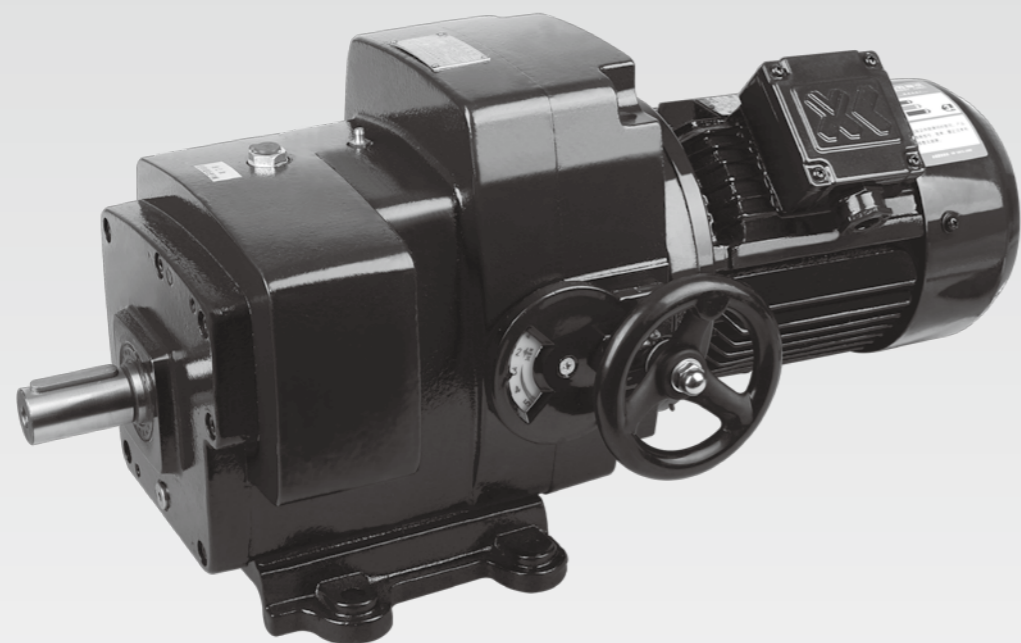


SPT 系列锥盘环盘减变速机

SPT Series of Ring-Cone Disc Reducer & Variator



■ 概述 | Introduction

SPT 系列锥盘环盘减变速机是我公司不断创新、完善的专利产品，在性能及外观方面有了很大的提高，具有以下特点：

- 设计独特、结构合理：通过自动加压机构，使原动机功耗正比于外界负荷变化，节能效果好。
- 运动平稳、低噪音、无需润滑，由于摩擦副采用金属~非金属元件，因而噪音低，而且在干式吸震状态下工作，完全免除了漏油引起的内外部污染。
- 高效耐用：采用我公司研制成功的特种摩擦材料，有特大的摩擦系数和耐用度、输出特征基本呈恒功率特性。中高速时效率达 85% 以上。
- 维护保养、操作使用简单方便，性能稳定，可靠性高，外观美观，重量轻。

SPT 系列锥盘环盘减变速机有上述优点，所以广泛应用于食品、制药、化工、工程、塑料、印刷、电子等行业的机械传动装置上。

The SPT series cone ring-disk variable speeds gearing is a patented product in our company with constantly innovation and perfection, has the greatly improved in terms of performance and appearance, and has the following characteristics:

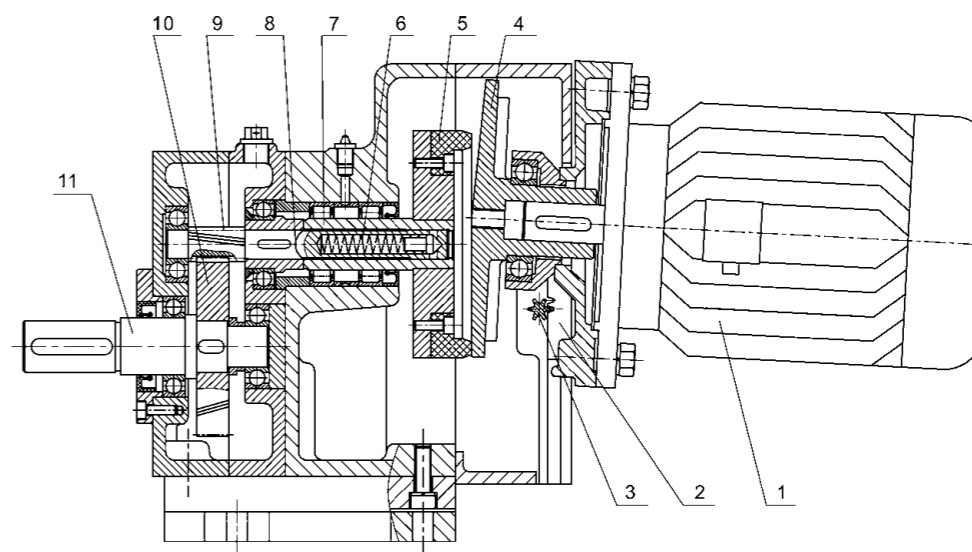
- Unique design and proper structure;it makes the power consumption of the prime motor which is in direct ratio with the external ,load change correspondingly by means of auto-pressed mechanism, resulting in excellent effect on energy saving.
- Stable operation, low noise,without lubrication needed;as the rubbing pair is made of metal ~ non-metal material, it is featured by low noise and totally free from internal or external pollution caused by oil leakage when working in dry and anti-vibration condition.
- High efficiency and durability; Special friction material developed by our company with extra high friction coefficient, high durability and constant output power is applied. Its efficiency at medium and high speed reaches 85% or above.
- Easy to maintain and operate with stable performance, high reliability ,good appearance and light in weight.

The SPT series cone ring-disk variable speeds gearing has the above-mentioned advantages, consequently, widely used in the mechanical transmission of the food, pharmaceutical, chemical, engineering, plastics, printing, electronics , etc.

■ 工作原理 | Principle of Operation

SPT 锥盘环盘减变速机停机时，锥盘 4、环盘 5 在预压弹簧 6 的作用下，产生一定的压紧力；工作时，电动机 1 驱动锥盘 4，依靠摩擦力矩带动环盘 5 转动，通过联接齿轴 9、齿轮 10 使输出轴 11 运转。当输出轴 11 上的负载发生变化时，通过自动加压凸轮 8，使摩擦副间的压紧力和摩擦力矩正比于负载而变化，因此输出功率正比于外界负载的变化而变化；调速时，通过调速齿轮 3、齿条 2 使锥盘 4 与环盘 5 的径向移动，改变锥盘 4 与环盘 5 的接触工作半径，从而实现了平稳的无级调速。

When SPT ring-cone disc reducer & variator stops working,cone disc 4 and ring disc 5 will produce some compressive stress under the effectiveness of preload spring 6.when it is working,electromotor 1 drivers cone disc 4 and also drives ring disc 5 to rotate with frictional force. By connecting gear shaft 9 and gear 10,it makes output shaft 11 work.when the load on output shaft 11 changes,the compressive stress and the friction torque of the rubbing pair which are both in direct ratio with the load will change correspondingly under the effectiveness of the auto pressed cam 8 .therefore,power output which is in direct ratio with external load will change correspondingly too.when the speed is adjusted,the contact working radial movement which is caused by means of governor gear 3 and rack 2.The stable stepless speed control is finally achieved.



- | | | |
|--------------------------------------|---------------------------|----------------------------------|
| 1 — 电动机 / Electromotor | 4 — 锥盘 / Cone disc | 8 — 加压凸轮 / Pressed cam |
| 2、3 — 调速齿条，齿轮
Governor gear, rack | 5 — 环盘 / Ring disc | 9 — 联接齿轴 / Connection gear shaft |
| | 6 — 预压弹簧 / Preload spring | 10 — 齿轮 / Gear |
| | 7 — 联接套 / Joint sleeve | 11 — 输出轴 / Output shaft |

