Taiwan
406, 5F-1, No.936,
Wen-Sin Road, Sec 4,
Taichung City, Taiwan
Tel: +886(4)2231 0059
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Room 1803, No. 678,
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DIE ERSTE INDUSTRY CO., LTD.
www.die-erste.com

Three-Piece High Performance Fire-Safe Ball valve

Model: FSB-370

Rating: 2000 CWP



Design feature:

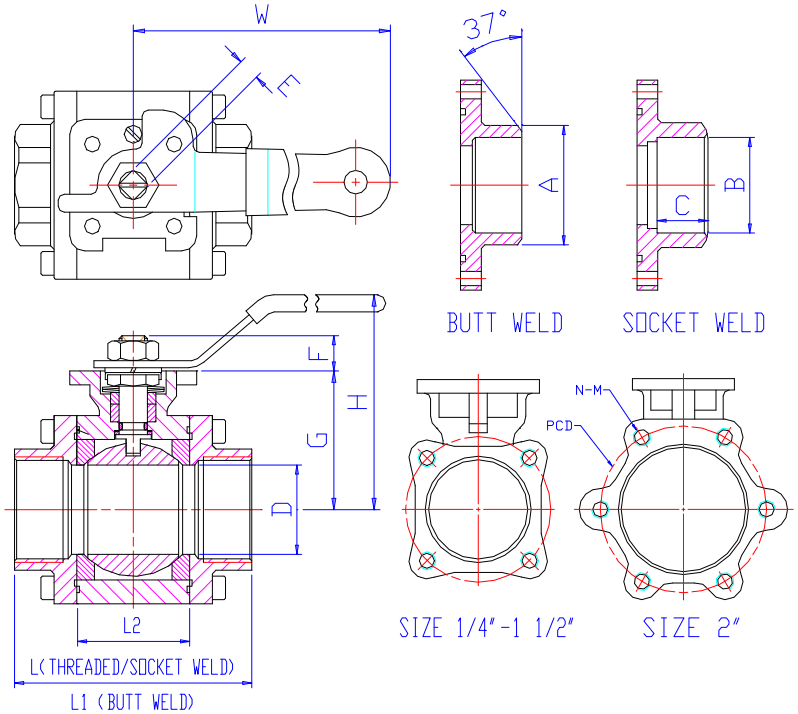
- Applications for Hydraulic, Chemical, Steam, Oil/ Gas, Oxygen, Vacuum.
- Extremely Rugged 3-Piece Design Withstand Extremes In Piping Enclose Bolt Design, Stress And Thermal Shock.
- Direct-mounting of actuator to valves, low cost and easy automation.
- Integral twin pattern ISO 5211 mounting pad for double & spring return actuator.
- Self-adjusting stem packing assembly with Belleville spring for temperature fluctuations, vibration, and is secured.
- API 607 Fire-Safe approved.
- Thrust washer prevents galling, reduces torque and provides secondary stem seal.
- Long cycle life, Low uniform torques.
- Bottom Entry Blow-Out Proof Stem design Provides Maximum Safety.
- Wide range of seat & seal materials is available.
- Thread & Socket-Weld Overall Length to DIN 3202 M3
- Investment cast body construction.
- DIN EN 10204-3.1 Certificate Available

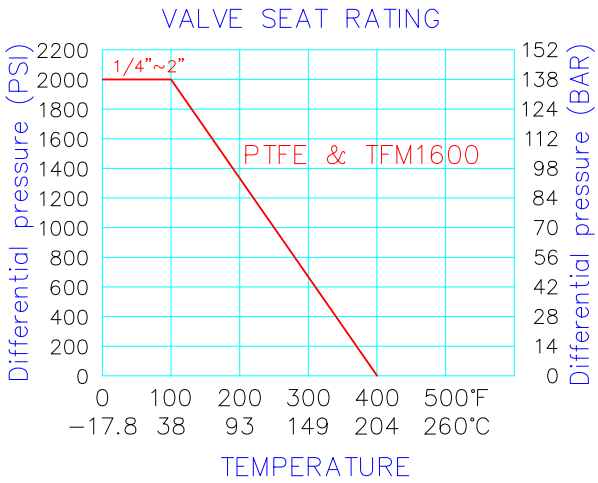
Specifications:

- Construction: 3-pc bolted body side-entry floating ball design.
- Flow bore: Full/ Standard port.
- Rating: 2000 PSI; 150 PSI Saturated Steam.
- Temperature: -20˚F ~ 400˚F (PTFE/ R.PTFE)
- Materials: ASTM CF8M,CF8, WCB
- Size range:
  Full port:1/4” ~ 4”.
  Standard port: 1/4” ~ 2-1/2”

Standard:

- Female pipe Threaded to NPT, DIN 259/2999, BS21..
- Inspection & testing according to API 598.
- API 607 4th Edition Fire-Safe Test approved.
- PED 97/23/EC; ISO 9001.





ISOQAR QUALITY ASSURED FIRM ISO 9001

DIE ERSTE INDUSTRY CO., LTD. is an ISO 9001:2000 DIE ERSTE GROUP registered company with operations in Taiwan and China.

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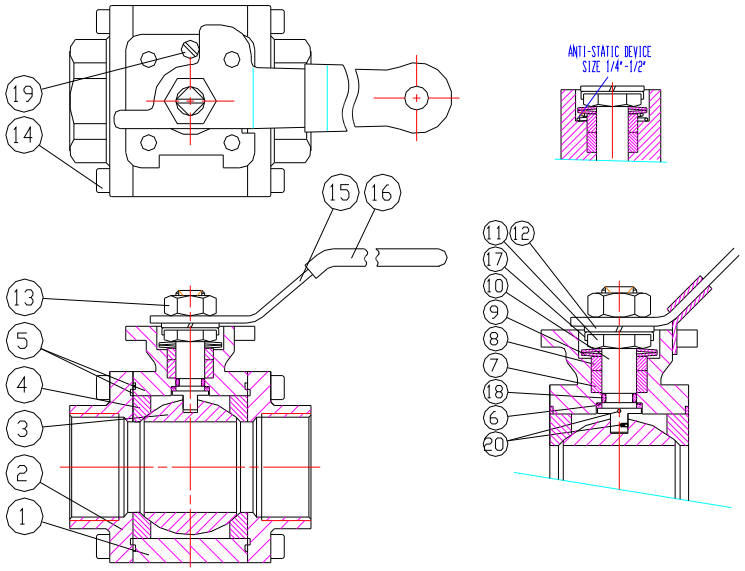
Dimensions List (Full Port)

T1:Breaking torque T2:Operation torque (kgf-cm) **Unit: mm**

Size	D	L	L1	L2	N-M	PCD	W	H	E	F	G	A	B	C	ISO 5211	W(kg)	T1	T2
1/4”	11	65	70	24.8	8-M8	53.7	140	70	9	8	37.5	13.8	14.2	10	F04	1.1	30	15
3/8”	11	65	70	24.8	8-M8	53.7	140	70	9	8	37.5	17.3	17.6	10	F04	1.1	30	15
1/2”	14	75	75	24.8	8-M8	53.7	140	70	9	8	37.5	21.7	21.8	13	F04	1.1	30	15
3/4”	20.5	80	90	34.4	8-M8	62.9	180	90	11	11	52	27.2	27.2	15	F04, F05	1.6	50	45
1”	25	90	100	39.6	8-M8	71.8	180	100	11	11	60	34	33.9	15	F04, F05	2.2	65	50
1-1/4”	31.5	110	110	45.1	8-M10	80.7	215	112	14	17	72	42.7	42.7	15	F07	3.3	180	130
1-1/2”	37	120	125	52.8	8-M12	94.3	215	115	14	17	76	48.6	48.8	16	F07	4.6	200	190
2”	50	140	150	67.8	12-M12	111	215	133	14	17	93	60.5	61.2	17	F07	7.3	210	200
2-1/2”	65	185	190	90.3	12-M16	140.5	380	173	22	24	116.5	76.3	73.9	17	F07, F10			
3”	80	205	220	106.3	12-M20	168	380	184	22	24	127	89.1	89.8	17	F07, F10			
4”	100	240	270	128.9	16-M20	201.5	600	242	27	29	159	114.3	115.3	20	F10			

