SCHAEFFLER

Precision Planetary Gearboxes

Series PSC

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 has 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 strain wave 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 7 000 Nm with two gear types – precision strain wave gears and precision planetary gears. This gives the industry a choice of precision strain wave gears for small cobots through to large industrial robots as well as precision strain wave gears for secondary and main axes in machine tools, and positioning drives for a wide variety of automation tasks.

Precision Planetary Gearboxes

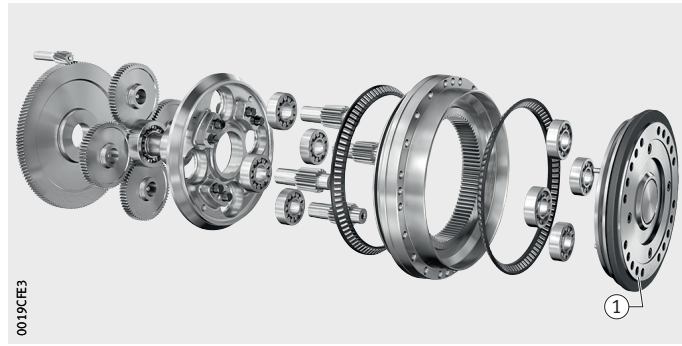
Our precision strain wave gears of series PSC are designed for a wide range of industrial applications, achieved in part by a wide variety of variants comprising eight sizes with a solid and hollow shaft design, mounting kits and complete gear units with different motor attachment variants.
The combination of planetary stage and spur gear stage permits extensive matching to the required torque and speed range.
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 of at least 20 000 operating hours, 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 patented 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

Design

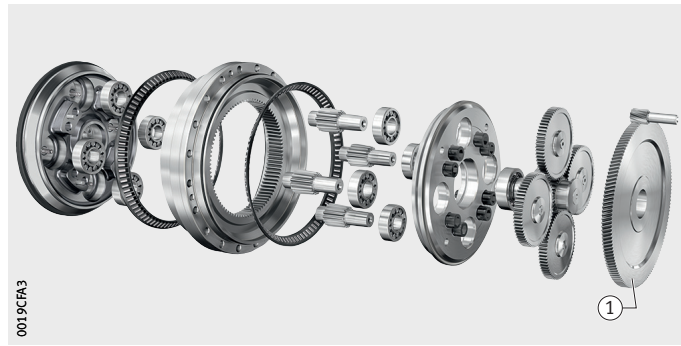
The gearbox series are designed as precision planetary gearboxes with an integrated spur gear stage at the gear input and have patented tooth technology, which ensures an extremely low and constant torsional backlash for the duration of the operating life.

Rigid bearing arrangements ensure high torsional and tilting rigidity and enable high output speeds. 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.



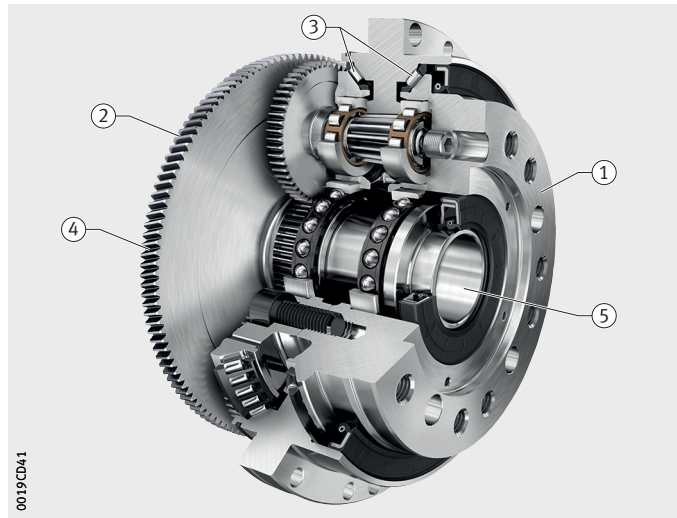
① Output side

Figure 1
Output side



① Input side

Figure 2
Input side



① Output flange
② Input
③ Main bearing arrangement
④ Gear teeth (ground)
⑤ Hollow shaft

Figure 3
Cross section
Gearbox of series PSC

The ground gear teeth offer the following advantages:

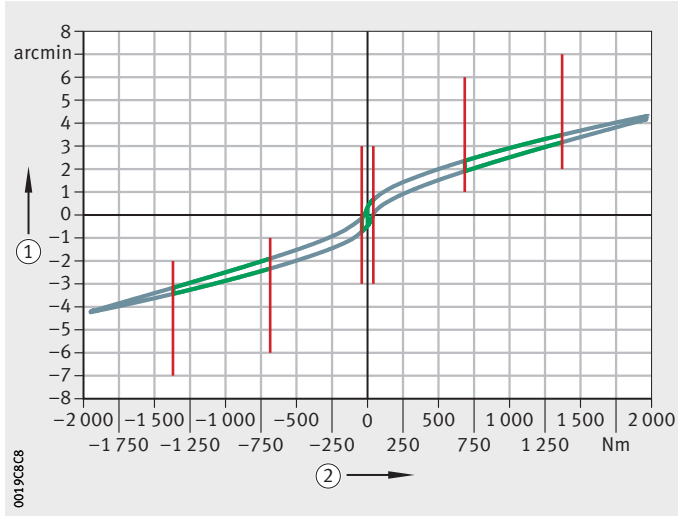
- low torsional backlash
- high precision
- low noise generation
- high synchronous running accuracy

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

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 disabled 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 value range between 50% and 100% of the nominal load is evaluated in order to determine the torsional rigidity.



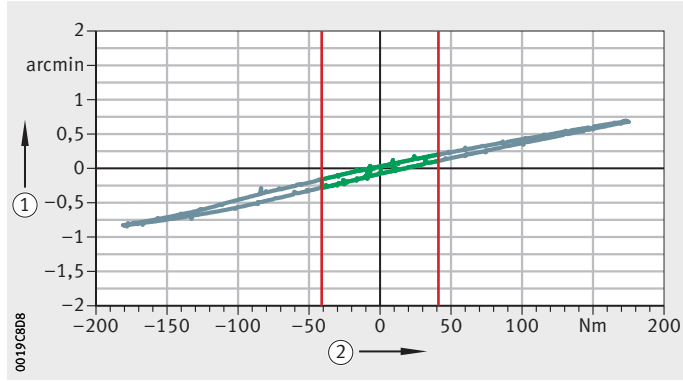
① Torsion angle
② Torque

Figure 4
Hysteresis curve
(example PSC160-V)

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 this parameter 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.



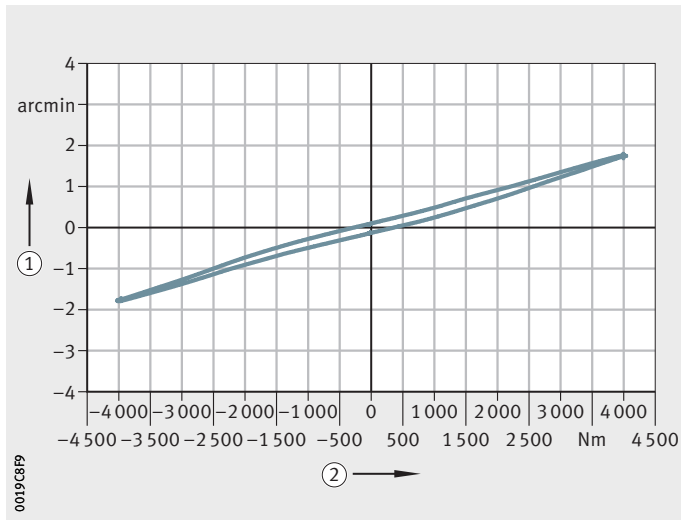
① Torsion angle
② Torque

Figure 5
Hysteresis curve for torsional backlash, Lost Motion (example PSC160-V)

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.



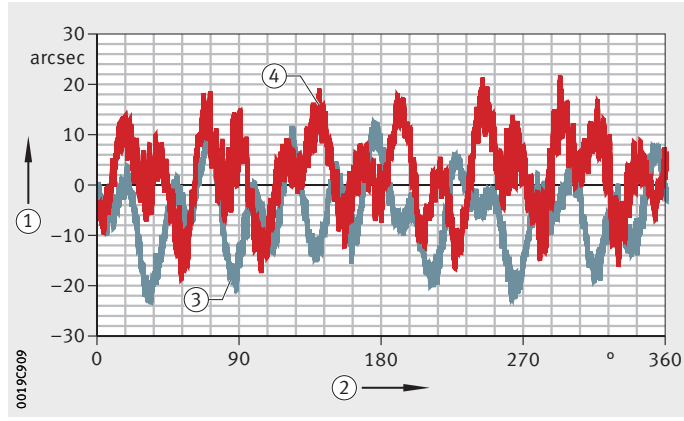
① Torsion angle
② Torque

Figure 6
Determining the tilting rigidity (example PSC160-V)

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.

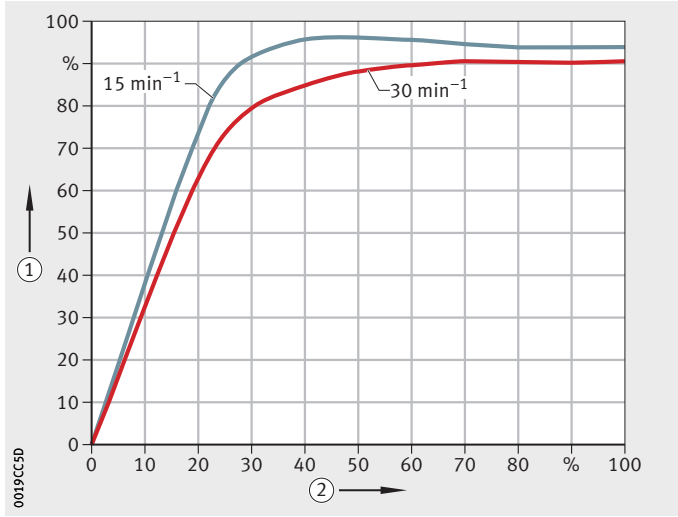


① Synchronous running
② Angle of rotation, output
③ Direction of rotation: CW
④ Direction of rotation: CCW

Figure 7
Synchronous running accuracy (example PSC160-V)

Efficiency

The efficiency (%) 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%.



① Efficiency
② Load moment under full load

Figure 8
Efficiency

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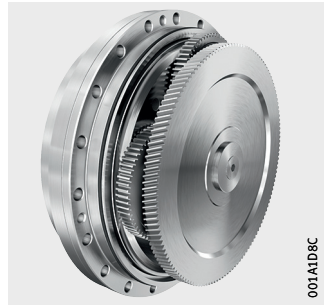
Precision Planetary Gearboxes

Gearbox mounting kits
Gear units and motor attachment variants
Technical data

Three-stage construction

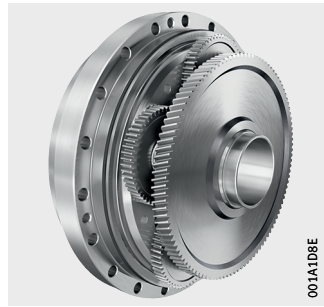
with solid shaft

PSC..-V-E



with hollow shaft

PSC..-H-E



Gearbox mounting kits

Designs

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 hollow shafts are suitable for the passage of supply cables.

