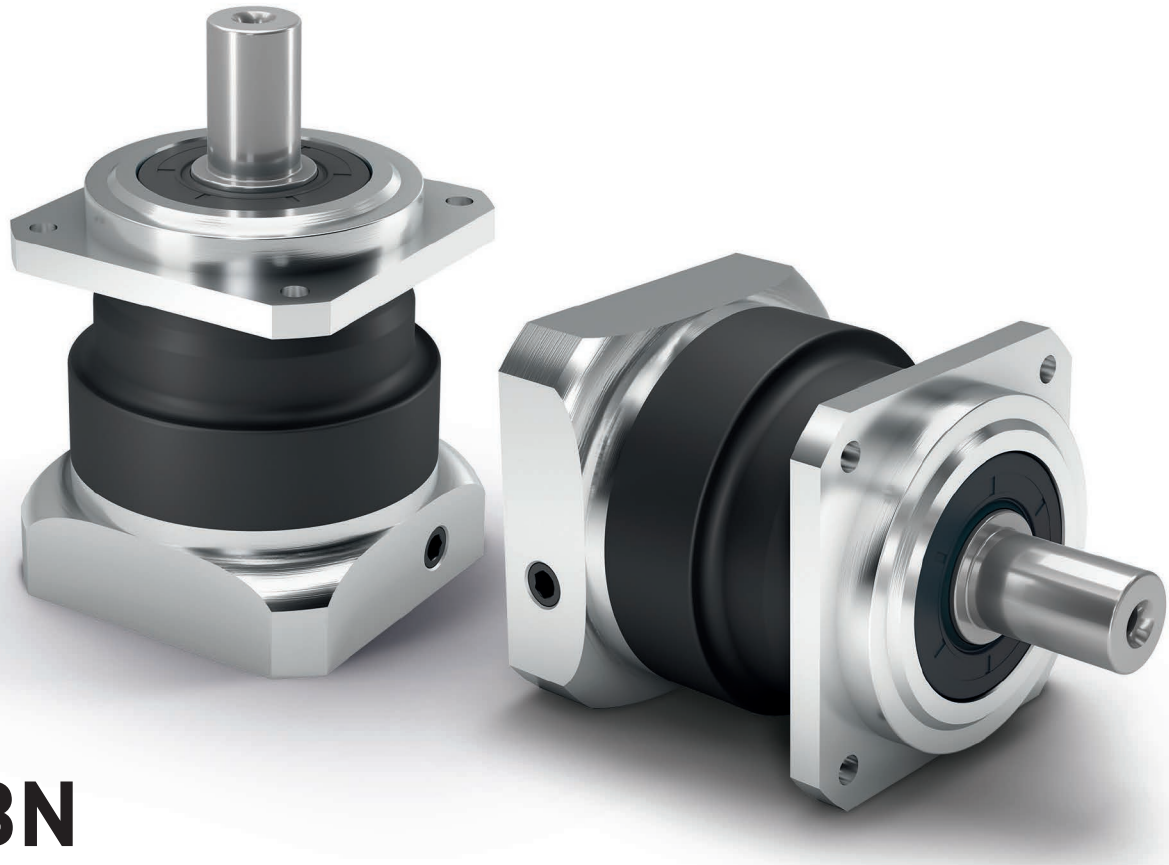


PSBN

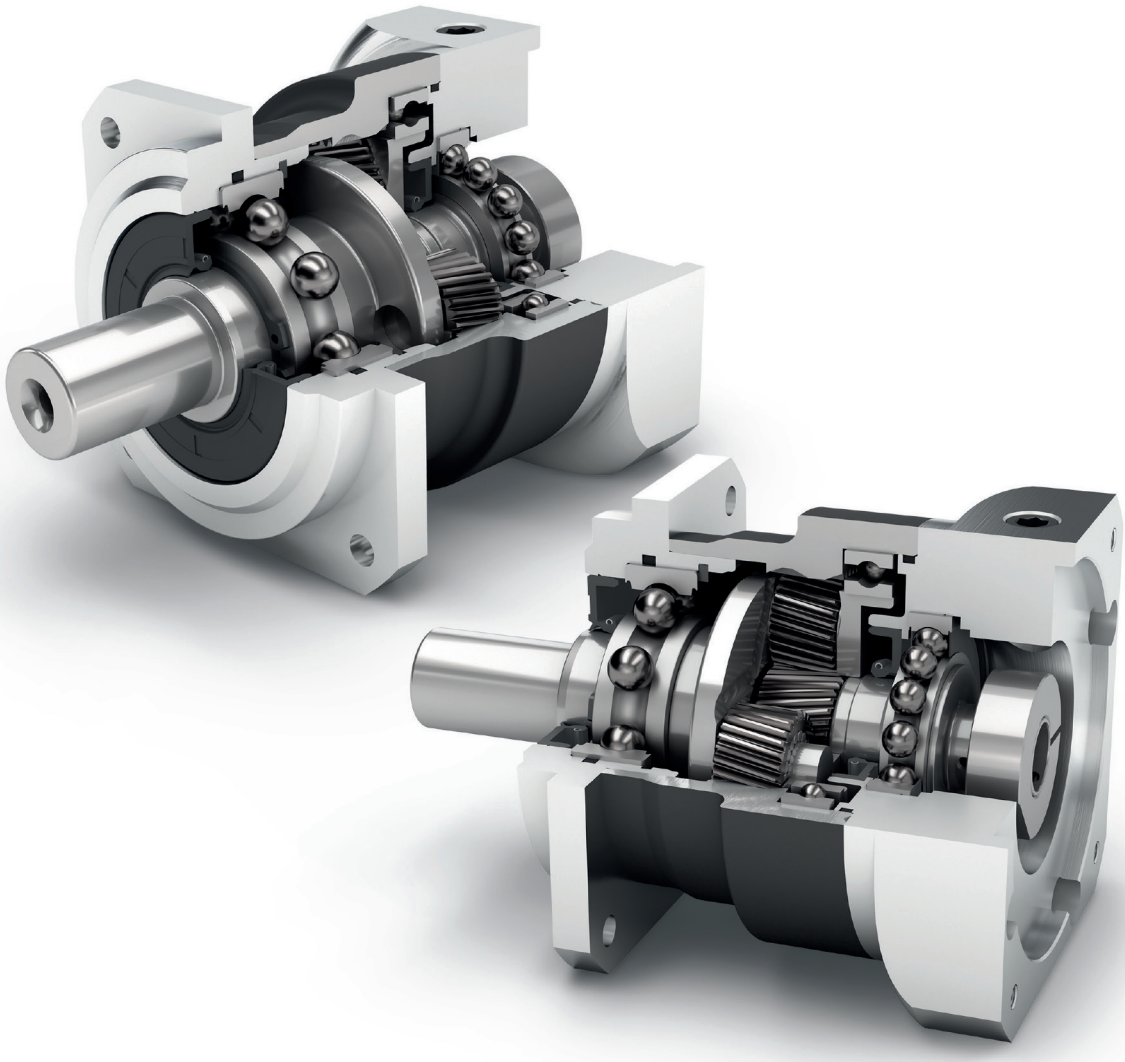
The high-performance precision planetary gearbox with helical gearing for a particularly quiet drive

Our **PSBN** is the ideal combination of a precision planetary gearbox and efficient bearing technology. It was designed specifically to achieve maximum performance at high speed. Thanks to the helical gearing, it operates particularly smoothly - and is quieter than average.

Nominal output torque	**11 - 470 Nm**
Radial force	**640 - 5800 N**
Axial force	**1100 - 9400 N**
Torsional backlash	**1 - 8 arcmin**
Protection class	**IP65**

Frame sizes

55 **70** **90** **115** **142**



- Precision Line
- Equidirectional rotation
- Square type output flange
- Rotary shaft seal
- Option: Reduced backlash
- Coaxial gearbox
- Helical gear
- Reinforced deep groove ball bearings
- Planet carrier in cage design
- Option: Painted surface – RAL 9005 Jet black

Detailed explanations of the technical features starting on page 173.