Dimensions List (Standard Port)

Size	D	L	L1	L2	N-M	PCD	W	H	E	F	G	A	B	C	ISO 5211	W (kg)	T1	T2
1/4”	11	65	70	24.8	8-M8	53.7	140	70	9	8	37.5	13.8	14.2	10	F04	1.1	30	15
3/8”	11	65	70	24.8	8-M8	53.7	140	70	9	8	37.5	17.3	17.6	10	F04	1.1	30	15
1/2”	11	75	75	24.8	8-M8	53.7	140	70	9	8	37.5	21.7	21.8	13	F04	1.1	30	15
3/4”	14	80	90	24.8	8-M8	53.7	140	70	9	8	37.5	27.2	27.2	15	F04	1.1	30	15
1”	20.5	90	100	34.4	8-M8	62.9	180	90	11	11	52	34	33.9	15	F04, F05	1.6	50	45
1-1/4”	25	110	110	39.6	8-M8	71.8	180	100	11	11	60	42.7	42.7	15	F04, F05	2.2	65	50
1-1/2”	31.5	120	125	45.1	8-M10	80.7	215	112	14	17	72	48.6	48.8	16	F07	3.3	180	130
2”	37	140	150	52.8	8-M12	94.3	215	115	14	17	76	60.5	61.2	17	F07	4.6	200	190
2-1/2”	50	185	190	67.8	12-M12	111	215	133	14	17	93	76.3	73.9	17	F07	7.3	210	200



MATERIALS LIST:

NO	PART NAME	MATERIAL	NO	PART NAME	MATERIAL
1	BODY	CF8M / WCB	10	STEM	SS316 / SS304
2	ENDCAP	CF8M / WCB	11	NUT	SS304
3	SOLID BALL	CF8M / CF8	12	SPRING WASHER	SS304
4	BALL SEAT	PTFE	13	NUT	SS304
5	BODY SEAL	GRAPHITE	14	BOLT	SS304
	BODY SEAL	PTFE	15	HANDLE	SS304 / ZINC PLATED STEEL
6	THRUST WASHER	GRAPHITE	16	HANDLE SLEEVE	VINYL
	THRUST WASHER	PTFE	17	SADDLE WASHER	SS304
7	STEM PACKING	GRAPHITE	18	O-RING	VITON
8	GLAND	SS304	19	STOP PING	SS304
9	BELLEVILLE SPRING	SS301	20	ANTI-STATIC DEVICE	SS304

ISOQAR QUALITY ASSURED FIRM ISO 9001

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JYL®

PNEUMATIC ACTUATOR
Serie JYL-AP



Higher performance and reliability

Fully compliance with all the latest international standards

Wide range options in technical specification and highly cost-effective

Compact housing design, suitable for any application and workin genvironment

DESIGN AND CONSTRUCTION

DESIGN

JYL series pneumatic actuators ha ve introduc ed improvement design for rack and pinion. It is alw ays Vtork's mission to o ffer initiative products by c ombining the long field experienc es in products a pplication and the latest production and materials te chnology a v a il a ble in the market tod ay. The benefit of new design has long been verified in practic e. With new te chnicalfe atures equipped, Vtork series pneumatic actuators have advanta geous characteristic in:

- Reliability
- High performance
- Fully compliance with all the latest international standards
- Extensive products range allows best versatility at lower price
- Innovations and patented solutions for a universal drive shaft
- Multifunction position indicator
- Compact and light

CONSTRUCTION

1. A single compact design utilizing identical body and end caps for both double acting and spring return models. This feature reduces inventory and allows field conversion, by adding or removing modular spring cartridges.

2. Full conformance to following latest specifications: ISO 5211, DIN 3337 and VDI/VDE 3845 for product interchangeability and easy mounting of solenoids, limit switches and other accessories.

3. JYL piston rack and pinion design for compact construction, symmetric mounting position, high-cycle life and fast operation. Reverse rotation can be accomplished in the field by simply inverting the pistons.

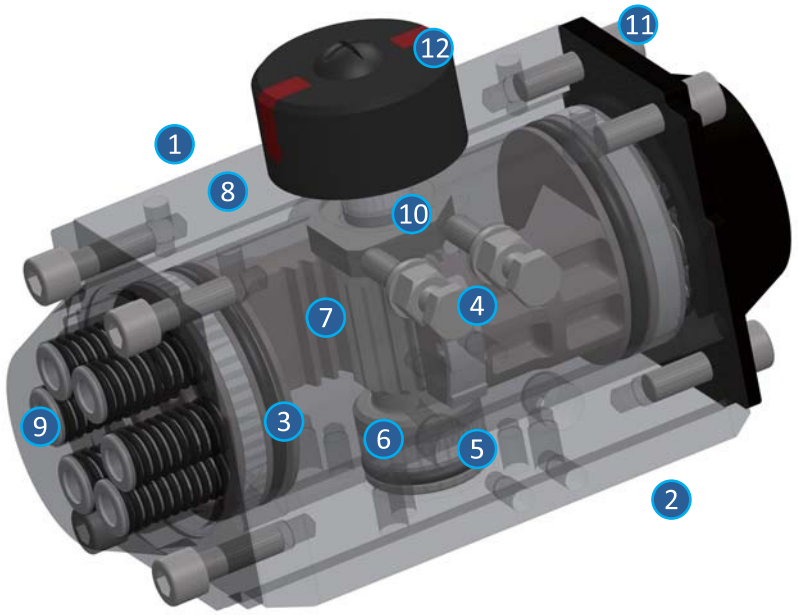
4. Two independent external travel stop adjustments permit easy and precise adjustment of +/- 5° in both directions. This adjustment may be made in either the open or closed position and provides for accurate valve alignment.

5. Multiple bearings and guides on pistons and racks for precise operation, low friction, high cycle life and a blowout proof pinion shaft.

6. Electroless nickel-plated blowout resistant, bearing guided, one-piece pinion shaft for improved safety and maximum cycle life.

7. High precision teeth on piston racks and pinion shaft for accurate positioning, low backlash, and maximum engagement resulting in overall efficient operation.

8. Extruded aluminum body with both internal and external corrosion protections having a honed cylinder surface for longer life and a lower coefficient of friction.



9. Modular preloaded spring cartridges designed with coated springs for simple range versatility, greater safety and corrosion resistance.

10. Selected high quality bearings and seals that provide a wide operating temperature range, low friction, and high cycle life.

11. Internal and external stainless steel fasteners for long term corrosion resistance.

12. Multifunctional position indicator for visual position indication, and a direct, easy, economical way to mount popular sensors.

RANGE OF OPTIONS, QUALITY MANUFACTURING, AND ACCESSORIES

RANGE OF OPTIONS

A. Stainless steel 304 or 316 drive shafts are available on request for all sizes no matter the type of corrosion protection selected.
B. For extremely high or low temperature applications, all models may be equipped with FPM or Silicon O rings along with an JYL tested and certified suitable lubricant.
C. Other than the standard double square bottom drive shaft connection, we can supply a keyed drive connection, a flat head connection or a special personalized drive connection.