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

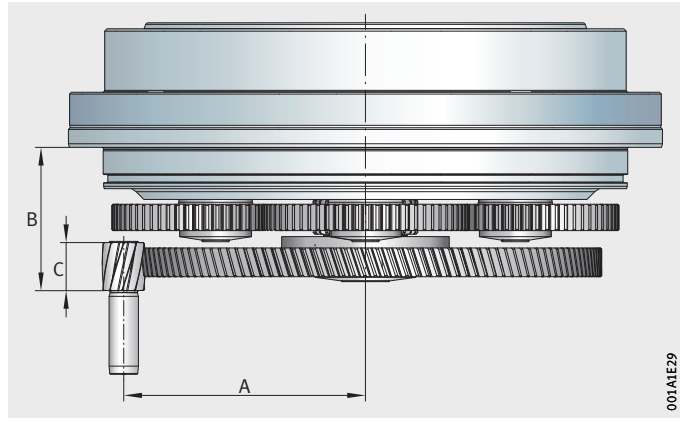


Figure 1
Gearbox with solid shaft and plug-in pinion (ER)

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

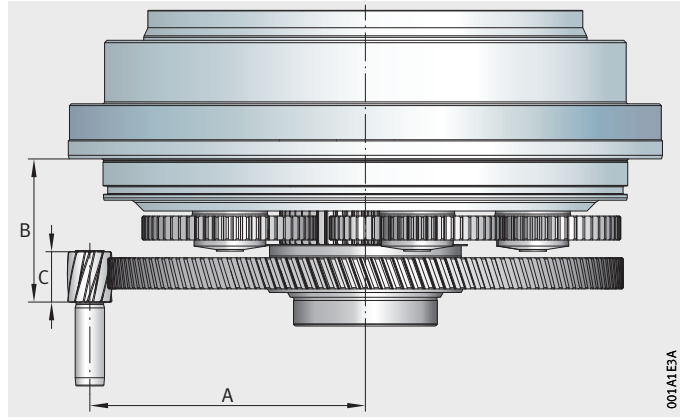


Figure 2
Gearbox with hollow shaft and plug-in pinion (ER)

Gearbox mounting kits

Transmission ratios for gearbox mounting kits with solid shaft

Gearbox	i_{nom}	i_{exact}	Input pinion mm	A mm	B mm	C mm
PSC030-V-E	50	$337\,183/6\,630$	AR16	60	44,5	14,5
	63	$359\,078/5\,525$	AR16	60	44,5	14,5
	80	$376\,594/4\,641$	AR16	60	44,5	14,5
	100	$389\,731/3\,978$	ER12	60	44,5	14,5
	125	$402\,868/3\,315$	ER12	60	44,5	14,5
	160	$416\,005/2\,652$	ER12	60	44,5	14,5
	200	$424\,763/2\,210$	ER9	60	44,5	14,5
PSC056-V-E	50	$564\,788/11\,745$	AR16	75	42,25	14,5
	63	$85\,946/1\,305$	AR16	75	42,25	14,5
	80	$116\,641/1\,450$	ER12	75	42,25	14,5
	100	$239\,421/2\,465$	ER12	75	42,25	14,5
	125	$3\,508/29$	ER12	75	42,25	14,5
	160	$251\,699/1\,595$	ER12	75	42,25	14,5
	200	$153\,475/783$	ER9	75	42,25	14,5
PSC080-V-E	50	$754/15$	AR16	85	49,5	14,5
	63	$33\,176/525$	AR16	85	49,5	14,5
	80	$57\,304/735$	ER16	85	49,5	14,5
	100	$1\,508/15$	ER12	85	49,5	14,5
	125	$12\,818/105$	ER12	85	49,5	14,5
	160	$1\,508/9$	ER12	85	49,5	14,5
	200	$107\,068/525$	ER9	85	49,5	14,5
PSC112-V-E	50	$325\,367/6\,525$	AR16	95	55,75	17
	63	$227\,143/3\,625$	AR16	95	55,75	17
	80	$6\,139/75$	ER16	95	55,75	17
	100	$42\,973/435$	ER12	95	55,75	17
	125	$834\,904/6\,525$	ER12	95	55,75	17
	160	$853\,321/5\,220$	ER12	95	55,75	17
	200	$288\,533/1\,450$	ER12	95	55,75	17

continued ▼

Transmission ratios for gearbox mounting kits with solid shaft

Gearbox	i_{nom}	i_{exact}	Input pinion mm	A mm	B mm	C mm
PSC160-V-E	50	$^{354\,928}/_{6\,975}$	AR18	105	58	20
	63	$^{3\,169}/_{50}$	AR18	105	58	20
	80	$^{386\,618}/_{4\,725}$	ER18	105	58	20
	100	$^{15\,845}/_{162}$	ER15	105	58	20
	125	$^{136\,267}/_{1\,050}$	ER15	105	58	20
	160	$^{415\,139}/_{2\,700}$	ER15	105	58	20
	200	$^{44\,366}/_{225}$	ER12	105	58	20
PSC224-V-E	50	$^{3\,531}/_{70}$	AR22	115	62,75	21
	63	$^{1\,584}/_{25}$	AR22	115	62,75	21
	71	$^{11\,286}/_{161}$	AR22	115	62,75	21
	80	$^{3\,828}/_{49}$	AR22	115	62,75	21
	100	$^{11\,880}/_{119}$	ER18	115	62,75	21
	140	$^{4\,125}/_{28}$	ER15	115	62,75	21
	200	$^{2\,079}/_{10}$	ER12	115	62,75	21
PSC300-V-E	50	$^{6\,338}/_{125}$	AR22	125	70,25	22,5
	63	$^{358\,097}/_{5\,625}$	AR22	125	70,25	22,5
	80	$^{186\,971}/_{2\,250}$	AR22	125	70,25	22,5
	100	$^{383\,449}/_{3\,825}$	ER18	125	70,25	22,5
	125	$^{129\,929}/_{1\,050}$	ER18	125	70,25	22,5
	160	$^{434\,153}/_{2\,700}$	ER18	125	70,25	22,5
	200	$^{440\,491}/_{2\,250}$	ER15	125	70,25	22,5
PSC400-V-E	50	$^{354\,928}/_{6\,975}$	AR26	140	73,5	25
	63	$^{3\,169}/_{50}$	AR26	140	73,5	25
	80	$^{34\,859}/_{450}$	AR26	140	73,5	25
	100	$^{9\,507}/_{95}$	ER22	140	73,5	25
	125	$^{72\,887}/_{600}$	ER22	140	73,5	25
	160	$^{224\,999}/_{1\,350}$	ER18	140	73,5	25
	200	$^{25\,352}/_{125}$	ER18	140	73,5	25

continued

Gearbox mounting kits

Transmission ratios for gearbox mounting kits with hollow shaft

Gearbox	i_{nom}	i_{exact}	Input pinion mm	A mm	B mm	C mm
PSC057-H-E	35,5	$^{2\,422}/_{65}$	AR16	85	42,25	14,5
	45	$^{15\,224}/_{325}$	AR16	85	42,25	14,5
	56	$^{26\,296}/_{455}$	ER16	85	42,25	14,5
	71	$^{22\,836}/_{325}$	ER12	85	42,25	14,5
	90	$^{5\,882}/_{65}$	ER12	85	42,25	14,5
	125	$^{4\,844}/_{39}$	ER12	85	42,25	14,5
	131,5	$^{97\,572}/_{715}$	ER12	85	42,25	14,5
PSC080-H-E	35,5	$^{21\,614}/_{611}$	AR16	95	49,5	17
	45	$^{82\,012}/_{1\,833}$	AR16	95	49,5	17
	56	$^{169\,882}/_{3\,055}$	ER16	95	49,5	17
	71	$^{43\,935}/_{611}$	ER12	95	49,5	17
	90	$^{401\,273}/_{4\,277}$	ER12	95	49,5	17
	125	$^{820\,120}/_{6\,721}$	ER12	95	49,5	17
	131,5	$^{8\,787}/_{65}$	ER12	105	49,5	20
PSC112-H-E	35,5	$^{25\,422}/_{725}$	AR18	105	49,5	20
	45	$^{26\,537}/_{600}$	AR18	105	49,5	20
	56	$^{27\,429}/_{500}$	ER18	105	49,5	20
	71	$^{28\,321}/_{400}$	ER15	105	49,5	20
	90	$^{446}/_{5}$	ER15	105	49,5	20
	125	$^{3\,122}/_{25}$	ER12	105	49,5	20
PSC160-H-E	35,5	$^{218\,327}/_{6\,188}$	AR22	115	58	21
	45	$^{228\,342}/_{5\,083}$	AR22	115	58	21
	50	$^{232\,348}/_{4\,641}$	AR22	115	58	21
	56	$^{236\,354}/_{4\,199}$	ER18	115	58	21
	71	$^{244\,366}/_{3\,315}$	ER18	115	58	21
	90	$^{250\,375}/_{2\,652}$	ER15	115	58	21
	125	$^{292\,438}/_{2\,431}$	ER15	115	58	21
	131,5	$^{294\,441}/_{2\,210}$	AR12	115	58	21

continued ▼

Transmission ratios for gearbox mounting kits with hollow shaft

Gearbox	i_{nom}	i_{exact}	Input pinion	A	B	C
			mm	mm	mm	mm
PSC224-H-E	35,5	$^{206\,719}/_{5\,733}$	AR22	125	62,75	22,5
	45	$^{324\,046}/_{7\,007}$	AR22	125	62,75	22,5
	56	$^{94\,979}/_{1\,729}$	ER18	125	62,75	22,5
	71	$^{681\,614}/_{9\,555}$	ER18	125	62,75	22,5
	90	$^{698\,375}/_{7\,644}$	ER18	125	62,75	22,5
	125	$^{776\,593}/_{6\,370}$	ER15	125	62,75	22,5
PSC300-H-E	35,5	$^{228\,342}/_{6\,409}$	AR26	140	70,25	25
	45	$^{14\,021}/_{312}$	AR26	140	70,25	25
	56	$^{246\,369}/_{4\,420}$	AR26	140	70,25	25
	71	$^{274\,411}/_{3\,757}$	ER22	140	70,25	25
	90	$^{20\,030}/_{221}$	ER22	140	70,25	25
	125	$^{2\,003}/_{17}$	ER18	140	70,25	25
	131,5	$^{144\,216}/_{1\,105}$	ER18	140	70,25	25
PSC400-H-E	35,5	$^{12\,544}/_{351}$	AR26	155	73,5	25
	45	$^{504}/_{11}$	AR26	155	73,5	25
	56	$^{13\,440}/_{247}$	AR26	155	73,5	25
	71	$^{4\,592}/_{65}$	ER22	155	73,5	25
	90	$^{1\,176}/_{13}$	ER22	155	73,5	25
	125	$^{4\,816}/_{39}$	ER18	155	73,5	25
PSC500-H-E	150	$^{1\,440\,628}/_{9\,711}$	Special	190	72,75	25

continued

Gearbox mounting kits

Explanations

The explanations refer to the data in the following product tables, see from page 20.

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.

i_{nom} –
Nominal transmission ratio

i_{exact} –
Exact transmission ratio

J_J kg·cm^2
Mass moment of inertia at input

$n_{max\ Out}$ min^{-1}
Max. output speed
Higher max. output speeds are possible, please contact us.

$n_{max\ per\ In}$ min^{-1}
Max. permissible input speed
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.

C_k Nm/arcmin
Tilting rigidity, ±15%

C_r Nm/arcmin
Torsional rigidity
At 50% to 100% of the rated torque (+5%/–10%).

M_{Out} Nm
Continuous torque at output

$M_{nom\ Out}$ Nm
Rated torque at output
Based on 12 million times during the operating life.

M_{acc} Nm
Acceleration moment
Based on 6 million times during the operating life.

