

FT® **FORCE & TORQUE**



**P Series High-Cycle
Rack and Pinion Actuator**
P系列高频动作执行器



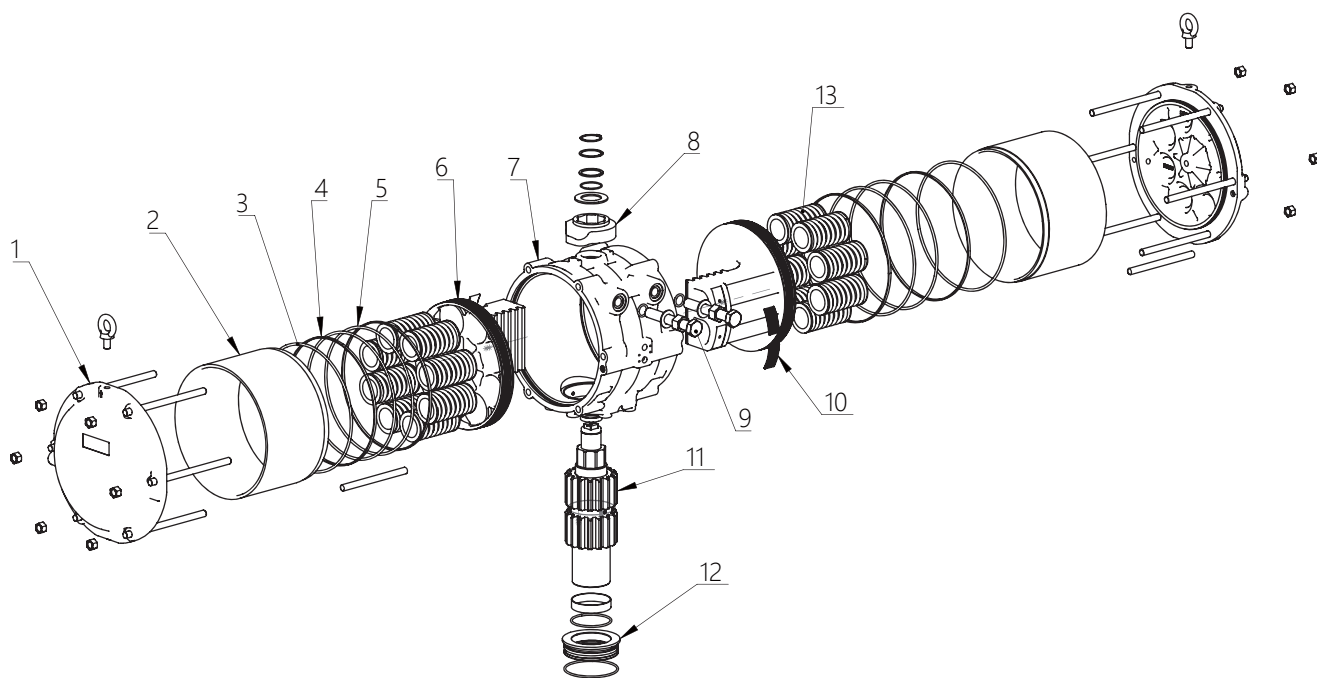
无锡福斯拓科科技有限公司
WUXI FORCE & TORQUE TECHNOLOGY CO., LTD.