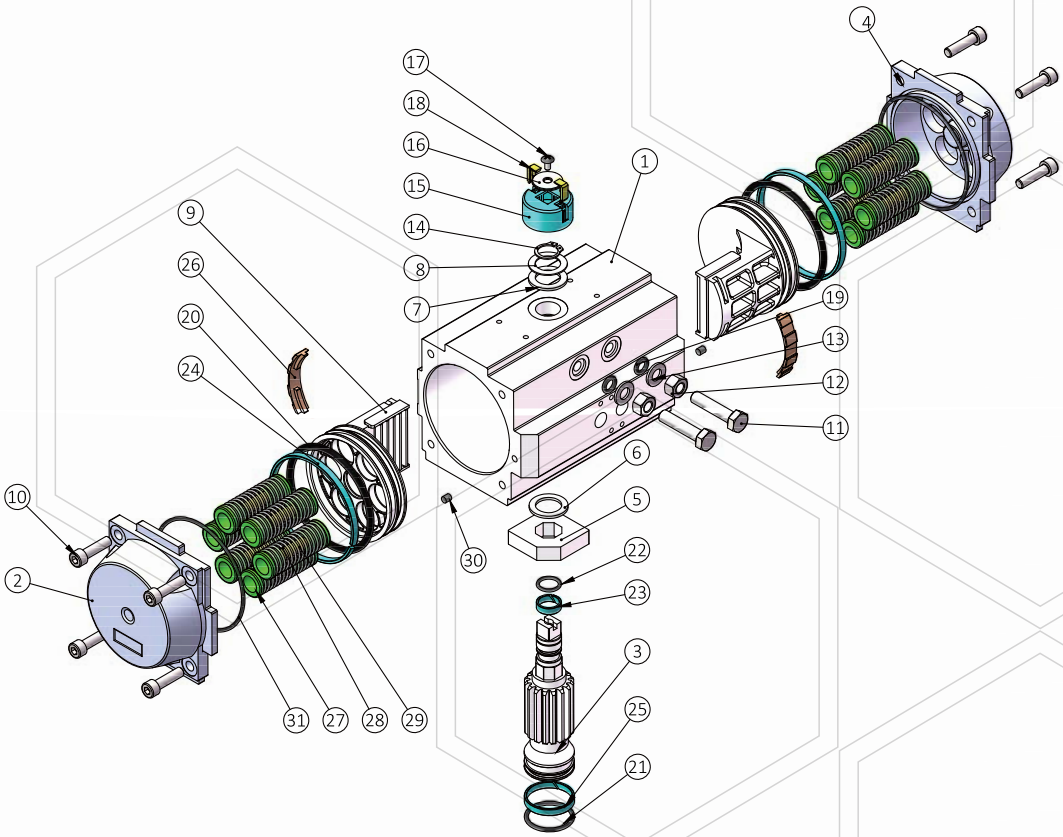
QUALITY MANAGEMENT

- Production conforms to ISO9001.
- Each individual actuator has been factory inspe cted and tested and given a serial number for full trac e ability.
- Each individual actuator is individually packed in a special cardboard carton for protection,with a product description label for easy identification and includes installation,operation and maintenance instructions .

ACCESSORIES AVAILABLE

- Different Square reductions suitable for drive shaft
- Centering rings for all sizes
- Brackets
- Couplings
- Solenoid valves
- Switch boxes
- Proximity switches
- Gear boxes
- Positioners

Parts And Materials



Item Number	Part Description	Material Quality	QTY	Item Number	Part Description	Material Quality	QTY	Item Number	Part Description	Material Quality	QTY
1	Body	Aluminium alloy	1	12	Nut(stop screw)	Stainless steel	2	23	Bearing(pinion top)	POM+PTFE	1
2	Left End cap	Aluminium alloy	1	13	Washer (stop screw)	Stainless steel	2	24	Bearing(pinion head)	POM+PTFE	2
3	Drive shaft	Alloy Steel	1	14	Spring clip	Spring steel	1	25	Bearing(pinion bottom)	POM+PTFE	1
4	Right end cap	Aluminium alloy	1	15	Position indicator	Nylon	1	26	Wear band	Nylon	2
5	OCTI-CAM	Alloy Steel	1	16	Indicator thrust bearing	Stainless steel	1	27	Spring seat	Nylon	24
6	Thrust bearing (pinion top)	POM+PTFE	1	17	Cap screw	Stainless steel	1	28	Spring	High-carbon steel	12
7	Thrust bearing	POM+PTFE	1	18	Color code	Nylon	2	29	Straining beam	Copper pipe	12
8	Thrust washer	Stainless steel	1	19	"o" ring(stop screw)	NBR	2	30	Plug	NBR	2
9	Piston	Aluminium alloy	2	20	"o" ring(piston)	NBR	2	31	"o" ring(end cap)	NBR	2
10	Cap screw (end cap)	Stainless steel	8	21	"o" ring(pinion bottom)	NBR	1				
11	Stop top screw	Stainless steel	2	22	"o" ring(pinion top)	NBR	1				

TECHNICAL DATA(METRIC UNIT)

Model TypeA	AP032		AP050		AP065		AP0075		AP085		AP095		AP110		AP125		AP140		AP160		AP190		AP210		AP240		AP270		AP300		AP350		AP400	
	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S
Diameter mm	32		50		65		75		85		95		110		125		140		160		190		210		240		270		300		350		400	
Air Volume Opening(L)	0.03		0.09		0.19		0.30		0.44		0.88		0.83		1.41		1.76		2.85		4.75		6.60		11.40		15.80		19.09		27.65		42.81	
Air Volume Closing(L)	0.04		0.15		0.32		0.50		0.66		1.17		1.27		2.13		2.72		4.08		7.20		10.29		15.10		18.80		28.23		44.10		62.05	
Opening Time (sec)	0.3		0.3	0.9	0.4	0.9	0.4	0.9	0.9	1.0	0.9	1.4	0.9	1.4	1.3	2.4	1.3	2.8	2.0	4.8	2.2	2.4	2.9	3.4	3.2	3.8	4.4	5.0	5.0	6.0	6.2	7.4	7.5	9.6
closing Time (sec)	0.4		0.4	0.7	0.4	0.8	0.4	0.9	0.9	1.2	1.0	1.4	1.0	1.6	1.4	2.4	1.4	3.0	2.4	4.9	2.6	3.0	3.8	4.1	3.7	4.0	4.9	5.5	6.0	6.8	7.2	8.4	8.5	10.6
Weight (Kg)hai	0.47	0.59	1.13	1.25	1.97	2.21	2.93	3.29	3.78	4.26	5.14	5.86	6.09	7.17	10.86	12.54	13.77	15.93	20.15	23.75	28.41	33.81	40.03	48.43	52.6	77.76	73.64	90.6	108	135.6	146.7	188.1	220.5	283.5

1. For model 32-160

(1)Room temperature (2)Actuator stroke 90° (3) Solenoid valve with orifice of 4 mm and a flow capacity Qn400L/min (4) Inside pipe diameter 6 mm (5) Medium clean air

(6) Air supply pressure 5.5 bar (7)Actuator without external resistance load

2. For model 190-400

(1)Room temperature (2)Actuator stroke 90° (3)Solenoid valve with orifice of 12 mm and a flow capacity Qn5100L/min (4) Inside pipe diameter 8 mm (5) Medium clean air