M_{estop} Nm
E-stop moment
Based on 3 000 times during the operating life.

M_{Tilt} Nm
Continuous tilting moment
Tilting moment for load case $F_a = 0$ and $F_r = 0$.

$M_{Tilt\ estop}$ Nm
Max. e-stop tilting moment

$F_{a\ max\ dyn}$ kN
Max. dynamic axial force
Max. axial force for load case continuous tilting moment = 0 and $F_r = 0$.

$F_{a\ max\ stat}$ kN
Max. static axial force
Max. axial force for load case continuous tilting moment = 0 and $F_r = 0$.

$F_{r\ max\ dyn}$ kN
Max. dynamic radial force
Max. radial force for load case continuous tilting moment = 0 and $F_a = 0$.

$F_{r\ max\ stat}$ kN
Max. static radial force
Max. radial force for load case continuous tilting moment = 0 and $F_a = 0$.

P_p Nm/kg
Power density

$\varphi_{\alpha\ back}$ arcmin
Torsional backlash at output

$\varphi_{\alpha\ lost}$ arcmin
Lost Motion at output

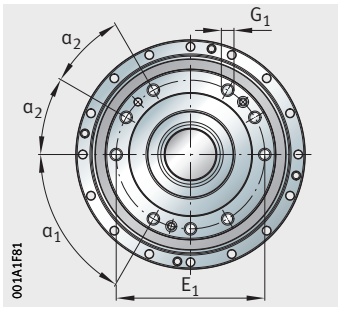
$Ups_{SynchronousRunning}$ arcsec
Synchronous running accuracy

Calculations are based on an output speed of $n_2 = 15\ min^{-1}$.
Calculations are valid for S5 intermittent operation;
for S1 continuous operation, please contact us.

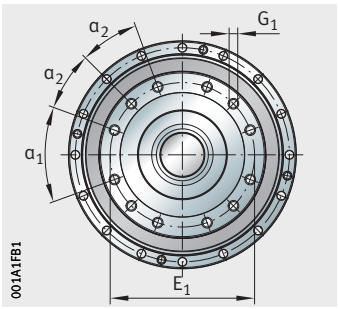
Other transmission ratios available by agreement.

Precision planetary gearboxes

Gearbox mounting kits
with solid shaft



PSC030-V



PSC056-V

Product table · Performance data

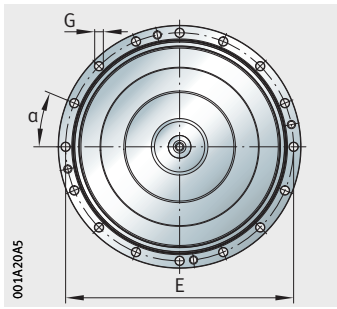
Designation	≈ m	i_{nom}	i_{exact}	J	$n_{max\ Out}$	$n_{max\ per\ In}$	$n_{per\ In}$	C_k	C_r	M_{Out}	$M_{nom\ Out}$
	kg				min^{-1}	min^{-1}	min^{-1}	Nm/arcmin	Nm/arcmin	Nm	Nm
		50	$^{337\,183}/_{6\,630}$	0,5	118						
		63	$^{359\,078}/_{5\,525}$	0,36	92						
		80	$^{376\,594}/_{4\,641}$	0,26	74						
PSC030-V	5,2	100	$^{389\,731}/_{3\,978}$	0,2	61	6 000	4 000	580	85	300	235
		125	$^{402\,868}/_{3\,315}$	0,15	49						
		160	$^{416\,005}/_{2\,652}$	0,1	38						
		200	$^{424\,763}/_{2\,210}$	0,07	31						
		50	$^{564\,788}/_{11\,745}$	1,01	120	5 771					
		63	$^{85\,946}/_{1\,305}$	0,75	91	6 000					
		80	$^{116\,641}/_{1\,450}$	0,51	75	6 000					
PSC056-V	7,7	100	$^{239\,421}/_{2\,465}$	0,35	62	6 000	4 000	1 170	165	575	445
		125	$^{3\,508}/_{29}$	0,24	50	6 000					
		160	$^{251\,699}/_{1\,595}$	0,16	38	6 000					
		200	$^{153\,475}/_{783}$	0,12	31	6 000					

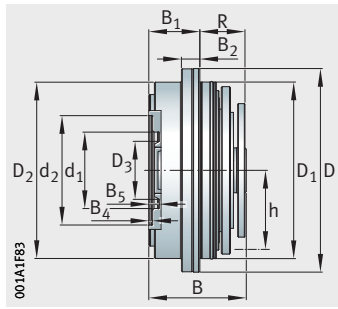
Product table · Dimensions in mm

Designation	G_1	α_2	α_1	E_1	B_1	R	B_2
		°	°				
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

1) User must provide proof of screw connection
(permissible strength class 12.9 for housing flange and output flange and 10.9 for cover flange).





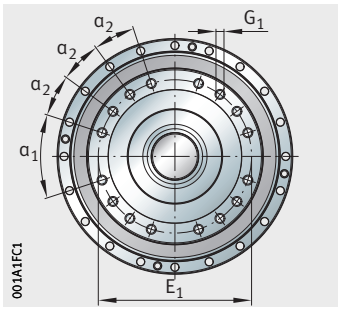
PSC030-V, PSC056-V

M_{acc} Nm	M_{estop} Nm	M_{Tilt} Nm	$M_{Tilt\ estop}$ [1)] Nm	$F_{a\ max\ dyn}$ kN	$F_{a\ max\ stat}$ kN	$F_{r\ max\ dyn}$ kN	$F_{r\ max\ stat}$ kN	P_{ρ} Nm/kg	φ_{α} back ≦ arcmin	φ_{α} lost arcmin	$Ups_{Synchronous-Running}$ ≦ arcsec
327	800	720	2 650	16,5	80	10,3	26,5	57	0,1	1,5	90
625	1 545	1 070	3 645	18	152	11	55	75	0,1	≦ 0,6	70

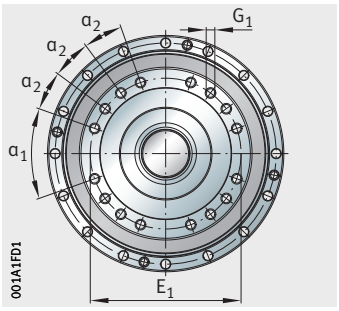
D_2	d_2	d_1	D_3	B_5	B_4	h	D_1 h7	D h8	B ±1	G	α °	E
134	83 H7	58 –	44,04	8	3	60	134	154,5	74	5,5	22,5	145
158	98 –	70 H7	48,5	–	5,25	75	159	180	80,85	6,6	22,5	169

Precision planetary gearboxes

Gearbox mounting kits with solid shaft



PSC080-V



PSC112-V

Product table (continued) · Performance data

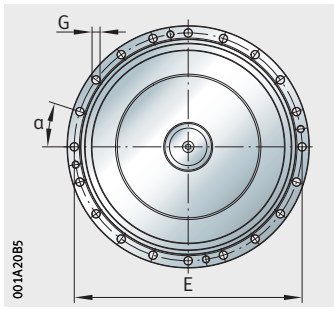
Designation	≈ m kg	i_{nom}	i_{exact}	J	$n_{max\ Out}$ min^{-1}	$n_{max\ per\ In}$ min^{-1}	$n_{per\ In}$ min^{-1}	C_k Nm/arcmin	C_r Nm/arcmin	M_{Out} Nm	$M_{nom\ Out}$ Nm
PSC080-V	11,2	50	$^{754}/_{15}$	1,92	99	5 000	3 500	1 560	260	980	770
		63	$^{33\,176}/_{525}$	1,43	79						
		80	$^{57\,304}/_{735}$	0,96	64						
		100	$^{1\,508}/_{15}$	0,67	50						
		125	$^{12\,818}/_{105}$	0,45	41						
		160	$^{1\,508}/_{9}$	0,31	30						
		200	$^{107\,068}/_{525}$	0,22	25						
PSC112-V	15,9	50	$^{325\,367}/_{6\,525}$	3,37	100	4 986	3 500	2 230	430	1 480	1 165
		63	$^{227\,143}/_{3\,625}$	2,52	80	5 000					
		80	$^{6\,139}/_{75}$	1,69	61	5 000					
		100	$^{42\,973}/_{435}$	1,19	51	5 000					
		125	$^{834\,904}/_{6\,525}$	0,8	39	5 000					
		160	$^{853\,321}/_{5\,220}$	0,54	31	5 000					
		200	$^{288\,533}/_{1\,450}$	0,39	25	5 000					

Product table (continued) · Dimensions in mm

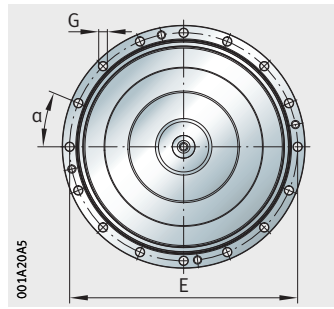
Designation	G_1	α_2 °	α_1 °	E_1	B_1	R	B_2
PSC080-V	M8×13	18	36	130	42,5	44,5	19
PSC112-V	M10×15	17	39	148	48,75	50,25	21,5

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

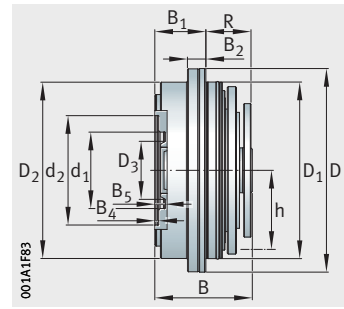
1) User must provide proof of screw connection
(permissible strength class 12.9 for housing flange and output flange and 10.9 for cover flange).



PSC080-V



PSC112-V

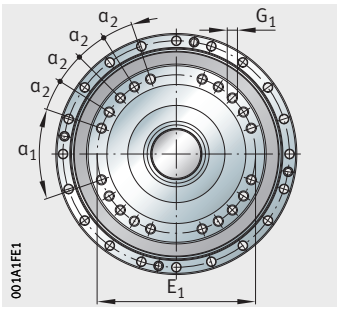


M_{acc} Nm	M_{estop} Nm	M_{Tilt} Nm	$M_{Tilt\ estop}$ [1)] Nm	$F_{a\ max\ dyn}$ kN	$F_{a\ max\ stat}$ kN	$F_{r\ max\ dyn}$ kN	$F_{r\ max\ stat}$ kN	P_{ρ} Nm/kg	φ_{α} back ≦ arcmin	φ_{α} lost ≦ arcmin	$Ups_{Synchronous-Running}$ ≦ arcsec
1 075	2 530	1 280	4 345	18,5	168	11,5	57	88	0,1	0,6	50
1 630	3 780	2 410	5 910	29,5	270	18	85	93	0,1	0,6	50

