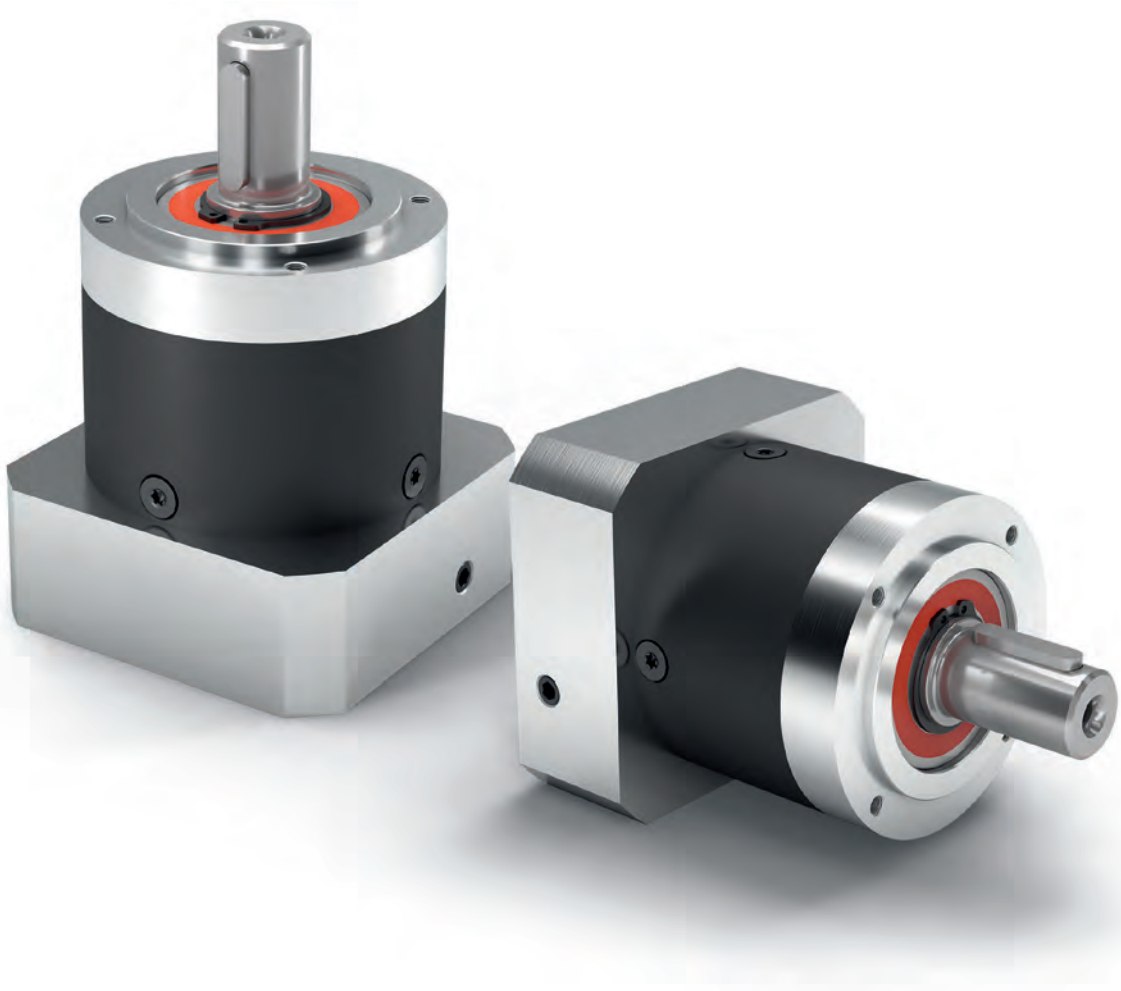


PLE

其优势在于：此款行星减速机即使在最高转速时也能达到最高效率

PLE是我们的性价比奇迹。它的重量很轻，性能强大，轴承计降低了振动，并且润滑效果得到了优化，因此适合高强度的生产周期。它是真正的动力单元，价格公道且富有吸引力。

Unparalleled: This planetary gearbox maintains its maximum efficiency even at the highest speeds

The **PLE** is our price/performance wonder. It is particularly lightweight, extremely powerful and yet still suitable for demanding production cycles thanks to its low-friction bearing concept and optimized lubrication. A real power-house at an attractive and fair price.

