PSNpro

采用斜齿结构的精密行星减速机，专为静音运行与极限性能场景研发

凭借斜齿传动技术，**PSNpro**成功实现静音运行与极致同步精度的双重突破。它也是高循环扭矩工况的理想选择。其预紧的圆锥滚子轴承与方形输出法兰结构，确保超高负载能力，助力输出轴承受极端工况下的极限载荷。

The helical precision planetary gearbox for low-noise operation and maximum performance

Thanks to its helical gearing, the **PSNpro** enables low-noise operation and maximum synchronisation quality. It is also ideal for high cycle torques. Its preloaded tapered roller bearings and square output flange ensure a high load capacity and allow high output shaft loads, even under extreme conditions.

周期性扭矩
Cyclic torque **14 - 1800 Nm**

径向力
Radial force **950 - 20000 N**

轴向力
Axial force **2200 - 17000 N**

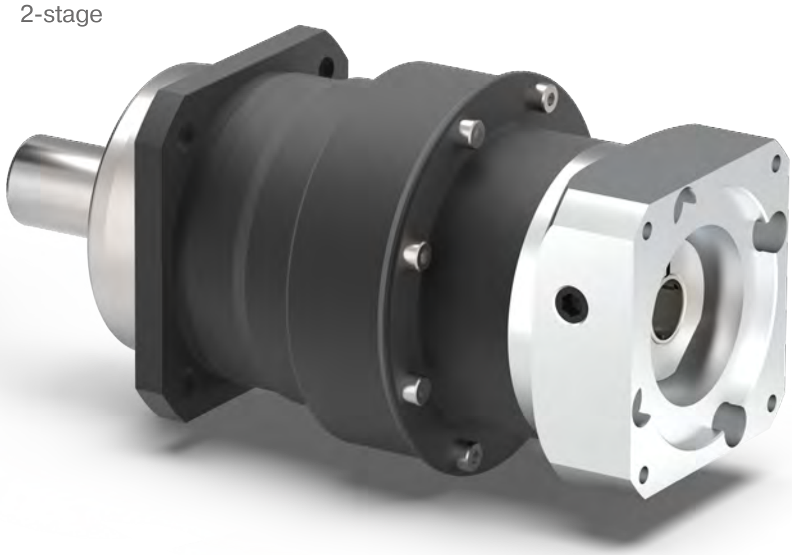
回程间隙
Torsional backlash **1 - 8 arcmin**

防护等级
Protection class **IP65**

结构尺寸
Frame sizes

55	70	90	115	142	190

2级
2-stage



精密型
Precision Line

同轴减速机
Coaxial gearbox

斜齿
Helical gear

旋转方向 同方向
Equidirectional rotation

配有预紧的圆锥滚子轴承
Preloaded tapered roller bearings

正方形输出法兰
Square type output flange

输出端带有超长定心环
Extra long centering collar

径向轴密封
Rotary shaft seal

可选: 降低回程间隙
Option: Reduced backlash

行星齿轮架（笼状结构）
Planet carrier in cage design

可选: 齿轮-齿条
行星减速机（细节见第 158 页）
Option: Rack and pinion
Planetary gearbox (Details on page 158)

可选：喷漆表面
——RAL 9005 黑色
Option: Painted surface
– RAL 9005 Jet black

技术特点的详细解释，请从第201页读起。
Detailed explanations of the technical features starting on page 201.