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

Precision planetary gearboxes

Gearbox mounting kits
with solid shaft



PSC160-V, PSC224-V

Product table (continued) · Performance data

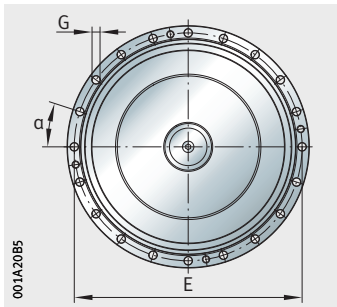
Designation	≈ m	i_{nom}	i_{exact}	J	$n_{max\ Out}$	$n_{max\ per\ In}$	$n_{per\ In}$	C_k	C_r	M_{Out}	$M_{nom\ Out}$
	kg				min^{-1}	min^{-1}	min^{-1}	Nm/arcmin	Nm/arcmin	Nm	Nm
PSC160-V	19,9	50	$^{354\,928}/_{6\,975}$	–	98	5 000	3 500	2 300	570	1 850	1 450
		63	$^{3\,169}/_{50}$	2,52	79						
		80	$^{386\,618}/_{4\,725}$	3,3	61						
		100	$^{15\,845}/_{162}$	2,31	51						
		125	$^{136\,267}/_{1\,050}$	1,56	39						
		160	$^{415\,139}/_{2\,700}$	1,05	33						
		200	$^{44\,366}/_{225}$	0,76	25						
PSC224-V	27,7	50	$^{3\,531}/_{70}$	10,29	89	4 500	3 000	2 620	680	2 325	1 820
		63	$^{1\,584}/_{25}$	7,69	71						
		71	$^{11\,286}/_{161}$	6,48	64						
		80	$^{3\,828}/_{49}$	5,16	58						
		100	$^{11\,880}/_{119}$	3,62	45						
		125	$^{12\,177}/_{98}$	2,44	36						
		140	$^{4\,125}/_{28}$	1,64	31						
		200	$^{2\,079}/_{10}$	1,18	22						

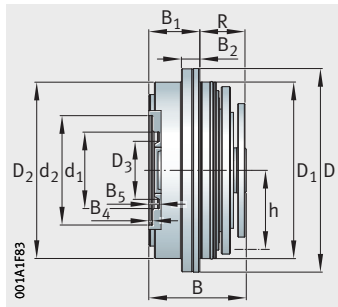
Product table (continued) · Dimensions in mm

Designation	G_1	α_2	α_1	E_1	B_1	R	B_2
		°	°				
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

[1] User must provide proof of screw connection
(permissible strength class 12.9 for housing flange and output flange and 10.9 for cover flange).





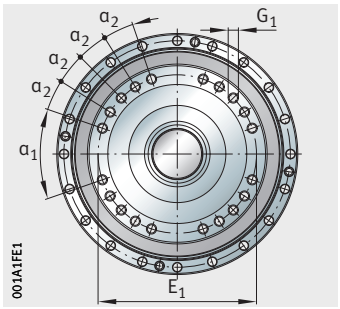
PSC160-V, PSC224-V

M_{acc} Nm	M_{estop} Nm	M_{Tilt} Nm	$M_{Tilt\ estop}$ [1)] Nm	$F_{a\ max\ dyn}$ kN	$F_{a\ max\ stat}$ kN	$F_{r\ max\ dyn}$ kN	$F_{r\ max\ stat}$ kN	P_{ρ} Nm/kg	φ_{α} back ≦ arcmin	φ_{α} lost ≦ arcmin	$Ups_{Synchronous-Running}$ ≦ arcsec
2 030	4 800	2 750	7 800	31	292	19	97	93	0,1	0,6	50
2 550	6 090	3 060	9 280	32	315	20	100	84	0,1	0,6	50

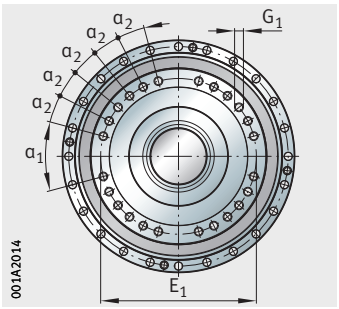
D_2	d_2	d_1 H7	D_3	B_4	h	D_1 h7	D h8	B ±1	G	α °	E
218	143	100	67,5	4,75	105	219	248	108	9	18	233
233	155	110	80	6	115	234	263	116	9	18	248

Precision planetary gearboxes

Gearbox mounting kits
with solid shaft



PSC300-V



PSC400-V

Product table (continued) · Performance data

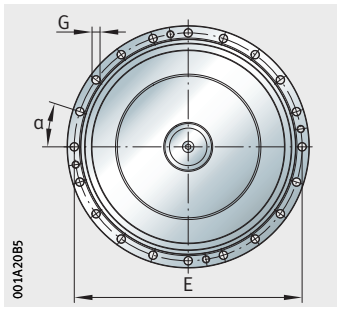
Designation	≈ m kg	i_{nom}	i_{exact}	J	$n_{max\ Out}$ min^{-1}	$n_{max\ per\ In}$ min^{-1}	$n_{per\ In}$ min^{-1}	C_k Nm/arcmin	C_r Nm/arcmin	M_{Out} Nm	$M_{nom\ Out}$ Nm
PSC300-V	37,4	50	$^{6\,338}/_{125}$	16,92	79	4 000	2 500	5 490	1 130	3 435	2 690
		63	$^{358\,097}/_{5\,625}$	12,64	63						
		80	$^{186\,971}/_{2\,250}$	8,48	48						
		100	$^{383\,449}/_{3\,825}$	5,95	40						
		125	$^{129\,929}/_{1\,050}$	4,01	32						
		160	$^{434\,153}/_{2\,700}$	2,7	25						
		200	$^{440\,491}/_{2\,250}$	1,94	20						
PSC400-V	50,3	50	$^{354\,928}/_{6\,975}$	27,87	69	3 500	2 000	6 260	1 350	4 495	3 505
		63	$^{3\,169}/_{50}$	20,83	55						
		80	$^{34\,859}/_{450}$	13,97	45						
		100	$^{9\,507}/_{95}$	9,8	35						
		125	$^{72\,887}/_{600}$	6,6	29						
		160	$^{224\,999}/_{1\,350}$	4,45	21						
		200	$^{25\,352}/_{125}$	3,2	17						

Product table (continued) · Dimensions in mm

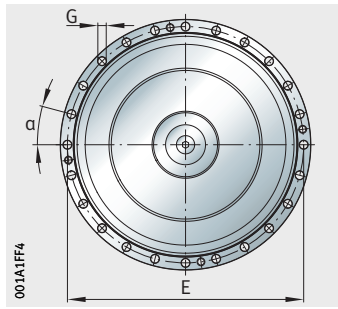
Designation	G_1	α_2 °	α_1 °	E_1	B_1	R	B_2
PSC300-V	M12×20	13	38	200	65	64,75	29
PSC400-V	M12×20	12	30	220	71	68	32

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

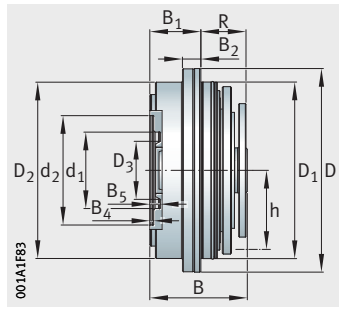
[1] User must provide proof of screw connection
(permissible strength class 12.9 for housing flange and output flange and 10.9 for cover flange).



PSC300-V



PSC400-V

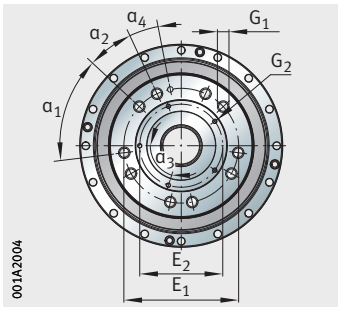


M_{acc} Nm	M_{estop} Nm	M_{Tilt} Nm	$M_{Tilt\ estop}$ [1)] Nm	$F_{a\ max\ dyn}$ kN	$F_{a\ max\ stat}$ kN	$F_{r\ max\ dyn}$ kN	$F_{r\ max\ stat}$ kN	P_{ρ} Nm/kg	$\varphi_{\alpha\ back}$ ≦ arcmin	$\varphi_{\alpha\ lost}$ ≦ arcmin	$Ups_{Synchronous-Running}$ ≦ arcsec
3 765	8 990	4 800	11 410	42,5	400	26,5	140	92	0,1	0,6	50
4 905	11 980	6 080	13 750	46	535	29	170	89	0,1	0,6	50

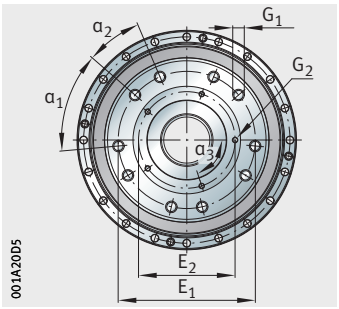
D_2	d_2	d_1 H7	D_3	B_4	h	D_1 h7	D h8	B ±1	G	α °	E
264	175	125	91,5	8,25	125	265	301	131	11	18	282
292	195	140	101	7,5	140	293	329	144	11	15	310

Precision planetary gearboxes

Gearbox mounting kits
with hollow shaft



PSC057-H



PSC080-H

Product table · Performance data

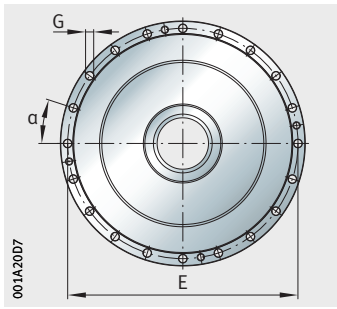
Designation	≈ m	i_{nom}	i_{exact}	J	$n_{max\ Out}$	$n_{max\ per\ In}$	$n_{per\ In}$	C_k	C_r	M_{Out}	$M_{nom\ Out}$
	kg				min^{-1}	min^{-1}	min^{-1}	Nm/arcmin	Nm/arcmin	Nm	Nm
PSC057-H	7,7	35,5	$2\,422/_{65}$	2,42	120	4 471	4 000	1 300	185	575	445
		45	$15\,224/_{325}$	1,89	120	5 621					
		56	$26\,296/_{455}$	1,28	104	6 000					
		71	$22\,836/_{325}$	0,86	85	6 000					
		90	$5\,882/_{65}$	0,52	66	6 000					
		125	$4\,844/_{39}$	0,32	48	6 000					
		131,5	$97\,572/_{715}$	0,27	44	6 000					
PSC080-H	11,2	35,5	$21\,614/_{611}$	5,47	100	3 537	3 500	2 730	305	980	770
		45	$82\,012/_{1\,833}$	3,58	100	4 474					
		56	$169\,882/_{3\,055}$	2,42	90	5 000					
		71	$43\,935/_{611}$	1,64	70	5 000					
		90	$401\,273/_{4\,277}$	0,98	53	5 000					
		125	$820\,120/_{6\,721}$	0,61	41	5 000					
		131,5	$8\,787/_{65}$	0,5	37	5 000					

Product table · Dimensions in mm

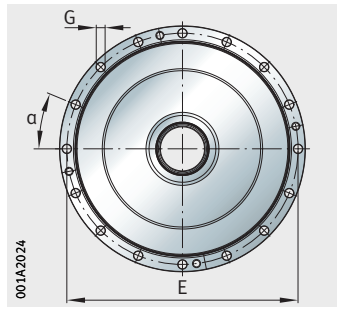
Designation	G_1	G_2	α_4	α_2	α_1	E_2	E_1	B_1	R	B_2
			°	°	°					
PSC057-H	M10×15	M4×8	14	22	50	75,2	104	50,8	37,25	16
PSC080-H	M10×15	M5×8	–	26	46	88	125	56,75	44	19

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

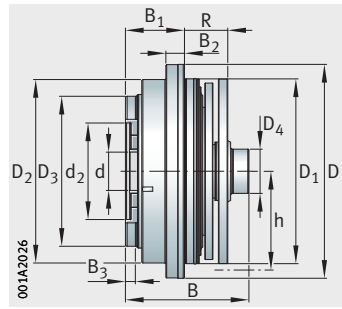
1) User must provide proof of screw connection
(permissible strength class 12.9 for housing flange and output flange and 10.9 for cover flange).