技术规范 Technical Specifications



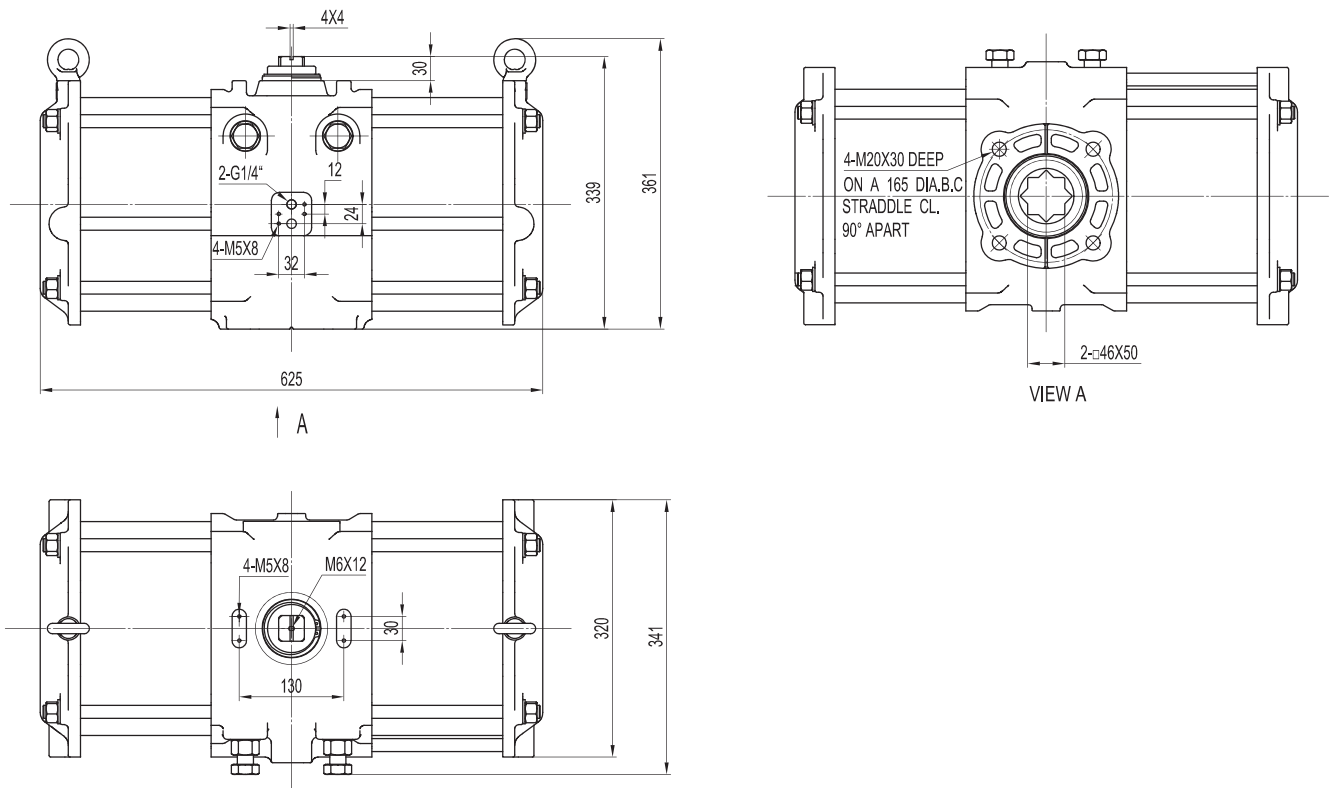
- 1 箱体、气缸分段设计，更便于加工，设计更加科学；
Section design for the centre body and cylinder, which is more scientific design and more efficient for manufacturing.
- 2 执行器箱体采用低压铸造，经加热-保温-淬火-时效处理，大幅提高铝铸件的机械强度；
Low pressure casting for the actuator centre body, after heating-heat preservation-quenching-aging treatment, the mechanical strength of aluminum casting is greatly improved.
- 3 承压部分缸筒采用优质合金钢材质，内壁经专业珩磨及镀硬铬处理，使得内壁达到镜面效果，并具有较强的耐腐蚀性和耐磨性；
The pressure bearing cylinder is made of high-quality alloy steel. The inner wall is professionally honed and hard chrome-plated to achieve mirror effect and excellent wear and corrosion resistance.
- 4 可轻松实现120°、145°、180°行程执行器的设计需求；
Realize design requirements for 120 °,145 °and 180 °special stroke actuators.
- 5 活塞采用高强度的球墨铸铁，相比普通重力铸造铝合金，抗拉强度提高200%以上；
The piston is made of high-strength ductile iron, of which the tensile strength increases by more than 200% than normal gravity casting aluminum alloy.
- 6 一体式的球墨铸铁活塞，齿面经精加工而成，大幅提高了齿轮齿条的传动精度和耐磨性。
Integral ductile iron piston with the tooth surface finish machined, which improves the transmission precision and wear resistance for the gear and rack.
- 7 齿轮及齿条传动齿模数增加，大幅提高了齿的疲劳强度，约50%；
Increase transmission tooth modulus for gear and rack, greatly enhancing the fatigue strength of the tooth by about 50%.
- 8 采用双密封圈、双导向圈设计，优化了油脂润滑和密封性能，大幅度提高了气密性寿命；
Double seal rings and double guide rings design, optimizing grease lubrication, sealing performance and greatly improving the air-tightness service life.
- 9 采用气源接口全通径设计，满足了快速动作的供气需求；
Full port design for air connections, providing enough air pressure for quick action requirements.
- 10 凸轮限位块采用锻钢材材质，满足快速动作的冲击限位和高频动作的疲劳寿命；
The cam limit block is made of forged steel to meet requirements for impact limit of quick action and fatigue life of high cycle action.
- 11 设计加大了限位螺栓规格，提供更高强度的螺杆限位；
Increase size for the limit adjustment screws to enhance the strength of screw limit rod.
- 12 ISO5211底部安装法兰增加了泄压槽及滚花加工，增加了与阀门连接的摩擦力，降低执行器与阀门（支架）的扭动现象。
Additional Relief groove and knurling process for ISO5211 bottom mounting flange, increasing the frictional force connected with the valve and reducing the twisting phenomenon between the actuator and the valve (bracket).

