

上海常丰传动机械有限公司

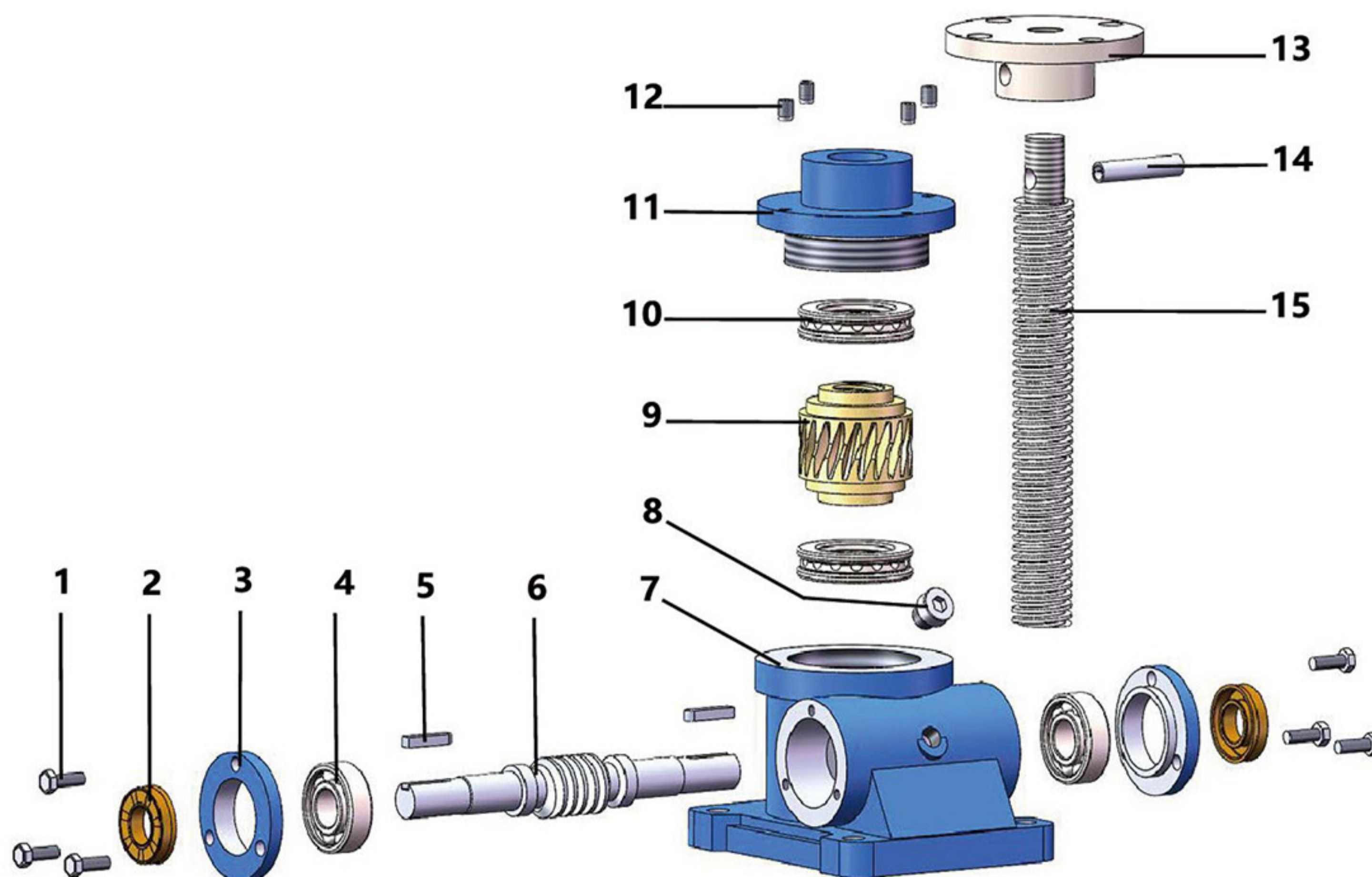
SWL系列 蜗轮丝杆升降机

WORM GEAR SCREW ELEVATOR

提供3D、CAD下载 提供选型咨询



1、SWL系列结构分解



零组件:

1.外六角螺丝

2.油封

3.蜗杆端盖

4.蜗杆轴承

5.轴键

6.蜗杆

7.机座

8.注油口螺栓

9.蜗轮

10.蜗轮轴承

11.上端盖

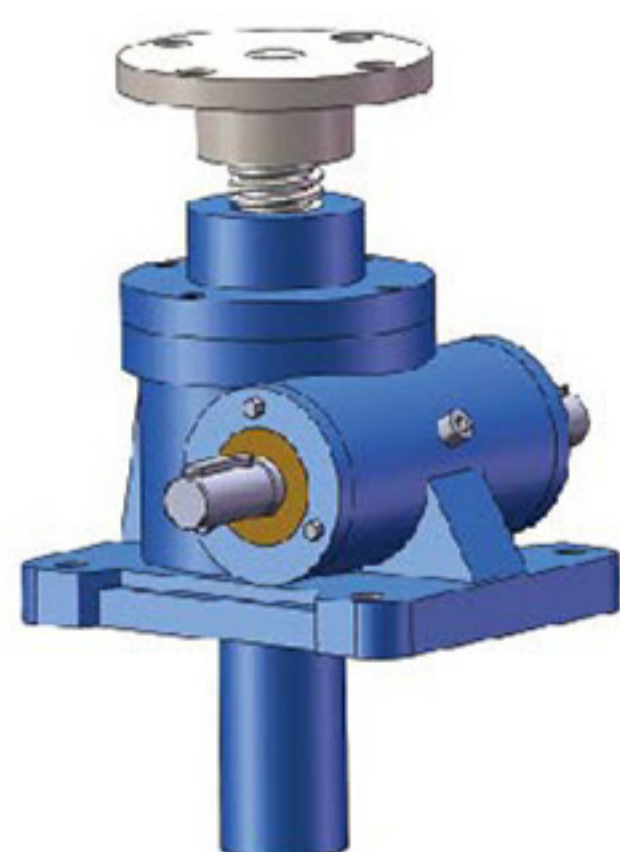
12.紧定螺丝

13.1型法兰头部

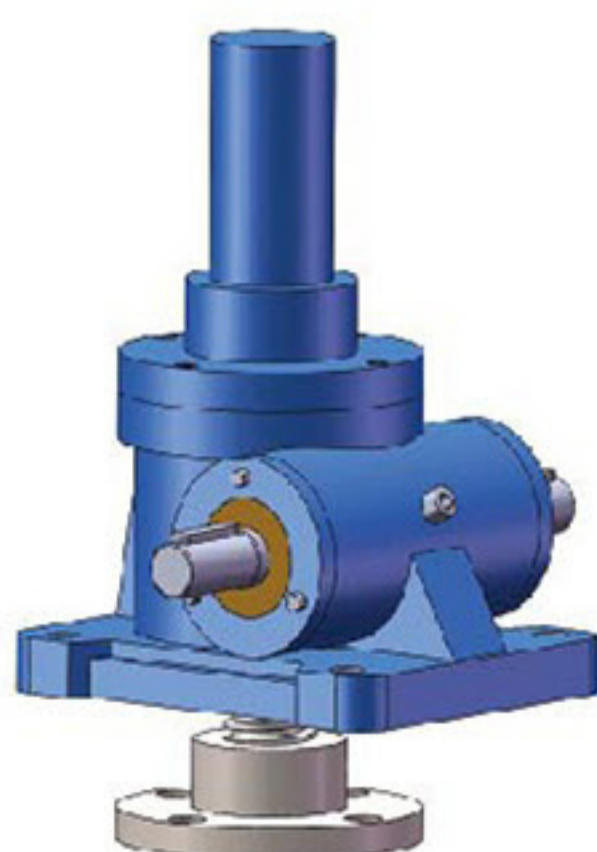
14.固定空心销

15.梯形丝杆

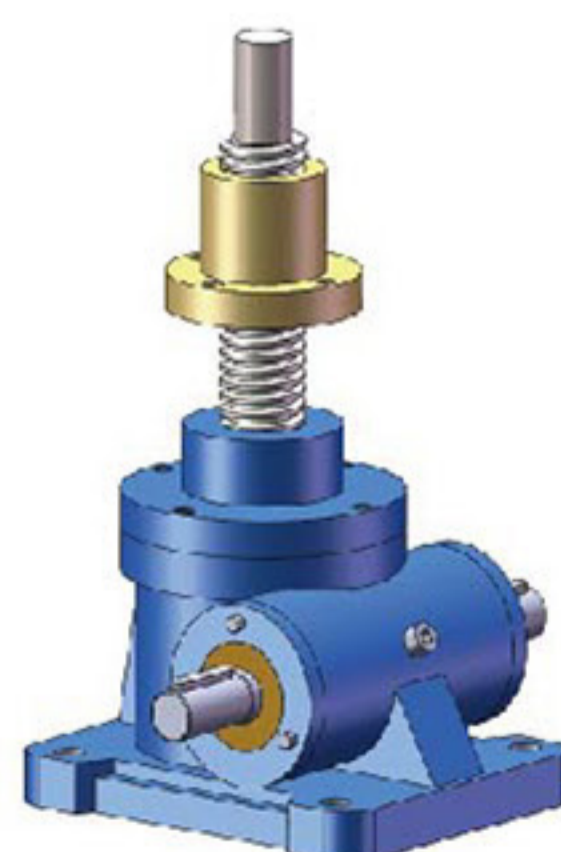
2、SWL系列结构分解



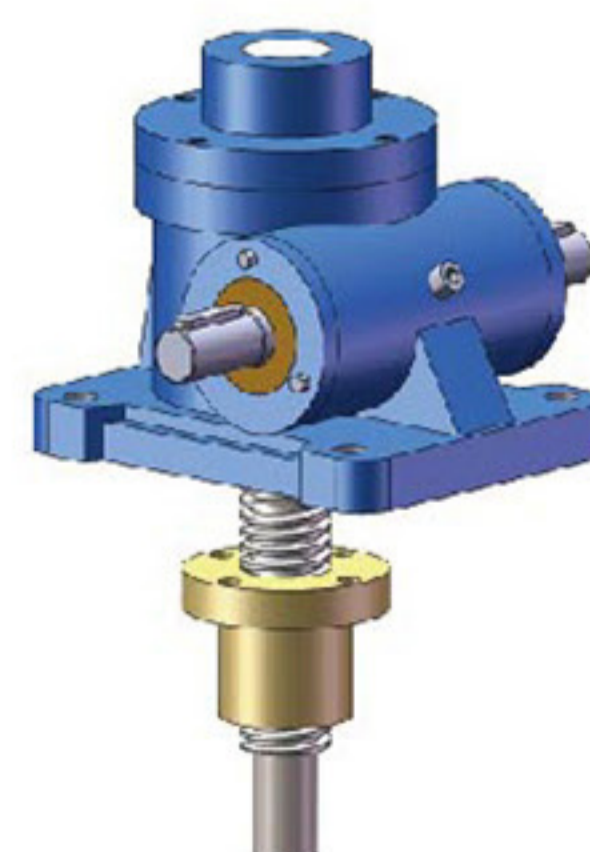
1A 基本型
1A BASIC TYPE



1B 基本型
1B BASIC TYPE



2A 基本型
2A BASIC TYPE



2B 基本型
2B BASIC TYPE

上海常丰传动机械有限公司

SHANGHAI CHANGFENG TRANSMISSION MACHINERY CO LTD

3、产品概述/SUMMARIZE

蜗轮丝杆升降机广泛应用于机械、冶金、建筑、水利设备等行业，具有起升、下降及借助辅件推进、翻转及各种高度位置调整等诸多功能。

蜗轮丝杆升降机是一种基础起重部件，具有结构紧凑、体积小、重量轻、动力源广泛、无噪音、安装方便、使用灵活、功能多、配套形式多、可靠性高、使用寿命长等许多优点。可以单台或组合使用，能按一定程序准确地控制调整提升或推进的高度，可以用电动机或其他动力直接带动，也可以手动。它有不同的结构形式和装配形式，且提升高度可按用户的要求定制。

4、SWL/SWLD梯形丝杆型-低速、低频率

BSWL/BSWLD型(梯形丝杆型)适用于低速、低频率场合，主要构成部件为:精密梯形丝杆副与高精度蜗轮蜗杆副。

- 1:价格经济、结构紧凑、操作简便、保养方便;
 - 2:低速、低频率:主要用于大负荷、低速与无需频繁工作的场所;
 - 3:保持载重:梯形丝杆具有自锁功能，即使没有制动装置也可保持载重;
- *在受到较大震动，冲击载荷时，可能会使自锁功能失效，此时请外加制动装置。

5、SWLB/SWLDB 滚珠丝杆型-高速、高频率

BSWLB/BSWLDB型(普通滚珠丝杆型)，适用于高速，高频率和高性能的装置中，主要构成部件为精密滚珠丝杆副与高精度蜗轮蜗杆副。

- 1:高效率:只需很小的驱动源,就可以产生很大的推动力;
 - 2:高速化:与梯形丝杆相比，速度有很大的提高，能轻松而高速的运转;
 - 3:使用寿命长:采用高质量的滚珠丝杆，使其工作寿命提高;
- *本身无自锁功能，需外加制动装置或选择带有制动的驱动源。

SWL

6、型号说明

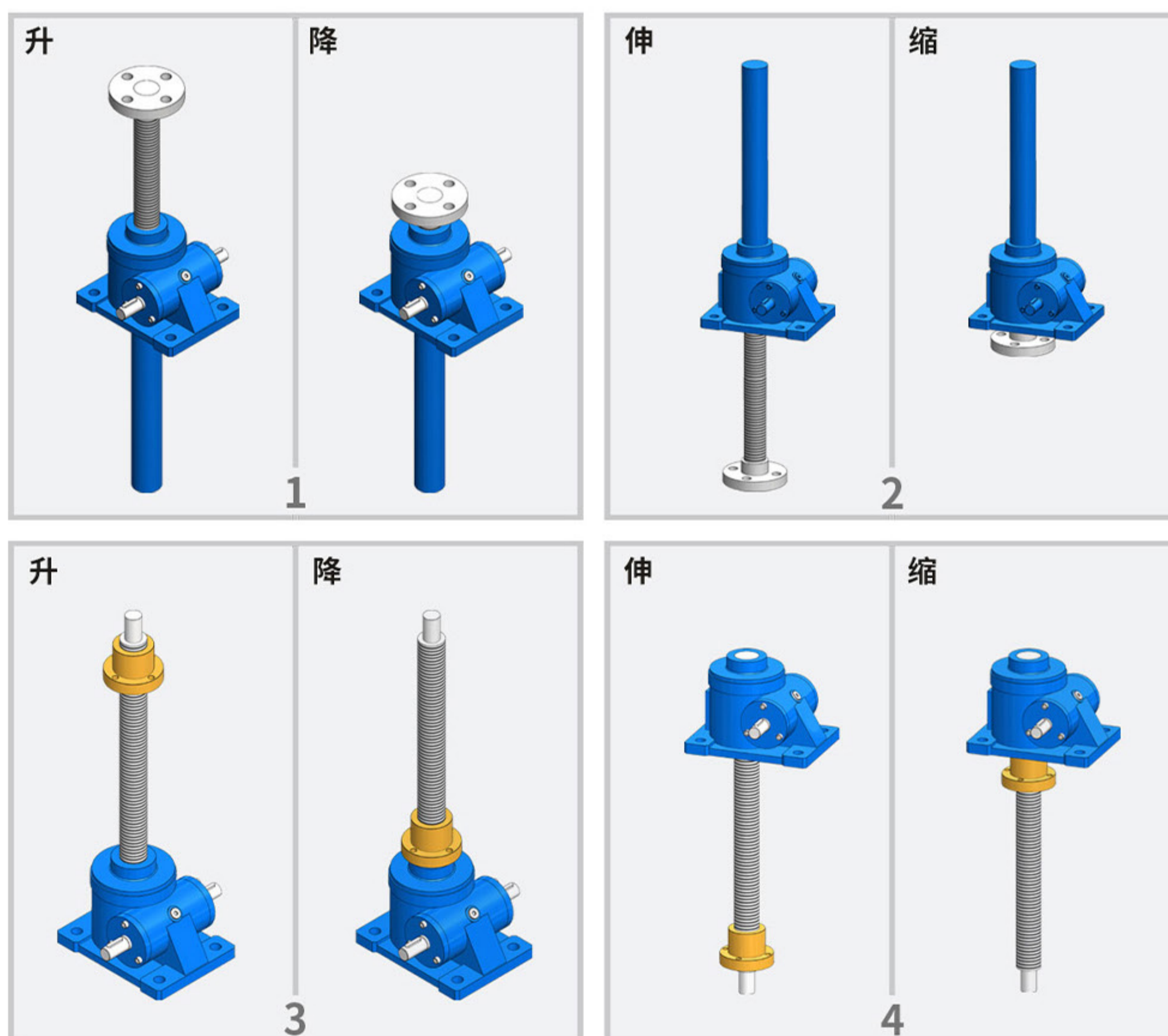
SWL	5	M	1A	II	100	A	Z	80B5
代号	型号	速比	装配形式	头部形式		轴指向	附件	电机
SWL	0.5 2.5 5 10 20 25 35 50	M 慢速比	1A 丝杆向上	I型 NG光轴	100 200 300 ... 按需订制	A B C D	F 旋转	IEC法兰 伺服法兰 步进电机座
SWLD			1B 丝杆向下	II型 FL法兰端			Z 防护管	
SWLB		N 正常速比	2A 螺母向上	III型 NF标准外螺纹			FZ旋转+防护管	
SWLDB			2B 螺母向下	IV型 TF扁头			FG 方管+方管防旋转	
		P 快速比		V型 TS球型铰接		T伸缩防尘罩(伸缩量10%-15%) 可配手工防尘罩(伸缩量5%) 下单注明		
				V型 FO插销端				IEC法兰 伺服法兰 步进电机座
				X型 非标头部				

7、升降机种类图示

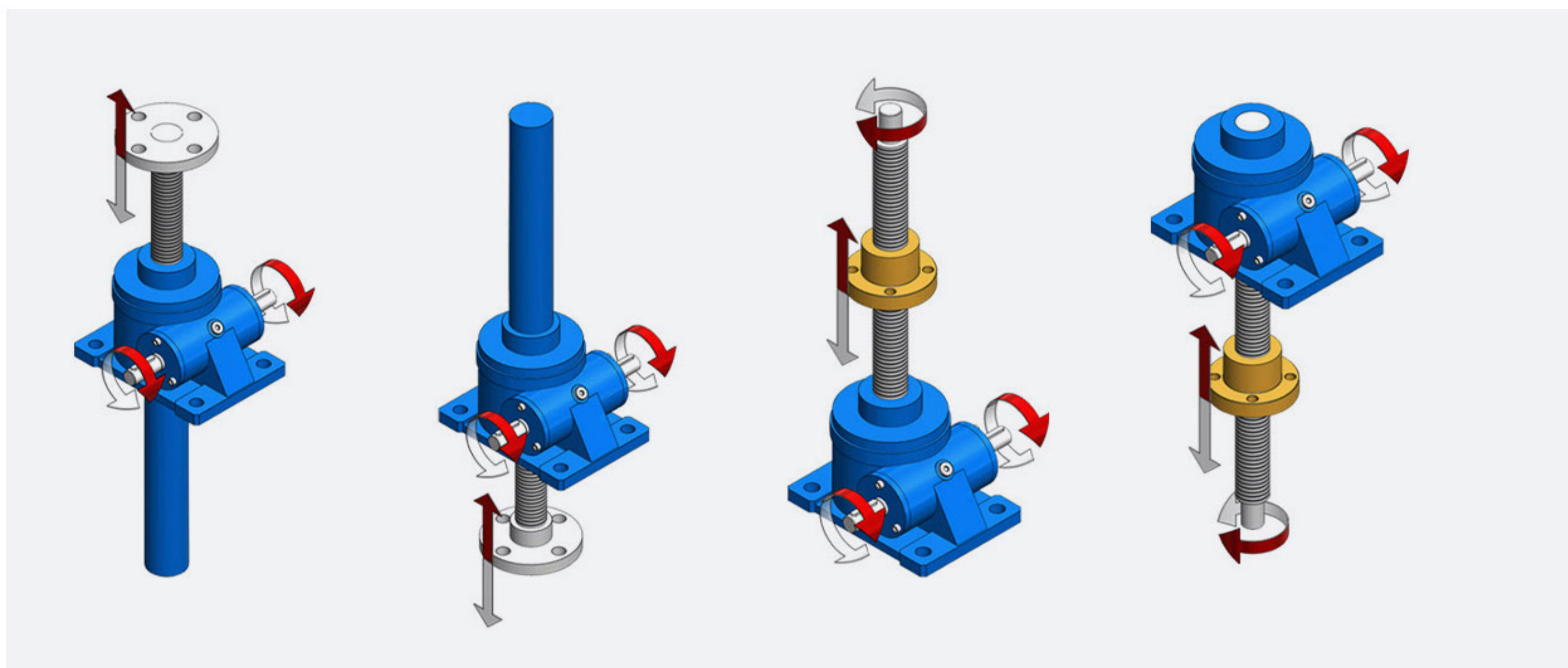
7.1- 马达安装说明



7.2- SWL运动示例图

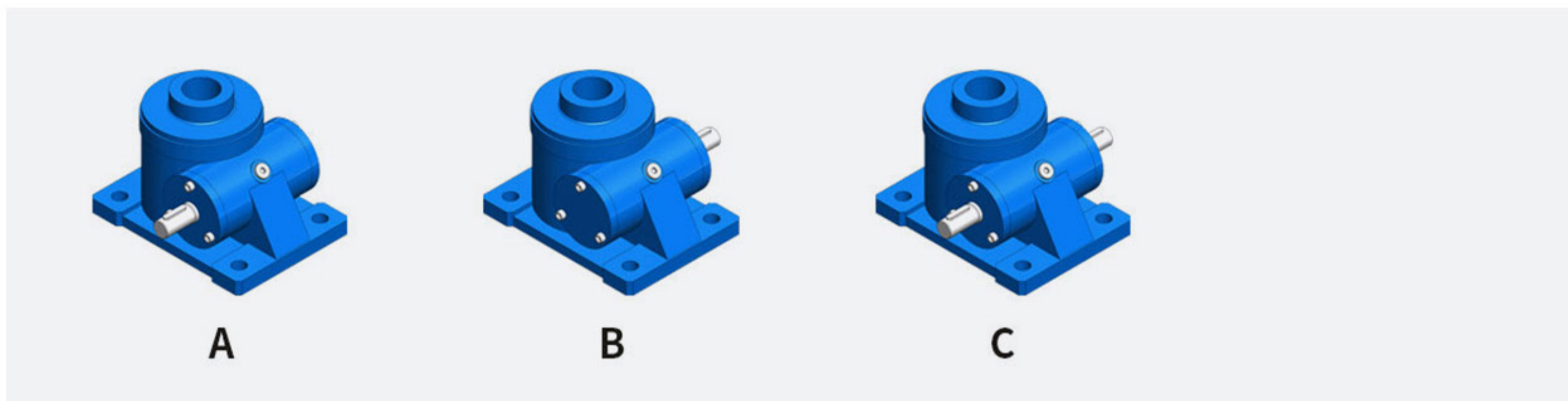


8、升降机旋转方向

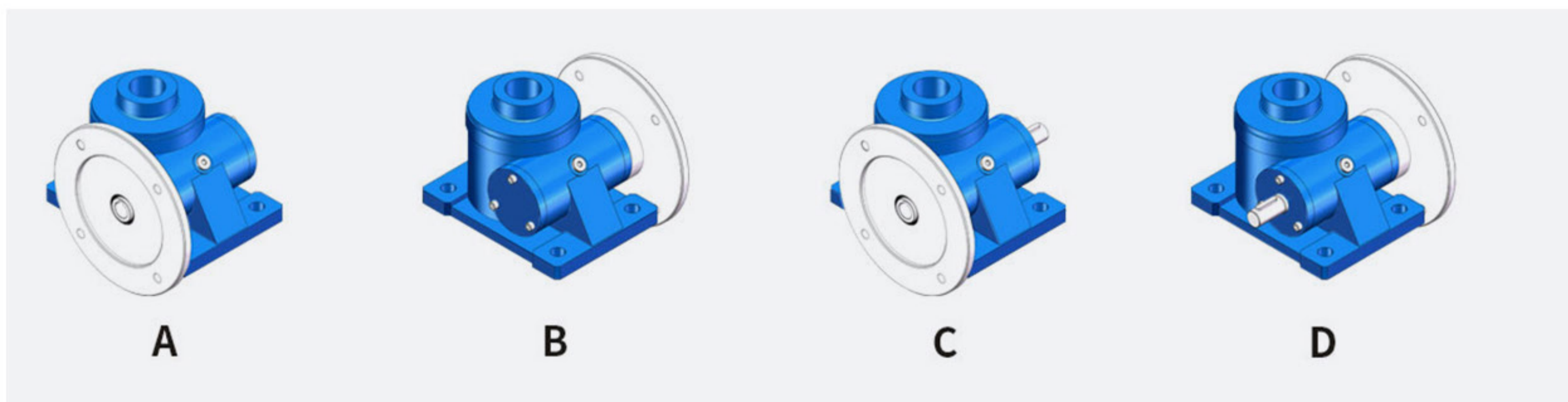


9、轴指向

9.1- SWL、SWLD 系列轴指向表示



9.2- SWLB、SWLDB 系列轴指向表示



12、升降机的选择/SELECTION OF ELEVATORS

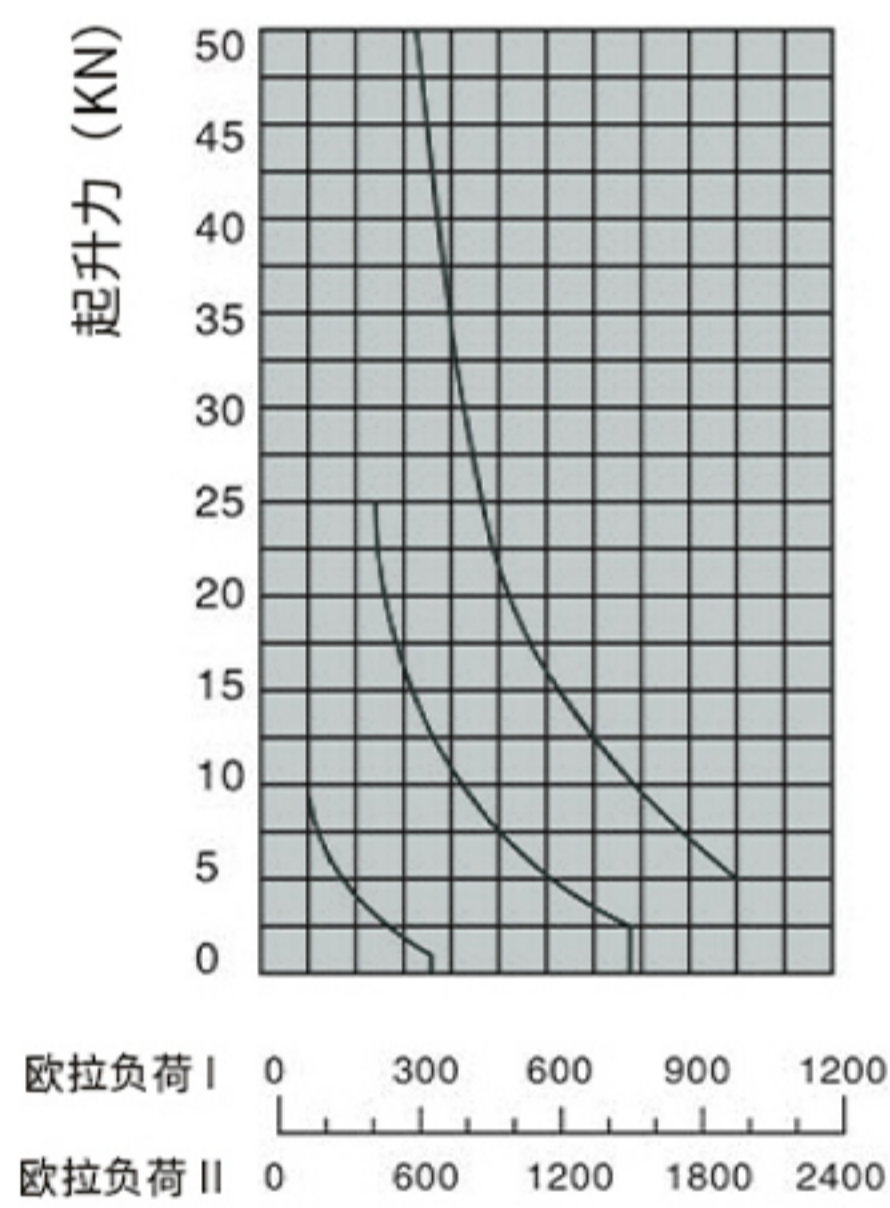
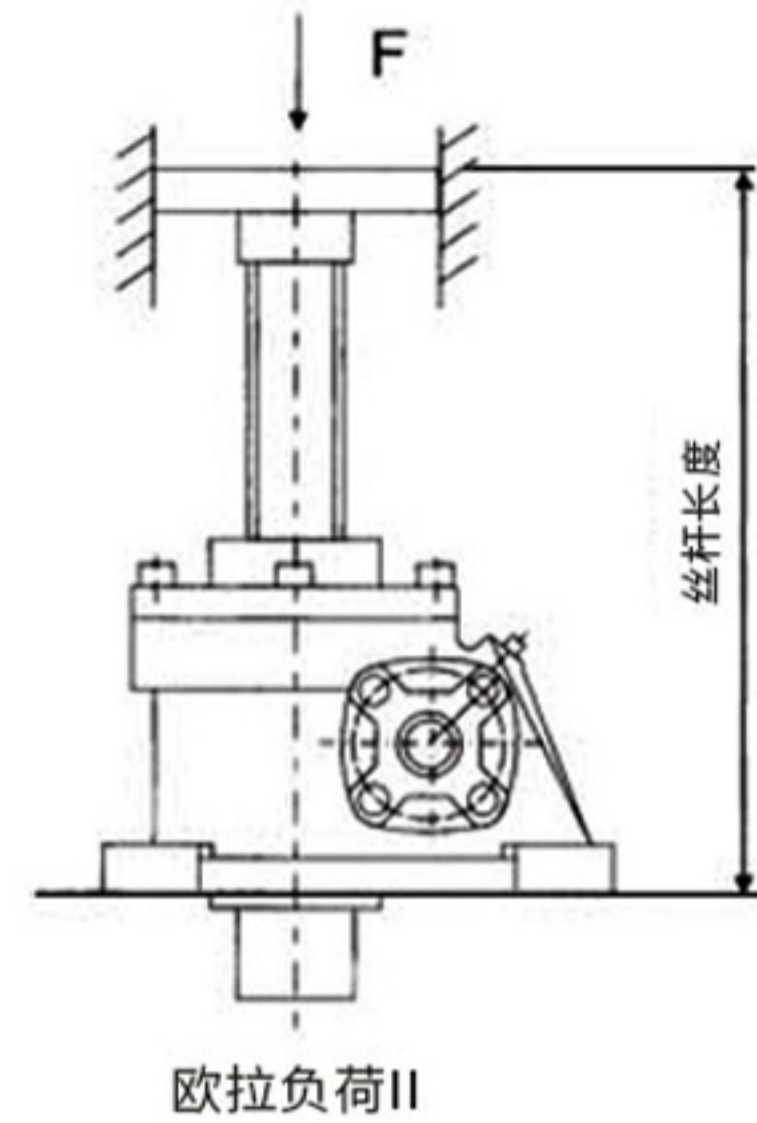
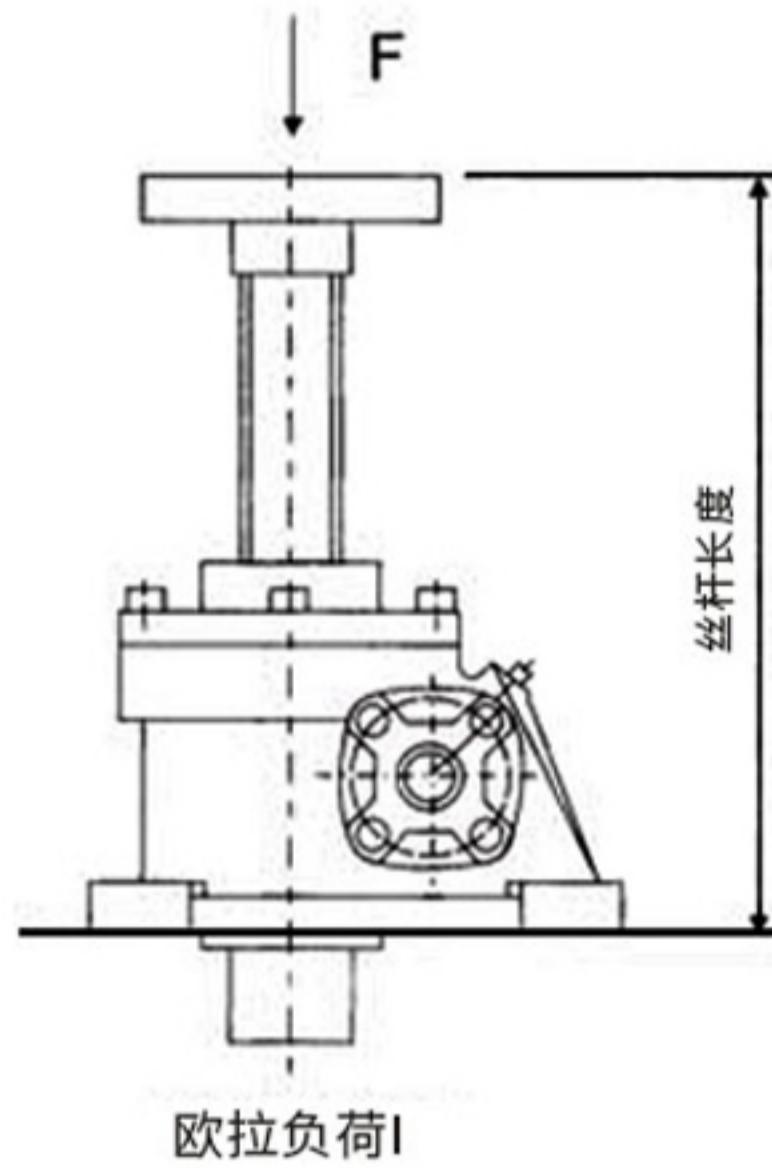


图1 丝杆长度 (mm)

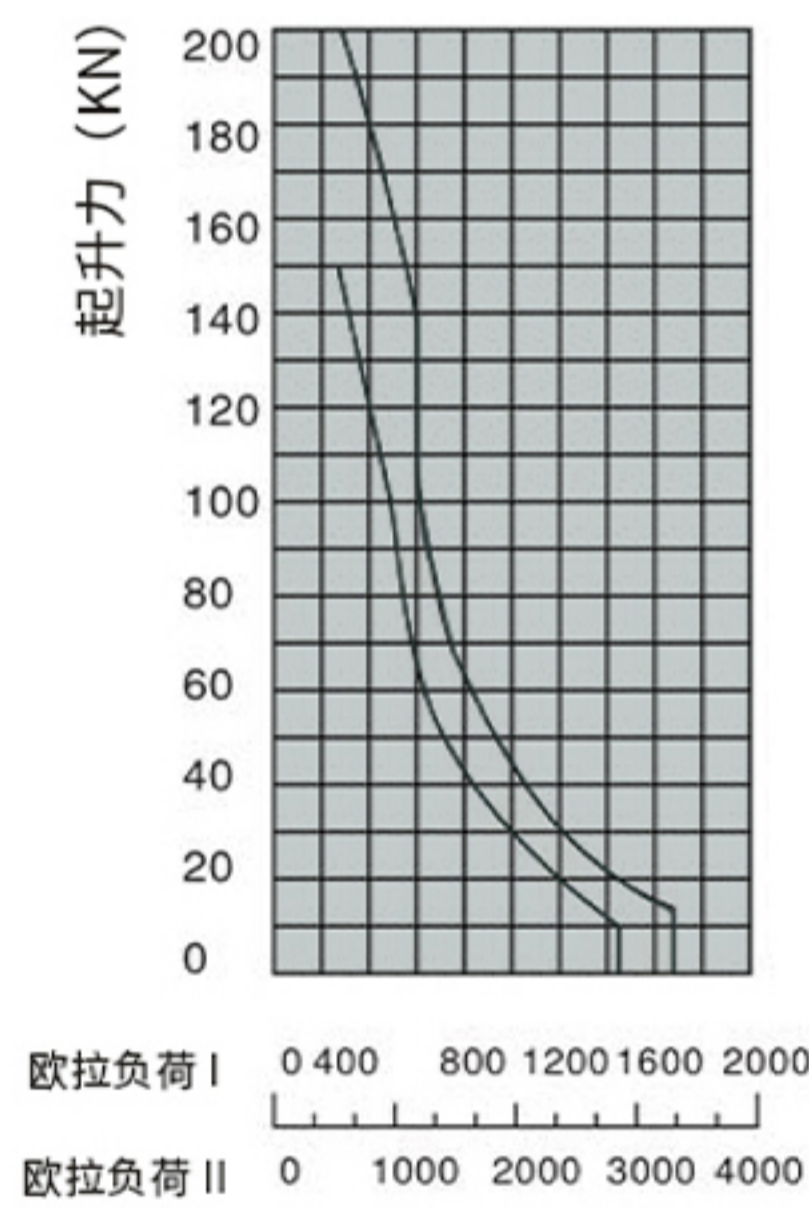


图2 丝杆长度 (mm)

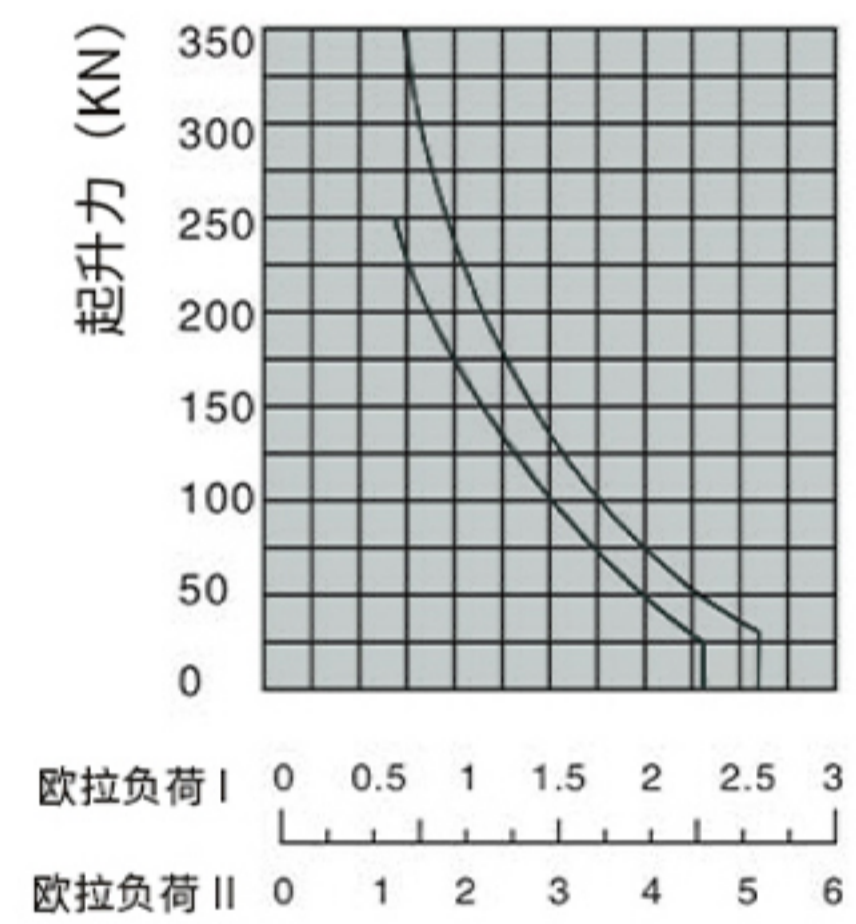


图3 丝杆长度 (mm)

根据丝杆行程和提升负荷 图1~图3，找出所需升降机的型号，再查提升力和提升速度表，校核提升速度是否满足要求，若查出的提升速度不能满足要求，建议选择型号大一点的升降机。
例:已知提升符合为 $F=20\text{KN}$ ，丝杆行程=400MM，提升速度 $V=0.65\text{M}/\text{MIN}$ ，试求所需的升降机。

根据 $F=20\text{KN}$ ，丝杆行程=400MM 图1，选择SWL5升降机。再查提升力和提升速度表核对SWL5升降在机20KN负荷下只允许0.526M/MIN的速度，只有重型大型号的升降机。再查提升力和提升速度表得知SWL10在20KN负荷下允许提升速度为1.44M/MIN而满足要求。

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10、升降机的性能参数

	SWL0.5	SWL1	SWL2.5	SWL5	SWL10/15	SWL20	SWL25	SWL35	SWL50	SWL100
最大起升力KN	5	10	25	50	100/50	200	250	350	500	1000
最大拉力KN	5	10	25	50	99	166	250	350	300	1000
丝杆螺丝尺寸	Tr16x4	Tr24x4	Tr30x6	Tr40x7	Tr58x12	Tr65x12	Tr90x16	Tr100x20	Tr120x20	Tr160x24
蜗轮蜗杆传动比(快速)-P	5:1	6:1	6:1	6:1	8:1	8:1	10 $\frac{2}{3}$:1	10 $\frac{2}{3}$:1	10 $\frac{2}{3}$:1	12
蜗杆每转行程mm	0.8	0.833	1	1.167	1.565	1.5	1.5	1.87	1.87	2
蜗轮蜗杆传动比(中速)-N	10:1	12:1	12:1	12:1	12:1	12:1	16:1	16:1	-	-
蜗杆每转行程mm	0.4	0.333	0.5	0.583	1	1	1	1.25	-	-
蜗轮蜗杆传动比(慢速)-M	20:1	24:1	24:1	24:1	24:1	24:1	32:1	32:1	32:1	36:1
蜗杆每转行程mm	0.2	0.208	0.25	0.292	0.5	0.5	0.5	0.625	0.625	0.667
拉力负荷时螺杆的最大伸长mm	1000	1200	1500	2000	2500	3000	3500	4000	5500	6500
最大许用功率KW	0.15	0.25	0.55	1.1	2.6	3.7	2.6	6	7.5	15
普通比(P)总效率%	21	21	23	21	23	21	23	18	15	13
慢速比(M)总效率%	12	13	14	12	15	13	15	11	11	10
润滑油量Kg	0.03	0.05	0.1	0.25	0.5	0.75	0.5	1.9	2	2.5
不加行程的质量Kg	2.5	4	7.3	16.2	25	36	68	87	420	1010
丝杆每100mm的重量kg	0.3	0.3	0.45	0.82	1.67	2.15	4.2	5.2	7.45	13.6

11、升降机的注意事项/PRECAUTIONS FOR ELEVATORS

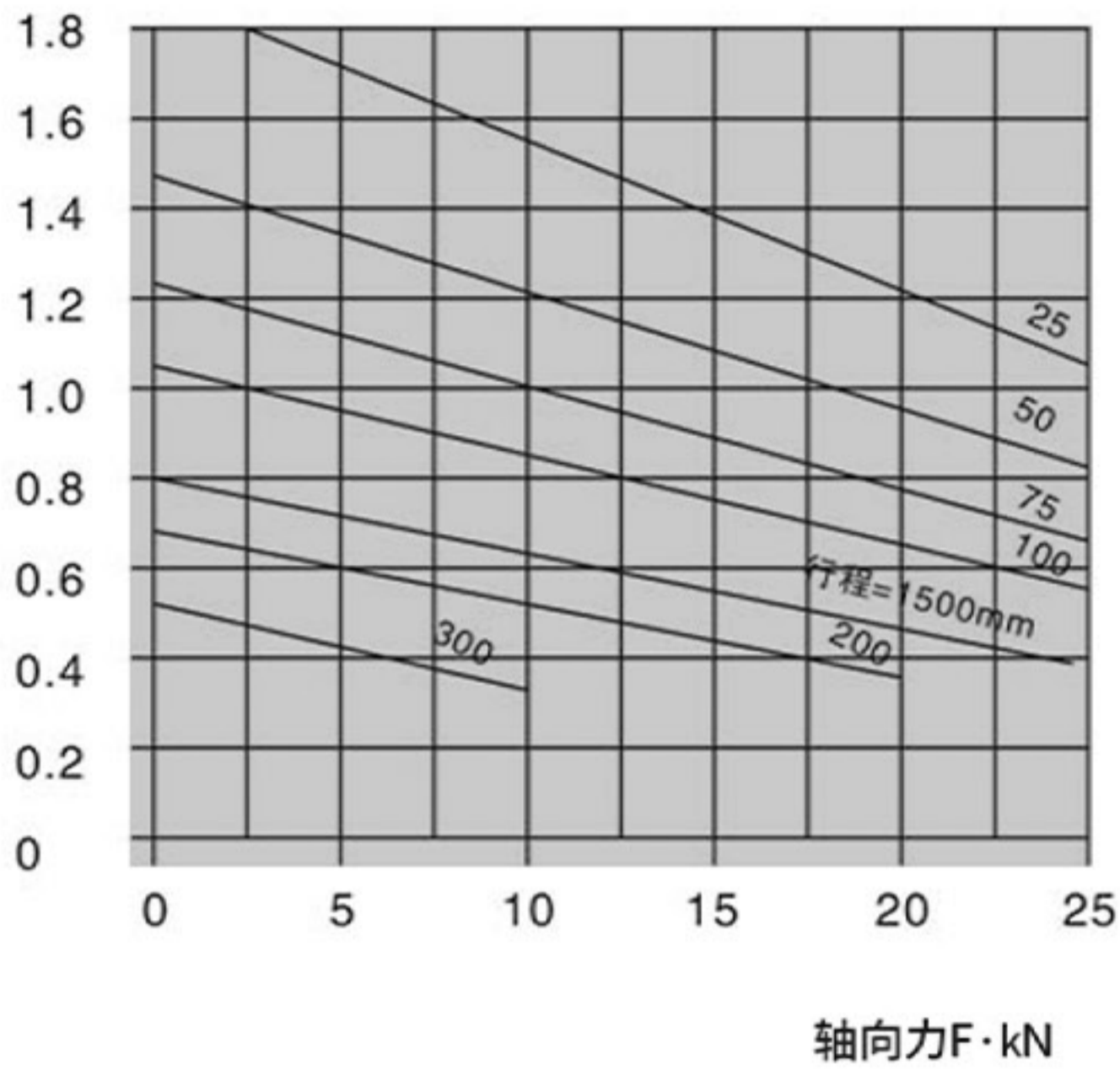
- 1、请严格按承载能力表选择合适的速比和与之对应的具有充分裕度的载荷的升降机;
- 2、升降机工作时应控制减速机表面和升降螺母表面温度在-15°C~80°C;
- 3、升降机不得连续连续运转，单台升降机的负荷时间率(T%)以30分钟为单位计算，不得超过20%;

$$\text{负荷率T\%} = \frac{\text{1动作周期的工作时间}}{\text{1动作周期的工作时间} + \text{1动作周期的停歇时间}} \times 100\%$$

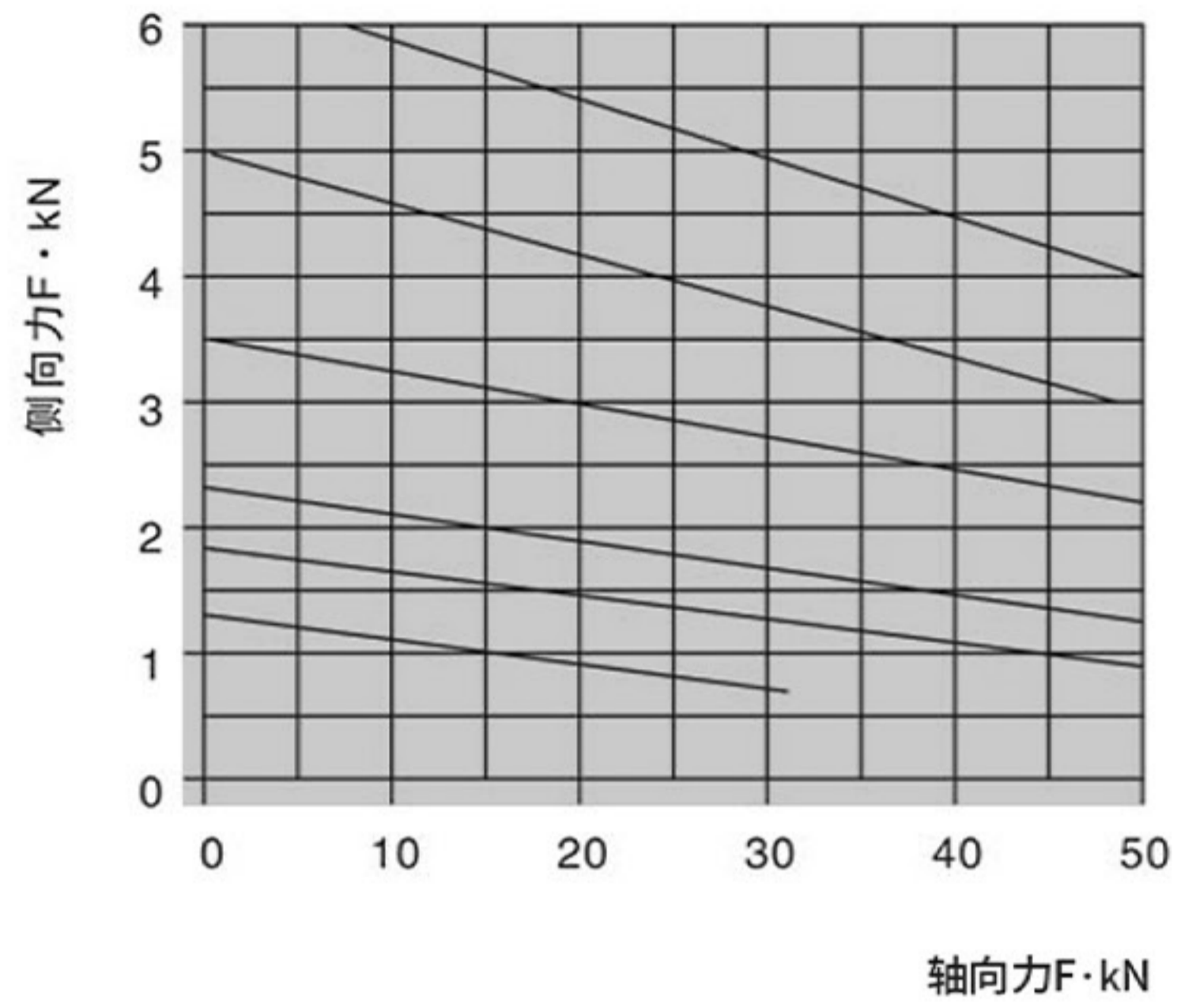
- 4、必须保证有充足的驱动源动力;
- 5、升降机理论上具有自锁功能，但在振动冲击较大的场合会造成自锁功能失灵，请务必加制动装置;
- 6、升降机使用环境:

使用环境	室内无雨水侵入的场所
周围空气	灰尘为一般工厂状况
环境温度	-15°C~40°C
相对湿度	85%以下

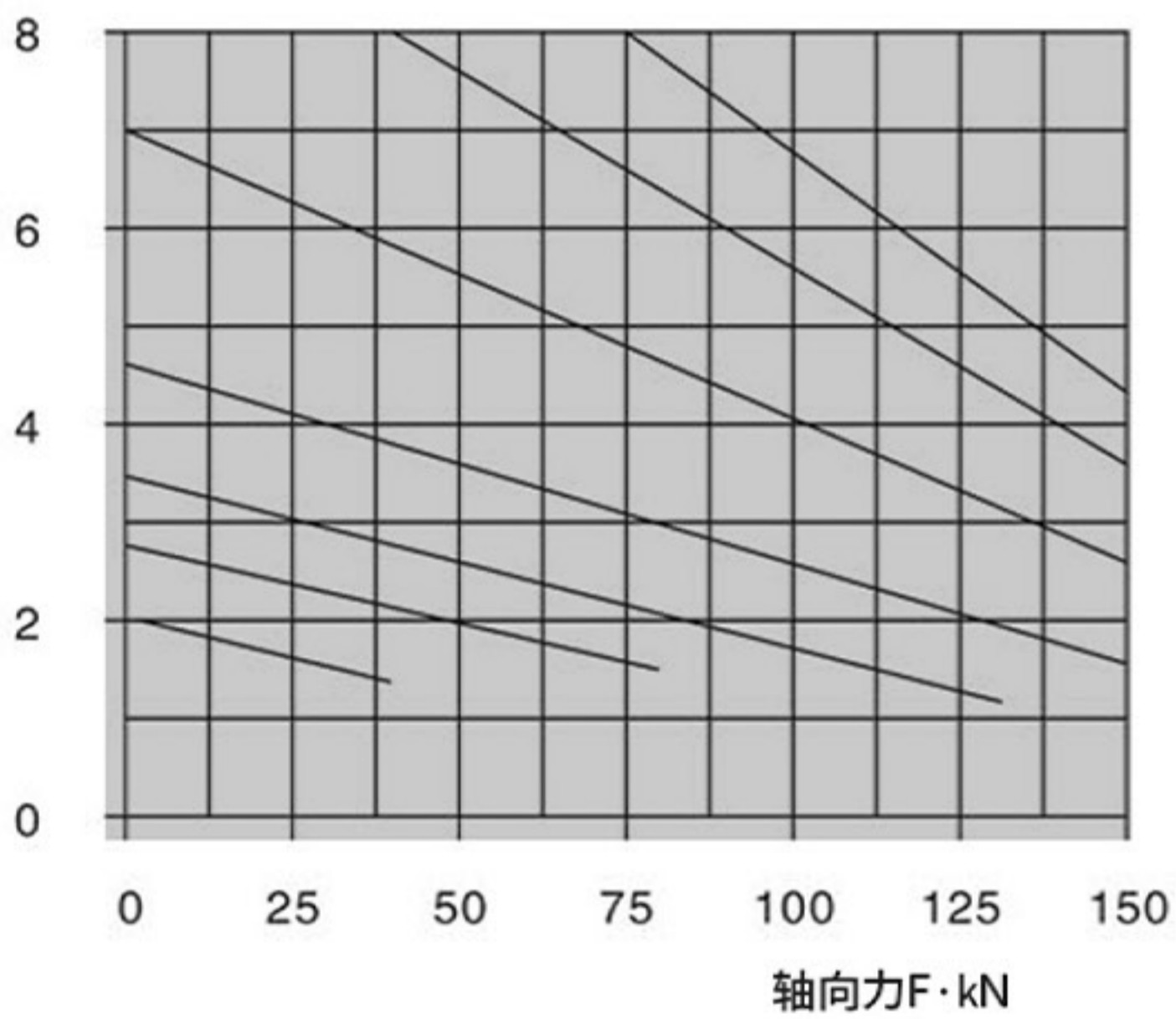
15、丝杆许用径向力FS和轴向力FA与行程的关系



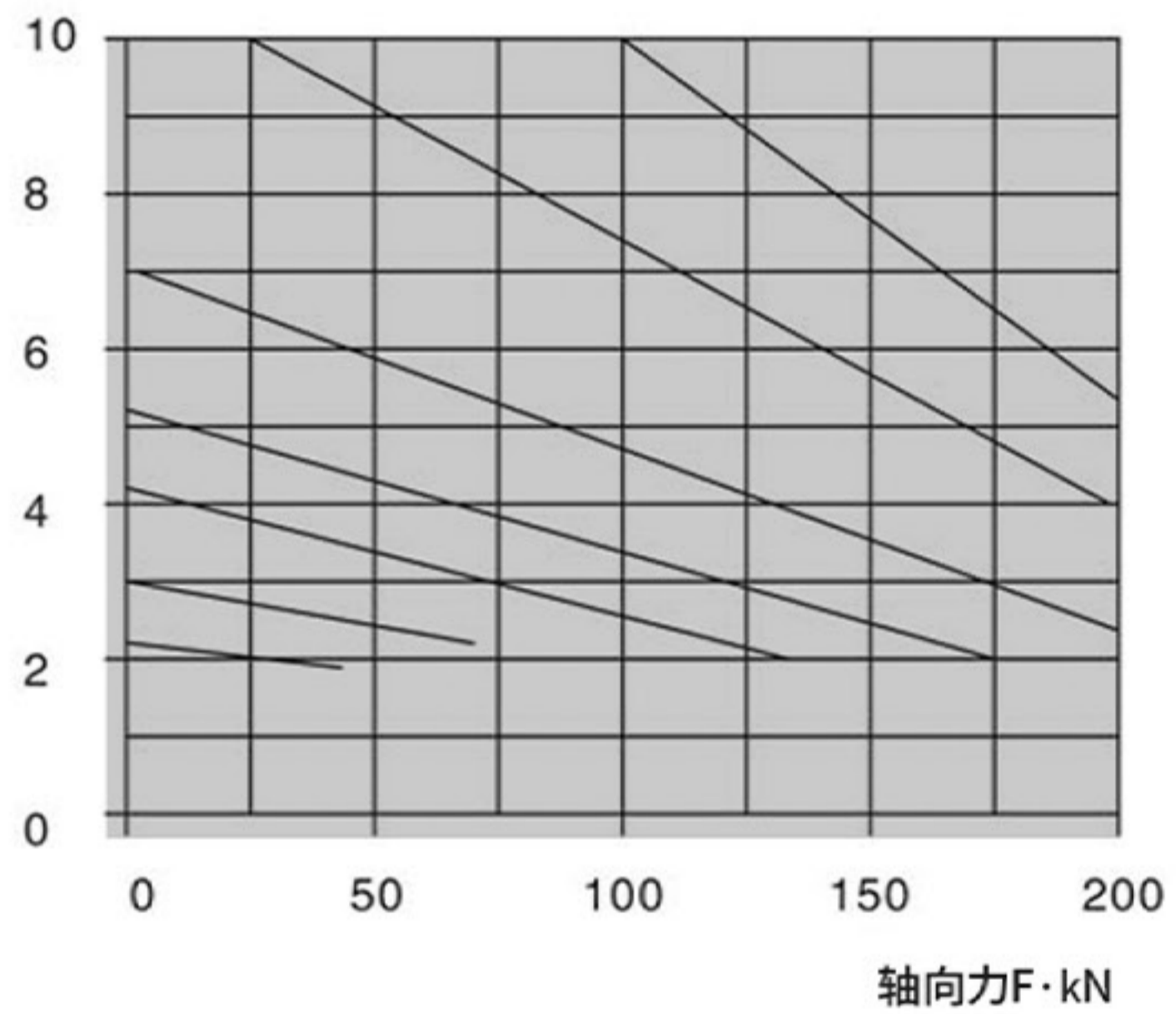
SWL1/2.5



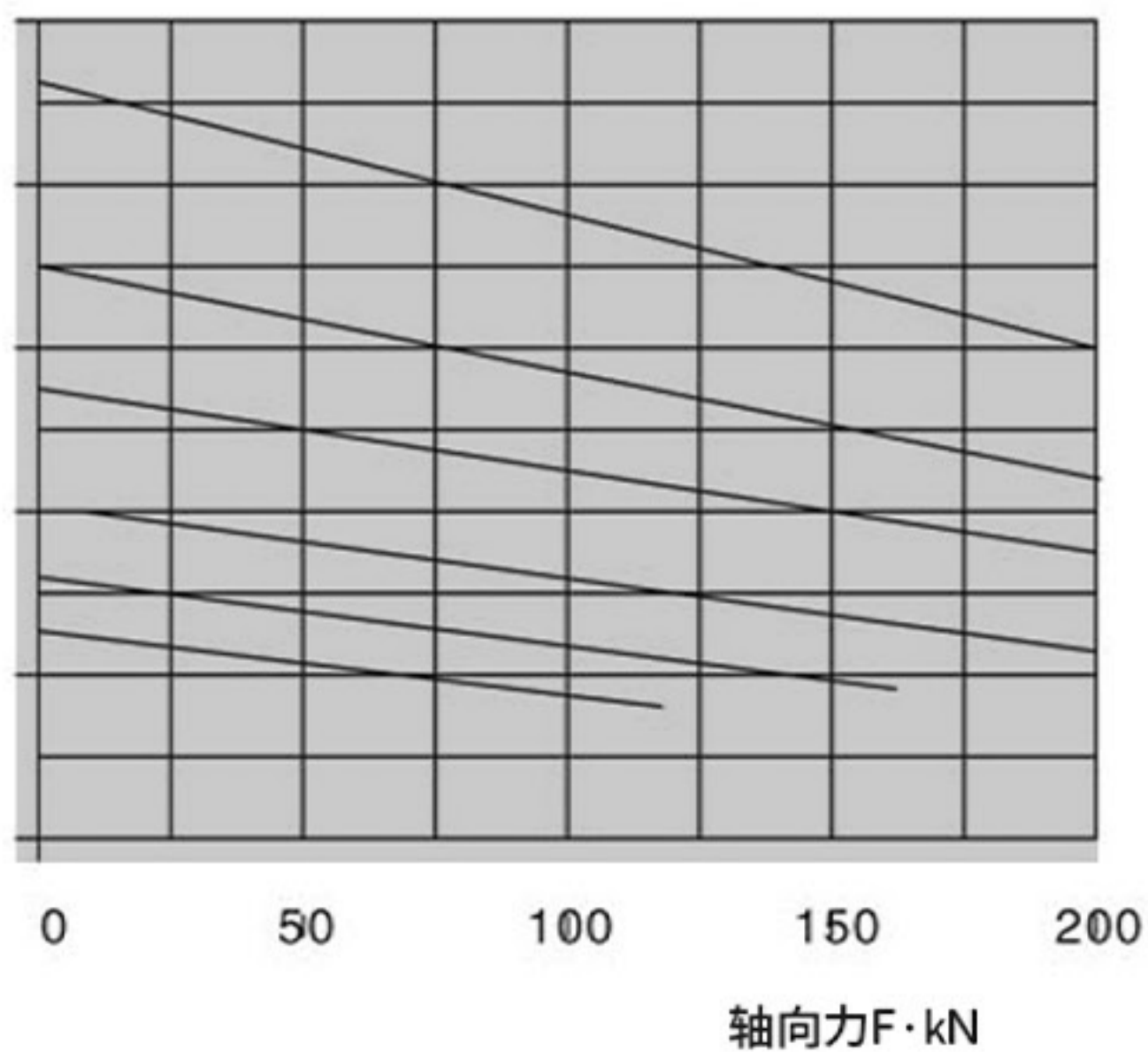
SWL5



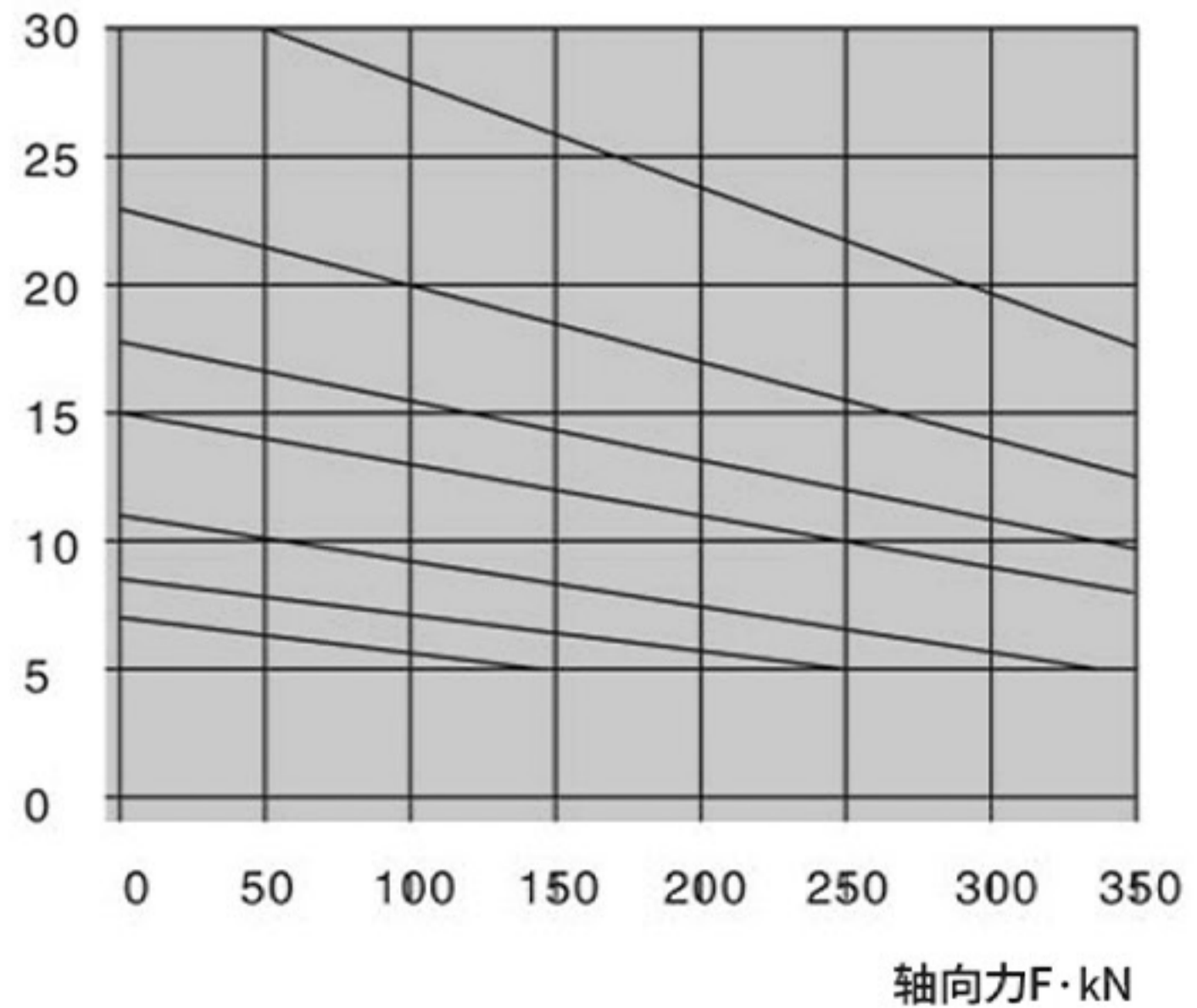
SWL10/15



SWL20



SWL25



SWL30

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13、升降机的选择

$$1、\text{驱动功率: } P = \frac{FAV}{60\eta}$$

式中: P-驱动功率, KW;
V-起升速度, m/min;
FA-起升力(或拉力), KN
 η -传递总功率(图表)

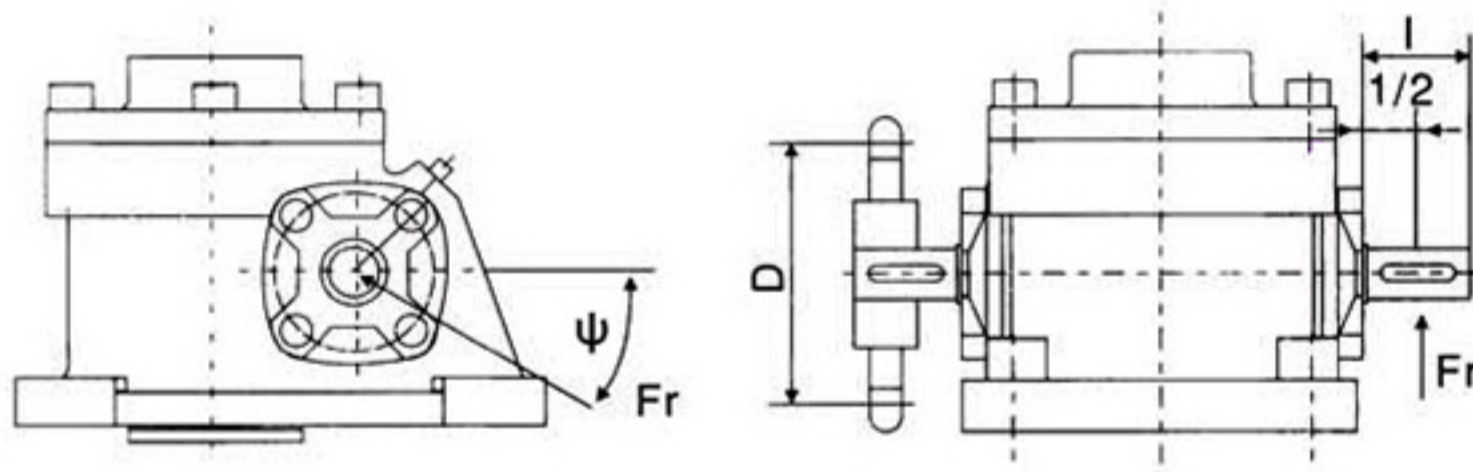
$$2、\text{驱动功率: } 9550X \frac{N}{P}$$

式中: Mt-驱动扭矩, N·m;
P-驱动功率, KW;
 η -转速, r/min

型号	SWL											
	0.5	0.5M	1	1M	2.5	5M	10/15	10M/15M	20	20M	35	35M
η	0.12	0.21	0.21	0.13	0.23	0.12	0.23	0.15	0.21	0.13	0.18	0.11

14、输入轴的许用径向力

1、蜗杆轴伸上, 由于安装齿轮、链轮或带轮所产生的径向力 E_r 。其最大许用力与起升力和型号有关。在1/2处许用的最大径向力和扭矩见解和表格



型号	F _{rmax}	M _{t max}
	N	N·m
BSWL1/1M	160	6.6
BSWL2.5/2.5M	350	18
BSWL5/5M	750	44.2
BSWL10/10M/15/15M	1000	108
BSWL20/20M	1300	182
BSWL25/25M	2000	314
BSWL35/35M	2300	398

注: 表中参数是按 $\psi \approx 30^\circ$ 或 330° 的计算。

2、齿轮或带轮的最小直径:

$$D_{\min} = 19100x - \frac{P}{F_{\max}\eta} = \frac{2M_1}{F_{\max}}$$

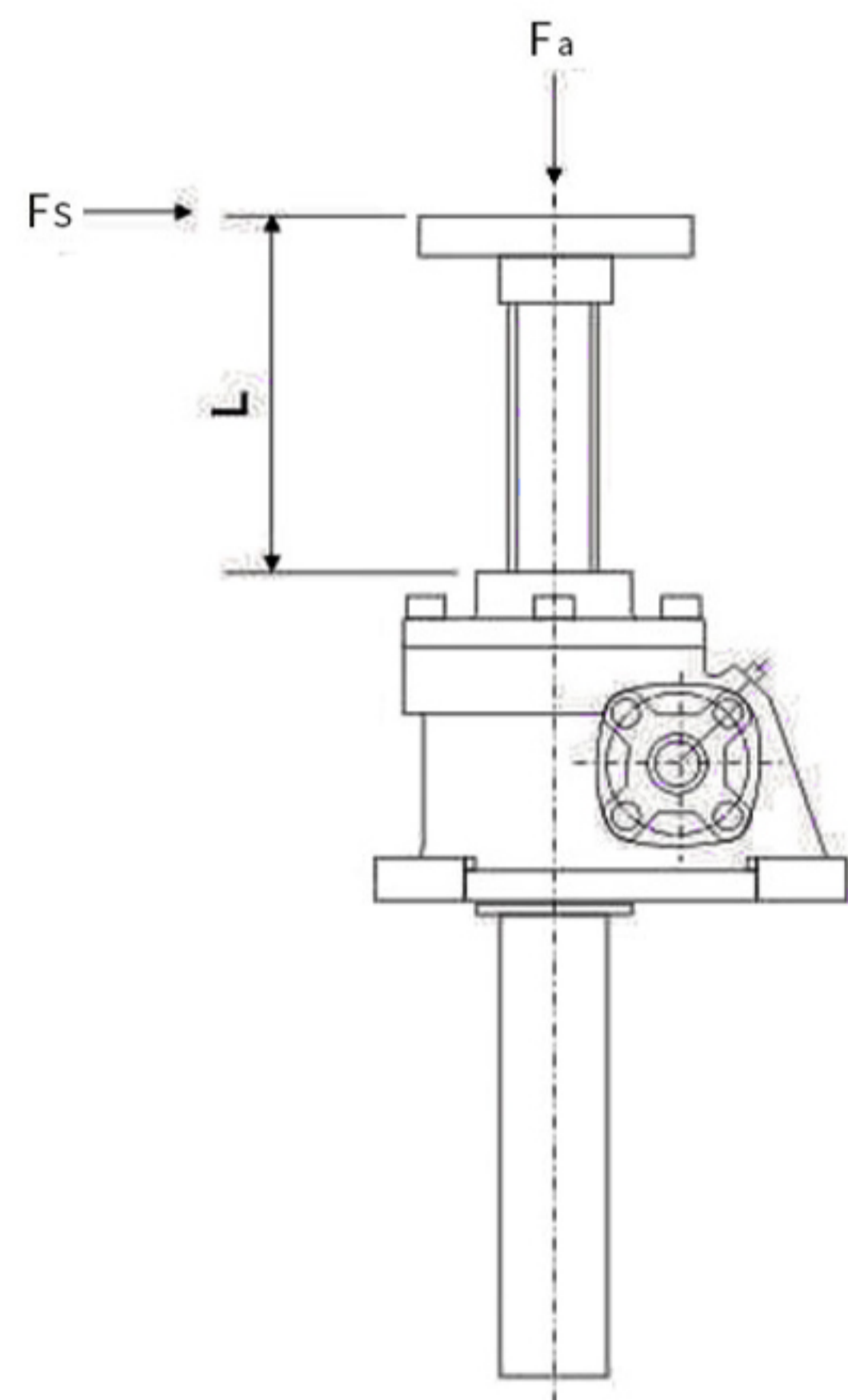
式中: D_{\min} —齿轮或带轮的最小直径, M;

P-驱动功率, KW

F_{\max} —最大径向力, N;

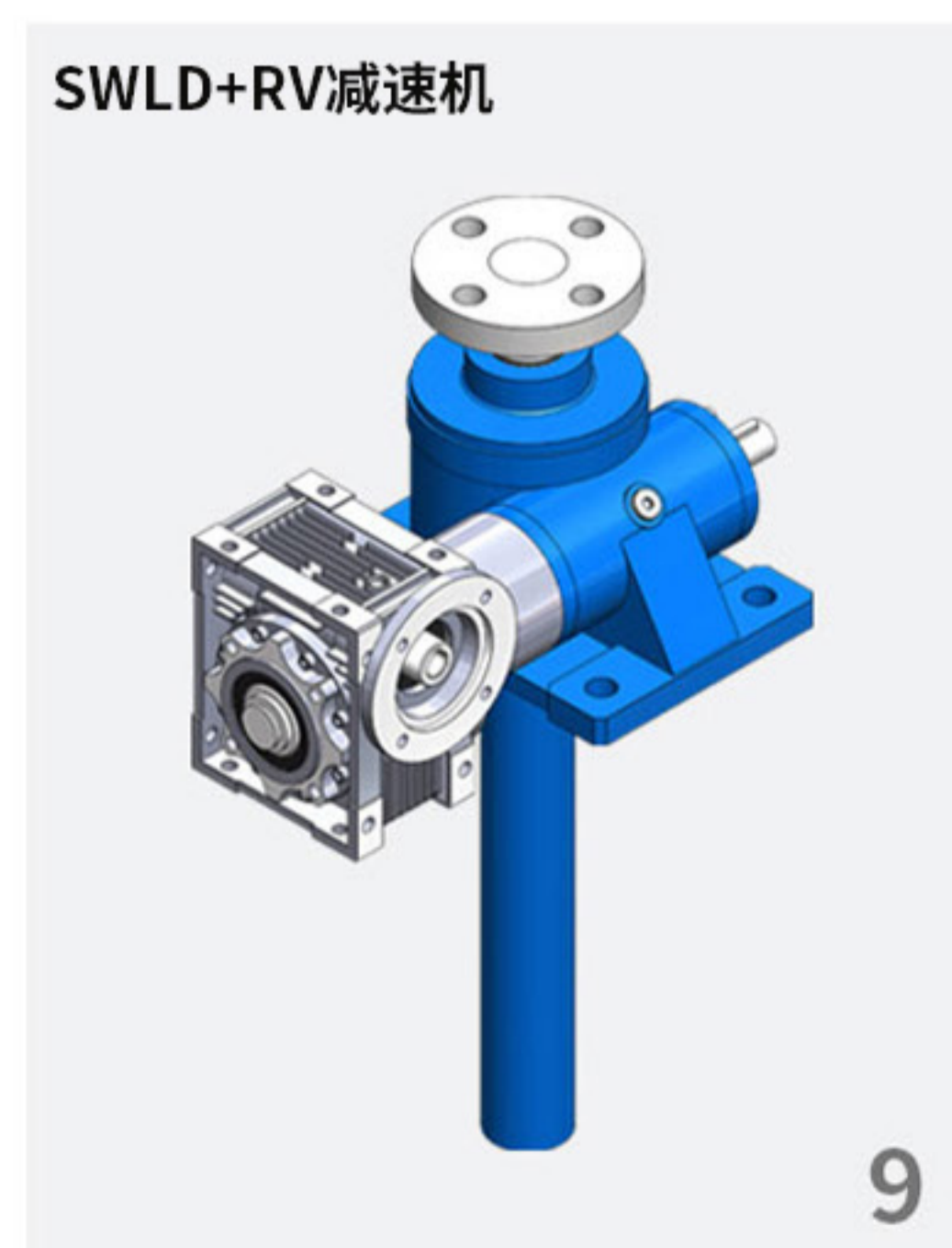
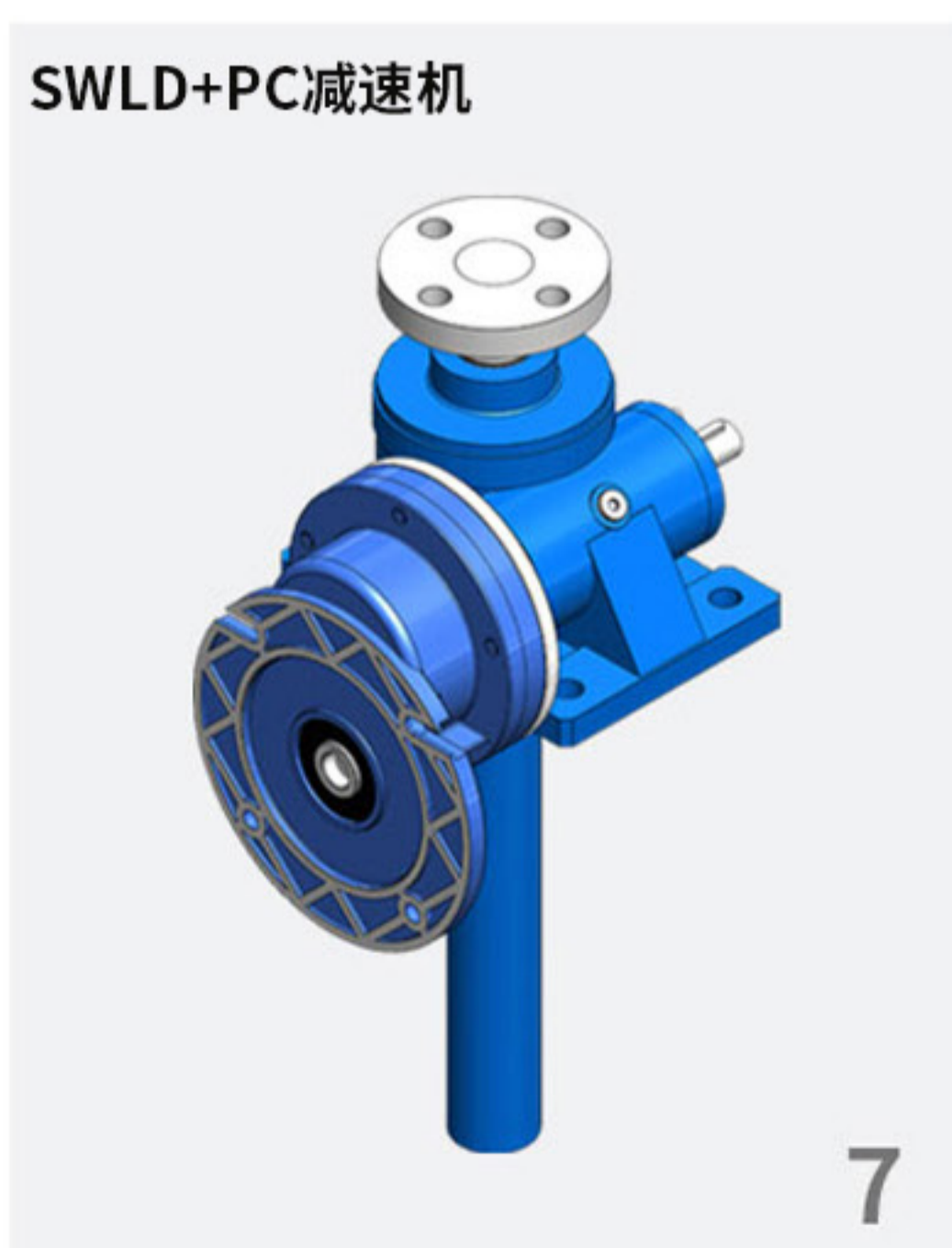
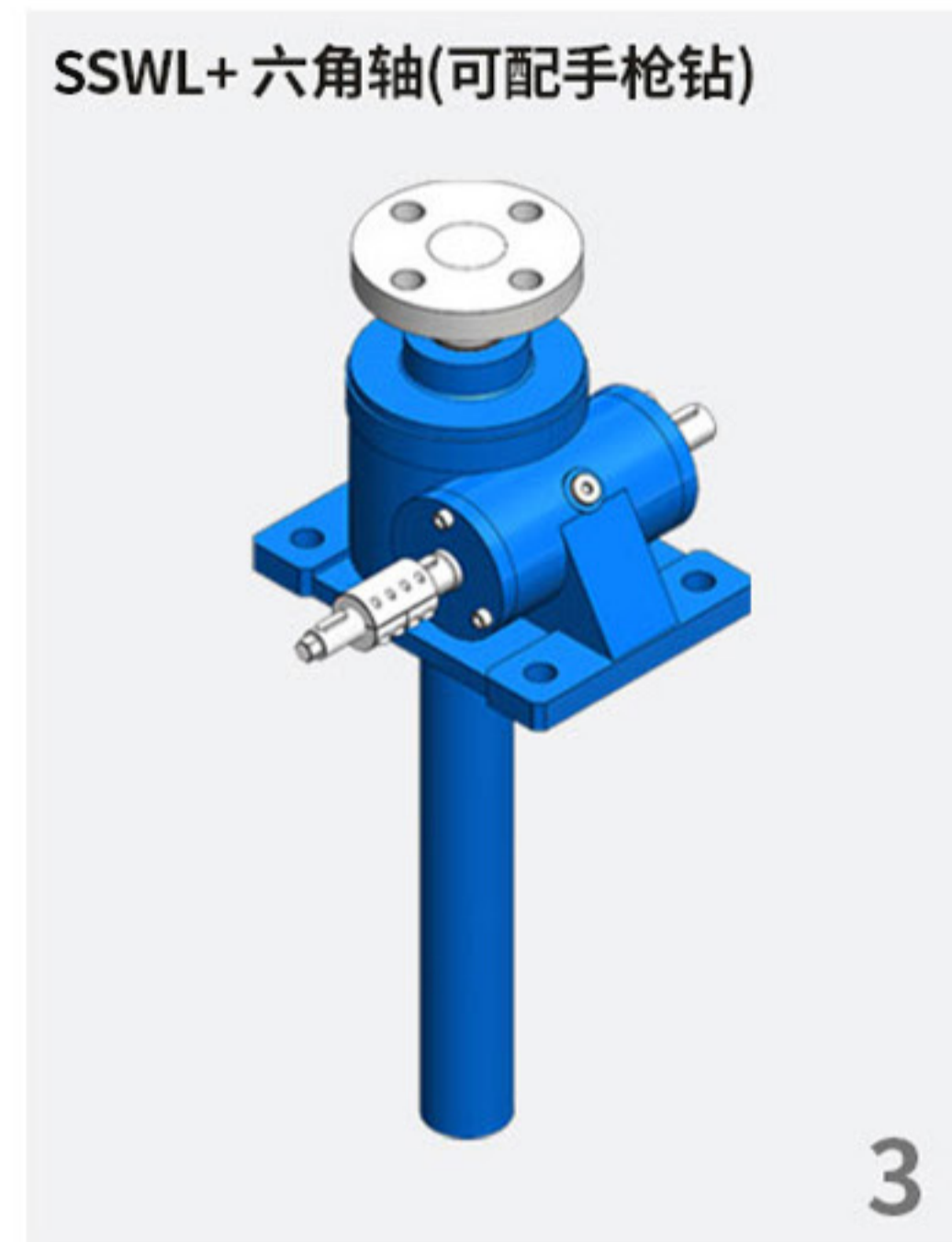
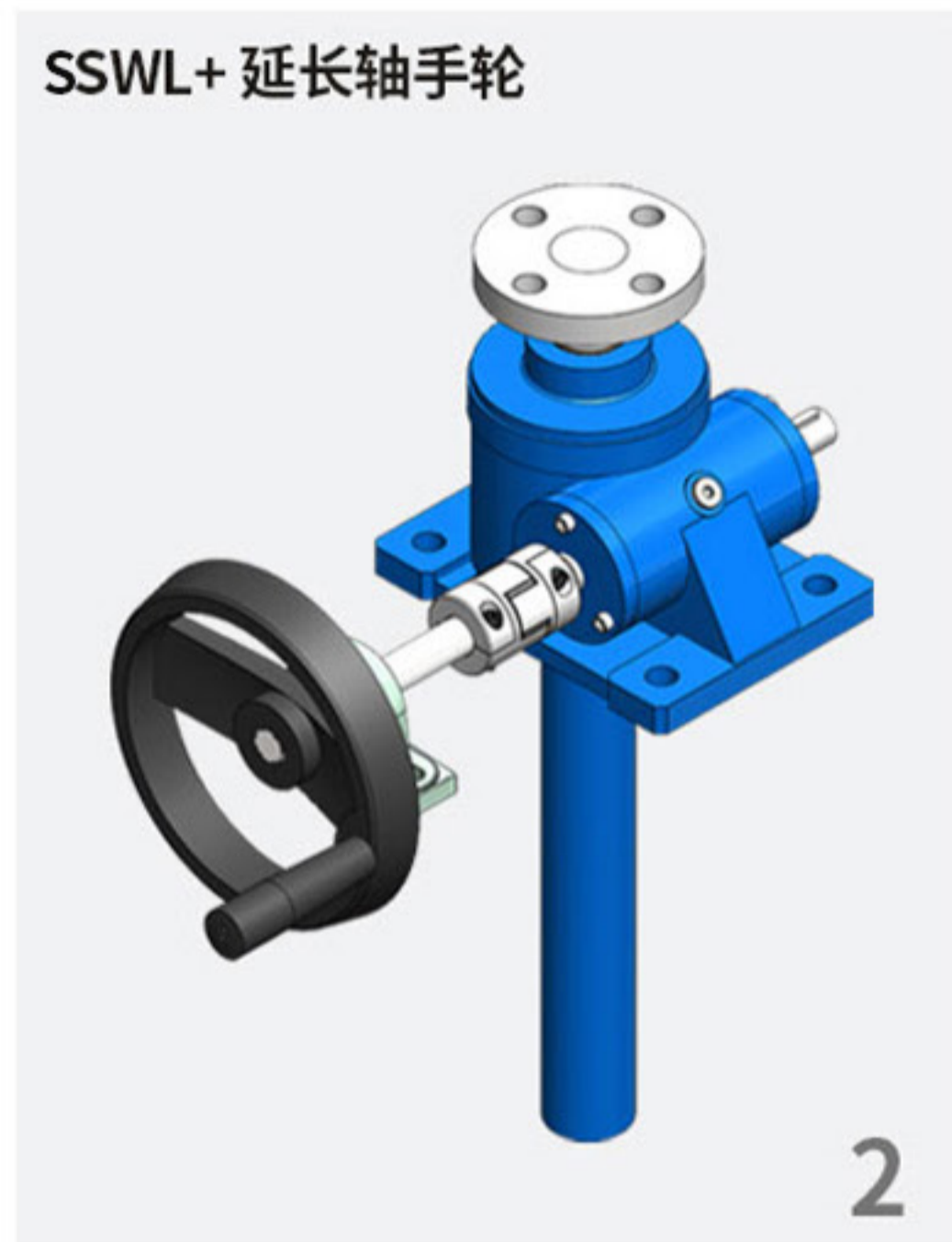
n—蜗杆转速, r/min;

M_1 —驱动扭矩, N·m



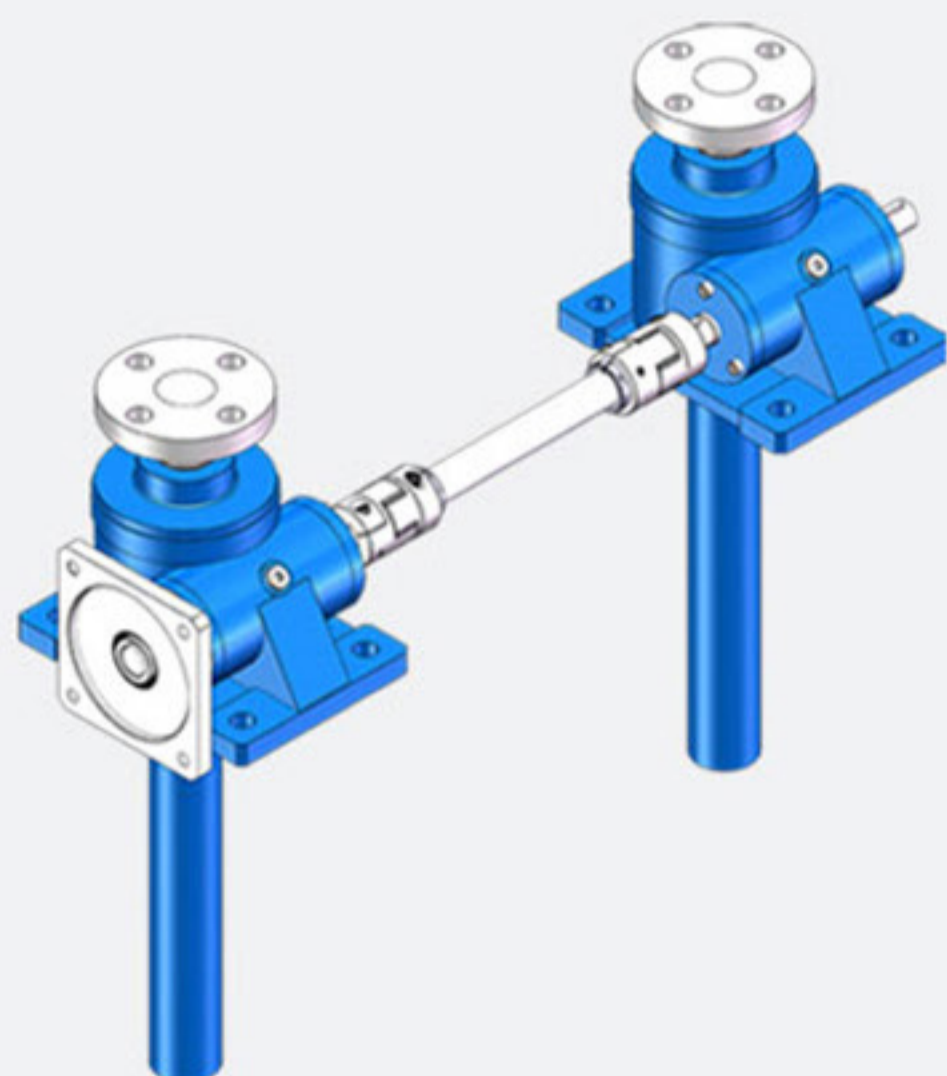
16、SWL升降机部分可选案例

16.1- 单台示例(以03页图1为例)



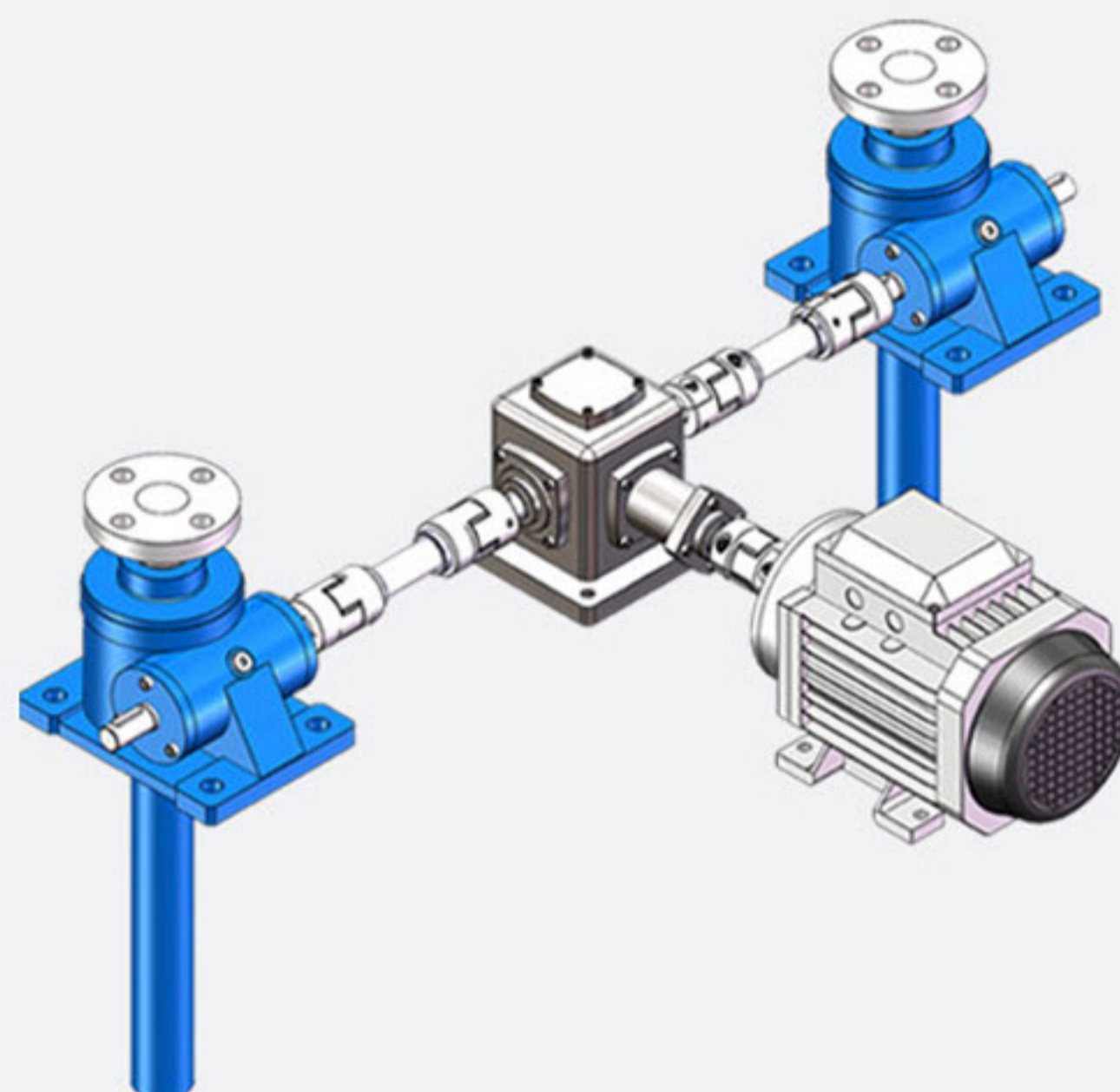
16.2- 两台示例(以03页图1为例)

SWL两台联动场景



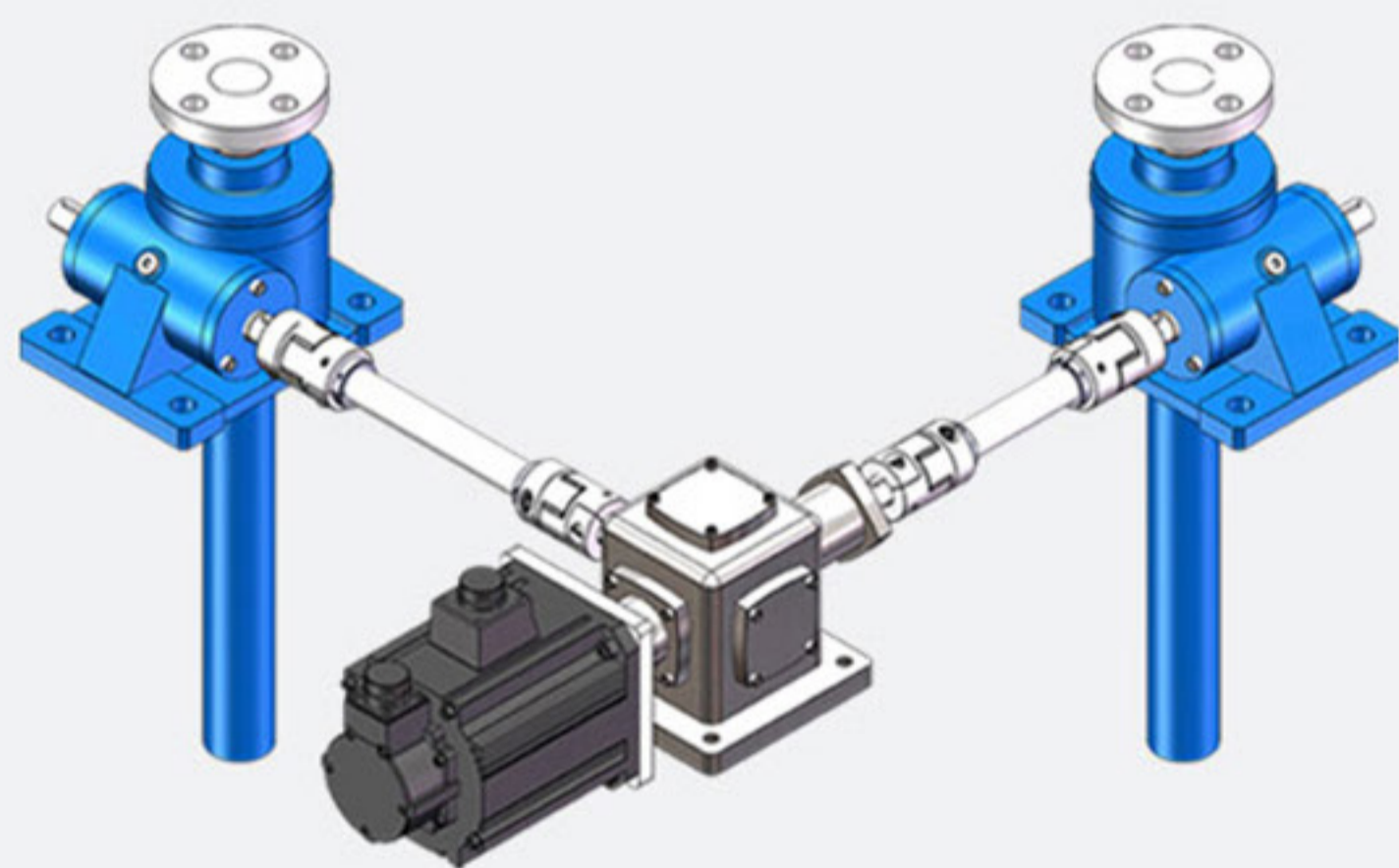
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SWL两台联动场景



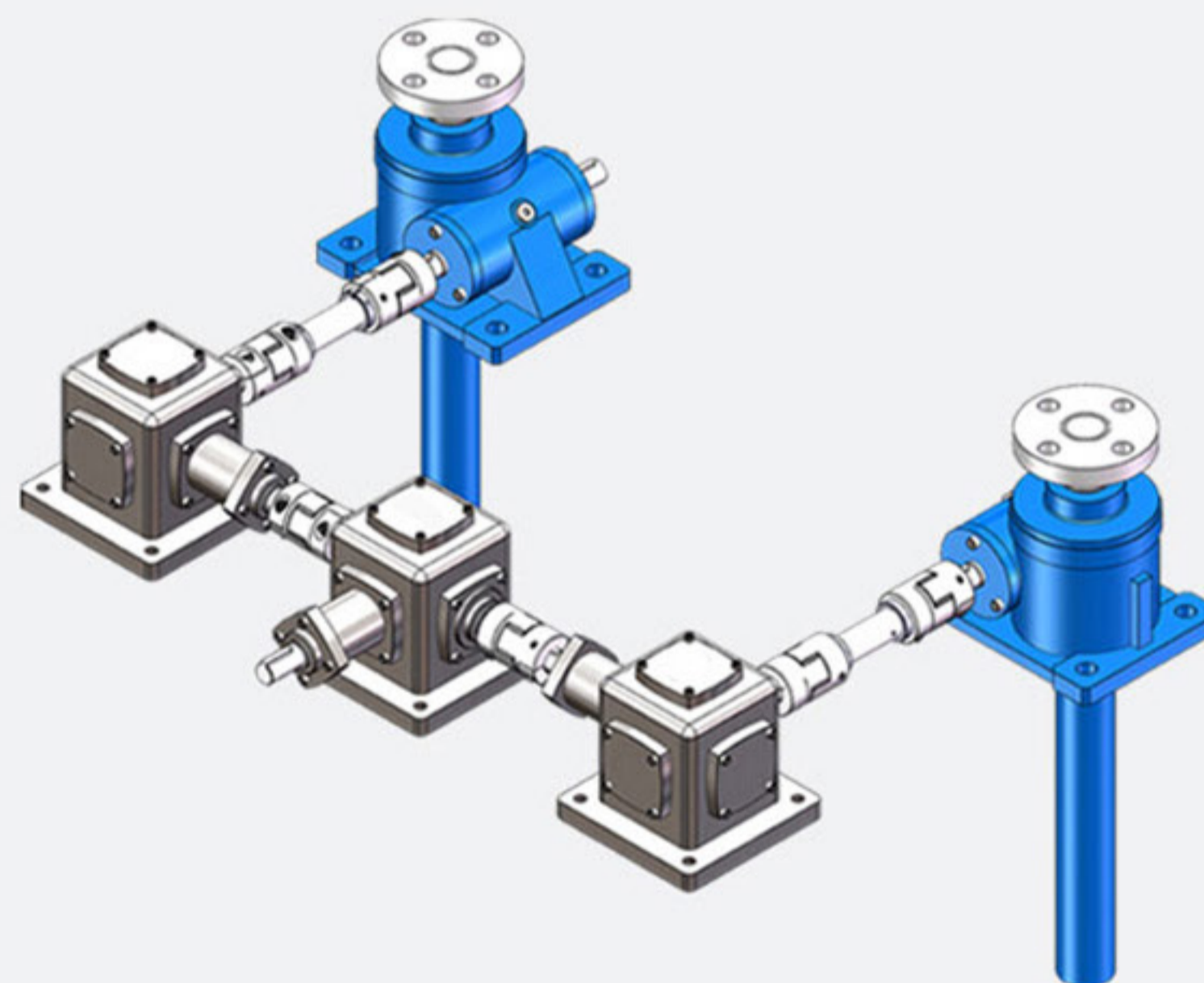
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SWL两台联动场景



