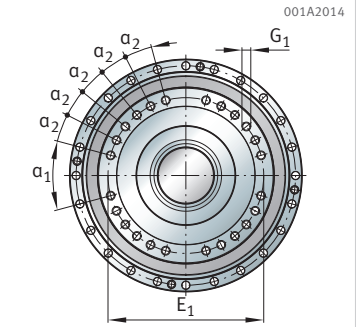
Dimensions

Designation	D_2	d_2	d_1	D_3	B_4	h	D_1	D	B	G	α	E
			H7				h7	h8	±1			
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	°	mm
PSC160-V	218	143	100	67,5	4,75	105	219	248	108	9	18	233
PSC224-V	233	155	110	80	6	115	234	263	116	9	18	248

2.1.2.3.4 PSC300-V, PSC400-V



PSC300-V



PSC400-V

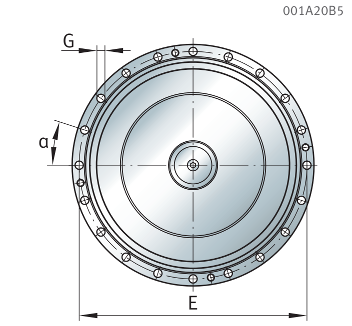
Designation	m	i_{nom}	i_{ex}	J_i	$n_{max\ out}$	$n_{max\ per\ In}$	$n_{per\ In}$	C_{bend}	C_t	M_{perm}	M_{nom}
	kg			kg · cm²	min^{-1}	min^{-1}	min^{-1}	Nm/arcmin	Nm/arcmin	Nm	Nm
PSC300-V	37,4	50	$^{6338}/_{125}$	16,92	79	4000	2500	5490	1130	3435	2690
PSC300-V	37,4	63	$^{358097}/_{5625}$	12,64	63	4000	2500	5490	1130	3435	2690
PSC300-V	37,4	80	$^{186971}/_{2250}$	8,48	48	4000	2500	5490	1130	3435	2690
PSC300-V	37,4	100	$^{383449}/_{3825}$	5,95	40	4000	2500	5490	1130	3435	2690
PSC300-V	37,4	125	$^{129929}/_{1050}$	4,01	32	4000	2500	5490	1130	3435	2690
PSC300-V	37,4	160	$^{434153}/_{2700}$	2,70	25	4000	2500	5490	1130	3435	2690
PSC300-V	37,4	200	$^{440491}/_{2250}$	1,94	20	4000	2500	5490	1130	3435	2690
PSC400-V	50,3	50	$^{354928}/_{6975}$	27,87	69	3500	2000	6260	1350	4495	3505
PSC400-V	50,3	63	$^{3169}/_{50}$	20,83	55	3500	2000	6260	1350	4495	3505
PSC400-V	50,3	80	$^{34859}/_{450}$	13,97	45	3500	2000	6260	1350	4495	3505
PSC400-V	50,3	100	$^{9507}/_{95}$	9,80	35	3500	2000	6260	1350	4495	3505
PSC400-V	50,3	125	$^{72887}/_{600}$	6,60	29	3500	2000	6260	1350	4495	3505
PSC400-V	50,3	160	$^{224999}/_{1350}$	4,45	21	3500	2000	6260	1350	4495	3505
PSC400-V	50,3	200	$^{25352}/_{125}$	3,20	17	3500	2000	6260	1350	4495	3505

Dimensions

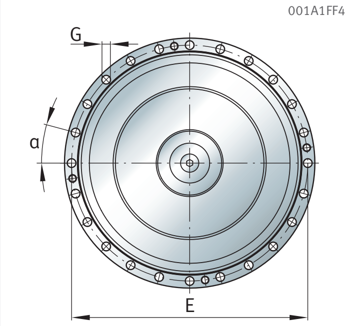
Designation	G_1	α_2	α_1	E_1	B_1	R	B_2
		°	°	mm	mm	mm	mm
PSC300-V	M12×20	13	38	200	65	64,75	29
PSC400-V	M12×20	12	30	220	71	68	32

CAD download:

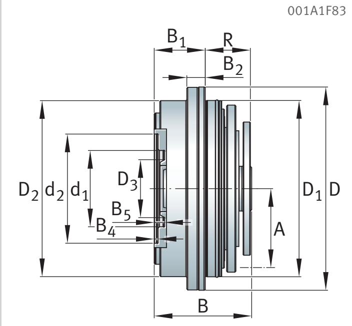
- https://cdn.schaeffler-ecommerce.com/downloads/robotics/PSC300-V-E.STEP
- https://cdn.schaeffler-ecommerce.com/downloads/robotics/PSC400-V-E.STEP



PSC300-V



PSC400-V



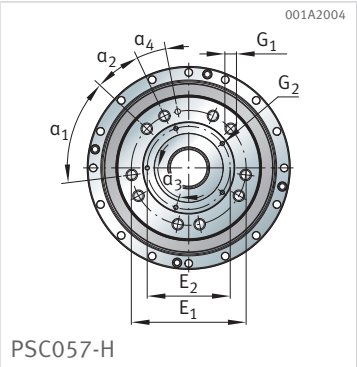
PSC300-V, PSC400-V

M_{acc}	M_{estop}	M_{bend}	$M_{bend\ estop}$	F_a	F_{0a}	F_r	F_{0r}	t_S	t_K	ρ_P	$\varphi_{\alpha\ tol}$	$\varphi_{\alpha\ lost}$	Ups_{sync}
Nm	**Nm**	**Nm**	**Nm**	**kN**	**kN**	**kN**	**kN**	**mm**	**mm**	**Nm/kg**	**arcmin**	**arcmin**	**arcsec**
3765	8990	4800	11410	42,5	400	26,5	140	0,039	0,035	71,9	0,1	0,6	50
3765	8990	4800	11410	42,5	400	26,5	140	0,039	0,035	71,9	0,1	0,6	50
3765	8990	4800	11410	42,5	400	26,5	140	0,039	0,035	71,9	0,1	0,6	50
3765	8990	4800	11410	42,5	400	26,5	140	0,039	0,035	71,9	0,1	0,6	50
3765	8990	4800	11410	42,5	400	26,5	140	0,039	0,035	71,9	0,1	0,6	50
3765	8990	4800	11410	42,5	400	26,5	140	0,039	0,035	71,9	0,1	0,6	50
3765	8990	4800	11410	42,5	400	26,5	140	0,039	0,035	71,9	0,1	0,6	50
4905	11980	6080	13750	46,0	535	29,0	170	0,039	0,035	69,7	0,1	0,6	50
4905	11980	6080	13750	46,0	535	29,0	170	0,039	0,035	69,7	0,1	0,6	50
4905	11980	6080	13750	46,0	535	29,0	170	0,039	0,035	69,7	0,1	0,6	50
4905	11980	6080	13750	46,0	535	29,0	170	0,039	0,035	69,7	0,1	0,6	50
4905	11980	6080	13750	46,0	535	29,0	170	0,039	0,035	69,7	0,1	0,6	50
4905	11980	6080	13750	46,0	535	29,0	170	0,039	0,035	69,7	0,1	0,6	50
4905	11980	6080	13750	46,0	535	29,0	170	0,039	0,035	69,7	0,1	0,6	50

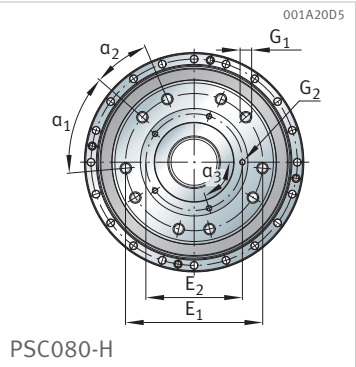
Dimensions

Designation	D_2	d_2	d_1	D_3	B_4	h	D_1	D	B	G	α	E
			H7				**h7**	**h8**	**±1**			
	mm	**mm**	**mm**	**mm**	**mm**	**mm**	**mm**	**mm**	**mm**	**mm**	**°**	**mm**
PSC300-V	264	175	125	91,5	8,25	125	265	301	131	11	18	282
PSC400-V	292	195	140	101	7,5	140	293	329	144	11	15	310