PSC057-H



PSC080-H

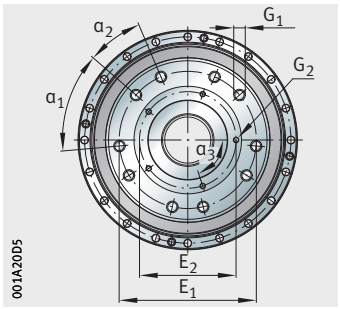


M_{acc} Nm	M_{estop} Nm	M_{Tilt} Nm	$M_{Tilt\ estop}$ [1)] Nm	$F_{a\ max\ dyn}$ kN	$F_{a\ max\ stat}$ kN	$F_{r\ max\ dyn}$ kN	$F_{r\ max\ stat}$ kN	P_{ρ} Nm/kg	φ_{α} back ≦ arcmin	φ_{α} lost ≦ arcmin	$Ups_{Synchronous-Running}$ ≦ arcsec
625	1 545	1 070	3 645	18	152	11	55	75	0,1	0,6	70
1 075	2 530	1 280	4 345	18,5	168	11,5	57	88	0,1	0,6	50

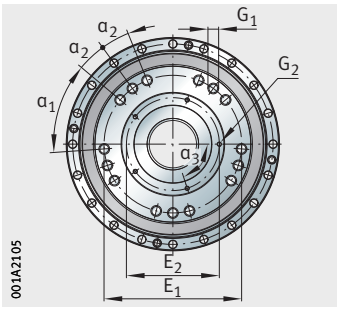
D_2	D_3	d_2 H7	d	B_3	D_4	h	D_1 h7	D h8	B_3 max.	B ±0,5	G	α °	E
158	129 h7	83	33	–	38 –	85	159	184	7	106,3	6,6	22,5	173
177	145 –	98	42	7,5	48 h7	95	178	200	–	114	6,6	18	188

Precision planetary gearboxes

Gearbox mounting kits with hollow shaft



PSC112-H



PSC160-H

Product table (continued) · Performance data

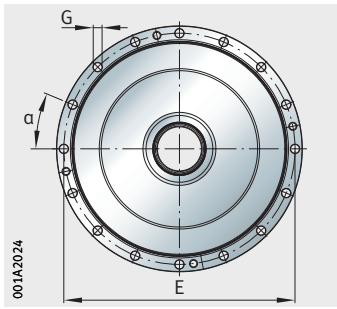
Designation	≈ m kg	i_{nom}	i_{exact}	J	$n_{max\ Out}$ min^{-1}	$n_{max\ per\ In}$ min^{-1}	$n_{per\ In}$ min^{-1}	C_k Nm/arcmin	C_r Nm/arcmin	M_{Out} Nm	$M_{nom\ Out}$ Nm
PSC112-H	15,9	35,5	$^{25\,422}/_{725}$	9,63	100	3 506	3 500	3 315	480	1 480	1 165
		45	$^{26\,537}/_{600}$	6,31	100	4 423					
		56	$^{27\,429}/_{500}$	4,26	91	5 000					
		71	$^{28\,321}/_{400}$	2,89	71	5 000					
		90	$^{446}/_{5}$	1,73	56	5 000					
		125	$^{3\,122}/_{25}$	1,08	40	5 000					
PSC160-H	19,9	35,5	$^{218\,327}/_{6\,188}$	18,79	100	3 528	3 500	3 670	690	1 850	1 450
		45	$^{228\,342}/_{5\,083}$	12,31	100	4 492					
		50	$^{232\,348}/_{4\,641}$	10,04	100	5 000					
		56	$^{236\,354}/_{4\,199}$	8,32	89	5 000					
		71	$^{244\,366}/_{3\,315}$	5,63	68	5 000					
		90	$^{250\,375}/_{2\,652}$	3,38	53	5 000					
		125	$^{292\,438}/_{2\,431}$	2,1	42	5 000					
		131,5	$^{294\,441}/_{2\,210}$	1,73	38	5 000					

Product table (continued) · Dimensions in mm

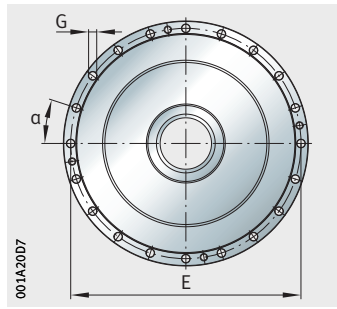
Designation	G_1	G_2	α_2 °	α_1 °	E_2	E_1	B_1	R	B_2
PSC112-H	M12×18	M4×6,5	15	42	105,5	147	58,75	50,75	21,5
PSC160-H	M12×21,75	M5×12	14	44	108	160	62	53,25	23

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

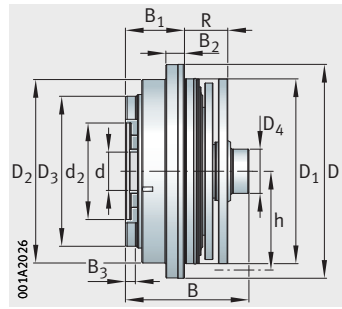
[1] User must provide proof of screw connection (permissible strength class 12.9 for housing flange and output flange and 10.9 for cover flange).



PSC112-H



PSC160-H

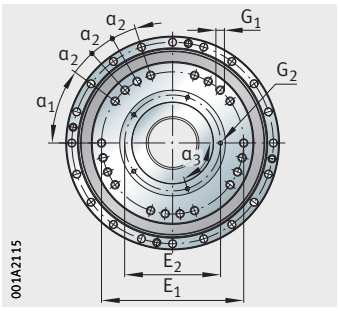


M_{acc} Nm	M_{estop} Nm	M_{Tilt} Nm	$M_{Tilt\ estop}$ [1] Nm	$F_{a\ max\ dyn}$ kN	$F_{a\ max\ stat}$ kN	$F_{r\ max\ dyn}$ kN	$F_{r\ max\ stat}$ kN	P_ρ Nm/kg	φ_α back ≦ arcmin	φ_α lost ≦ arcmin	$Ups_{Synchronous-Running}$ ≦ arcsec
1 630	3 780	2 410	5 910	29,5	270	18	85	93	0,1	0,6	50
2 030	4 800	2 750	7 800	31	292	19	97	93	0,1	0,6	50

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

Precision planetary gearboxes

Gearbox mounting kits
with hollow shaft



PSC224-H, PSC300-H

Product table (continued) · Performance data

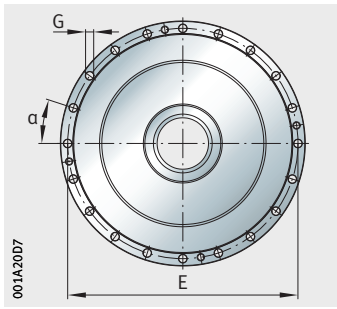
Designation	≈ m	i_{nom}	i_{exact}	J	$n_{max\ Out}$	$n_{max\ per\ In}$	$n_{per\ In}$	C_k	C_r	M_{Out}	$M_{nom\ Out}$
	kg				min^{-1}	min^{-1}	min^{-1}	Nm/arcmin	Nm/arcmin	Nm	Nm
PSC224-H	27,7	35,5	$^{206\,719}/_{5\,733}$	29,38	90	3 245	3 000	4 100	820	2 325	1 820
		45	$^{324\,046}/_{7\,007}$	19,25	90	4 162					
		56	$^{94\,979}/_{1\,729}$	13,01	82	5 000					
		71	$^{681\,614}/_{9\,555}$	8,81	63	5 000					
		90	$^{698\,375}/_{7\,644}$	5,29	49	5 000					
		125	$^{776\,593}/_{6\,370}$	3,29	37	5 000					
PSC300-H	37,4	35,5	$^{228\,342}/_{6\,409}$	48,31	80	2 850	2 500	8 810	1 240	3 435	2 690
		45	$^{14\,021}/_{312}$	31,65	80	3 595					
		56	$^{246\,369}/_{4\,420}$	21,39	72	4 000					
		71	$^{274\,411}/_{3\,757}$	14,49	55	4 000					
		90	$^{20\,030}/_{221}$	8,7	44	4 000					
		125	$^{2\,003}/_{17}$	5,4	34	4 000					
		131,5	$^{144\,216}/_{1\,105}$	4,46	31	4 000					

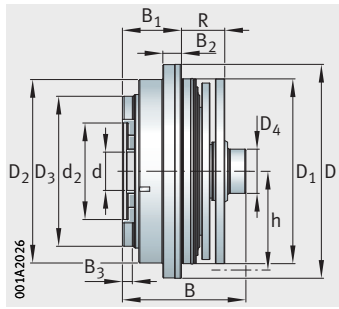
Product table (continued) · Dimensions in mm

Designation	G_1	G_2	α_2	α_1	E_2	E_1	B_1	R	B_2
			°	°					
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

[1] User must provide proof of screw connection
(permissible strength class 12.9 for housing flange and output flange and 10.9 for cover flange).





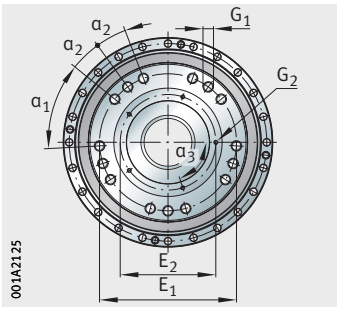
PSC224-H, PSC300-H

M_{acc} Nm	M_{estop} Nm	M_{Tilt} Nm	$M_{Tilt\ estop}$ [1)] Nm	$F_{a\ max\ dyn}$ kN	$F_{a\ max\ stat}$ kN	$F_{r\ max\ dyn}$ kN	$F_{r\ max\ stat}$ kN	P_{ρ} Nm/kg	φ_{α} back ≦ arcmin	φ_{α} lost ≦ arcmin	$Ups_{Synchronous-Running}$ ≦ arcsec
2 550	6 090	3 060	9 280	32	315	20	100	84	0,1	0,6	50
3 765	8 990	4 800	11 410	42,5	400	26,5	140	92	0,1	0,6	50

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

Precision planetary gearboxes

Gearbox mounting kits
with hollow shaft



PSC400-H

Product table (continued) · Performance data

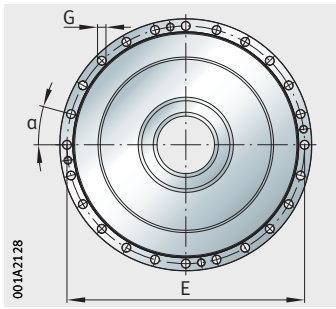
Designation	≈ m kg	i_{nom}	i_{exact}	J	$n_{max\ Out}$ min^{-1}	$n_{max\ per\ In}$ min^{-1}	$n_{per\ In}$ min^{-1}	C_k Nm/arcmin	C_r Nm/arcmin	M_{Out} Nm	$M_{nom\ Out}$ Nm
PSC400-H	50,3	35,5	$^{12\,544}/_{351}$	79,59	70	2 502	2 000	10 250	1 460	4 495	3 505
		45	$^{504}/_{11}$	52,13	70	3 207					
		56	$^{13\,440}/_{247}$	35,24	64	3 500					
		71	$^{4\,592}/_{65}$	23,87	50	3 500					
		90	$^{1\,176}/_{13}$	14,33	39	3 500					
		125	$^{4\,816}/_{39}$	8,9	28	3 500					

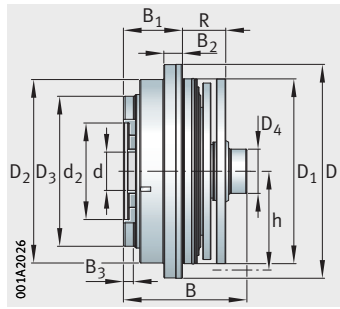
Product table (continued) · Dimensions in mm

Designation	G_1	G_2	α_2 °	α_1 °	E_2	E_1	B_1	R	B_2
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

1) User must provide proof of screw connection
(permissible strength class 12.9 for housing flange and output flange and 10.9 for cover flange).