周期性扭矩
Cyclic torque **5 - 800 Nm**

径向力
Radial force **200 - 5000 N**

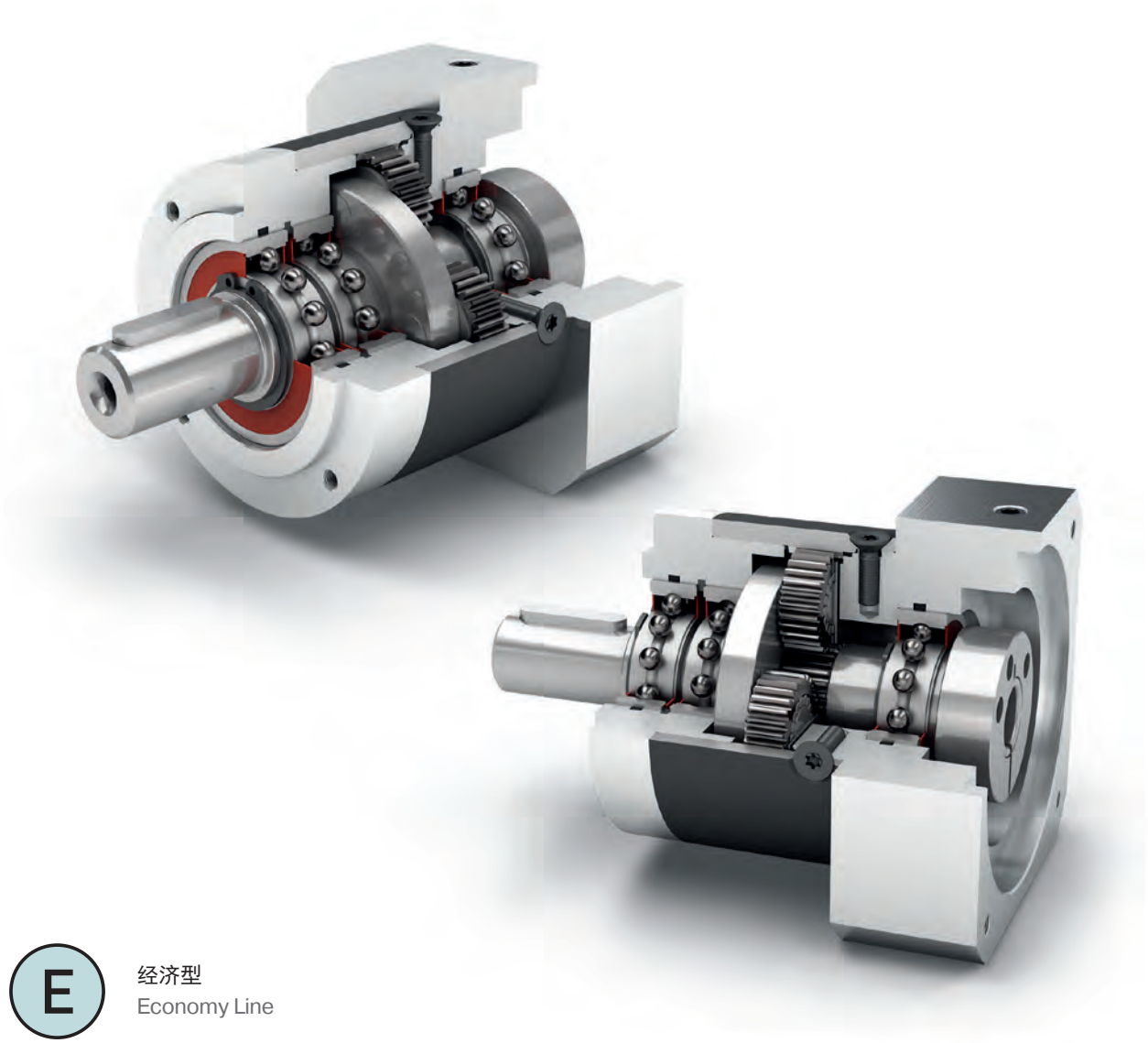
轴向力
Axial force **240 - 11000 N**

回程间隙
Torsional backlash **6 - 22 arcmin**

防护等级
Protection class **IP54**

结构尺寸
Frame sizes

40	60	80	120	160



经济型
Economy Line

同轴减速机
Coaxial gearbox

直齿
Spur gear

低摩擦深沟球轴承
Low-friction deep groove ball bearings

行星齿轮架
Planet carrier in disc design

旋转方向 同方向
Equidirectional rotation

圆形输出法兰
Round type output flange

多样的传动比 (i=3 至 i=512)
High ratio variety i=3 up to i=512

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			PLE040	PLE060	PLE080	PLE120	PLE160	p(1)
	使用寿命(2)	Service life(2)	L_h	h	20.000					
	有效系数(3)	Efficiency(3)	η	%	98					1
					97					2
					92					3
	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			IP54					
S	标准润滑	Standard lubrication			润滑脂（终生润滑）/ Grease (lifetime lubrication)					
F	食品级润滑	Food grade lubrication			润滑脂（终生润滑）/ Grease (lifetime lubrication)					
	安装位置	Installation position			任意 / Any					
S	标准回程间隙	Standard backlash	φ	arcmin	< 15	< 10	< 7	< 7	< 6	1
					< 19	< 12	< 9	< 9	< 9	2
					< 22	< 15	< 11	< 11	-	3
	抗扭刚度(3)	Torsional stiffness(3)	C_{2t}	Nm / arcmin	0,7 - 1,0	2,0 - 2,7	7,2 - 10,0	15,5 - 21,0	57,5 - 69,0	1
					0,8 - 1,0	2,3 - 2,8	7,9 - 10,4	17,5 - 22,0	61,0 - 75,0	2
					0,8 - 1,0	2,3 - 2,8	7,9 - 10,5	17,5 - 22,0	-	3
	减速机重量(3)	Gearbox weight(3)	m	kg	0,4	0,9	2,1 - 2,2	5,6 - 5,9	17,3 - 17,5	1
					0,4 - 0,5	1,0 - 1,1	2,6 - 2,7	7,3 - 7,7	23,2 - 23,5	2
					0,5	1,2 - 1,3	3,0 - 3,2	9,1 - 9,5	-	3
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)	58	58	60	65	70	

输出轴载荷	Output shaft loads			PLE040	PLE060	PLE080	PLE120	PLE160	p(1)
最大径向力	Maximum radial force	$F_{r\,max}$	N	200	700	1000	2000	5000	
最大轴向力	Maximum axial force	$F_{a\,max}$		240	800	1450	3800	11000	
最大倾斜力矩	Maximum tilting moment	$M_{K\,max}$	Nm	6	25	41	115	474	

输入特性	Input characteristics			PLE040	PLE060	PLE080	PLE120	PLE160	p(1)
输入端锁紧系统直径（代码）	Clamping system diameter input (Code)	D26	mm	8 (A)	11 (C)	19 (E)(5)	24 (F)(5)	35 (G)(5)	