Code	Gearbox characteristics			PSBN055	PSBN070	PSBN090	PSBN115	PSBN142	p[1]
	Service life (L_{10h})	t_L	h	20,000					
	Service life at T_{2N} x 0.88			30,000					
	Efficiency at full load[2]	η	%	98					1
				96					2
	Min. operating temperature	T_{min}	°C (°F)	-25 (-13)					
	Max. operating temperature	T_{max}		90 (194)					
	Protection class			IP65					
S	Standard lubrication			Oil (lifetime lubrication)					
F	Food grade lubrication			Oil (lifetime lubrication)					
L	Low temperature lubrication[3]			Oil (lifetime lubrication)					
	Installation position			Any					
S	Standard backlash	j_t	arcmin	< 6	< 3	< 3	< 3	< 3	1
				< 8	< 5	< 5	< 5	< 5	2
R	Reduced backlash			< 4	< 2	< 1	< 1	< 1	1
				< 6	< 2	< 1	< 1	< 1	2
	Torsional stiffness[2]	c_g	Nm / arcmin (lb_f.in/ arcmin)	1.4 - 2.3 (12 - 20)	4.1 - 5.4 (36 - 48)	9.3 - 12.8 (82 - 113)	22.5 - 32.5 (199 - 288)	59.5 - 76.0 (527 - 673)	1
				1.5 - 2.4 (13 - 21)	4.1 - 5.7 (36 - 50)	10.2 - 13.4 (90 - 119)	25.5 - 35.0 (226 - 310)	57.5 - 71.0 (509 - 628)	2
	Gearbox weight[2]	m_G	kg (lb_m)	0.8 (1.7 - 1.9)	1.4 - 1.5 (3.0 - 3.2)	2.7 - 2.8 (6.0 - 6.2)	5.4 - 5.7 (11.8 - 12.6)	13.2 - 13.5 (29.0 - 29.7)	1
				1.1 (2.5)	2.0 - 2.1 (4.5 - 4.6)	3.3 - 3.4 (7.2 - 7.4)	6.5 - 6.7 (14.3 - 14.7)	14.8 - 15.2 (32.6 - 33.5)	2
S	Standard surface			Housing: Steel – heat-treated and post-oxidized (black)					
B	Painted surface			RAL 9005 Jet black					
	Running noise[4]	Q_g	dB(A)	56	57	58	63	66	
	Max. bending moment based on the gearbox input flange[5]	M_b	Nm (lb_f.in)	10 (89)	18 (159)	38 (336)	80 (708)	180 (1593)	1
				10 (89)	18 (159)	18 (159)	38 (336)	80 (708)	2

Output shaft loads			PSBN055	PSBN070	PSBN090	PSBN115	PSBN142	p[1]
Radial force for 20,000 h[6][7]	$F_{r\ 20.000\ h}$	N (lb_f)	640 (144)	1000 (225)	1900 (427)	2300 (517)	4200 - 5800 (944 - 1304)	
Axial force for 20,000 h[6][7]	$F_{a\ 20.000\ h}$		1100 (247)	1500 (337)	3000 (674)	4400 (989)	9400 (2113)	
Radial force for 30,000 h[6][7]	$F_{r\ 30.000\ h}$		560 (126)	850 (191)	1700 (382)	2000 (450)	3700 - 5100 (832 - 1147)	
Axial force for 30,000 h[6][7]	$F_{a\ 30.000\ h}$		900 (202)	1300 (292)	2500 (562)	3700 (832)	7700 (1731)	
Maximum radial force[7][8]	$F_{r\ Stat}$		830 (187)	1600 (360)	3100 (697)	4500 (1012)	9500 (2136)	
Maximum axial force[7][8]	$F_{a\ Stat}$		1350 (303)	1500 (337)	2800 (629)	4500 (1012)	9600 (2158)	
Tilting moment for 20,000 h[6][8]	$M_{K\ 20.000\ h}$	Nm (lb_f.in)	33 (288)	68 (601)	154 (1362)	226 (2001)	581 - 811 (5143 - 7179)	
Tilting moment for 30,000 h[6][8]	$M_{K\ 30.000\ h}$		28 (251)	58 (513)	138 (1221)	197 (1744)	512 - 697 (4531 - 6169)	

Moment of inertia			PSBN055	PSBN070	PSBN090	PSBN115	PSBN142	p[1]
Mass moment of inertia[2]	J	$kgcm^2$ (lb_f. $in.s^2 10^{-4}$)	0.096 - 0.133 (0.850 - 1.177)	0.127 - 0.260 (1.124 - 2.301)	0.327 - 0.785 (2.894 - 6.948)	0.874 - 2.650 (7.736 - 23.454)	6.539 - 14.440 (57.875 - 127.805)	1
			0.096 - 0.113 (0.850 - 1.000)	0.123 - 0.175 (1.089 - 1.549)	0.124 - 0.200 (1.097 - 1.770)	0.321 - 0.600 (2.841 - 5.310)	0.841 - 2.003 (7.443 - 17.728)	2