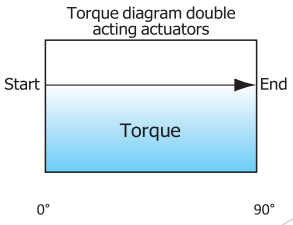
(6) Air supply pressure 5.5 bar (7)Actuator without external resistance load

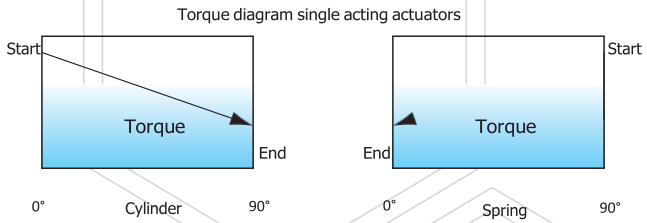
Cautions: obviously on the field applications when one or more of the above parameter are different, the moving time will be di fferent

Air consumption rest with air supply, air volume and action cycle times. Expressions:

$$L/min = \text{Air volume(opening air volume+closing air volume)} X \left[\frac{\text{Air Supply(Kpa)+101.3}}{101.3} \right] X \text{Action times(/min)}$$

METRIC TORQUE RATINGS





DOUBLE ACTING TORQUE RATINGS IN Nm

Model	Supply Pressure (Unit:bar)									
	2.5	**3**	**3.5**	**4**	**4.5**	**5**	**5.5**	**6**	**7**	**8**
AP032	2.9	3.4	4.0	4.6	5.3	5.9	6.5	7.1	8.3	9.5
AP050	8.6	10.4	12.3	14.2	16.0	17.9	19.8	21.6	25.4	29.1
AP065	17.4	21.2	25.0	28.7	32.5	36.3	40.1	43.9	51.4	59.0
AP075	27.0	32.9	38.8	44.7	50.5	56.4	62.3	68.2	79.9	91.7
AP085	39.7	48.3	56.9	65.6	74.2	82.8	91.4	100.1	117.3	134.6
AP095	55.7	67.9	80.0	92.1	104.2	116.4	128.5	140.6	164.8	189.1
AP110	72.0	89.3	105.0	120.6	136.3	152.0	167.6	183.3	214.6	245.9
AP125	128.7	159.5	187.5	215.4	243.4	271.4	299.4	327.4	383.3	439.3
AP140	196	237	278	319	360	401	442	483	565	647
AP160	263.5	326.6	383.9	441.2	498.5	555.8	613.1	670.4	785.0	899.7
AP190	428.5	518.0	607.3	696.6	785.9	875.3	964.6	1053.9	1232.5	1411.1
AP210	598.2	723.2	847.9	972.6	1097.3	1222.0	1346.6	1471.3	1720.7	1970.1
AP240	928.3	1122.0	1315.0	1508.0	1702.0	1895.0	2089.0	2282.0	2669.0	3056.0
AP270	1305.0	1577.0	1849.0	2121.0	2393.0	2665.0	2937.0	3209.0	3753.0	4297.0
AP300	1678.6	2029.4	2379.3	2729.2	3079.1	3429.0	3778.9	4128.8	4828.5	5528.3
AP350	2492.5	3011.8	3531.1	4050.4	4569.6	5088.9	5608.2	6127.5	7166.0	8204.6
AP400	3798.1	4589.4	5380.7	6172.0	6963.3	7754.5	8545.8	9337.1	10919.7	12502.2