Code	减速机参数	Gearbox characteristics			PSNpro 055	PSNpro 070	PSNpro 090	PSNpro 115	PSNpro 142	PSNpro 190	p[1]
	使用寿命[2]	Service life[2]	L_h	h	20.000						
	有效系数[3]	Efficiency[3]	η	%	97						1
					96						2
	最低工作温度	Min. operating temperature	T_{min}	°C	-25						
	最高工作温度	Max. operating temperature	T_{max}		90						
	防护等级	Protection class			IP65						
S	标准润滑	Standard lubrication			润滑油（终生润滑）/ Oil (lifetime lubrication)						
F	食品级润滑	Food grade lubrication			润滑油（终生润滑）/ Oil (lifetime lubrication)						
	安装位置	Installation position			任意 / Any						
S	标准回程间隙	Standard backlash	φ	arcmin	< 6	< 3	< 3	< 3	< 3	< 3	1
					< 8	< 5	< 5	< 5	< 5	< 5	2
R	降低回程间隙	Reduced backlash			< 4	< 2	< 1	< 1	< 1	< 1	1
					< 6	< 3	< 1	< 1	< 1	< 1	2
	抗扭刚度[3]	Torsional stiffness[3]	C_{2t}	Nm / arcmin	1,3 - 1,9	3,6 - 5,0	10,5 - 13,9	28,0 - 39,0	62,0 - 88,0	181,0 - 246,0	1
					1,3 - 1,9	3,4 - 4,9	10,3 - 13,8	28,5 - 39,5	61,0 - 86,0	179,0 - 255,0	2
	减速机重量[3]	Gearbox weight[3]	m	kg	0,8	2,2	4,0 - 4,1	6,9 - 7,3	15,1 - 15,5	34,5 - 36,3	1
					1,1	2,2	4,1 - 4,2	8,2 - 8,4	16,3 - 16,8	37,5 - 39,4	2
S	标准的箱体表面	Standard surface			箱体：钢 – 热处理后氧化 (黑色) Housing: Steel – heat-treated and post-oxidized (black)						
B	喷漆表面[4]	Painted surface[4]			RAL 9005 黑色 RAL 9005 Jet black						
	运行噪音[3]	Running noise[3]	L_{pA}	dB(A)	56	57	58	63	66	68	

输出轴载荷	Output shaft loads			PSNpro 055	PSNpro 070	PSNpro 090	PSNpro 115	PSNpro 142	PSNpro 190	p[1]
最大径向力	Maximum radial force	$F_{r\,max}$	N	950	3200	5500	6000	13000	20000	
最大轴向力	Maximum axial force	$F_{a\,max}$		2200	3400	4500	6500	12000	17000	
最大倾斜力矩	Maximum tilting moment	$M_{K\,max}$	Nm	40	203	419	562	1566	2887	

输入特性	Input characteristics			PSNpro 055	PSNpro 070	PSNpro 090	PSNpro 115	PSNpro 142	PSNpro 190	p[1]
输入端锁紧系统直径（代码）[5]	Clamping system diameter input (Code)[5]	D26	mm	11 (C)[5]	11 (C)	14 (D)	19 (E)	35 (G)[5]	48 (K)[5]	1
				14 (D)	14 (D)[5]	19 (E)[5]	24 (F)[5]	42 (H)	-	
				-	19 (E)	24 (F)	35 (G)	-	-	
				11 (C)[5]	11 (C)[5]	11 (C)	14 (D)	19 (E)	35 (G)[5]	2
				14 (D)	14 (D)	14 (D)[5]	19 (E)[5]	24 (F)[5]	42 (H)	
				-	-	19 (E)	24 (F)	35 (G)	-	
转动惯量[3][5]	Mass moment of inertia input[3][5]	J_1	kgcm^2	0,096 - 0,126	0,150 - 0,294	0,439 - 0,920	1,147 - 2,775	6,475 - 13,112	21,695 - 53,182	1
				0,095 - 0,109	0,168 - 0,227	0,327 - 0,408	1,279 - 1,559	3,444 - 4,565	18,722 - 23,015	2
平均空载扭矩[3][5]	Average idle torque[3][5]	T_0	Nm	0,15 - 0,30	0,30 - 0,75	0,60 - 1,45	1,00 - 3,00	2,30 - 7,95	5,20 - 17,65	1
				0,15 - 0,25	0,15 - 0,35	0,25 - 0,50	0,50 - 1,20	0,85 - 2,65	2,00 - 5,85	2
基于减速机输入法兰的最大弯矩	Max. bending moment based on the gearbox input flange	M_{b1}		10	18	38	80	180	300	1
				10	18	18	38	80	180	2