(1) Number of stages
(2) The ratio-dependent values can be retrieved in Tec Data Finder – www.neugart.com
(3) T_{min} = -40°C. Optimal operating temperature max. 50°C
(4) Sound pressure level from 1 m, measured on input running at n_1=3000 rpm no load; i=5
(5) Max. motor weight* in kg = 0.2 x M_b / motor length in m
* with symmetrically distributed motor weight
* with horizontal and stationary mounting
(6) These values are based on an output shaft speed of n_2=100 rpm
(7) Based on center of output shaft
(8) Other (sometimes higher) values following changes to T_{2N}, F_r, F_a, cycle, and service life of bearing. Application specific configuration with NCP – www.neugart.com

Output torques			PSBN055	PSBN070	PSBN090	PSBN115	PSBN142	i[1]	p[2]
Nominal output torque[3][4]	T_{2N}	Nm (lb_f.in)	11 (97)	29 (257)	54 (478)	135 (1195)	380 (3363)	3	1
			18 (159)	39 (345)	80 (708)	180 (1593)	470 (4160)	4	
			18 (159)	40 (354)	80 (708)	175 (1549)	405 (3585)	5	
			18 (159)	37 (327)	78 (690)	175 (1549)	355 (3142)	7	
			18 (159)	39 (345)	75 (664)	155 (1372)	350 (3098)	8	
			13,5 (119)	28 (248)	59 (522)	140 (1239)	305 (2699)	10	
			16 (142)	29 (257)	54 (478)	135 (1195)	380 (3363)	12	2
			18 (159)	29 (257)	54 (478)	135 (1195)	380 (3363)	15	
			18 (159)	39 (345)	80 (708)	180 (1593)	450 (3983)	16	
			18 (159)	39 (345)	80 (708)	180 (1593)	450 (3983)	20	
			18 (159)	40 (354)	80 (708)	175 (1549)	405 (3585)	25	
			18 (159)	40 (354)	80 (708)	175 (1549)	405 (3585)	35	
			18 (159)	39 (345)	80 (708)	180 (1593)	470 (4160)	40	
			18 (159)	40 (354)	80 (708)	175 (1549)	405 (3585)	50	
			18 (159)	37 (327)	78 (690)	175 (1549)	355 (3142)	70	
			13,5 (119)	28 (248)	59 (522)	140 (1239)	305 (2699)	100	
Max. output torque[4][5]	T_{2max}	Nm (lb_f.in)	18 (159)	46 (407)	86 (761)	216 (1912)	608 (5381)	3	1
			29 (257)	62 (549)	128 (1133)	288 (2549)	752 (6656)	4	
			29 (257)	64 (566)	128 (1133)	280 (2478)	648 (5735)	5	
			29 (257)	59 (522)	125 (1106)	280 (2478)	568 (5027)	7	
			29 (257)	62 (549)	120 (1062)	248 (2195)	560 (4956)	8	
			22 (195)	45 (398)	94 (832)	224 (1983)	488 (4319)	10	
			26 (230)	46 (407)	86 (761)	216 (1912)	608 (5381)	12	2
			29 (257)	46 (407)	86 (761)	216 (1912)	608 (5381)	15	
			29 (257)	62 (549)	128 (1133)	288 (2549)	720 (6373)	16	
			29 (257)	62 (549)	128 (1133)	288 (2549)	720 (6373)	20	
			29 (257)	64 (566)	128 (1133)	280 (2478)	648 (5735)	25	
			29 (257)	64 (566)	128 (1133)	280 (2478)	648 (5735)	35	
			29 (257)	62 (549)	128 (1133)	288 (2549)	752 (6656)	40	
			29 (257)	64 (566)	128 (1133)	280 (2478)	648 (5735)	50	
			29 (257)	59 (522)	125 (1106)	280 (2478)	568 (5027)	70	
			22 (195)	45 (398)	94 (832)	224 (1983)	488 (4319)	100	