零件与材料 Parts & Materials



序号 NO.	名称 Name	数量 Qty.	材料 Material
1	缸盖 Cylinder Cap	2	铸铝 Cast aluminum
2	缸体 Cylinder	2	钢 steel
3	O型圈 O-ring	2	NBR
4	导向带 Guide Ring	2	聚酯树脂 Polyester resin
5	O型圈 O-ring	2	NBR
6	活塞 Piston	2	铸铁 Cast iron
7	箱体 Box	1	铸铝 Cast aluminum
8	凸轮 Cam	1	钢 steel
9	调节螺栓 Adjust screw	2	不锈钢 Stainless steel
10	导向钉 Guide pin	4	POM
11	齿轴 Pinion	1	钢 Steel
12	衬套 Bushing	1	铝合金 Aluminum alloy
13	弹簧 Spring	n	弹簧钢 Spring steel

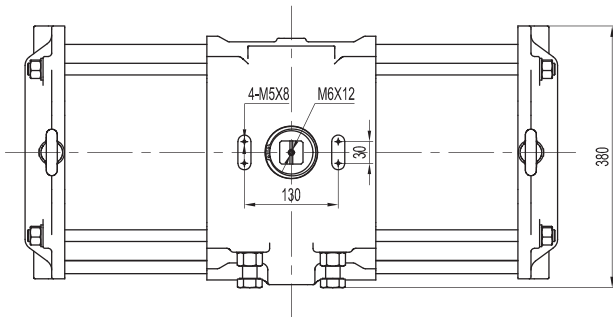
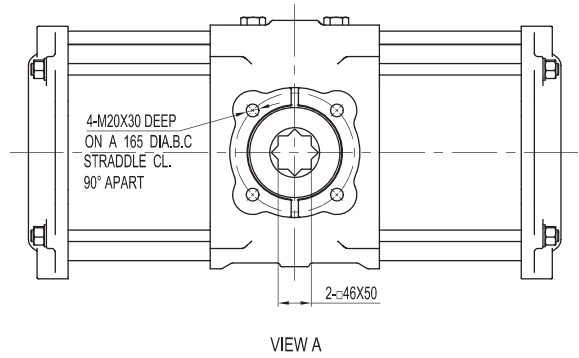
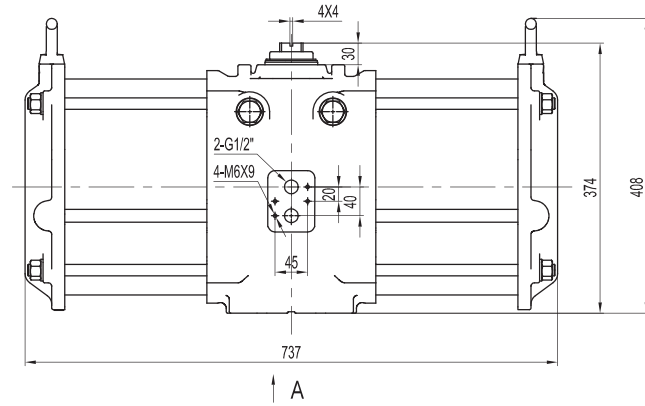
PRD(S)250外型尺寸 Dimension