(1) 减速机级数
(2) 利用 NCP 针对应用进行专门设计 – www.neugart.com
(3) 传动比相关的数值可在 Tec Data Finder 中检索 – www.neugart.com
(4) 更多信息见第 183
(5) 参考 锁紧系统直径

(1) Number of stages
(2) Application specific configuration with NCP – www.neugart.com
(3) The ratio-dependent values can be retrieved in Tec Data Finder – www.neugart.com
(4) More information on page 183
(5) Reference clamping system diameter

输出扭矩	**Output torques**			**PSNpro 055**	**PSNpro 070**	**PSNpro 090**	**PSNpro 115**	**PSNpro 142**	**PSNpro 190**	**i[1]**	**p[2]**
周期性扭矩[3][4]	Cyclic torque[3][4]	T_{2Z}	Nm	20	48	114	250	520	1110	3	1
				25	68	150	330	700	1480	4	
				25	68	150	330	850	1800	5	
				18,5	45	108	300	600	1450	7	
				18	40	84	190	425	-	8	
				13,5	32	72	190	315	850	10	
				20	48	114	250	650	1500	12	2
				20	48	114	250	650	1500	15	
				25	68	150	330	850	1800	16	
				25	68	150	330	850	1800	20	
				25	68	150	330	850	1800	25	
				25	68	150	330	850	1800	35	
				25	68	150	330	850	1260	40	
				25	68	150	330	850	1580	50	
				18,5	44	108	300	600	1450	70	
				13,5	32	72	190	315	850	100	
最大扭矩[3][4]	Maximum torque[3][4]	T_{2max}	Nm	29	77	139	300	520	1110	3	1
				40	83	200	400	700	1480	4	
				40	79	184	440	870	1850	5	
				29	58	165	395	800	1680	7	
				28	64	134	295	485	-	8	
				21	52	116	280	500	1050	10	
				29	77	139	395	770	1870	12	2
				29	77	139	395	770	1870	15	
				40	83	220	520	1020	2210	16	
				40	83	220	520	1020	2210	20	
				40	79	184	440	1070	1960	25	
				40	79	184	440	1070	1960	35	
				40	79	220	520	1180	2020	40	
				40	79	184	440	1070	1960	50	
				29	50	165	390	800	1680	70	
				21	52	116	280	500	1050	100	

PSNpro

(1) 传动比 ($i=n_1/n_2$)
(2) 减速机级数
(3) 利用 NCP 针对应用进行专门设计 – www.neugart.com
(4) 参考夹紧系统直径

(1) Ratios ($i=n_1/n_2$)
(2) Number of stages
(3) Application specific configuration with NCP – www.neugart.com
(4) Based on reference clamping system diameter

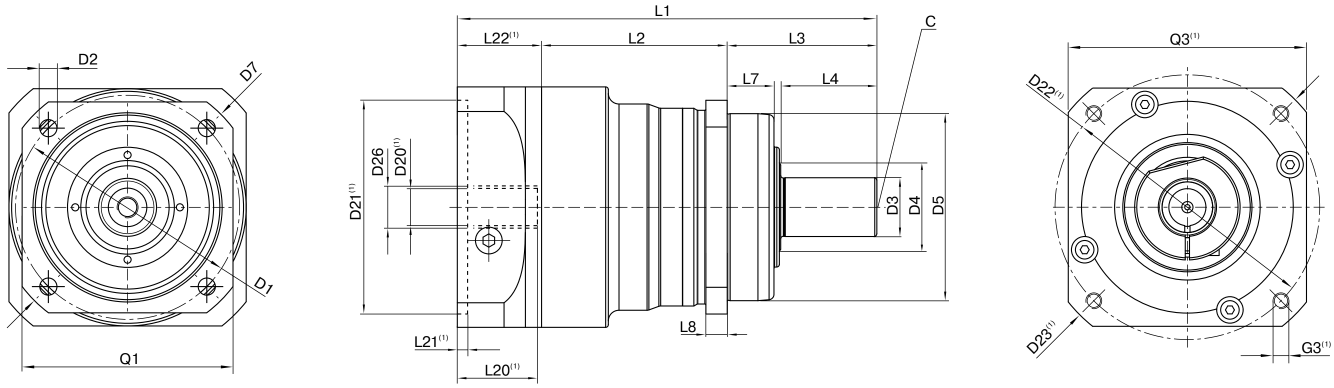
输出扭矩	Output torques			PSNpro 055	PSNpro 070	PSNpro 090	PSNpro 115	PSNpro 142	PSNpro 190	i[1]	p[2]
连续扭矩[3]	Continuous torque[3]	T_{2D}	Nm	11	30	62	155	475	1110	3	1
				18,5	39	94	194	600	1380	4	
				17,5	37	84	167	550	1230	5	
				15,5	37	80	156	500	1070	7	
				15	34	71	154	425	-	8	
				11	27	61	159	315	720	10	
				17,5	40	77	200	550	1270	12	2
				17,5	41	79	200	520	1270	15	
				25	55	80	194	530	1610	16	
				25	57	87	194	530	1600	20	
				25	57	76	164	435	1530	25	
				25	61	89	190	475	1540	35	
				25	61	94	200	500	1260	40	
				25	61	103	220	550	1580	50	
				15,5	40	92	220	510	1230	70	
				11	27	61	162	315	720	100	