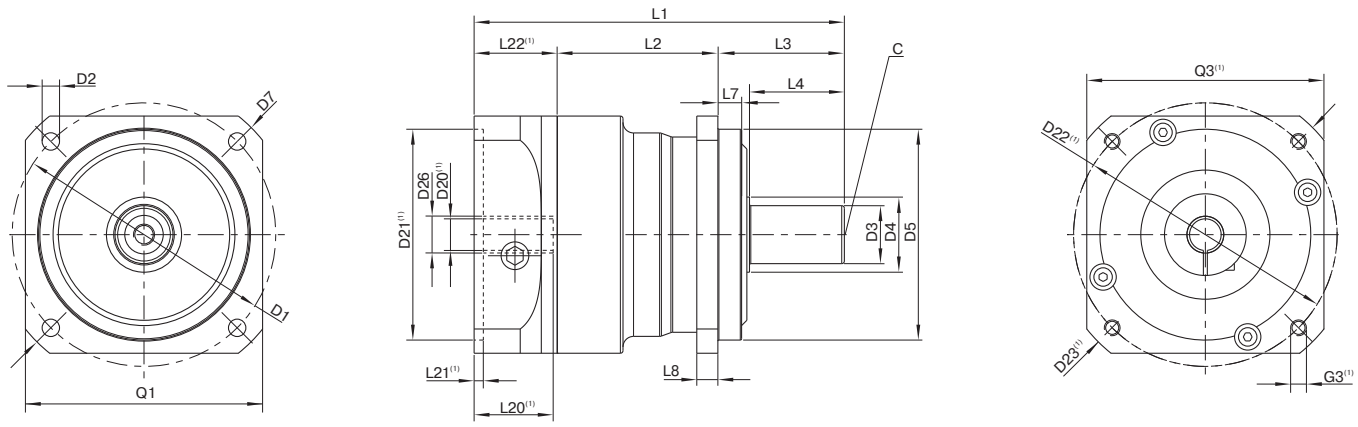
(1) Ratios ($i=n_1/n_2$)
(2) Number of stages
(3) Application specific configuration with NCP – www.neugart.com
(4) Values for feather key (code "A"): for repeated load
(5) 30,000 rotations of the output shaft permitted; see page 166

Output torques			PSBN055	PSBN070	PSBN090	PSBN115	PSBN142	i[1]	p[2]
Emergency stop torque[3]	T_{2Stop}	Nm (lb_f.in)	48 (425)	90 (797)	210 (1859)	490 (4337)	1250 (11063)	3	1
			48 (425)	120 (1062)	280 (2478)	650 (5753)	1650 (14604)	4	
			48 (425)	130 (1151)	280 (2478)	650 (5753)	1650 (14604)	5	
			48 (425)	80 (708)	175 (1549)	340 (3009)	1300 (11506)	7	
			48 (425)	90 (797)	200 (1770)	380 (3363)	1100 (9736)	8	
			24 (212)	90 (797)	200 (1770)	480 (4248)	600 (5310)	10	
			48 (425)	135 (1195)	220 (1947)	500 (4425)	1250 (11063)	12	2
			48 (425)	135 (1195)	220 (1947)	500 (4425)	1250 (11063)	15	
			48 (425)	150 (1328)	300 (2655)	650 (5753)	1650 (14604)	16	
			48 (425)	150 (1328)	300 (2655)	650 (5753)	1650 (14604)	20	
			48 (425)	150 (1328)	300 (2655)	650 (5753)	1650 (14604)	25	
			48 (425)	150 (1328)	300 (2655)	650 (5753)	1650 (14604)	35	
			48 (425)	150 (1328)	300 (2655)	650 (5753)	1650 (14604)	40	
			48 (425)	150 (1328)	300 (2655)	650 (5753)	1650 (14604)	50	
			48 (425)	80 (708)	175 (1549)	340 (3009)	1300 (11506)	70	
			24 (212)	80 (708)	200 (1770)	480 (4248)	600 (5310)	100	

Input speeds			PSBN055	PSBN070	PSBN090	PSBN115	PSBN142	i[1]	p[2]
Average thermal input speed at T_{2N} and S1[4][5]	n_{1N}	rpm	4950[6]	3800[6]	3400[6]	2900[6]	1600[6]	3	1
			5000[6]	4400[6]	3700[6]	3000[6]	1950[6]	4	
			5000[6]	4600[6]	3900[6]	3500[6]	2350[6]	5	
			5000	5000	4500	4000[6]	3150[6]	7	
			5000	5000	4500	4000	3450[6]	8	
			5000	5000	4500	4000	3500	10	
			4950[6]	5000	5000	4500	3150[6]	12	2
			5000[6]	5000	5000	4500	3950[6]	15	
			5000[6]	5000	5000	4500	3400[6]	16	
			5000	5000	5000	4500	4000[6]	20	
			5000	5000	5000	4500	4000	25	
			5000	5000	5000	4500	4000	35	
			5000	5000	5000	4500	4000	40	
			5000	5000	5000	4500	4000	50	
			5000	5000	5000	4500	4000	70	
			5000	5000	5000	4500	4000	100	
Max. mechanical input speed[4]	n_{1Limit}	rpm	10000	14,000	10,000	8500	6500		1
			10000	14,000	14,000	10,000	8500		2