3

SWL两台联动场景

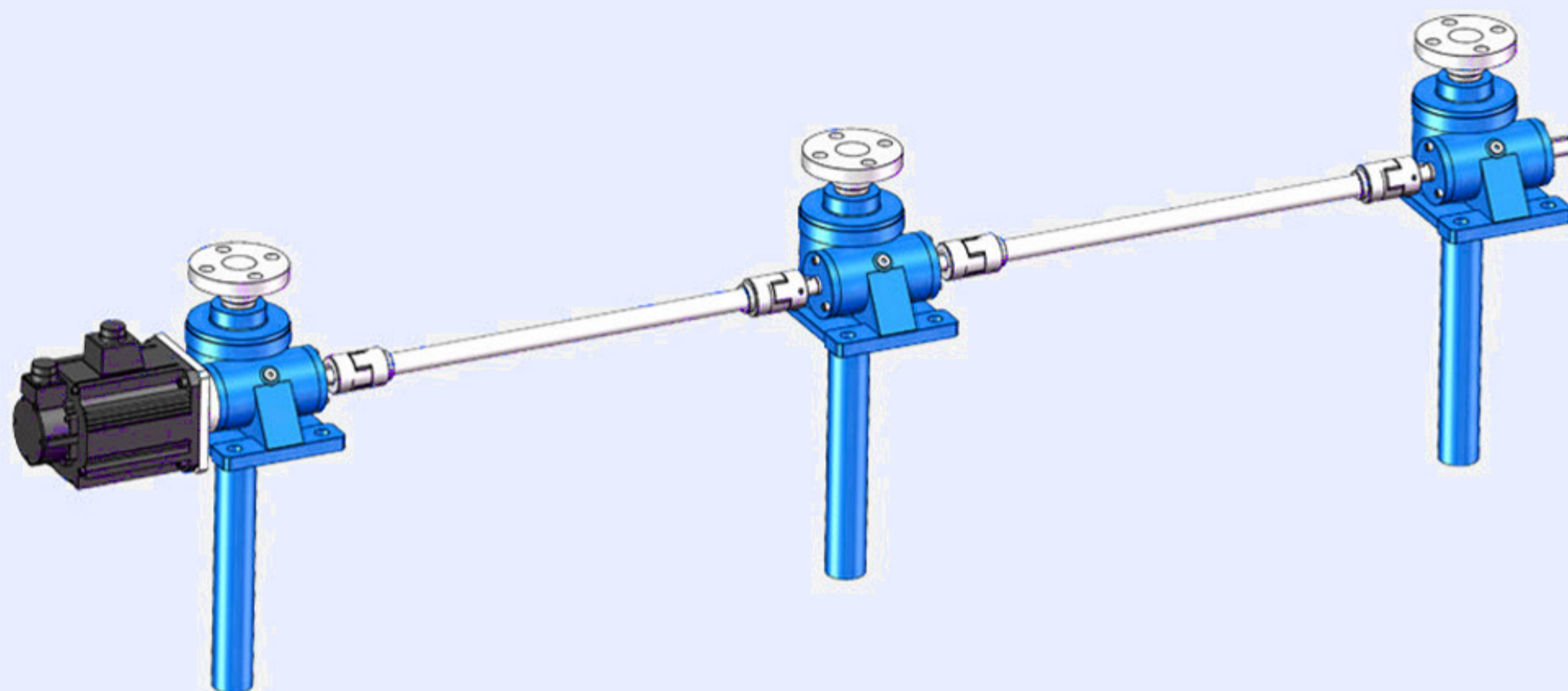


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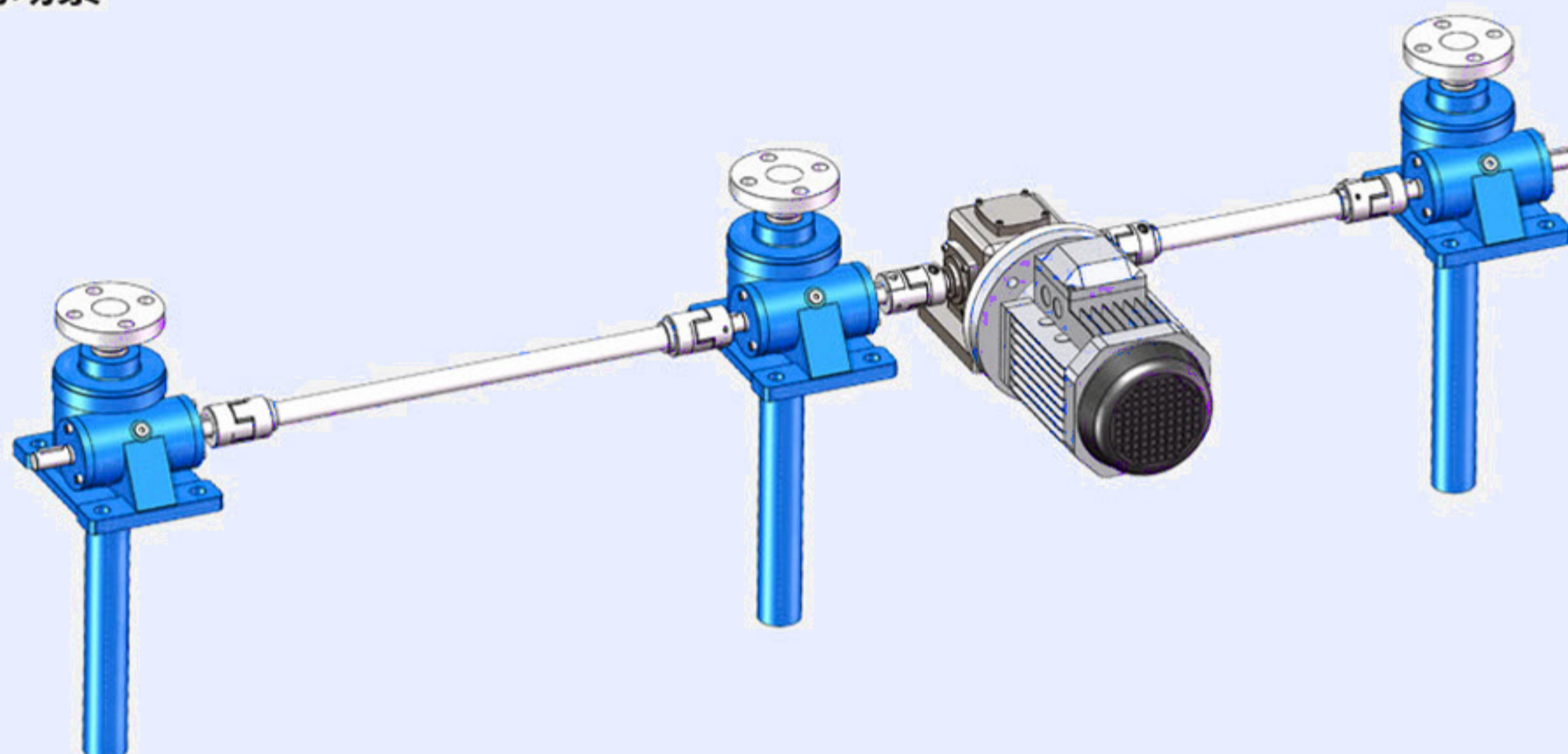
如需要更多样式请与客服联系

16.3- 三台示例(以03页图1为例)

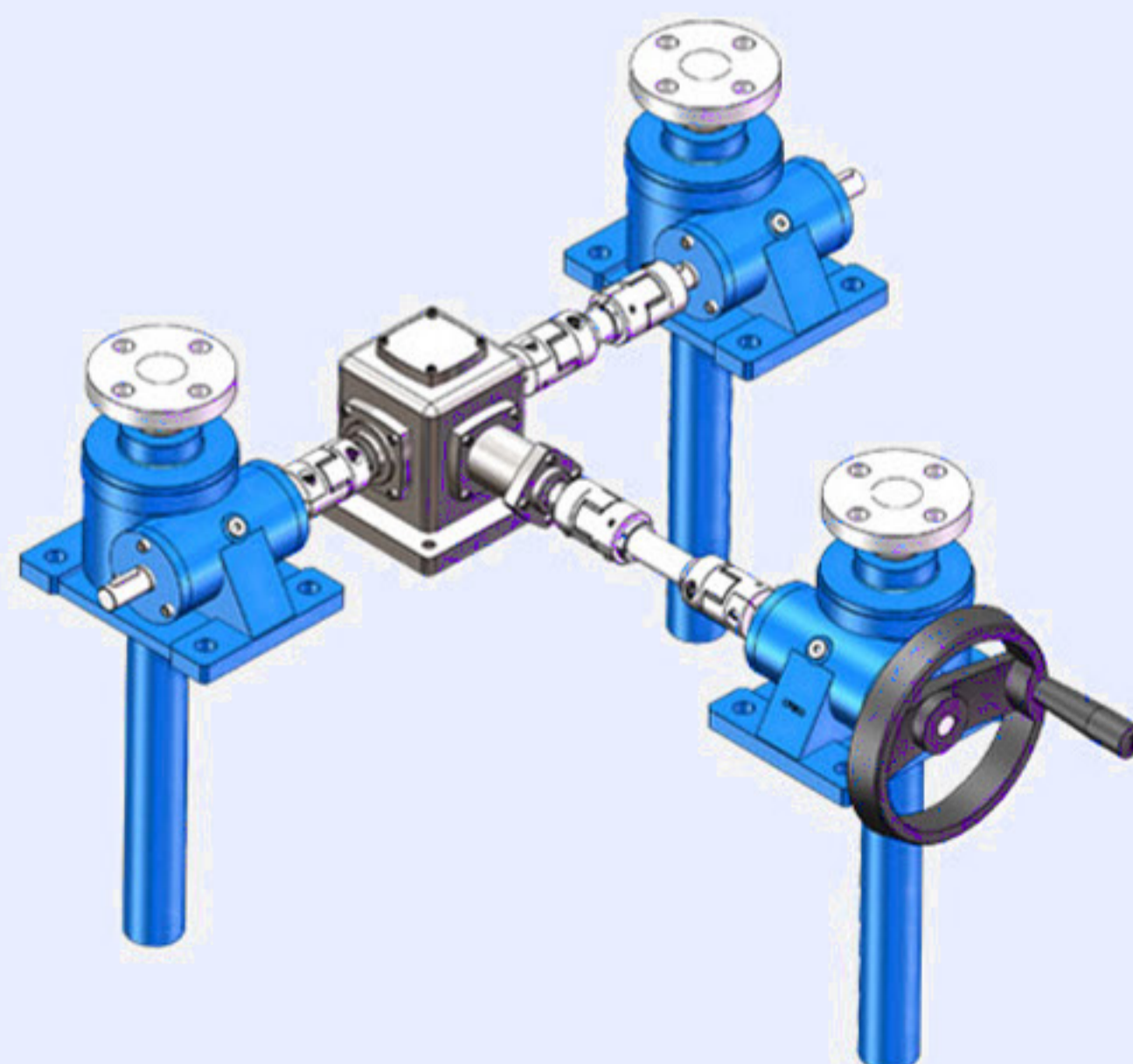
SWL三台联动场景



SWL三台联动场景



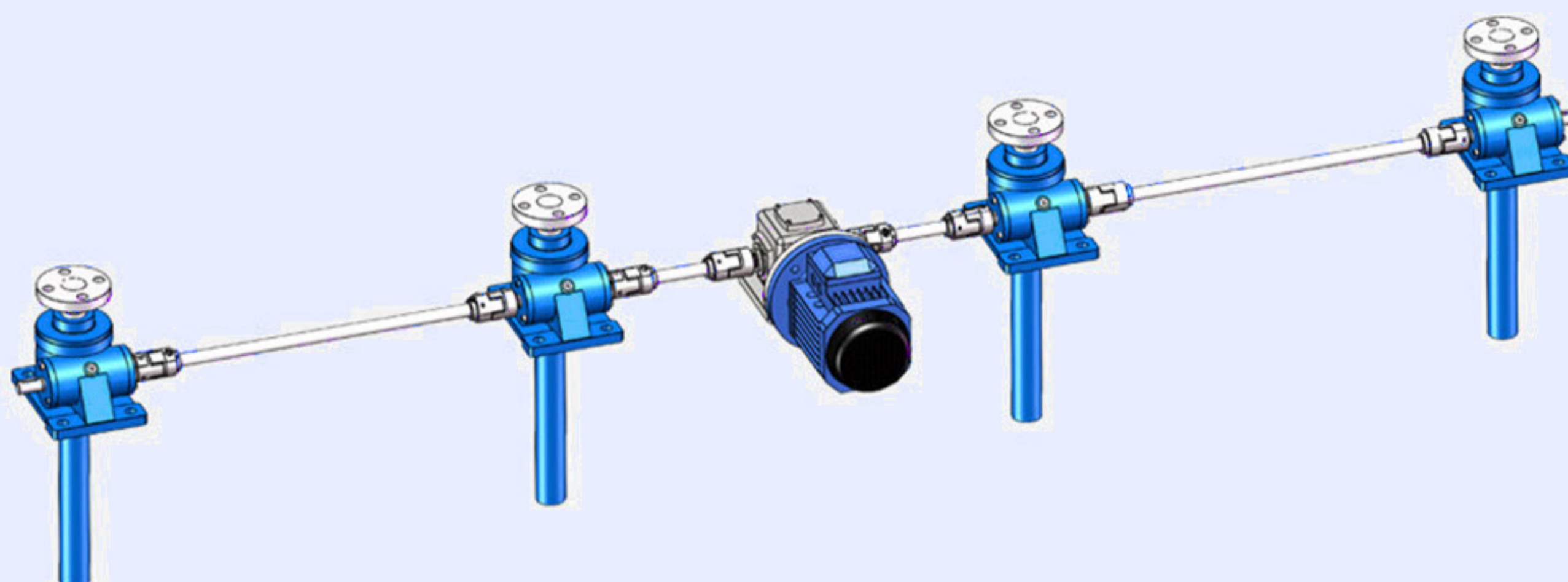
SWL三台联动场景



如需要更多样式请与客服联系

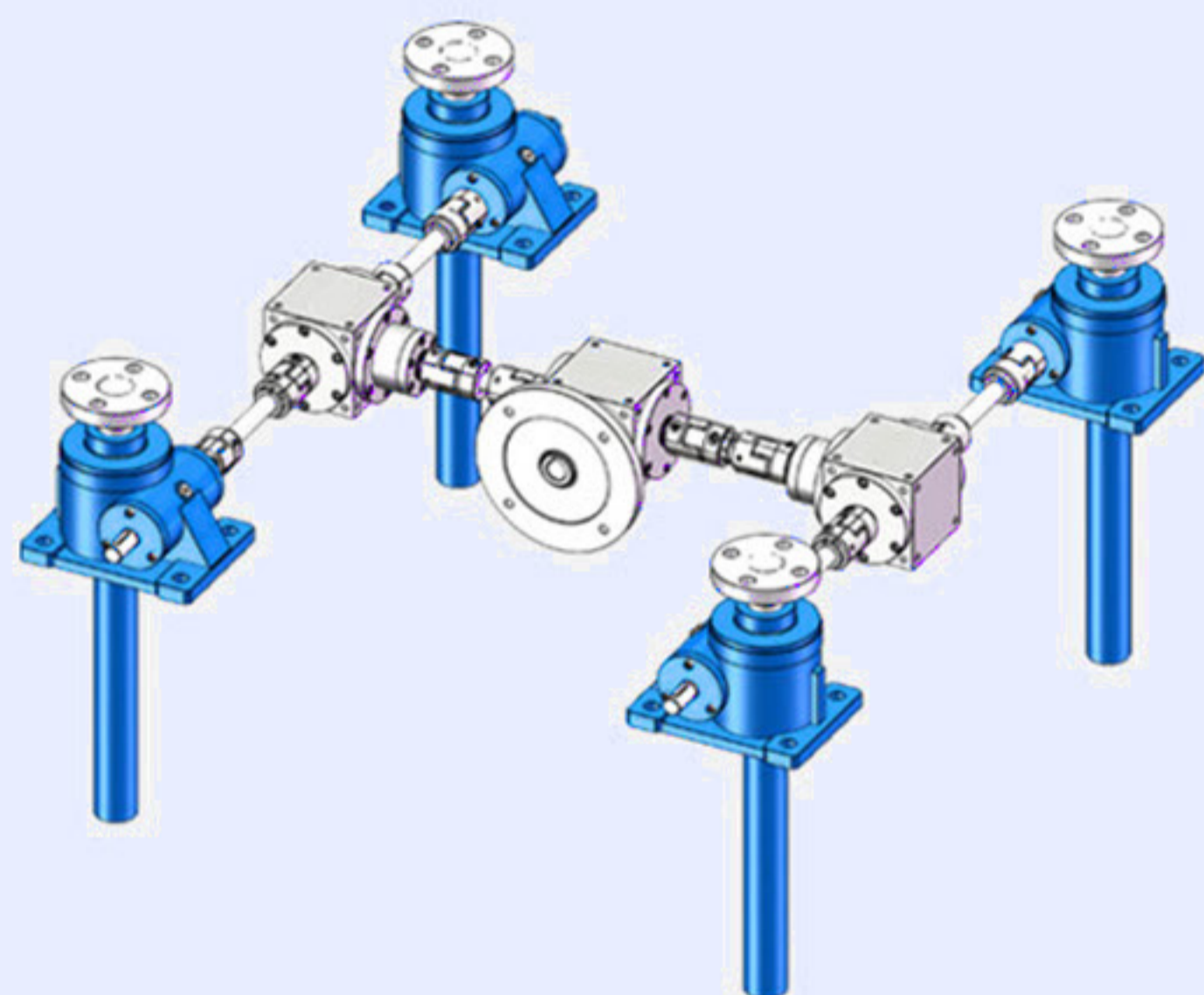
16.4- 四台示例(以03页图1为例)

SWL四台联动场景



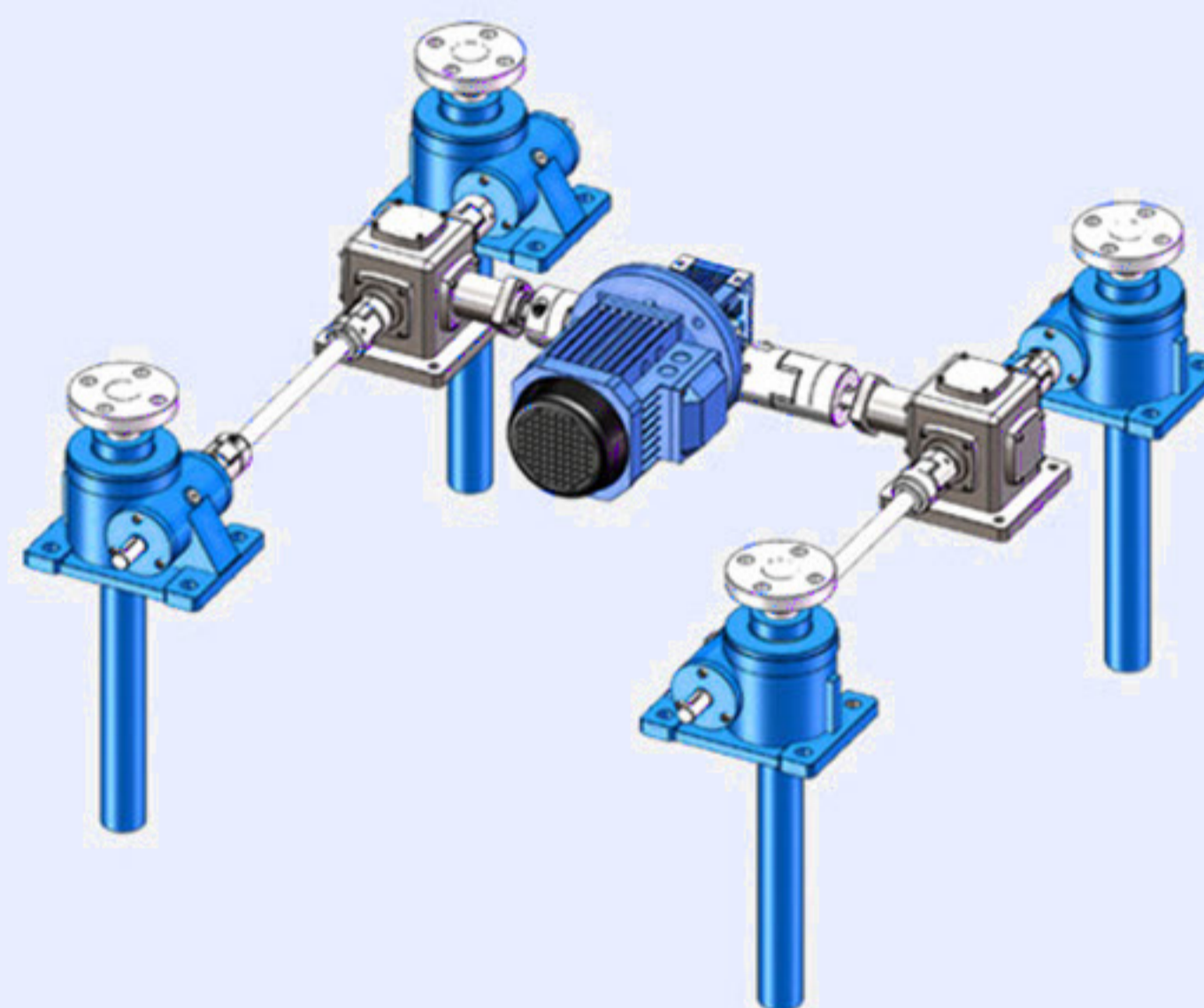
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SWL四台联动场景



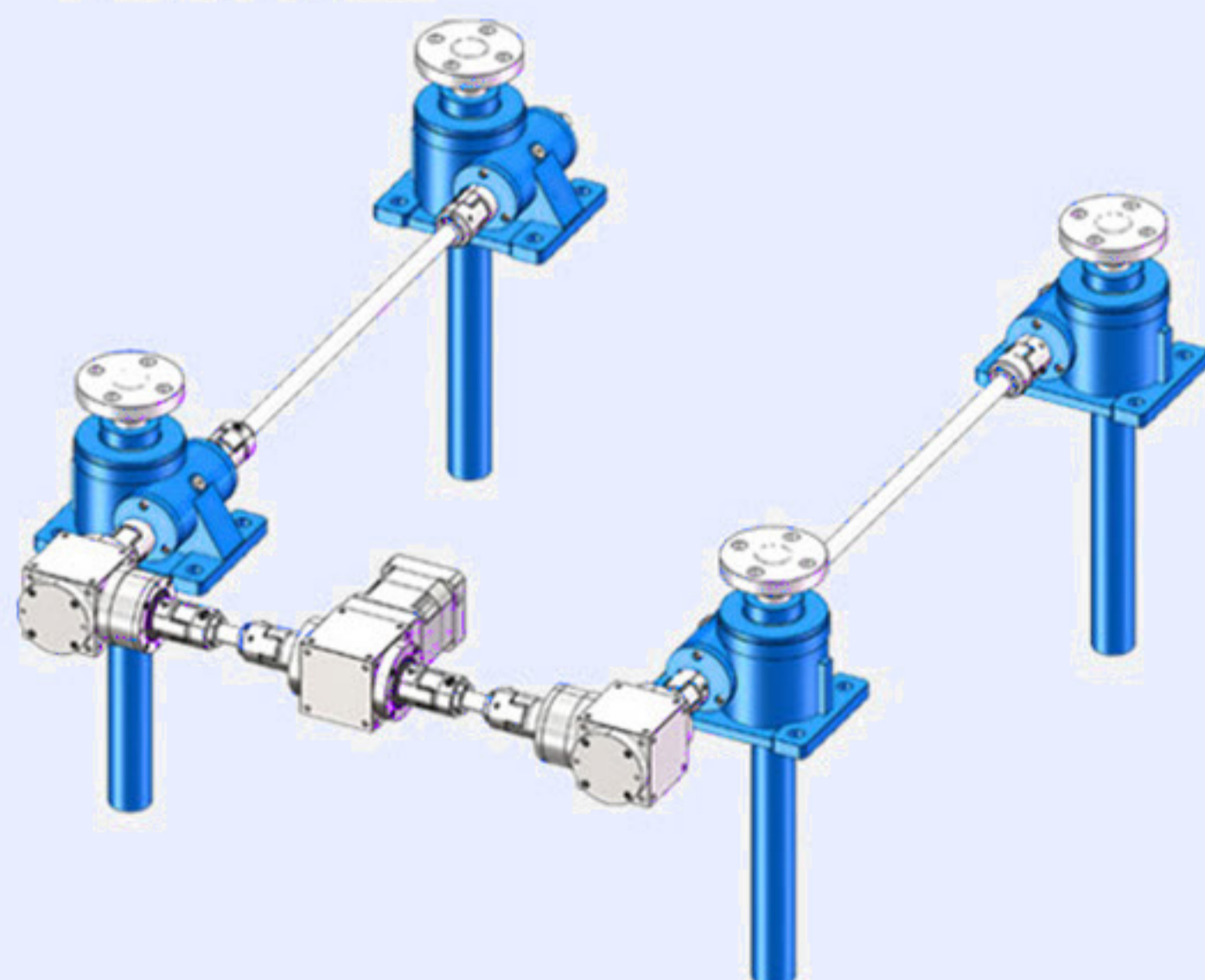
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SWL两台联动场景



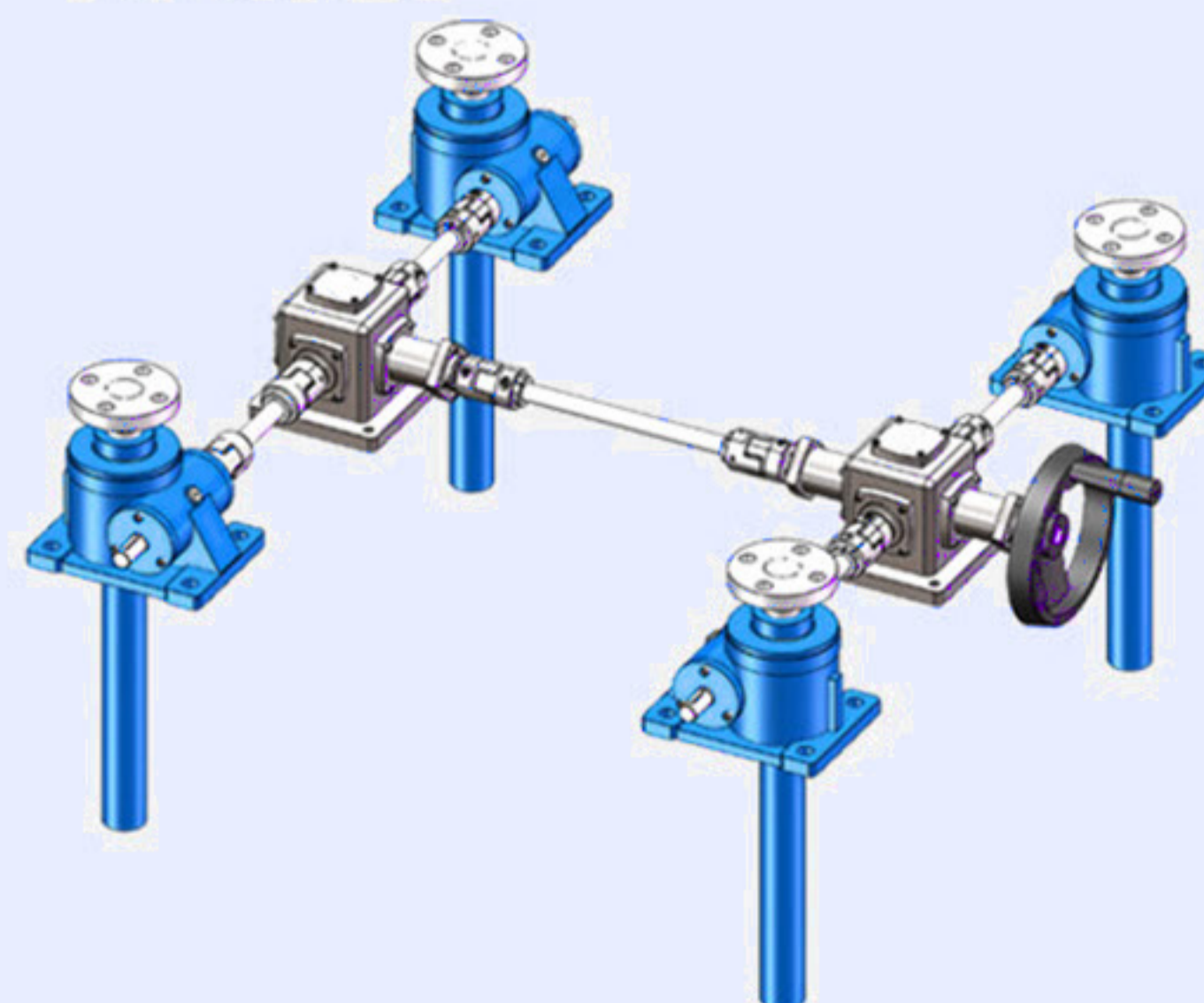
3

SWL四台联动场景



4

SWL四台联动场景

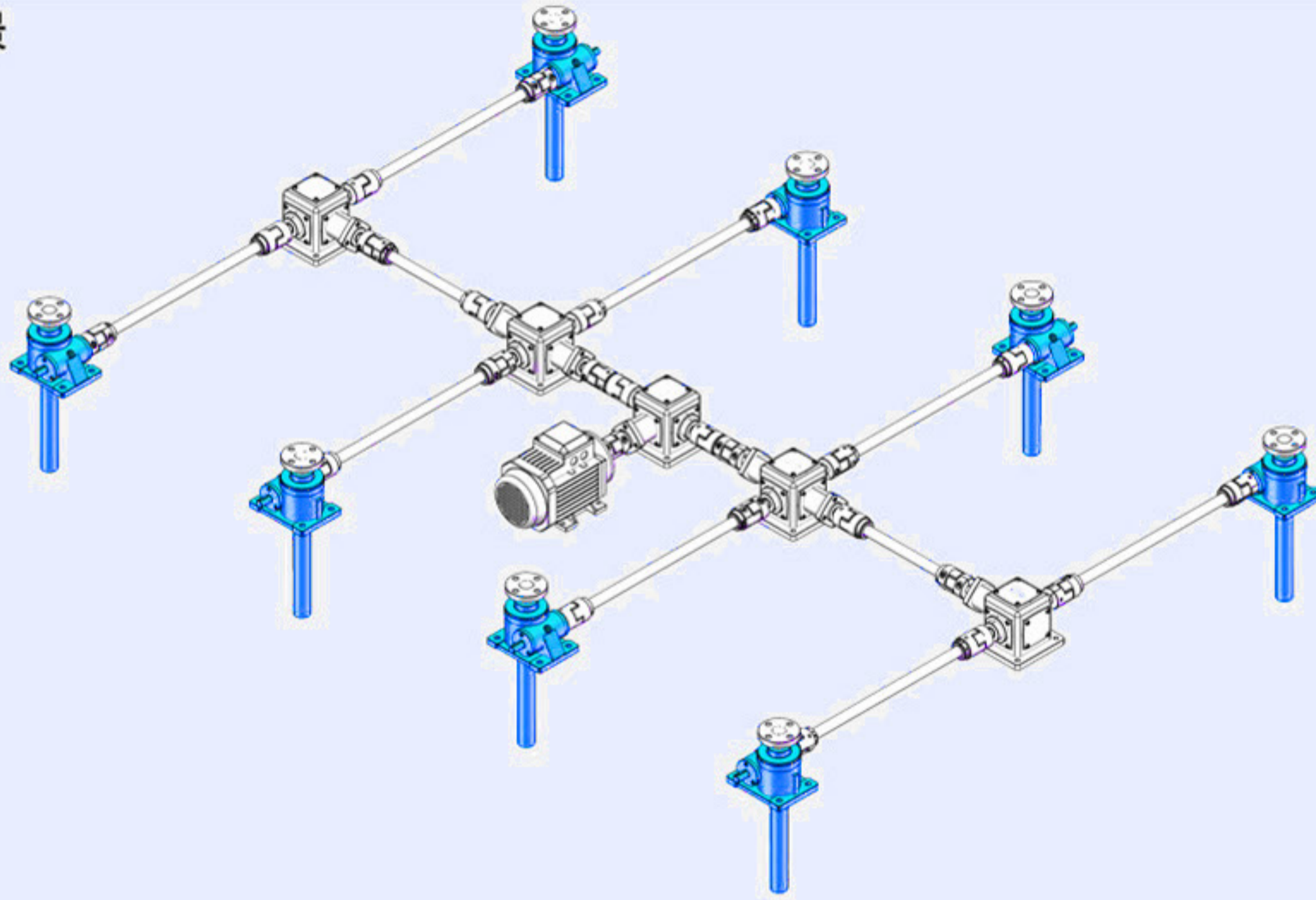


5

如需要更多样式请与客服联系

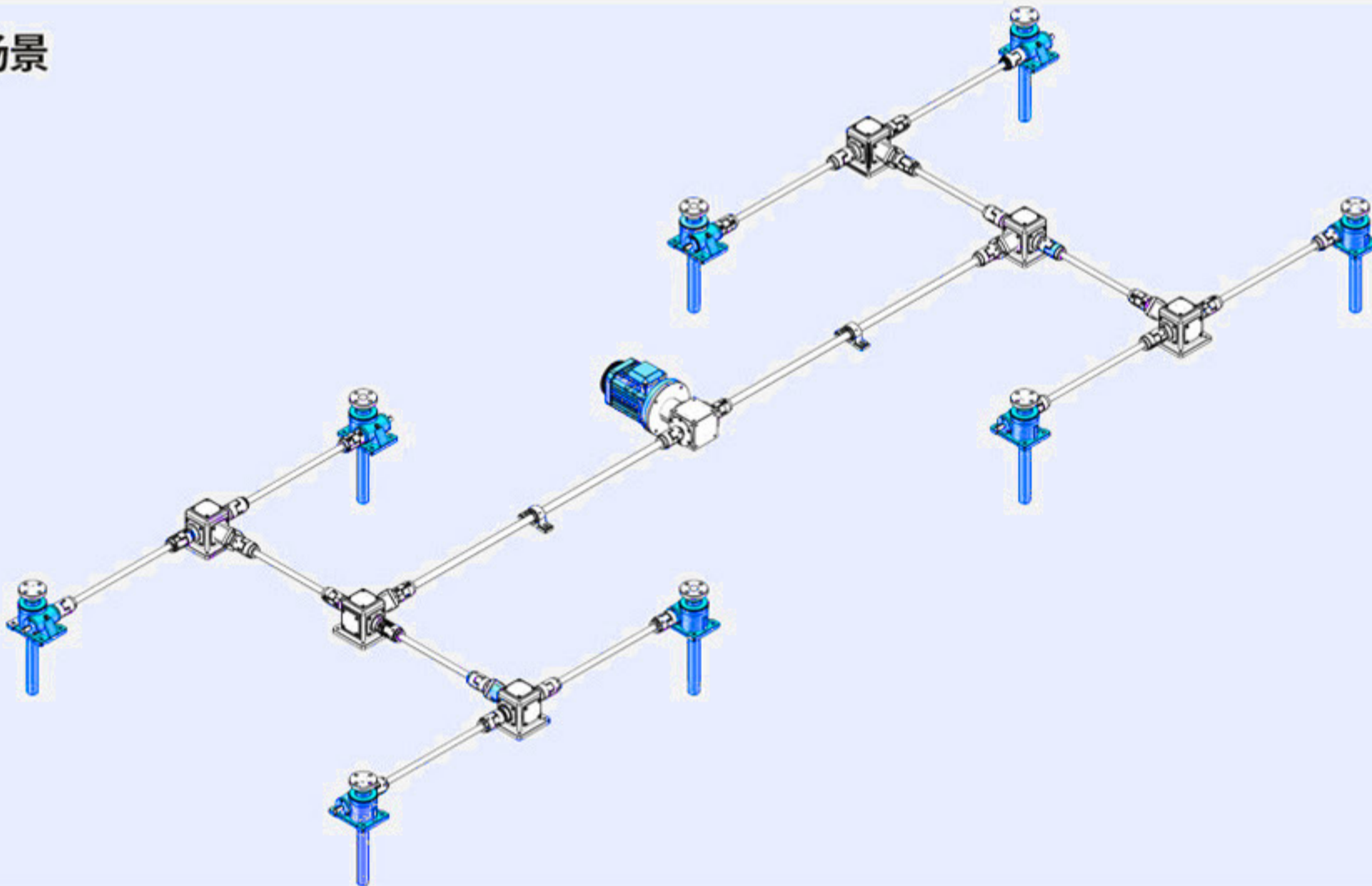
16.5- 多台示例(以03页图1为例)

SWL多台联动场景



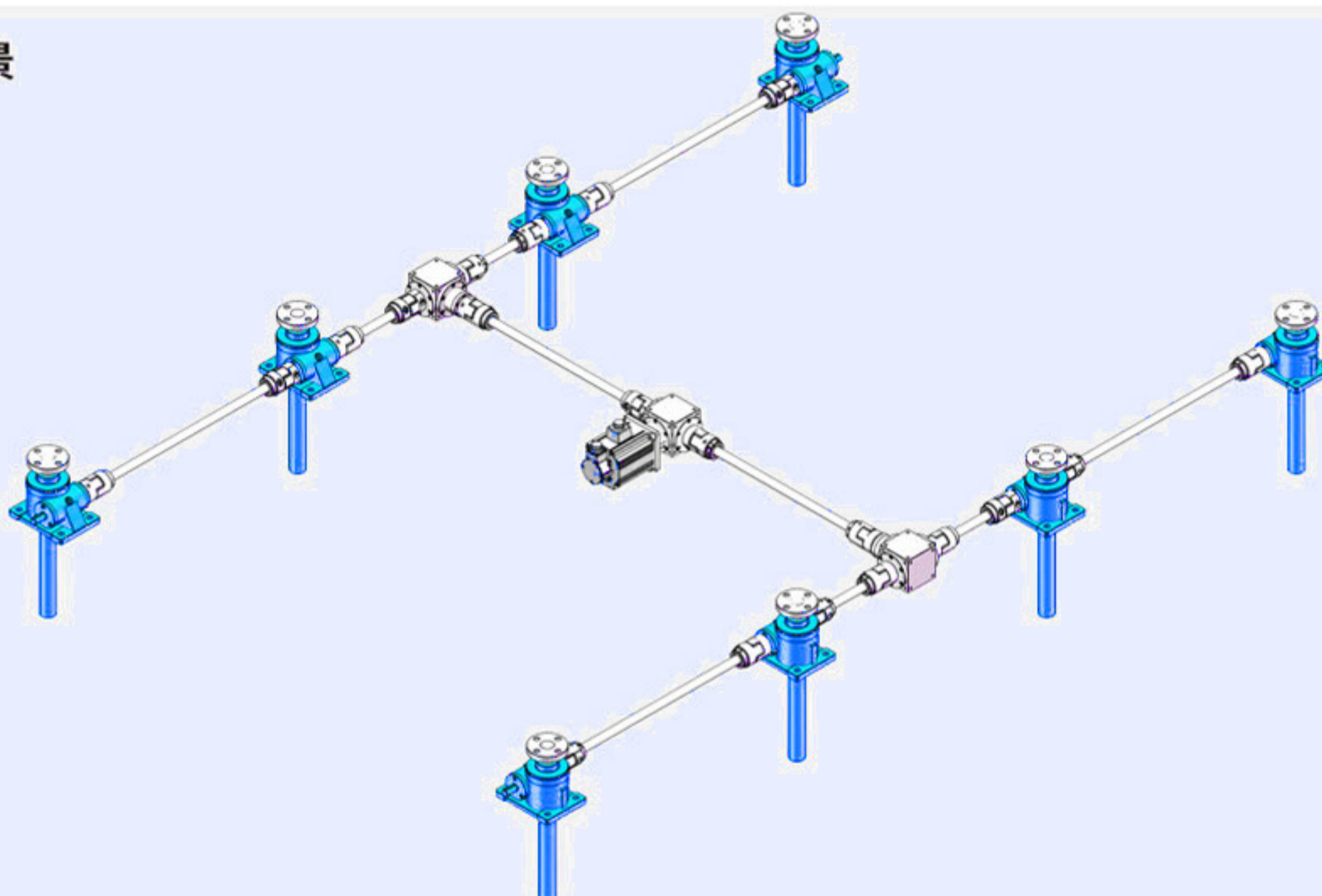
1

SWL多台联动场景



2

SWL多台联动场景



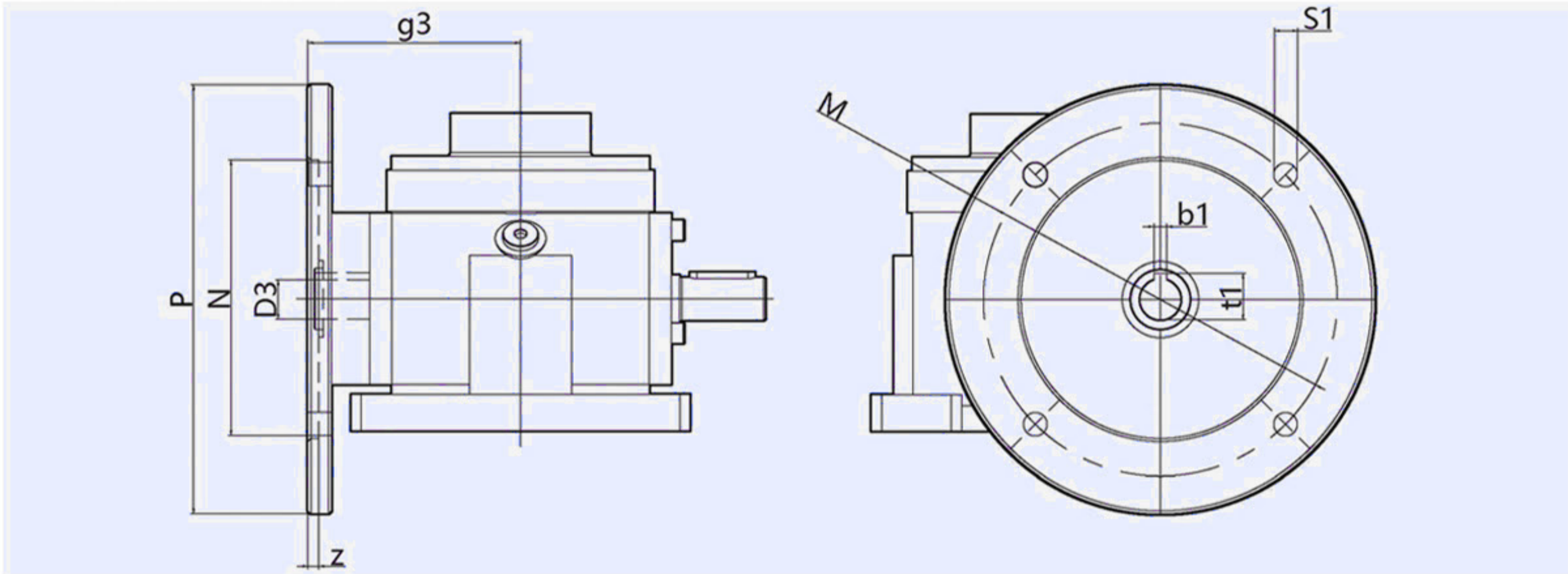
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如需要更多样式请与客服联系

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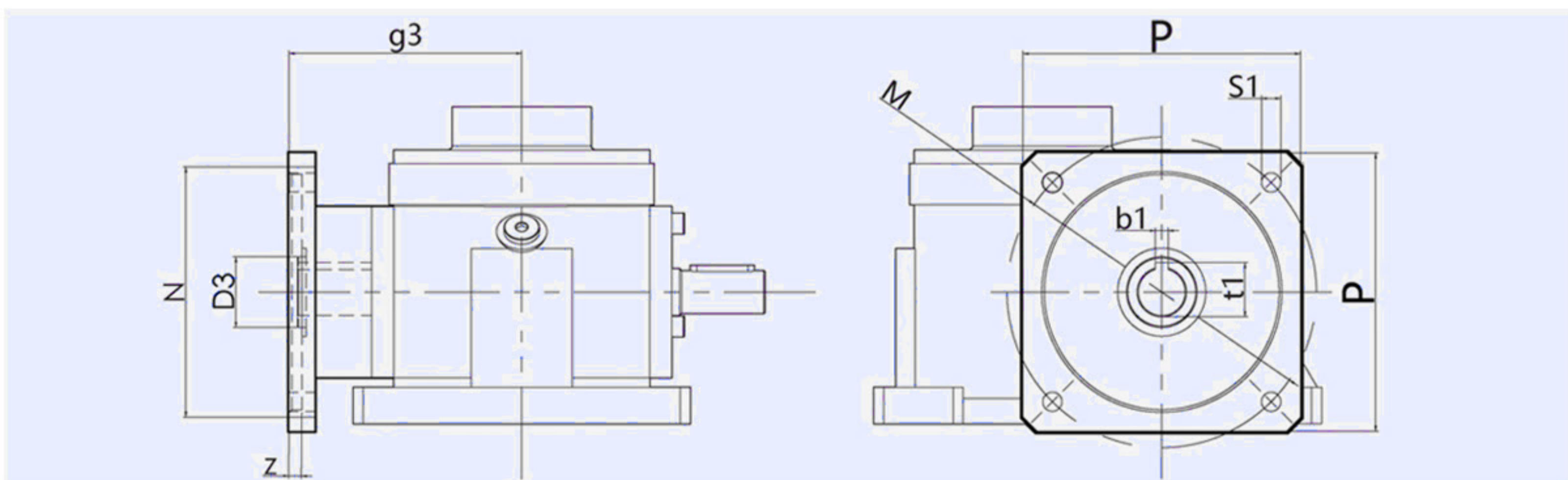
SHANGHAI CHANGFENG TRANSMISSION MACHINERY CO LTD

1. SWL...IEC输入法兰尺寸表



型号规格	法兰规格 IEC	g3	D3	N	M	P	S1	b1	t1	Z
SWL1	56B5	72	9	80	100	120	M5	3	10.4	4
	63B5	72	11	95	115	140	M10	4	12.8	4
	71B5	77	14	110	130	160	M10	5	16.3	5
SWL2.5	71B5	77	14	110	130	160	M10	5	16.3	5
	80B5	87	19	130	165	200	M10	6	21.8	5
SWL5	80B5	99	19	130	165	200	M10	6	21.8	5
	90B5	109	24	130	165	200	M10	8	27.3	5
SWL10	90B5	118	24	130	165	200	M10	8	27.3	5
	100B5	160	28	180	215	250	M12	8	31.3	5.5
	112B5	142	28	180	215	250	M12	8	31.3	5.5
SWL20	90B5	142	24	130	165	200	M10	8	27.3	5
	100B5	142	28	180	215	250	M12	8	31.3	5.5
	112B5	142	28	180	215	250	M12	8	31.3	5.5
SWL25	132B5	175	38	230	265	300	M12	10	41.3	6
SWL35	132B5	202	38	230	265	300	M12	10	41.3	6
	160B5	232	38	230	265	300	M12	10	41.3	6