				9 (B)(5)	14 (D)(5)	24 (F)	35 (G)	-	
				11 (C)	19 (E)	-	-	-	
转动惯量(3)(5)	Mass moment of inertia input(3)(5)	J_1	$kgcm^2$	0,022 - 0,033	0,085 - 0,149	0,359 - 0,654	1,378 - 2,361	3,726 - 11,999	1
				0,022 - 0,032	0,086 - 0,142	0,365 - 0,613	1,414 - 2,288	3,502 - 10,087	2
				0,022 - 0,031	0,086 - 0,096	0,365 - 0,590	1,413 - 2,196	-	3
平均空载扭矩(3)(5)	Average idle torque(3)(5)	T_0	Nm	0,05	0,10 - 0,15	0,20 - 0,35	0,50 - 1,05	1,10 - 2,90	1
				0,05	0,10	0,15 - 0,25	0,45 - 0,80	0,80 - 1,80	2
				0,05	0,10	0,15 - 0,20	0,45 - 0,75	-	3
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}		4,5	12	16	40	140	

(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			PLE040	PLE060	PLE080	PLE120	PLE160	i(1)	p(2)
周期性扭矩(3)(4)	Cyclic torque(3)(4)	T_{2Z}	Nm	11	28	85	115	400	3	1
				15	38	115	155	450	4	
				14	40	110	195	450	5	
				8,5	25	65	135	-	7	
				6	18	50	120	450	8	
				5	15	38	95	-	10	
				16,5	44	130	210	-	9	2
				20	44	120	260	800	12	
				18	44	110	230	700	15	
				20	44	120	260	800	16	
				20	44	120	260	800	20	
				18	40	110	230	700	25	
				20	44	120	260	800	32	
				18	40	110	230	700	40	
				7,5	18	50	120	450	64	
				20	44	120	260	-	60	3
				20	44	120	260	-	80	
				20	44	120	260	-	100	
				18	44	110	230	-	120	
				20	44	120	260	-	160	
				18	40	110	230	-	200	
				20	44	120	260	-	256	
				18	40	110	230	-	320	
				7,5	18	50	120	-	512	
最大扭矩(3)(4)	Maximum torque(3)(4)	T_{2max}	Nm	11	44	105	184	450	3	1
				24	60	140	245	600	4	
				22	64	175	310	720	5	
				13,5	40	104	215	-	7	
				9,5	28	80	192	720	8	
				8	24	60	152	-	10	
				16,5	70	205	335	-	9	2
				32	70	192	415	1280	12	
				28	70	176	365	1120	15	
				32	70	192	415	1280	16	
				32	70	192	415	1280	20	
				28	64	176	365	1120	25	
				32	70	192	415	1280	32	
				28	64	176	365	1120	40	
				12	28	80	192	720	64	
				32	70	192	415	-	60	3
				32	70	192	415	-	80	
				32	70	192	415	-	100	
				28	70	176	365	-	120	
				32	70	192	415	-	160	
				28	64	176	365	-	200	
				32	70	192	415	-	256	
				28	64	176	365	-	320	
				12	28	80	192	-	512	