OUTPUT TORQUE OF PNEUMATIC ACTUATOR WITH DOUBLE ACTING (UNIT:Nm)									
Model	Air Supply pressure (Bar)								
	2	3	4	5	6	7	8		
PRD250	836	1254	1672	2090	2508	2925	3343		

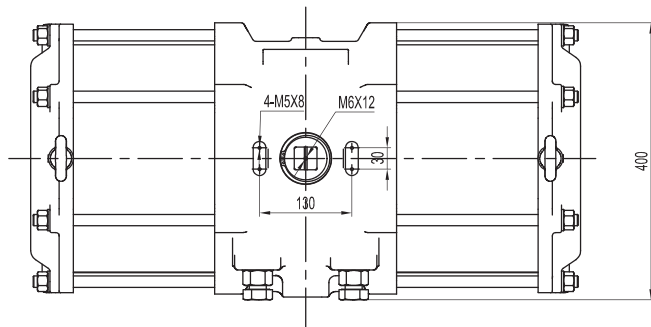
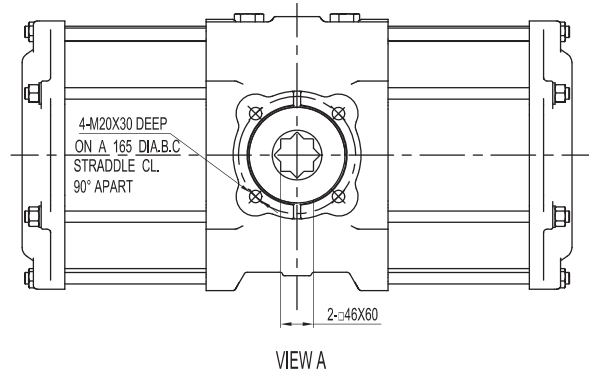
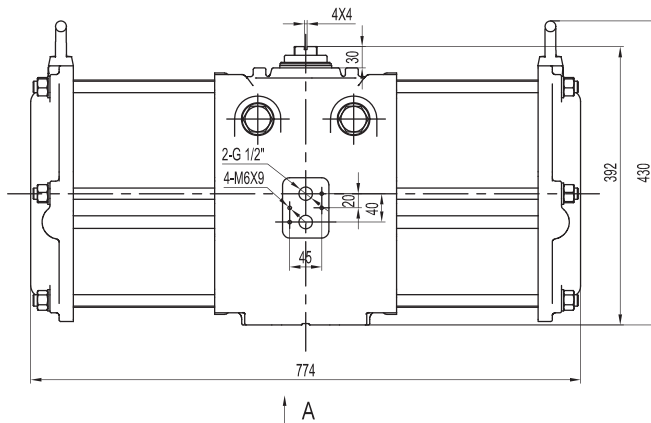
OUTPUT TORQUE OF PNEUMATIC ACTUATOR WITH SPRING RETURN (UNIT:Nm)									
Model	Spring Qty	Air pressure (Bar)							
		4		5		6		Springs' output	
		0°	90°	0°	90°	0°	90°	90°	0°
		Start	End	Start	End	Start	End	Start	End
PRS250	7	1061	853					735	544
	8	983	748	1384	1145			840	622
	9	905	643	1306	1040	1707	1437	945	700
	10	827	538	1228	935	1629	1332	1050	778
	11			1151	830	1552	1227	1155	855
	12			1073	725	1474	1122	1260	933

PRD(S)280外型尺寸 Dimension



OUTPUT TORQUE OF PNEUMATIC ACTUATOR WITH DOUBLE ACTING (UNIT:Nm)									
Model	Air Supply pressure (Bar)								
	2	3	4	5	6	7	8		
PRD280	1258	1887	2516	3145	3774	4404	5033		
OUTPUT TORQUE OF PNEUMATIC ACTUATOR WITH SPRING RETURN (UNIT:Nm)									
Model	Spring Qty	Air pressure (Bar)							
		4		5		6		Springs' output	
		0°	90°	0°	90°	0°	90°	90°	0°
		Start	End	Start	End	Start	End	Start	End
PRS280	7	1673	1347					1043	742
	8	1567	1198	2171	1796			1192	848
	9	1461	1049	2065	1647	2669	2244	1341	954
	10	1355	900	1959	1498	2563	2095	1490	1060
	11			1853	1349	2457	1946	1639	1166
	12			1747	1200	2351	1797	1788	1272