SINGLE ACTING TORQUE RATINGS IN Nm

Model	Supply Pressure (Unit:bar)																				Spring stroke	
	2.5		**3**		**3.5**		**4**		**4.5**		**5**		**5.5**		**6**		**7**		**8**			
	0°	**90°**	**0°**	**90°**	**0°**	**90°**	**0°**	**90°**	**0°**	**90°**	**0°**	**90°**	**0°**	**90°**	**0°**	**90°**	**0°**	**90°**	**0°**	**90°**	**90°**	**0°**
AP050 S05	**5.1**	**3.4**	6.9	5.3	8.8	7.2	10.7	9.0	12.5	10.9	14.4	12.8	16.3	14.6	18.1	16.5	21.9	20.2	25.6	23.9	**5.2**	**3.5**
AP050 S06	4.4	2.4	**6.2**	**4.3**	8.1	6.1	10.0	8.0	11.8	9.9	13.7	11.7	15.6	13.6	17.4	15.5	21.2	19.2	24.9	22.9	**6.2**	**4.2**
AP050 S07			5.5	3.2	**7.4**	**5.1**	9.3	7.0	11.1	8.8	13.0	10.7	14.9	12.6	16.7	14.4	20.5	18.2	24.2	21.9	**7.2**	**4.9**
AP050 S08					6.7	4.1	**8.6**	**5.9**	10.4	7.8	12.3	9.7	14.2	11.5	16.0	13.4	19.8	17.1	23.5	20.9	**8.2**	**5.6**
AP050 S09							7.9	4.9	**9.7**	**6.8**	11.6	8.6	13.5	10.5	15.3	12.4	19.1	16.1	22.8	19.8	**9.3**	**6.3**
AP050 S10									9.0	5.7	**10.9**	**7.6**	12.8	9.5	14.6	11.3	18.4	15.1	22.1	18.8	**10.3**	**7.0**
AP050 S11											10.2	6.6	**12.1**	**8.4**	13.9	10.3	17.7	14.0	21.4	17.8	**11.3**	**7.7**
AP050 S12													11.4	7.4	**13.2**	**9.3**	17.0	13.0	20.7	16.7	**12.4**	**8.4**
AP065 S05	**8.7**	**4.3**	12.5	8.1	16.3	11.9	20.0	15.6	23.8	19.4	27.6	23.2	31.4	27.0	35.2	30.8	42.7	38.3	50.3	45.9	**13.1**	**8.7**
AP065 S06	7.0	1.7	**10.7**	**5.5**	14.5	9.2	18.3	13.0	22.1	16.8	25.9	20.6	29.7	24.4	33.4	28.2	41.0	35.7	48.6	43.3	**15.7**	**10.4**
AP065 S07			9.0	2.8	**12.8**	**6.6**	16.6	10.4	20.4	14.2	24.1	18.0	27.9	21.8	31.7	25.5	39.3	33.1	46.8	40.7	**18.3**	**12.2**
AP065 S08					11.0	4.0	**14.8**	**7.8**	18.6	11.6	22.4	15.4	26.2	19.1	30.0	22.9	37.5	30.5	45.1	38.1	**21.0**	**13.9**
AP065 S09							13.1	5.2	**16.9**	**9.0**	20.7	12.7	24.4	16.5	28.2	20.3	35.8	27.9	43.4	35.4	**23.6**	**15.7**
AP065 S10									15.1	6.3	**18.9**	**10.1**	22.7	13.9	26.5	17.7	34.0	25.2	41.6	32.8	**26.2**	**17.4**
AP065 S11											17.2	7.5	**21.0**	**11.3**	24.7	15.1	32.3	22.6	39.9	30.2	**28.8**	**19.1**
AP065 S12													19.2	8.7	**23.0**	**12.4**	30.6	20.0	38.1	27.6	**31.4**	**20.9**
AP075 S05	**16.3**	**10.2**	22.2	16.0	28.1	21.9	34.0	27.8	39.8	33.7	45.7	39.6	51.6	45.4	57.5	51.3	69.2	63.1	81.0	74.8	**16.9**	**10.7**
AP075 S06	14.2	6.8	**20.1**	**12.7**	25.9	18.6	31.8	24.4	37.7	30.3	43.6	36.2	49.4	42.1	55.3	47.9	67.1	59.7	78.8	71.4	**20.2**	**12.8**
AP075 S07			17.9	9.3	**23.8**	**15.2**	29.7	21.1	35.6	26.9	41.4	32.8	47.3	38.7	53.2	44.6	64.9	56.3	76.7	68.1	**23.6**	**15.0**
AP075 S08					21.7	11.8	**27.5**	**17.7**	33.4	23.6	39.3	29.4	45.2	35.3	51.0	41.2	62.8	53.0	74.5	64.7	**27.0**	**17.1**
AP075 S09							25.4	14.3	**31.3**	**20.2**	37.1	26.1	43.0	32.0	48.9	37.8	60.7	49.6	72.4	61.3	**30.3**	**19.3**
AP075 S10									29.1	16.8	**35.0**	**22.7**	40.9	28.6	46.8	34.5	58.5	46.2	70.3	58.0	**33.7**	**21.4**
AP075 S11											32.9	19.3	**38.7**	**25.2**	44.6	31.1	56.4	42.8	68.1	54.6	**37.1**	**23.5**
AP075 S12													36.6	21.8	**42.5**	**27.7**	54.2	39.5	66.0	51.2	**40.4**	**25.7**
AP085 S05	**23.2**	**13.7**	31.8	22.3	40.4	30.9	49.0	39.5	57.6	48.1	66.3	56.8	74.9	65.4	83.5	74.0	100.8	91.3	118.0	108.5	**26.1**	**16.6**
AP085 S06	19.8	8.4	**28.4**	**17.0**	37.1	25.7	45.7	34.3	54.3	42.9	62.9	51.5	71.6	60.2	80.2	68.8	97.4	86.0	114.7	103.3	**31.3**	**19.9**
AP085 S07			25.1	11.8	**33.8**	**20.5**	42.4	29.1	51.0	37.7	59.6	46.3	68.3	55.0	76.9	63.6	94.1	80.8	111.4	98.1	**36.5**	**23.2**
AP085 S08					30.4	15.2	**39.1**	**23.9**	47.7	32.5	56.3	41.1	64.9	49.7	73.6	58.4	90.8	75.6	108.1	92.9	**41.7**	**26.5**
AP085 S09							35.8	18.7	**44.4**	**27.3**	53.0	35.9	61.6	44.5	70.3	53.2	87.5	70.4	104.8	87.7	**46.9**	**29.8**
AP085 S10									41.1	22.1	**49.7**	**30.7**	58.3	39.3	67.0	48.0	84.2	65.2	101.5	82.5	**52.1**	**33.1**
AP085 S11											46.4	25.5	**55.0**	**34.1**	63.6	42.7	80.9	60.0	98.1	77.2	**57.3**	**36.4**
AP085 S12													51.7	28.9	**60.3**	**37.5**	77.6	54.8	94.8	72.0	**62.5**	**39.7**
AP095 S05	**33.6**	**20.9**	45.8	33.0	57.9	45.1	70.0	57.3	82.1	69.4	94.3	81.5	106.4	93.6	118.5	105.8	142.7	130.0	167.0	154.2	**34.9**	**22.1**
AP095 S06	29.2	13.9	**41.4**	**26.1**	53.5	38.2	65.6	50.3	77.7	62.4	89.8	74.5	102.0	86.7	114.1	98.8	138.3	123.0	162.6	147.3	**41.8**	**26.5**
AP095 S07			36.9	19.1	**49.1**	**31.2**	61.2	43.3	73.3	55.4	85.4	67.6	97.5	79.7	109.7	91.8	133.9	116.1	158.1	140.3	**48.8**	**30.9**
AP095 S08					44.6	24.2	**56.8**	**36.4**	68.9	48.5	81.0	60.6	93.1	72.7	105.2	84.8	129.5	109.1	153.7	133.3	**55.8**	**35.4**
AP095 S09							52.3	29.4	**64.5**	**41.5**	76.6	53.6	88.7	65.8	100.8	77.9	125.1	102.1	149.3	126.4	**62.7**	**39.8**
AP095 S10									60.0	34.5	**72.2**	**46.7**	84.3	58.8	96.4	70.9	120.6	95.1	144.9	119.4	**69.7**	**44.2**
AP095 S11											67.7	39.7	**79.9**	**51.8**	92.0	63.9	116.2	88.2	140.5	112.4	**76.7**	**48.6**
AP095 S12													75.4	44.8	**87.6**	**57.0**	111.8	81.2	136.0	105.4	**83.6**	**53.0**
AP110 S05	**43.4**	**26.2**	60.7	43.4	76.4	59.1	92.0	74.8	107.7	90.4	123.4	106.1	139.0	121.8	154.7	137.4	186.0	168.8	217.3	200.1	**45.9**	**28.6**
AP110 S06	37.7	17.0	**55.0**	**34.3**	70.6	49.9	86.3	65.6	102.0	81.3	117.6	96.9	133.3	112.6	149.0	128.3	180.3	159.6	211.6	190.9	**55.0**	**34.3**
AP110 S07			49.3	25.1	**64.9**	**40.8**	80.6	56.4	96.2	72.1	111.9	87.8	127.6	103.4	143.2	119.1	174.6	150.4	205.9	181.8	**64.2**	**40.0**
AP110 S08					59.2	31.6	**74.9**	**47.3**	90.5	62.9	106.2	78.6	121.9	94.3	137.5	109.9	168.9	141.3	200.2	172.6	**73.4**	**45.8**
AP110 S09							69.1	38.1	**84.8**	**53.8**	100.5	69.4	116.1	85.1	131.8	100.8	163.1	132.1	194.5	163.4	**82.5**	**51.5**
AP110 S10									79.1	44.6	**94.8**	**60.3**	110.4	75.9	126.1	91.6	157.4	122.9	188.7	154.2	**91.7**	**57.2**
AP110 S11											89.0	51.1	**104.7**	**66.7**	120.4	82.4	151.7	113.7	183.0	145.1	**100.9**	**62.9**
AP110 S12													99.0	57.6	**114.6**	**73.2**	146.0	104.6	177.3	135.9	**110.0**	**68.6**