(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			PLE040	PLE060	PLE080	PLE120	PLE160	i(1)	p(2)
连续扭矩(3)	Continuous torque(3)	T_{2D}	Nm	3,5	22	37	97	340	3	1
				12,5	23	82	131	380	4	
				11,5	24	84	165	380	5	
				7	19,5	55	114	-	7	
				5	15	42	102	380	8	
				4	12,5	32	80	-	10	
				10,5	30	87	178	-	9	2
				14,5	32	102	220	680	12	
				15	35	93	195	590	15	
				17	35	102	220	680	16	
				17	37	102	220	680	20	
				15	34	93	195	590	25	
				17	37	102	220	680	32	
				15	34	93	195	590	40	
				6	15	42	102	380	64	
				17	37	102	220	-	60	3
				17	37	102	220	-	80	
				17	37	102	220	-	100	
				15	37	93	195	-	120	
				17	37	102	220	-	160	
				15	34	93	195	-	200	
				17	37	102	220	-	256	
				15	34	93	195	-	320	
				6	15	42	102	-	512	

输入转速	Input speeds			PLE040	PLE060	PLE080	PLE120	PLE160	i(1)	p(2)
连续输入转速(3)(4)	Continuous input speed(3)(4)	n_{1D}	min^{-1}	5000	4500	4000	2150	1250	3	1
				5000	4500	3750	2300	1400	4	
				5000	4500	4000	2500	1700	5	
				5000	4500	4000	3500	-	7	
				5000	4500	4000	3500	2200	8	
				5000	4500	4000	3500	-	10	
				5000	4500	4000	2650	-	9	2
				5000	4500	4000	2750	1850	12	
				5000	4500	4000	3000	2000	15	
				5000	4500	4000	2850	1950	16	
				5000	4500	4000	3350	2300	20	
				5000	4500	4000	3500	2500	25	
				5000	4500	4000	3500	2900	32	
				5000	4500	4000	3500	3000	40	
				5000	4500	4000	3500	3000	64	
				5000	4500	4000	3500	-	60	3
				5000	4500	4000	3500	-	80	
				5000	4500	4000	3500	-	100	
				5000	4500	4000	3500	-	120	
				5000	4500	4000	3500	-	160	
				5000	4500	4000	3500	-	200	
				5000	4500	4000	3500	-	256	
				5000	4500	4000	3500	-	320	
				5000	4500	4000	3500	-	512	
最高机械输入转速(3)	Max. mechanical input speed(3)	n_{1max}	min^{-1}	18000	13000	7000	6500	6500		

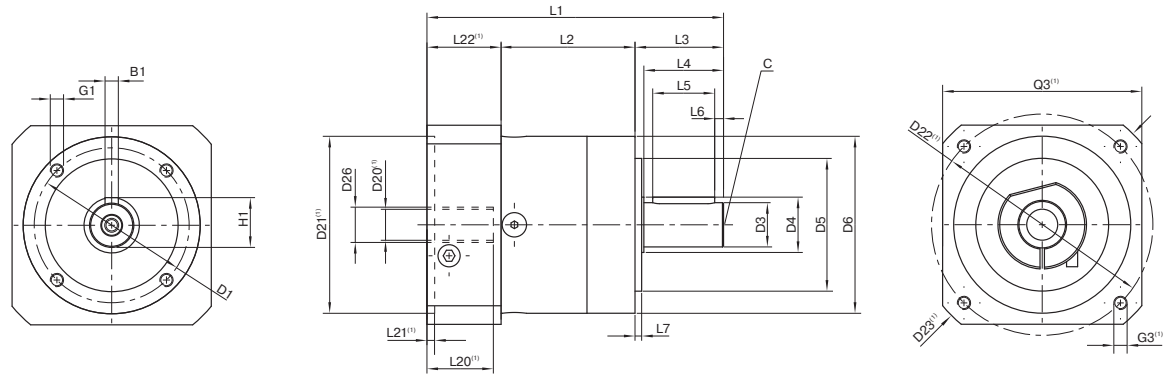
(1) 传动比 ($i=n_1/n_2$)
(2) 减速机级数
(3) 利用 NCP 针对应用进行专门设计 – www.neugart.com
(4) 参考夹紧系统直径