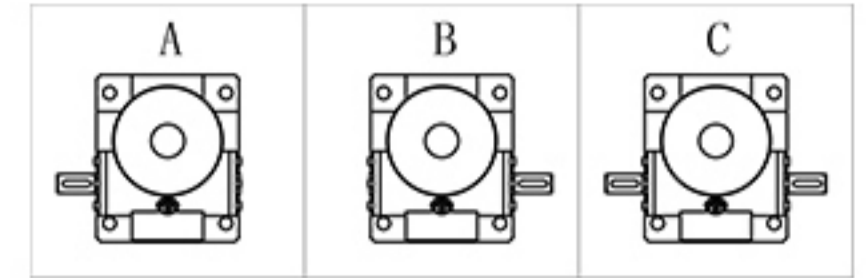
2. SWLD...ST伺服、步进电机输入法兰尺寸表



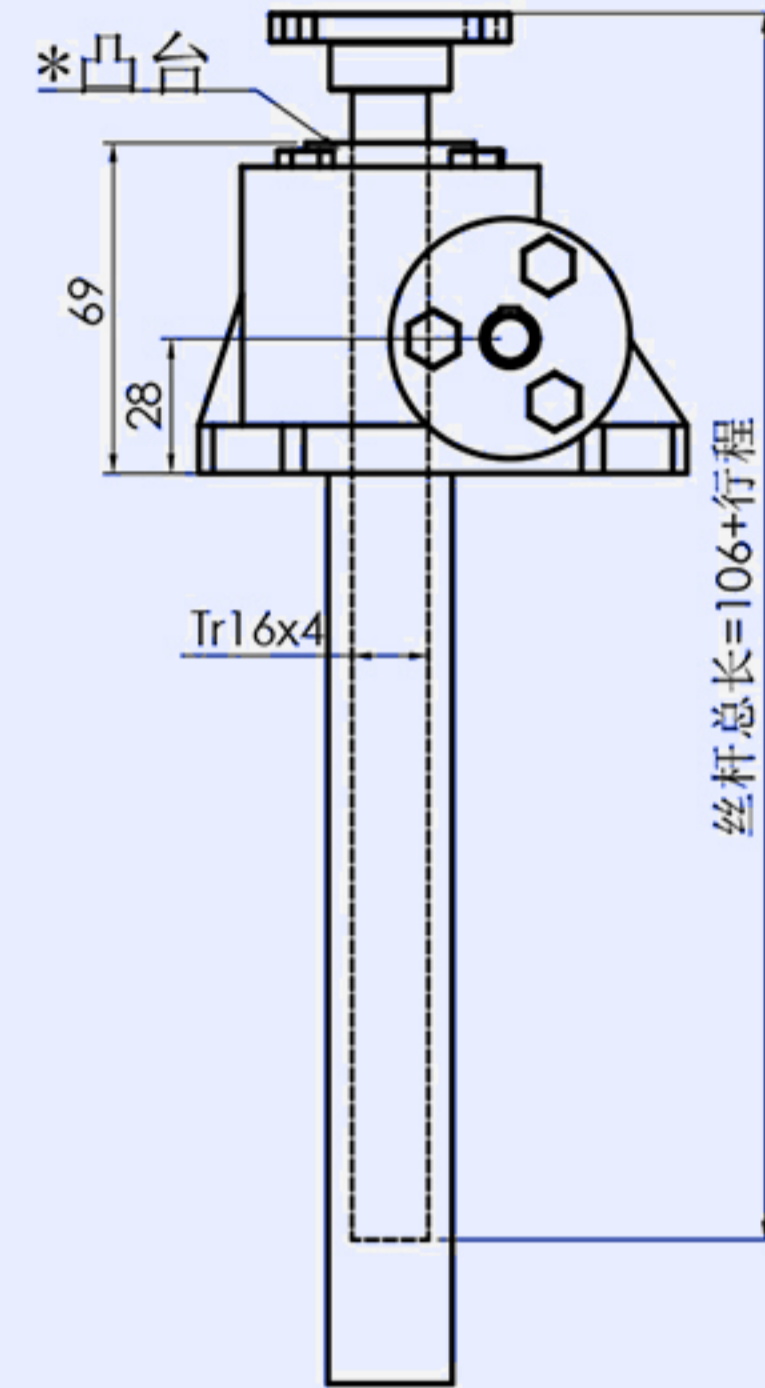
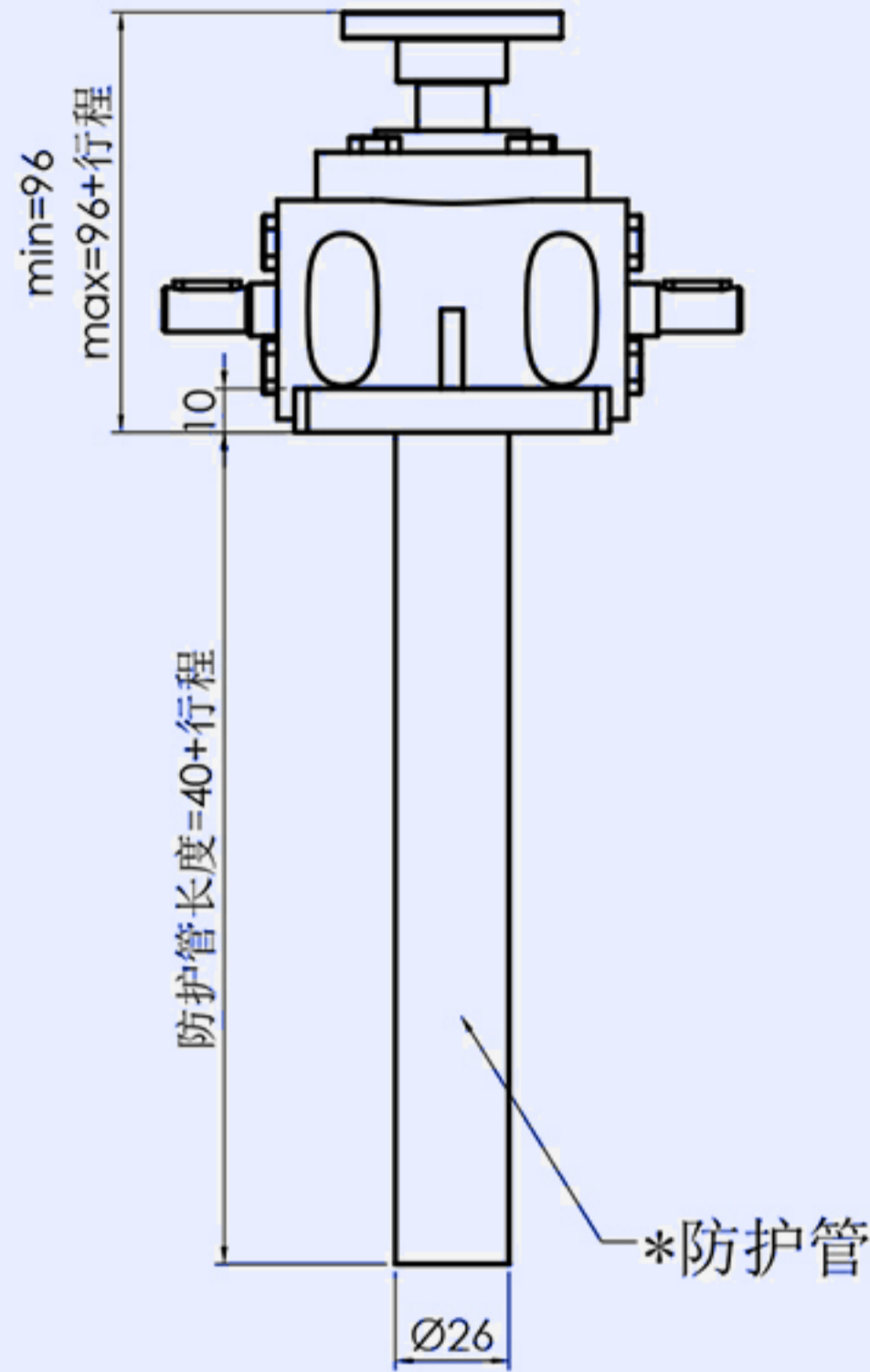
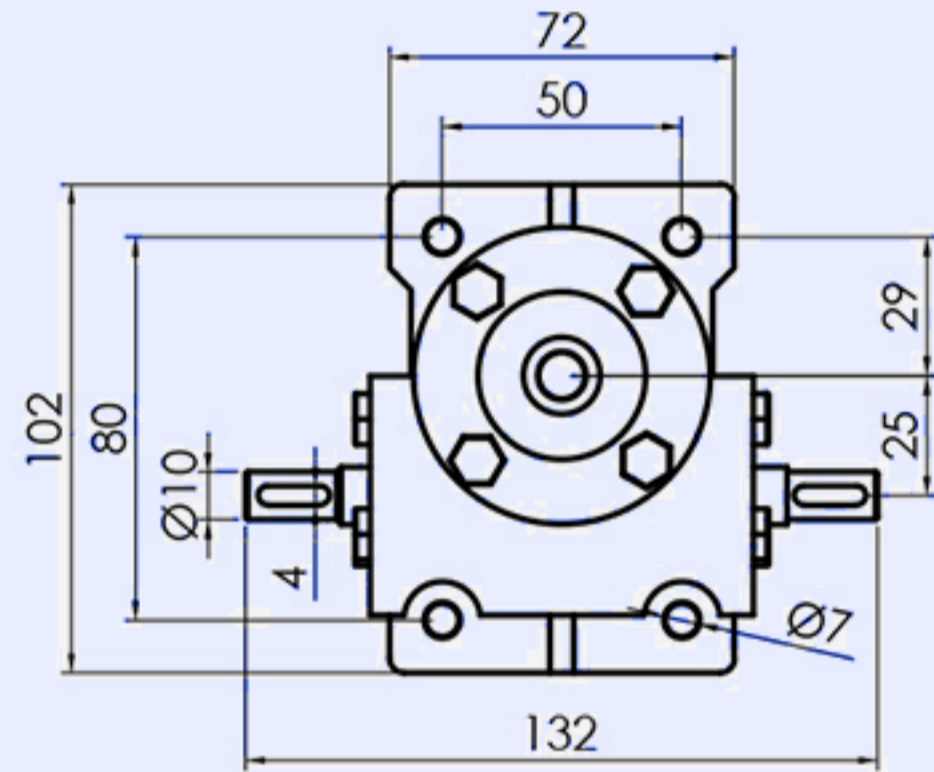
型号规格	法兰规格 IEC	g3	D3	N	M	P	S1	b1	t1	Z
SWL1	SF60	72	14	50	70	60	M6	5	16.3	4
SWL2.5	BJ86	77	14	73	69	86	M5	5	16	4
	SF60	77	14	50	70	60	M5	5	16.3	4
	SF80	87	19	70	90	80	M5	6	21.8	5
	SF90	87	16	80	100	90	M8	5	18.3	5
SWL5	SF110	109	19	95	130	110	M8	6	21.8	6
	SF130	109	22	110	145	130	M8	6	24.8	6
SWL10	SF100	118	16	80	110	100	M8	5	18.3	5

SWL 0.5 外形尺寸图表

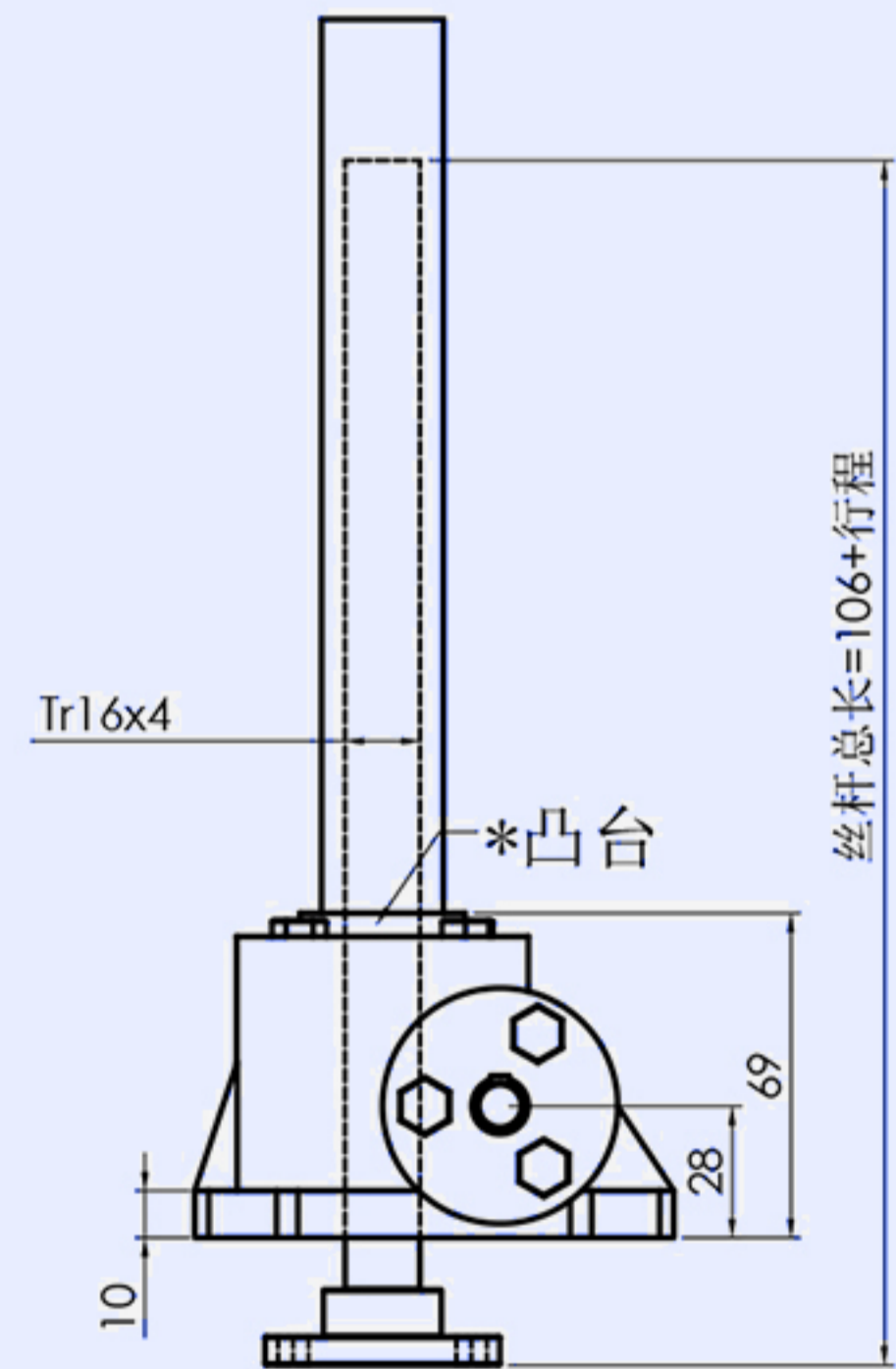
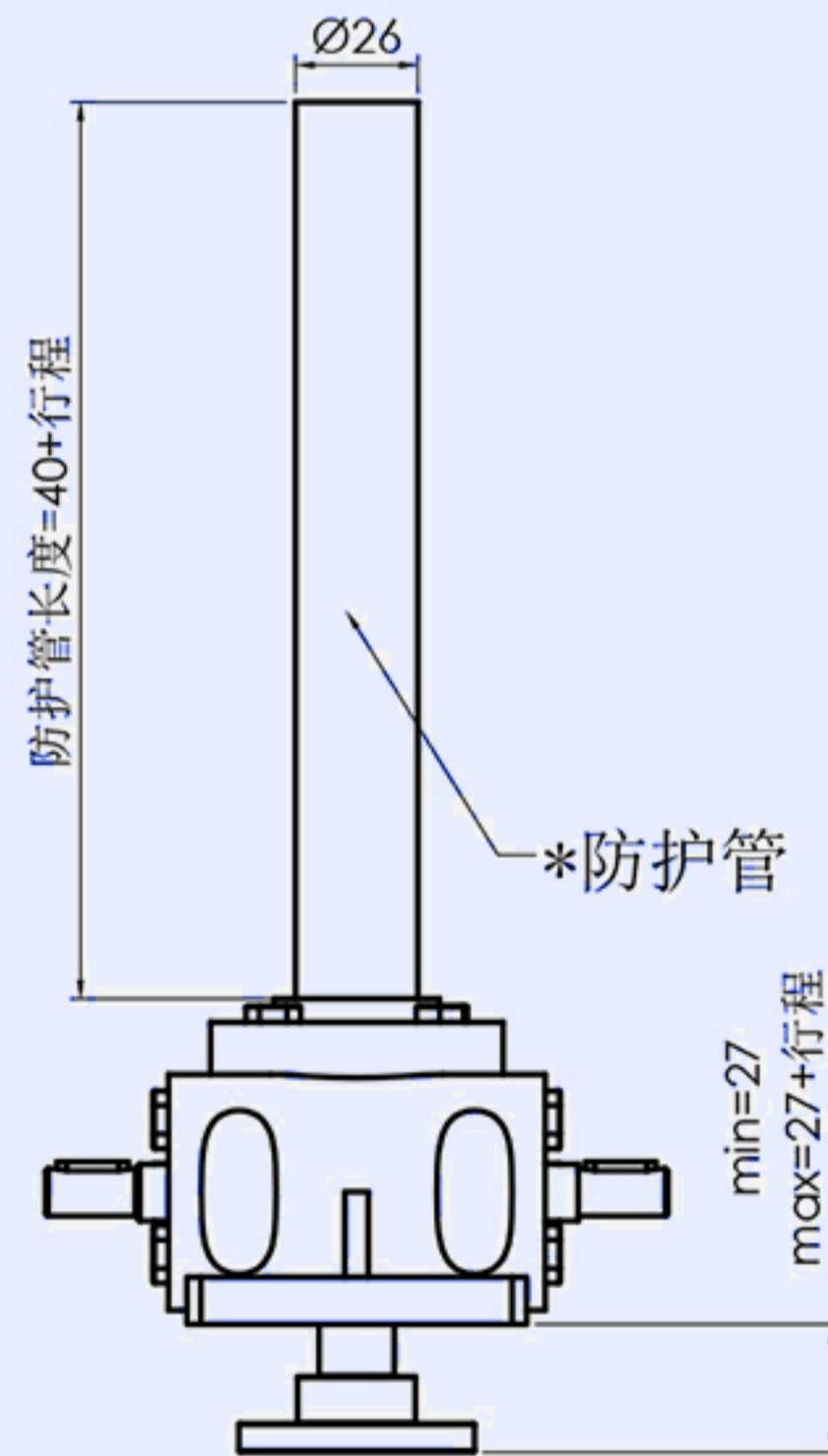
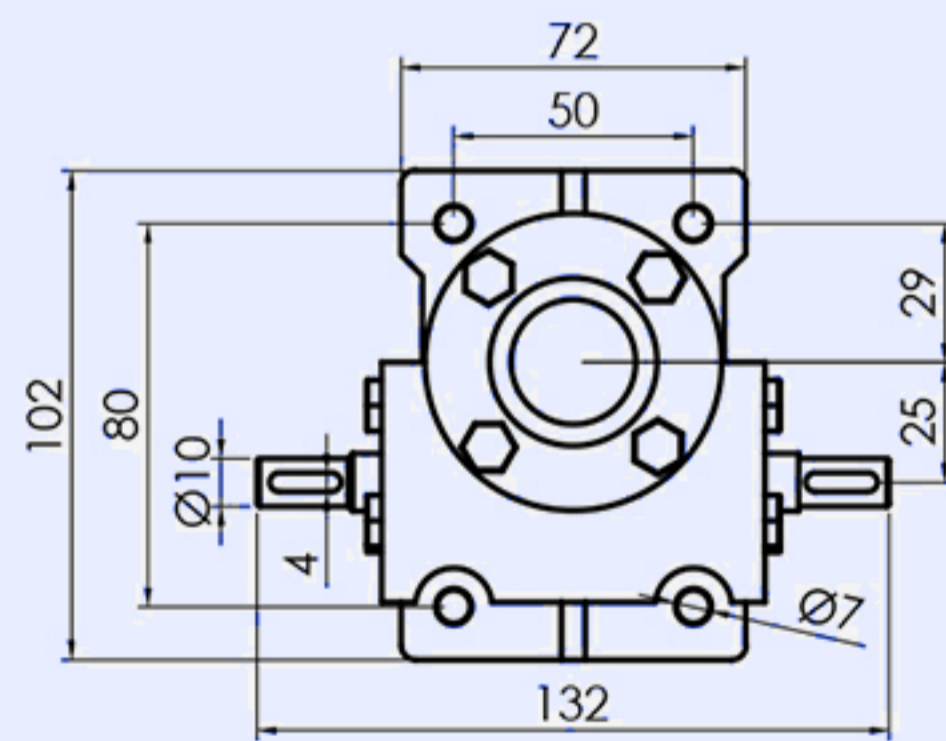
*轴指向(默认C),A、B轴指向下单请注明



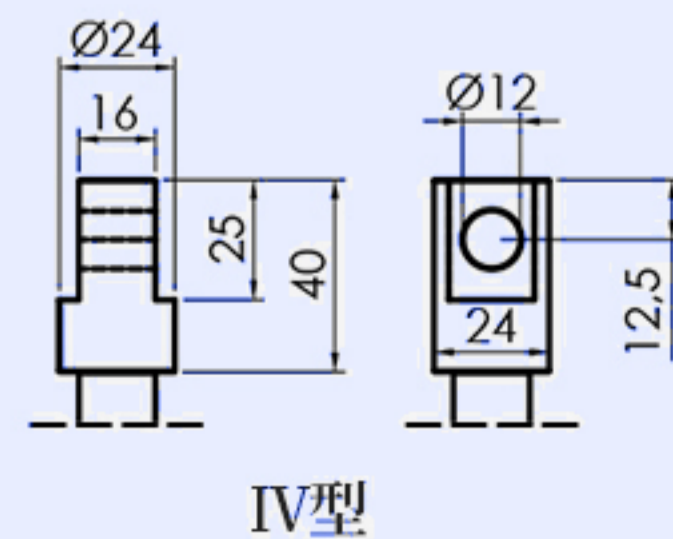
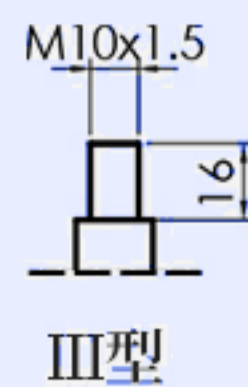
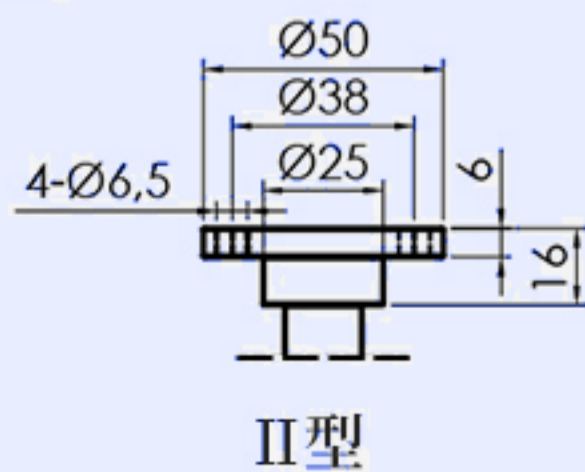
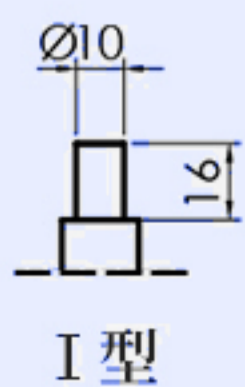
1A 型



1B 型

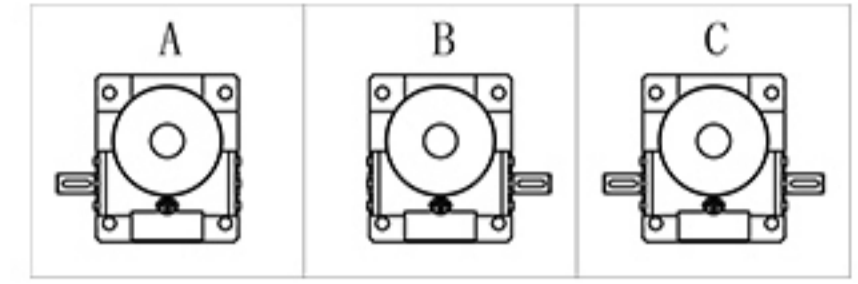


丝杆头部可选形式:

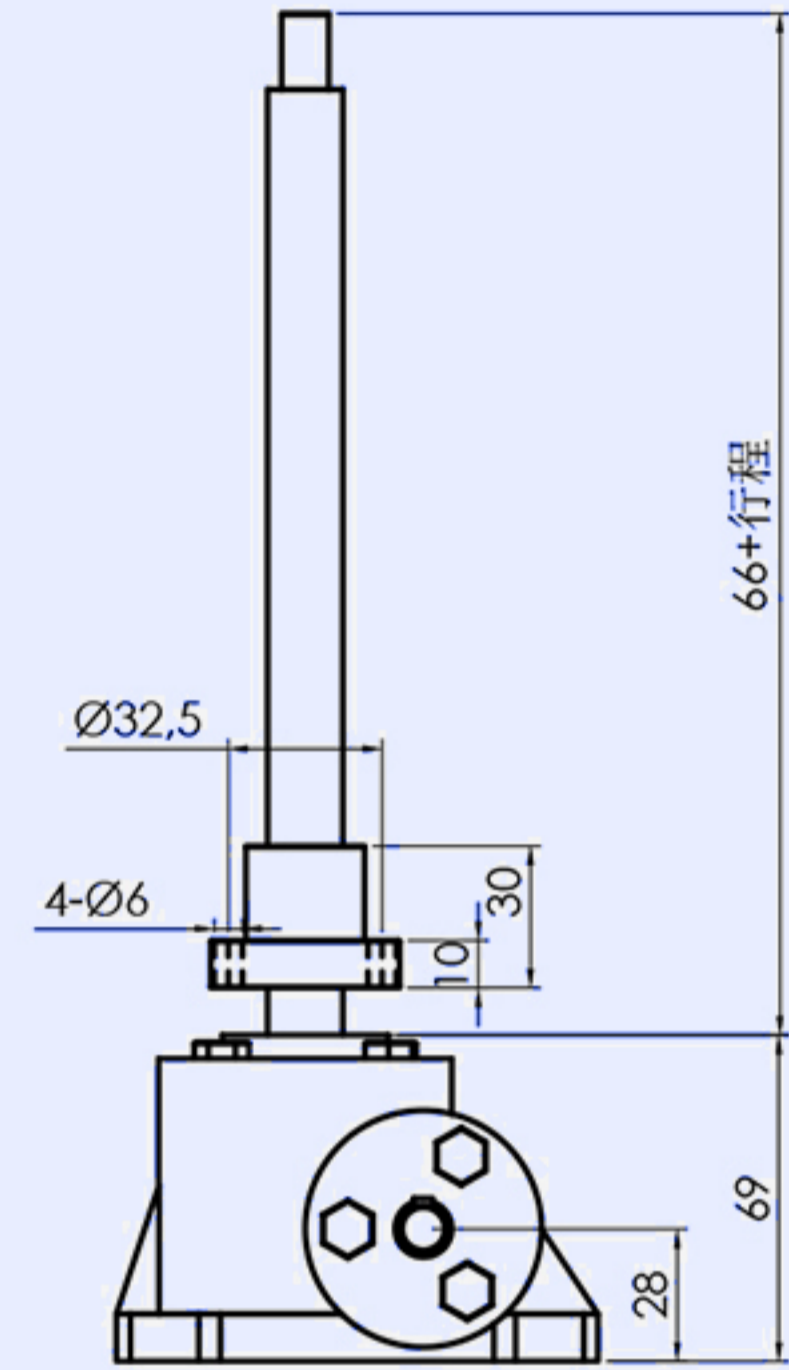
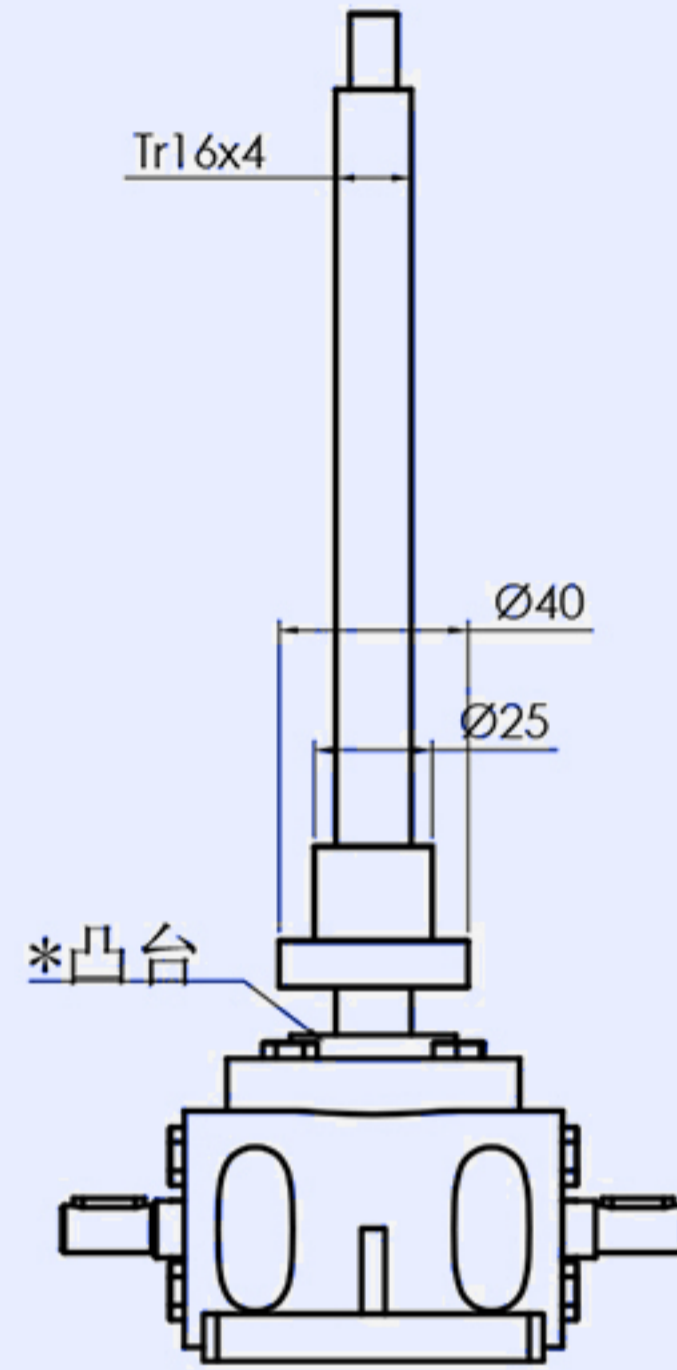
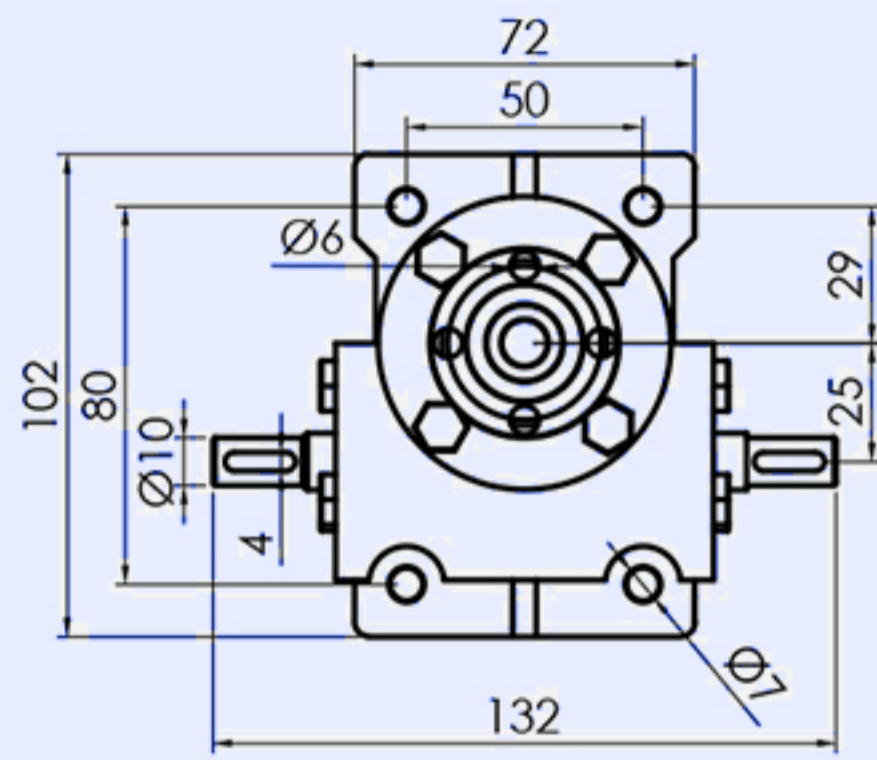


SWL 0.5 外形尺寸图表

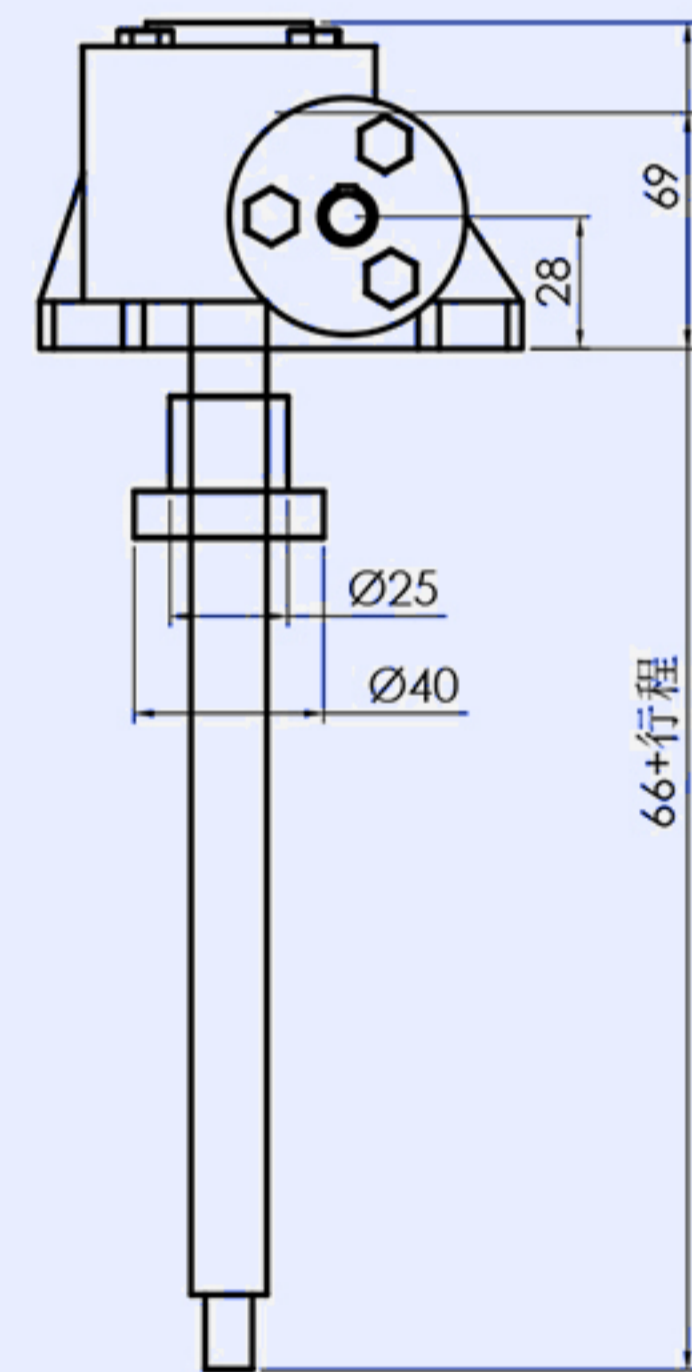
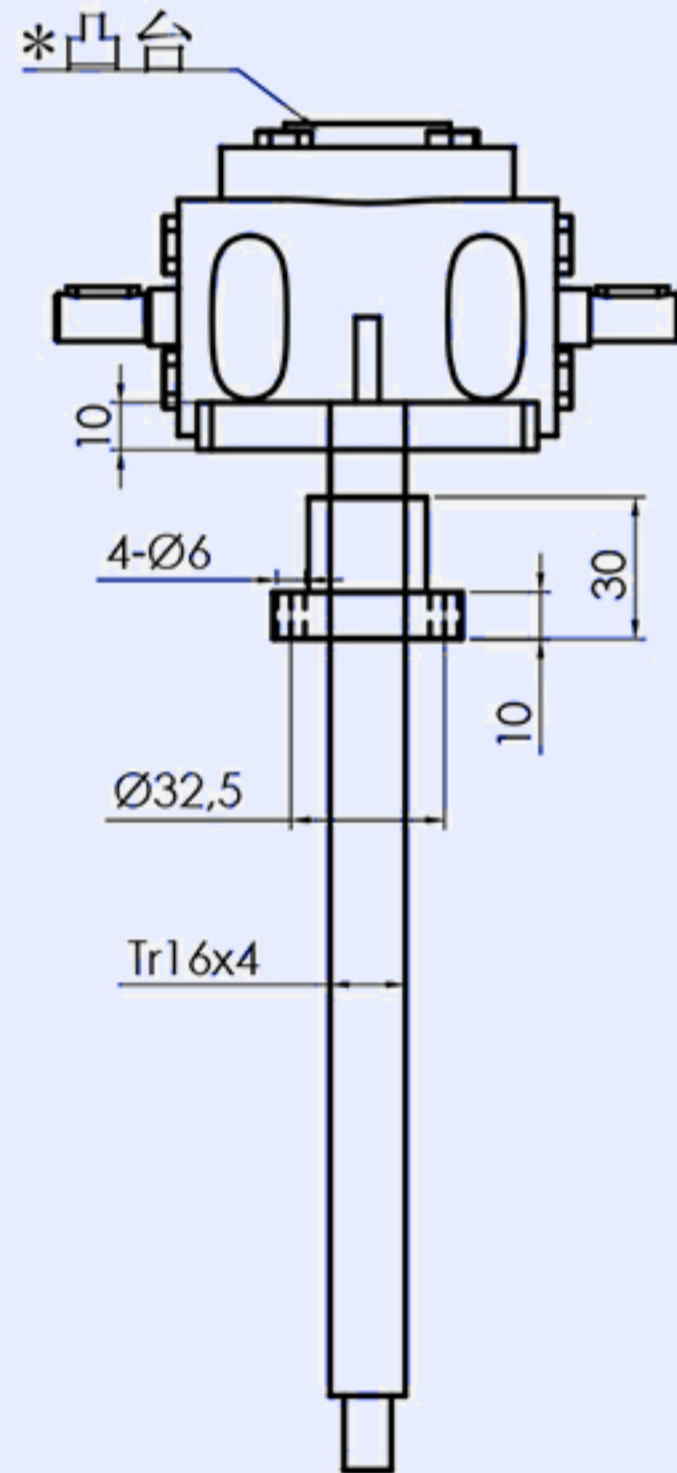
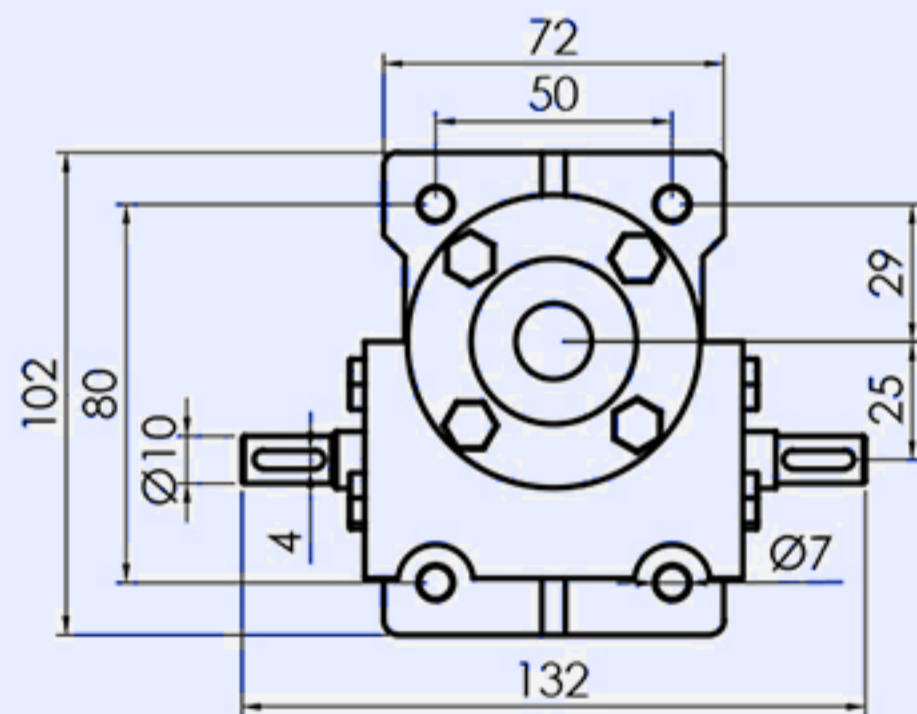
*轴指向(默认C),A、B轴指向下单请注明



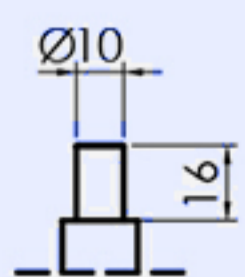
2A 型



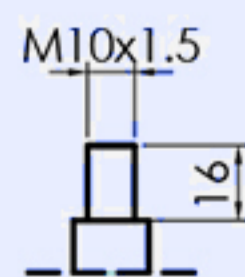
2B 型



丝杆头部可选形式:



I 型



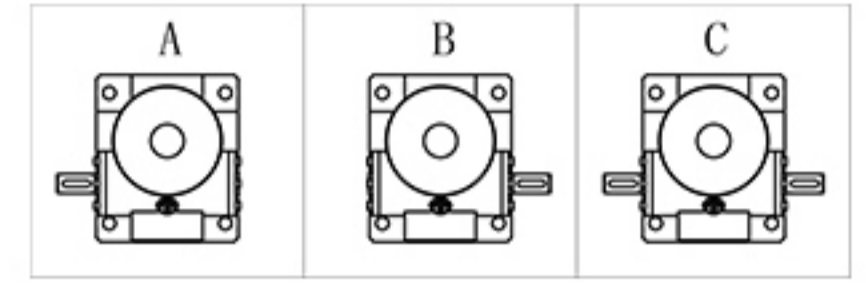
III 型

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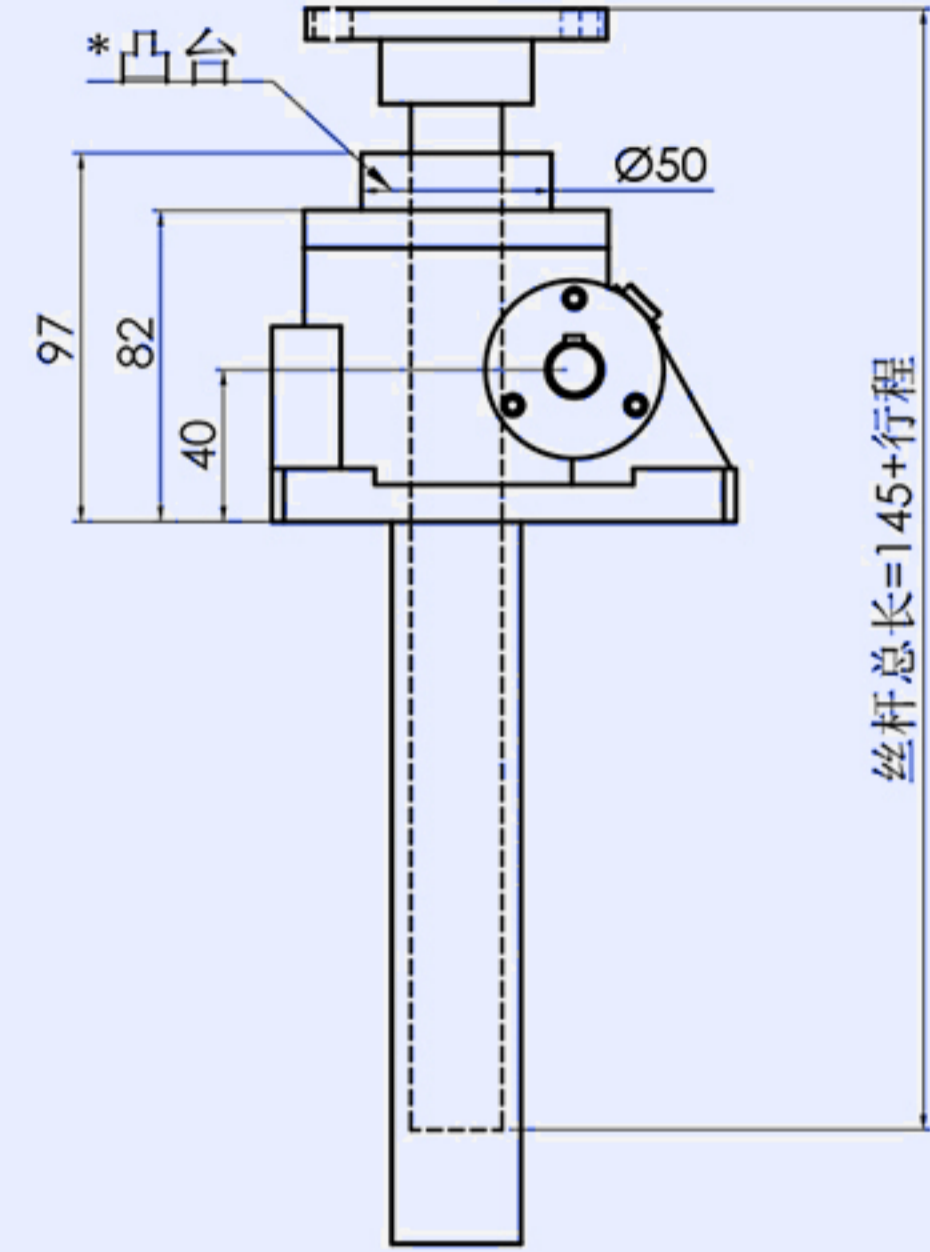
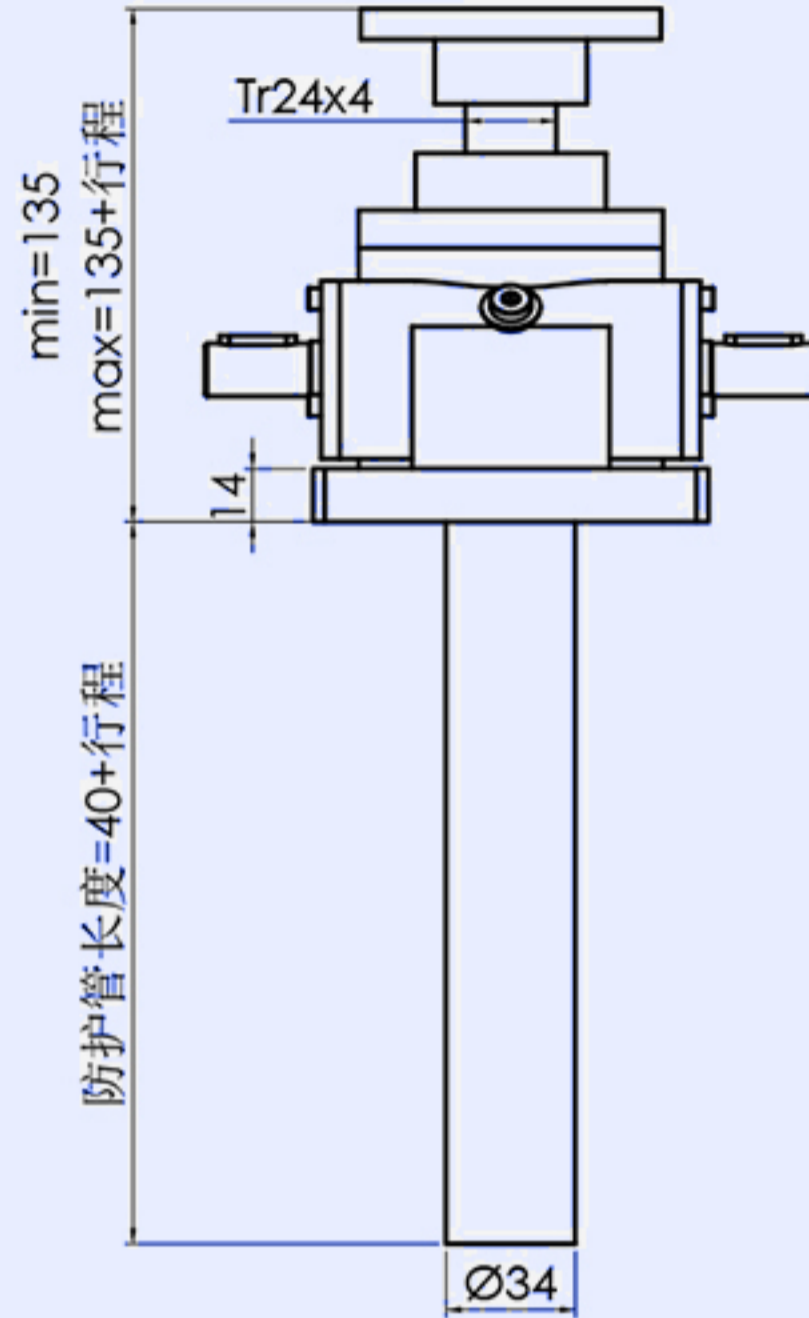
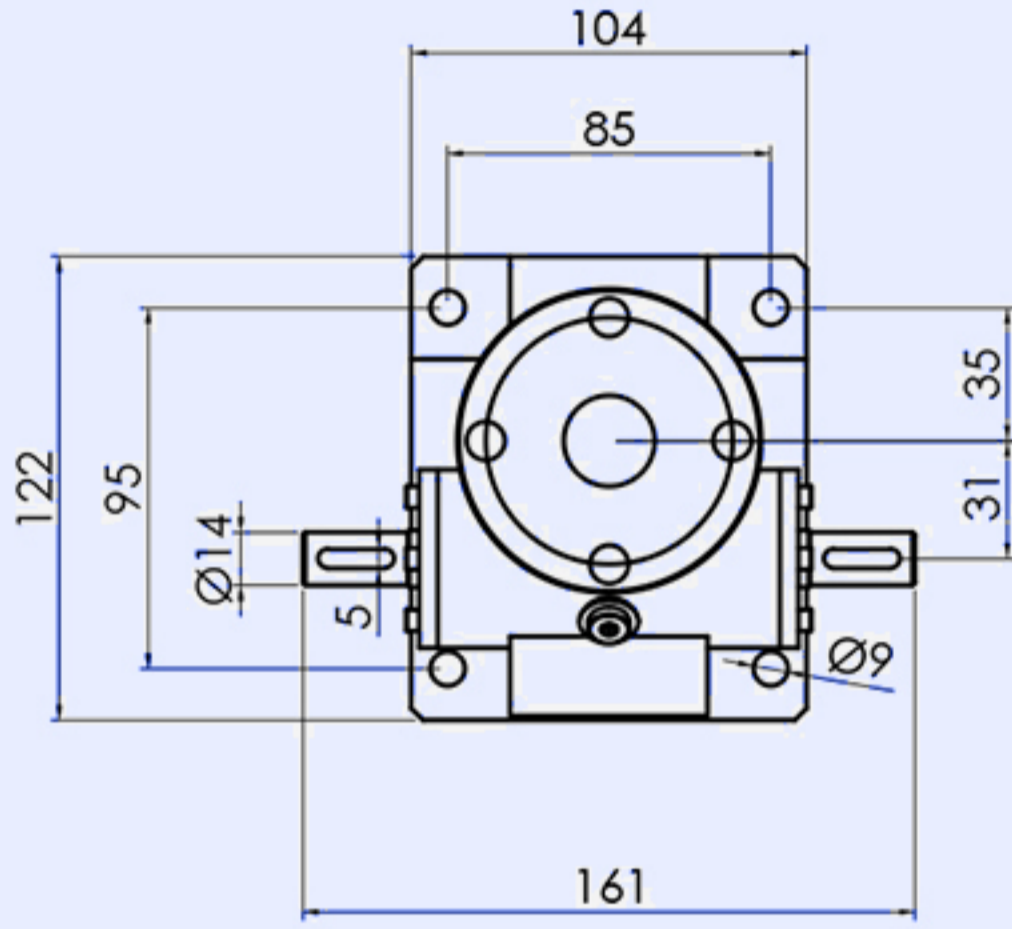
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SWL 1 外形尺寸图表