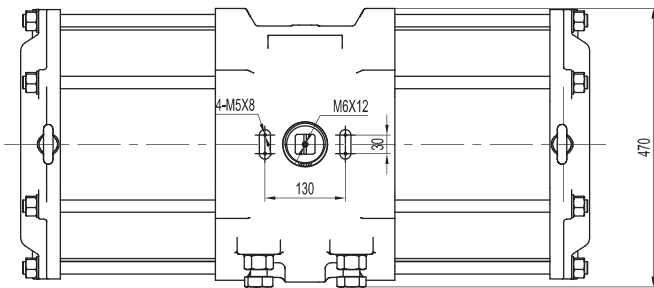
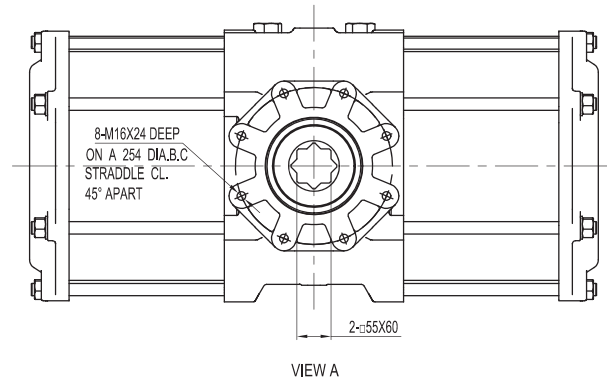
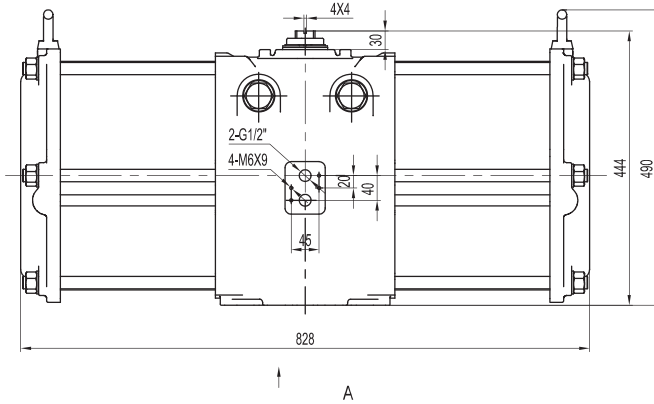
PRD(S)300外型尺寸 Dimension



OUTPUT TORQUE OF PNEUMATIC ACTUATOR WITH DOUBLE ACTING (UNIT:Nm)									
Model	Air Supply pressure (Bar)								
	2	3	4	5	6	7	8		
PRD300	1526	2289	3052	3815	4578	5341	6104		

OUTPUT TORQUE OF PNEUMATIC ACTUATOR WITH SPRING RETURN (UNIT:Nm)									
Model	Spring Qty	Air pressure (Bar)							
		4		5		6		Springs' output	
		0° Start	90° End	0° Start	90° End	0° Start	90° End	90° Start	0° End
PRS300	7	1916	1402					1485	1022
	8	1754	1166	2517	1929			1697	1168
	9	1592	930	2355	1693	3118	2456	1909	1314
	10	1430	695	2193	1458	2956	2221	2122	1460
	11			2030	1222	2793	1985	2334	1606
	12			1868	986	2631	1749	2546	1752

