

## ONE-STAGE PLANETARY GEARBOX

		i	PG 25/1	PG 100/1	PG 200/1	PG 500/1	PG 1200/1	PG 3000/1
<b>Nominal output torque</b> Also applicable for <b>S1 operation</b>	<b>T<sub>2N</sub> [Nm]</b>	<b>3</b>	-	-	120	280	720	1 800
		<b>4</b>	25	85	170	420	1 020	2 500
		<b>5</b>	25	100	200	500	1 200	3 000
		<b>7</b>	25	85	170	420	1 020	2 500
		<b>10</b>	20	60	120	280	720	1 800
<b>Emergency stop torque <sup>1)</sup></b>	<b>T<sub>2Not</sub> [Nm]</b>	<b>3</b>	-	-	400	840	2 160	5 400
		<b>4</b>	100	280	560	1 260	3 060	7 500
		<b>5</b>	100	330	660	1 500	3 600	9 000
		<b>7</b>	80	280	560	1 260	3 060	7 500
		<b>10</b>	80	200	400	840	2 160	5 400
<b>Max. acceleration torque <sup>2)</sup></b>	<b>T<sub>2B</sub> [Nm]</b>	<b>3</b>	-	-	220	560	1 440	3 000
		<b>4</b>	50	170	340	840	2 040	5 000
		<b>5</b>	50	200	400	1 000	2 400	6 000
		<b>7</b>	50	170	340	840	2 040	5 000
		<b>10</b>	40	110	220	560	1 440	3 000
<b>Max. input speed <sup>5)</sup></b>	<b>n<sub>1Max</sub> [rpm]</b>	<b>3</b>	-	-	4 000	3 200	2 500	2 000
		<b>4</b>	5 000	5 000	4 000	3 200	2 500	2 000
		<b>5</b>	6 300	6 300	5 000	4 000	3 200	2 500
		<b>7</b>	8 000	8 000	6 300	5 000	4 000	3 000
		<b>10</b>	10 000	10 000	8 000	6 300	5 000	3 500
<b>Nominal input speed</b>	<b>n<sub>1N</sub> [rpm]</b>	<b>3</b>	-	-	2 300	1 800	1 300	800
		<b>4</b>	3 000	3 000	2 500	2 000	1 500	1 000
		<b>5</b>	4 000	4 000	3 000	2 500	2 000	1 200
		<b>7</b>	5 000	5 000	4 000	3 000	2 500	1 500
		<b>10</b>	6 000	6 000	5 000	4 000	3 000	2 000
<b>Backlash standard reduced <sup>3)</sup></b>	<b>[arcmin]</b>		≤ 6	≤ 6	≤ 4	≤ 4	≤ 4	≤ 4
			≤ 3	≤ 3	≤ 2	≤ 2	≤ 2	≤ 2
<b>Torsional rigidity</b>	<b>C<sub>t</sub> [Nm/arcmin]</b>		3.5	8.2	24	48	149	340
<b>Moment of inertia</b>	<b>I<sub>1</sub> [kg cm<sup>2</sup>]</b>	<b>3</b>	-	-	2.8	8.2	36	128
		<b>4</b>	0.16	0.55	2.0	6.75	24.5	97.6
		<b>5</b>	0.16	0.47	1.64	5.54	18.8	76.4
		<b>7</b>	0.15	0.41	1.36	4.59	14.5	59.9
		<b>10</b>	0.14	0.38	1.22	4.1	12.3	51.1
<b>Max. axial force</b>	<b>F<sub>A</sub> [N]</b>		3 200	4 500	7 000	10 000	15 000	22 000
<b>Max. radial force <sup>4)</sup></b>	<b>F<sub>R</sub> [N]</b>		2 700	3 700	6 700	9 200	14 000	21 000
<b>Lifetime</b>	<b>L<sub>h</sub> [h]</b>		> 20 000	> 20 000	> 20 000	> 20 000	> 20 000	> 20 000
<b>Efficiency</b>	<b>η</b>		≥ 97%	≥ 97%	≥ 97%	≥ 97%	≥ 97%	≥ 97%
<b>Weight</b>	<b>m [kg]</b>		1.6	2.9	5.7	11.5	27	62
<b>Operating noise <sup>6)</sup></b>	<b>L<sub>p</sub> [dB(A)]</b>		≤ 53	≤ 56	≤ 56	≤ 56	≤ 65	≤ 65
<b>Lubrication</b>	Lifetime lubrication, closed system							
<b>Surface protection</b>	Aluminium, respectively steel, galvanically treated							
<b>Installation position</b>	Any, variable							
<b>Operating temperature</b>	-10 °C to +90°C							
<b>Direction of rotation</b>	same as input							
<b>Degree of protection</b>	IP 65							