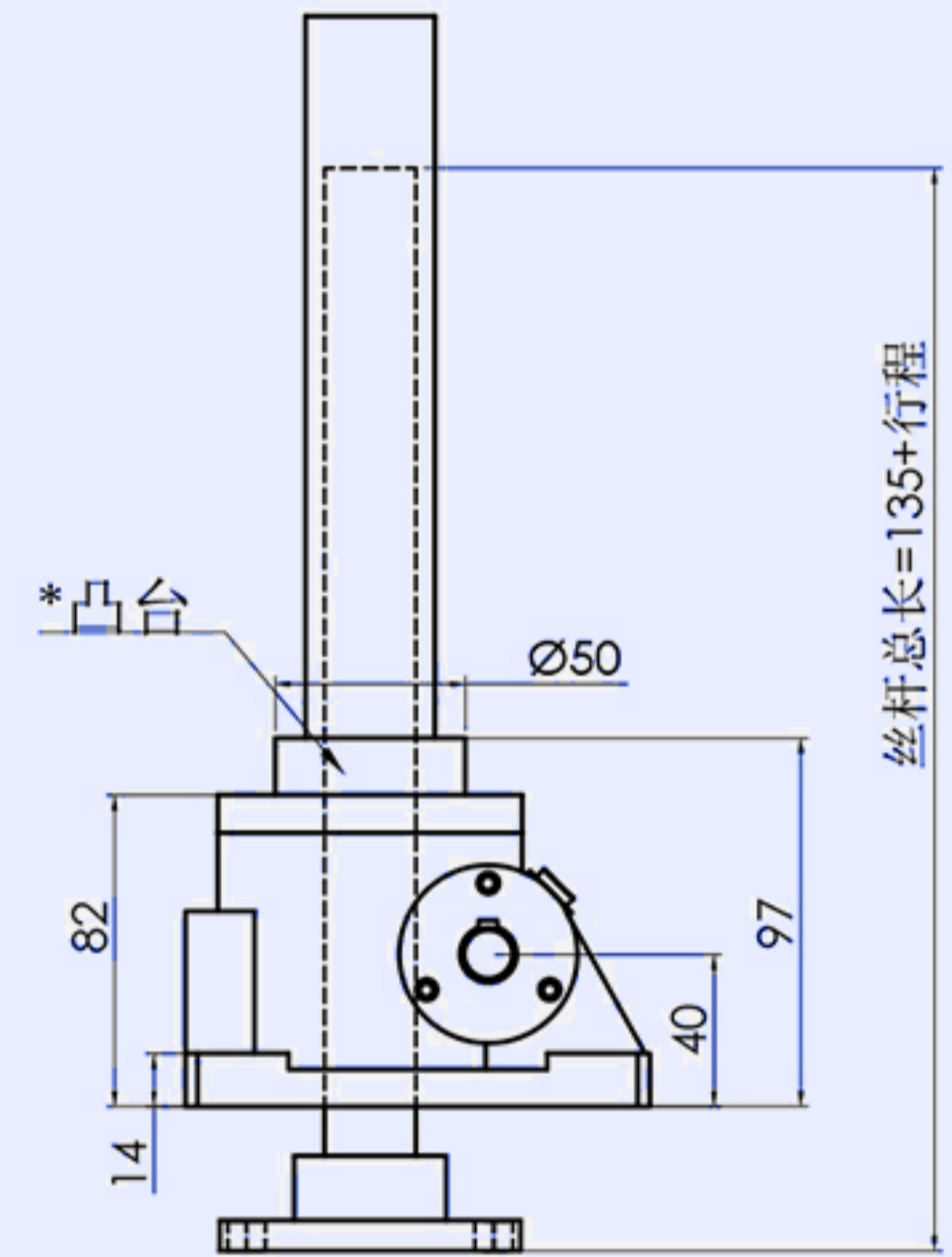
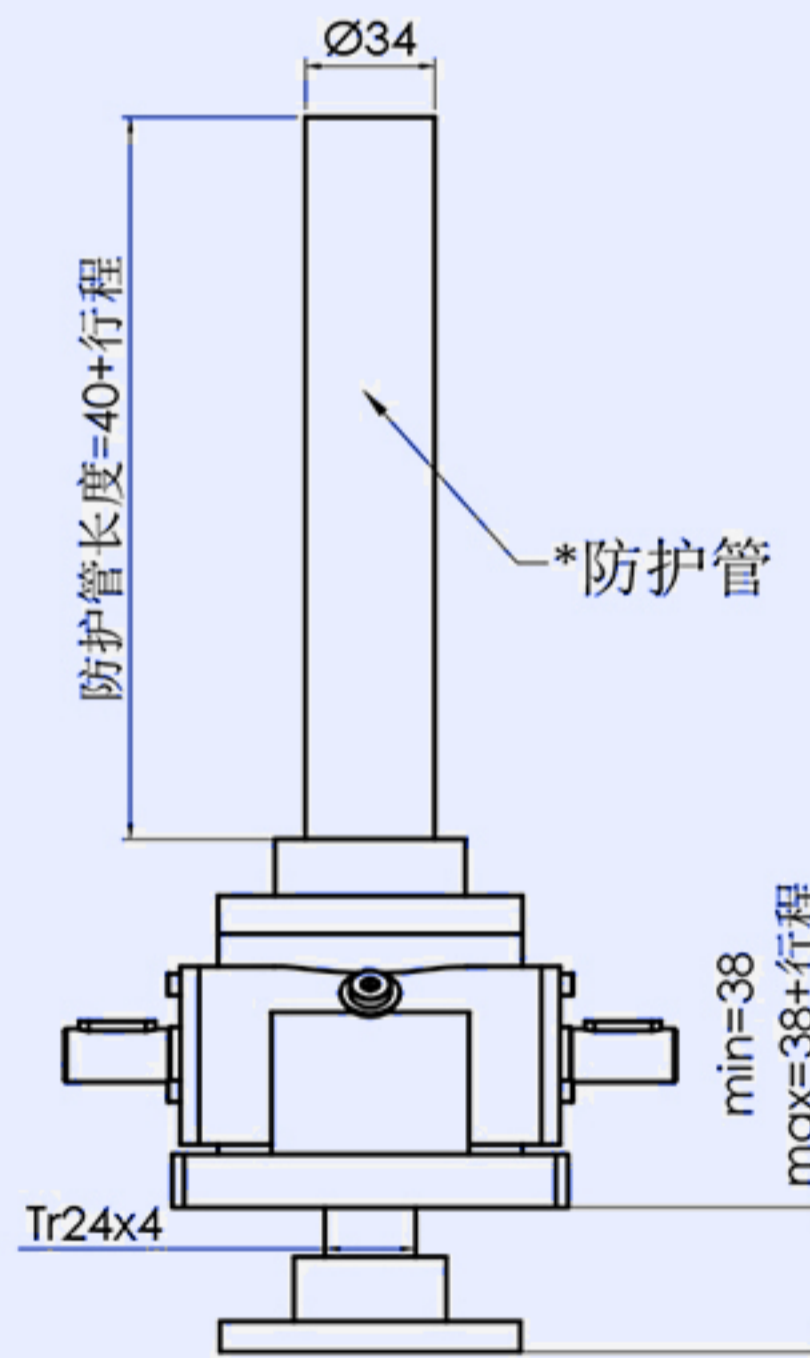
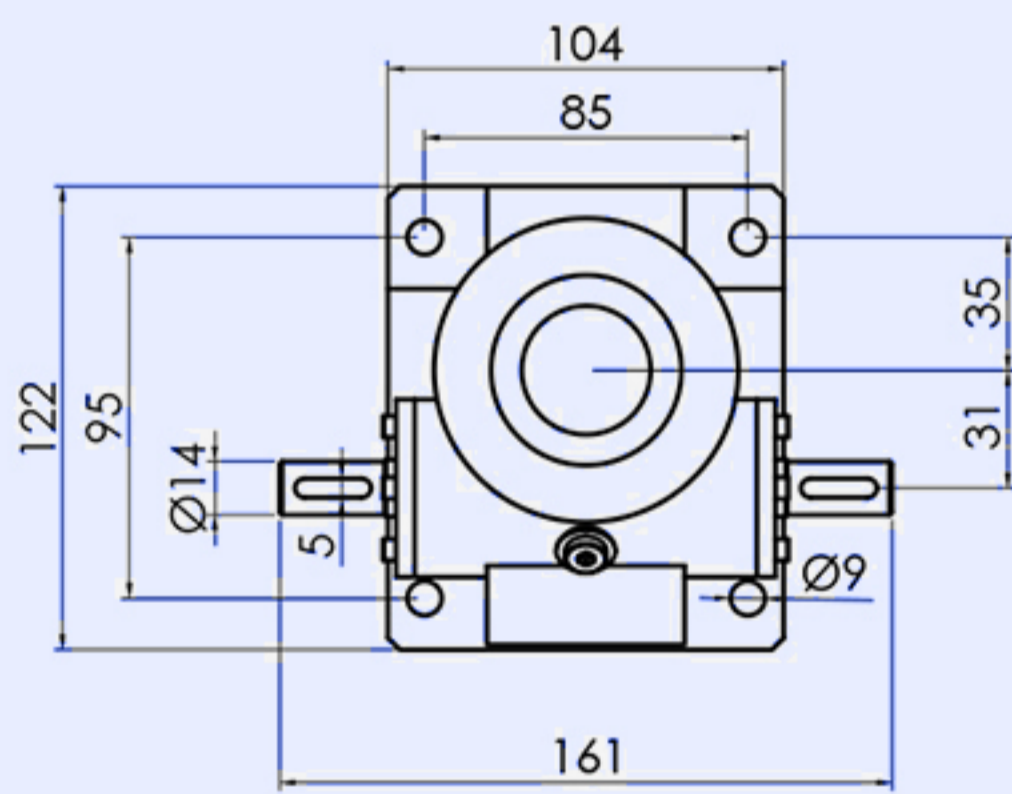
*轴指向(默认C),A、B轴指向下单请注明



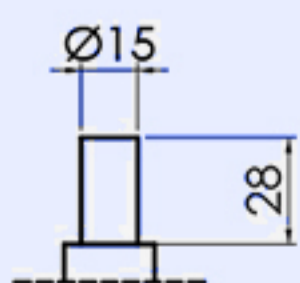
1A 型



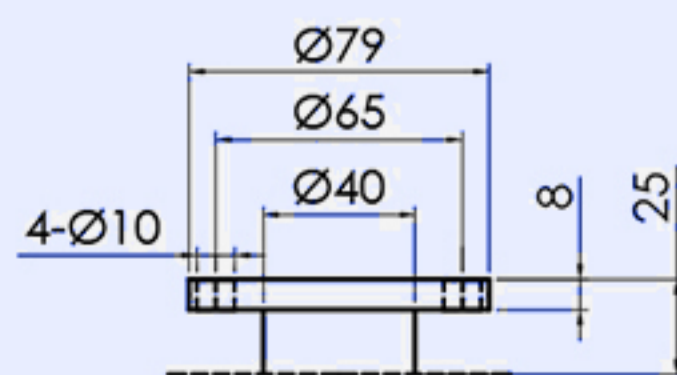
1B 型



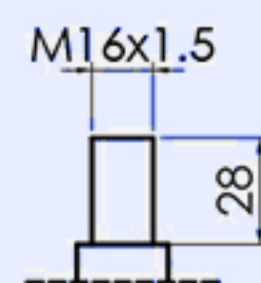
丝杆头部可选形式:



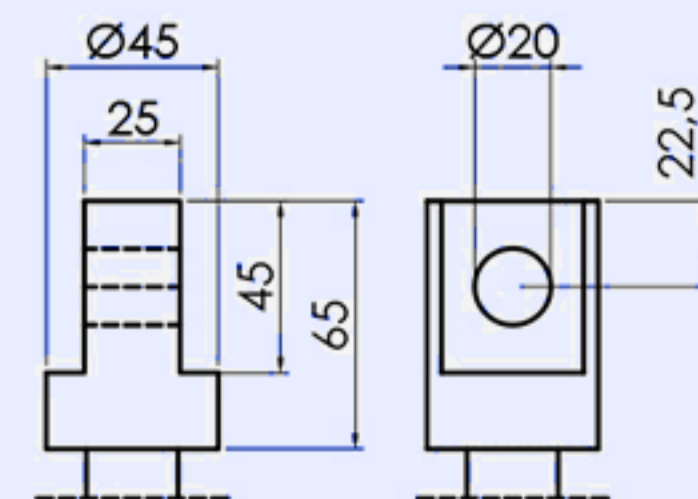
I 型



II 型



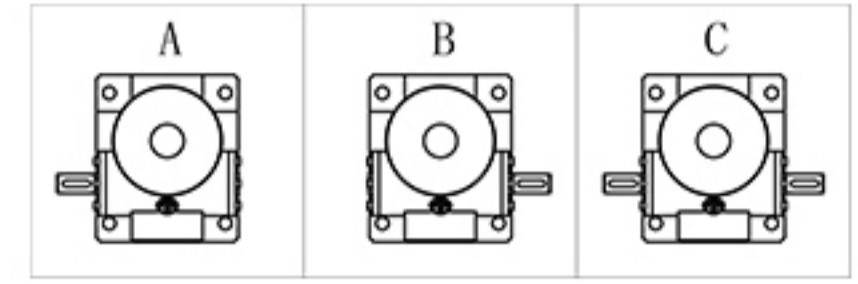
III 型



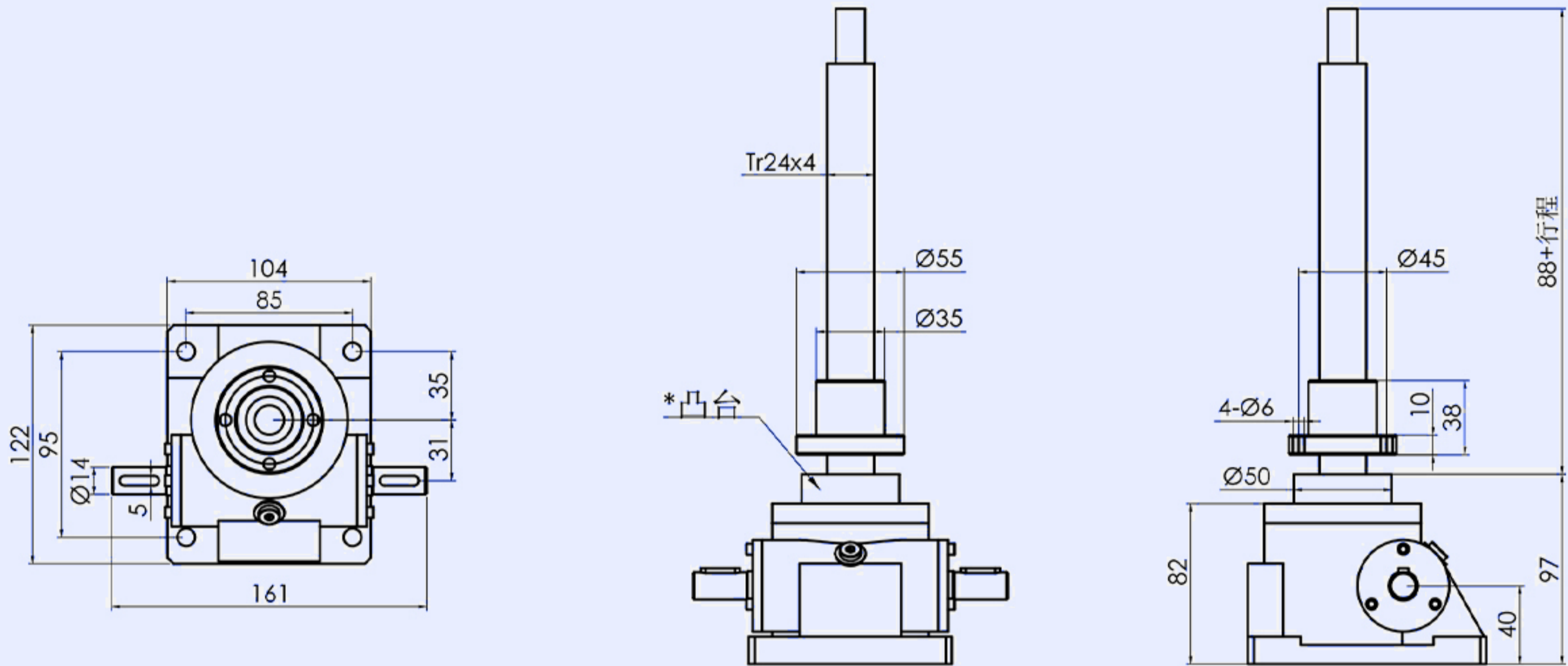
IV 型

SWL 1 外形尺寸图表

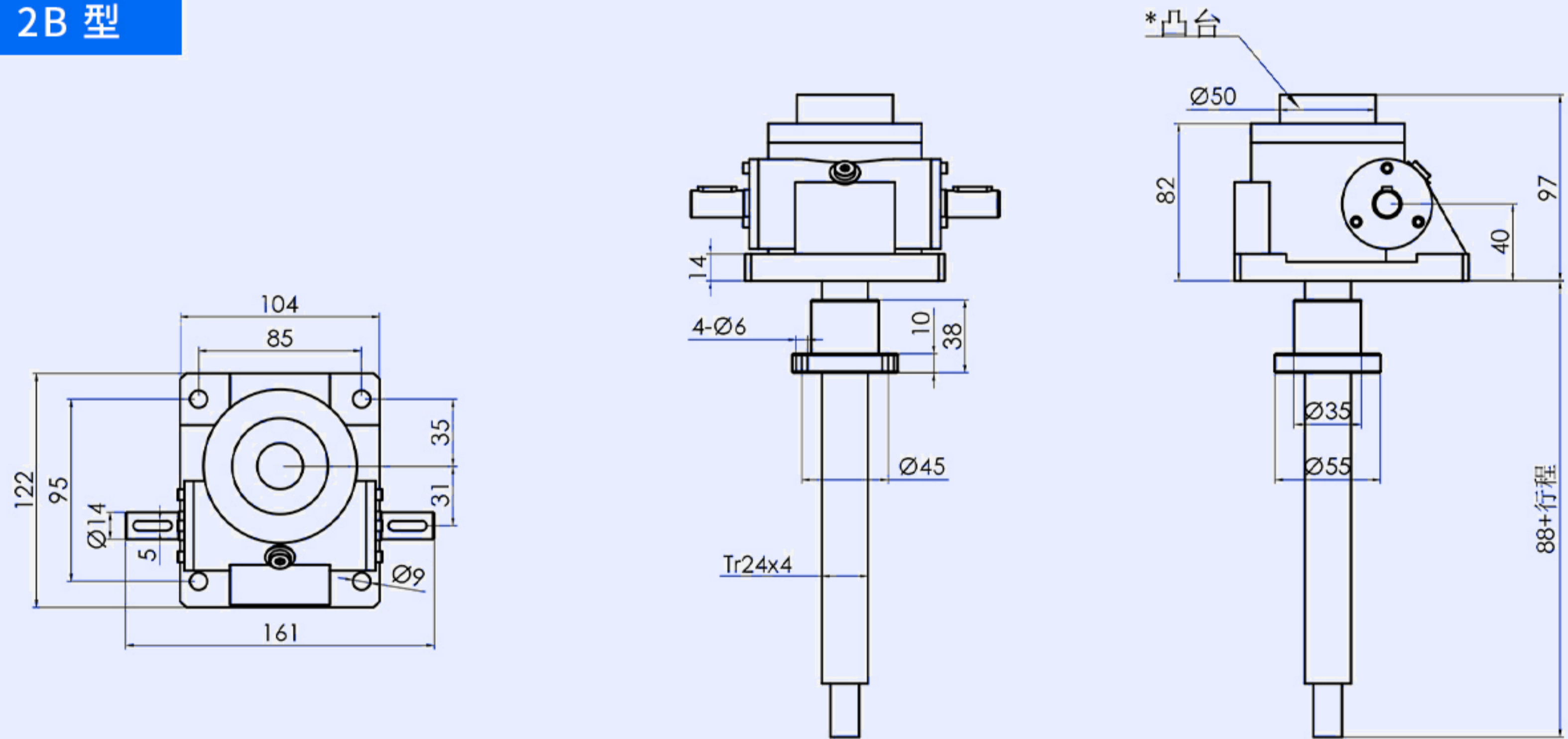
*轴指向(默认C),A、B轴指向下单请注明



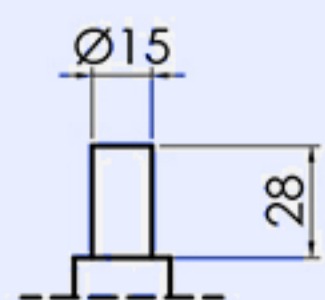
2A 型



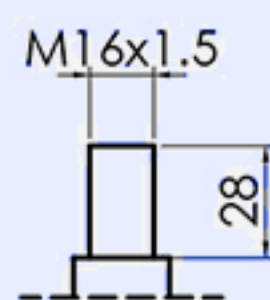
2B 型



丝杆头部可选形式:



I 型



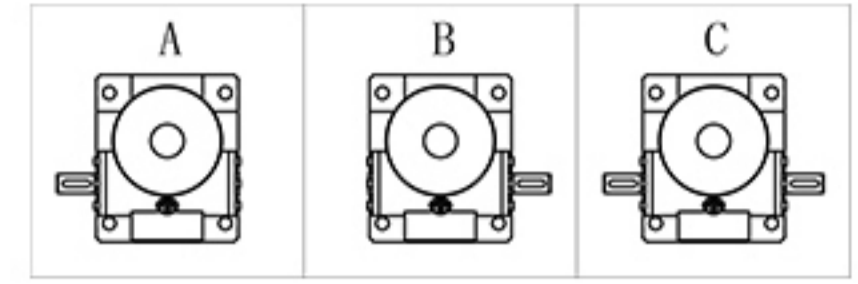
III 型

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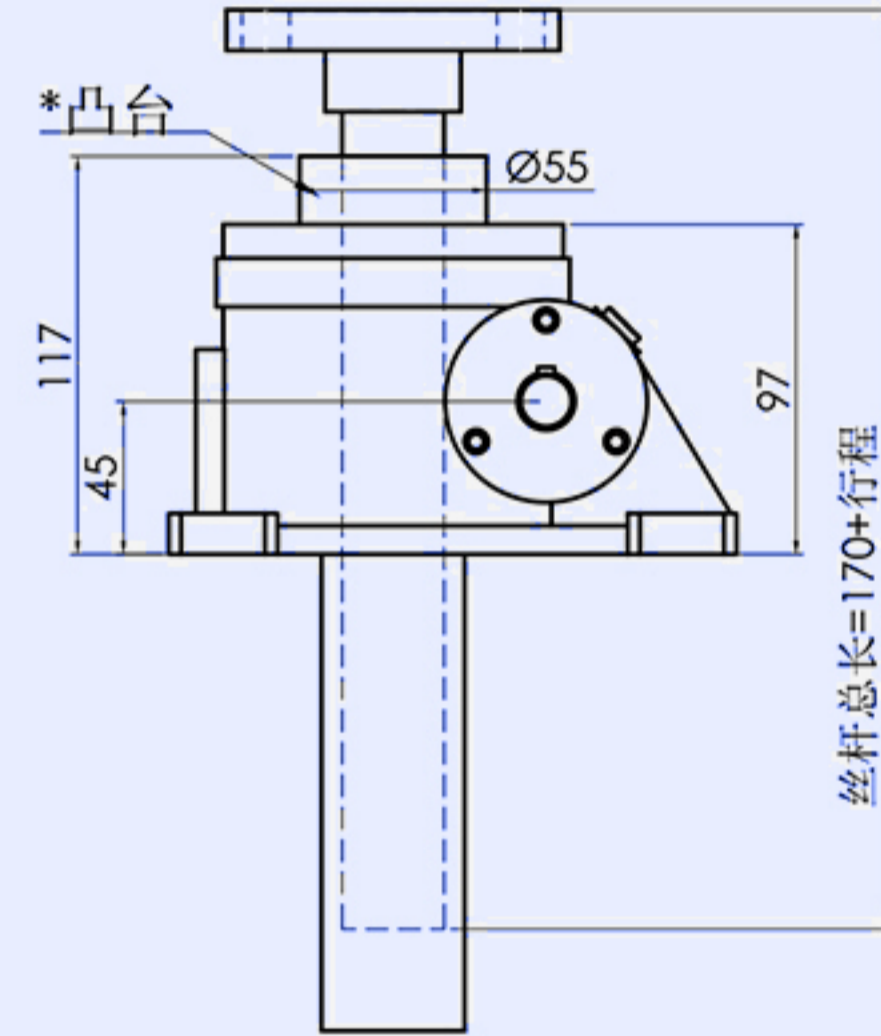
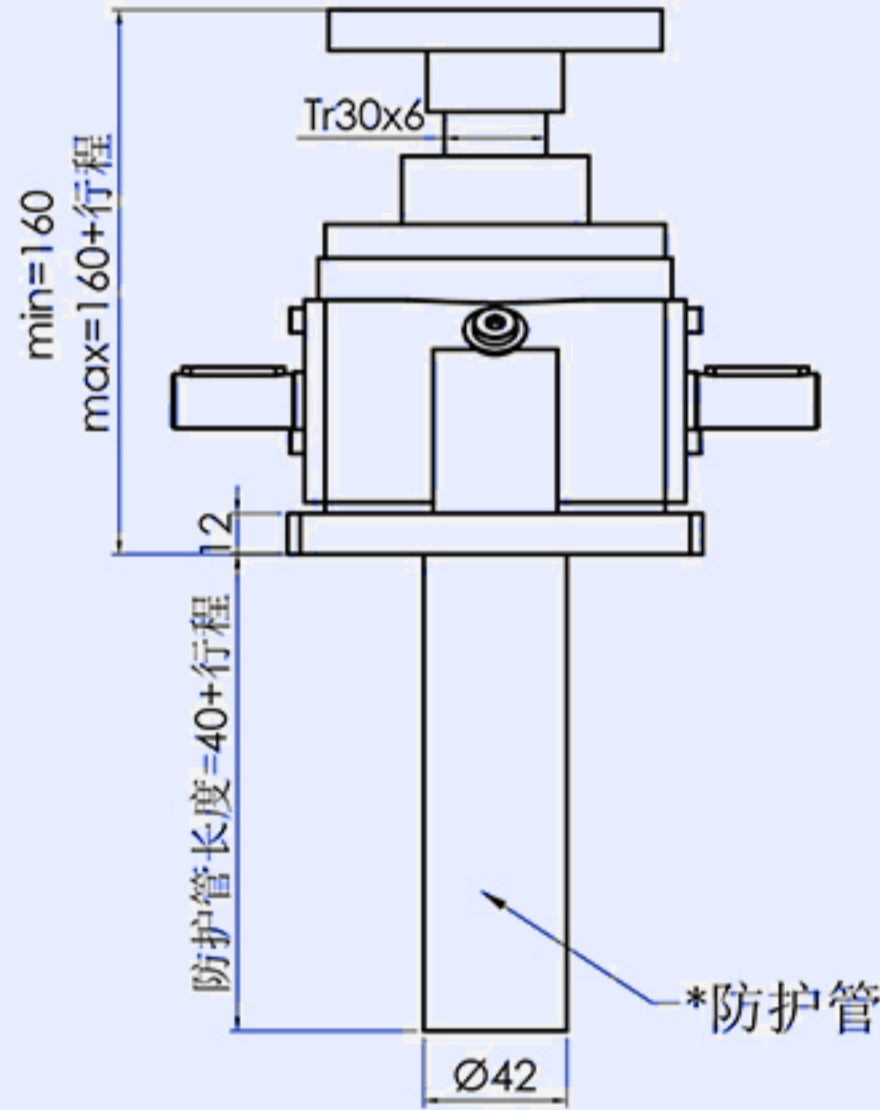
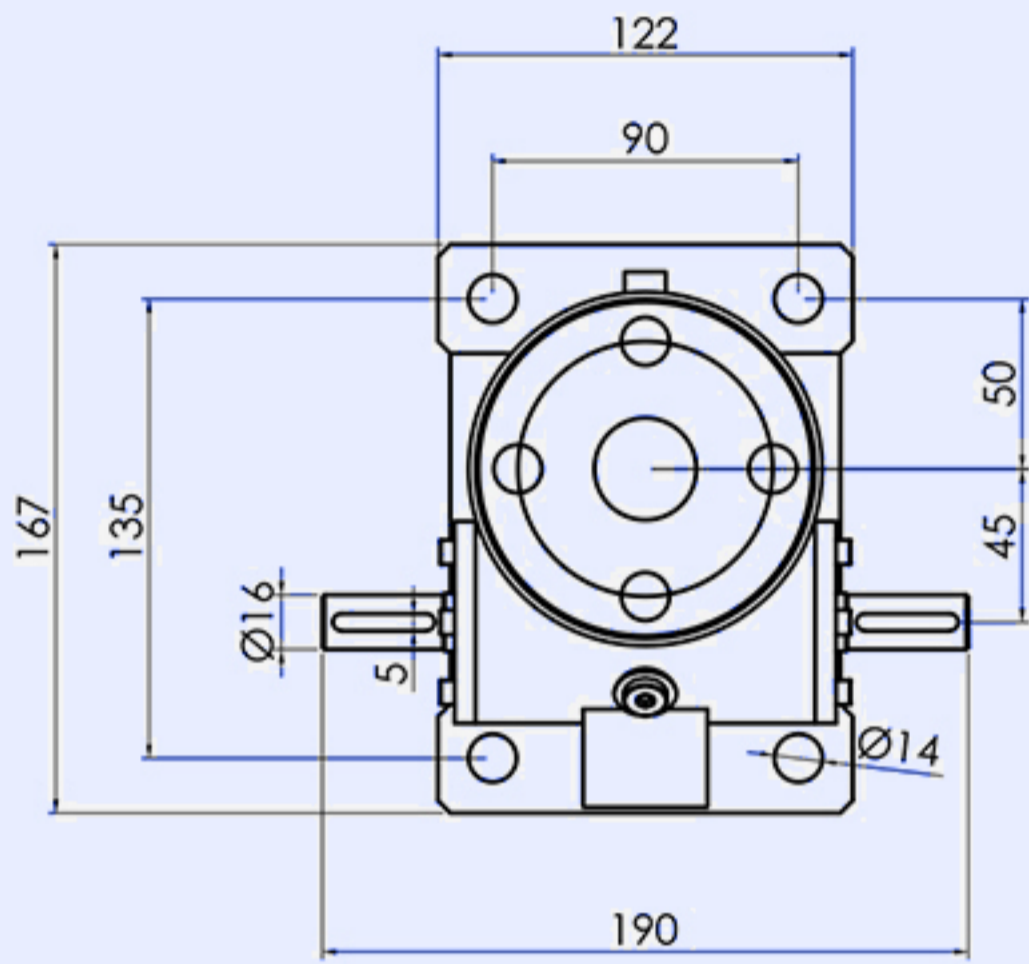
SHANGHAI CHANGFENG TRANSMISSION MACHINERY CO LTD

SWL 2.5 外形尺寸图表

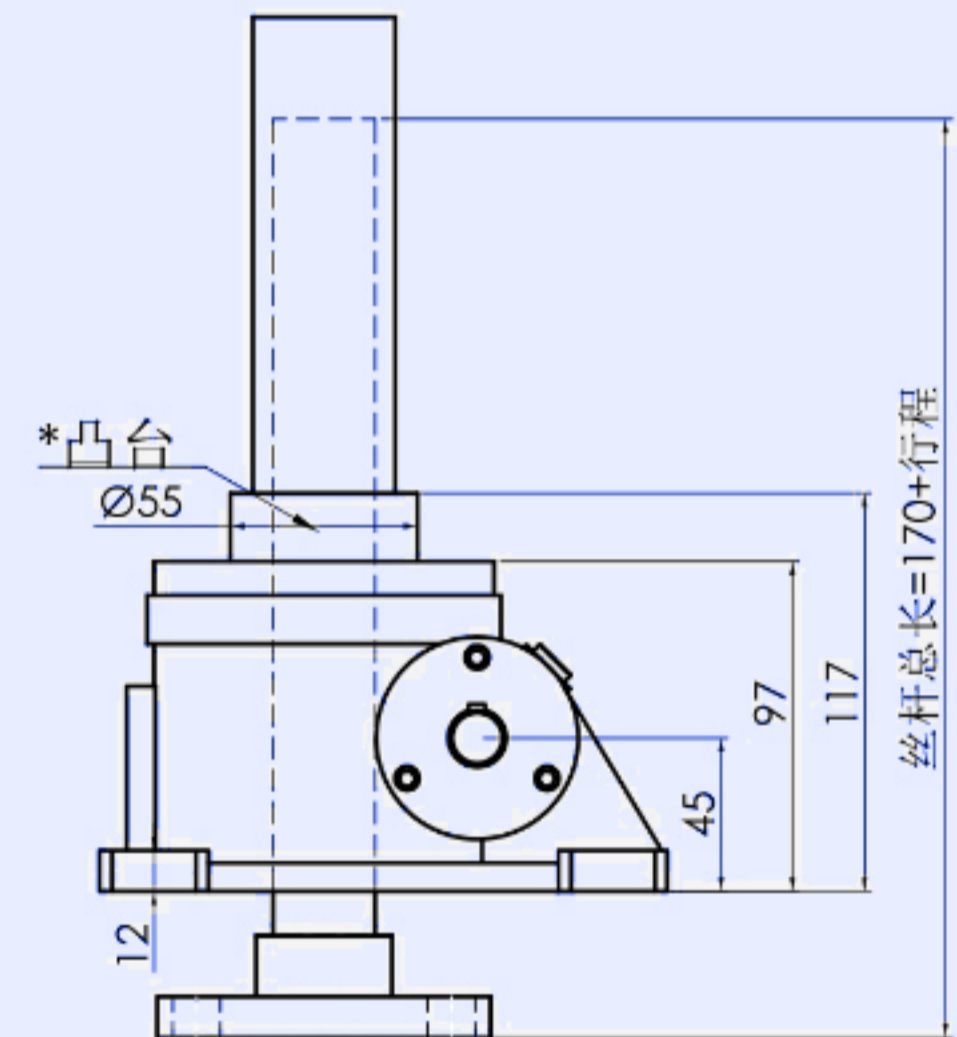
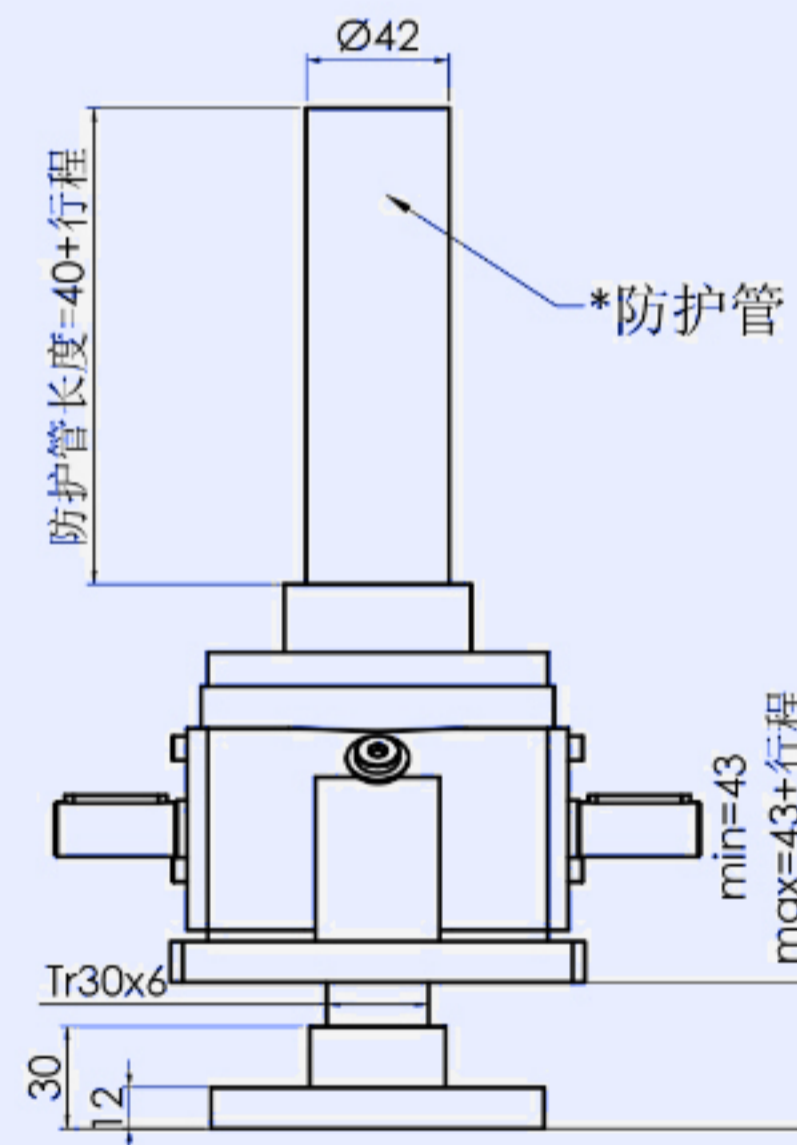
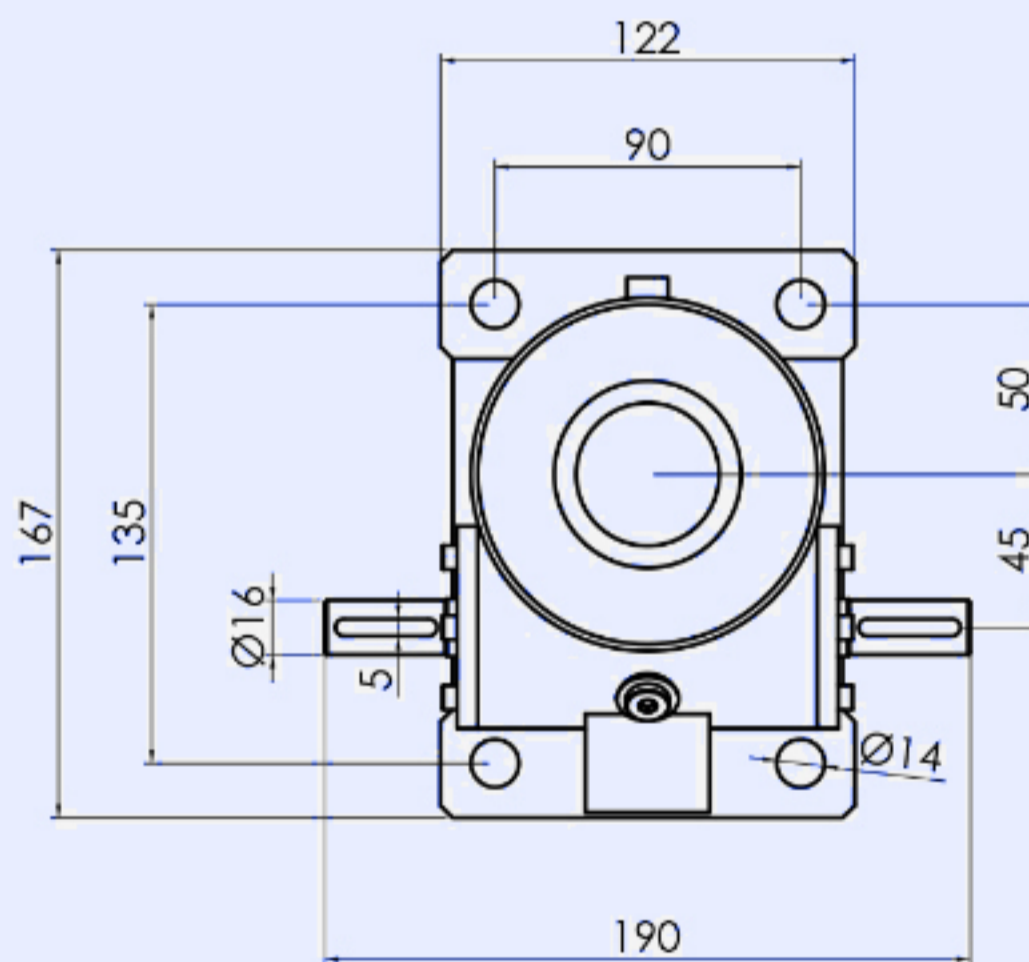
*轴指向(默认C),A、B轴指向下单请注明



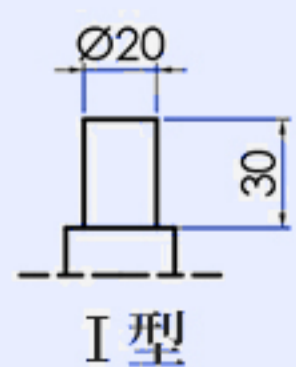
1A 型



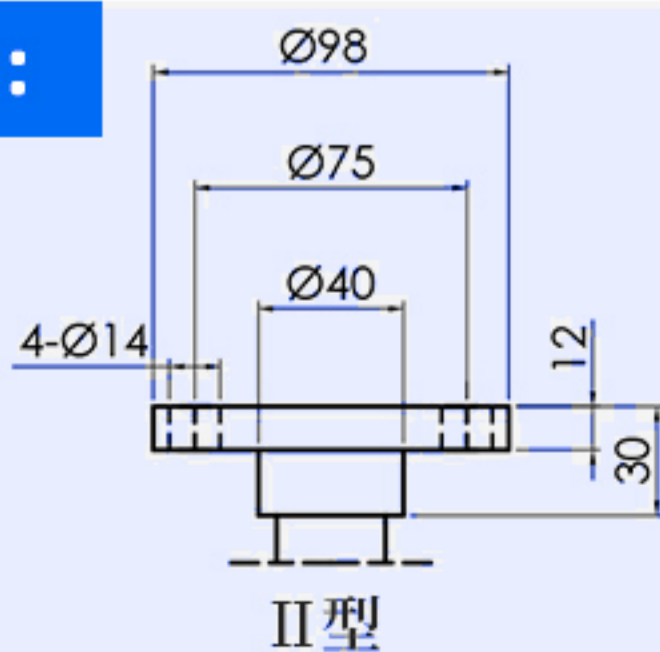
1B 型



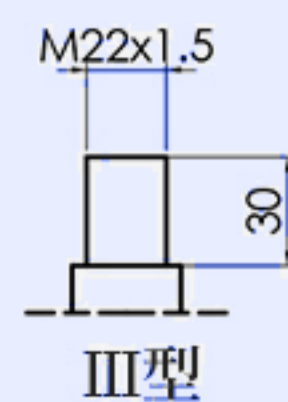
丝杆头部可选形式:



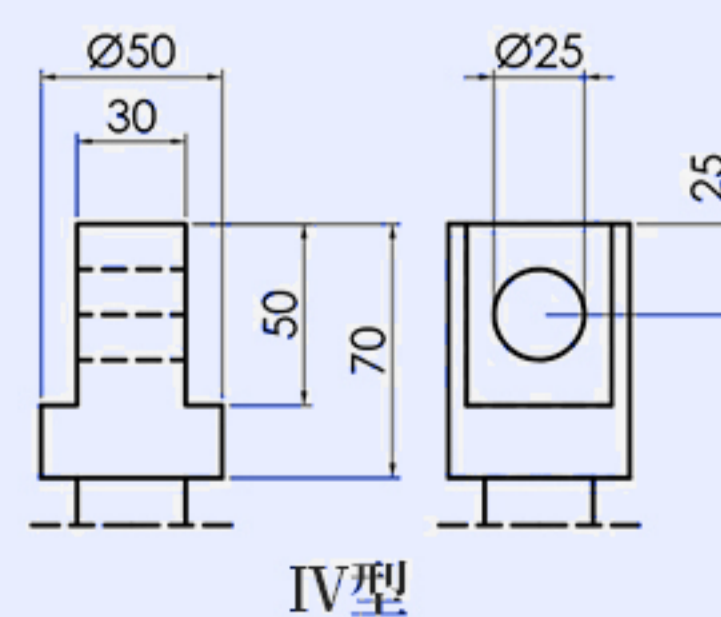
I 型



II 型



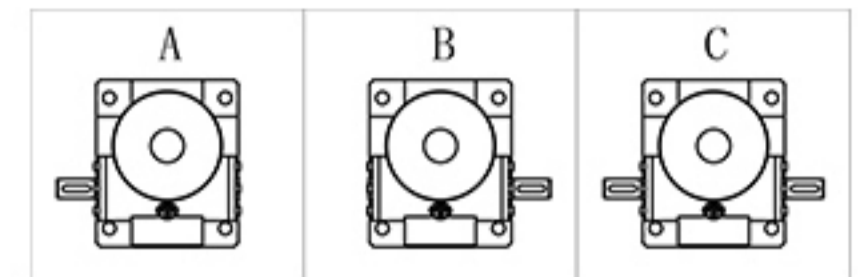
III 型



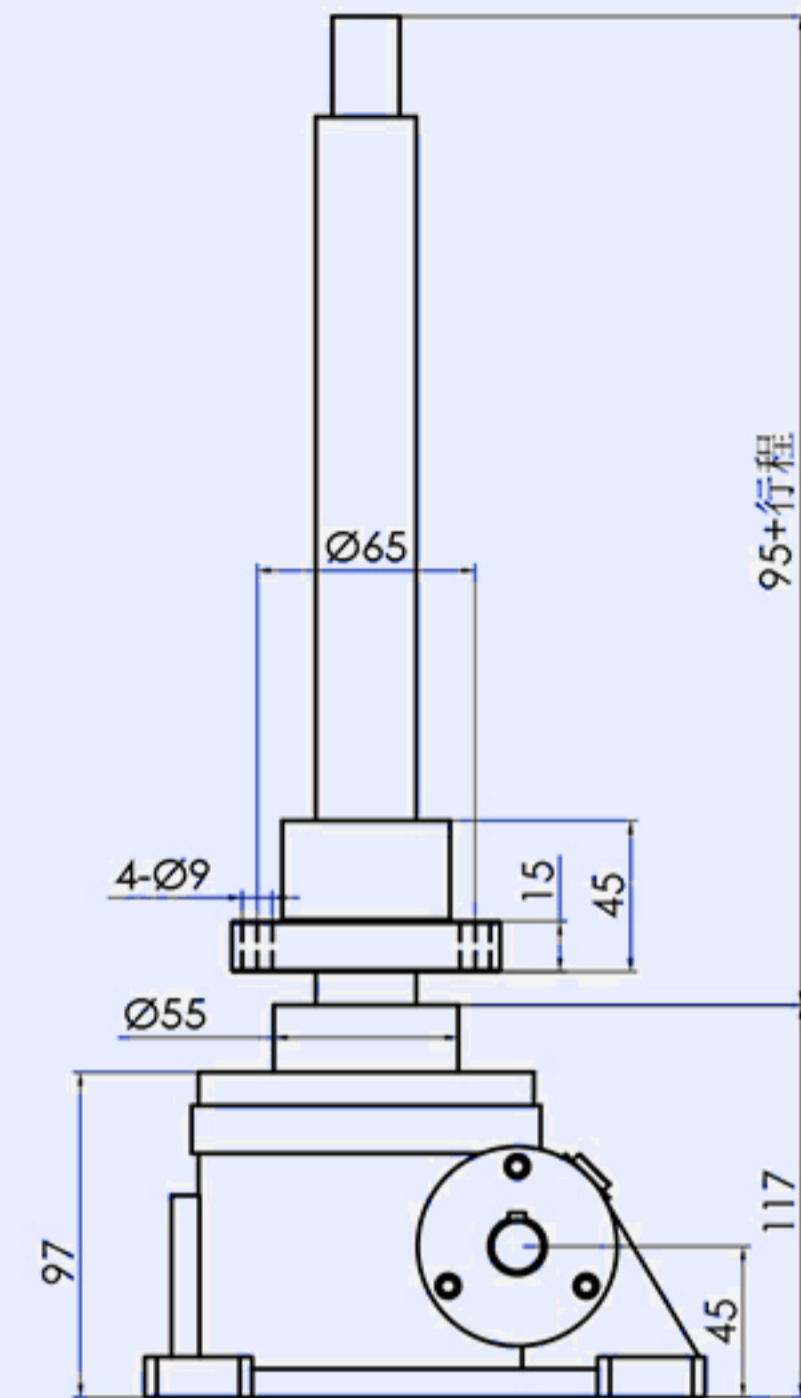
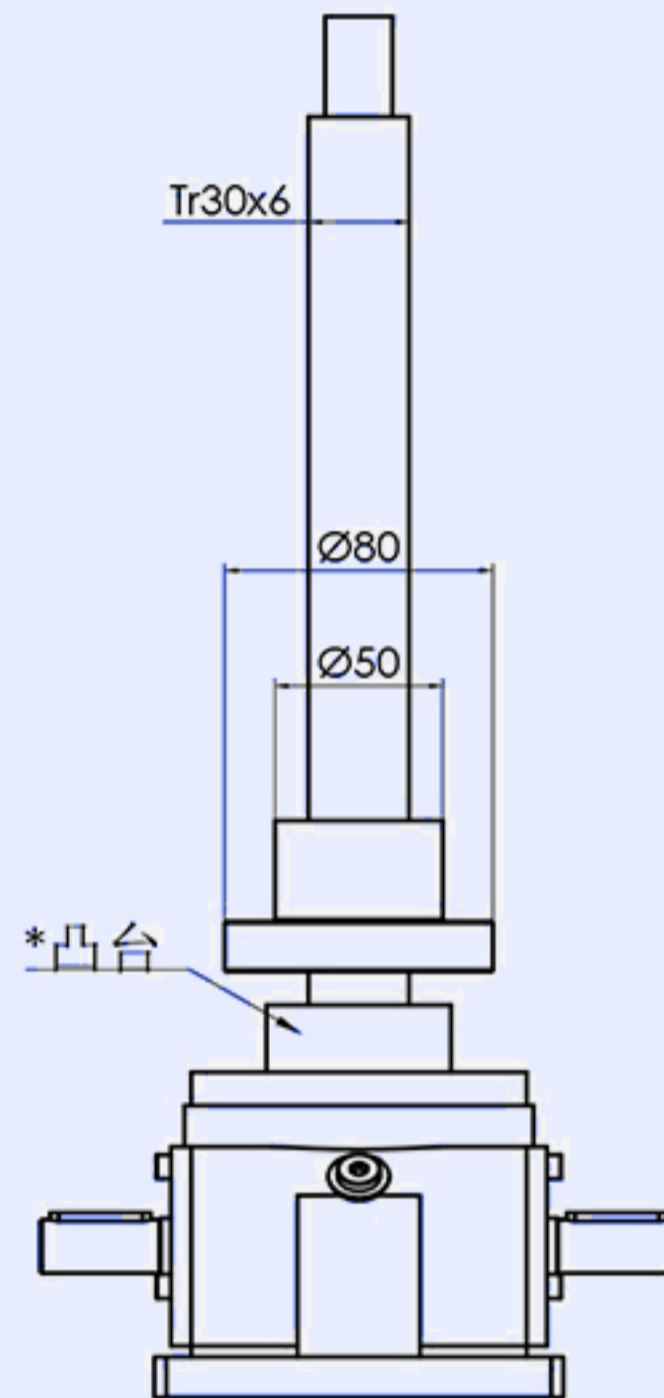
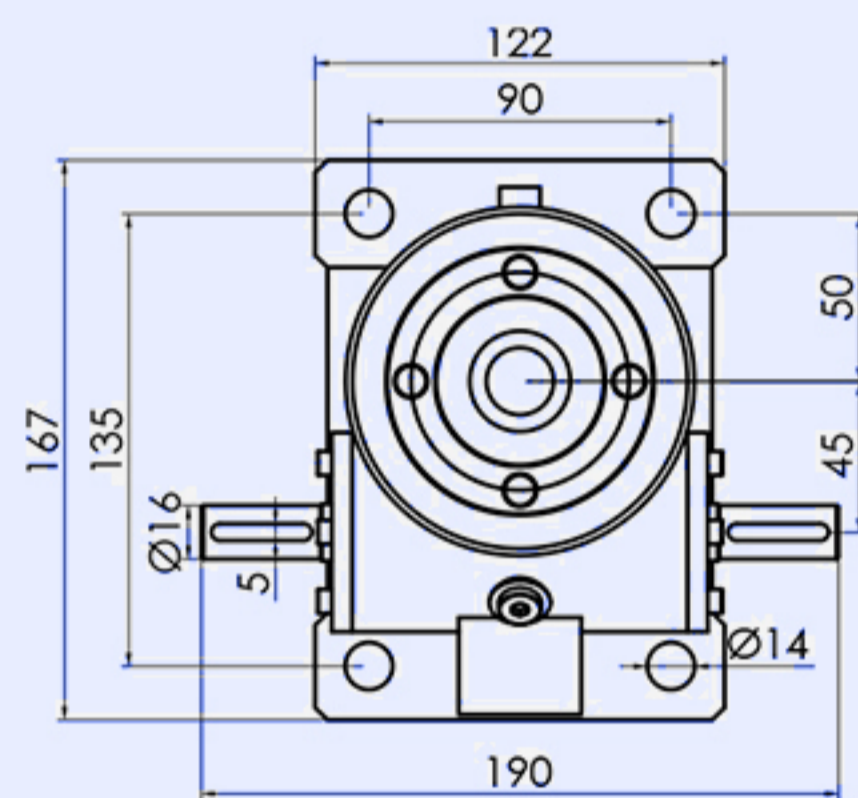
IV 型