METRIC TORQUE RATINGS

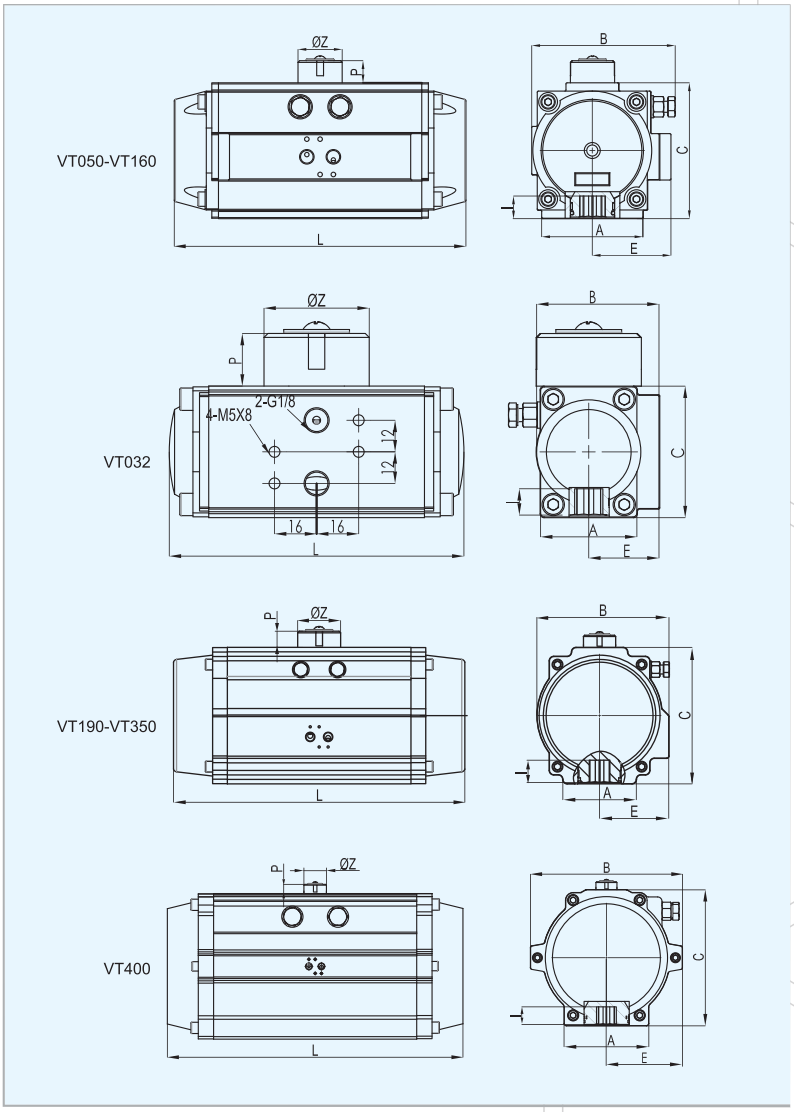
JYL®

SINGLE ACTING TORQUE RATINGS IN Nm

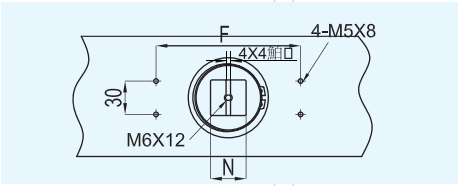
Model	Supply Pressure (Unit: bar)																				Spring stroke	
	2.5		3		3.5		4		4.5		5		5.5		6		7		8			
	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	90°	0°
AP125 S05	**77.7**	**48.2**	108.5	78.9	136.5	106.9	164.4	134.9	192.4	162.9	220.4	190.9	248.4	218.4	276.4	246.8	332.3	302.8	388.3	358.7	80.6	51.0
AP125 S06	67.5	32.0	**98.3**	**62.8**	126.3	90.8	154.2	118.8	182.2	146.8	210.2	174.7	238.2	202.7	266.2	230.7	322.1	286.7	378.1	342.6	96.7	61.2
AP125 S07			88.1	46.7	**116.1**	**74.7**	144.0	102.7	172.0	130.7	200.0	158.6	228.0	186.6	256.0	214.6	311.9	270.6	367.9	326.5	112.8	71.4
AP125 S08					105.9	58.6	**133.8**	**86.6**	161.8	114.5	189.8	142.5	217.8	170.5	245.8	198.5	301.7	254.4	357.7	310.4	128.9	81.6
AP125 S09							123.6	70.5	**151.6**	**98.4**	179.6	126.4	207.6	154.4	235.6	182.4	291.5	238.3	347.5	294.3	145.0	91.8
AP125 S10									141.4	82.3	169.4	110.3	197.4	138.3	225.4	166.3	281.3	222.2	337.3	278.2	161.1	102.0
AP125 S11											159.2	94.2	187.2	122.2	215.2	150.2	271.1	206.1	327.1	262.1	177.2	112.2
AP125 S12													177.0	106.1	205.0	134.0	260.9	190.0	316.9	246.0	193.3	122.4
AP140 S05	114.2	74.1	155.1	115	196.1	156	237.0	196.9	277.9	237.8	318.8	278.7									122.4	82.3
AP140 S06	97.7	49.6	138.7	90.6	179.6	131.5	220.5	172.4	261.5	213.3	302.4	254.3	343.3	295.2							146.8	98.7
AP140 S07			122.2	66.1	163.2	107.0	204.1	147.9	245.0	188.9	285.9	229.8	326.9	270.7	367.8	311.6					171.3	115.2
AP140 S08					146.7	82.5	187.6	123.5	228.6	164.4	269.5	205.3	310.4	246.2	351.3	287.2	433.2	369.0			195.8	131.6
AP140 S09							171.2	99.0	212.1	139.9	253.0	180.9	294.0	221.8	334.9	262.7	416.7	344.6	498.6	426.4	220.2	148.1
AP140 S10									195.7	115.5	236.6	156.4	277.5	197.3	318.4	238.2	400.3	320.1	482.1	401.9	244.7	164.5
AP140 S11											220.1	131.9	261.1	172.8	302.0	213.8	383.8	295.6	465.7	377.5	269.2	181.0
AP140 S12													244.6	148.4	285.5	189.3	367.4	271.1	449.2	353.0	293.6	197.4
AP160 S05	**153.5**	**101.3**	216.6	164.4	273.9	221.7	331.2	279.0	388.5	336.3	445.8	393.6	503.1	450.9	560.4	508.2	675.0	622.8	789.7	737.4	162.3	110.0
AP160 S06	131.5	68.8	**194.6**	**131.9**	251.9	189.2	309.2	246.5	366.5	303.8	423.8	361.1	481.1	418.4	538.4	475.7	653.0	590.3	767.7	705.0	194.7	132.0
AP160 S07			172.6	99.5	**229.9**	**156.8**	287.2	214.1	344.5	271.4	401.8	328.7	459.1	386.0	516.4	443.3	631.0	557.9	745.7	672.5	227.2	154.0
AP160 S08					207.9	124.3	**265.2**	**181.6**	322.5	238.9	379.8	296.2	437.1	353.5	494.4	410.8	609.0	525.4	723.7	640.1	259.6	176.0
AP160 S09							243.2	149.2	**300.5**	**206.5**	357.8	263.8	415.1	321.1	472.4	378.4	587.0	493.0	701.7	607.6	292.1	198.0
AP160 S10									278.5	174.0	335.8	231.3	393.1	288.6	450.4	345.9	565.0	460.5	679.7	575.2	324.5	220.0
AP160 S11											313.8	198.9	371.1	256.2	428.4	313.5	543.0	428.1	657.7	542.7	357.0	242.0
AP160 S12													349.1	223.7	406.4	281.0	521.0	395.6	635.7	510.3	389.4	264.0
AP190 S05	246.8	167.4	336.3	256.9	425.6	346.2	514.9	435.5	604.2	524.8	693.5	614.1									261.2	181.8
AP190 S06	210.4	115.1	299.9	204.6	389.2	293.9	478.5	383.3	567.8	472.6	657.2	561.9	746.5	651.2							313.4	218.1
AP190 S07			263.6	152.4	352.9	241.7	442.2	331.0	531.5	420.3	620.8	509.6	710.1	599.0	799.4	688.3					365.6	254.5
AP190 S08					316.5	189.5	405.8	278.7	495.1	368.1	584.5	457.4	673.8	546.7	779.5	636.0	941.7	814.7			417.8	290.8
AP190 S09							369.5	226.6	458.8	315.9	548.1	405.2	637.4	494.5	745.2	583.8	905.3	762.4	1084.0	941.1	470.1	327.2
AP190 S10									422.4	263.6	511.8	353.0	601.1	442.3	710.9	531.6	869.0	710.2	1047.6	888.8	522.3	363.5
AP190 S11											475.4	300.7	564.7	390.0	676.6	479.3	832.6	658.0	1011.3	836.6	574.5	399.9
AP190 S12													528.4	337.8	642.3	427.1	796.3	605.7	974.9	784.4	628.8	436.8
AP210 S05	**352.8**	**239.1**	477.8	364.1	602.5	488.8	727.2	613.5	851.9	738.2	976.6	862.9	1101.2	987.5	1225.9	1112.2	1475.3	1361.6	1724.7	1611.0	359.1	245.4
AP210 S06	303.7	167.3	**428.7**	**292.3**	553.4	417.0	678.1	541.7	802.8	666.4	927.5	791.0	1052.2	915.7	1176.9	1040.4	1426.2	1289.8	1675.6	1539.2	430.9	294.5
AP210 S07			379.6	220.5	**504.3**	**345.2**	629.0	469.8	753.7	594.5	878.4	719.2	1003.1	843.9	1127.8	968.6	1377.2	1218.0	1626.5	1467.4	502.7	343.6
AP210 S08					455.3	273.3	**579.9**	**398.0**	704.6	522.7	829.3	647.4	954.0	772.1	1078.7	896.8	1328.1	1146.2	1577.5	1395.5	574.6	392.6
AP210 S09							530.9	326.2	**655.6**	**450.9**	780.2	575.6	904.9	700.3	1029.6	825.0	1279.0	1074.3	1528.4	1323.7	646.4	441.7
AP210 S10									606.5	379.1	731.2	503.8	855.8	628.4	980.5	753.1	1229.9	1002.5	1479.3	1251.9	718.2	490.8
AP210 S11											682.1	431.9	806.8	556.6	931.5	681.3	1180.8	930.7	1430.2	1180.1	790.0	539.9
AP210 S12													757.7	484.8	882.4	609.5	1131.8	858.9	1381.1	1108.3	861.8	589.0
AP240 S05	517.8	374.3	711.2	567.7	904.6	761.1	1098.0	954.5	1291.4	1147.9	1484.8	1341.3									554.0	410.5
AP240 S06	435.7	263.5	629.1	456.9	822.5	650.3	1015.9	843.7	1209.3	1037.1	1402.7	1230.5	1596.1	1423.9							664.8	492.6
AP240 S07			547.0	346.1	740.4	539.5	933.8	732.9	1127.2	926.3	1320.6	1119.7	1514.0	1313.1	1707.4	1506.5					775.6	574.7
AP240 S08					658.3	428.7	851.7	622.1	1045.1	815.5	1238.5	1008.9	1431.9	1202.3	1625.3	1395.7	2012.1	1782.5			886.4	656.8
AP240 S09							769.6	511.3	963.0	704.7	1156.4	898.1	1349.8	1091.5	1543.2	1284.9	1930.0	1671.7	2316.8	2058.5	997.2	738.9
AP240 S10									880.9	593.9	1074.3	787.3	1267.7	980.7	1461.1	1174.1	1847.9	1560.9	2234.7	1947.7	1108.0	821.0
AP240 S11											992.2	676.5	1185.6	869.9	1379.0	1063.3	1765.8	1450.1	2152.6	1836.9	1218.8	903.1
AP240 S12													1103.5	759.1	1296.9	952.5	1683.7	1339.3	2070.5	1726.1	1329.6	985.2
AP270 S05	745.9	**519.4**	1017.9	791.4	1289.9	1063.4	1561.8	1335.3	1833.8	1607.3	2105.7	1879.2									786.0	**559.5**
AP270 S06	634.0	362.2	**906.0**	**634.2**	1178.0	906.2	1449.9	1178.1	1721.9	1450.1	1993.8	1722.0	2265.8	1994.0							943.2	**671.4**
AP270 S07			794.1	477.0	1166.1	**749.0**	1338.0	1020.9	1610.0	1292.9	1881.9	1564.8	2153.9	1836.8	2425.9	2108.8					1100.4	**783.3**
AP270 S08					954.2	591.8	1226.1	**863.7**	1498.1	1135.7	1770.0	1407.6	2042.0	1679.6	2314.0	1951.6	2857.9	2495.5			1257.6	**895.2**
AP270 S09							1114.2	706.5	1386.2	**978.5**	1658.1	1250.4	1930.1	1522.4	2202.1	1794.4	2746.0	2338.3	3289.9	2882.2	1414.8	**1007.1**
AP270 S10									1274.3	821.3	1546.2	**1093.2**	1818.2	1365.2	2090.2	1637.2	2634.1	2181.1	3178.0	2725.0	1572.0	**1119.0**
AP270 S11											1434.3	936.0	1706.3	**1208.0**	1978.3	1480.0	2522.2	2023.9	3066.1	2567.8	1729.2	1230.9
AP270 S12													1594.4	1050.8	1866.4	**1322.8**	2410.3	1866.7	2954.2	2410.6	1886.4	**1342.8**
AP300 S05	**987.5**	**646.7**	1338.3	997.5	1688.2	1347.4	2038.1	1697.3	2388.0	2047.2	2737.9	2397.1	3087.8	2747.0	3437.7	3096.9	4137.4	3796.6	4837.2	4496.4	1031.9	**691.1**
AP300 S06	849.3	440.3	**1200.1**	**791.1**	1550.0	1141.0	1899.9	1490.9	2249.8	1840.8	2599.6	2190.7	2949.5	2540.6	3299.4	2890.5	3999.2	3590.3	4699.0	4290.1	1238.3	**829.3**
AP300 S07			1061.9	584.7	**1411.7**	**934.6**	1761.6	1284.5	2111.5	1634.4	2461.4	1984.3	2811.3	2334.2	3161.2	2684.1	3861.0	3383.9	4560.8	4083.7	1444.7	**967.5**
AP300 S08					1273.5	728.2	**1623.4**	**1078.1**	1973.3	1428.0	2323.2	1777.9	2673.1	2127.8	3023.0	2477.7	3722.8	3177.5	4422.6	3877.3	1651.0	**1105.8**
AP300 S09							1485.2	871.8	**1835.1**	**1221.7**	2185.0	1571.5	2534.9	1921.4	2884.8	2271.3	3584.6	2971.1	4284.4	3670.9	1857.4	**1244.0**
AP300 S10									1696.9	1015.3	2046.8	**1365.2**	2396.7	1715.1	2746.6	2065.0	3446.3	2764.7	4146.1	3464.5	2063.8	**1382.2**
AP300 S11											1908.5	1158.8	2258.4	**1508.7**	2608.3	1858.6	3308.1	2558.4	4007.9	3258.2	2270.2	**1520.4**
AP300 S12													2120.2	1302.3	2470.1	**1652.2**	3169.9	2352.0	3869.7	3051.8	2476.6	**1658.6**
AP350 S05	**1498.2**	**1017.1**	2017.5	1536.4	2536.8	2055.6	3056.1	2574.9	3575.3	3094.2	4094.6	3613.5	4613.9	4132.7	5133.2	4652.0	6171.7	5690.6	7210.3	6729.1	1475.5	**994.3**
AP350 S06			**1818.6**	**1241.3**	2337.9	1760.5	2857.2	2279.8	3376.5	2799.1	3895.8	3318.4	4415.0	3837.7	4934.3	4356.9	5972.9	5395.5	7011.4	6434.0	1770.5	**1193.2**
AP350 S07			1619.8	946.2	**2139.1**	**1465.5**	2658.3	1984.7	3177.6	2504.0	3696.9	3023.3	4216.2	3542.6	4735.5	4061.8	5774.0	5100.4	6812.6	6139.0	2065.6	**1392.0**
AP350 S08					1940.2	1170.4	**2459.5**	**1689.6**	2978.8	2208.9	3498.0	2728.2	4017.3	3247.5	4536.6	3766.8	5575.1	4805.3	6613.7	5843.9	2360.7	**1590.9**
AP350 S09					1741.3	875.3	2260.6	1394.6	**2779.9**	**1913.8**	3299.2	2433.1	3818.5	2952.4	4337.7	3471.7	5376.3	4510.2	6414.8	5548.8	2655.8	**1789.7**
AP350 S10							2061.8	1099.5	2581.0	1618.7	**3100.3**	**2138.0**	3619.6	2657.3	4138.9	3176.6	5177.4	4215.1	6216.0	5253.7	2950.9	**1988.6**
AP350 S11							1862.9	804.4	2382.2	1323.7	2901.5	1842.9	**3420.7**	**2362.2**	3940.0	2881.5	4978.6	3920.0	6017.1	4958.6	3246.0	**2187.5**
AP350 S12									2183.3	1028.6	2702.6	1547.8	3221.9	2067.1	3741.2	**2586.4**	4779.7	3624.9	5818.3	4663.5	3541.1	**2386.3**
AP400 S05	2222.0	1497.0	3013.0	2288.0	3805.0	3080.0	4596.0	3871.0	5387.0	4662.0	6179.0	5454.0									2301.0	1576.0
AP400 S06			2698.0	1828.0	3490.0	2620.0	4281.0	3411.0	5072.0	4202.0	5863.0	4993.0	6655.0	5785.0							2761.0	1891.0
AP400 S07			2383.0	1368.0	3174.0	2195.0	3966.0	2951.0	4757.0	3742.0	5548.0	4533.0	6339.0	5324.0	7131.0	6116.0					3221.0	2206.0
AP400 S08					2859.0	1699.0	3650.0	2490.0	4442.0	3282.0	5233.0	4073.0	6024.0	4864.0	6816.0	5656.0	8398.0	7238.0			3682.0	2522.0
AP400 S09					2544.0	1239.0	3335.0	2030.0	4126.0	2821.0	4918.0	3613.0	5709.0	4404.0	6500.0	5195.0	8083.0	6778.0	9665.0	8360.0	4142.0	2837.0
AP400 S10							3020.0	1570.0	3811.0	2361.0	4603.0	3153.0	5394.0	3944.0	6185.0	4735.0	7768.0	6318.0	9350.0	7900.0	4602.0	3152.0
AP400 S11							2705.0	1110.0	3496.0	1901.0	4287.0	2692.0	5079.0	3484.0	5870.0	4275.0	7452.0	5857.0	9035.0	7440.0	5062.0	3467.0
AP400 S12									3181.0	1441.0	3972.0	2232.0	4763.0	2023.0	5555.0	3815.0	7137.0	5397.0	8720.0	6980.0	5522.0	3782.0