1) Max. 1 000 times during gearbox lifetime.

2) At a maximum of 1 000 cycles per hour. Percentage of the overall running time less than 5% and duration of the impulse under 0.3 sec.

3) Optional

4) Resultant force at center of output shaft and at output speed 300 rpm.

5) For cyclic duty only

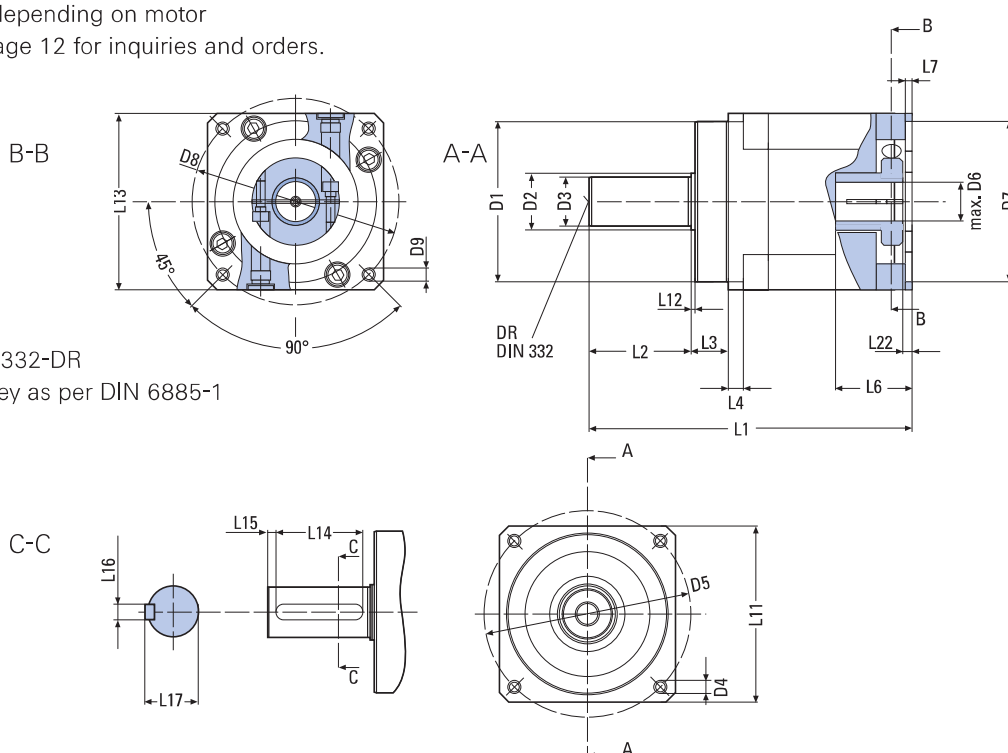
6) i = 10, n<sub>an</sub> = 3 000 rpm

Dimensions [mm]		PG 25/1	PG 100/1	PG 200/1	PG 500/1	PG 1200/1	PG 3000/1
<b>DR</b>		M5	M8	M12	M16	M20	M20
<b>D1 (g6)</b>		60	70	90	130	160	200
<b>D2</b>		20	28	40	45	60	95
<b>D3 (k6)</b>		16	22	32	40	55	85
<b>D4</b>		5.5	6.6	9	11	13	17
<b>D5</b>		68	85	120	165	215	290
<b>D6 * (F7)</b>	<b>min.</b>	6	14	19	24	32	42
	<b>max.</b>	14	24	32	38	48	60
<b>L1 *</b>		129.5	155.7	193.1	245.6	290	399.5
<b>L2 (+0,5)</b>		28	36	58	82	82	130
<b>L3</b>		20	20	30	30	30	40
<b>L4</b>		7.7	8	10	12.5	22	30
<b>L6 *</b>	<b>min.</b>	15	23	30	32	45	55
	<b>max.</b>	30	40	50	60	82	110
<b>L7 *</b>		3.5	4.5	5.5	5.3	8	8
<b>L11</b>		62	76	101	141	182	242
<b>L12</b>		2	2	2	3	3	3
<b>L13 *</b>	<b>min.</b>	62	80	106	141	182	242
<b>L14</b>		22	28	50	70	70	110
<b>L15</b>		3	4	4	5	5	7.5
<b>L16</b>		5	6	10	12	16	22
<b>L17</b>		18	24.5	35	43	59	90
<b>L22 *</b>		4.5	7.5	8.5	7.5	9	10

**D7 / D 8 / D9**

Adaptations available for all common servomotors, dimensions are variable.

\* Dimensions depending on motor  
Please use page 12 for inquiries and orders.



Centering DIN 332-DR  
Optional with key as per DIN 6885-1

## TWO-STAGE PLANETARY GEARBOX

		i	PG 25/2	PG 100/2	PG 200/2	PG 500/2	PG 1200/2
<b>Nominal output torque</b> <b>Also applicable for</b> <b>S1 operation</b>	$T_{2N}$ [Nm]	<b>20, 35, 40, 70</b>	25	85	170	420	1 020
		<b>25, 50</b>	25	100	200	500	1 200
		<b>100</b>	20	60	120	280	720
<b>Emergency stop torque <sup>1)</sup></b>	$T_{2Not}$ [Nm]	<b>20, 35, 40, 70</b>	100	280	560	1 260	3 060
		<b>25, 50</b>	100	330	660	1 500	3 600
		<b>100</b>	80	200	400	840	2 160
<b>Max. acceleration torque <sup>2)</sup></b>	$T_{2B}$ [Nm]	<b>20, 35, 40, 70</b>	50	170	340	840	2 040
		<b>25, 50</b>	50	200	400	1 000	2 400
		<b>100</b>	40	110	220	560	1 440
<b>Max. input speed <sup>5)</sup></b>	$n_{1Max}$ [rpm]	<b>20, 25, 35,</b>	6 300	6 300	5 000	4 000	3 200
		<b>40, 50, 70, 100</b>	10 000	10 000	8 000	6 300	5 000
<b>Nominal input speed</b>	$n_{1N}$ [rpm]	<b>20, 25, 35,</b>	4 000	4 000	3 000	2 500	2 000
		<b>40, 50, 70, 100</b>	6 000	6 000	5 000	4 000	3 000
<b>Backlash standard</b> <b>reduced <sup>3)</sup></b>	[arcmin]		≤ 8	≤ 8	≤ 6	≤ 6	≤ 6
			≤ 6	≤ 6	≤ 4	≤ 4	≤ 4
<b>Torsional rigidity</b>	$C_t$ [Nm/arcmin]		3.5	8.2	24	48	149
<b>Moment of inertia</b>	$I_1$ [kg cm <sup>2</sup> ]	<b>20</b>	0.12	0.47	1.56	5.29	6.95
		<b>25</b>	0.12	0.47	1.54	5.25	6.70
		<b>35</b>	0.12	0.47	1.53	5.21	6.53
		<b>40</b>	0.10	0.47	1.44	4.96	5.51
		<b>50</b>	0.10	0.47	1.44	4.96	5.45
		<b>70</b>	0.10	0.46	1.44	4.94	5.42
		<b>100</b>	0.10	0.46	1.44	4.94	5.39
<b>Max. axial force</b>	$F_A$ [N]		3 200	4 500	7 000	10 000	15 000
<b>Max. radial force <sup>4)</sup></b>	$F_R$ [N]		2 700	3 700	6 700	9 200	14 000
<b>Lifetime</b>	$L_h$ [h]		> 20 000	> 20 000	> 20 000	> 20 000	> 20 000
<b>Efficiency</b>	$\eta$		≥ 94%	≥ 94%	≥ 94%	≥ 94%	≥ 94%
<b>Weight</b>	$m$ [kg]		2.2	3.8	7.5	15	35
<b>Operating noise <sup>6)</sup></b>	$L_p$ [dB(A)]		≤ 49	≤ 51	≤ 55	≤ 55	≤ 63
<b>Lubrication</b>	Lifetime lubrication, closed system						
<b>Surface protection</b>	Aluminium, respectively steel, galvanically treated						
<b>Installation position</b>	Any, variable						
<b>Operating temperature</b>	-10 °C to +90°C						
<b>Direction of rotation</b>	same as input						
<b>Degree of protection</b>	IP 65						