SWL 2.5 外形尺寸图表

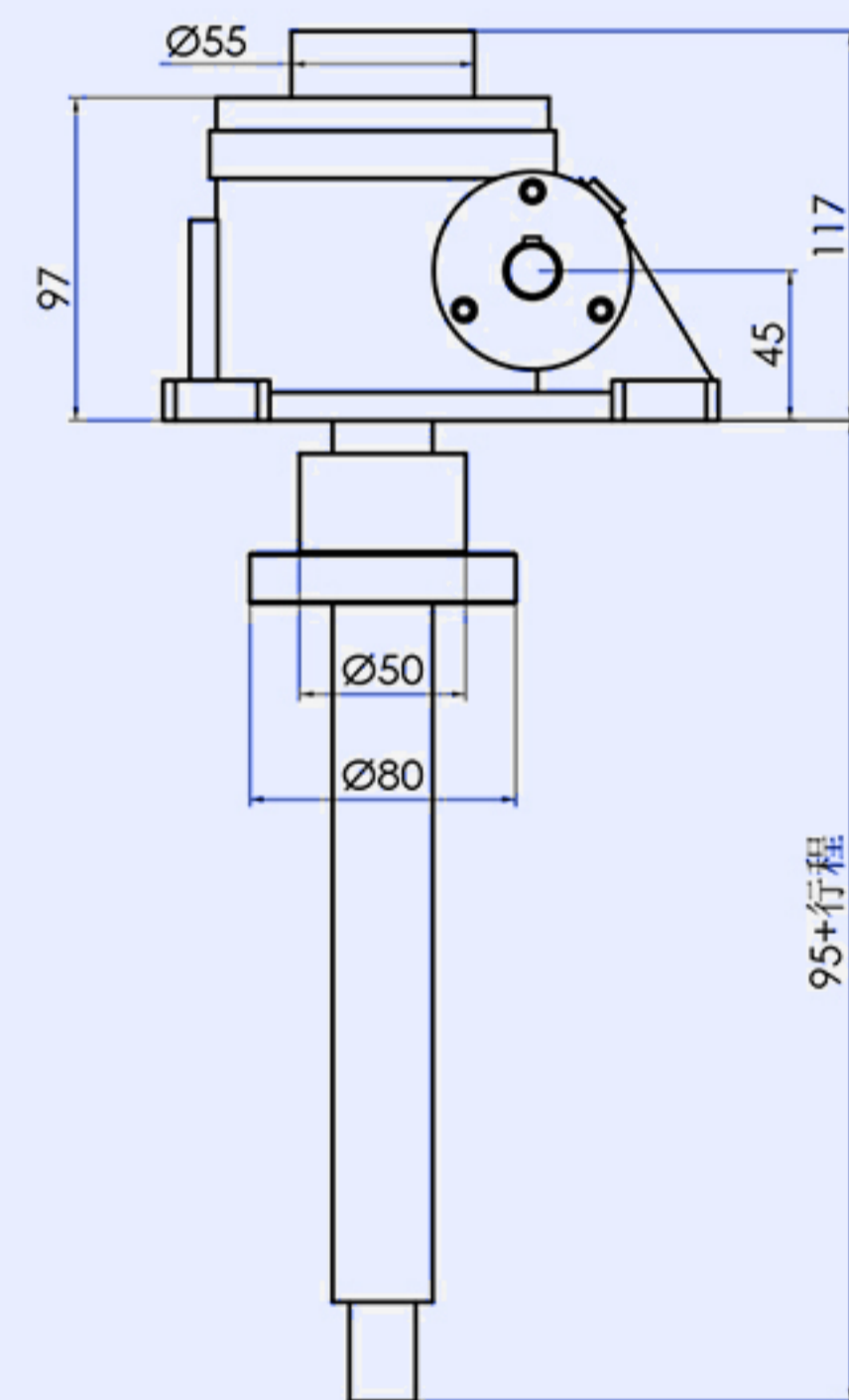
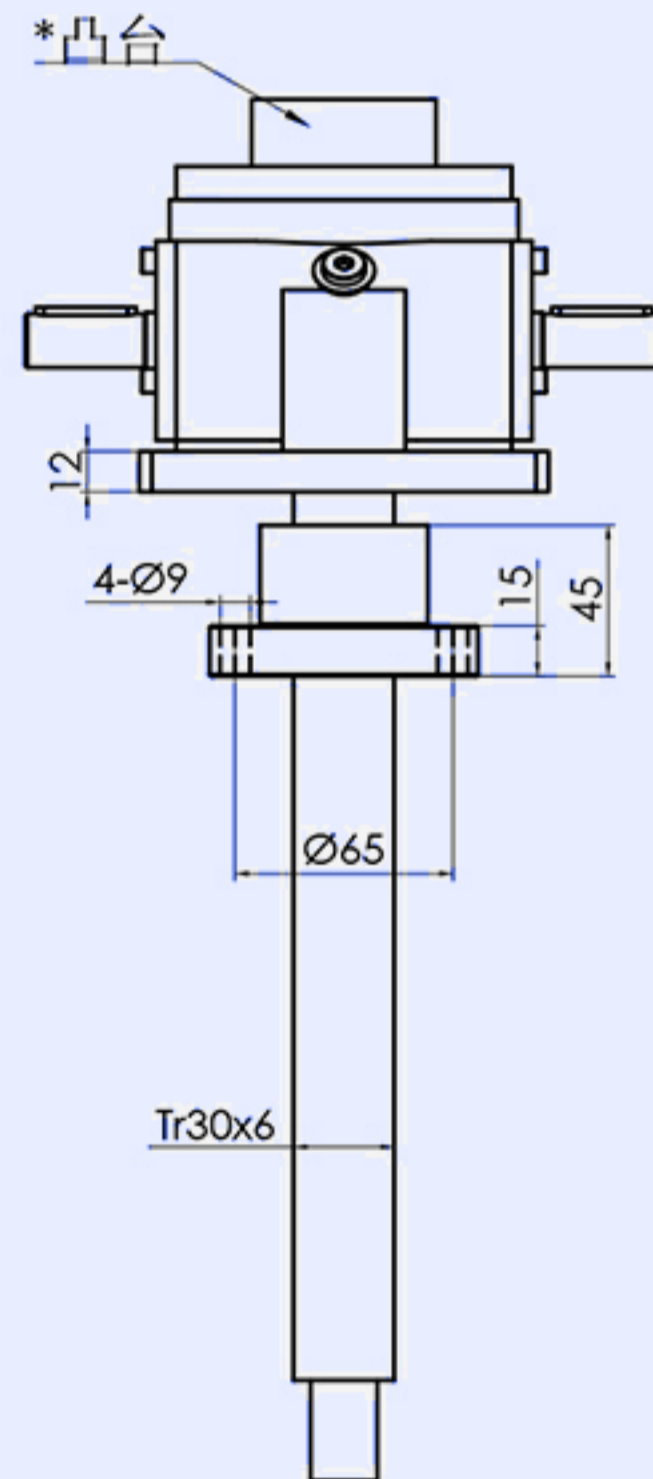
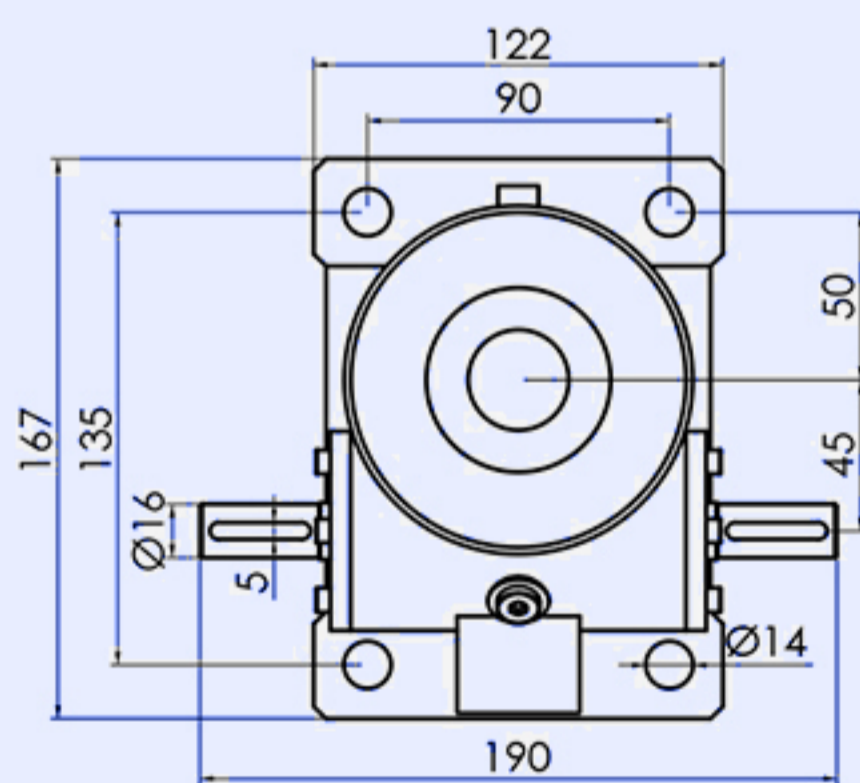
*轴指向(默认C),A、B轴指向下单请注明



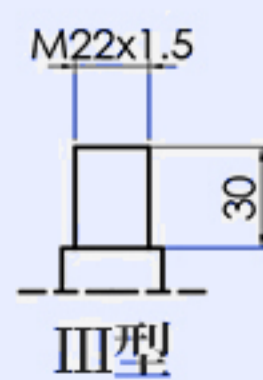
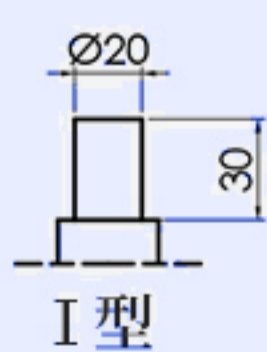
2A 型



2B 型



丝杆头部可选形式:

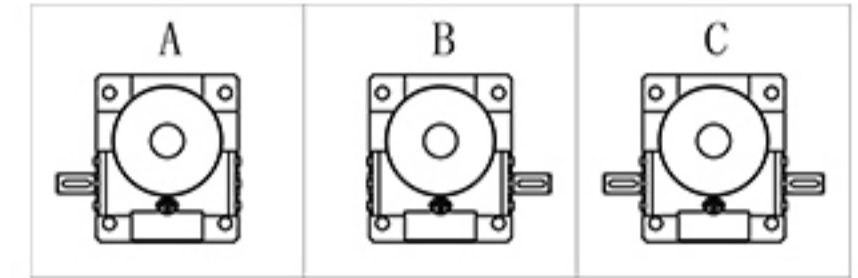


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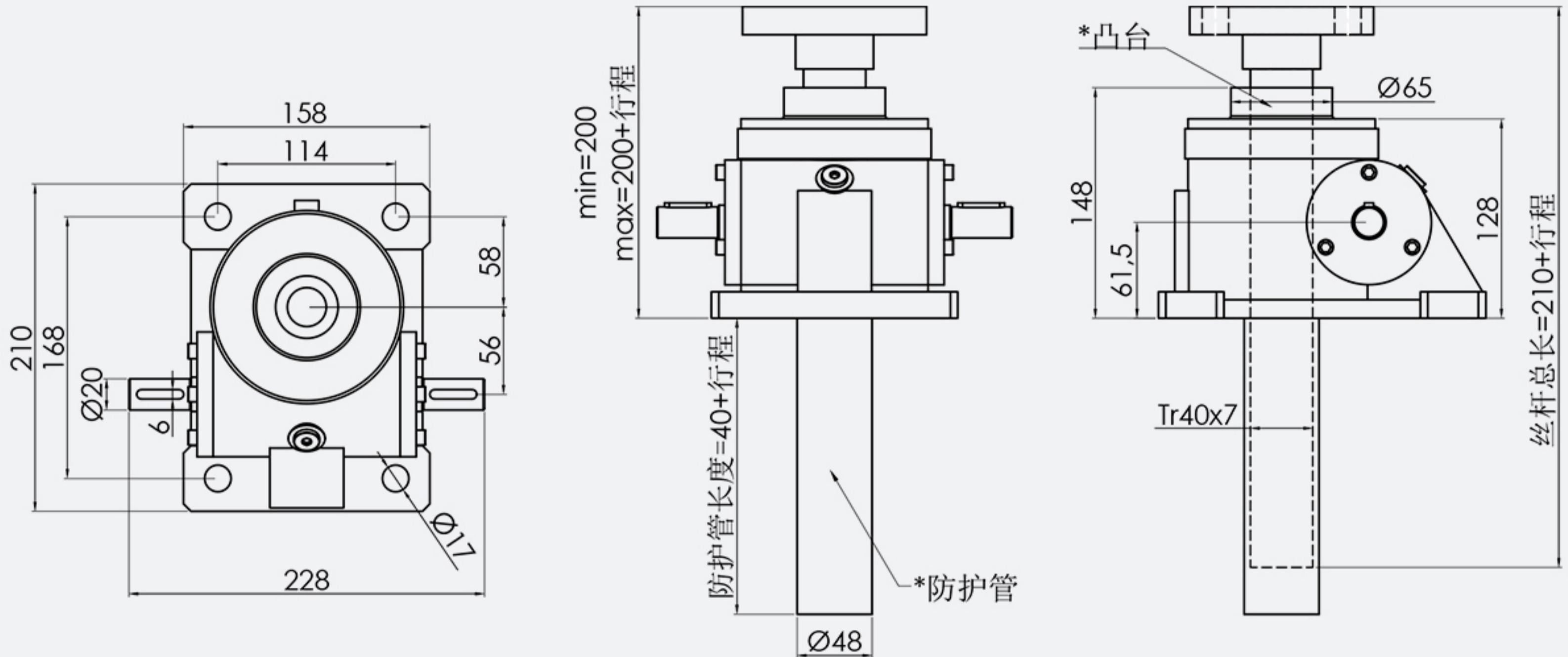
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SWL 5 外形尺寸图表

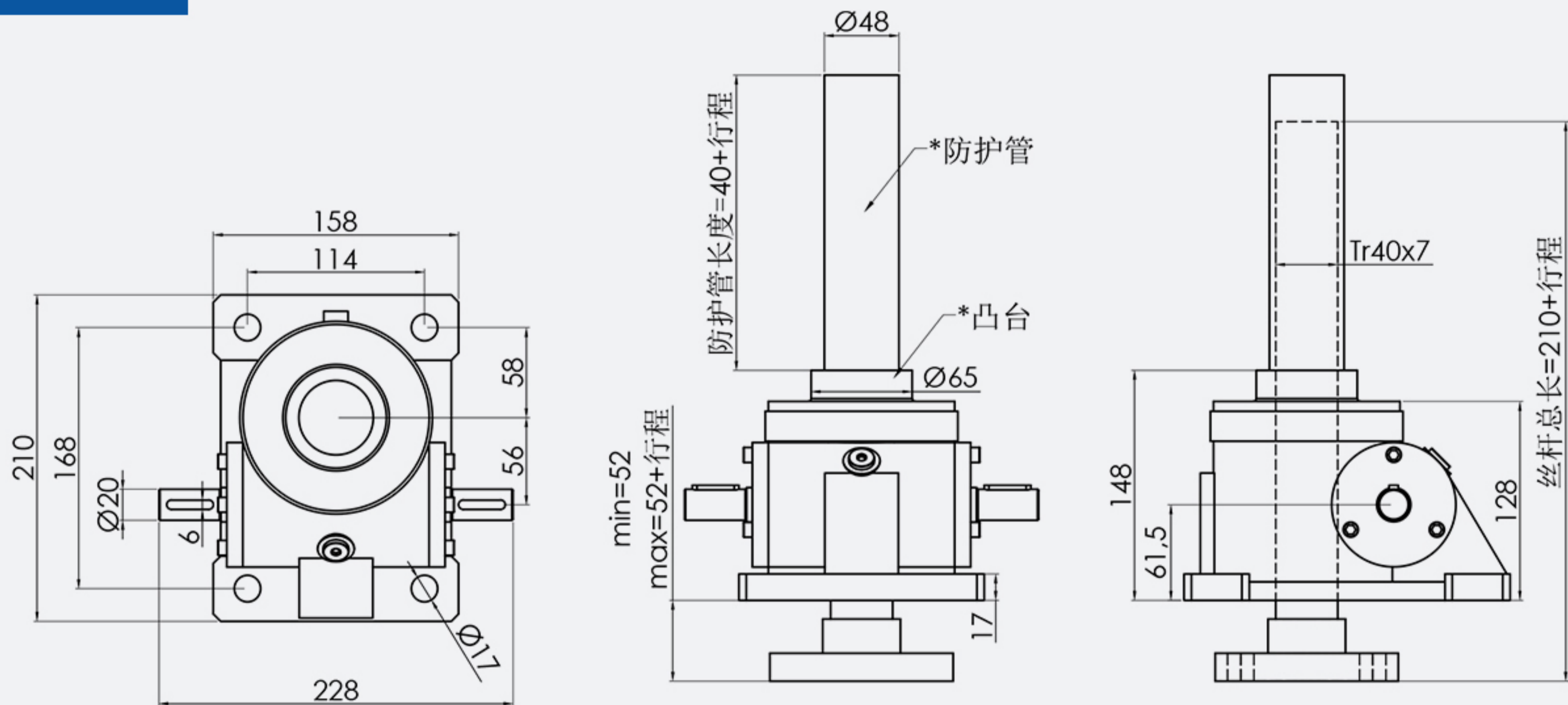
*轴指向(默认C),A、B轴指向下单请注明



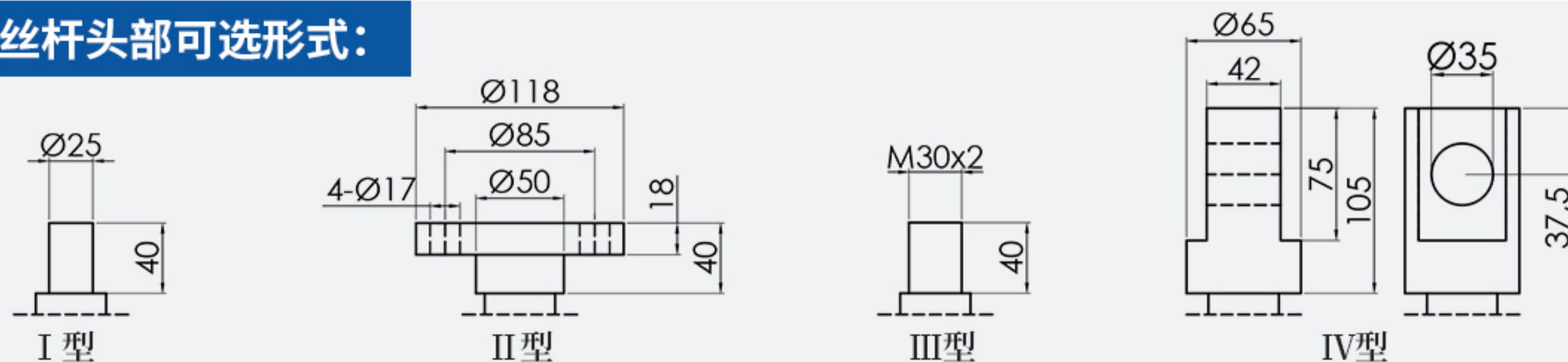
1A 型



1B 型

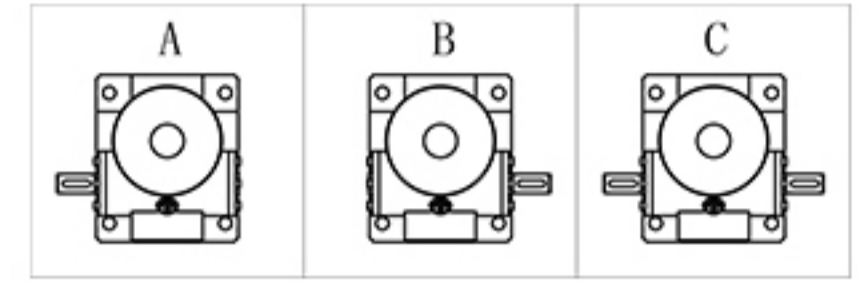


丝杆头部可选形式:

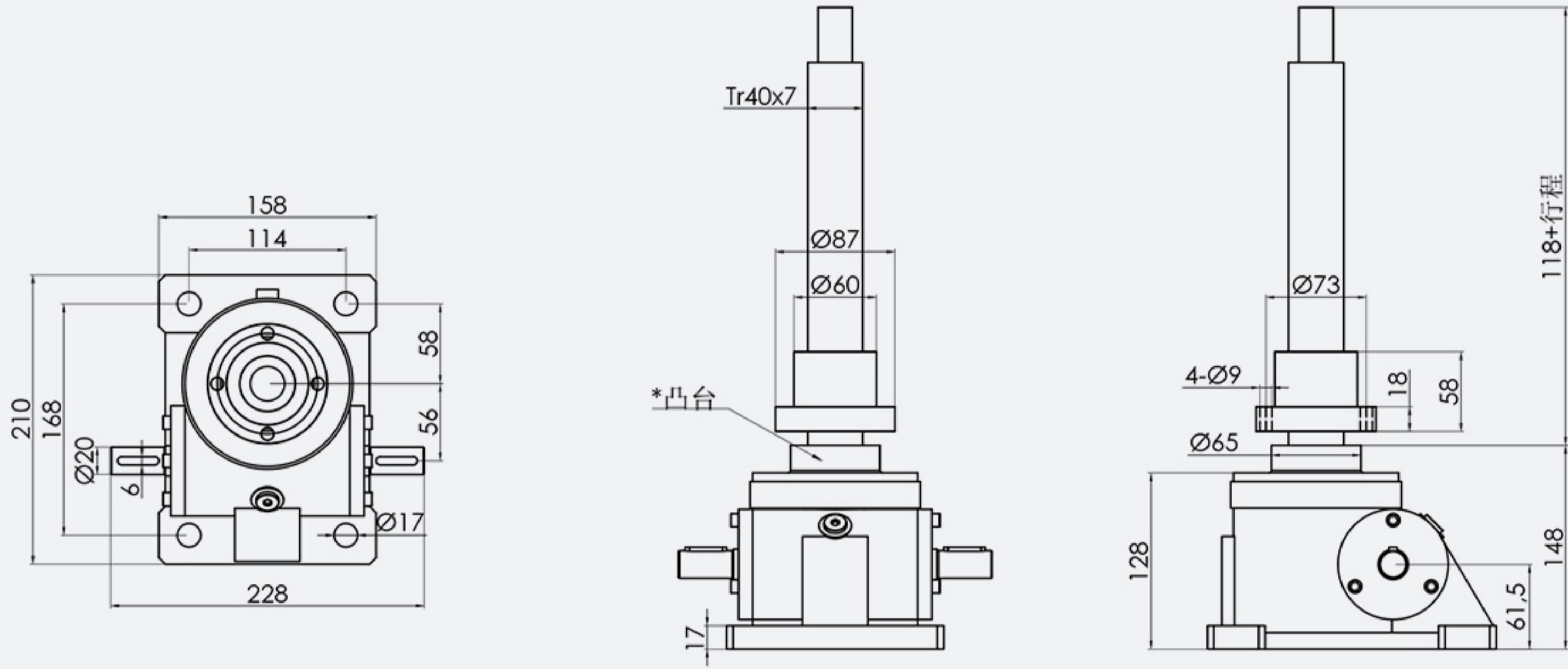


SWL 5 外形尺寸图表

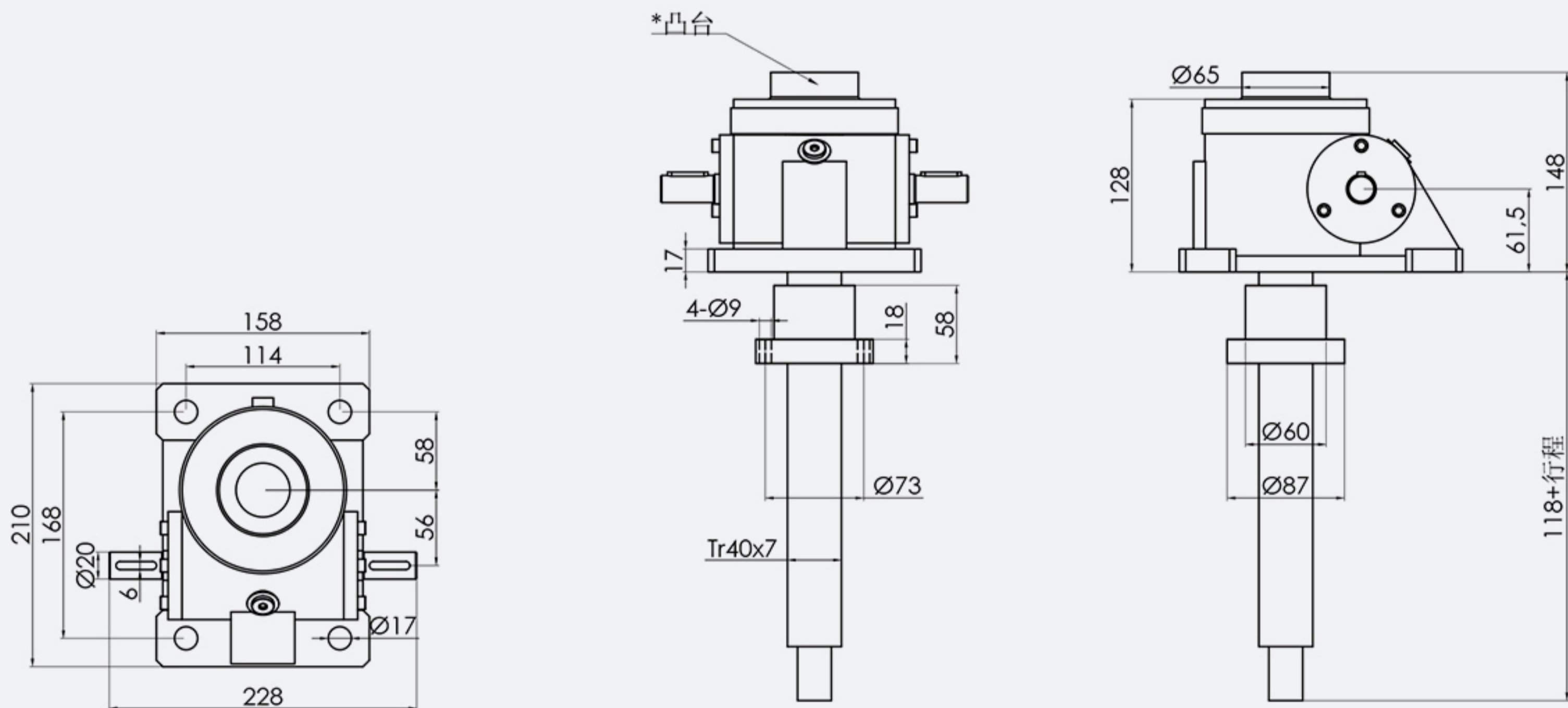
*轴指向(默认C),A、B轴指向下单请注明



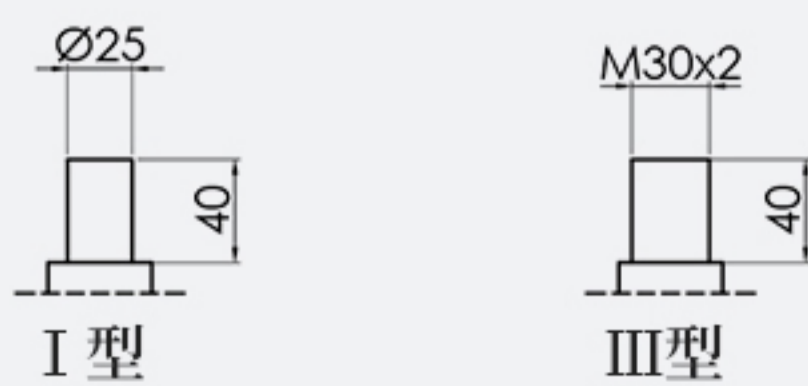
2A 型



2B 型



丝杆头部可选形式:

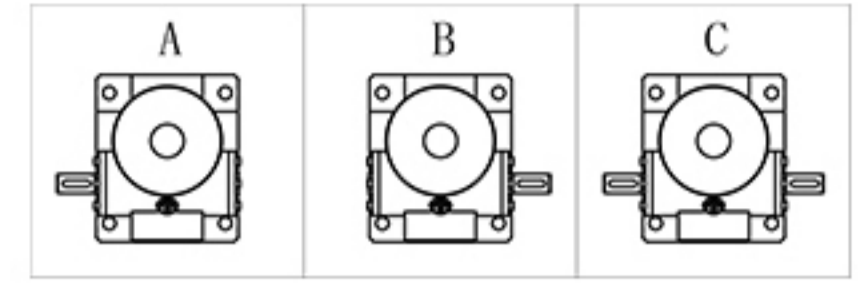


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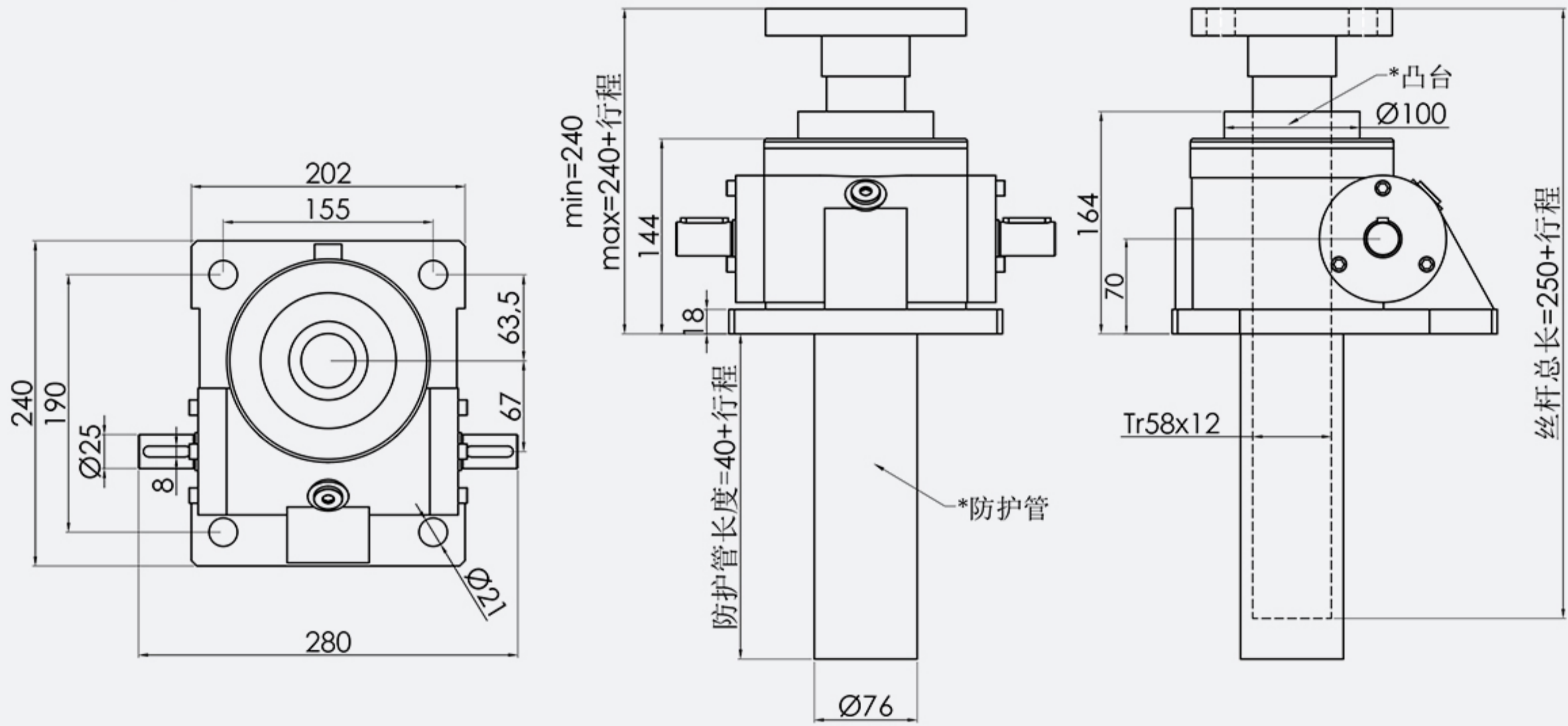
SHANGHAI CHANGFENG TRANSMISSION MACHINERY CO LTD

SWL 10 外形尺寸图表

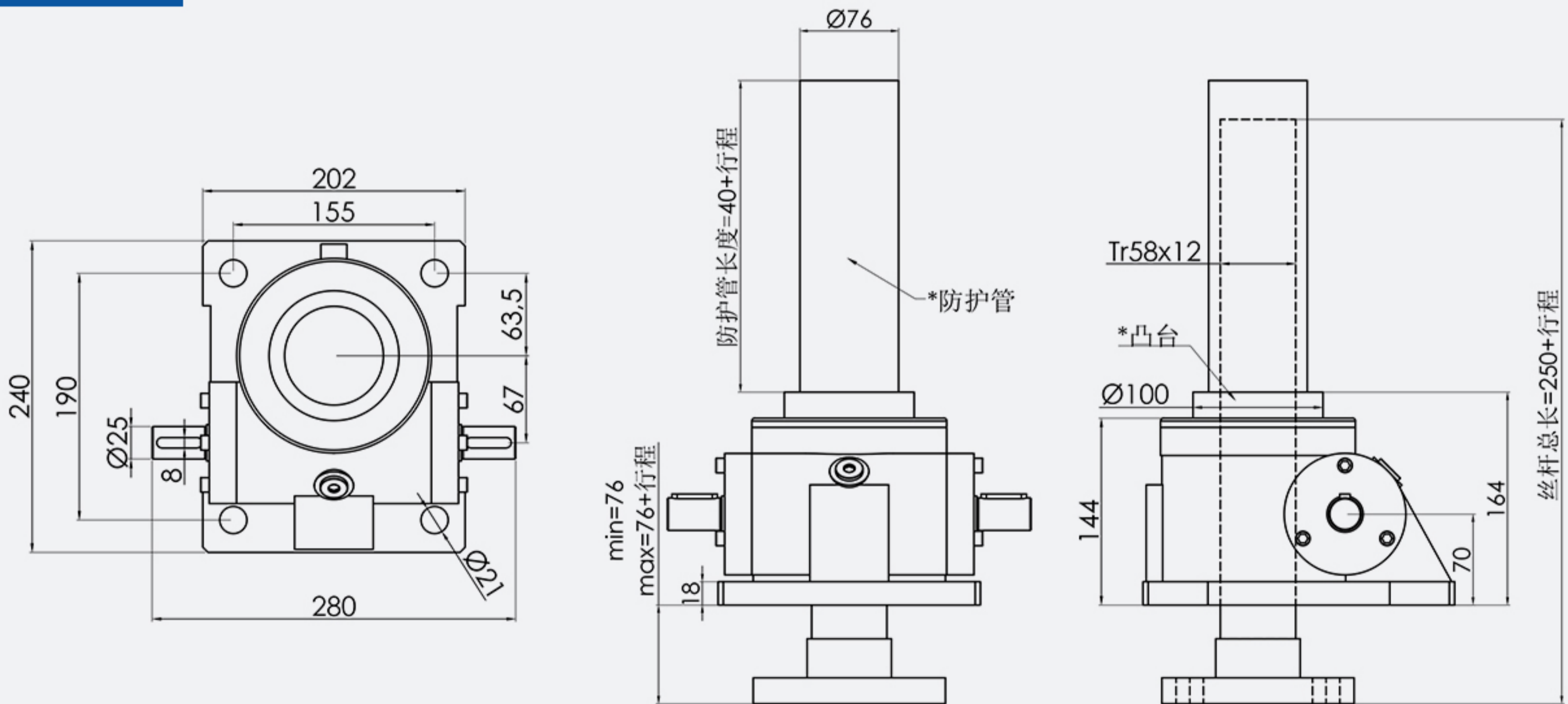
*轴指向(默认C),A、B轴指向下单请注明



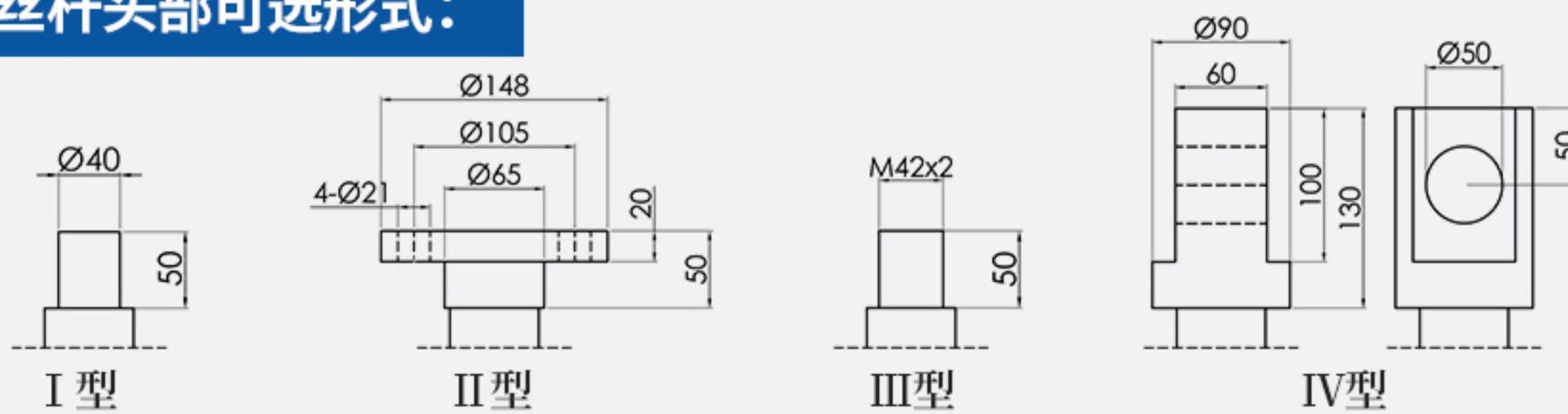
1A 型



1B 型

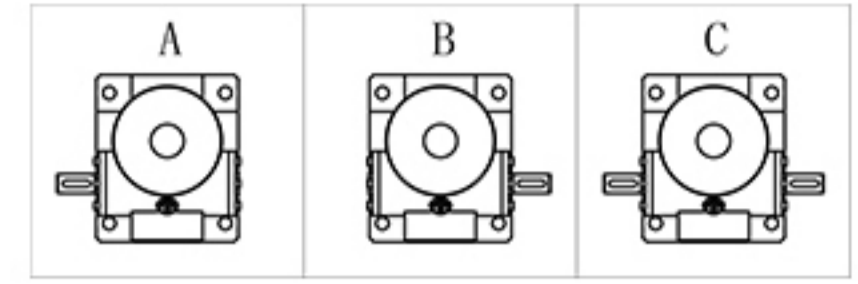


丝杆头部可选形式:

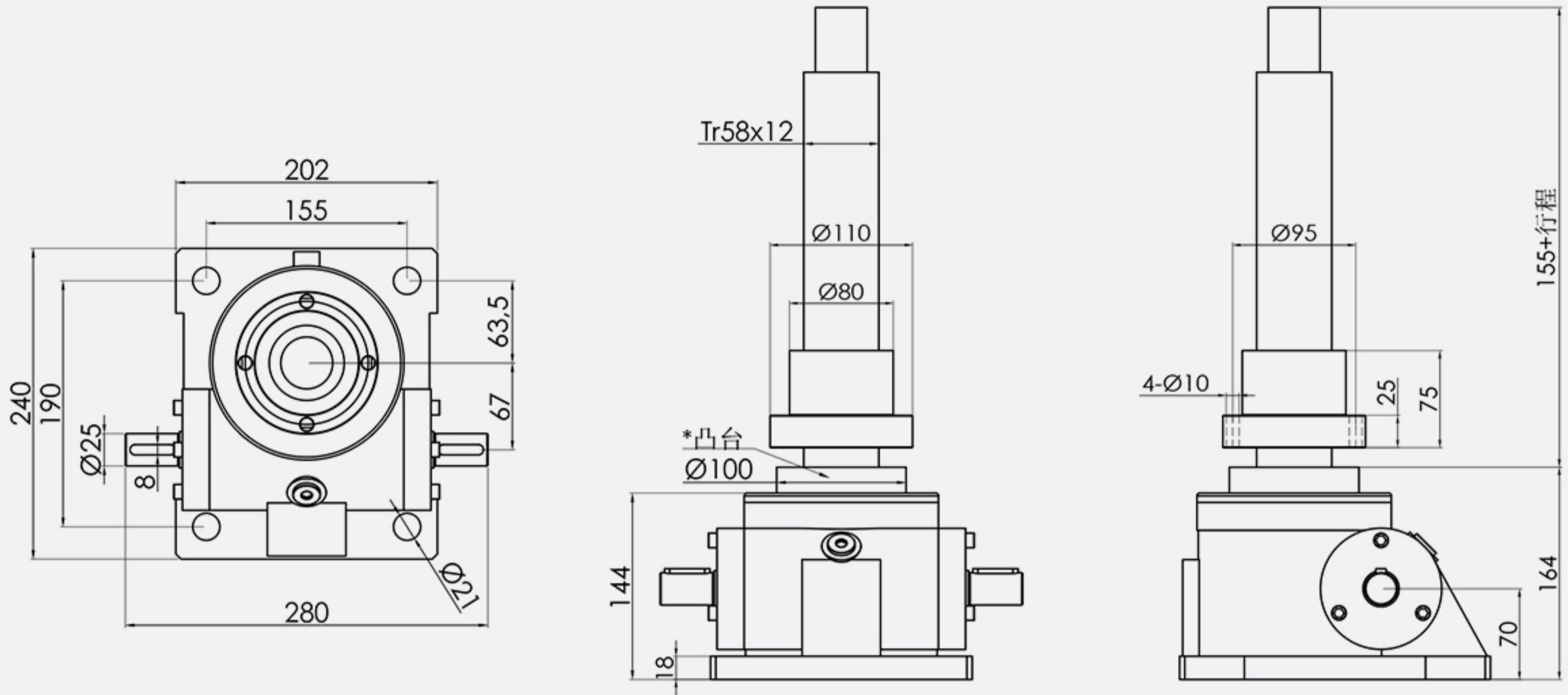


SWL 10 外形尺寸图表

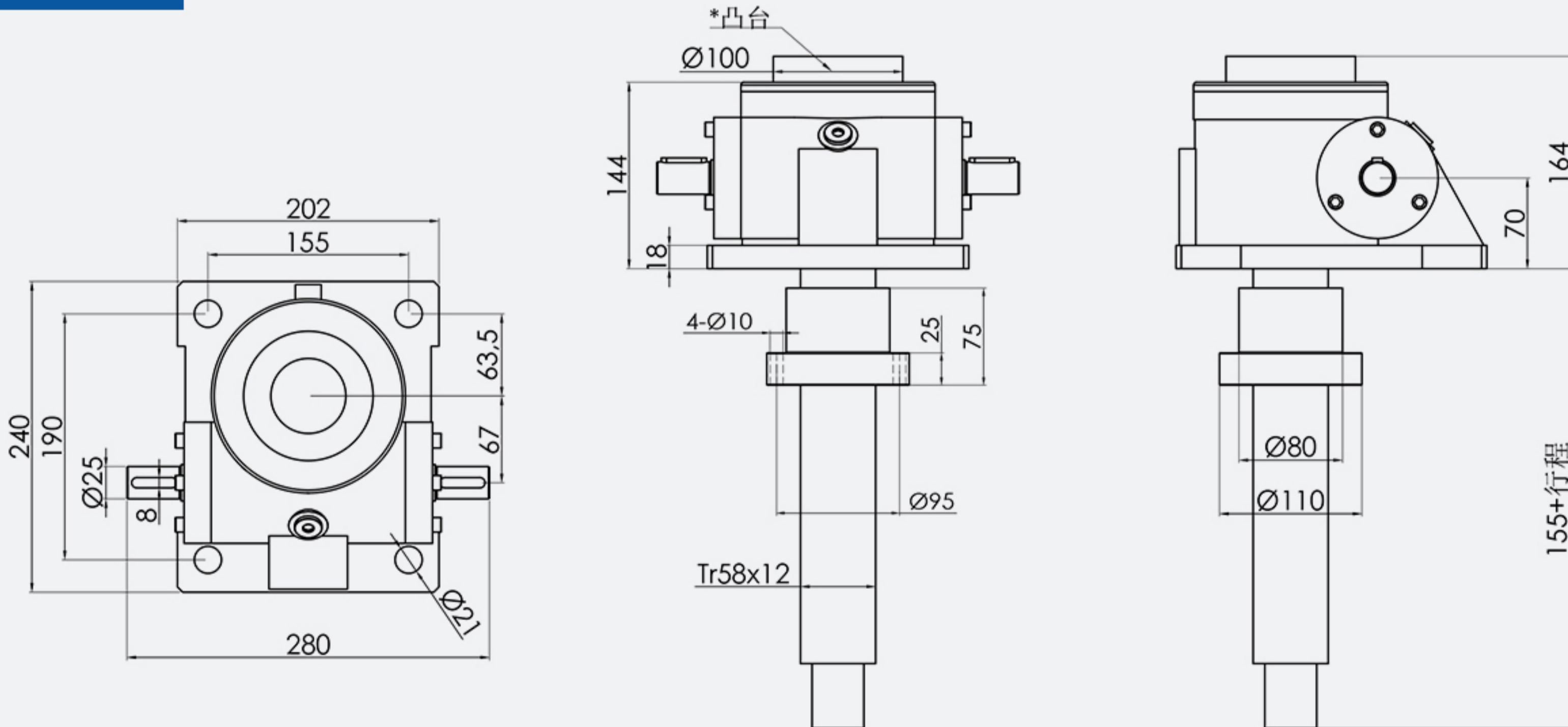
*轴指向(默认C),A、B轴指向下单请注明



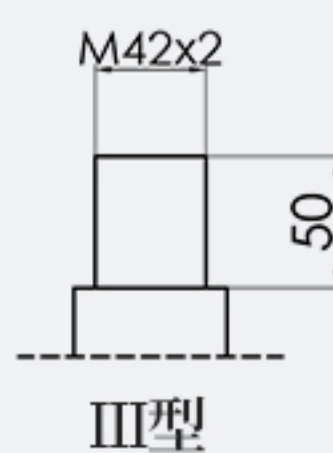
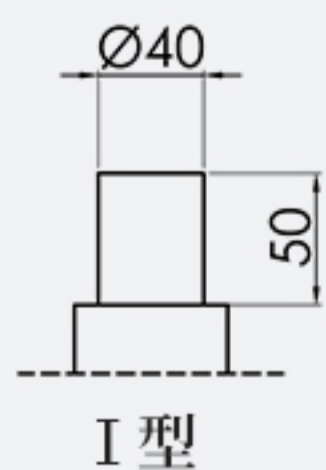
2A 型



2B 型



丝杆头部可选形式:

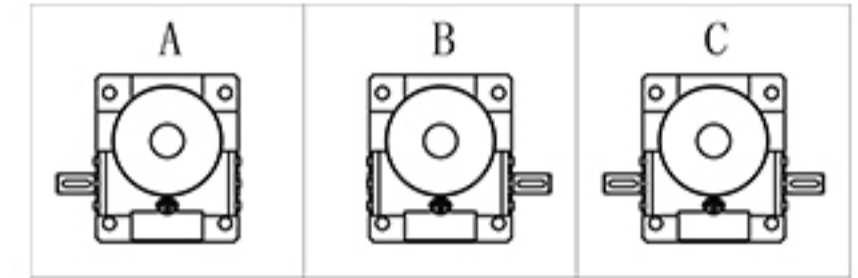


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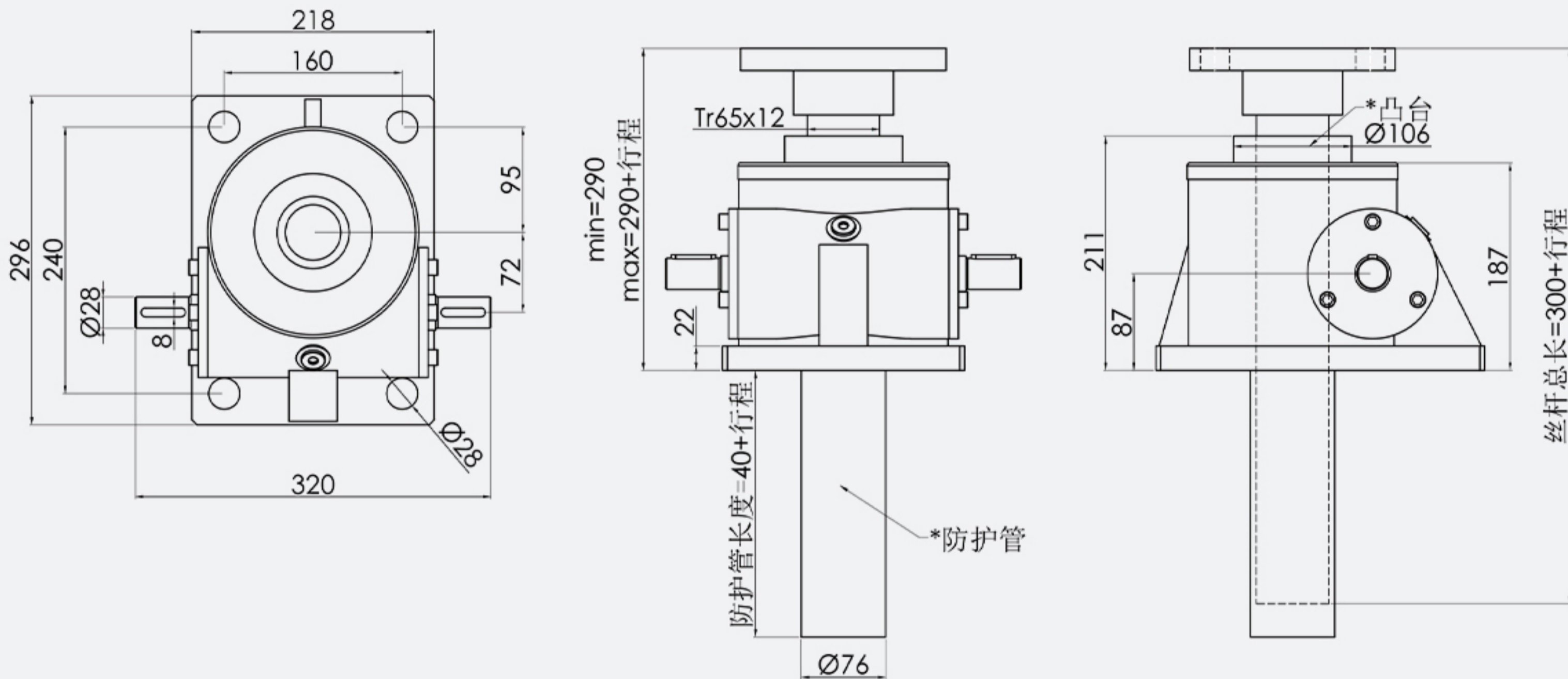
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SWL 20 外形尺寸图表