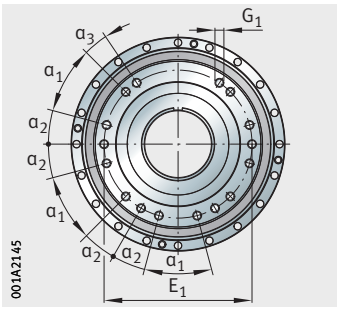
PSC400-H

M_{acc} Nm	M_{estop} Nm	M_{Tilt} Nm	$M_{Tilt\ estop}$ [1)] Nm	$F_{a\ max\ dyn}$ kN	$F_{a\ max\ stat}$ kN	$F_{r\ max\ dyn}$ kN	$F_{r\ max\ stat}$ kN	P_{ρ} Nm/kg	φ_{α} back ≦ arcmin	φ_{α} lost ≦ arcmin	$Ups_{Synchronous-Running}$ ≦ arcsec
4 905	11 980	6 080	13 750	46	535	29	170	89	0,1	0,6	50

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

Precision planetary gearboxes

Gearbox mounting kits
with hollow shaft



PSC500-H

Product table (continued) · Performance data

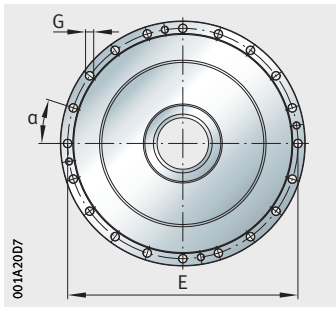
Designation	≈ m kg	i_{nom}	i_{exact}	J	$n_{max\ Out}$ min^{-1}	$n_{max\ per\ In}$ min^{-1}	$n_{per\ In}$ min^{-1}	C_k Nm/arcmin	C_r Nm/arcmin	M_{Out} Nm	$M_{nom\ Out}$ Nm
PSC500-H	68,8	150	$^{1\,440\,628}/_{9\,711}$	–	30	4 500	2 000	12 500	2 100	4 685	3 650

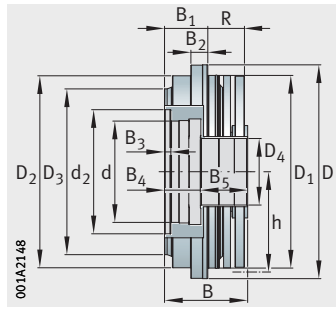
Product table (continued) · Dimensions in mm

Designation	G_1	α_3 °	α_2 °	α_1 °	E_1	B_1	R	B_2
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

1) User must provide proof of screw connection
(permissible strength class 12.9 for housing flange and output flange).





PSC500-H

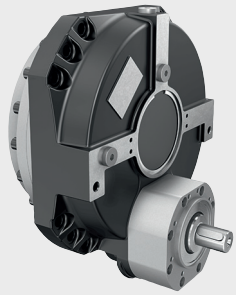
M_{acc}	M_{estop}	M_{Tilt}	$M_{Tilt\ estop}$ [1)]	$F_{a\ max\ dyn}$	$F_{a\ max\ stat}$	$F_{r\ max\ dyn}$	$F_{r\ max\ stat}$	P_{ρ}	φ_{α} back	φ_{α} lost	$Ups_{Synchronous-Running}$
Nm	Nm	Nm	Nm	kN	kN	kN	kN	Nm/kg	≦ arcmin	≦ arcmin	≦ arcsec
5 110	12 480	9 750	20 000	58	450	37	142	68	0,1	0,6	50

D_2	D_3	d_2 H7	d H9	B_3	B_4 ±1	B_5	D_4	h	D_1 h7	D h8	B ±0,5	G	α °	E
364	314	235	192	12	68	89,5	126	190	365	405	157,5	13,5	18	384

Gear unit

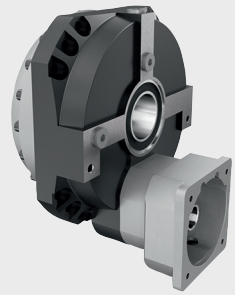
Solid shaft
with flange cover
with motor attachment variant 2

PSC..-V



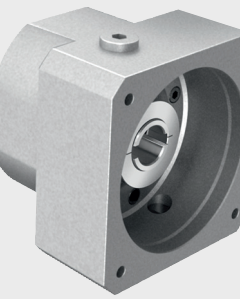
Hollow shaft
with flange cover
with motor attachment variant 1

PSC..-H

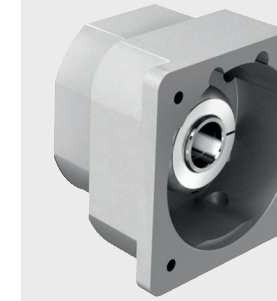


Motor attachment variants

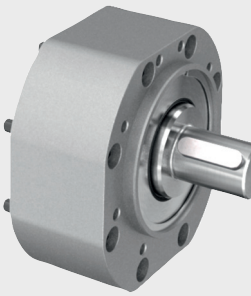
Variante 0



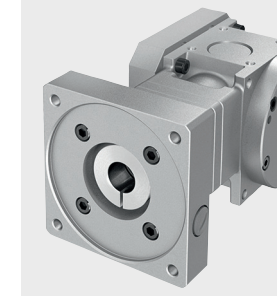
Variante 1



Variante 2



Variante 6



Design

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.

Optional versions:

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

Motor attachment variants

- Variant 0
  - with metal bellows coupling for flexible and torsionally rigid connection
  - for shaft diameters from 11 mm to 55 mm
- 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

Other motor attachment variants are available by agreement, for example with an integral motor or helical pre-stage.

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

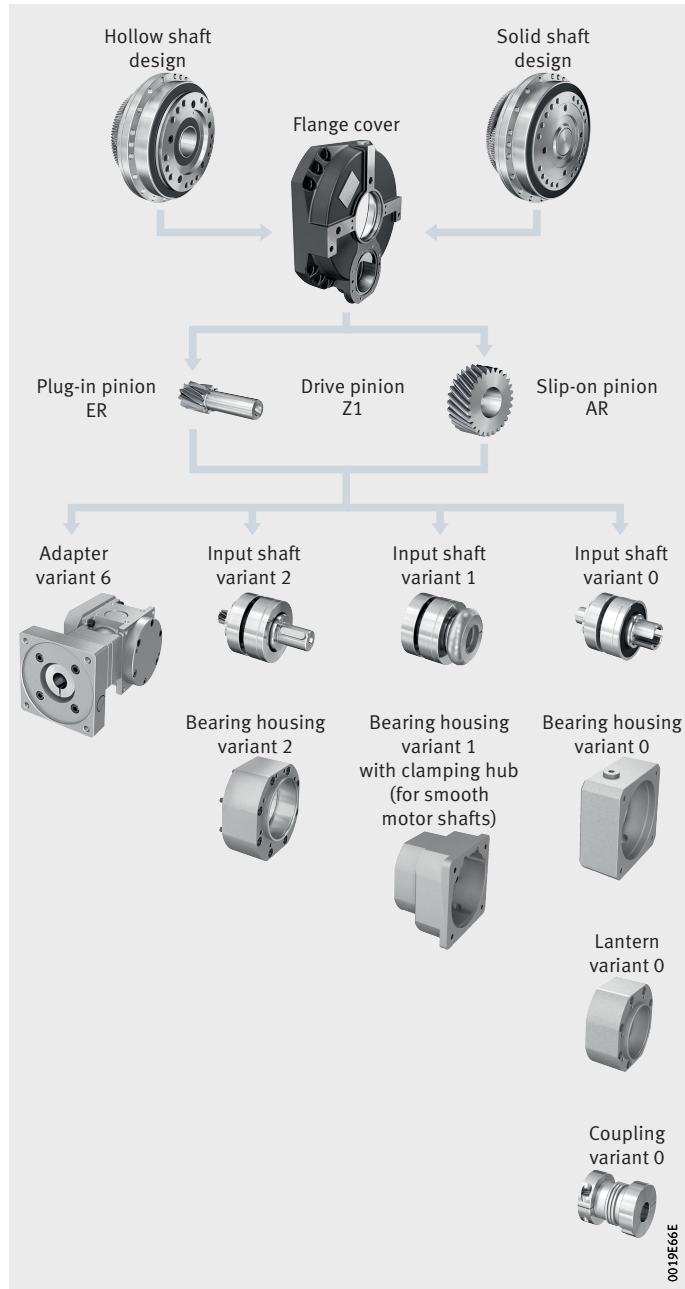


Figure 1
Configuration overview

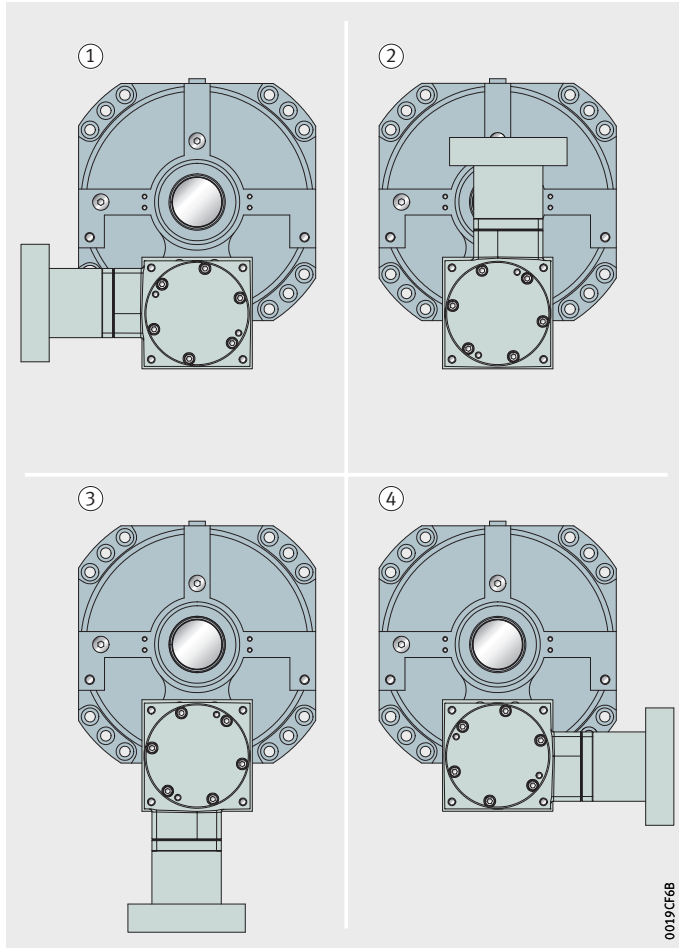
Motor attachment and gearbox variants

Motor shaft dimension d×l mm	Motor attachment variant	Gearbox		
		PSC030 PSC056 PSC057 PSC080	PSC112 PSC160 PSC224	PSC300 PSC400
11×23	0, 1, 2, 6	■	–	–
14×30	0, 1, 2, 6	■	–	–
16×40	0, 1, 2, 6	■	■	–
19×40	0, 1, 2, 6	■	■	–
22×50	0, 1, 2, 6	■	■	–
24×50	0, 1, 2, 6	■	■	–
28×60	0, 1, 2, 6	■	■	■
32×60	0, 1, 2, 6	■	■	■
35×60	0, 2, 6	–	■	■
38×80	0, 2, 6	–	■	■

■ Version available.