- 1) Max. 1 000 times during gearbox lifetime.
- 2) At a maximum of 1 000 cycles per hour. Percentage of the overall running time less than 5% and duration of the impulse under 0.3 sec.
- 3) Optional
- 4) Resultant force at center of output shaft and at output speed 300 rpm.
- 5) For cyclic duty only
- 6)  $i = 10$ ,  $n_{an} = 3 000$  rpm



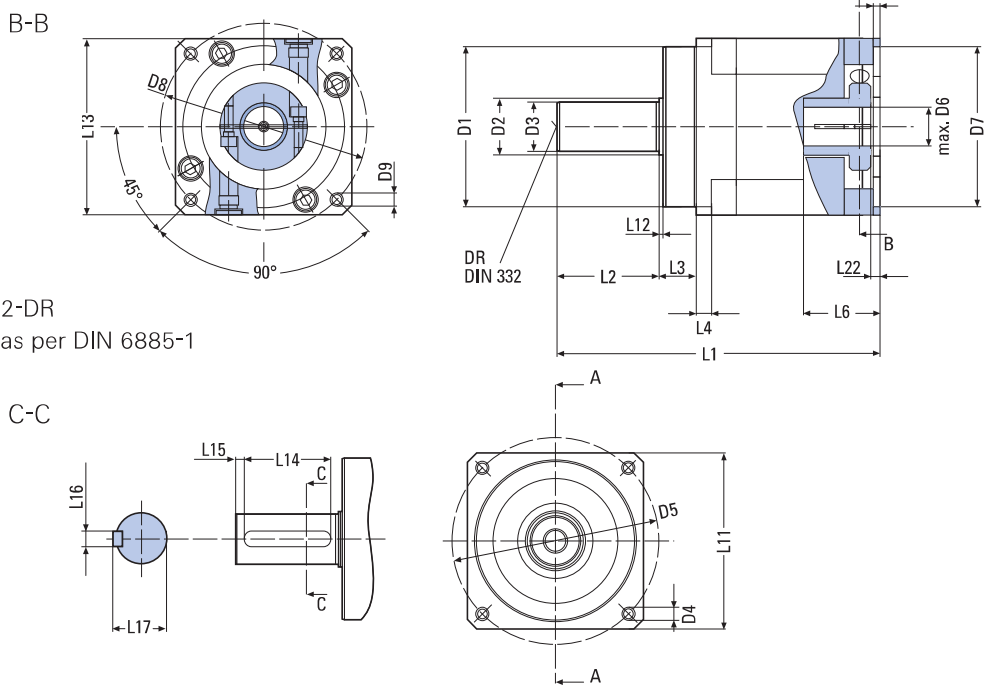
For installation drawings, please reference:  
[www.zf.com/industrial-drives](http://www.zf.com/industrial-drives)