输入转速	Input speeds			PSNpro 055	PSNpro 070	PSNpro 090	PSNpro 115	PSNpro 142	PSNpro 190	i[1]	p[2]
连续输入转速[3][4]	Continuous input speed[3][4]	n_{1D}	min^{-1}	4050	2500	2050	1500	830	500	3	1
				4100	3150	1950	1650	1050	460	4	
				4950	3800	2500	2250	1500	650	5	
				5000	4500	3400	3200	2200	970	7	
				5000	4500	3350	3150	2600	-	8	
				5000	4500	4000	3500	2950	1400	10	
				3800	3800	3900	2500	1350	990	12	2
				4300	4500	4500	3050	1950	1300	15	
				3650	4000	4300	3050	1850	1100	16	
				4100	4500	4500	3800	2300	1400	20	
				4250	4500	4500	4000	3050	1550	25	
				4850	4500	4500	4000	3500	2150	35	
				4900	4500	4500	4000	3500	2850	40	
				5000	4500	4500	4000	3500	2750	50	
				5000	4500	4500	4000	3500	3000	70	
				5000	4500	4500	4000	3500	3000	100	
最高机械输入转速[3]	Max. mechanical input speed[3]	n_{1max}	min^{-1}	10000	10000	10000	8500	6500	6000		1
				10000	10000	10000	10000	8500	6500		2

输出扭矩	Output torques			PSNpro 055	PSNpro 070	PSNpro 090	PSNpro 115	PSNpro 142	PSNpro 190	i[1]	p[2]
急停扭矩[4][5]	Emergency stop torque[4][5]	T_{2Stop}	Nm	55	120	210	495	1050	2220	3	1
				55	150	280	650	1400	2960	4	
				55	150	300	650	1750	3600	5	
				55	102	255	650	1390	3240	7	
				50	117	295	500	850	-	8	
				24	61	141	345	740	1830	10	
				55	150	300	650	1340	3260	12	2
				55	150	300	650	1340	3260	15	
				55	150	300	650	1780	3600	16	
				55	150	300	650	1780	3600	20	
				55	150	300	650	2000	3600	25	
				55	150	300	650	2000	3600	35	
				55	150	300	650	2000	2970	40	
				55	150	300	650	1650	3600	50	
				55	89	255	600	1390	3230	70	
				24	61	116	345	740	1830	100	

(1) 传动比 ($i=n_1/n_2$)
(2) 减速机级数
(3) 利用 NCP 针对应用进行专门设计 – www.neugart.com
(4) 参考夹紧系统直径
(5) 允许 1000 次

(1) Ratios ($i=n_1/n_2$)
(2) Number of stages
(3) Application specific configuration with NCP – www.neugart.com
(4) Based on reference clamping system diameter
(5) Permitted 1000 times