INSTALLATION

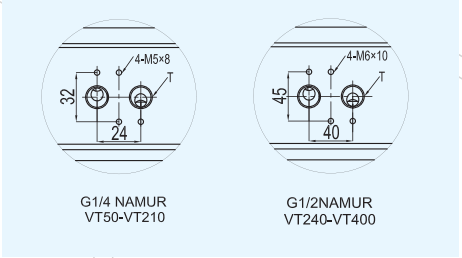
FRONT VIEW SIDE VIEW



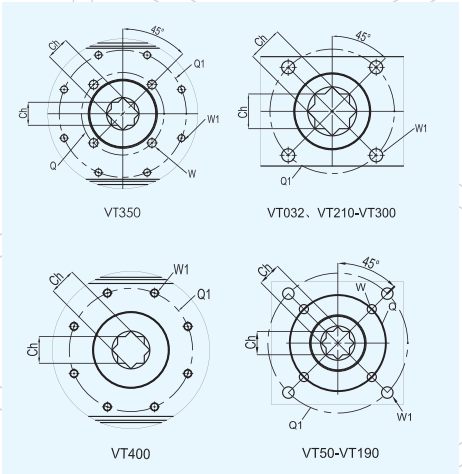
TOP



AIR CONNECTION



BOTTOM



MODEL	A	B	C	L	E	F	P	ØZ	N	I	FLANGE	Q	Q1	W	W1	Ch	T
AP032	37	47	50	110	27	50	20	40	10	10	F03	—	36	—	M5×9	9×9	G1/8"
AP050	45	70.5	70	154	41.5	80	20	40	10	12	F03/05	36	50	M5×7.5	M6×9	11×11	G1/4"
AP065	62	89.5	89	189	51.5	80	20	40	10	16	F05/07	50	70	M6×9	M8×12	14×14	G1/4"
AP075	68	102.5	100	210	59	80	20	40	14	16	F05/07	50	70	M6×9	M8×12	14×14	G1/4"
AP085	68	112.5	113	229	63.5	80	20	40	14	19	F05/07	50	70	M6×9	M8×12	17×17	G1/4"
AP095	92	126	123	264	71	80	20	40	14	19	F05/07	50	70	M6×9	M8×12	17×17	G1/4"
AP110	93	138.5	136	266	76.5	80	20	40	14	19	F07/10	70	102	M8×12	M10×15	17×17	G1/4"
AP125	96	157	161	337	85	80	30	56	22	25	F07/10	70	102	M8×12	M10×15	22×22	G1/4"
AP140	110	178	178	377	97	80	30	56	22	31	F10/12	102	125	M10×15	M12×18	27×27	G1/4"
AP160	112	196	200	412	106	130	30	56	22	31	F10/12	102	125	M10×15	M12×18	27×27	G1/4"
AP190	136	216.5	232	488	112	130	30	56	22	41	F10/14	102	140	M10×15	M16×24	36×36	G1/4"
AP210	140	235.5	255	550	120	130	30	80	32	40	F14	—	140	—	M16×24	36×36	G1/4"
AP240	159	262	292	602	131	130	30	80	32	50	F16	—	165	—	M20×28	46×46	G1/2"
AP270	159	295	331	672	147.5	130	30	80	32	50	F16	—	165	—	M20×28	46×46	G1/2"
AP300	180	335	354	784	173	130	30	80	32	50	F16	—	165	—	M20×28	46×46	G1/2"
AP350	270	385	410	845	195	130	30	80	32	50	F16/F25	165	254	M20×28	M16×30	46×46	G1/2"
AP400	290	520	466	956	260	130	30	80	32	60	F25	—	254	—	M16×30	55×55	G1/2"

MODEL SELECTION

MODEL	TYPE	SPRING QTY	FLANGE	SQURE	OPTION	SEALING PART
AP032	D=DOUBLE ACTING S=SPRING RETURN		F03	9×9	CAP COLOR RAL 7046 9004 5021 3020 6002 5015 TYPE OF BODY P Smooth Surface + hard Anodized S Sandblasted Surface + hard Anodized (Color: Grey) H Sandblasted Surface + hard Anodized (Color: Dark Grey) F Sandblasted Surface + hard Anodized + PTFE Coated	STANDARD NITRILE RUBBER -15°C-+80°C HT FLUORORUBBER (FOR HIGH TEMPERATURE) -15°C-+150°C LT SILASTIC (FOR LOW TEMPERATURE) -40°C-+80°C
AP050		ONLY FOR SPRING REST 4 5 6 7 8 9 10 11 12	F03/05	11×11		
AP065			F05/07	14×14		
AP075			F05/07	14×14		
AP085			F05/07	17×17		
AP095			F05/07	17×17		
AP110			F07/10	17×17		
AP125			F07/10	22×22		
AP140			F10/12	27×27		
AP160			F10/12	27×27		
AP190			F10/14	36×36		
AP210			F14	36×36		
AP240			F16	46×46		
AP270			F16	46×46		
AP300			F16	46×46		
AP350			F16/25	46×46		
AP400			F25	55×55		

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