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.



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

Figure 2
Installation positions for variant 6 with right angle pre-stage

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

Gearbox	i_{nom}	i_{exact}	M_{nstop} 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	$^{564788}/_{3915}$	1 545
PSC056-V	189	$^{85946}/_{435}$	1 545
PSC056-V	240	$^{564788}/_{2349}$	1 545
PSC056-V	315	$^{85946}/_{261}$	1 545
PSC056-V	400	$^{4518304}/_{11745}$	1 545
PSC056-V	504	$^{687568}/_{1305}$	1 545
PSC056-V	640	$^{171892}/_{261}$	1 545
PSC080-V	150	$^{754}/_{5}$	2 212
PSC080-V	189	$^{33176}/_{175}$	2 530
PSC080-V	240	$^{57304}/_{245}$	2 530
PSC080-V	315	$^{33176}/_{105}$	2 530
PSC080-V	400	$^{57304}/_{147}$	2 530
PSC080-V	504	$^{265408}/_{525}$	2 530
PSC080-V	640	$^{458432}/_{735}$	2 530
PSC112-V	150	$^{325367}/_{2175}$	3 491
PSC112-V	189	$^{681429}/_{3625}$	3 780
PSC112-V	240	$^{6139}/_{25}$	3 780
PSC112-V	315	$^{227143}/_{725}$	3 780
PSC112-V	400	$^{6139}/_{15}$	3 780
PSC112-V	504	$^{1817144}/_{3625}$	3 780
PSC112-V	640	$^{49112}/_{75}$	3 780

continued ▼

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

Gearbox	i_{nom}	i_{exact}	M_{nstop} Nm
PSC160-V	150	$^{354928}/_{2325}$	3 562
PSC160-V	189	$^{9507}/_{50}$	4 437
PSC160-V	240	$^{386618}/_{1575}$	4 800
PSC160-V	315	$^{3169}/_{10}$	4 437
PSC160-V	400	$^{386618}/_{945}$	4 800
PSC160-V	504	$^{25352}/_{50}$	4 437
PSC160-V	640	$^{3092944}/_{4725}$	4 800
PSC224-V	150	$^{10593}/_{70}$	6 090
PSC224-V	189	$^{4752}/_{25}$	6 090
PSC224-V	240	$^{11484}/_{49}$	6 090
PSC224-V	315	$^{1584}/_{5}$	6 090
PSC224-V	400	$^{19140}/_{49}$	6 090
PSC224-V	504	$^{12672}/_{25}$	6 090
PSC224-V	640	$^{30624}/_{49}$	6 090
PSC300-V	150	$^{19014}/_{125}$	7 099
PSC300-V	189	$^{358097}/_{1875}$	8 913
PSC300-V	240	$^{186971}/_{750}$	8 990
PSC300-V	315	$^{358097}/_{1125}$	8 913
PSC300-V	400	$^{186971}/_{450}$	8 990
PSC300-V	504	$^{2864776}/_{5625}$	8 913
PSC300-V	640	$^{1495768}/_{2250}$	8 990
PSC400-V	150	$^{354928}/_{2325}$	11 980
PSC400-V	189	$^{9507}/_{50}$	11 980
PSC400-V	240	$^{34859}/_{150}$	11 980
PSC400-V	315	$^{3169}/_{10}$	11 980
PSC400-V	400	$^{34859}/_{90}$	11 980
PSC400-V	504	$^{25352}/_{50}$	11 980
PSC400-V	640	$^{278872}/_{450}$	11 980

continued ▲

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

Gearbox	i_{nom}	i_{exact}	M_{nstop} Nm
PSC057-H	106,5	$^{7266}/_{65}$	1 545
PSC057-H	135	$^{45672}/_{325}$	1 545
PSC057-H	168	$^{78888}/_{455}$	1 545
PSC057-H	225	$^{15224}/_{65}$	1 545
PSC057-H	280	$^{26296}/_{91}$	1 545
PSC057-H	360	$^{121792}/_{325}$	1 545
PSC057-H	448	$^{210368}/_{455}$	1 545
PSC057-H	560	$^{52592}/_{91}$	1 545
PSC080-H	106,5	$^{64842}/_{611}$	1 556
PSC080-H	135	$^{82012}/_{611}$	1 969
PSC080-H	168	$^{509646}/_{3055}$	2 447
PSC080-H	225	$^{410060}/_{1833}$	1 969
PSC080-H	280	$^{169882}/_{611}$	2 447
PSC080-H	360	$^{656096}/_{1833}$	1 969
PSC080-H	448	$^{1359056}/_{3055}$	2 447
PSC080-H	560	$^{339764}/_{611}$	2 447
PSC112-H	106,5	$^{76266}/_{725}$	2 455
PSC112-H	135	$^{26537}/_{200}$	3 096
PSC112-H	168	$^{82287}/_{500}$	3 780
PSC112-H	225	$^{26537}/_{120}$	3 096
PSC112-H	280	$^{27429}/_{100}$	3 780
PSC112-H	360	$^{53074}/_{150}$	3 096
PSC112-H	448	$^{54858}/_{125}$	3 780
PSC112-H	560	$^{27429}/_{50}$	3 780
PSC160-H	106,5	$^{654981}/_{6188}$	3 780
PSC160-H	135	$^{685026}/_{5083}$	4 800
PSC160-H	168	$^{1091635}/_{6188}$	4 800
PSC160-H	225	$^{1141710}/_{5083}$	4 800
PSC160-H	280	$^{436654}/_{1547}$	4 800
PSC160-H	360	$^{1826736}/_{5083}$	4 800
PSC160-H	450	$^{2283420}/_{5083}$	4 800

continued

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

Gearbox	i_{nom}	i_{exact}	M_{nstop} Nm
PSC224-H	106,5	$^{206719}/_{1911}$	5 048
PSC224-H	135	$^{972138}/_{7007}$	6 090
PSC224-H	177,5	$^{1033595}/_{5733}$	5 048
PSC224-H	225	$^{1620230}/_{7007}$	6 090
PSC224-H	284	$^{1653752}/_{5733}$	5 048
PSC224-H	360	$^{2592368}/_{7007}$	6 090
PSC224-H	450	$^{3240460}/_{7007}$	6 090
PSC300-H	106,5	$^{685026}/_{6409}$	8 990
PSC300-H	135	$^{14021}/_{104}$	8 990
PSC300-H	168	$^{739107}/_{4420}$	8 990
PSC300-H	225	$^{70105}/_{312}$	8 990
PSC300-H	280	$^{246369}/_{884}$	8 990
PSC300-H	360	$^{14021}/_{39}$	8 990
PSC300-H	448	$^{492738}/_{1105}$	8 990
PSC300-H	560	$^{246369}/_{1105}$	8 990
PSC400-H	106,5	$^{12544}/_{117}$	10 007
PSC400-H	135	$^{1512}/_{11}$	11 980
PSC400-H	168	$^{40320}/_{247}$	11 980
PSC400-H	225	$^{2520}/_{11}$	11 980
PSC400-H	280	$^{67200}/_{247}$	11 980
PSC400-H	360	$^{4032}/_{11}$	11 980
PSC400-H	448	$^{107520}/_{247}$	11 980
PSC400-H	560	$^{134400}/_{247}$	11 980