2.1.2.3.5 PSC057-H, PSC080-H



PSC057-H



PSC080-H

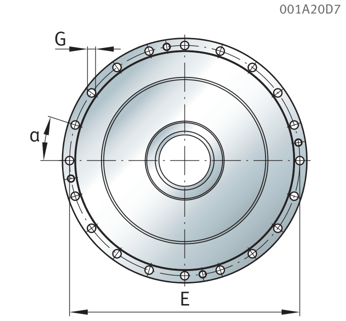
Designation	m	i_{nom}	i_{ex}	J_i	$n_{max\ out}$	$n_{max\ per\ In}$	$n_{per\ In}$	C_{bend}	C_t	M_{perm}	M_{nom}
	kg			kg · cm²	min^{-1}	min^{-1}	min^{-1}	Nm/arcmin	Nm/arcmin	Nm	Nm
PSC057-H	7,7	35,5	$^{2422}/_{65}$	2,42	120	4471	4000	1300	185	575	445
PSC057-H	7,7	45	$^{15224}/_{325}$	1,89	120	5621	4000	1300	185	575	445
PSC057-H	7,7	56	$^{26296}/_{455}$	1,28	104	6000	4000	1300	185	575	445
PSC057-H	7,7	71	$^{22836}/_{325}$	0,86	85	6000	4000	1300	185	575	445
PSC057-H	7,7	90	$^{5882}/_{65}$	0,52	66	6000	4000	1300	185	575	445
PSC057-H	7,7	125	$^{4844}/_{39}$	0,32	48	6000	4000	1300	185	575	445
PSC057-H	7,7	131,5	$^{97572}/_{715}$	0,27	44	6000	4000	1300	185	575	445
PSC080-H	11,2	35,5	$^{21614}/_{611}$	5,47	100	3537	3500	2730	305	980	770
PSC080-H	11,2	45	$^{82012}/_{1833}$	3,58	100	4474	3500	2730	305	980	770
PSC080-H	11,2	56	$^{169882}/_{3055}$	2,42	90	5000	3500	2730	305	980	770
PSC080-H	11,2	71	$^{43935}/_{611}$	1,64	70	5000	3500	2730	305	980	770
PSC080-H	11,2	90	$^{401273}/_{4277}$	0,98	53	5000	3500	2730	305	980	770
PSC080-H	11,2	131,5	$^{8787}/_{65}$	0,50	37	5000	3500	2730	305	980	770
PSC080-H	11,2	125	$^{820120}/_{6721}$	0,61	41	5000	3500	2730	305	980	770

Dimensions

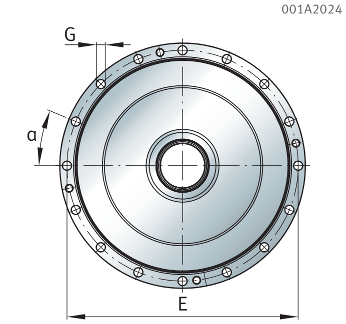
Designation	G_1	G_2	α_4	α_2	α_1	E_2	E_1	B_1	R	B_2
			°	°	°	mm	mm	mm	mm	mm
PSC057-H	M10×15	M4×8	14	22	50	75,2	104	50,8	37,25	16
PSC080-H	M10×15	M4×8	–	26	46	88	125	56,75	44	19

CAD download:

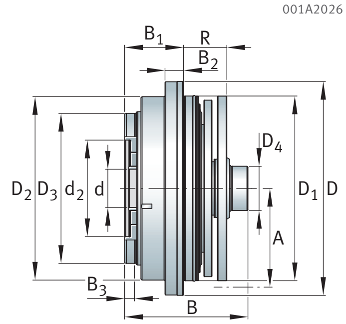
- https://cdn.schaeffler-ecommerce.com/downloads/robotics/PSC057-H-E.STEP
- https://cdn.schaeffler-ecommerce.com/downloads/robotics/PSC080-H-E.STEP



PSC057-H



PSC080-H



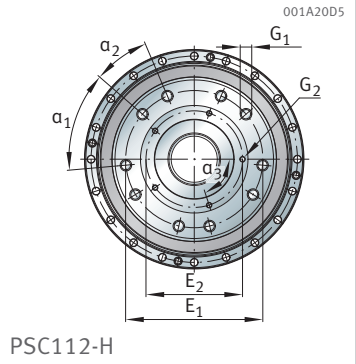
PSC057-H, PSC080-H

M_{acc}	M_{estop}	M_{bend}	$M_{bend\ estop}$	F_a	F_{0a}	F_r	F_{0r}	t_S	t_K	ρ_P	$\varphi_{\alpha\ tol}$	$\varphi_{\alpha\ lost}$	Ups_{sync}
Nm	**Nm**	**Nm**	**Nm**	**kN**	**kN**	**kN**	**kN**	**mm**	**mm**	**Nm/kg**	**arcmin**	**arcmin**	**arcsec**
625	1545	1070	3645	18,0	152	11,0	55	0,035	0,032	57,8	0,1	0,6	70
625	1545	1070	3645	18,0	152	11,0	55	0,035	0,032	57,8	0,1	0,6	70
625	1545	1070	3645	18,0	152	11,0	55	0,035	0,032	57,8	0,1	0,6	70
625	1545	1070	3645	18,0	152	11,0	55	0,035	0,032	57,8	0,1	0,6	70
625	1545	1070	3645	18,0	152	11,0	55	0,035	0,032	57,8	0,1	0,6	70
625	1545	1070	3645	18,0	152	11,0	55	0,035	0,032	57,8	0,1	0,6	70
625	1545	1070	3645	18,0	152	11,0	55	0,035	0,032	57,8	0,1	0,6	70
1075	2530	1280	4345	18,5	168	11,5	57	0,035	0,032	68,8	0,1	0,6	50
1075	2530	1280	4345	18,5	168	11,5	57	0,035	0,032	68,8	0,1	0,6	50
1075	2530	1280	4345	18,5	168	11,5	57	0,035	0,032	68,8	0,1	0,6	50
1075	2530	1280	4345	18,5	168	11,5	57	0,035	0,032	68,8	0,1	0,6	50
1075	2530	1280	4345	18,5	168	11,5	57	0,035	0,032	68,8	0,1	0,6	50
1075	2530	1280	4345	18,5	168	11,5	57	0,035	0,032	68,8	0,1	0,6	50
1075	2530	1280	4345	18,5	168	11,5	57	0,035	0,032	68,8	0,1	0,6	50

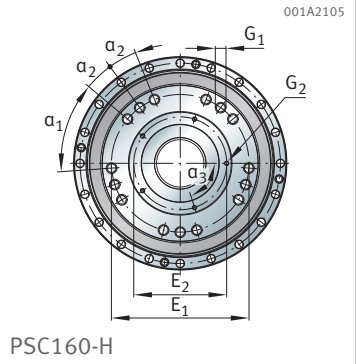
Dimensions

Designation	D_2	D_3	d_2	d	B_3	B_3	D_4	h	D_1	D	B	G	α	E
			H7			**max.**	**h9**		**h7**	**h8**	**±0,5**			
	mm	**mm**	**mm**	**mm**	**mm**	**mm**	**mm**	**mm**	**mm**	**mm**	**mm**	**mm**	**°**	**mm**
PSC057-H	158	129 h7	83	33	–	7	38	85	159	184	106,3	6,6	22,5	173
PSC080-H	177	145	98	42	7,5	–	48	95	178	200	114	6,6	18	188

2.1.2.3.6 PSC112-H, PSC160-H



PSC112-H



PSC160-H

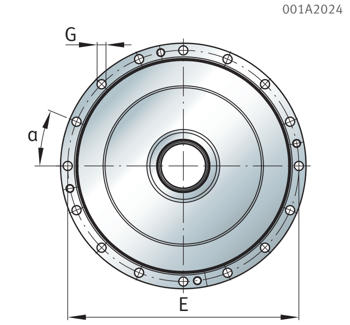
Designation	m	i_{nom}	i_{ex}	J_i	$n_{max\ out}$	$n_{max\ per\ In}$	$n_{per\ In}$	C_{bend}	C_t	M_{perm}	M_{nom}
	kg			kg · cm²	min^{-1}	min^{-1}	min^{-1}	Nm/arcmin	Nm/arcmin	Nm	Nm
PSC112-H	15,9	35,5	$^{25422}/_{725}$	9,63	100	3506	3500	3315	480	1480	1165
PSC112-H	15,9	45	$^{26537}/_{600}$	6,31	100	4423	3500	3315	480	1480	1165
PSC112-H	15,9	56	$^{27429}/_{500}$	4,26	91	5000	3500	3315	480	1480	1165
PSC112-H	15,9	71	$^{28321}/_{400}$	2,89	71	5000	3500	3315	480	1480	1165
PSC112-H	15,9	90	$^{446}/_{5}$	1,73	56	5000	3500	3315	480	1480	1165
PSC112-H	15,9	125	$^{3122}/_{25}$	1,08	40	5000	3500	3315	480	1480	1165
PSC160-H	19,9	45	$^{228342}/_{5083}$	12,31	100	4492	3500	3670	690	1850	1450
PSC160-H	19,9	35,5	$^{218327}/_{6188}$	18,79	100	3528	3500	3670	690	1850	1450
PSC160-H	19,9	50	$^{232348}/_{4641}$	10,04	100	5000	3500	3670	690	1850	1450
PSC160-H	19,9	71	$^{244366}/_{3315}$	5,63	68	5000	3500	3670	690	1850	1450
PSC160-H	19,9	56	$^{236354}/_{4199}$	8,32	89	5000	3500	3670	690	1850	1450
PSC160-H	19,9	90	$^{250375}/_{2652}$	3,38	53	5000	3500	3670	690	1850	1450
PSC160-H	19,9	125	$^{292438}/_{2431}$	2,10	42	5000	3500	3670	690	1850	1450
PSC160-H	19,9	131,5	$^{294441}/_{2210}$	1,73	38	5000	3500	3670	690	1850	1450

Dimensions

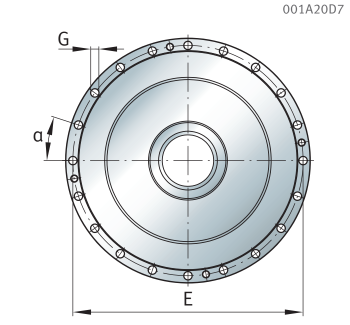
Designation	G_1	G_2	α_2	α_1	E_2	E_1	B_1	R	B_2
			°	°	mm	mm	mm	mm	mm
PSC112-H	M12×18	M4×6,5	15	42	105,5	147	58,75	50,75	21,5
PSC160-H	M12×21,75	M5×12	14	44	108	160	62	53,25	23

CAD download:

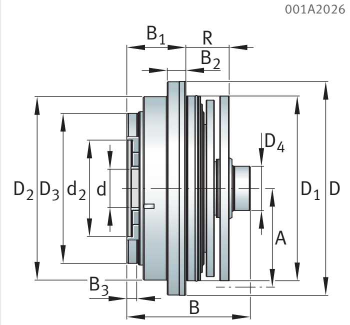
- https://cdn.schaeffler-ecommerce.com/downloads/robotics/PSC112-H-E.STEP
- https://cdn.schaeffler-ecommerce.com/downloads/robotics/PSC160-H-E.STEP



PSC112-H



PSC160-H



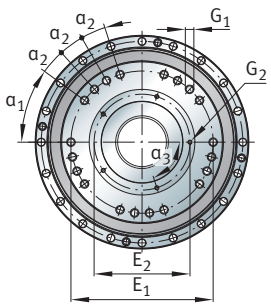
PSC112-H, PSC160-H

M_{acc}	M_{estop}	M_{bend}	$M_{bend\ estop}$	F_a	F_{0a}	F_r	F_{0r}	t_S	t_K	ρ_P	$\varphi_{\alpha\ tol}$	$\varphi_{\alpha\ lost}$	Ups_{sync}
Nm	Nm	Nm	Nm	kN	kN	kN	kN	mm	mm	Nm/kg	arcmin	arcmin	arcsec
1630	3780	2410	5910	29,5	270	18,0	85	0,035	0,032	73,3	0,1	0,6	50
1630	3780	2410	5910	29,5	270	18,0	85	0,035	0,032	73,3	0,1	0,6	50
1630	3780	2410	5910	29,5	270	18,0	85	0,035	0,032	73,3	0,1	0,6	50
1630	3780	2410	5910	29,5	270	18,0	85	0,035	0,032	73,3	0,1	0,6	50
1630	3780	2410	5910	29,5	270	18,0	85	0,035	0,032	73,3	0,1	0,6	50
1630	3780	2410	5910	29,5	270	18,0	85	0,035	0,032	73,3	0,1	0,6	50
2030	4800	2750	7800	31,0	292	19,0	97	0,039	0,032	72,9	0,1	0,6	50
2030	4800	2750	7800	31,0	292	19,0	97	0,039	0,032	72,9	0,1	0,6	50
2030	4800	2750	7800	31,0	292	19,0	97	0,039	0,032	72,9	0,1	0,6	50
2030	4800	2750	7800	31,0	292	19,0	97	0,039	0,032	72,9	0,1	0,6	50
2030	4800	2750	7800	31,0	292	19,0	97	0,039	0,032	72,9	0,1	0,6	50
2030	4800	2750	7800	31,0	292	19,0	97	0,039	0,032	72,9	0,1	0,6	50
2030	4800	2750	7800	31,0	292	19,0	97	0,039	0,032	72,9	0,1	0,6	50
2030	4800	2750	7800	31,0	292	19,0	97	0,039	0,032	72,9	0,1	0,6	50

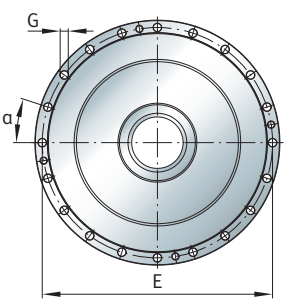
Dimensions

Designation	D_2	D_3	d_2	d	B_3	D_4	h	D_1	D	B	G	α	E
			H7			h9		h7	h8	±0,5			
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	°	mm
PSC112-H	202	167	114	50	8	55	105	203	232	126,5	9	22,5	217
PSC160-H	218	181,5	120	55	8,25	60	115	219	248	131,75	9	18	233

2.1.2.3.7 PSC224-H, PSC300-H



PSC224-H, PSC300-H



PSC224-H, PSC300-H

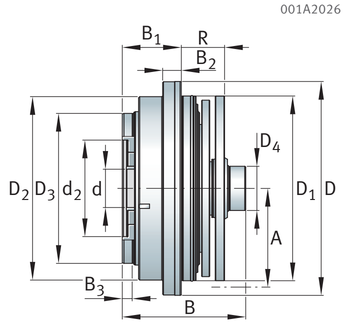
Designation	m	i_{nom}	i_{ex}	J_i	$n_{max\ out}$	$n_{max\ per\ In}$	$n_{per\ In}$	C_{bend}	C_t	M_{perm}	M_{nom}
	kg			kg · cm²	min^{-1}	min^{-1}	min^{-1}	Nm/arcmin	Nm/arcmin	Nm	Nm
PSC224-H	27,7	35,5	$^{206719}/_{5733}$	29,38	90	3245	3000	4100	820	2325	1820
PSC224-H	27,7	45	$^{324046}/_{7007}$	19,25	90	4162	3000	4100	820	2325	1820
PSC224-H	27,7	56	$^{94979}/_{1729}$	13,01	82	5000	3000	4100	820	2325	1820
PSC224-H	27,7	71	$^{681614}/_{9555}$	8,81	63	5000	3000	4100	820	2325	1820
PSC224-H	27,7	90	$^{698375}/_{7644}$	5,29	49	5000	3000	4100	820	2325	1820
PSC224-H	27,7	125	$^{776593}/_{6370}$	3,29	37	5000	3000	4100	820	2325	1820
PSC300-H	37,4	35,5	$^{228342}/_{6409}$	48,31	80	2850	2500	8810	1240	3435	2690
PSC300-H	37,4	45	$^{14021}/_{312}$	31,65	80	3595	2500	8810	1240	3435	2690
PSC300-H	37,4	56	$^{246369}/_{4420}$	21,39	72	4000	2500	8810	1240	3435	2690
PSC300-H	37,4	71	$^{274411}/_{3757}$	14,49	55	4000	2500	8810	1240	3435	2690
PSC300-H	37,4	90	$^{20030}/_{221}$	8,70	44	4000	2500	8810	1240	3435	2690
PSC300-H	37,4	125	$^{2003}/_{17}$	5,40	34	4000	2500	8810	1240	3435	2690
PSC300-H	37,4	131,5	$^{144216}/_{1105}$	4,46	31	4000	2500	8810	1240	3435	2690

Dimensions

Designation	G_1	G_2	α_2	α_1	E_2	E_1	B_1	R	B_2
			°	°	mm	mm	mm	mm	mm
PSC224-H	M10×19,75	M5×12	12	36	118	175	65,5	56,5	25
PSC300-H	M12×20	M6×12	13	33	130	200	76,5	64,75	29

CAD download:

- https://cdn.schaeffler-ecommerce.com/downloads/robotics/PSC224-H-E.STEP
- https://cdn.schaeffler-ecommerce.com/downloads/robotics/PSC300-H-E.STEP



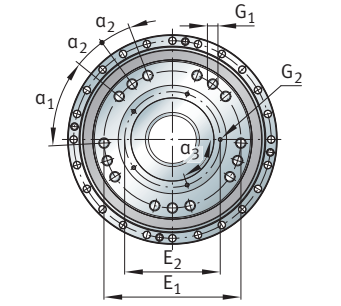
PSC224-H, PSC300-H

M_{acc}	M_{estop}	M_{bend}	$M_{bend\ estop}$	F_a	F_{0a}	F_r	F_{0r}	t_S	t_K	ρ_P	$\varphi_{\alpha\ tol}$	$\varphi_{\alpha\ lost}$	Ups_{sync}
Nm	Nm	Nm	Nm	kN	kN	kN	kN	mm	mm	Nm/kg	arcmin	arcmin	arcsec
2550	6090	3060	9280	32,0	315	20,0	100	0,039	0,035	65,7	0,1	0,6	50
2550	6090	3060	9280	32,0	315	20,0	100	0,039	0,035	65,7	0,1	0,6	50
2550	6090	3060	9280	32,0	315	20,0	100	0,039	0,035	65,7	0,1	0,6	50
2550	6090	3060	9280	32,0	315	20,0	100	0,039	0,035	65,7	0,1	0,6	50
2550	6090	3060	9280	32,0	315	20,0	100	0,039	0,035	65,7	0,1	0,6	50
2550	6090	3060	9280	32,0	315	20,0	100	0,039	0,035	65,7	0,1	0,6	50
3765	8990	4800	11410	42,5	400	26,5	140	0,039	0,035	71,9	0,1	0,6	50
3765	8990	4800	11410	42,5	400	26,5	140	0,039	0,035	71,9	0,1	0,6	50
3765	8990	4800	11410	42,5	400	26,5	140	0,039	0,035	71,9	0,1	0,6	50
3765	8990	4800	11410	42,5	400	26,5	140	0,039	0,035	71,9	0,1	0,6	50
3765	8990	4800	11410	42,5	400	26,5	140	0,039	0,035	71,9	0,1	0,6	50
3765	8990	4800	11410	42,5	400	26,5	140	0,039	0,035	71,9	0,1	0,6	50
3765	8990	4800	11410	42,5	400	26,5	140	0,039	0,035	71,9	0,1	0,6	50

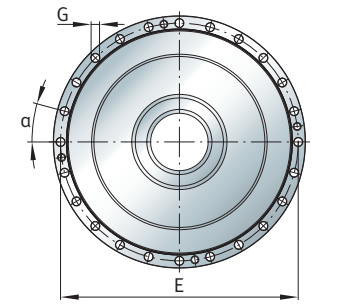
Dimensions

Designation	D_2	D_3	d_2	d	B_3	D_4	h	D_1	D	B	G	α	E
			H7			h9		h7	h8	±0,5			
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	°	mm
PSC224-H	233	197,5	130	60	9	65	125	234	263	138,5	9	18	248
PSC300-H	264	225	150	68,5	8	76	140	265	301	157	11	18	282

2.1.2.3.8 PSC400-H



PSC400-H



PSC400-H

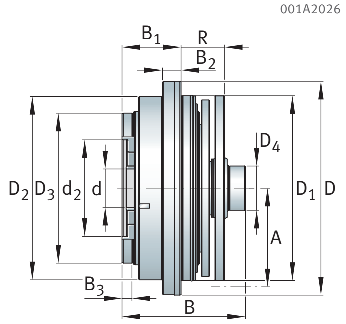
Designation	m	i_{nom}	i_{ex}	J_i	$n_{max\ out}$	$n_{max\ per\ In}$	$n_{per\ In}$	C_{bend}	C_t	M_{perm}	M_{nom}
	kg			kg · cm²	min^{-1}	min^{-1}	min^{-1}	Nm/arcmin	Nm/arcmin	Nm	Nm
PSC400-H	50,3	35,5	$^{12544}/_{351}$	79,59	70	2502	2000	10250	1460	4495	3505
PSC400-H	50,3	45	$^{504}/_{11}$	52,13	70	3207	2000	10250	1460	4495	3505
PSC400-H	50,3	56	$^{13440}/_{247}$	35,24	64	3500	2000	10250	1460	4495	3505
PSC400-H	50,3	71	$^{4592}/_{65}$	23,87	50	3500	2000	10250	1460	4495	3505
PSC400-H	50,3	90	$^{1176}/_{13}$	14,33	39	3500	2000	10250	1460	4495	3505
PSC400-H	50,3	125	$^{4816}/_{39}$	8,90	28	3500	2000	10250	1460	4495	3505

Dimensions

Designation	G_1	G_2	α_2	α_1	E_2	E_1	B_1	R	B_2
			°	°	mm	mm	mm	mm	mm
PSC400-H	M16×28	M6×12	15	42	150	215	82	68	32

CAD download:

- https://cdn.schaeffler-ecommerce.com/downloads/robotics/PSC400-H-E.STEP



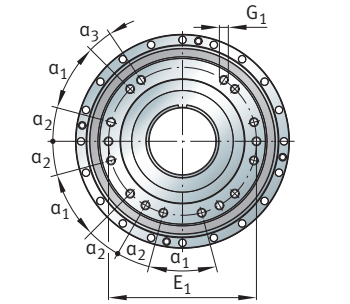
PSC400-H

M_{acc}	M_{estop}	M_{bend}	$M_{bend\ estop}$	F_a	F_{0a}	F_r	F_{0r}	t_S	t_K	ρ_P	$\varphi_{\alpha\ tol}$	$\varphi_{\alpha\ lost}$	Ups_{sync}
Nm	Nm	Nm	Nm	kN	kN	kN	kN	mm	mm	Nm/kg	arcmin	arcmin	arcsec
4905	11980	6080	13750	46,0	535	29,0	170	0,039	0,035	69,7	0,1	0,6	50
4905	11980	6080	13750	46,0	535	29,0	170	0,039	0,035	69,7	0,1	0,6	50
4905	11980	6080	13750	46,0	535	29,0	170	0,039	0,035	69,7	0,1	0,6	50
4905	11980	6080	13750	46,0	535	29,0	170	0,039	0,035	69,7	0,1	0,6	50
4905	11980	6080	13750	46,0	535	29,0	170	0,039	0,035	69,7	0,1	0,6	50
4905	11980	6080	13750	46,0	535	29,0	170	0,039	0,035	69,7	0,1	0,6	50

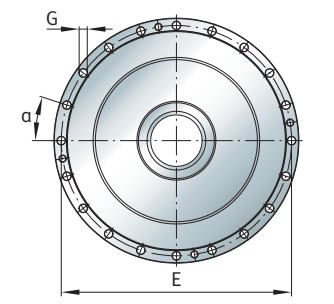
Dimensions

Designation	D_2	D_3	d_2	d	B_3	D_4	h	D_1	D	B	G	α	E
			H7			h9		h7	h8	±0,5			
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	°	mm
PSC400-H	292	245	170	75	9	85	155	293	329	169,5	11	15	310

2.1.2.3.9 PSC500-H



PSC500-H



PSC500-H

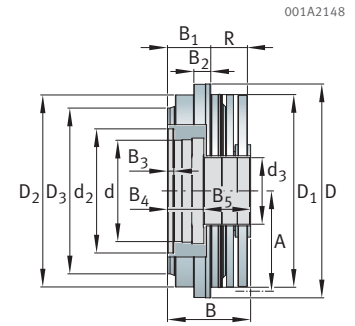
Designation	m	i_{nom}	i_{ex}	J_i	$n_{max\ out}$	$n_{max\ per\ In}$	$n_{per\ In}$	C_{bend}	C_t	M_{perm}	M_{nom}
	kg			kg · cm²	min^{-1}	min^{-1}	min^{-1}	Nm/arcmin	Nm/arcmin	Nm	Nm
PSC500-H	68,8	150	$^{1440628}/_{9711}$	–	30	4500	2000	12500	2100	4685	3650

Dimensions

Designation	G_1	α_3	α_2	α_1	E_1	B_1	R	B_2
		°	°	°	mm	mm	mm	mm
PSC500-H	M16×28	11	15	30	280	82	69,5	32

CAD download:

- https://cdn.schaeffler-ecommerce.com/downloads/robotics/PSC500-H-E.STEP



PSC500-H

M_{acc}	M_{estop}	M_{bend}	$M_{bend\ estop}$	F_a	F_{0a}	F_r	F_{0r}	t_S	t_K	ρ_P	$\varphi_{\alpha\ tol}$	$\varphi_{\alpha\ lost}$	Ups_{sync}
Nm	Nm	Nm	Nm	kN	kN	kN	kN	mm	mm	Nm/kg	arcmin	arcmin	arcsec
5110	12480	9750	20000	58,0	450	37,0	142	0,060	0,060	53,1	0,1	0,6	50

Dimensions

Designation	D_2	D_3	d_2	d	B_3	B_4	B_5	D_3	h	D_1	D	B	G	α	E
			H7	H9		±1				h7	h8	±0,5			
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	°	mm
PSC500-H	364	314	235	192	12	68	89,5	126	190	365	405	157,5	13,5	18	384

2.2 Gear units and motor attachment variants

2.2.1 Product overview

Gear units can be integrated directly into the system with minimal effort. They consist of a three-stage standard mounting kit and are equipped with a flange cover and the desired adapter. The transmission ratio determines whether a plug-in or slip-on pinion is used.

0019CE75

13 Gear unit with unconnected input shaft, flange cover and motor attachment variant 2 (PSC..-V)

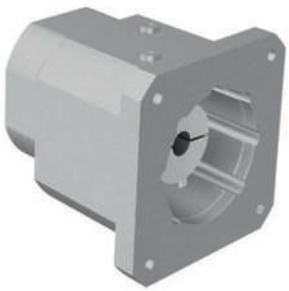
001A5A37

14 Gear unit with hollow shaft, flange cover and motor attachment variant 1 (PSC..-H)

Optional versions:

- food grade lubrication
- gear unit in RAL 9005 black
- protective sleeve for hollow shaft

001A59A5



15 Motor attachment variant 0

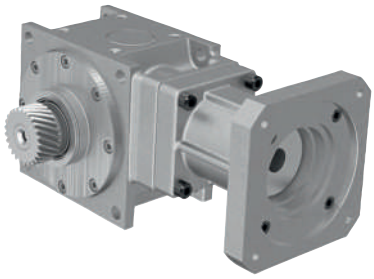
001A5A06

16 Motor attachment variant 1

001A59D5

17 Motor attachment variant 2

001A5A87

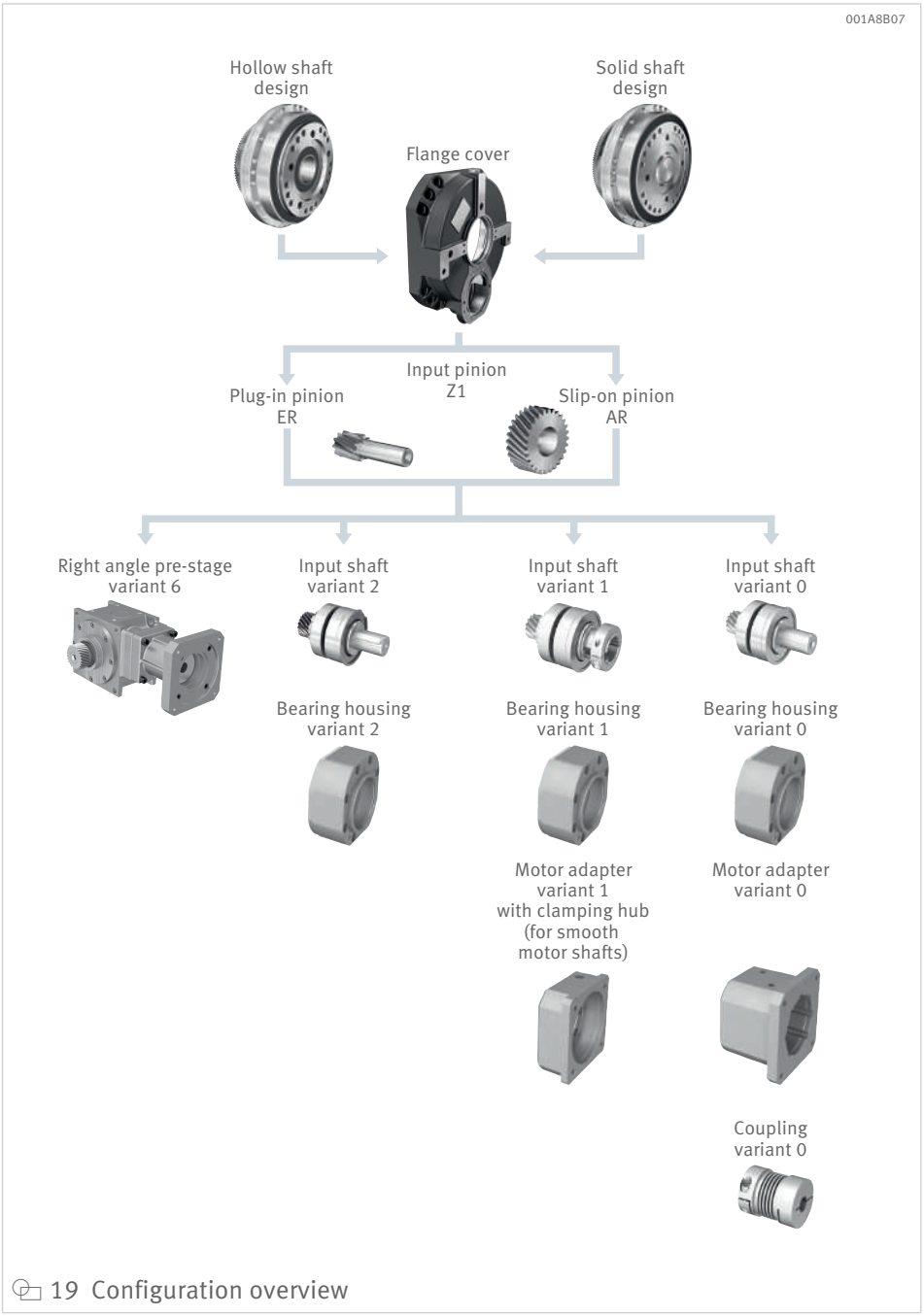


18 Right angle pre-stage variant 6

- Variant 1
  - with clamping hub for transmission of torque
  - for smooth shaft diameters from 11 mm to 38 mm
- Variant 2
  - with adapter and unconnected input shaft for individual connection design
- Variant 6
  - with right angle pre-stage

Further motor attachment variants are available by agreement.

A smooth motor shaft is recommended for all motor attachment variants. Input shafts for motor shafts with a feather key are available by agreement. Input shafts for other motor shaft dimensions are possible by agreement.



19 Configuration overview

4 Motor attachment and gearbox variants

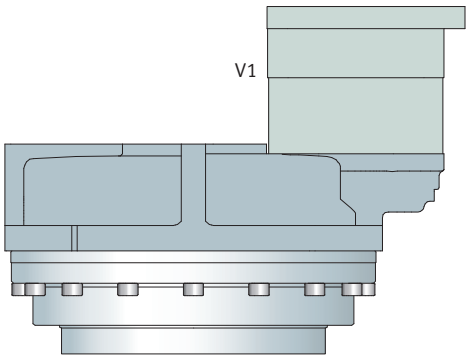
Motor shaft dimension	Motor attachment variant	Gearbox		
d×l mm		PSC030 PSC056 PSC057 PSC080	PSC112 PSC160 PSC224	PSC300 PSC400
11×23	0, 1, 6	•	–	–
14×30	0, 1, 6	•	–	–
16×40	0, 1, 6	•	•	–
19×40	0, 1, 6	•	•	–
22×50	0, 1, 6	•	•	–
24×50	0, 1, 6	•	•	–
28×60	0, 1, 6	•	•	•
32×60	0, 1, 6	•	•	•
35×60	0, 1, 6	–	•	•
38×80	0, 1, 6	–	•	•

• Version available.

Other motor shaft dimensions by agreement.

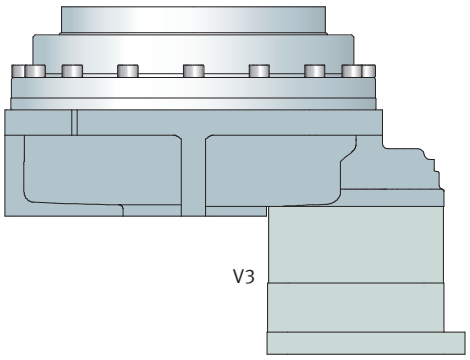
2.2.2 Installation positions

0019CF31



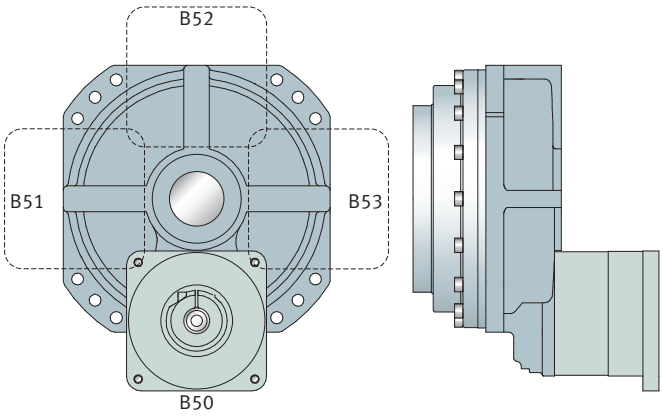
20 Output bottom, input top

0019CF34



21 Output top, input bottom

0019CF36

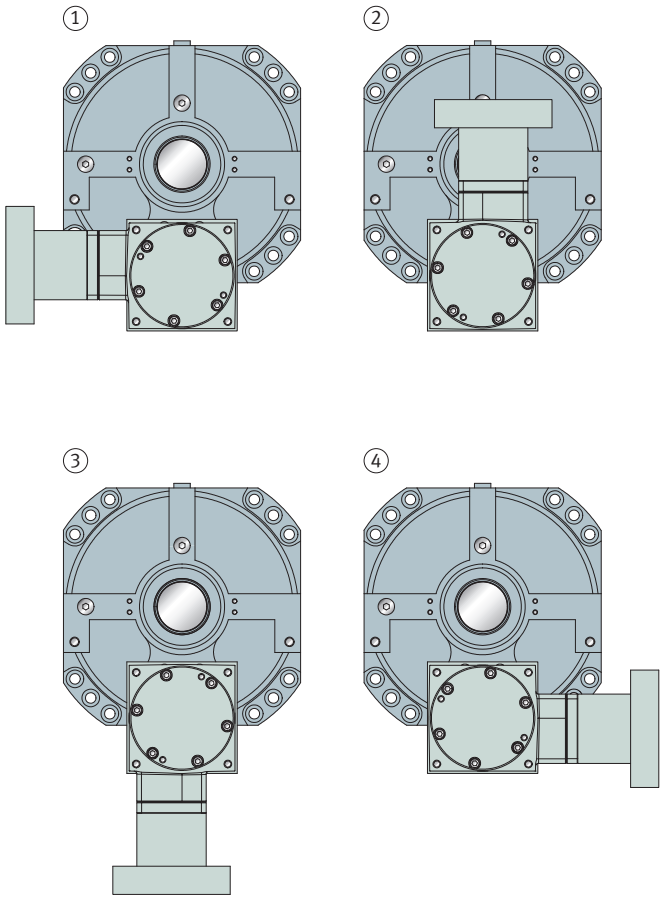


22 Output horizontal, input position as required

2.2.2.1 Installation positions for variant 6 with right angle pre-stage

The installation positions of the right angle pre-stages are shown relative to the main gearbox.

0019CF6B

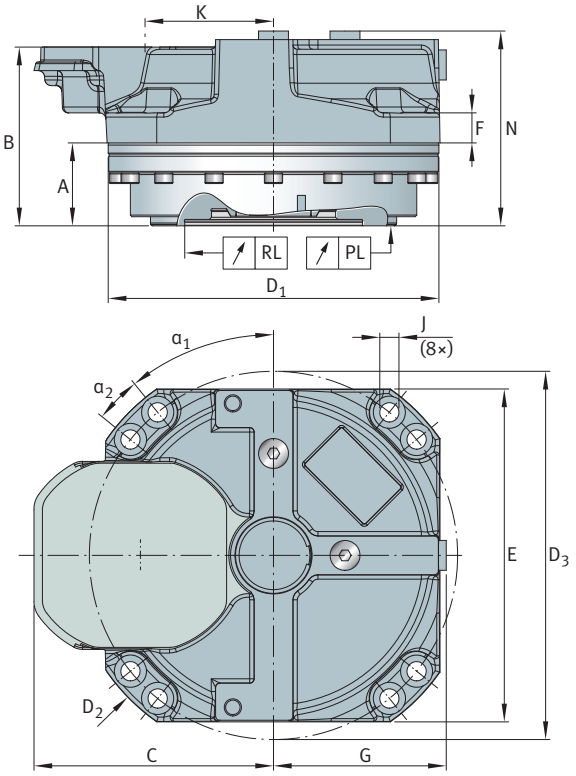


23 Installation positions for variant 6 with right angle pre-stage

1	W (West)	2	N (North)
3	S (South)	4	E (East)

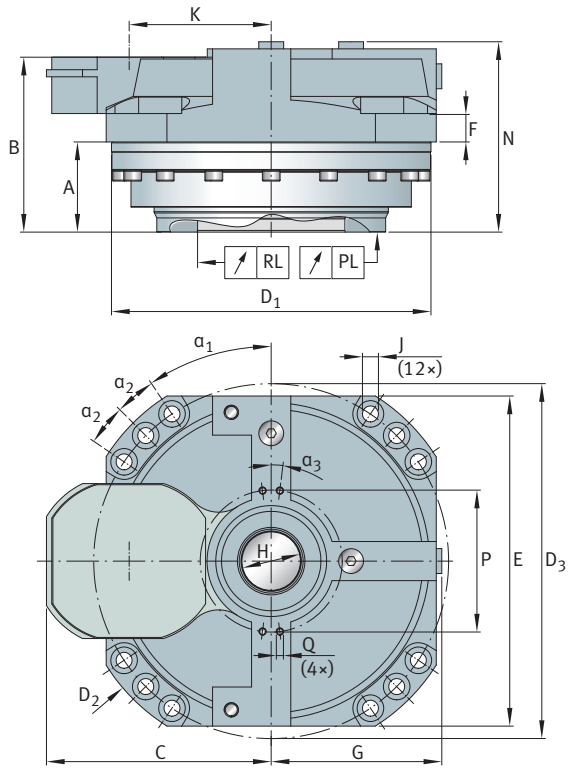
2.2.3 Dimensions

0019CD74



24 PSC030-V

0019CEA6



25 All other gearboxes

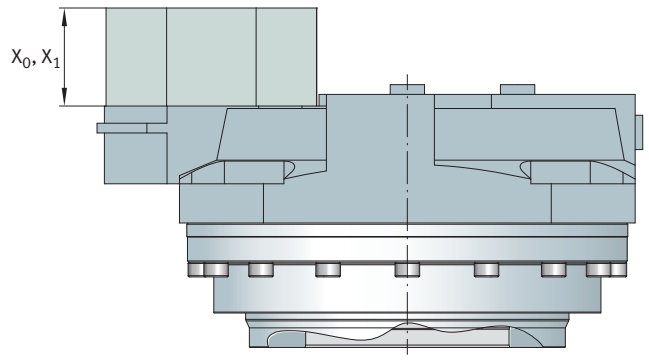
5 Dimensions for gearboxes with solid shaft and hollow shaft

Gearbox	A	B	N	Ø D1 h8	E	C	G
	mm	mm	mm	mm	mm	mm	mm
Solid shaft							
PSC030-V	38,75	83,5	91	154,5	156	112	81
PSC056-V	38,5	86,25	95	180	186	127	96
PSC080-V	42,5	97,5	107,25	200	202	137	105
PSC112-V	48,75	111,75	123,25	232	234	158	121
PSC160-V	52	111,25	127,5	248	254	168	131
PSC224-V	56,5	126,5	137	263	272	178	140
PSC300-V	65	145,75	153,75	301	303	200	156
PSC400-V	71	155	166	329	335	215	172
Hollow shaft							
PSC057-H	50,8	98,55	107,3	184	186	127	96
PSC080-H	56,75	111,75	121,5	200	202	137	105
PSC112-H	58,75	121,75	133,25	232	234	158	121
PSC160-H	62	127,25	137,5	248	254	168	131
PSC224-H	65,5	135,5	146	263	272	178	140
PSC300-H	76,5	157,25	165,25	301	303	200	156
PSC400-H	82	166	177	329	335	215	172

6 Dimensions for gearboxes with solid shaft and hollow shaft

Gearbox	α_1	α_2	Ø J	Ø D3	K	H	Ø P	RL	PL
	°	°	mm	mm	mm	mm	mm	mm	mm
Solid shaft									
PSC030-V	39	12	9	172	60	–	–	0,029	0,032
PSC056-V	34	11	9	200	75	–	–	0,029	0,035
PSC080-V	34	11	9	220	85	–	–	0,029	0,035
PSC112-V	34	11	11	255	95	–	–	0,032	0,035
PSC160-V	32,5	12,5	11	272	105	–	–	0,032	0,039
PSC224-V	32,5	12,5	13,5	286	115	–	–	0,032	0,039
PSC300-V	32,5	12,5	13,5	329	125	–	–	0,035	0,039
PSC400-V	32,5	12,5	13,5	357	140	–	–	0,035	0,039
Hollow shaft									
PSC057-H	34	11	9	200	85	33	80	–	–
PSC080-H	34	11	9	220	95	42	90	–	–
PSC112-H	34	11	11	255	105	50	95	–	–
PSC160-H	32,5	12,5	11	272	115	55	115	–	–
PSC224-H	32,5	12,5	13,5	286	125	60	120	–	–
PSC300-H	32,5	12,5	13,5	329	140	68,5	130	–	–
PSC400-H	32,5	12,5	13,5	357	155	75	155	–	–

2.2.3.1 Variant 1

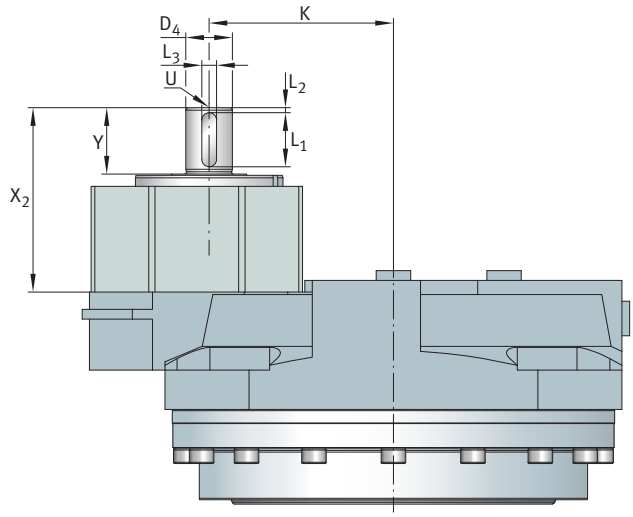


26 Variant 1 with clamping hub

7 Dimensions for gearboxes with motor attachment variant 0 and 1

Gearbox	Length of motor shaft	X0	X1
	mm	mm	mm
PSC030	23	100	65,75
PSC056	30	107	70,75
PSC057	40	117	84,5
PSC080	50	127	95,5
	60	137	105,5
PSC112	40	132	85,25
PSC160	50	142	100,5
PSC224	60	152	110,5
	80	172	130,5
PSC300	60	163	111,5
PSC400	80	183	131,5

2.2.3.2 Variant 2

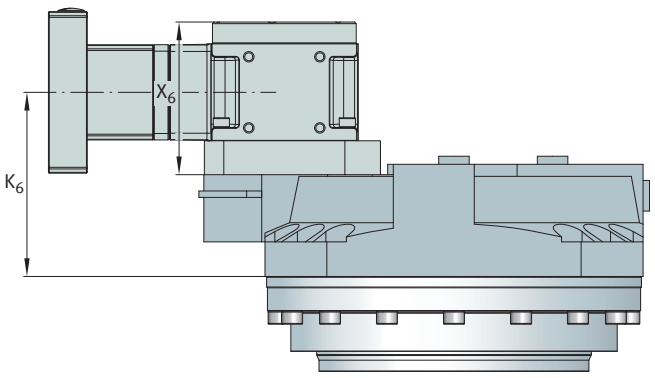


27 Variant 2 with unconnected input shaft

8 Dimensions for gearboxes with motor attachment variant 2

Gearbox	X2	Y	Ø D4 k6	L1	L2	L3 h9	L4
	mm	mm	mm	mm	mm	mm	mm
PSC030	75	27	19	22	2	6	M6
PSC056	75	27	19	22	2	6	M6
PSC057	75	27	19	22	2	6	M6
PSC080	75	27	19	22	2	6	M6
PSC112	90	35	24	30	2	8	M6
PSC160	90	35	24	30	2	8	M6
PSC224	90	35	24	30	2	8	M6
PSC300	100	45	30	40	2	8	M8
PSC400	100	45	30	40	2	8	M8

2.2.3.3 Variant 6



28 Variant 6 with right angle pre-stage

The following values are basic values for design purposes and serve as a guide. The actual values may differ, depending on the design.

9 Dimensions for gearboxes with motor attachment variant 6

Gearbox	X6	K6
	mm	mm
PSC030-V	87,5	93,25
PSC056-V	87,5	96,25
PSC057-H	87,5	96,25
PSC080-V/H	87,5	103,5
PSC112-V/H	94,5	114
PSC160-V	94,5	116,25
PSC160-H	107,75	124,25
PSC224-V/H	107,75	129
PSC300-V	107,75	139,75
PSC300-H	129	151,75
PSC400-V/H	129	155

2.2.4 Performance data

2.2.4.1 Explanations

i_{nom}	–	Nominal transmission ratio
i_{ex}	–	Exact transmission ratio
M_{estop}	Nm	E-stop moment Based on 3000 times during the operating life.

2.2.4.2 Specific performance data, variant 6

10 Standard transmission ratios with right angle pre-stage with solid shaft

Gearbox	i_{nom}	i_{ex}	M_{estop}
			Nm
PSC030-V	150	$^{337183}/_{2210}$	800
PSC030-V	189	$^{1077234}/_{5525}$	800
PSC030-V	240	$^{376594}/_{1547}$	800
PSC030-V	315	$^{359078}/_{1105}$	800
PSC030-V	400	$^{1882970}/_{4641}$	800
PSC030-V	504	$^{2872624}/_{5525}$	800
PSC030-V	640	$^{3012752}/_{4641}$	800
PSC056-V	150	$^{564788}/_{3915}$	1545
PSC056-V	189	$^{85946}/_{435}$	1545
PSC056-V	240	$^{564788}/_{2349}$	1545
PSC056-V	315	$^{85946}/_{261}$	1545
PSC056-V	400	$^{4518304}/_{11745}$	1545
PSC056-V	504	$^{687568}/_{1305}$	1545
PSC056-V	640	$^{171892}/_{261}$	1545
PSC080-V	150	$^{754}/_{5}$	2212
PSC080-V	189	$^{33176}/_{175}$	2530
PSC080-V	240	$^{57304}/_{245}$	2530
PSC080-V	315	$^{33176}/_{105}$	2530
PSC080-V	400	$^{57304}/_{147}$	2530
PSC080-V	504	$^{265408}/_{525}$	2530
PSC080-V	640	$^{458432}/_{735}$	2530
PSC112-V	150	$^{325367}/_{2175}$	3491
PSC112-V	189	$^{681429}/_{3625}$	3780
PSC112-V	240	$^{6139}/_{25}$	3780
PSC112-V	315	$^{227143}/_{725}$	3780
PSC112-V	400	$^{6139}/_{15}$	3780

Gearbox	i_{nom}	i_{ex}	M_{estop}
			Nm
PSC112-V	504	$^{1817144}/_{3625}$	3780
PSC112-V	640	$^{49112}/_{75}$	3780
PSC160-V	150	$^{354928}/_{2325}$	3562
PSC160-V	189	$^{9507}/_{50}$	4437
PSC160-V	240	$^{386618}/_{1575}$	4800
PSC160-V	315	$^{3169}/_{10}$	4437
PSC160-V	400	$^{386618}/_{945}$	4800
PSC160-V	504	$^{25352}/_{50}$	4437
PSC160-V	640	$^{3092944}/_{4725}$	4800
PSC224-V	150	$^{10593}/_{70}$	6090
PSC224-V	189	$^{4752}/_{25}$	6090
PSC224-V	240	$^{11484}/_{49}$	6090
PSC224-V	315	$^{1584}/_{5}$	6090
PSC224-V	400	$^{19140}/_{49}$	6090
PSC224-V	504	$^{12672}/_{25}$	6090
PSC224-V	640	$^{30624}/_{49}$	6090
PSC300-V	150	$^{19014}/_{125}$	7099
PSC300-V	189	$^{358097}/_{1875}$	8913
PSC300-V	240	$^{186971}/_{750}$	8990
PSC300-V	315	$^{358097}/_{1125}$	8913
PSC300-V	400	$^{186971}/_{450}$	8990
PSC300-V	504	$^{2864776}/_{5625}$	8913
PSC300-V	640	$^{1495768}/_{2250}$	8990
PSC400-V	150	$^{354928}/_{2325}$	11980
PSC400-V	189	$^{9507}/_{50}$	11980
PSC400-V	240	$^{34859}/_{150}$	11980
PSC400-V	315	$^{3169}/_{10}$	11980
PSC400-V	400	$^{34859}/_{90}$	11980
PSC400-V	504	$^{25352}/_{50}$	11980
PSC400-V	640	$^{278872}/_{450}$	11980

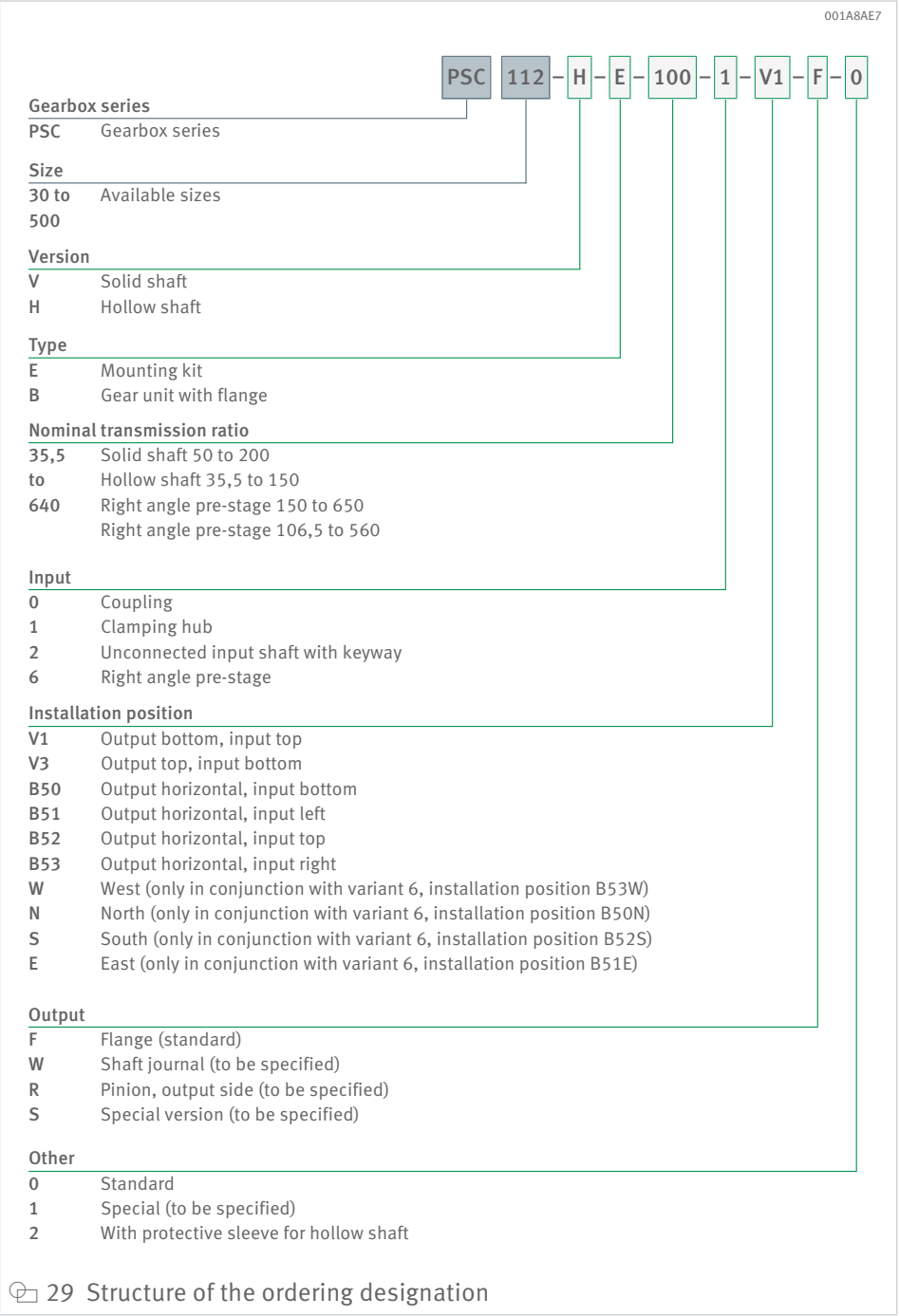
11 Standard transmission ratios with right angle pre-stage with hollow shaft