[1] Ratios ($i=n_1/n_2$)
[2] Number of stages
[3] Permitted 1000 times
[4] Application-specific speed configurations with NCP – www.neugart.com
[5] See page 166 for the definition
[6] Average thermal input speed at 50% T_{2N} and S1

PSBN Dimensions



Drawing corresponds to a PSBN090 / 1-stage / smooth output shaft / 14 mm clamping system / motor adaptation – 2-part – round universal flange / B5 flange type motor

(1) The dimensions vary with the motor/gearbox flange. The input flange dimensions can be retrieved for each specific motor in Tec Data Finder at www.neugart.com

Geometry(1)			**PSBN055**	**PSBN070**	**PSBN090**	**PSBN115**	**PSBN142**	**p**(2)	**Code**
Pitch circle diameter output	D1		63 (2.480)	70 (2.756)	100 (3.937)	130 (5.118)	165 (6.496)		
Mounting bore output	D2	4x	5.5 (0.217)	5.5 (0.217)	6.6 (0.260)	9.0 (0.354)	11.0 (0.433)		
Shaft diameter output	D3	j6	13 (0.512)	16 (0.630)	22 (0.866)	32 (1.260)	40 (1.575)		
Shaft collar output	D4		17 (0.669)	25 (0.984)	28.5 (1.122)	38.5 (1.516)	48.5 (1.909)		
Centering diameter output	D5	g6	50 (1.969)	50 (1.969)	80 (3.150)	110 (4.331)	130 (5.118)		
Diagonal dimension output	D7		74 (2.913)	80 (3.150)	115 (4.528)	148 (5.827)	185 (7.283)		
Flange cross section output	Q1	■	55 (2.165)	60 (2.362)	90 (3.543)	115 (4.528)	140 (5.512)		
Min. total length	L1		93.5 (3.681)	116.5 (4.587)	140.5 (5.531)	182.5 (7.185)	247.5 (9.744)	1	
			117 (4.606)	145 (5.709)	162.5 (6.398)	204 (8.032)	279 (10.984)	2	
Housing length	L2		43 (1.693)	54 (2.126)	61 (2.402)	74 (2.913)	100.5 (3.957)	1	
			56.5 (2.224)	82.5 (3.248)	89 (3.504)	107.5 (4.232)	138.5 (5.453)	2	
Shaft length output	L3		26 (1.024)	37 (1.457)	48 (1.890)	65 (2.559)	97 (3.819)		
Centering depth output	L7		6 (0.217)	6 (0.236)	9 (0.354)	4 (0.157)	12 (0.472)		
Flange thickness output	L8		6 (0.236)	6 (0.236)	8 (0.315)	10 (0.394)	12 (0.472)		
Center hole (DIN 332. type DR)	C		M4x10	M5x12.5	M8x19	M12x28	M16x36		
Motor shaft diameter j6/k6	D20		More information on page 163/164						
Clamping system diameter input	D26								
Output shaft with feather key (DIN 6885-1)			A 5x5x16	A 5x5x25	A 6x6x28	A 10x8x50	A 12x8x65		**A**
Feather key width (DIN 6885-1)	B1		5 (0.197)	5 (0.197)	6 (0.236)	10 (0.394)	12 (0.472)		
Shaft height including feather key (DIN 6885-1)	H1		15 (0.591)	18 (0.709)	24.5 (0.965)	35 (1.378)	43 (1.693)		
Shaft length from shoulder	L4		19 (0.748)	28 (1.102)	36 (1.417)	58 (2.283)	82 (3.228)		
Feather key length	L5		16 (0.630)	25 (0.984)	28 (1.102)	50 (1.969)	65 (2.559)		
Distance from shaft end	L6		2 (0.079)	2 (0.079)	4 (0.157)	4 (0.157)	8 (0.315)		
Smooth output shaft									**B**
Shaft length from shoulder	L4		19 (0.748)	28 (1.102)	36 (1.417)	58 (2.283)	82 (3.228)		

(1) Dimensions in mm
(2) Number of stages