PRD(S)350外型尺寸 Dimension



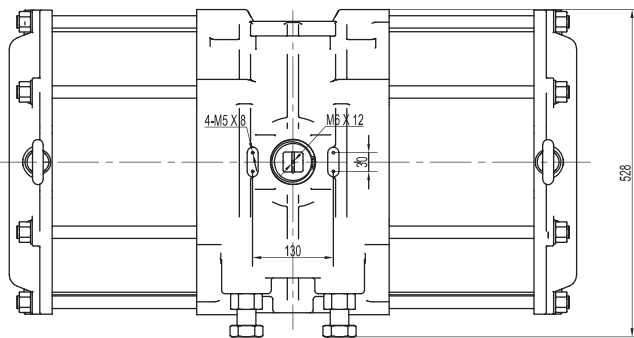
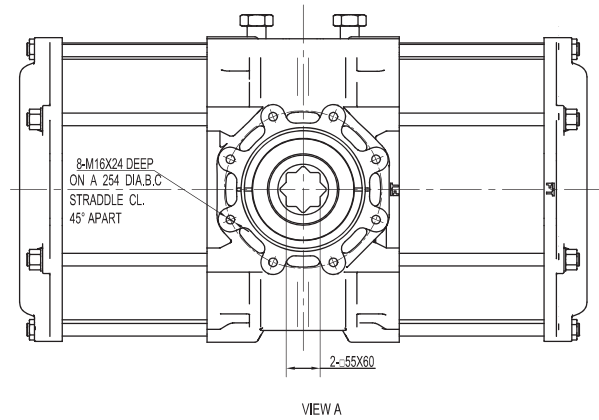
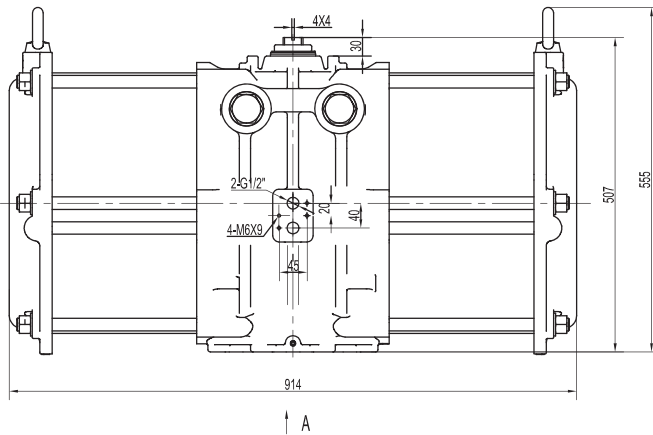
OUTPUT TORQUE OF PNEUMATIC ACTUATOR WITH DOUBLE ACTING (UNIT:Nm)

Model	Air Supply pressure (Bar)						
	2	3	4	5	6	7	8
PRD350	2285	3427	4570	5712	6854	7997	9039

OUTPUT TORQUE OF PNEUMATIC ACTUATOR WITH SPRING RETURN (UNIT:Nm)

Model	Spring Qty	Air pressure (Bar)							
		4		5		6		Springs' output	
		0° Start	90° End	0° Start	90° End	0° Start	90° End	90° Start	0° End
PRS350	7	2745	1922					2383	1642
	8	2484	1544	3626	2686			2724	1877
	9	2224	1165	3366	2307	4508	3499	3064	2112
	10	1963	787	3105	1929	4247	3071	3405	2346
	11			2844	1551	3986	2693	3745	2581
	12			2584	1172	3726	2314	4086	2816

PRD(S)400外型尺寸 Dimension



OUTPUT TORQUE OF PNEUMATIC ACTUATOR WITH DOUBLE ACTING (UNIT:Nm)									
Model	Air Supply pressure (Bar)								
	2	3	4	5	6	7	8		
PRD400	3256	4884	6512	8140	9768	11396	13024		
OUTPUT TORQUE OF PNEUMATIC ACTUATOR WITH SPRING RETURN (UNIT:Nm)									
Model	Spring Qty	Air pressure (Bar)							
		4		5		6		Springs' output	
		0°	90°	0°	90°	0°	90°	90°	0°
PRS400		Start	End	Start	End	Start	End	Start	End
	9	3887	2396					3703	2362
	10	3595	1939	5223	3567			4115	2624
	11	3303	1482	4931	3110	6559	4738	4526	2887
	12	3012	1025	4640	2653	6268	4281	4938	3149
	13			4348	2195	5976	3823	5349	3412
	14			4057	1738	5685	3366	5761	3674
	15			3765	1281	5393	2909	6172	3937
16					5101	2452	6584	4199	