图示为带平键的 PSNpro090 / 1 级 / 光滑输出轴 / 14 mm 锁紧系统 / 适配电机法兰 – 2 件式 – 圆形通用法兰 / B5 电机法兰类型
Drawing corresponds to a PSNpro090 / 1-stage / smooth output shaft / 14 mm clamping system / motor adaptation – 2-part – round universal flange / B5 flange type motor

(1) 具体尺寸视电机/减速机法兰而定。可以在 www.neugart.com 下 Tec Data Finder。中针对每个电机适配电机特有的输入法兰几何尺寸。
(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

几何尺寸(2)	Geometry(2)			PSN055	PSN070	PSN090	PSN115	PSN142	PSN190	p(3)	Code
输出端安装孔节圆直径	Pitch circle diameter output	D1		63	68 - 75	85	120	165	215		
输出端安装孔直径	Mounting bore output	D2	4x	5,5	5,5	6,5	9,0	11,0	13,5		
输出轴直径	Shaft diameter output	D3	k6	12	16	22	32	40	55		
输出轴轴肩直径	Shaft collar output	D4		16	21,5	31,5	41,5	57,5	76,5		
输出端定位凸台直径	Centering diameter output	D5	g7	50	60	70	90	130	160		
输出法兰对角线尺寸	Diagonal dimension output	D7		74	92	100	140	185	240		
输出端法兰外方	Flange cross section output	Q1	■	55	70	80	110	142	190		
最小总长	Min. total length	L1		103,5	134	157	202,5	261,5	310,5	1	
				127	162,5	179	224,5	292,5	355,5	2	
箱体长度	Housing length	L2		43	60,5	69,5	71	101,5	130,5	1	
				66,5	89	98	104,5	139	194	2	
输出端定位凸台深度	Centering depth output	L7		12	19	17,5	28	28	28		
输出端法兰厚度	Flange thickness output	L8		6	7	8	10	12	15		
中心孔（DIN 332，DR 形）	Center hole (DIN 332, type DR)	C		M4x10	M5x12,5	M8x19	M12x28	M16x36	M20x42		
电机轴直径 j6/k6	Motor shaft diameter j6/k6	D20		更多信息见第 191/192 页 More information on page 191/192							
输入端锁紧系统直径	Clamping system diameter input	D26		更多信息见第 94 页 More information on page 94							
带平键的输出轴 (DIN 6885-1)	Output shaft with feather key (DIN 6885-1)			A 4x 4x18	A 5x 5x25	A 6x 6x28	A 10x 8x50	A 12x 8x65	A 16x 10x70		A
平键宽度 (DIN 6885-1)	Feather key width (DIN 6885-1)	B1		4	5	6	10	12	16		
含平键在内的轴高 (DIN 6885-1)	Shaft height including feather key (DIN 6885-1)	H1		13,5	18	24,5	35	43	59		
输出轴轴长	Shaft length output	L3		36	48	56	88	110	112		
到轴肩的距离	Shaft length from shoulder	L4		23	28	36	58	80	82		
平键长度	Feather key length	L5		18	25	28	50	65	70		
到轴端的距离	Distance from shaft end	L6		2	2	4	4	8	6		
光滑输出轴	Smooth output shaft										B
输出轴轴长	Shaft length output	L3		36	48	56	88	110	112		
到轴肩的距离	Shaft length from shoulder	L4		23	28	36	58	80	82		
花键输出轴 (DIN 5480)	Splined output shaft (DIN 5480)			-	W16x0,8 x18x6m	W22x1,25 x16x6m	W32x1,25 x24x6m	W40x2,0 x18x6m	W55x2,0 x26x6m		C
花键或键槽的长度	Width of gearing	L_v		-	15	15	15	20	22		
输出轴轴长	Shaft length output	L3		-	46	46	56	70	71,5		
到轴肩的距离	Shaft length from shoulder	L4		-	26	26	26	40	41,5		

(2) 所有的尺寸单位为mm
(3) 减速机级数

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