Gearbox	i_{nom}	i_{ex}	M_{estop}
			Nm
PSC057-H	106,5	$^{7266}/_{65}$	1545
PSC057-H	135	$^{45672}/_{325}$	1545
PSC057-H	168	$^{78888}/_{455}$	1545
PSC057-H	225	$^{15224}/_{65}$	1545
PSC057-H	280	$^{26296}/_{91}$	1545
PSC057-H	360	$^{121792}/_{325}$	1545
PSC057-H	448	$^{210368}/_{455}$	1545
PSC057-H	560	$^{52592}/_{91}$	1545
PSC080-H	106,5	$^{64842}/_{611}$	1556
PSC080-H	135	$^{82012}/_{611}$	1969
PSC080-H	168	$^{509646}/_{3055}$	2447
PSC080-H	225	$^{410060}/_{1833}$	1969
PSC080-H	280	$^{169882}/_{611}$	2447
PSC080-H	360	$^{656096}/_{1833}$	1969
PSC080-H	448	$^{1359056}/_{3055}$	2447
PSC080-H	560	$^{339764}/_{611}$	2447
PSC112-H	106,5	$^{76266}/_{725}$	2455
PSC112-H	135	$^{26537}/_{200}$	3096
PSC112-H	168	$^{82287}/_{500}$	3780
PSC112-H	225	$^{26537}/_{120}$	3096
PSC112-H	280	$^{27429}/_{100}$	3780
PSC112-H	360	$^{53074}/_{150}$	3096
PSC112-H	448	$^{54858}/_{125}$	3780
PSC112-H	560	$^{27429}/_{50}$	3780
PSC160-H	106,5	$^{654981}/_{6188}$	3780
PSC160-H	135	$^{685026}/_{5083}$	4800
PSC160-H	168	$^{1091635}/_{6188}$	4800
PSC160-H	225	$^{1141710}/_{5083}$	4800
PSC160-H	280	$^{436654}/_{1547}$	4800
PSC160-H	360	$^{1826736}/_{5083}$	4800
PSC160-H	450	$^{2283420}/_{5083}$	4800
PSC224-H	106,5	$^{206719}/_{1911}$	5048
PSC224-H	135	$^{972138}/_{7007}$	6090
PSC224-H	177,5	$^{1033595}/_{5733}$	5048
PSC224-H	225	$^{1620230}/_{7007}$	6090
PSC224-H	284	$^{1653752}/_{5733}$	5048
PSC224-H	360	$^{2592368}/_{7007}$	6090
PSC224-H	450	$^{3240460}/_{7007}$	6090
PSC300-H	106,5	$^{685026}/_{6409}$	8990
PSC300-H	135	$^{14021}/_{104}$	8990
PSC300-H	168	$^{739107}/_{4420}$	8990
PSC300-H	225	$^{70105}/_{312}$	8990
PSC300-H	280	$^{246369}/_{884}$	8990
PSC300-H	360	$^{14021}/_{39}$	8990
PSC300-H	448	$^{492738}/_{1105}$	8990
PSC300-H	560	$^{246369}/_{1105}$	8990
PSC400-H	106,5	$^{12544}/_{117}$	10007
PSC400-H	135	$^{1512}/_{11}$	11980
PSC400-H	168	$^{40320}/_{247}$	11980
PSC400-H	225	$^{2520}/_{11}$	11980
PSC400-H	280	$^{67200}/_{247}$	11980
PSC400-H	360	$^{4032}/_{11}$	11980
PSC400-H	448	$^{107520}/_{247}$	11980
PSC400-H	560	$^{134400}/_{247}$	11980

3 Technical data

3.1 Ordering designation

Structure of the ordering designation for mounting kits and gear units



29 Structure of the ordering designation

Glossary

Axial force F_a

An axial force acts on the output flange parallel to the output axis and can act in the direction of, or away from, the gearbox. If the axial force is displaced from the axis of rotation, a bending moment also acts on the main bearing arrangement of the gearbox via the displacement. The permissible dynamic and static values for the reference speed and reference life are listed in the performance data. A distinction is made between static and dynamic axial force.

Acceleration moment M_{acc}

The acceleration moment is 6 million times the maximum permissible torque at the output.

Operating modes

The operating modes include continuous operation S1 and cyclic operation S5. The gearboxes can reach inadmissibly high temperatures at high input and output speeds, particularly during continuous operation.

Continuous torque M_{perm}

The continuous torque is the output torque that is permissible for 20000 hours at an output speed of 15 min^{-1}.

Torque M

The torque causes the rotating masses to accelerate and brake and is given in Nm.

Speed n

The speed influences the life and temperature of the gearboxes. The maximum permissible speeds at the input and output, which are dependent on the gearbox and transmission ratio, must not be exceeded.

Mounting kit

A mounting kit consists of a gearbox subassembly and input gearing, which is dependent on the transmission ratio. The fitting of the pinion, which is supplied loose, and the encapsulation of the oil chamber must be carried out by the customer.

Gear unit

In the case of the gear unit, the input side of the gearbox subassembly is encapsulated by a flange cover and the bearing housing to provide oil seal integrity. The gear units are usually provided with a motor adapter, an unconnected input shaft or a right angle pre-stage.

Synchronous running accuracy

The synchronous running accuracy defines the maximum transmission error (max. amplitude of the fluctuation) of the real output rotary motion, based on the value calculated theoretically using the transmission ratio. This parameter is given in angular seconds (arcsec). To determine this parameter, the gearbox is rotated without load in trailing mode. The input and output rotary motion are recorded using a suitable measurement sensor system. The range of values over one full rotation of the output is evaluated to determine the synchronous running accuracy.

Hysteresis curve

With the input shaft disabled without backlash, the gearbox is loaded bidirectionally at the output with a continuously increasing torque up to or beyond the nominal value in order to record a gearbox-specific hysteresis curve. Suitable measurement sensors record the torsional torque and the torsion angle at the output flange. The torsional rigidity, torsional backlash, Lost Motion and hysteresis loss can be read off the hysteresis curve. The latter represents the rotational spring efficiency of the gearbox.

Tilting moment M_{bend}

The tilting moment is the moment that acts on the output flange perpendicular to the output axis. The permissible continuous and emergency stop tilting moments are listed in the performance data.

Tilting rigidity C_k

Tilting rigidity is defined as the quotient of the tilting moment acting on the gearbox from the outside and the resulting tilting angle on the output flange.

Clamping hub

The torque of the motor can be transmitted to the input shaft of the gearbox via the clamping hub. An alternative is the coupling.

Coupling

The torque of the motor can be transmitted to the input shaft of the gearbox via the coupling. An alternative is the clamping hub.

Rating life L_h

The rating life indicates the anticipated service life of a gearbox with the associated parameters. The rating life is limited by factors such as wear of the bearings and tooth set.

Mass m

The specified mass relates in each case to gearbox mounting kits with a nominal transmission ratio of 50. The weights of gear units vary depending on the motor attachment variant and transmission and, for this reason, are not listed.

Mass moment of inertia J

The mass moment of inertia reflects the resistance of a body to a change in its rotational movement. The mass moment of inertia of the motor, gearbox and load should be taken into account at the design stage.

Rated torque M_{perm}

The acceleration moment is 12 million times the maximum permissible torque at the output if the acceleration moment is also called up 6 million times.

Emergency stop moment M_{estop}

The emergency stop or emergency shutdown moment is 3000 times the permissible torque that may occur in the case of an unplanned event.

Positional accuracy

The positional accuracy is determined by the angular deviation between the nominal and actual position. It is influenced by the synchronous running accuracy and by the torsional backlash or rigidity.

Radial force F_r

A radial force acts on the output flange perpendicular to the output axis; if the axial force is displaced from the flange, a bending moment also acts on the main bearing arrangement of the gearbox via the displacement. The permissible dynamic and static values for the reference speed and reference life are listed in the performance data.

Transmission ratio

The transmission ratio is the ratio of input to output speed. The torques are in inverted proportion to the speeds.

Torsional backlash

The torsional backlash of a gearbox describes the angular tolerance between output and input at a torque of 0 Nm. With the input disabled, the output is rotated and the torsion angle is measured. As it is difficult to apply a torque that corresponds exactly to the friction in the gearbox, the torsional backlash is read off the hysteresis curve in practice.

Torsional rigidity C_t

Torsional rigidity is defined as the quotient of the torsional torque acting on the gearbox from the outside and the resulting torsion angle at the output. In practice, the torsional backlash is read off the hysteresis curve.

Repeat accuracy

Repeat accuracy describes the variation that is encountered when positions are repeatedly actuated on the same path under the same load. With repeat accuracy, the errors from the transmission deviation and the rigidity remain constant, with the result that only the torsional backlash or position error remain as inaccuracies.

Right angle pre-stage

A right angle pre-stage is a bevel or hypoid gear, which is mounted on the flange cover and diverts the transmission path by 90°. A right angle pre-stage is used when there is insufficient installation space for the motor in a parallel arrangement, or if transmission ratios › 200:1 are required. The torsional backlash is slightly greater than 0,1 arcmin in gearboxes with a right angle pre-stage.

Efficiency

The efficiency is the ratio of output to input power. Unless specified otherwise, efficiency always refers to operation under full load.

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