Dimensions [mm]		PG 25/2	PG 100/2	PG 200/2	PG 500/2	PG 1200/2
<b>DR</b>		M5	M8	M12	M16	M20
<b>D1 (g6)</b>		60	70	90	130	160
<b>D2</b>		20	28	40	45	60
<b>D3 (k6)</b>		16	22	32	40	55
<b>D4</b>		5.5	6.6	9	11	13
<b>D5</b>		68	85	120	165	215
<b>D6 * (F7)</b>	<b>min.</b>	6	11	14	19	19
	<b>max.</b>	14	24	32	38	38
<b>L1 *</b>		153	182.2	236	296	335.2
<b>L2 (+0,5)</b>		28	36	58	82	82
<b>L3</b>		20	20	30	30	30
<b>L4</b>		7.7	8	10	12.5	22
<b>L6 *</b>	<b>min.</b>	15	23	30	32	45
	<b>max.</b>	30	40	50	60	82
<b>L7 *</b>		3.5	4.5	5.5	5.3	8
<b>L11</b>		62	76	101	141	182
<b>L12</b>		2	2	2	3	3
<b>L13 *</b>	<b>min.</b>	62	80	106	141	182
<b>L14</b>		22	28	50	70	70
<b>L15</b>		3	4	4	5	5
<b>L16</b>		5	6	10	12	16
<b>L17</b>		18	24.5	35	43	59
<b>L22 *</b>		4.5	7.5	8.5	7.5	9

**D7 / D 8 / D9**

Adaptations available for all common servomotors, dimensions are variable.

\* Dimensions depending on motor  
Please use page 12 for inquiries and orders.



Centering DIN 332-DR  
Optional with key as per DIN 6885-1

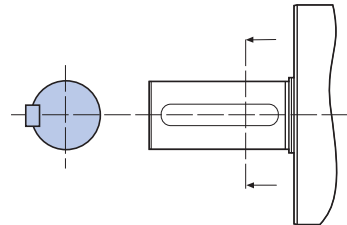
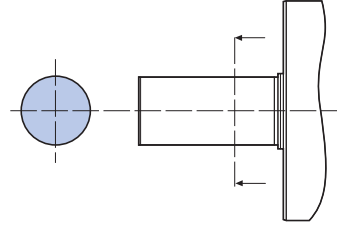
## GEARBOX OUTPUT SHAFT

The gearbox output shaft is available in the following designs:

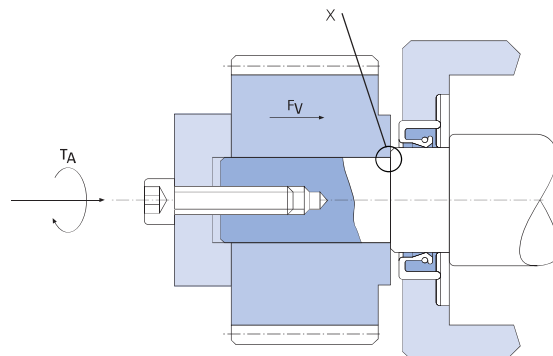
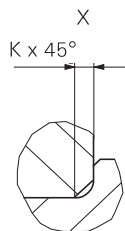
Plain output shaft (standard) for shrunk, backlash-free shaft-hub connections. This allows lower levels of running (operating) noise. We recommend the use of output shafts with shrunk shaft-hub connections.

Alternatively available:

Output shaft with key as per DIN 6885-1 for keyed shaft-hub connections. This type of connection is suitable for constant direction, where applications, requirements are not as stringent. This connection type requires additional axial fixing of the hub. A centering bore with thread is provided on the face end of the gearbox output shaft for this purpose (as per DIN 332-DR).



		PG 25/1 25/2	PG 100/1 100/2	PG 200/1 200/2	PG 500/1 500/2	PG 1200/1 1200/2	PG 3000/1
<b>Thread</b>		M5	M8	M12	M16	M20	M20
<b>T<sub>A</sub></b>	[Nm]	5.5	23	79	130	260	260
<b>F<sub>V</sub> (= Pretensioning Force)</b>	[kN]	6.5	17	40	50	80	80
<b>K min.</b>	[mm]	0.8	1.4	1.4	0.8	0.8	1.4
<b>K max.</b>	[mm]	1.0	1.6	1.6	1.0	1.0	1.6



The connecting part on the gearbox output shaft must have a chamfer „K“ (see table) on the contact pattern to the gearbox.