SPT 系列选型 | Options of SPT Series

使用条件及选型结果 / Conditions and results

使用条件 / Condition ○

选型结果 / Result ●

○ 负荷容量 (被驱动设备输入功率或输入转矩) Load capacity (Input power or input torque of the driven equipment)	P=0.75KW	
○ 电源电压 / Voltage	380V	
○ 电源频率 / Frequency	50Hz	
○ 要求转速 / Speed required	50r/min	
○ 负荷性质及运转时间 / Load pattern and operation time ● 确认使用系数 / Confirmation of usage coefficient ○ 启动次数 / Number of startups ● 确认启动系数 / Confirmation of startup coefficient ○ 可靠度 / Reliability ● 确认可靠度系数 / Confirmation of reliability coefficient ● 确认运行系数 / Confirmation of performance coefficient	均匀负荷, 14 小时 / 天 K _A =1.25 查表 P2 启动次数: 5 次 / 小时 K _S =1 查表 P4 可靠度: 一般 K _R =1 查表 P4 K=K _A * K _S * K _R =1.25	Uniform load, 14 hours/day K _A =1.25 check the table P2 Number of startups: 5 times/hour K _S =1 check the table P4 Reliability: normal K _R =1 check the table P4
○ 安装形式 / Type of installation ● 确认安装形式 / Confirmation of installation type	平行轴、卧装 B3 查表 P12	Parallel shaft, horizontal installation B3 check the table P12
○ 承载能力计算 / Calculation of bearing capacity ● 确认机型 / Confirmation of machine	M _{S2} =9550*P/ N _{2max} =87.3N.m M _{2min} ≥M _{S2} *K=109.2N.m 根据 N ₂ 及 M ₂ 查表 P9 得: SPT1.1-17AC Based on N ₂ and M ₂ & table P9: SPT1.1-17AC	
○ 环境条件 / Environmental condition ● 确认环境条件 / Confirmation of environmental condition	室内、环境温度 28℃ OK	
○ 电机规格 / Electromotor specification ● 确认电机规格 / Confirmation of electromotor specification	1.1KW-4、380V、50Hz 无制动器、室内型 / Without brake, for inside OK	
● 结束选型 / End of selection	SPT1.1-17AC-B3、380V、50Hz 无制动器、室内型 / Without brake, for inside	

SPT 系列型号规格表示方式 | Denotation of Specification & Dimension of SPT Series



减变速机类型 Type of reducer & variator	电机代号 Electromotor code	电机功率 Electromotor power	最低输出转速 Minimum output speed	结构形式 Structure	手轮方位 Position and direction of handwheel	安装形式 Installation form	接线盒方位 Position and direction of terminal box	数显代号 Digimatic code
锥盘环盘 减变速机 SPT Ring-cone disc reducer & variator SPT	普通 Y ₂ Normal Y ₂	见选型 参数表 See selections Parameter list	见选型 参数表 See selections Parameter list	卧式: A Horizontal: A	右手轮: C Right handwheel C	见表 P12 See the table P12	见表 P6 See the table P6	S
	防爆 B Explosion protection B							
	制动 E Brake E							
	变频 V Frequency conversion V			立式: B Vertical: B	左手轮: D Left handwheel D			
	变频制动 VE Brake by frequency conversion VE							
	多速 D Multi-speed D							
分马力 F Fractional horsepower F								

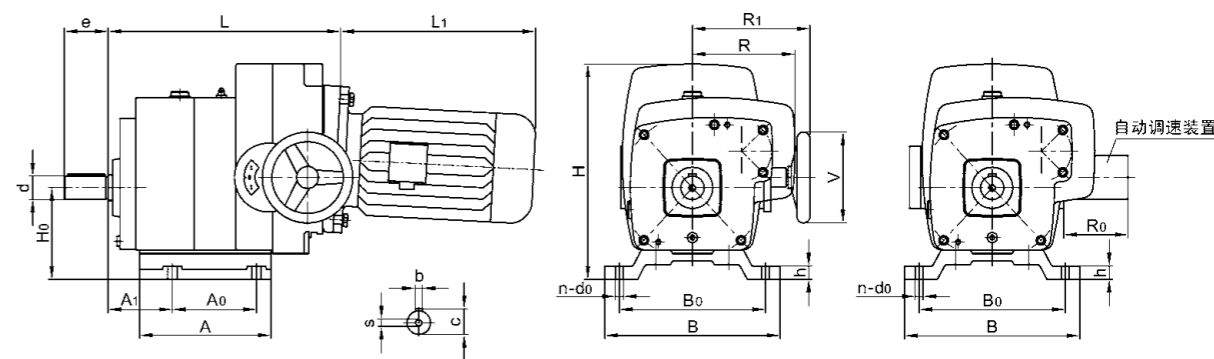
注: 如需自动控制及其它特殊要求, 请另注明。
Note: please specify automatic control or other special requirements if necessary.

SPT 系列选型参数表 | Parameter list selections of SPT Series

机座号 Housing No.	输入功率 (KW) Input power		0.37	0.55	0.75	1.1	1.5	2.2	3
	调速范围 Range of speed adjustment		许用输出转矩 N.m Permissible output torque						
0.37	I ₁	四极 4-pole	205-820	7-4	10.4-6	14-8			
		六极 6-pole	136-546	10.5-6	15.6-9	21-12			
0.55	II ₁	四极 4-pole	50-197	29-17	43-26	59-35			
		六极 6-pole	34-135	42-24	63-36	86-49			
0.75	II ₂	四极 4-pole	22-82	65-40	96-59	131-80			
		六极 6-pole	14-54	102-60	151-89	206-121			
0.75	III	四极 4-pole	12-44	120-74	179-110	244-150			
		六极 6-pole	8-30	175-107	261-160	356-218			
0.75	I	四极 4-pole	53-262		55-25	81-37	110-50	161-73	
		六极 6-pole	35-172		84-38	123-56	167-77		
1.1	II ₁	四极 4-pole	17-82		172-80	252-118	344-161	504-236	
		六极 6-pole	11-54		266-122	390-179	532-244		
1.5	II ₂	四极 4-pole	11-54		266-122	390-179	532-244	780-358	
		六极 6-pole	5-30		585-274	858-402	1170-548		
2.2	I	四极 4-pole	5-24		585-274	858-402	1170-548		
		六极 6-pole	3.5-15		836-439	1226-644	1671-878		
3	II	四极 4-pole	81-323					106-60	144-82
		六极 6-pole	54-214					159-90	
3	III	四极 4-pole	15-59					572-327	780-446
		六极 6-pole	10-39					858-495	
3	III	四极 4-pole	4-14.5					2145-1331	2925-1816
		六极 6-pole	2.5-9					3432-2145	

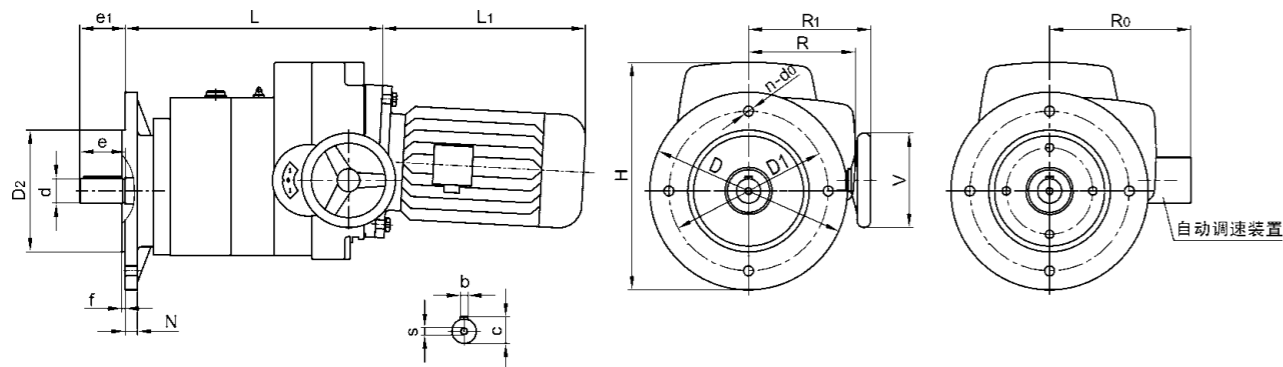
注: I、II、III 分别表示一、二、三级齿轮减速
Note: I、II、III respectively indicate the first, second and third grade of gear speed reduction