(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			PLE040	PLE060	PLE080	PLE120	PLE160	i(1)	p(2)
急停扭矩(3)(4)	Emergency stop torque(3)(4)	T_{2Stop}	Nm	22	60	150	375	800	3	1
				30	80	200	500	900	4	
				36	80	220	500	900	5	
				26	80	178	340	-	7	
				27	80	190	380	900	8	
				27	75	200	480	-	10	
				33	88	260	500	-	9	2
				40	88	240	520	1600	12	
				36	88	220	500	1400	15	
				40	88	240	520	1600	16	
				40	88	240	520	1600	20	
				36	80	220	500	1400	25	
				40	88	240	520	1600	32	
				36	80	220	500	1400	40	
				27	80	190	380	900	64	
				40	88	220	520	-	60	3
				40	88	240	520	-	80	
				40	88	240	520	-	100	
				36	88	220	500	-	120	
				40	88	240	520	-	160	
				36	80	220	500	-	200	
				40	88	240	520	-	256	
				36	80	220	500	-	320	
				27	80	190	380	-	512	

(1) 传动比 ($i=n_1/n_2$)
(2) 减速机级数
(3) 允许 1000 次
(4) 参考夹紧系统直径

(1) Ratios ($i=n_1/n_2$)
(2) Number of stages
(3) Permitted 1000 times
(4) Based on reference clamping system diameter



图示为带平键的 PLE060 / 1 级 / 附带平键的输出轴 / 11 mm 锁紧系统 / 适配电机法兰 - 单一法兰 / B5 电机法兰类型
Drawing corresponds to a PLE060 / 1-stage / output shaft with feather key / 11 mm clamping system / motor adaptation – one part / 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			PLE040	PLE060	PLE080	PLE120	PLE160	p(3)	Code
输出端安装孔节圆直径	Pitch circle diameter output	D1		34	52	70	100	145		
输出轴直径	Shaft diameter output	D3	h7	10	14	20	25	40		
输出轴轴肩直径	Shaft collar output	D4		12	17	25	35	55		
输出端定位凸台直径	Centering diameter output	D5	h7	26	40	60	80	130		
箱体直径	Housing diameter	D6		40	60	80	115	160		
安装螺纹 x 深度	Mounting thread x depth	G1	4x	M4x6	M5x8	M6x10	M10x16	M12x20		
最小总长	Min. total length	L1		88,5	106	133,5	176,5	255,5	1	
				106,5	118,5	150,5	204	305	2	
				114	131	168,5	231,5	-	3	
箱体长度	Housing length	L2		39	47	60	74	104	1	
				51,5	59,5	78	102	153,5	2	
				64,5	72	95	129,5	-	3	
输出轴轴长	Shaft length output	L3		26	35	40	55	87		
输出端定位凸台深度	Centering depth output	L7		2	3	3	4	5		
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 20 页 More information on page 20						
带平键的输出轴 (DIN 6885-1)	Output shaft with feather key (DIN 6885-1)			A 3x3x18	A 5x5x25	A 6x6x28	A 8x7x40	A 12x8x65		A
平键宽度 (DIN 6885-1)	Feather key width (DIN 6885-1)	B1		3	5	6	8	12		
含平键在内的轴高 (DIN 6885-1)	Shaft height including feather key (DIN 6885-1)	H1		11,2	16	22,5	28	43		
到轴肩的距离	Shaft length from shoulder	L4		23	30	36	50	80		
平键长度	Feather key length	L5		18	25	28	40	65		
到轴端的距离	Distance from shaft end	L6		2,5	2,5	4	5	8		
中心孔 (DIN 332,DR 形)	Center hole (DIN 332, type DR)	C		M3x9	M5x12,5	M6x16	M10x22	M16x36		
光滑输出轴	Smooth output shaft									B
到轴肩的距离	Shaft length from shoulder	L4		23	30	36	50	80		

(2) 所有的尺寸单位为 mm
(3) 减速机级数

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