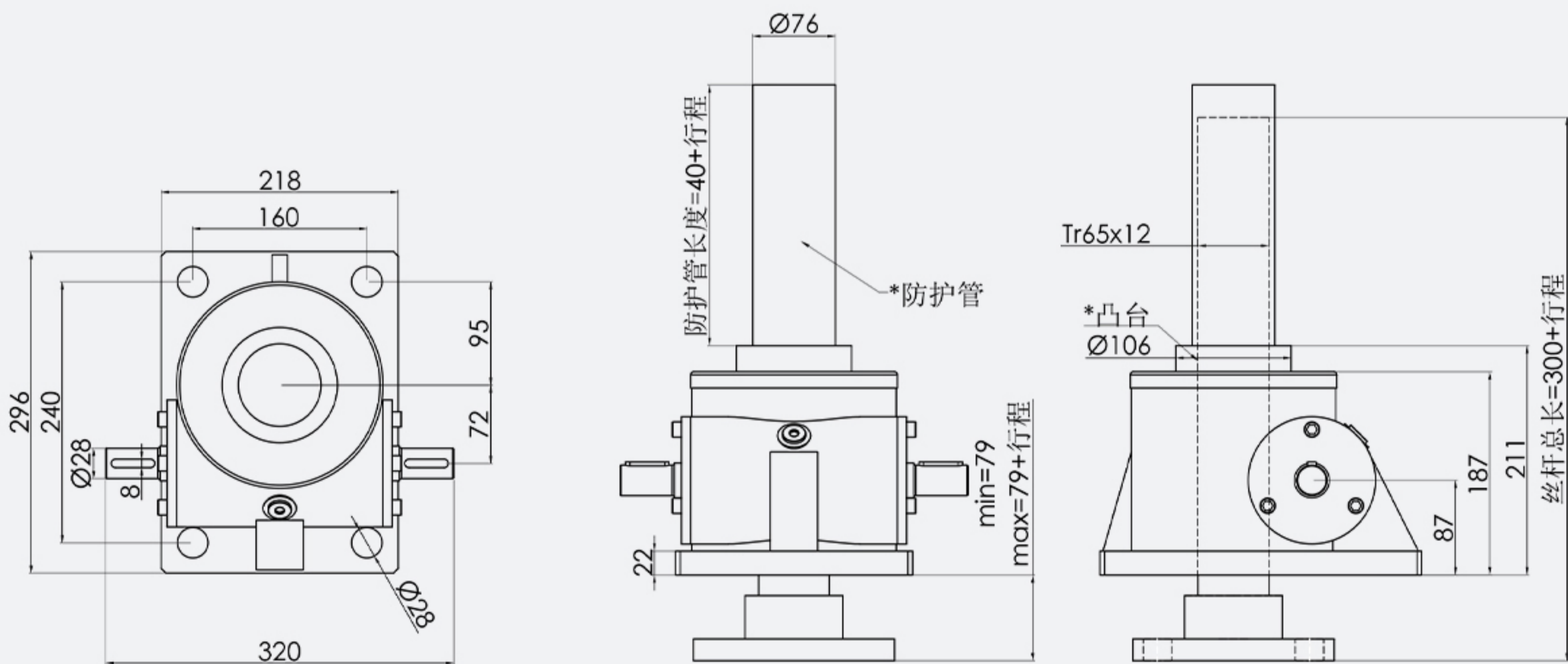
*轴指向(默认C),A、B轴指向下单请注明



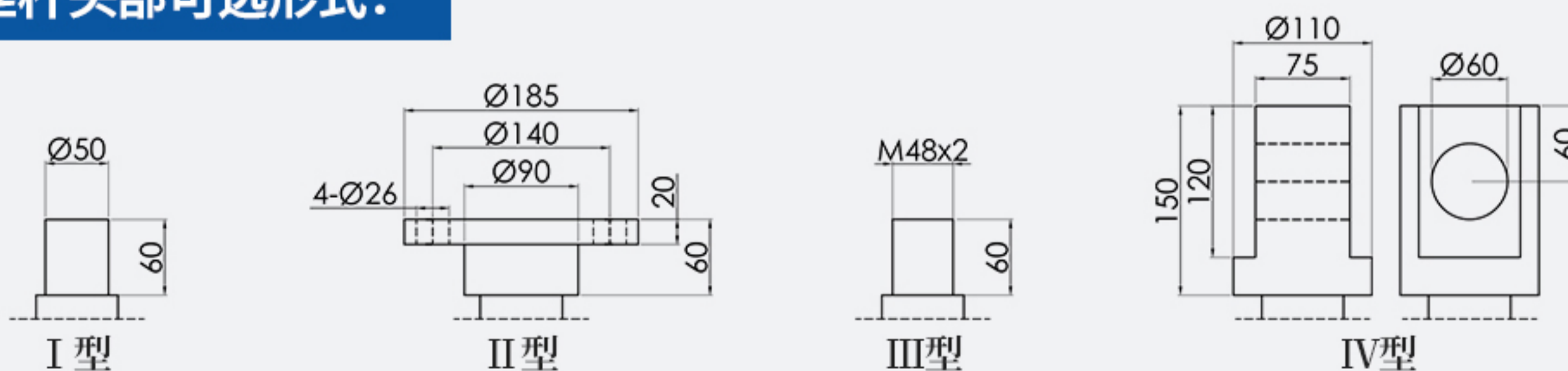
1A 型



1B 型

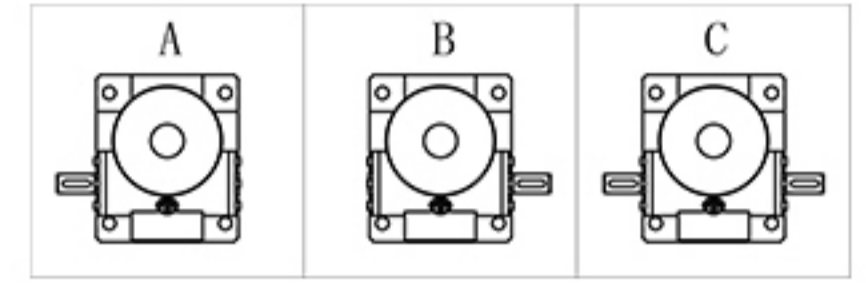


丝杆头部可选形式:

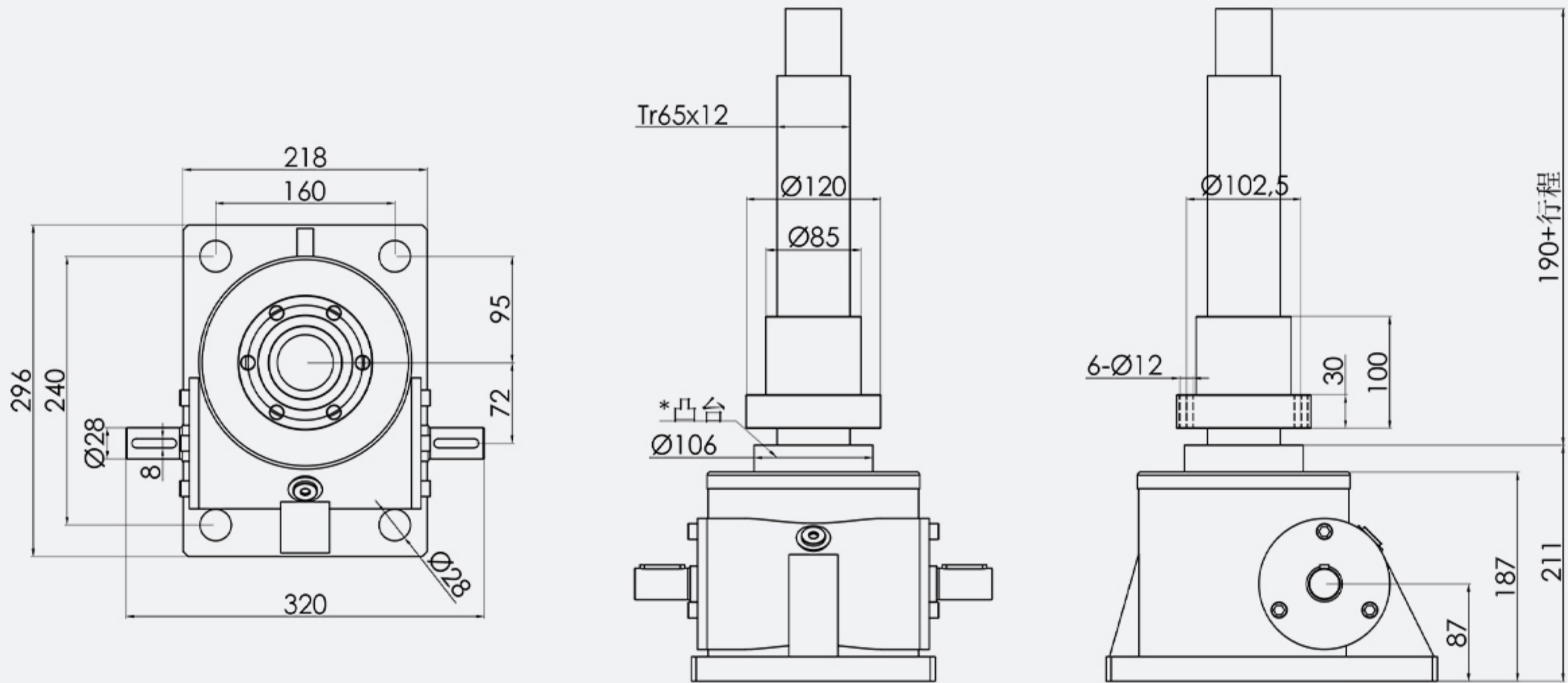


SWL 20 外形尺寸图表

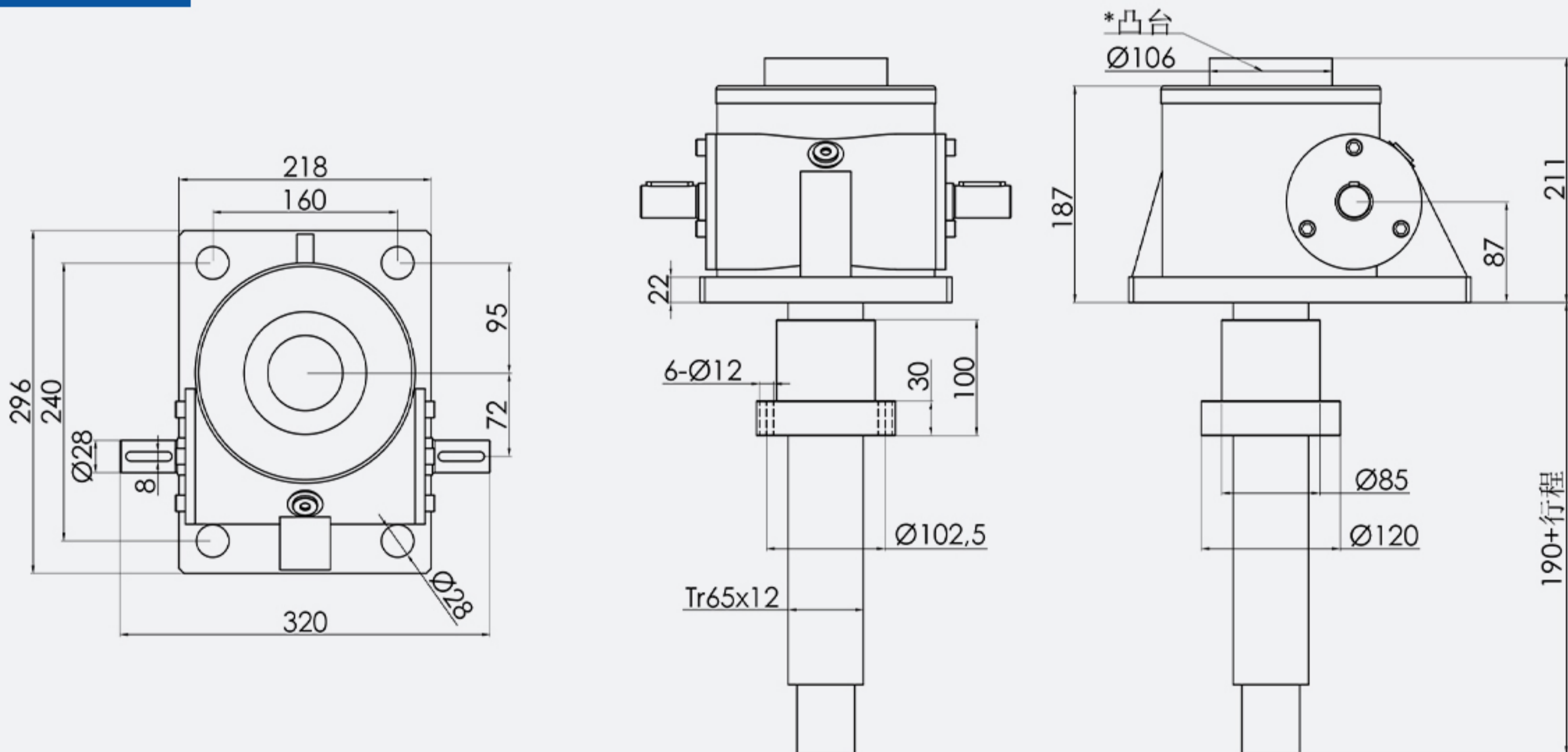
*轴指向(默认C),A、B轴指向下单请注明



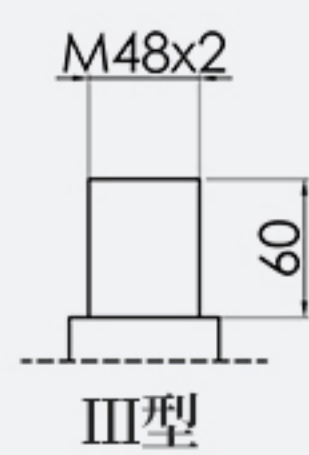
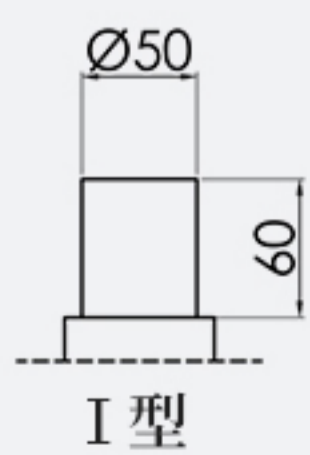
2A 型



2B 型



丝杆头部可选形式:

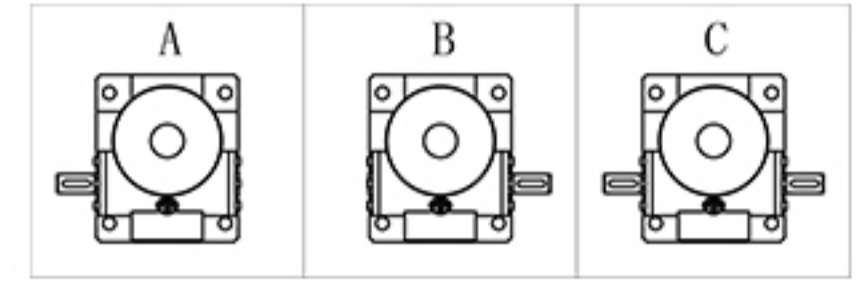


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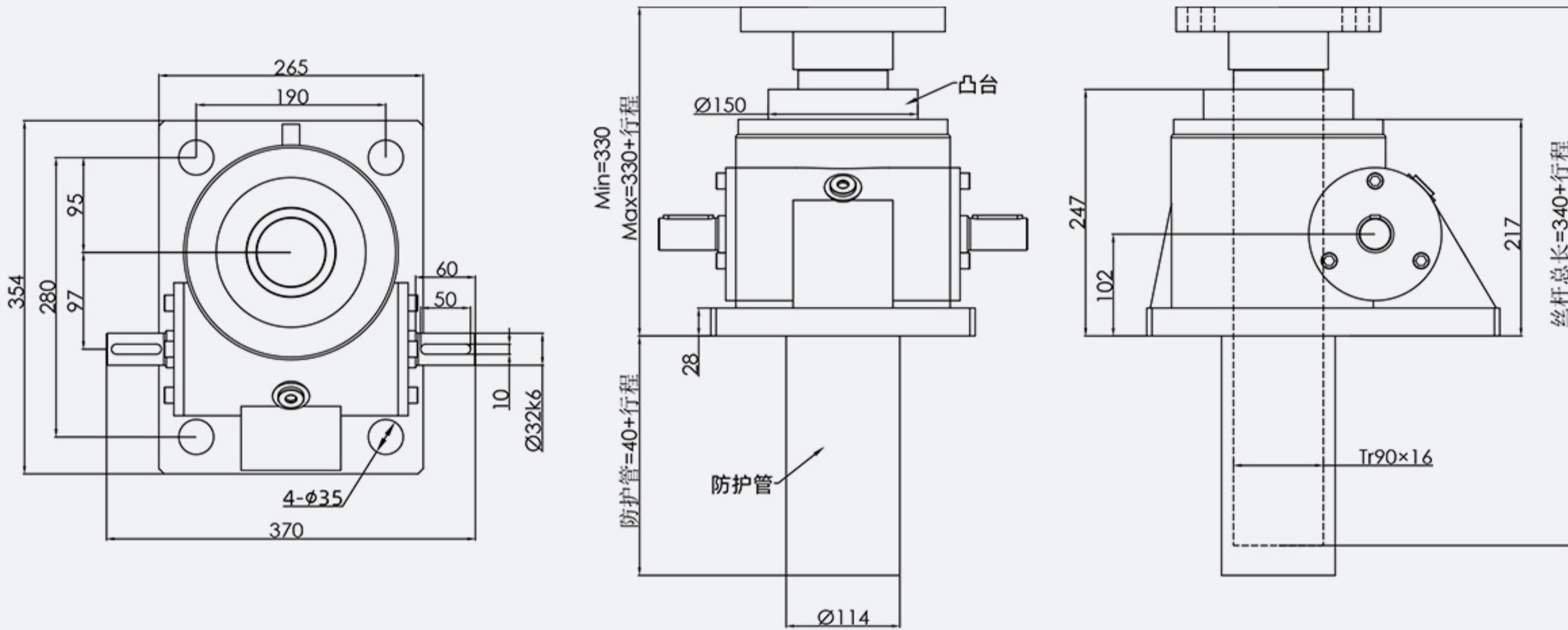
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SWL 25 外形尺寸图表

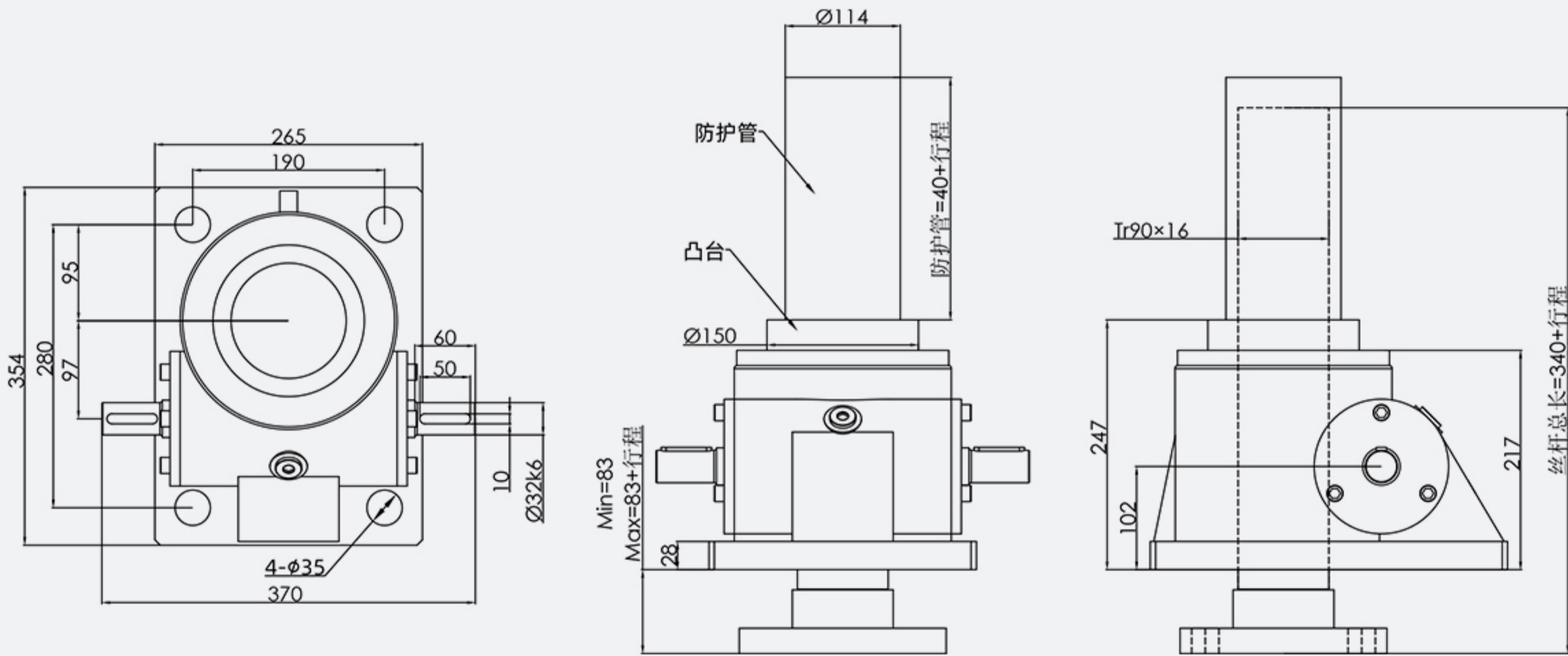
*轴指向(默认C),A、B轴指向下单请注明



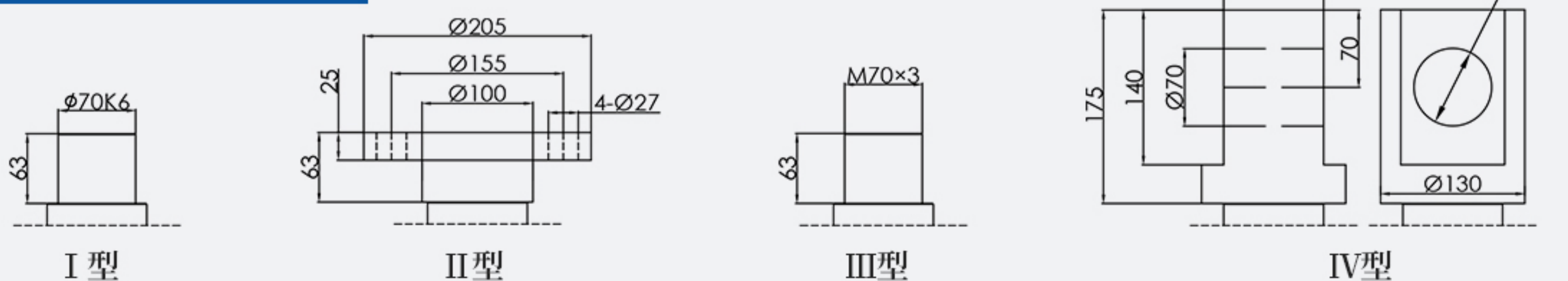
1A 型



1B 型

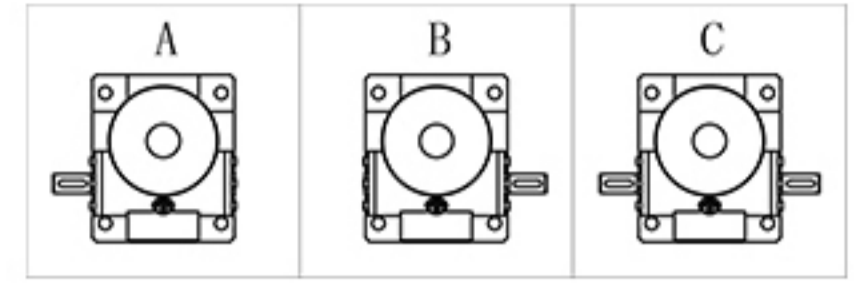


丝杆头部可选形式:

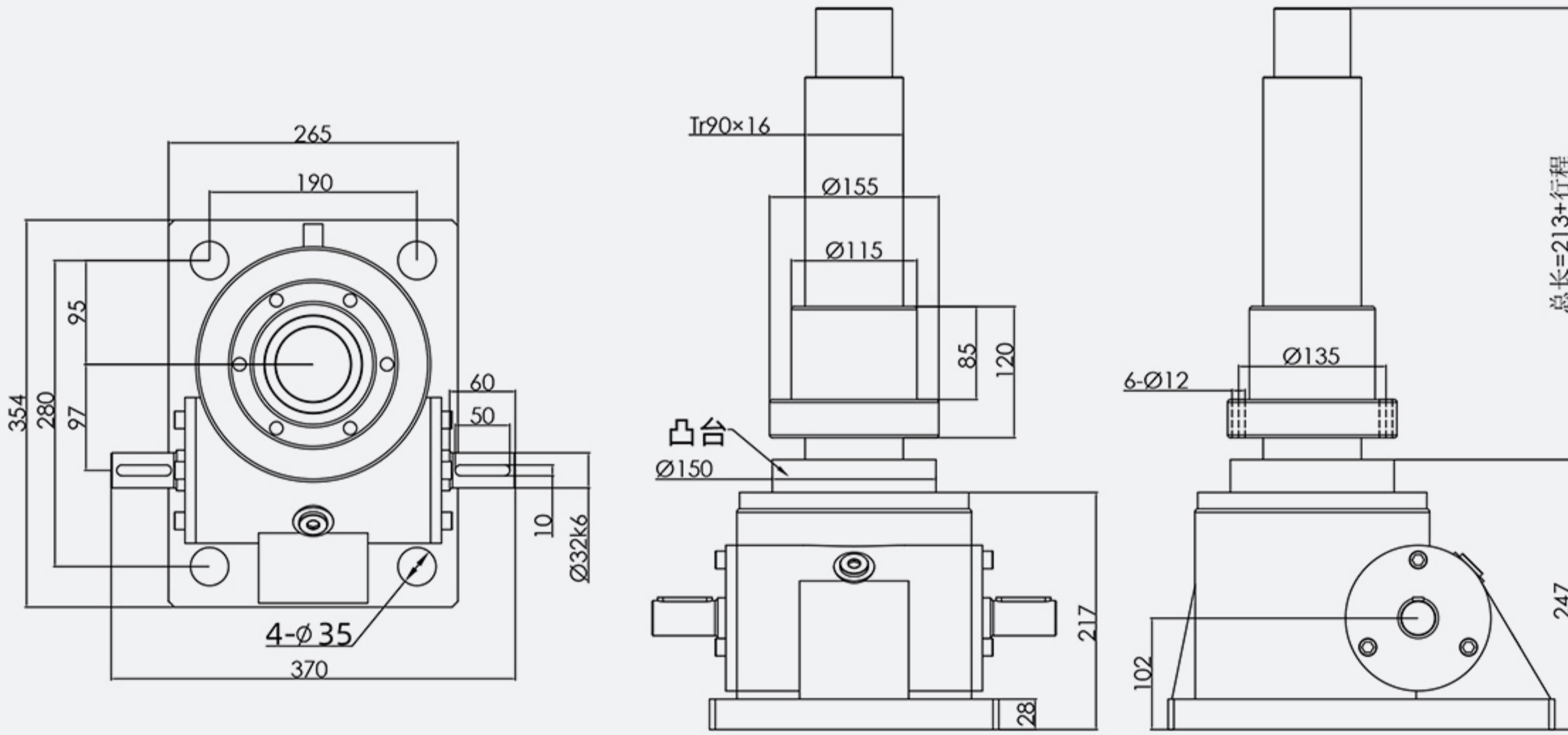


SWL 25 外形尺寸图表

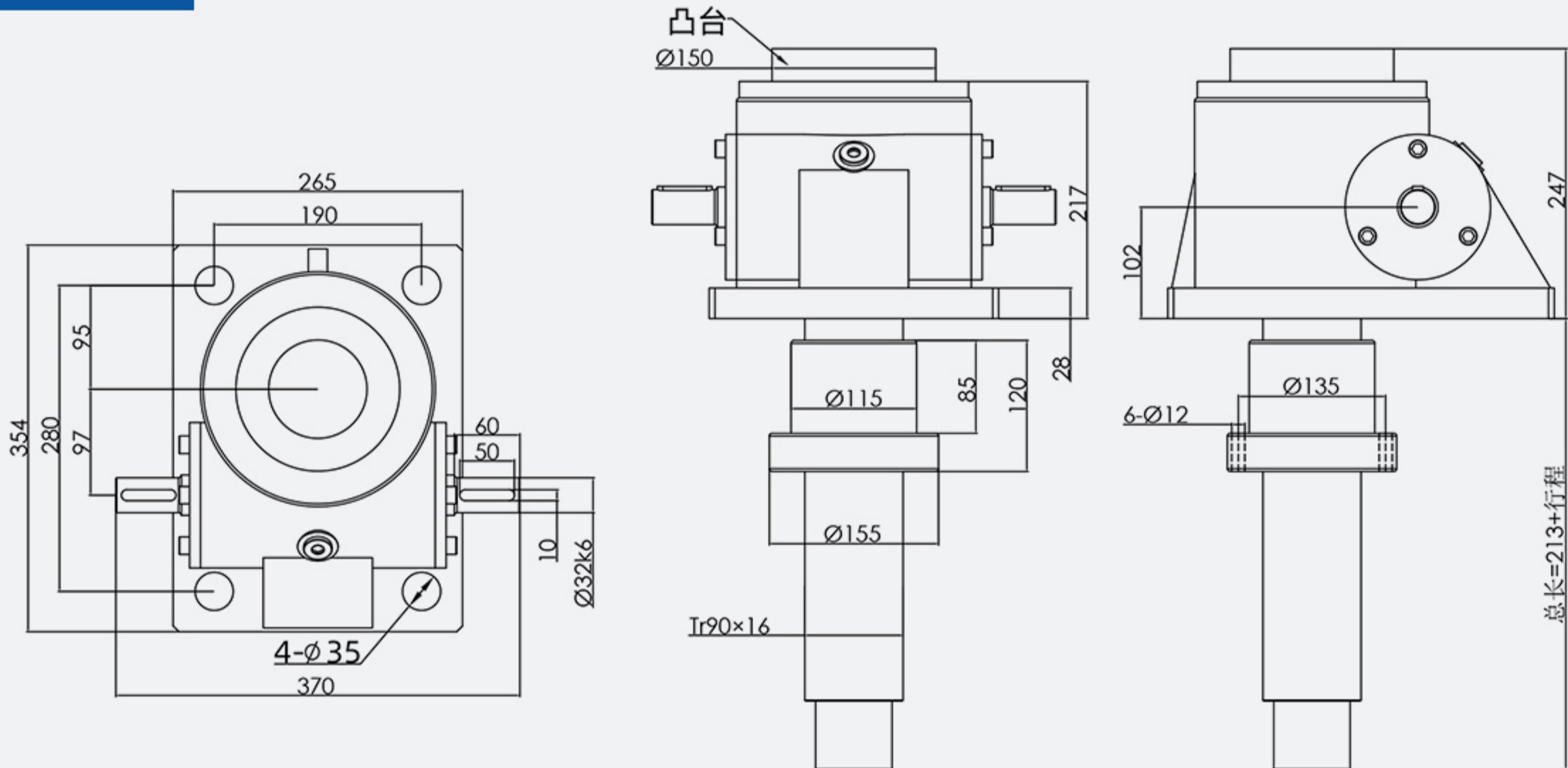
*轴指向(默认C),A、B轴指向下单请注明



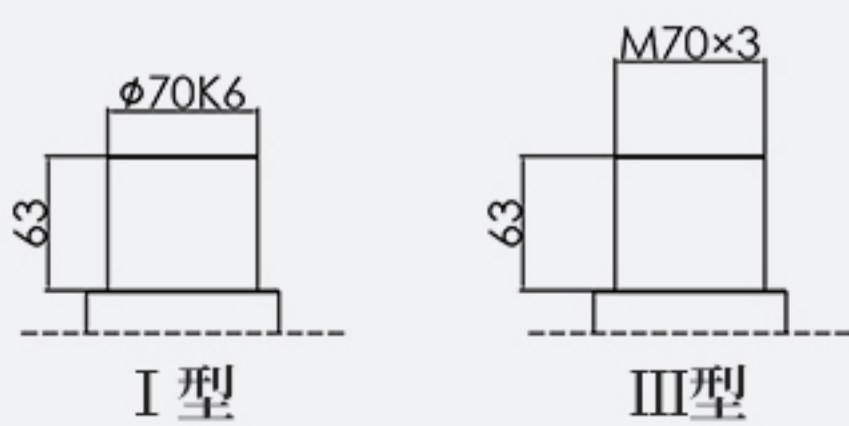
2A 型



2B 型

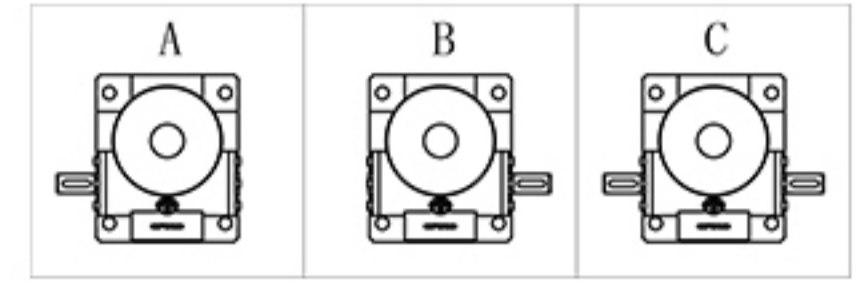


丝杆头部可选形式:

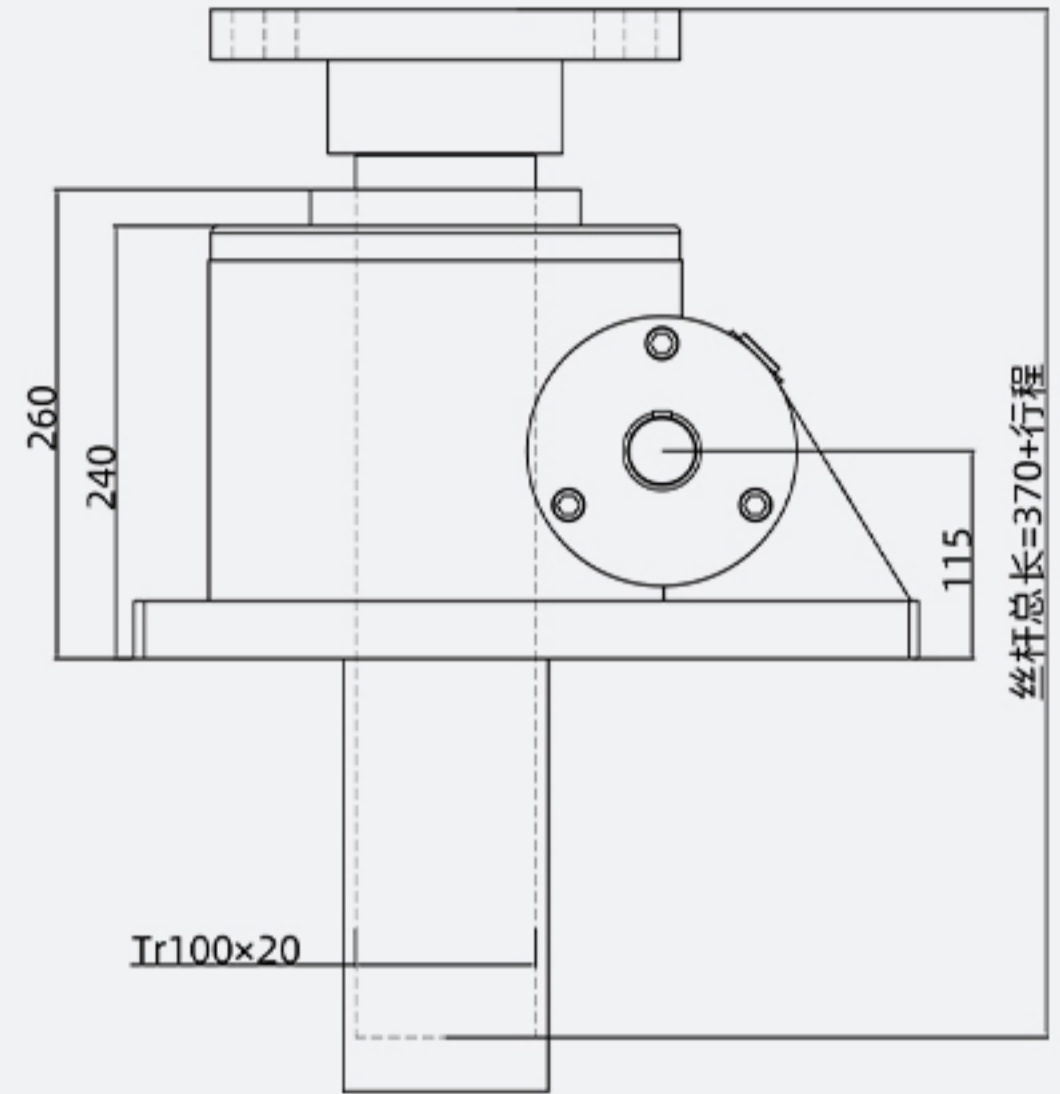
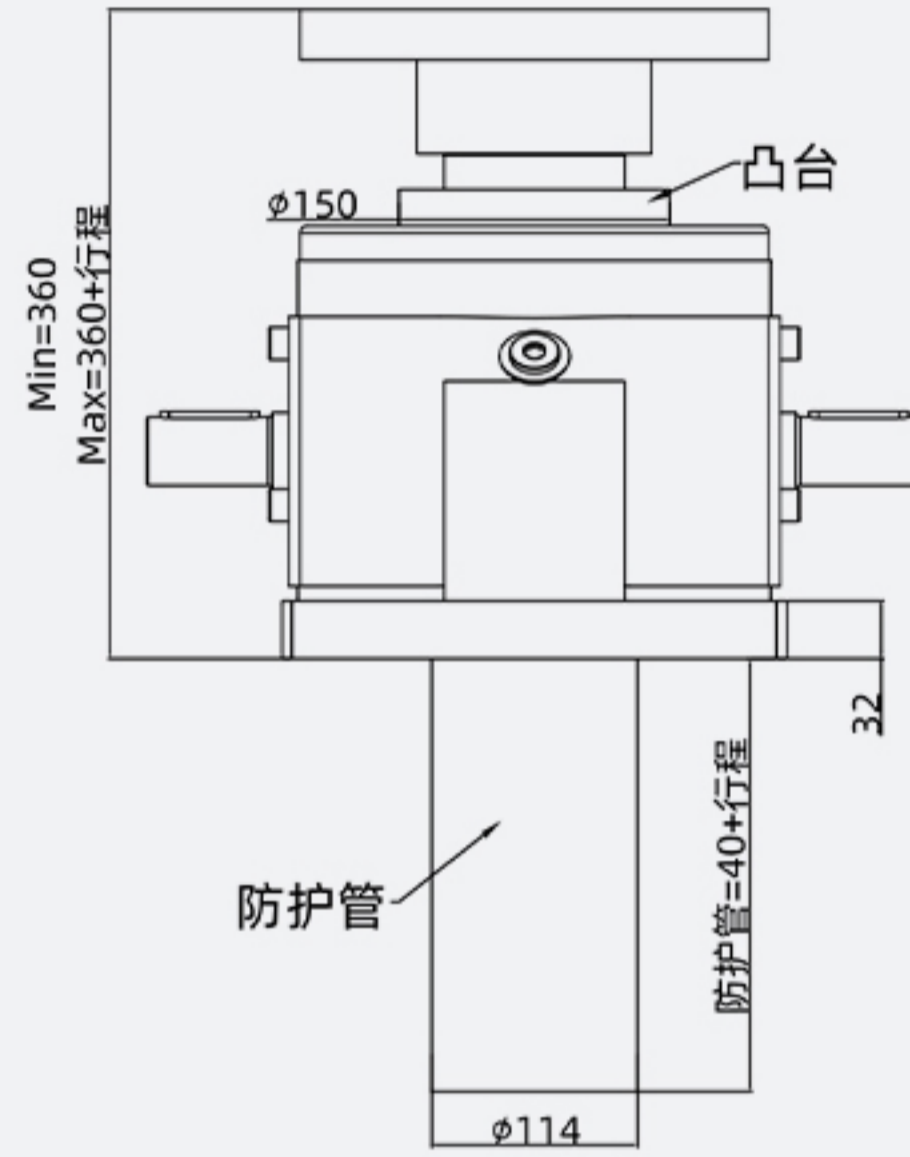
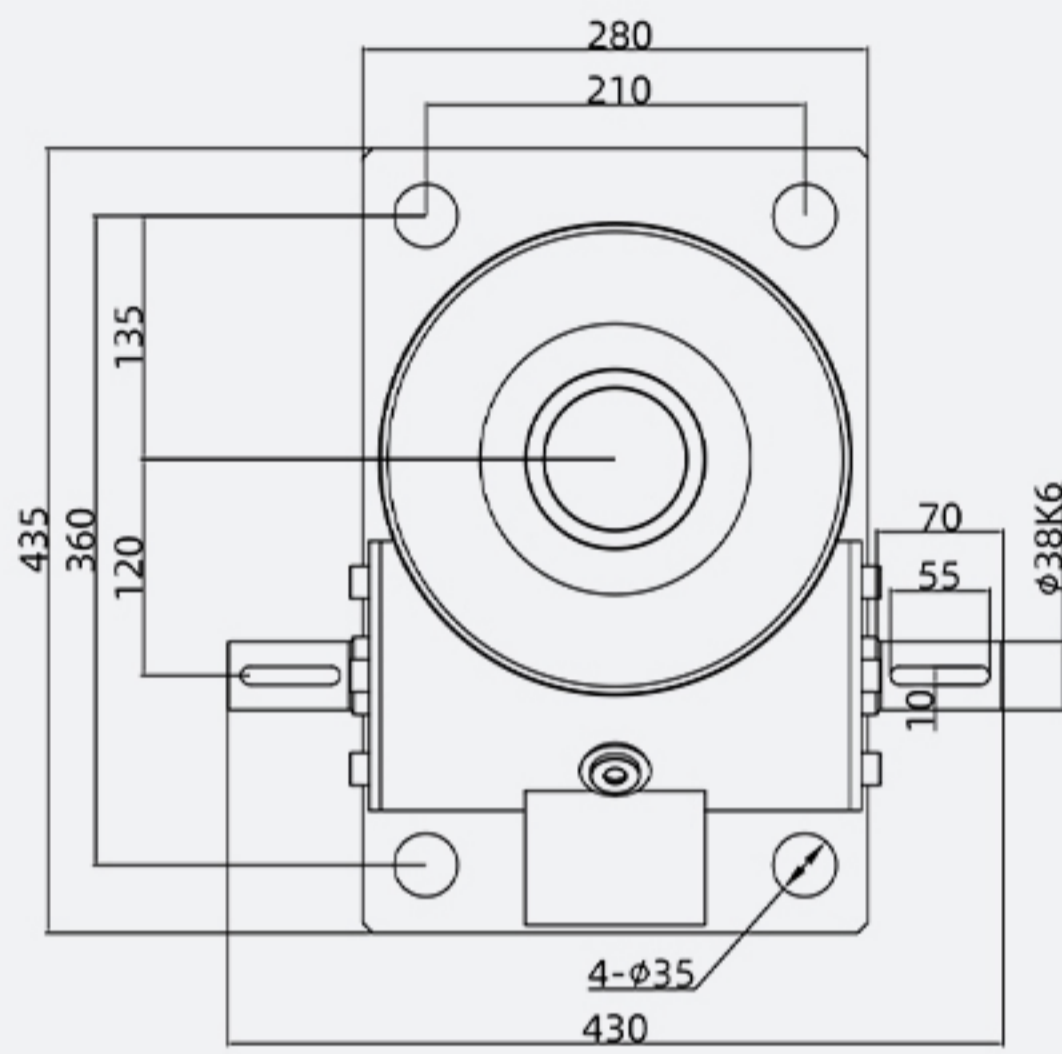


SWL 35 外形尺寸图表

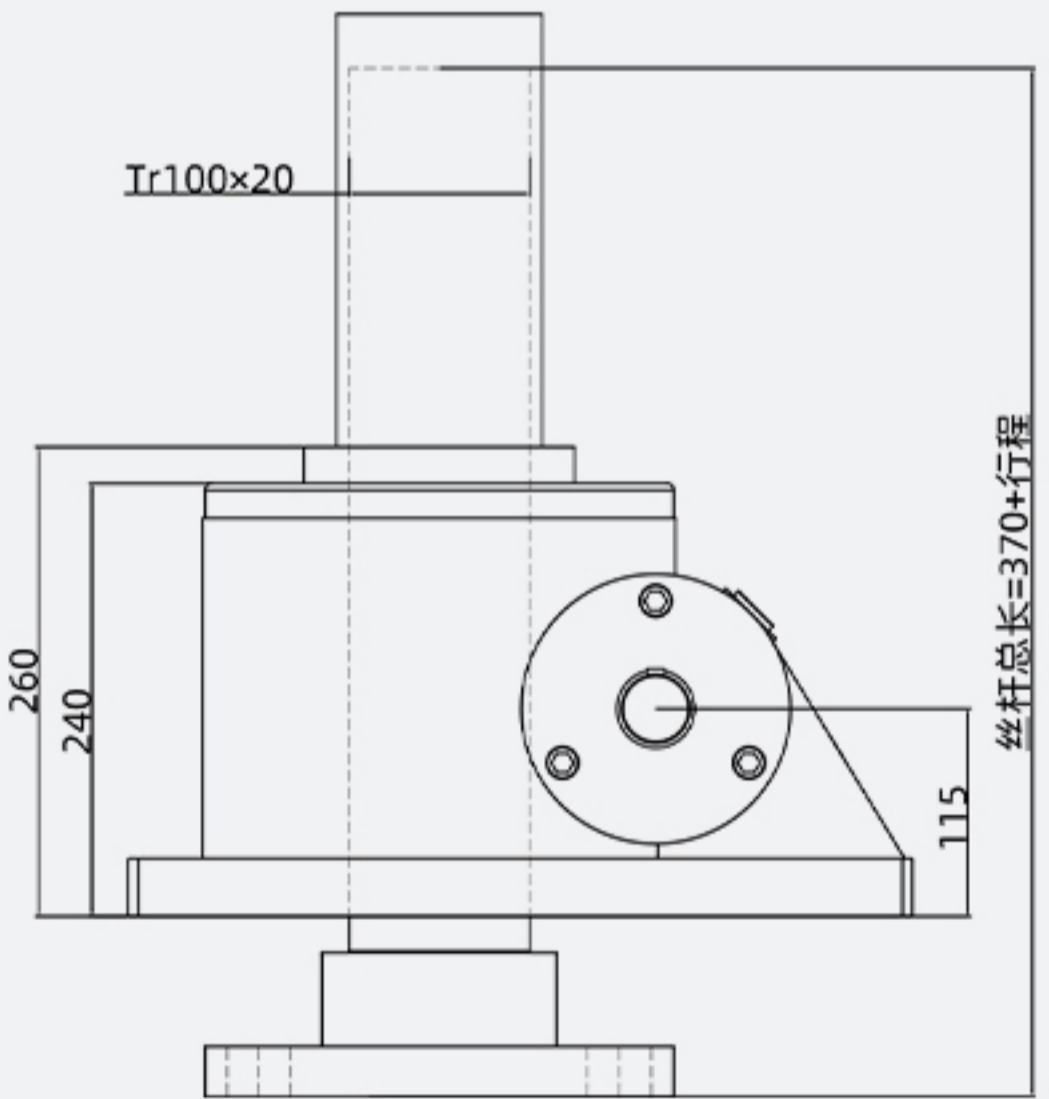
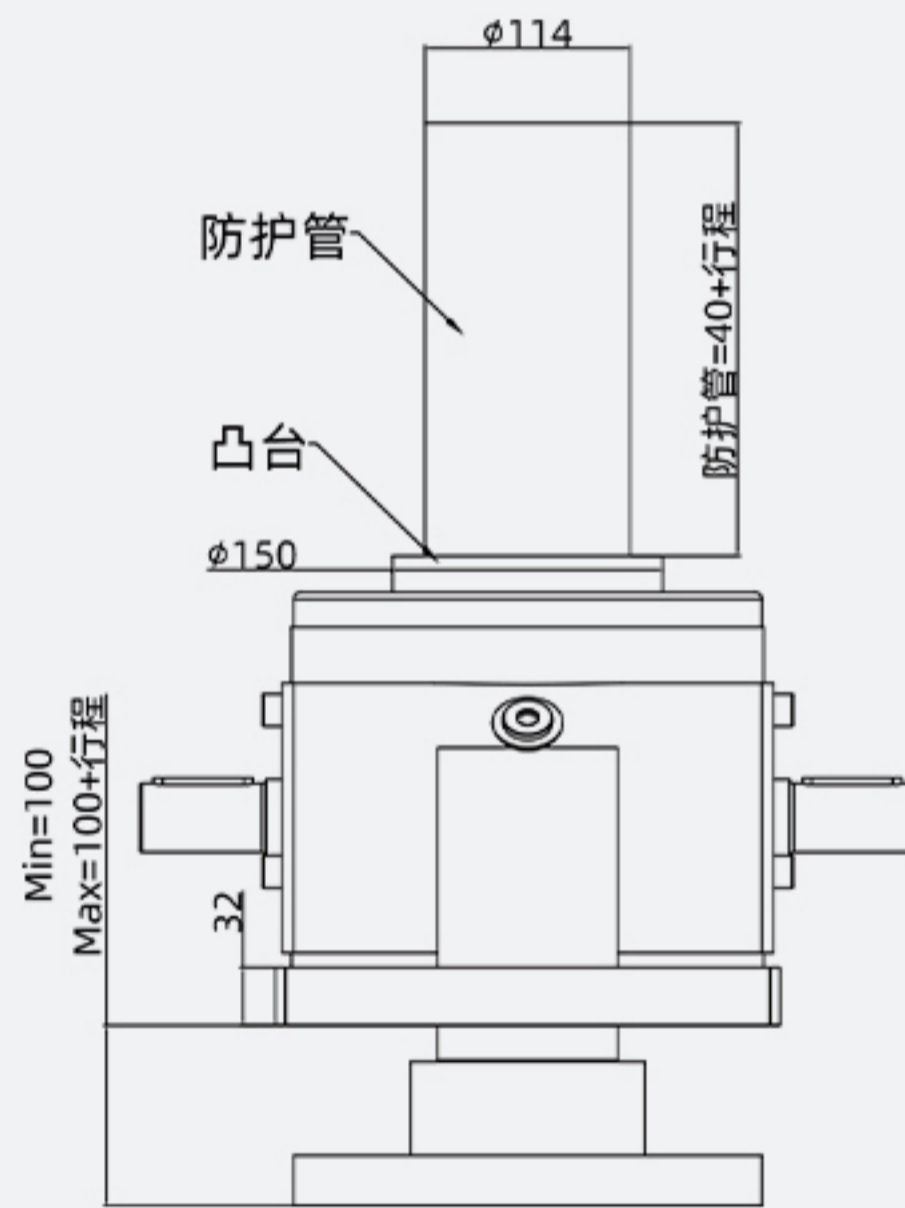
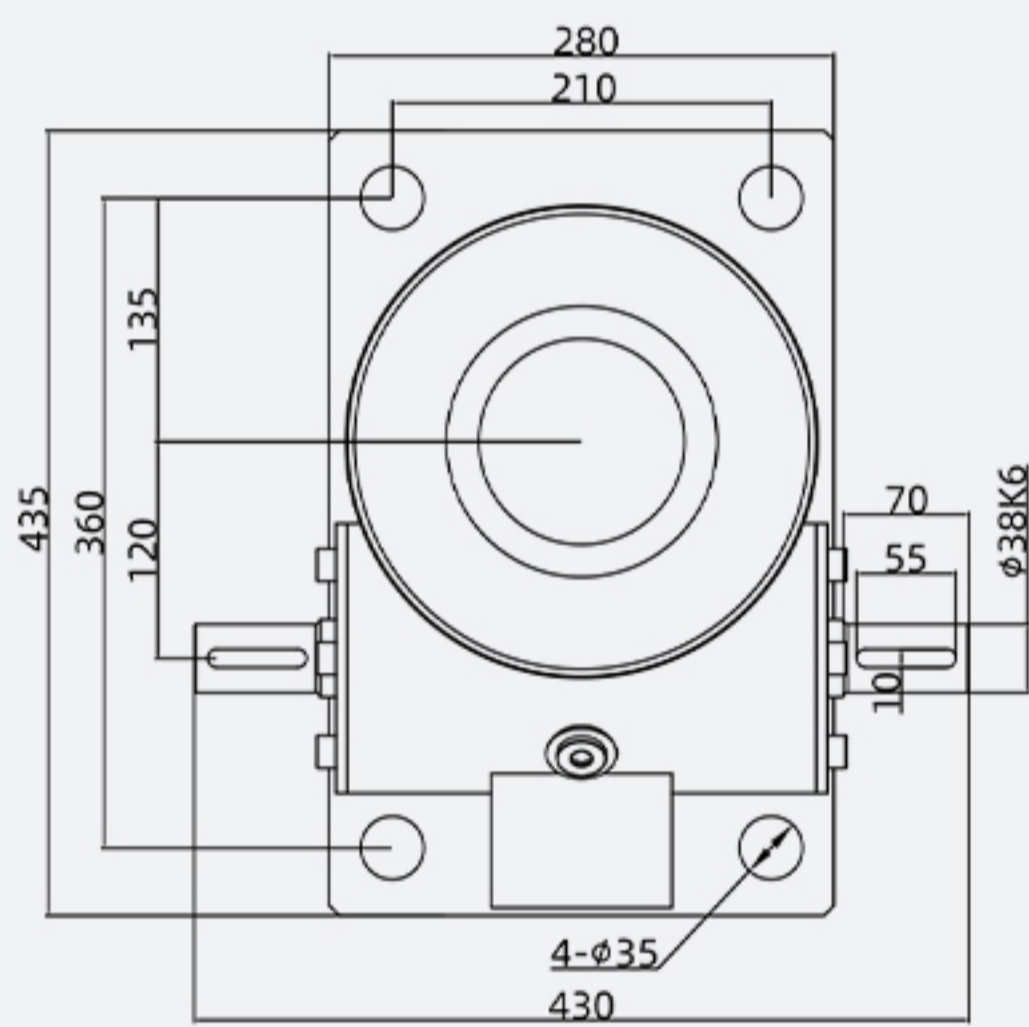
*轴指向(默认C),A、B轴指向下单请注明