SPT-AC 系列外形及安装尺寸 | Overall & Installation Dimension of SPT-AC Series



机座号 Housing No.	安装尺寸 Installation dimension						输出轴尺寸 Output shaft dimension					外形尺寸 Overall dimension										
	H ₀	A ₁	A ₀	B ₀	n	d ₀	d	e	b	c	s	A	B	h	H	R	R ₀	R ₁	V	L	L ₁	
0.37	I	85	84	100	160	4	9	28h6	58	8	31	M8	155	184	14	225	/	/	142	125	265	参考 电机 见表 P5 See the table for electr- omotor P5
0.55	II	85	86	100	160	4	9	28h6	56	8	31	M8	155	184	14	225	85	/	142	125	271	
0.75	III	146	54	163	160	4	9	32h6	60	10	35	M10	187	184	14	225	85	/	142	125	320	
0.75	I	120	68	115	200	4	13	32h6	60	10	35	M10	180	240	18	299	/	88	165	125	302	
1.1	II	125	88	115	200	4	13	32h6	60	10	35	M10	180	240	18	299	135	88	165	125	318	
1.5	III	122	92	115	200	4	13	48h6	73	16	51.5	M12	215	240	18	330	135	88	165	125	400	
2.2	I	160	60	200	280	4	17	48h6	80	16	51.5	M12	240	320	25	396	/	88	208	160	365	
		175	40	230	280	4	17	58h6	80	18	62	M12	270	320	25	396	215	88	208	160	385	
3	III	300	69	240	280	4	17	82h6	80	24	87	M16	284	320	25	401	215	88	208	160	450	

■ SPT-BC 系列外形及安装尺寸 | Overall & Installation Dimension of SPT-BC Series



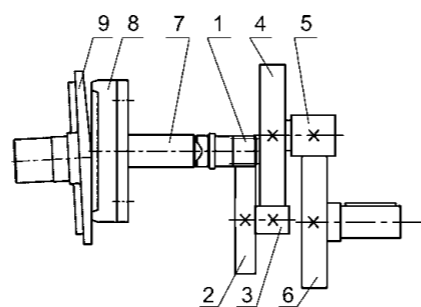
机座号 Housing No.	安装尺寸 Installation dimension					输出轴尺寸 Output shaft dimension					外形尺寸 Overall dimension										
	D1	D2	f	n	d0	d	e	b	c	s	D	N	e1	H	R	R0	R1	V	L	L1	
0.37	I	165	130h7	4	4	13	28h6	58	8	31	M8	200	12.5	50	240	/	/	142	125	271	参考电机见表 P5 See the table for electric motor P5
0.55																					
0.75																					
0.75	II	165	130h7	4	4	13	28h6	56	8	31	M8	200	12.5	50	240	/	/	142	125	276	
1.1																					
1.5																					
2.2	I	300	250h7	8	6	17	48h6	80	16	51.5	M12	350	25	69	411	/	221	208	160	396	
3																					

注：立式输出法兰孔：I 对为“米”字型，II 对为“十”字型。
Note: Vertical output flange hole: I pair is "米" style, and II pair is "+" style.

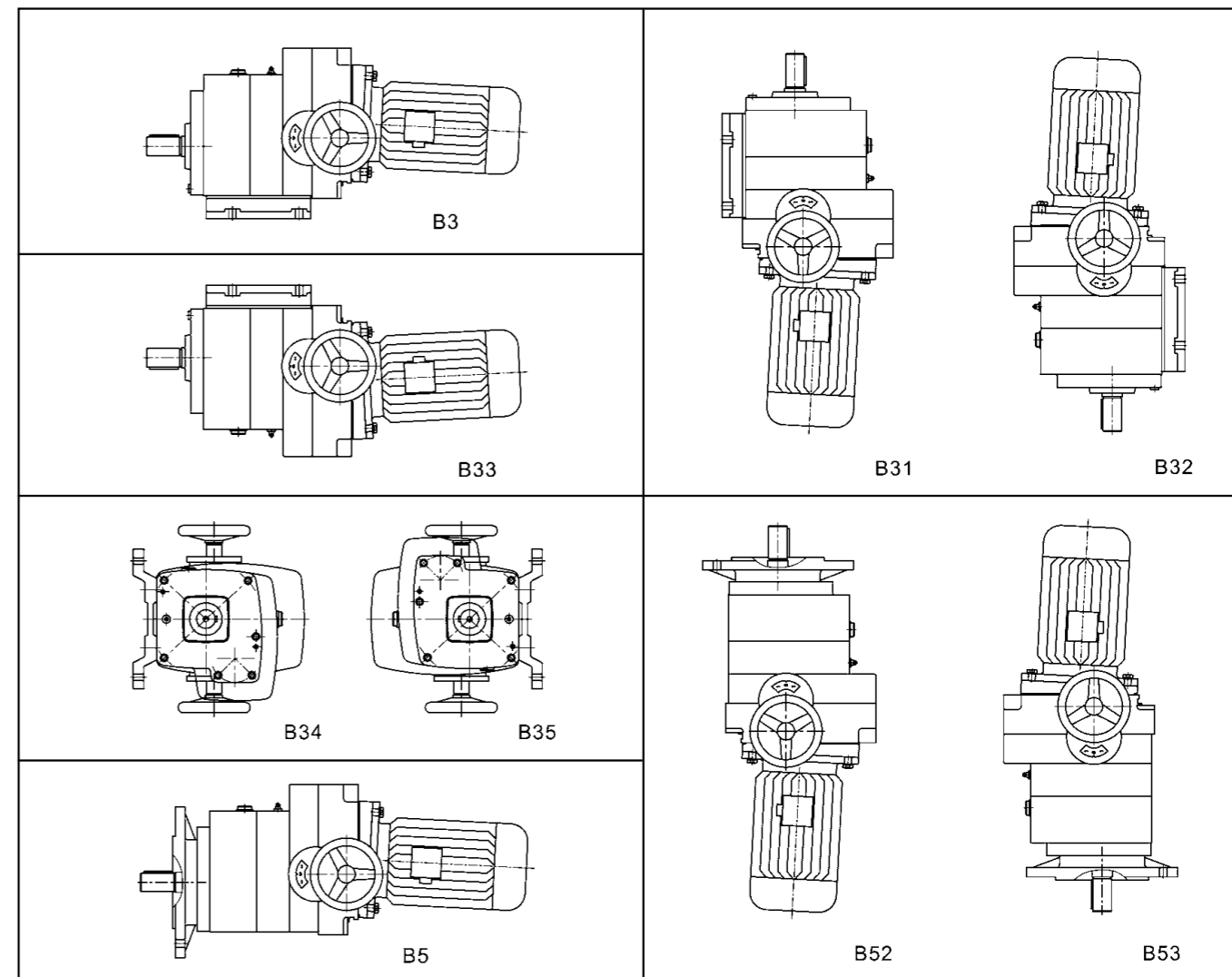
■ 易损件 | Wear Parts

级数 Grade	I	II	III
1	联接齿轴 Connection gear shaft	联接齿轴 Connection gear shaft	联接齿轴 Connection gear shaft
2	齿轮 I (齿轮 B) gear I (gear B)	齿轮 I (齿轮 B) gear I (gear B)	齿轮 I (齿轮 B) gear I (gear B)
3		齿轴 II (齿轴 A1) gear shaft II (gear A1)	齿轴 II (齿轴 A1) gear shaft II (gear A1)
4		齿轮 II (齿轮 A) gear II (gear A)	齿轮 II (齿轮 A) gear II (gear A)
5			齿轴 III (齿轴 B1) gear shaft III (gear shaft B1)
6			齿轮 III (齿轮 C) gear III (gear C)
7	联接套 (离合器套) joint sleeve (clutch lining)		
8	环盘 (摩擦盘) ring disc (friction disc)		
9	锥盘 (锥形摩擦盘) cone disc (conical friction disc)		

注：购买配件请写明型号和件号
Note: please specify the model and number of parts for purchase.



■ SPT 安装形式 | Installation Type of SPT Series



■ SPT 系列变速器润滑油量表 | Lubricating Oil Capacity Sheet of SPT Series Variable Speed Transmission

安装形式 Installation form	B3	B31	B32	B33	B34	B35	B5	B51	B52
机座号 Housing No.	润滑油量 (升) Lubricating Oil Capacity (L)								
0.37	I	0.18	0.3	0.3	0.5	0.3	0.3	0.18	0.3
0.55									
0.75									
0.75	II	0.2	0.4	0.4	0.6	0.4	0.4	0.2	0.4
1.1									
1.5									
2.2	III	0.4	0.6	0.6	0.8	0.6	0.6	0.4	0.6
3.0									
4.0									

■ SPT 系列变速器重量表 (不含电机) | Weight Table of SPT Series (Without Motor)

机座号 Housing No.	0.37	0.55	0.75	0.75	1.1	1.5	2.2	3.0	4.0
	I	II	III	I	II	III	I	II	III
重量 Weight	20 (22)	23 (25)	32	41 (45)	46 (50)	70	110 (129)	116 (125)	180

注：括号内为立式机型重量。 Note: Brackets for vertical models weight.