continued ▲

Installation positions for all other variants

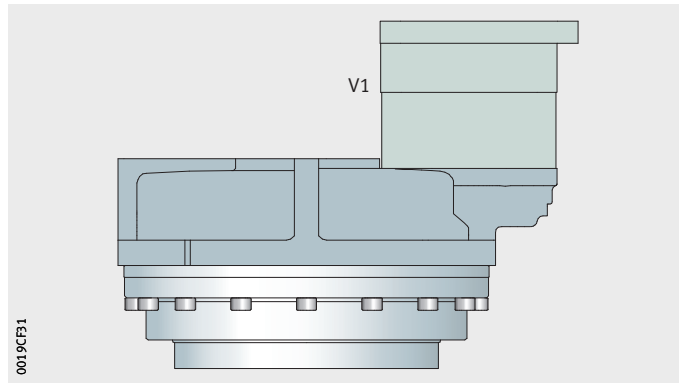


Figure 3
Output bottom, input top

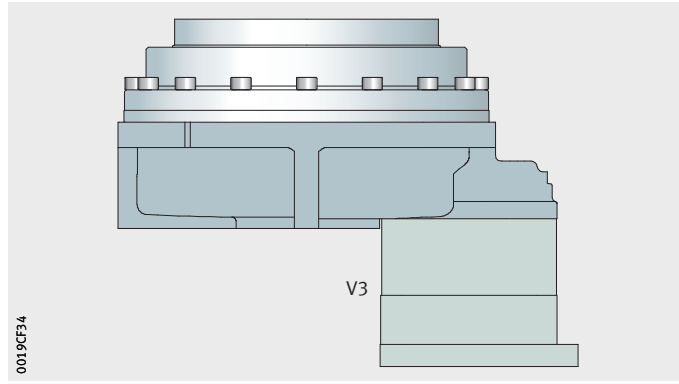


Figure 4
Output top, input bottom

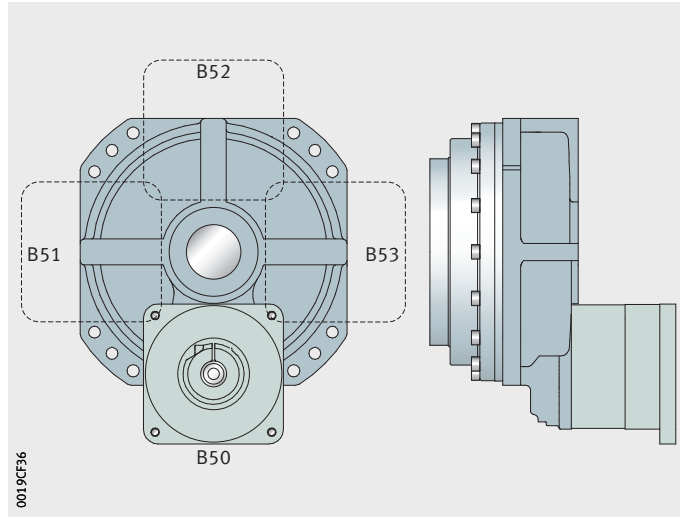


Figure 5
Output horizontal,
input position as required

Dimensions

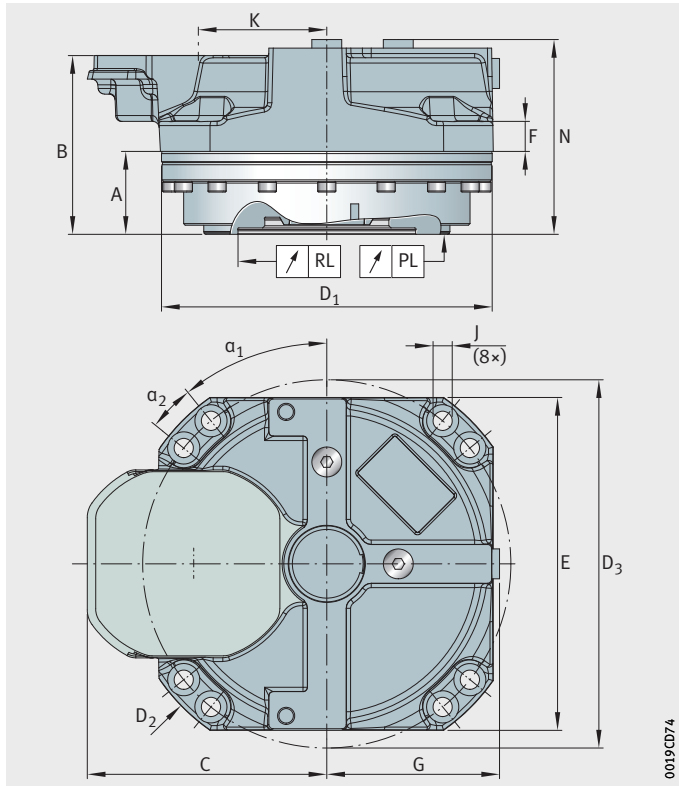


Figure 6
PSC030-V

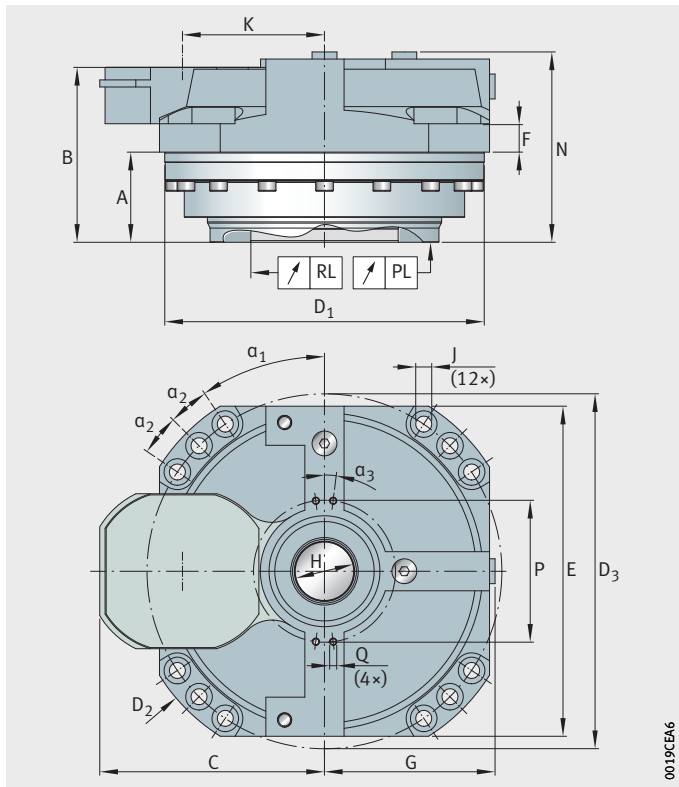


Figure 7
All other gearboxes

Gearbox with solid and hollow shaft

Gearbox	A mm	B mm	N mm	∅ D1 h8 mm	E mm	C mm	G mm	∅ D2 mm	F mm
Solid shaft									
PSC030-V	38,75	83,5	91	154,5	156	112	81	190	13,5
PSC056-V	38,5	86,25	95	180	186	127	96	220	15,5
PSC080-V	42,5	97,5	107,25	200	202	137	105	240	18,5
PSC112-V	48,75	111,75	123,25	232	234	158	121	282	21
PSC160-V	52	111,25	127,5	248	254	168	131	296	22,5
PSC224-V	56,5	126,5	137	263	272	178	140	317	24,5
PSC300-V	65	145,75	153,75	301	303	200	156	360	28,5
PSC400-V	71	155	166	329	335	215	172	390	31,5
Hollow shaft									
PSC057-H	50,8	98,55	107,3	184	186	127	96	220	15,5
PSC080-H	56,75	111,75	121,5	200	202	137	105	240	18,5
PSC112-H	58,75	121,75	133,25	232	234	158	121	282	21
PSC160-H	62	127,25	137,5	248	254	168	131	296	22,5
PSC224-H	65,5	135,5	146	263	272	178	140	317	24,5
PSC300-H	76,5	157,25	165,25	301	303	200	156	360	28,5
PSC400-H	82	166	177	329	335	215	172	390	31,5

continued

Gearbox with solid and hollow shaft

Gearbox	α_1 °	α_2 °	∅ J mm	∅ D3 mm	K mm	H mm	∅ P mm	RL mm	PL 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	–	–

continued

Variant 0 and variant 1

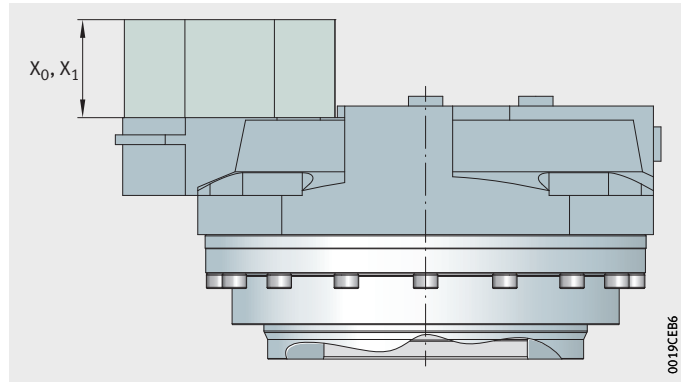


Figure 8
Variant 0
with coupling and
variant 1
with clamping hub

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

Variant 2

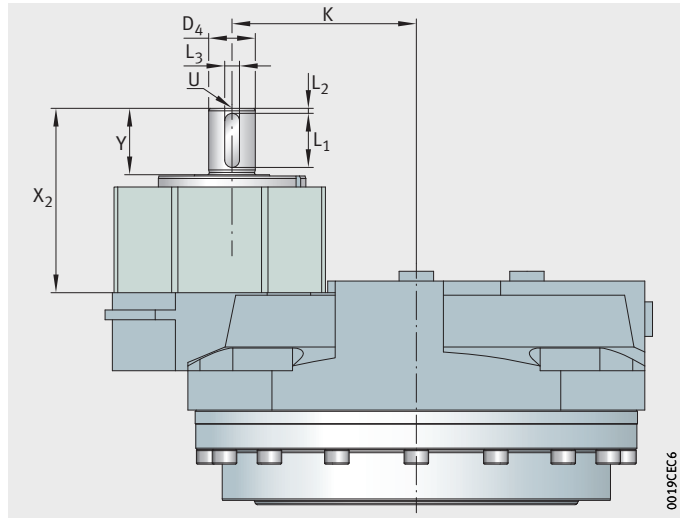


Figure 9
Variant 2
with unconnected input shaft

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

Variant 6

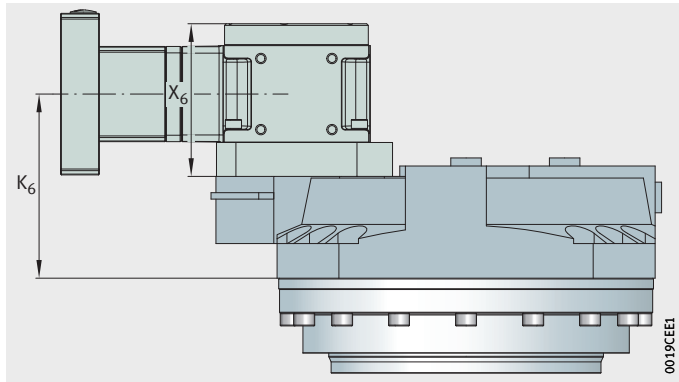


Figure 10
Variant 6
with right angle pre-stage

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

Gearbox	X6 mm	K6 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

Ordering example, ordering designation

Structure of the ordering designation for mounting kits and gear units.

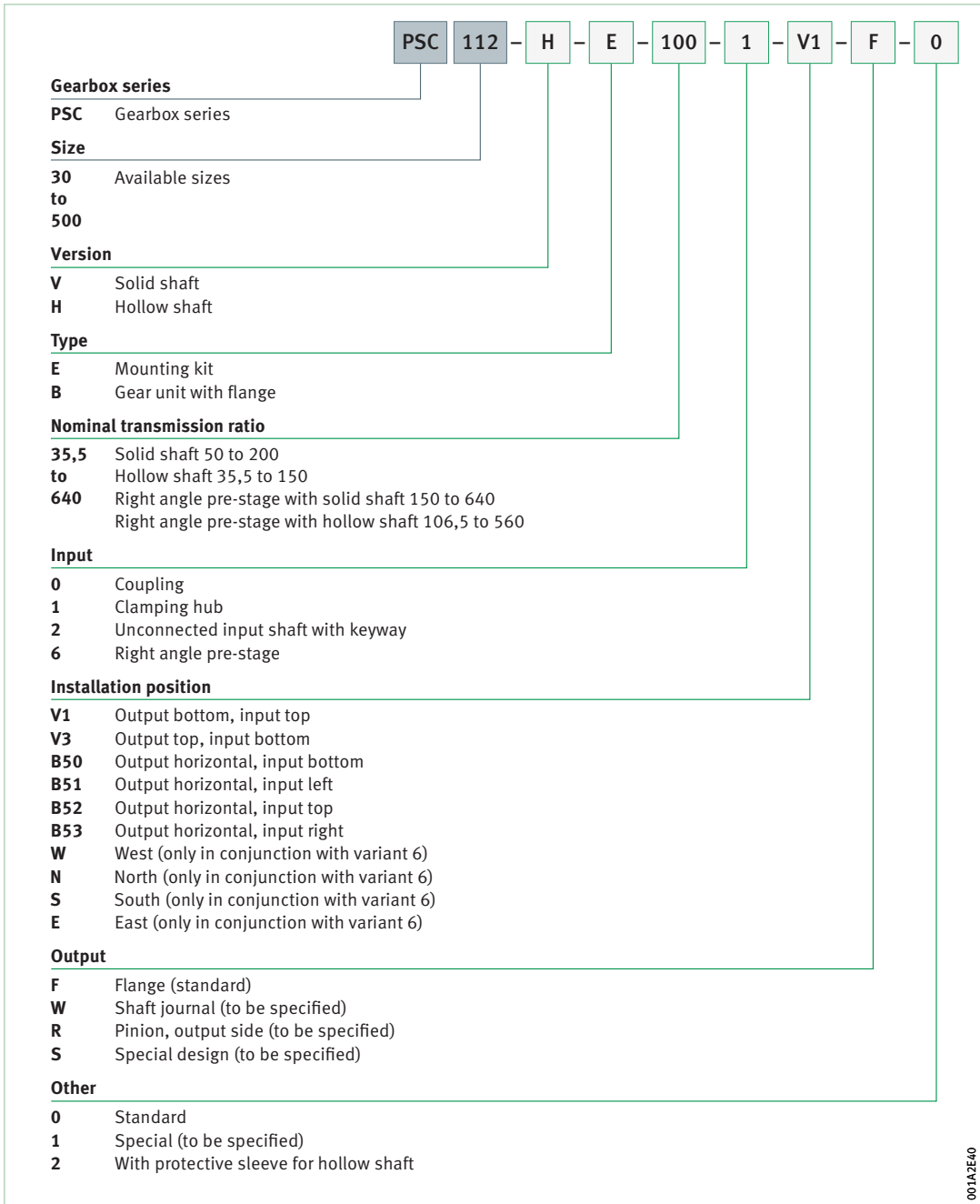


Figure 1
Structure of the ordering designation

Ordering example

Gearbox series	PSC
Size	112
Version	H
Type	E
Nominal transmission ratio	100
Input	1
Installation position	V1
Output	F
Other information	0

Ordering designation

PSC-112-H-E-100-1-V1-F-0

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