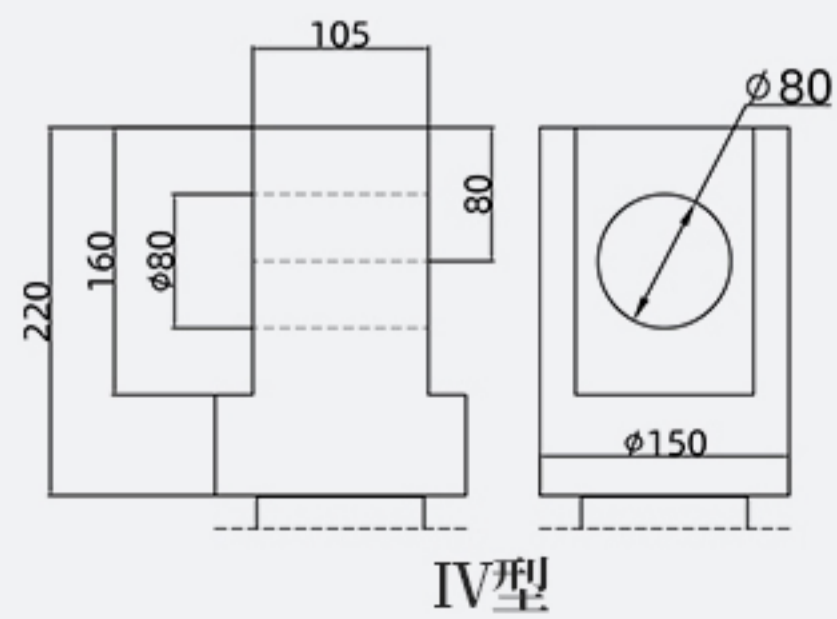
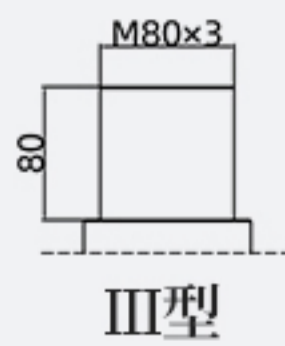
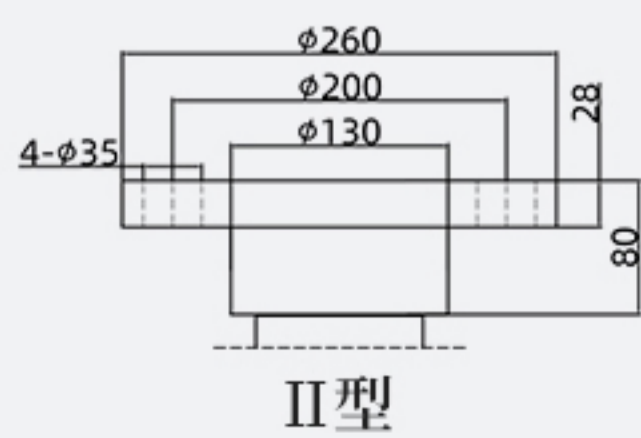
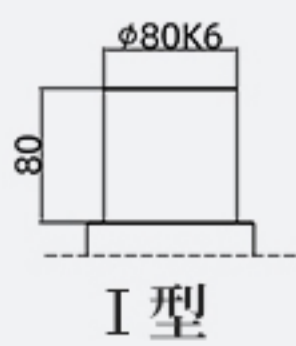
1A 型



1B 型

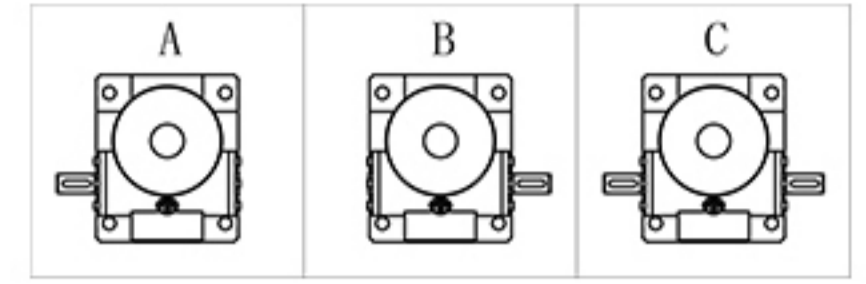


丝杆头部可选形式:

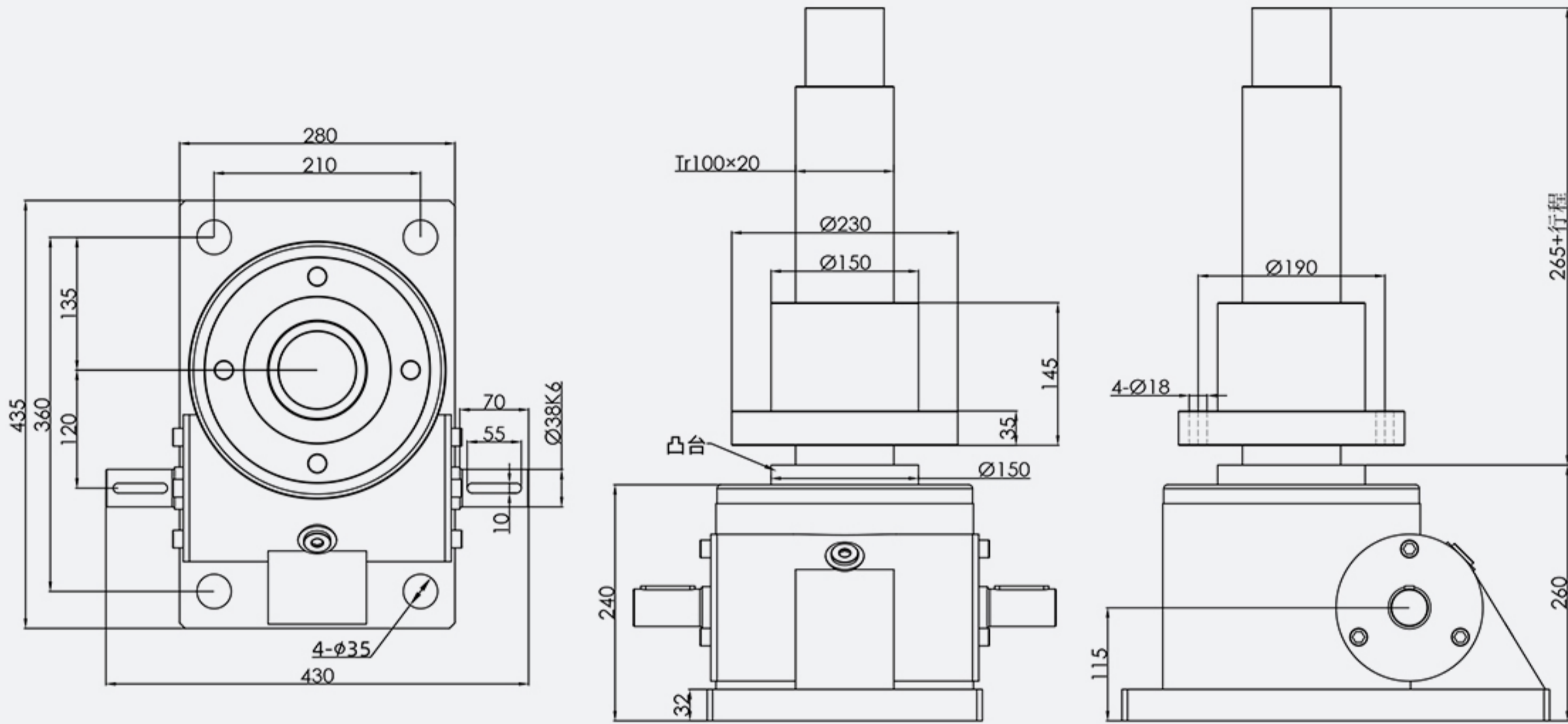


SWL 35 外形尺寸图表

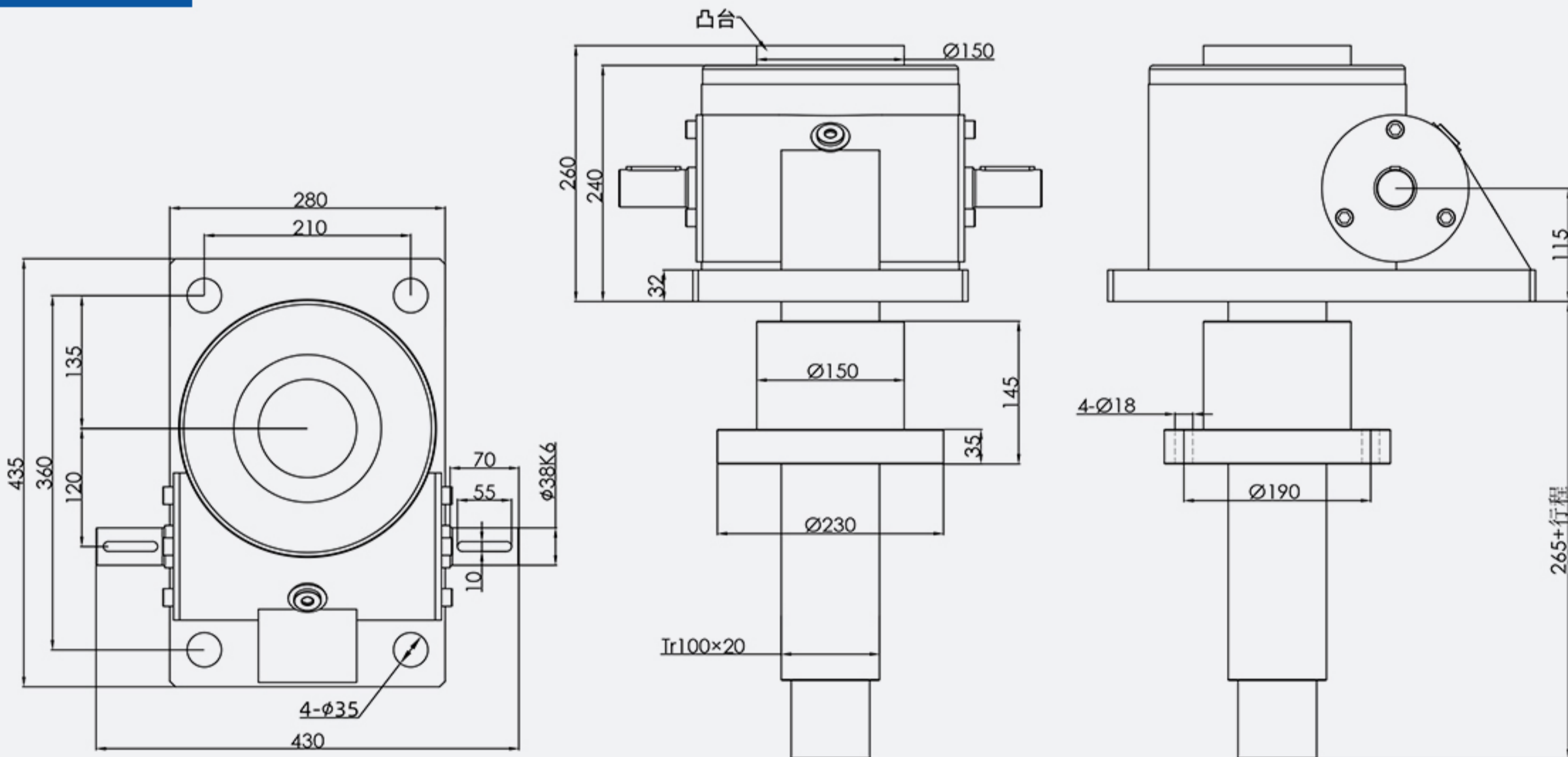
*轴指向(默认C),A、B轴指向下单请注明



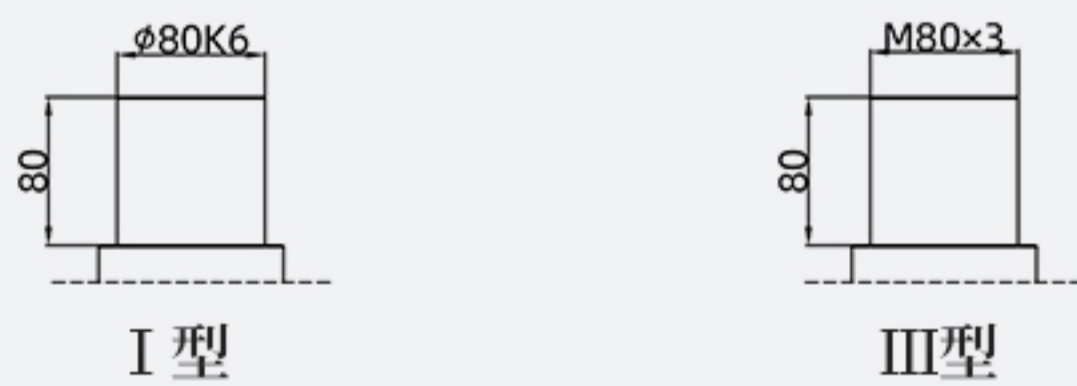
2A 型



2B 型



丝杆头部可选形式:

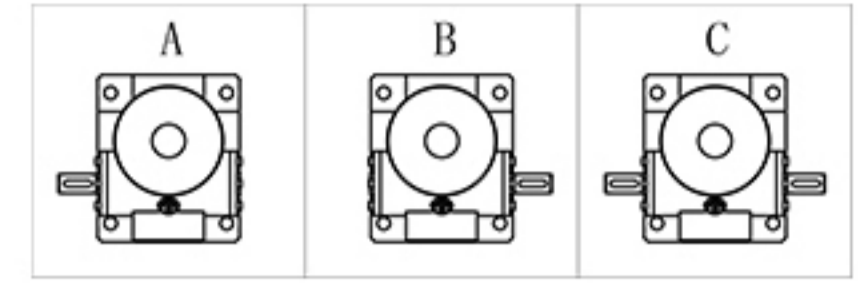


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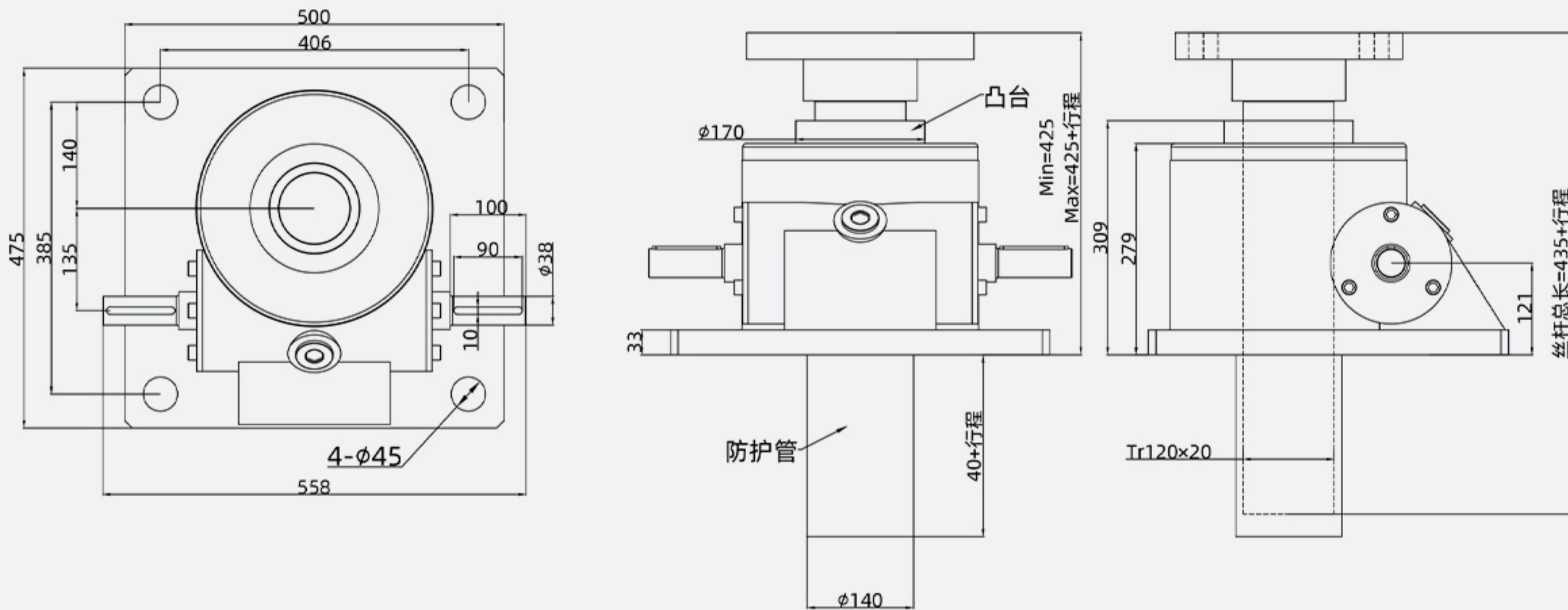
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SWL 50 外形尺寸图表

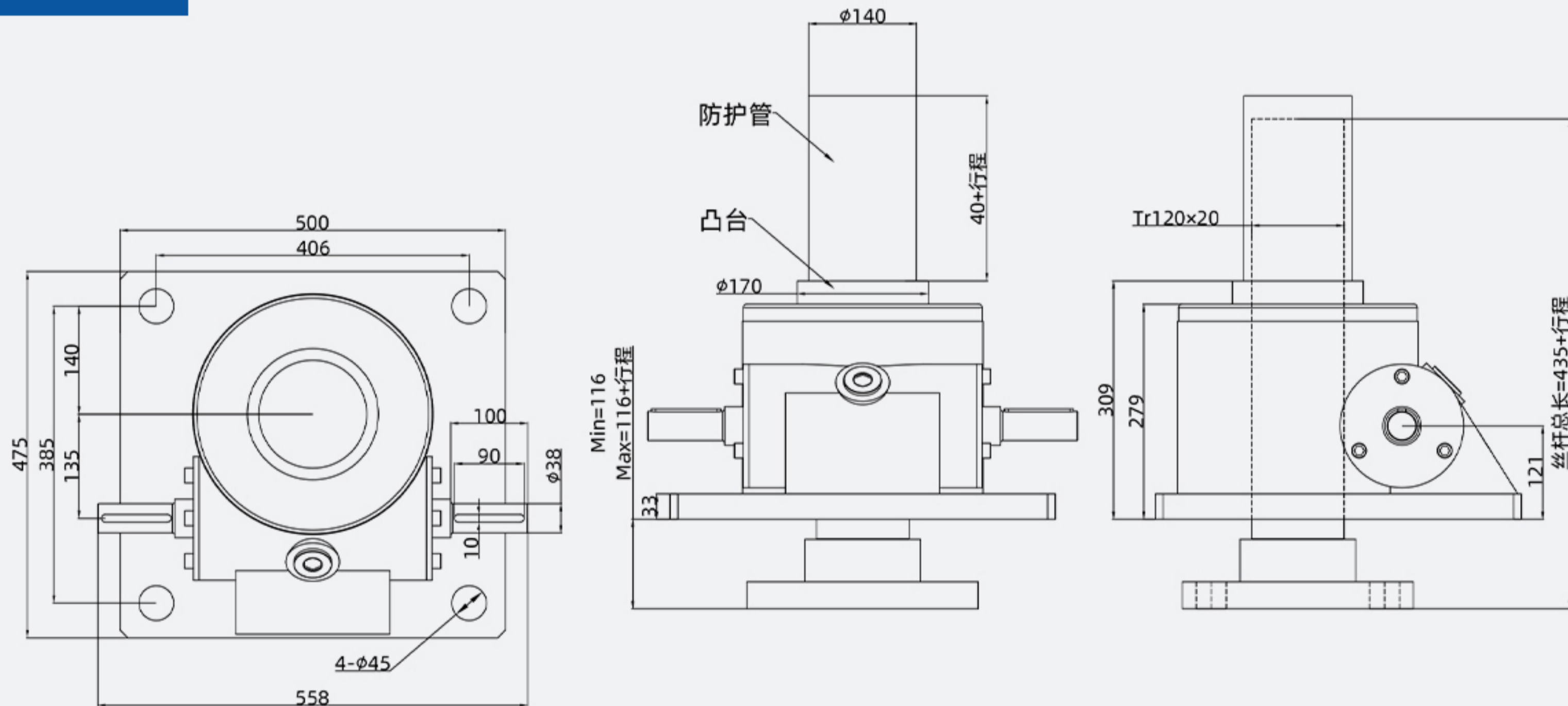
*轴指向(默认C),A、B轴指向下单请注明



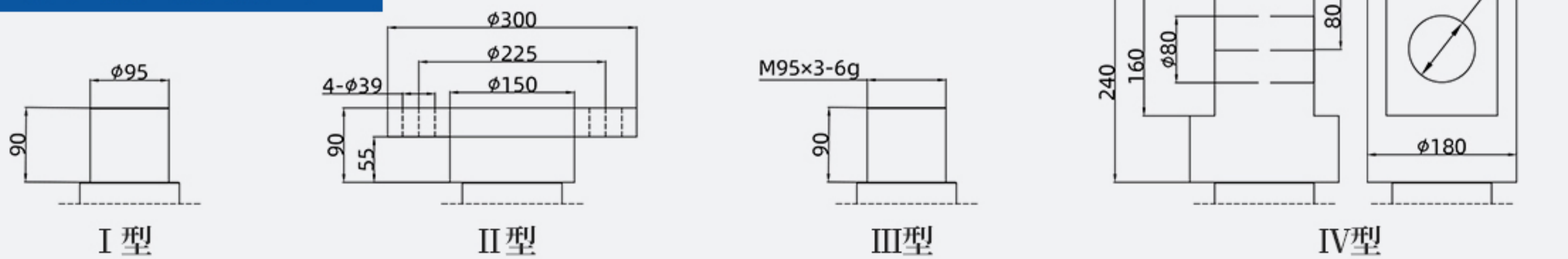
1A 型



1B 型

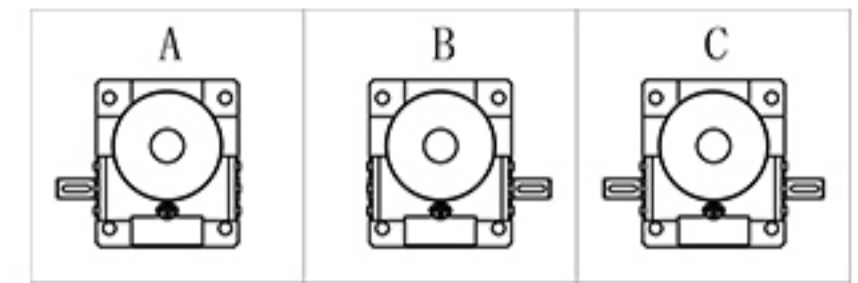


丝杆头部可选形式:

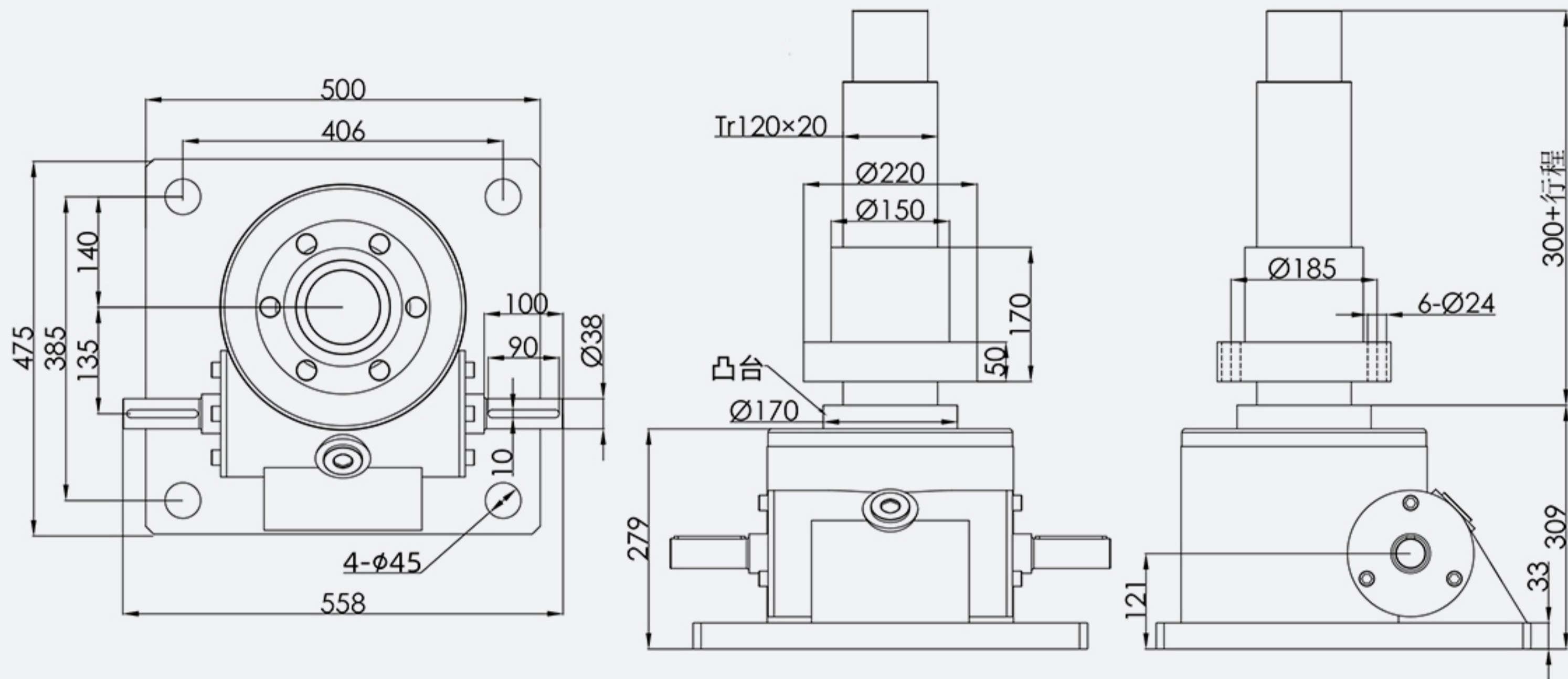


SWL 50 外形尺寸图表

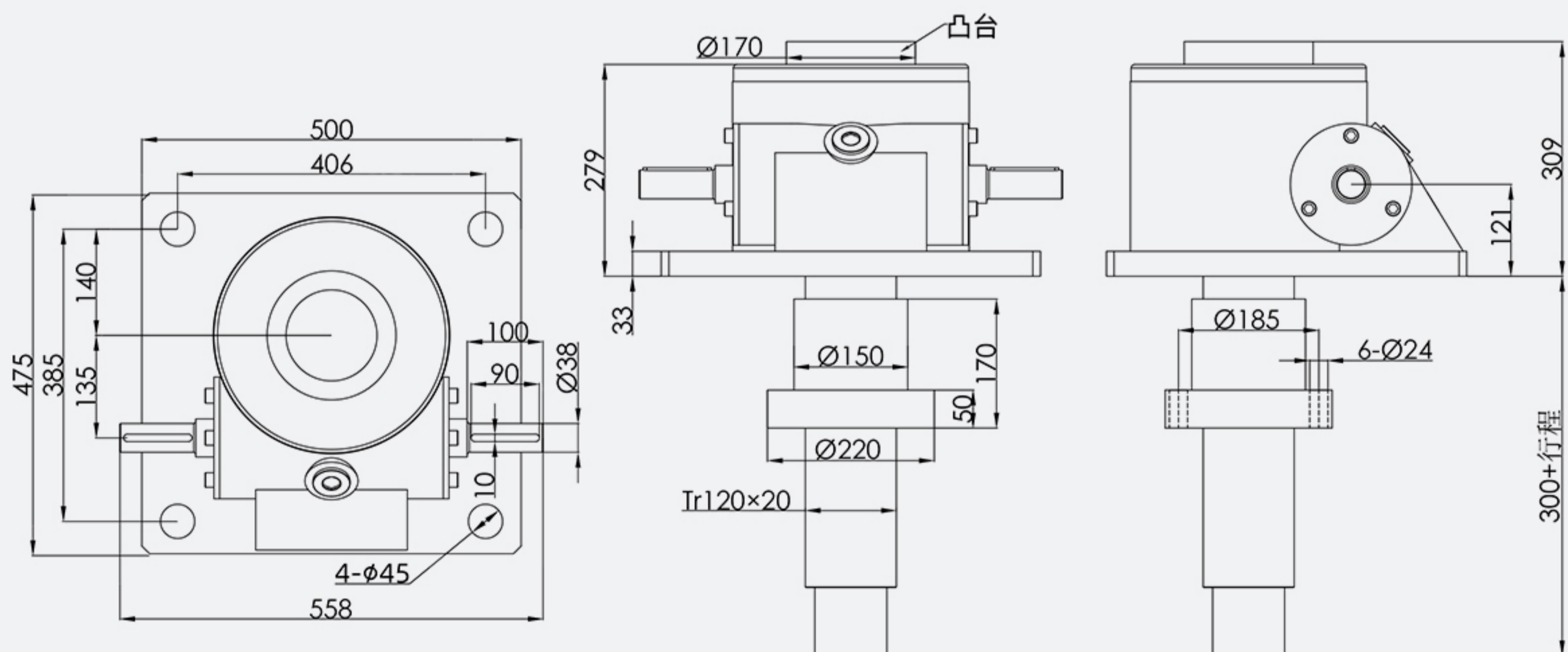
*轴指向(默认C),A、B轴指向下单请注明



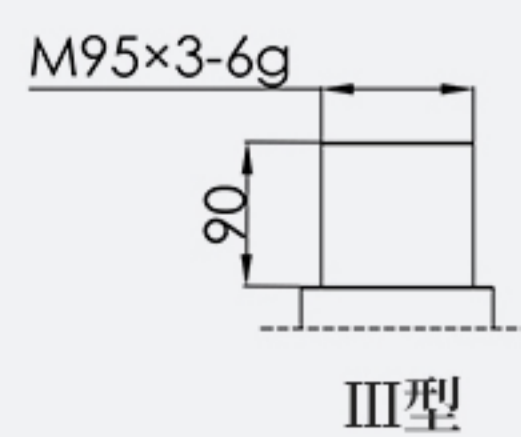
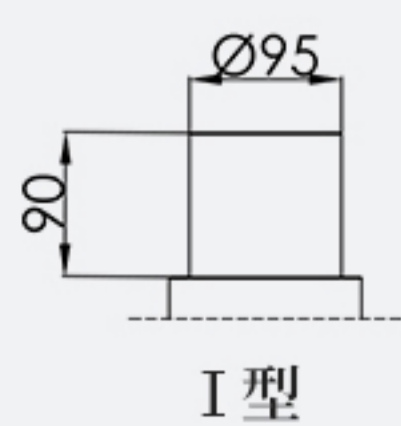
2A 型



2B 型



丝杆头部可选形式:

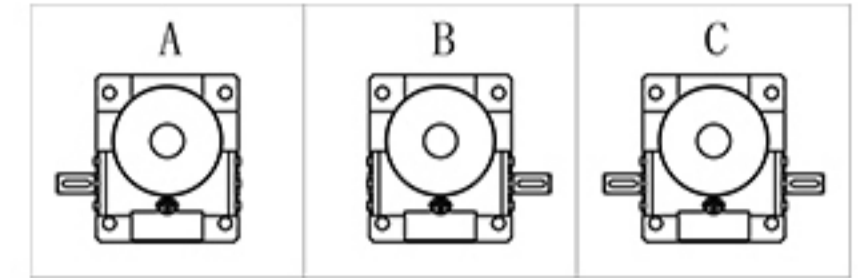


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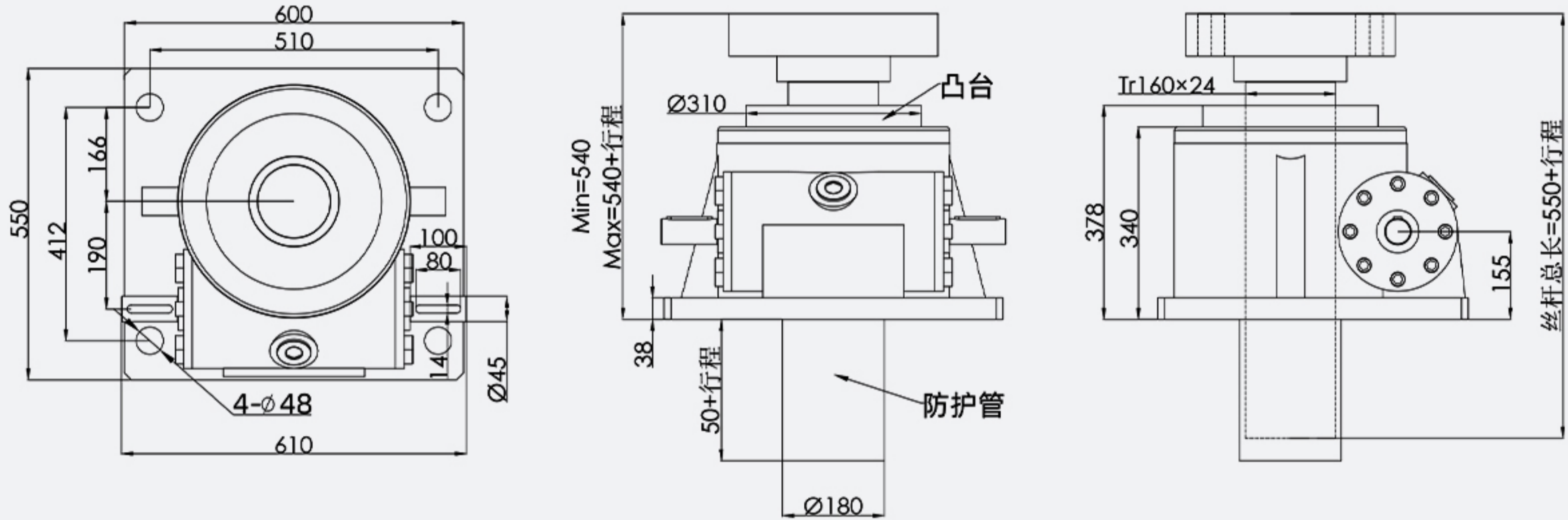
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SWL 100 外形尺寸图表

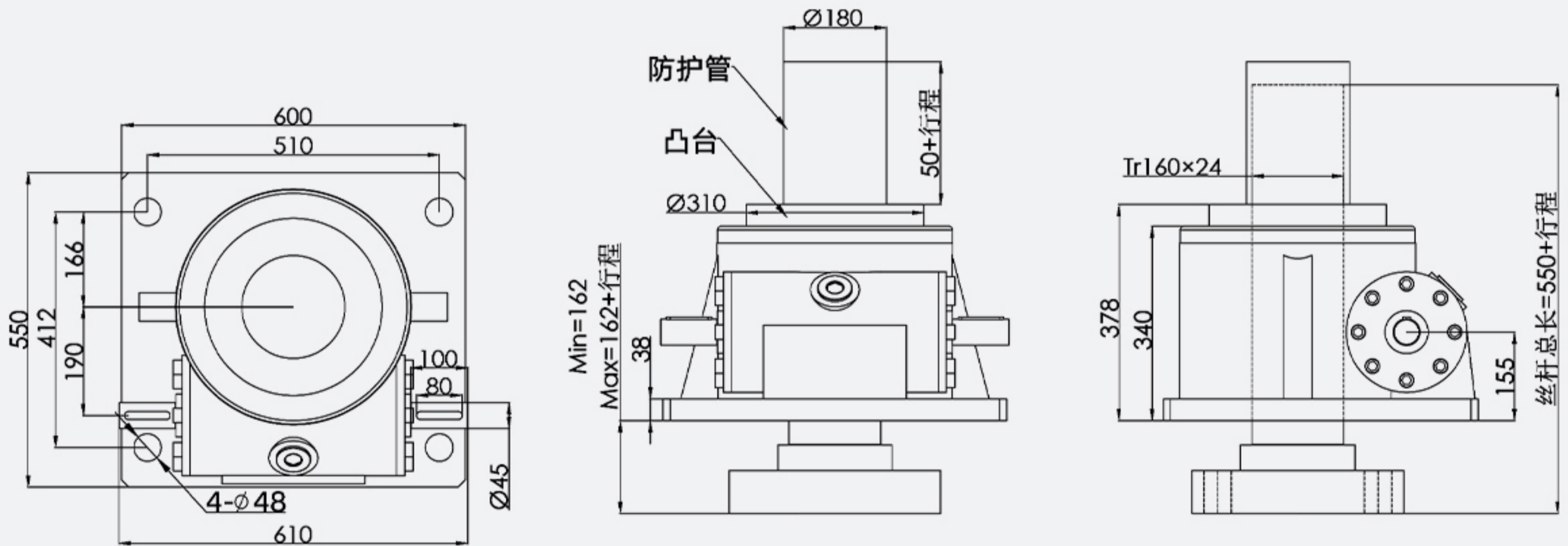
*轴指向(默认C),A、B轴指向下单请注明



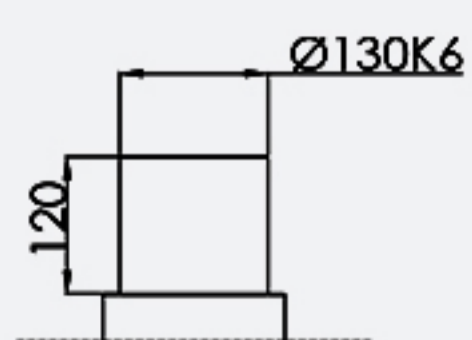
1A 型



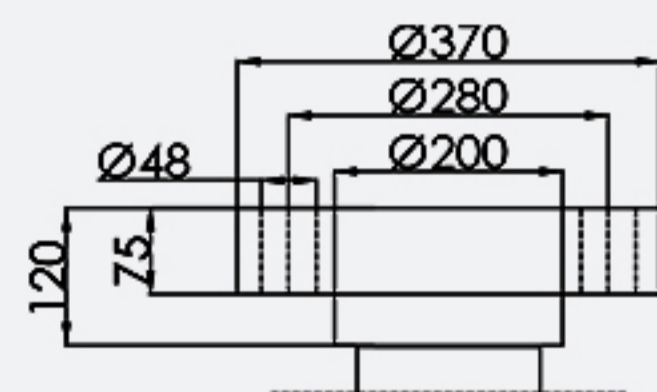
1B 型



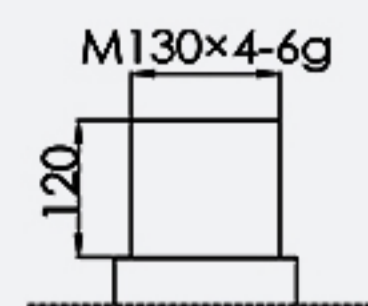
丝杆头部可选形式:



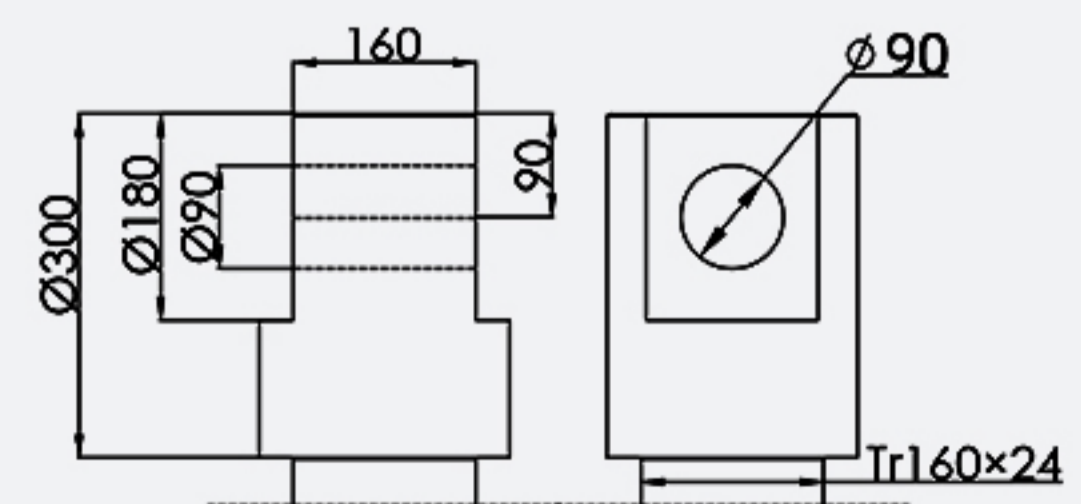
I 型



II 型



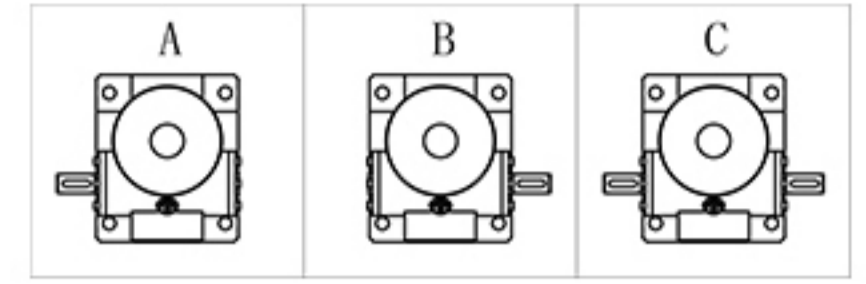
III 型



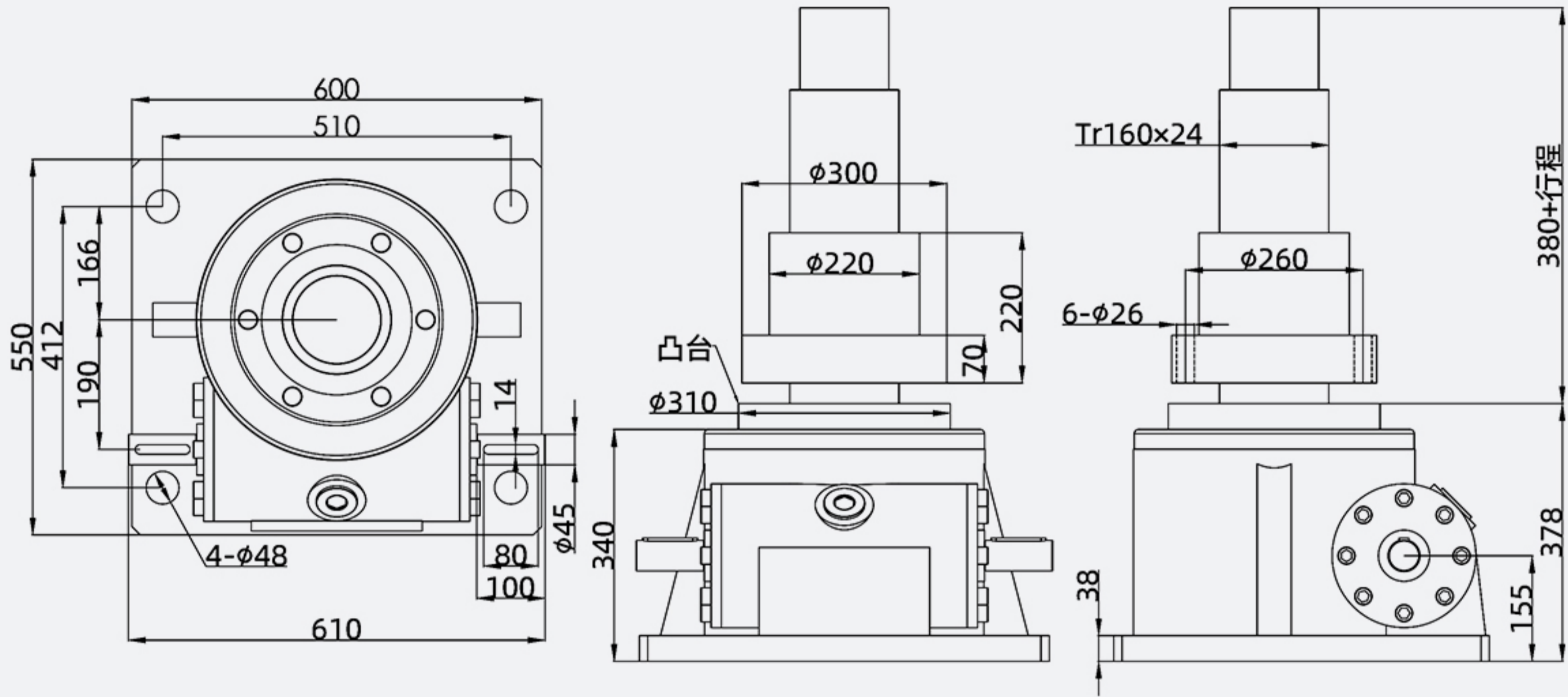
IV 型

SWL 100 外形尺寸图表

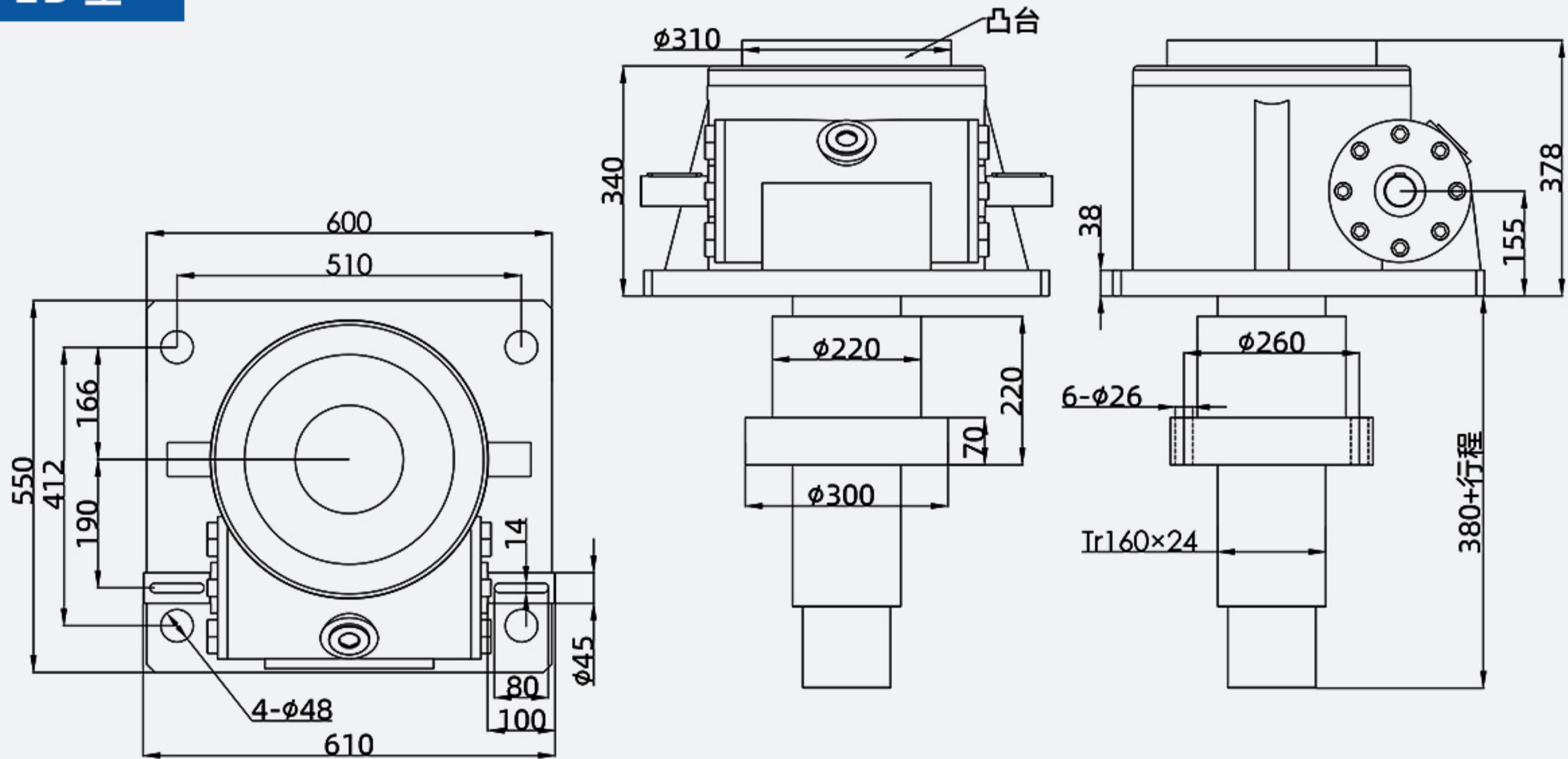
*轴指向(默认C),A、B轴指向下单请注明



2A 型



2B 型



丝杆头部可选形式:

