die erste®

Butterfly Valve

Concentric Butterfly Valve to DIN/EN
Lug Type
PN10, DN40 ~ DN500

Series 81L(E)-PN10

Features

- Suitable for use in HVAC, irrigation, industrial applications where positive shutoff is required
- Single through-put shaft provides most economical pricing
- 10 position lever or gear operation
- Alloy material available on request

Standards

- End dimensions acc. to DIN2633
- Inspection & test acc. to EN12266

Limitation

- Do not use EPDM when hydrocarbons are present.
- Kindly anticipate increased torque for PTFE coated disc + PTFE seat option; gear operation recommended for sizes ≥ 4".
- End-of-line service at half rating

PMA: See Table A

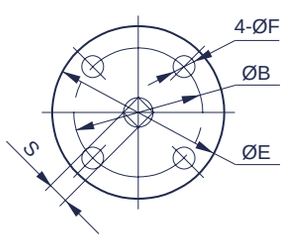
TMA: See Table B

Selection:

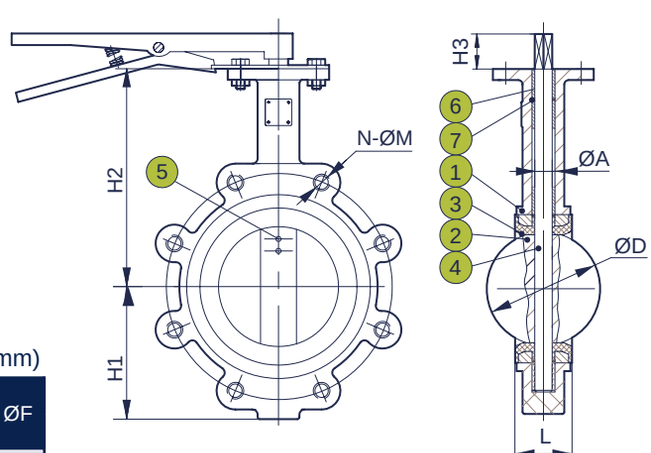
Material of Body:
CF8M/CF8/CI/DI

Options

- Double "half pin" style available for increased performance and lifecycle
- Coated disc available in: rubber, PTFE, nylon



DN40-DN500



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Materials List		
NO	PARTS NAME	MATERIAL
1	BODY	CF8M / CF8 / CI / DI
2	DISC*	CF8M / CF8 / CI / DI
3	SEAT	NBR / EPDM / VITON
4	STEM	SS410
5	TAPER PIN	SS
6	BUSHING	PTFE
7	O-RING	EPDM

*Coated disc option available.
Enclosed a condensed table, for complete options, contact DIE ERSTE directly.

Dimensions (mm)

Size		H1	H2	H3	L	ØD	ØC	N-ØM	ØA	S	ØE	ØB	ØF
IN	DN												
1½"	40	70	110	32	35	42.4	110	4-M16	12.7	9	92	70	9
2"	50	76	162	32	45	52.9	125	4-M16	12.7	9	92	70	9
2½"	65	80	175	32	48	64.6	145	4-M16	12.7	9	92	70	9
3"	80	95	181	32	49	79.04	160	4-M16	12.7	9	92	70	9
4"	100	114	200	32	55	104.4	180	8-M16	15.8	11	92	70	9
5"	125	127	213	32	58	129.5	210	8-M16	19.05	14	92	70	9
6"	150	140	225	32	59	155.8	240	8-M20	19.05	14	92	70	9
8"	200	173	260	36	64	202.7	295	8-M20	22.2	17	125	102	11
10"	250	203	292	36	70	250.7	350	12-M20	28.6	22	125	102	11
12"	300	237	337	36	80	301.9	400	12-M20	31.8	22	150	125	13
14"	350	279	368	45	80	333.3	460	16-M20	31.8	22	150	125	13
16"	400	304	400	51	90	389.6	515	16-M20	33.3	22	210	165	22
18"	450	362	422	51	109	439.9	565	20-M24	38.0	27	210	165	22
20"	500	368	479	64	135	491.6	620	20-M24	41.15	27	210	165	22

Table B: Temperature Rating	
SEAT	APPLICABLE TEMPERATURE
NBR	-20°C to +80°C(-4°F to 176°F)
EPDM	-20°C to +120°C(-4°F to 248°F)
VITON	-10°C to +200°C(+14°F to 392°F)
PTFE	-20°C to +150°C(-4°F to 302°F)

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Butterfly Valve

Concentric Butterfly Valve to DIN/EN
Lug Type
PN10, DN600 ~ DN1000

Series 81L(E)-PN10

Features

- Suitable for use in HVAC, irrigation, industrial applications where positive shutoff is required
- Single through-put shaft provides most economical pricing
- 10 position lever or gear operation
- Alloy material available on request

Standards

- End dimensions acc. to DIN2633
- Inspection & test acc. to EN12266

Limitation

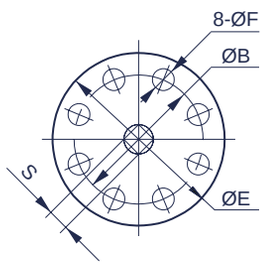
- Do not use EPDM when hydrocarbons are present.
- Kindly anticipate increased torque for PTFE coated disc + PTFE seat option; gear operation recommended for sizes ≥ 4".
- End-of-line service at half rating

Options

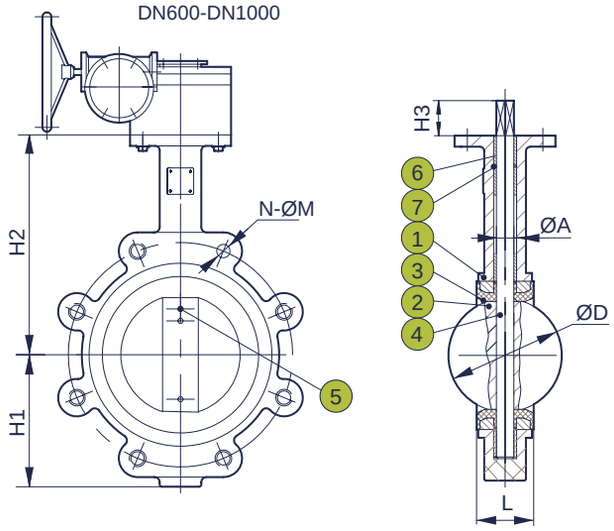
- Double "half pin" style available for increased performance and lifecycle
- Coated disc available in: rubber, PTFE, nylon

PMA: See Table A
TMA: See Table B
Selection:

Material of Body:
CF8M/CF8/CI/DI



DN600-DN1000



Materials List		
NO	PARTS NAME	MATERIAL
1	BODY	CF8M / CF8 / CI / DI
2	DISC*	CF8M / CF8 / CI / DI
3	SEAT	NBR / EPDM / VITON
4	STEM	SS410
5	TAPER PIN	SS
6	BUSHING	PTFE
7	O-RING	EPDM

*Coated disc option available.
Enclosed a condensed table, for complete options, contact DIE ERSTE directly.

Table A: Maximum Pressure Rating			
SIZE	RUBBER SEAT	PTFE SEAT	PTFE SEAT+ PTFE COATED DISC
≤ DN150 (6")	13.7 bar (200psi)	13.7 bar (200psi)	10.3 bar (150 psi)
DN200 (8")	13.7 bar (200psi)	10.3 bar (150 psi)	10.3 bar (150 psi)
DN250(10")~ DN300(12")	13.7 bar (200psi)	10.3 bar (150 psi)	6.9 bar (100 psi)
DN350(14")~ DN600(24")	10.3 bar (150 psi)	6.9 bar (100 psi)	6.9 bar (100 psi)
≥ DN600 (24")	6.9 bar (100 psi)	-	-
Gear Operation Recommendation	≥ DN300 (12")	≥ DN150 (6")	≥ DN100 (4")

Dimensions (mm)

Size		H1	H2	H3	L	ØD	ØC	N-ØM	ØA	S	ØE	ØB	ØF
IN	DN												
24"	600	444	562	70	156	592.3	725	20-M27	50.65	36	300	254	18
28"	700	520	630	70	156	694.1	840	24-M27	63.35	40	300	254	18
30"	750	621	648	72	169	744.2	-	-	63.35	40	300	254	18
32"	800	590	690	72	169	794.2	950	24-M30	63.35	40	300	254	18
36"	900	623	768	77	211	863.4	1050	28-M30	74.25	53	300	254	18
40"	1000	670	850	77	211	963.4	1160	28-M33	84.2	60	300	254	18

Table B: Temperature Rating	
SEAT	APPLICABLE TEMPERATURE
NBR	-20°C to +80°C(-4°F to 176°F)
EPDM	-20°C to +120°C(-4°F to 248°F)
VITON	-10°C to +200°C(+14°F to 392°F)
PTFE	-20°C to +150°C(-4°F to 302°F)

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Butterfly Valve

Concentric Butterfly Valve to DIN/EN
Lug Type
PN16, DN40 ~ DN500

Series 81L(E)-PN16

Features

- Suitable for use in HVAC, irrigation, industrial applications where positive shutoff is required
- Single through-put shaft provides most economical pricing
- 10 position lever or gear operation
- Alloy material available on request

Standards

- End dimensions acc. to DIN2633
- Inspection & test acc. to EN12266

Limitation

- Do not use EPDM when hydrocarbons are present.
- Kindly anticipate increased torque for PTFE coated disc + PTFE seat option; gear operation recommended for sizes ≥ 4".
- End-of-line service at half rating

PMA: See Table A

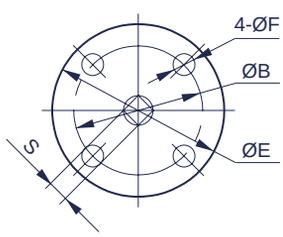
TMA: See Table B

Selection:

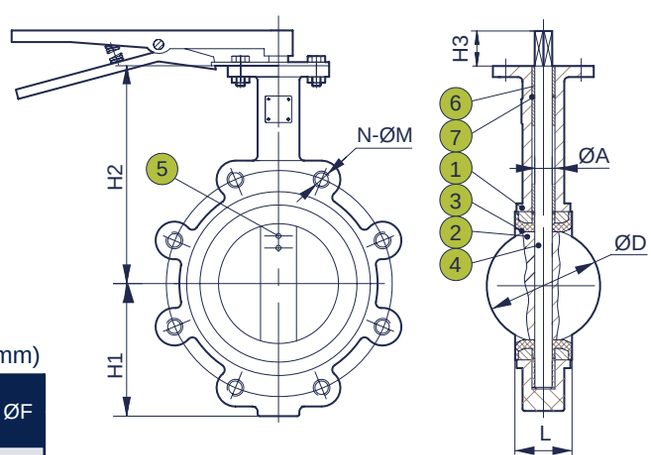
Material of Body:
CF8M/CF8/CI/DI

Options

- Double "half pin" style available for increased performance and lifecycle
- Coated disc available in: rubber, PTFE, nylon



DN40-DN500



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Materials List		
NO	PARTS NAME	MATERIAL
1	BODY	CF8M / CF8 / CI / DI
2	DISC*	CF8M / CF8 / CI / DI
3	SEAT	NBR / EPDM / VITON
4	STEM	SS410
5	TAPER PIN	SS
6	BUSHING	PTFE
7	O-RING	EPDM

*Coated disc option available.
Enclosed a condensed table, for complete options, contact DIE ERSTE directly.

Dimensions (mm)

Size		H1	H2	H3	L	ØD	ØC	N-ØM	ØA	S	ØE	ØB	ØF
IN	DN												
1½"	40	70	110	32	35	42.4	110	4-M16	12.7	9	92	70	9
2"	50	76	162	32	45	52.9	125	4-M16	12.7	9	92	70	9
2½"	65	80	175	32	48	64.6	145	4-M16	12.7	9	92	70	9
3"	80	95	181	32	49	79.04	160	8-M16	12.7	9	92	70	9
4"	100	114	200	32	55	104.4	180	8-M16	15.8	11	92	70	9
5"	125	127	213	32	58	129.5	210	8-M16	19.05	14	92	70	9
6"	150	140	225	32	59	155.8	240	8-M20	19.05	14	92	70	9
8"	200	173	260	36	64	202.7	295	12-M20	22.2	17	125	102	11
10"	250	203	292	36	70	250.7	355	12-M24	28.6	22	125	102	11
12"	300	237	337	36	80	301.9	410	12-M24	31.8	22	150	125	13
14"	350	279	368	45	80	333.3	470	16-M24	31.8	22	150	125	13
16"	400	304	400	51	90	389.6	525	16-M27	33.3	22	210	165	22
18"	450	362	422	51	109	439.9	585	20-M27	38.0	27	210	165	22
20"	500	368	479	64	135	491.6	650	20-M30	41.15	27	210	165	22

Table B: Temperature Rating	
SEAT	APPLICABLE TEMPERATURE
NBR	-20°C to +80°C(-4°F to 176°F)
EPDM	-20°C to +120°C(-4°F to 248°F)
VITON	-10°C to +200°C(+14°F to 392°F)
PTFE	-20°C to +150°C(-4°F to 302°F)

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Butterfly Valve

Concentric Butterfly Valve to DIN/EN
Lug Type
PN16, DN600 ~ DN1000

Series 81L(E)-PN16

Features

- Suitable for use in HVAC, irrigation, industrial applications where positive shutoff is required
- Single through-put shaft provides most economical pricing
- 10 position lever or gear operation
- Alloy material available on request

Standards

- End dimensions acc. to DIN2633
- Inspection & test acc. to EN12266

Limitation

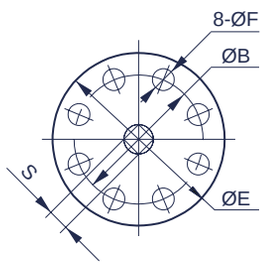
- Do not use EPDM when hydrocarbons are present.
- Kindly anticipate increased torque for PTFE coated disc + PTFE seat option; gear operation recommended for sizes ≥ 4".
- End-of-line service at half rating

Options

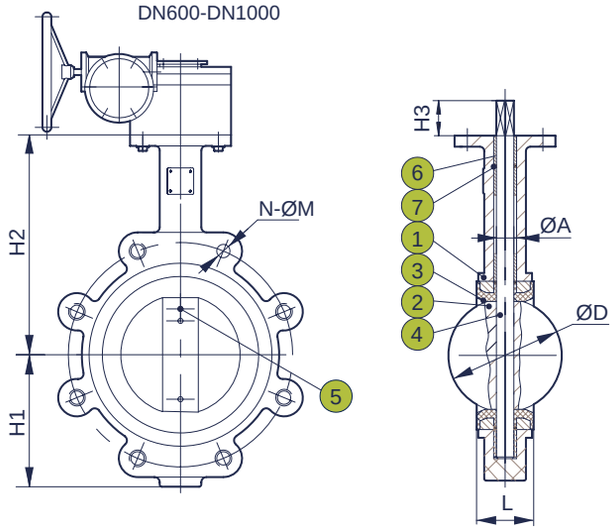
- Double "half pin" style available for increased performance and lifecycle
- Coated disc available in: rubber, PTFE, nylon

PMA: See Table A
TMA: See Table B
Selection:

Material of Body:
CF8M/CF8/CI/DI



DN600-DN1000



Materials List		
NO	PARTS NAME	MATERIAL
1	BODY	CF8M / CF8 / CI / DI
2	DISC*	CF8M / CF8 / CI / DI
3	SEAT	NBR / EPDM / VITON
4	STEM	SS410
5	TAPER PIN	SS
6	BUSHING	PTFE
7	O-RING	EPDM

*Coated disc option available.
Enclosed a condensed table, for complete options, contact DIE ERSTE directly.

Table A: Maximum Pressure Rating			
SIZE	RUBBER SEAT	PTFE SEAT	PTFE SEAT+ PTFE COATED DISC
≤ DN150 (6")	13.7 bar (200psi)	13.7 bar (200psi)	10.3 bar (150 psi)
DN200 (8")	13.7 bar (200psi)	10.3 bar (150 psi)	10.3 bar (150 psi)
DN250(10")~ DN300(12")	13.7 bar (200psi)	10.3 bar (150 psi)	6.9 bar (100 psi)
DN350(14")~ DN600(24")	10.3 bar (150 psi)	6.9 bar (100 psi)	6.9 bar (100 psi)
≥ DN600 (24")	6.9 bar (100 psi)	-	-
Gear Operation Recommendation	≥ DN300 (12")	≥ DN150 (6")	≥ DN100 (4")

Dimensions (mm)

Size		H1	H2	H3	L	ØD	ØC	N-ØM	ØA	S	ØE	ØB	ØF
IN	DN												
24"	600	444	562	70	156	592.3	770	20-M33	50.65	36	300	254	18
28"	700	520	630	70	156	694.1	840	24-M33	63.35	40	300	254	18
30"	750	621	648	72	169	744.2	-	-	63.35	40	300	254	18
32"	800	590	690	72	169	794.2	950	24-M36	63.35	40	300	254	18
36"	900	623	768	77	211	863.4	1050	28-M36	74.25	53	300	254	18
40"	1000	670	850	77	211	963.4	1170	28-M39	84.2	60	300	254	18

Table B: Temperature Rating	
SEAT	APPLICABLE TEMPERATURE
NBR	-20°C to +80°C(-4°F to 176°F)
EPDM	-20°C to +120°C(-4°F to 248°F)
VITON	-10°C to +200°C(+14°F to 392°F)
PTFE	-20°C to +150°C(-4°F to 302°F)

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Butterfly Valve

Concentric Butterfly Valve to ANSI/ASME Lug Type

CLASS125/CLASS150, 1½" ~ 20"

Series 81L(E)-CL125/CL150

Features

- Suitable for use in HVAC, irrigation, industrial applications where positive shutoff is required
- Single through-put shaft provides most economical pricing
- 10 position lever or gear operation
- Alloy material available on request

Standards

- End dimensions acc. to B16.5 (<28") and B16.47A (≥28")
- Inspection & test acc. to API598

Limitation

- Do not use EPDM when hydrocarbons are present.
- Kindly anticipate increased torque for PTFE coated disc + PTFE seat option; gear operation recommended for sizes ≥ 4".
- End-of-line service at half rating

PMA: See Table A

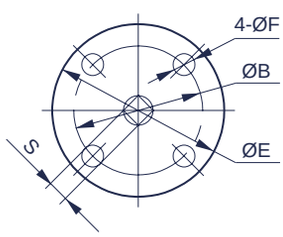
TMA: See Table B

Selection:

Material of Body:
CF8M/CF8/CI/DI

Options

- Double "half pin" style available for increased performance and lifecycle
- Coated disc available in: rubber, PTFE, nylon

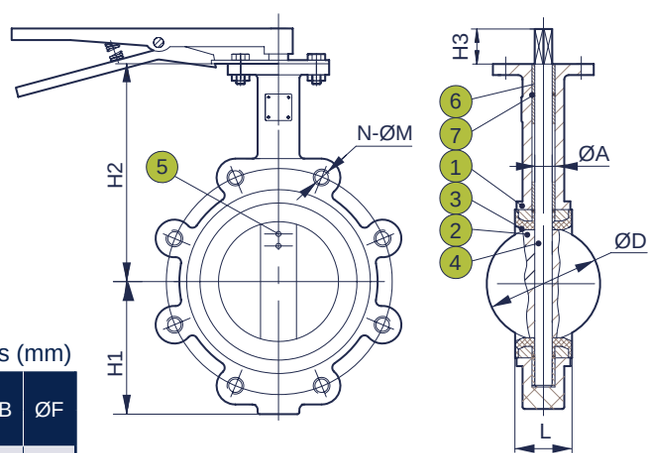


DN40-DN500

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Materials List		
NO	PARTS NAME	MATERIAL
1	BODY	CF8M / CF8 / CI / DI
2	DISC*	CF8M / CF8 / CI / DI
3	SEAT	NBR / EPDM / VITON
4	STEM	SS410
5	TAPER PIN	SS
6	BUSHING	PTFE
7	O-RING	EPDM

*Coated disc option available.
Enclosed a condensed table, for complete options, contact DIE ERSTE directly.



Dimensions (mm)

Size		H1	H2	H3	L	ØD	ØC	N-ØM	ØA	S	ØE	ØB	ØF
IN	DN												
1½"	40	70	110	32	35	42.4	98.5	4-1/2"-13	12.7	9	92	70	9
2"	50	76	162	32	45	52.9	120.5	4-5/8"-11	12.7	9	92	70	9
2½"	65	80	175	32	48	64.6	139.5	4-5/8"-11	12.7	9	92	70	9
3"	80	95	181	32	49	79.04	152.5	4-5/8"-11	12.7	9	92	70	9
4"	100	114	200	32	55	104.4	190.5	8-5/8"-11	15.8	11	92	70	9
5"	125	127	213	32	58	129.5	216.0	8-3/4"-10	19.05	14	92	70	9
6"	150	140	225	32	59	155.8	241.5	8-3/4"-10	19.05	14	92	70	9
8"	200	173	260	36	64	202.7	298.5	8-3/4"-10	22.2	17	125	102	11
10"	250	203	292	36	70	250.7	362.0	12-7/8"-9	28.6	22	125	102	11
12"	300	237	337	36	80	301.9	432.0	12-7/8"-9	31.8	22	150	125	13
14"	350	279	368	45	80	333.3	476.0	12-1"-8	31.8	22	150	125	13
16"	400	304	400	51	90	389.6	539.5	16-1"-8	33.3	22	210	165	22
18"	450	362	422	51	109	439.9	578.0	16-1⅛"-7	38.0	27	210	165	22
20"	500	368	479	64	135	491.6	635.0	20-1⅛"-7	41.15	27	210	165	22

Table B: Temperature Rating	
SEAT	APPLICABLE TEMPERATURE
NBR	-20°C to +80°C(-4°F to 176°F)
EPDM	-20°C to +120°C(-4°F to 248°F)
VITON	-10°C to +200°C(+14°F to 392°F)
PTFE	-20°C to +150°C(-4°F to 302°F)

Butterfly Valve

Concentric Butterfly Valve to ANSI/ASME Lug Type

CLASS125/CLASS150, 24" ~ 40" Series 81L(E)-PN125/CL150

Features

- Suitable for use in HVAC, irrigation, industrial applications where positive shutoff is required
- Single through-put shaft provides most economical pricing
- 10 position lever or gear operation
- Alloy material available on request

Standards

- End dimensions acc. to B16.5 (<28") and B16.47A (≥28")
- Inspection & test acc. to API598

Limitation

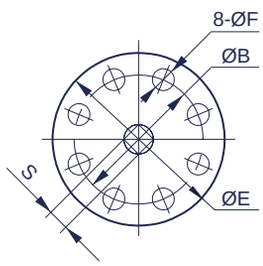
- Do not use EPDM when hydrocarbons are present.
- Kindly anticipate increased torque for PTFE coated disc + PTFE seat option; gear operation recommended for sizes ≥ 4".
- End-of-line service at half rating

Options

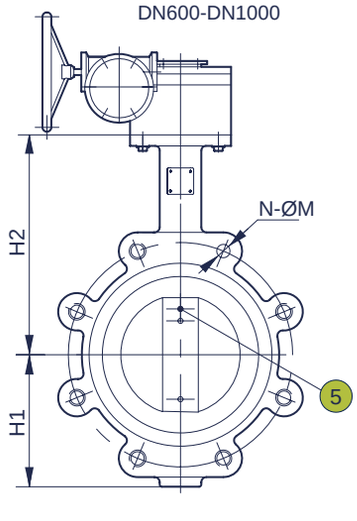
- Double "half pin" style available for increased performance and lifecycle
- Coated disc available in: rubber, PTFE, nylon

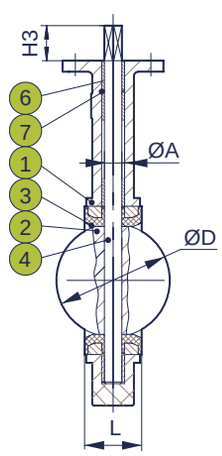
PMA: See Table A
TMA: See Table B
Selection:

Material of Body:
CF8M/CF8/CI/DI



DN600-DN1000





Materials List		
NO	PARTS NAME	MATERIAL
1	BODY	CF8M / CF8 / CI / DI
2	DISC*	CF8M / CF8 / CI / DI
3	SEAT	NBR / EPDM / VITON
4	STEM	SS410
5	TAPER PIN	SS
6	BUSHING	PTFE
7	O-RING	EPDM

*Coated disc option available.
Enclosed a condensed table, for complete options, contact DIE ERSTE directly.

Table A: Maximum Pressure Rating			
SIZE	RUBBER SEAT	PTFE SEAT	PTFE SEAT+ PTFE COATED DISC
≤ DN150 (6")	13.7 bar (200psi)	13.7 bar (200psi)	10.3 bar (150 psi)
DN200 (8")	13.7 bar (200psi)	10.3 bar (150 psi)	10.3 bar (150 psi)
DN250(10")~ DN300(12")	13.7 bar (200psi)	10.3 bar (150 psi)	6.9 bar (100 psi)
DN350(14")~ DN600(24")	10.3 bar (150 psi)	6.9 bar (100 psi)	6.9 bar (100 psi)
≥ DN600 (24")	6.9 bar (100 psi)	-	-
Gear Operation Recommendation	≥ DN300 (12")	≥ DN150 (6")	≥ DN100 (4")

Dimensions (mm)

Size		H1	H2	H3	L	ØD	ØC	N-ØM	ØA	S	ØE	ØB	ØF
IN	DN												
24"	600	444	562	70	156	592.3	749.5	20-1¼"-7	50.65	36	300	254	18
28"	700	520	630	70	156	694.1	-	-	63.35	40	300	254	18
30"	750	621	648	72	169	744.2	914.5	28-1¼"-7	63.35	40	300	254	18
32"	800	590	690	72	169	794.2	-	-	63.35	40	300	254	18
36"	900	623	768	77	211	863.4	1086.0	32-1½"-6	74.25	53	300	254	18
40"	1000	670	850	77	211	963.4	-	-	84.2	60	300	254	18

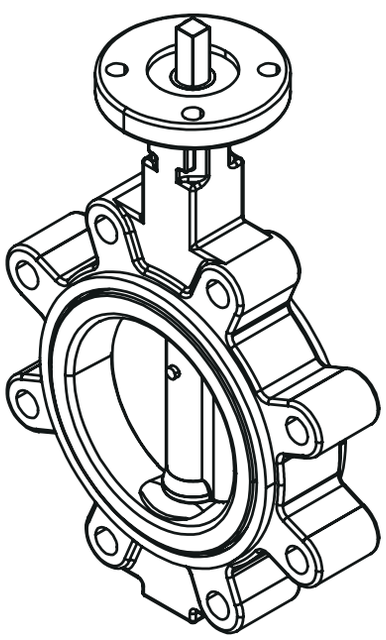
Table B: Temperature Rating	
SEAT	APPLICABLE TEMPERATURE
NBR	-20°C to +80°C(-4°F to 176°F)
EPDM	-20°C to +120°C(-4°F to 248°F)
VITON	-10°C to +200°C(+14°F to 392°F)
PTFE	-20°C to +150°C(-4°F to 302°F)

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Concentric Butterfly Valve

Series 81W(E)/81L(E)/81F(E)

Installation, Operation,
& Maintenance Manual



IOM-Series 81(E)-108_V2.0_EN
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Chapter I Introduction

The manual is provided to ensure proper installation, operation & maintenance for Concentric Butterfly Valve, Series 81L(E)/81W(E)/81F(E), manufactured and supplied by Die Erste Industry Co., Ltd. The valves are identified by marking on the body or on a name plate or both.

1.1 Contact Information

For information concerning warranties, or for questions pertaining to installation, operation or maintenance of DIE ERSTE products, contact:

DIE ERSTE INDUSTRY CO., LTD.
5F-1, No.936, Sec. 4, Wen-Xin Road,
Taichung City, Taiwan 406

Phone: +886 4 22310059
Fax: +886 4 22360236
Email: sales@die-erste.com

To order replacement parts, contact DIE ERSTE sales at address listed above.

1.2 General Notes

The following instructions refer to DIE ERSTE Series Concentric Butterfly Valve, Series 81L(E)/81W(E)/81F(E) (81(E)L for Lug Type End, 81W(E) for Wafer Type End and 81F(E) for Double Flanged End) as described in the DIE ERSTE current catalog.

Keep the protective covers in place until the valve is ready for installation. Valve performance depends upon prevention of damage to the disc and seat surfaces. After removing the cover make sure that the valve is completely open and free of obstructions, dirt, particles or any materials that may cause seat or seal damage.

Valves may contain a silicon-based lubricant for transportation, which aids in the assembly of the valve. Lubricant may be removed with a solvent if found objectionable. Alternatively valves can be ordered free of lubricants upon request.

Certain ferrous valves contain phosphate material, and are oil dipped during the course of manufacture. However, the processes used are completely non-toxic.

1.3 Precautions and Warnings

Choose the correct material of valve for different applications before obtaining the valve. The user should be aware of the operating situation, fluid properties, and the possible outcomes when implementing valves into the pipeline system. DIE ERSTE suggests that the user should make estimation beforehand.

Exceeding the pressure or temperature limitations marked on the name plate may cause damage and lead to uncontrolled pressure release. The practical and safe use of the valve is determined by both the body and seat ratings due to variety of seat and body materials. Please check both rating before installing to prevent valve damage and possible injury of personals.

For safety concern, unstable fluid should not be used in the pipeline system, unless otherwise specified with the category III in Declaration of conformity.

⚠ CAUTION:

Before removing valve from pipeline, operator should be aware of that: media flowing through the valve may be corrosive, toxic, flammable, or of a contaminant nature. Where there is evidence of harmful fluids having flowed through the valve, the utmost care must be taken. It is suggested that the following safety precautions should be taken when handling valves.

1) Always wear eye shields.

2) Always wear gloves and footwear.

3) Wear protective headgear.

4) Ensure that running water is readily accessible.

5) Fire extinguisher must be obtainable if media is flammable.

Check the line gauge to ensure that no pressure is present at the valve. Ensuring media is released by operating valve slowly to the half open position. Ideally, the valve should be decontaminated when the disc is in the half open position.

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1.4 Storage

If the valves are not to be installed immediately, please store the valve carefully before installation, preferably indoors in a dry and clean place.
Also, the valve ports should be sealed by caps or plastic paper to prevent dirt from entering and damaging inner parts.

Note:
Place the disc flap approximately five (5) degrees to the open position. Open storage is not allowed.

Chapter II Installation

Flush the pipeline carefully before installing the valve. The particles of dirt or debris or welding may damage the disc sealing surface and seats. Also, before installing, check all valve and mating flanges to ensure gasket surfaces are free from defects.

The butterfly valve shall be installed between two mating flanges. Before installing the valve in the line, fully close the valve to prevent the damage of collision between disc and mating flanges.

⚠ **CAUTION:**
Do not exceed the valve performance limitation.

⚠ **CAUTION:**
Before installing, make sure the line pressure has been relieved, and any hazardous fluids have been drained or purged from the system.

⚠ **CAUTION:**
Before installation, check that the media used is consistent with the performance of the butterfly valve.

2.1 General Notes

1) Direction

Standard 81(E) Series Butterfly Valves are generally bi-directionally sealed unless otherwise specified. If possible, we recommend that the larger side of the taper pin cross section be oriented upstream to avoid unnecessarily leakage.

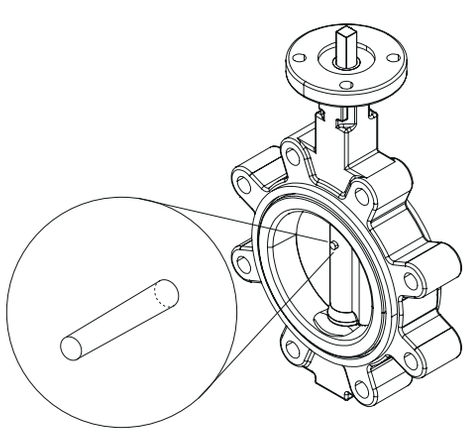


Figure 2.1. Taper pin on the Disc

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Note:
An upside-down position may cause the particles or dirt to enter the body cavity, and thus damage the stem packing.

2) Position

The butterfly valve is mostly recommended to be installed with the stem in the vertical position.

3) Fittings

Select the correct size of fittings according to the pipeline specification. Tighten the valve to the pipeline adequately with appropriate bolts. Do not attempt to correct pipeline misalignment by means of flanged bolting.

4) Systems hydrostatic test

Before delivery, valves are tested 1.5 times the allowable pressure at ambient temperature in OPEN position. However, after installation, the piping system may be subject to system tests, as condition not to exceed the marking pressure.

5) Pre-Installation Wash

Before the valve installation, clean the pipeline system to remove any foreign deposits by water. Clean the connecting flanged end surfaces as well to ensure tight sealing.

2.2 Installation of Ends

1) Wafer Ends (81W(E))

The wafer type butterfly valve should be centered between flanges to prevent any damage to the disc or shaft which could be caused by the disc striking the pipe wall.

Some sizes of Series 81W(E) with wafer ends, contain holes on valve body to ONLY help to align to mating flanges properly when installing to the pipeline. Note that the alignment holes or grooves do not apply to any pipe pressure.

The flange or pipe, if required, must be welded prior to the installation of the valve. If it cannot be done, a protective cover screen should be placed between the valve and welding part.

2) Lug Ends (81L(E))

Do not disassemble lug end valves before installation. Note that the taper threaded fitting should not be over tightened.

⚠ **CAUTION:**
If the lug end valve is installed at the end of the pipeline, it is necessary to mate the corresponding flange at the downstream end to make the force on the resilient seat uniform and symmetrical. If the seat is not uniformly loaded, it may lead to valve failure and leakage.

3) Double Flanged Ends (81F(E))

The general installation guides are the following:

1. Before installing the valves, make sure the flanges and the pipe are free from grit, dirt or burrs.
2. The flanges must be aligned and parallel with the correct distance to allow the valve face-to-face dimension and gaskets to fit between.
3. Tighten the flange bolts, with a torque value determined by the gasket manufacturer, other variables like gasket type and material, bolt, flange and lubricant affect the tightening torque values.
4. Note: bolts tightening must be uniform in order to create a parallel movement of the two flanges and uniform deformation of the gasket in between them.
5. Before pressure testing the valves, bring the valves to the half OPEN position to ensure pressure reaches the stem seals and to avoid unnecessary loading of the seats. Fail-to-close actuated valves should be brought to the half-OPEN position.

2.5 Pneumatic and Electrical Connections

Although there is a ISO 5211 mounting pad on the Series 81(E) Butterfly Valve, it is mainly designed for manual and gearbox operation. We don't recommend the valve is applied to actuation automation. If frequent ON/OFF operation is required in the application of the valve, we recommend that you use our Standard 81 Series Butterfly Valves, or contact your DIE ERSTE personnel.

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Chapter III Operation

For manual operation, shift the handle in counter-clockwise direction for CLOSED and clockwise for OPEN.

If the handle is in parallel position with the flow direction, the valve is OPEN. If the handle is in right angle position with the flow direction, the valve is CLOSED.

When installing actuator or the valve is operated with removable handle, the user should ensure the position of the valve whether open or close. The below Figure 3.1 provides the visual understanding of above explanation.

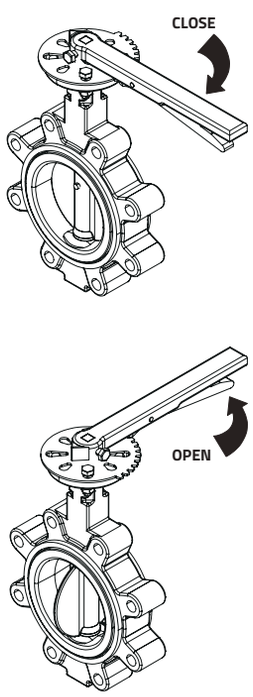


Figure 3.1 Rotation Direction for CLOSED and OPEN position

Note:

Please identify the ON/OFF status of the valve according to the direction of the disc, and then place the handle in the corresponding position. Never install the handle in the pipeline without knowing the valve ON/OFF status. The wrong installation of the handle may lead to safety incidents.

3.1 Handling

During the butterfly valve installation, it must follow the procedure to handle at the both side of the bodies. If using cable for big size valve, make sure the cable must be strong enough to ensure the safety during the installation.

Never lift the valve package by the actuator, positioner, limit switch or their piping. Valve damage or personal injury may occur from falling parts.

3.2 Cleaning

Even though the valves were transported under a clean environment, operator must check if there is any foreign body or dusts inside the bore. If present, clean the valve before installation. Operator may clean the valves by water, compression air, or steam. However, valve automation devices shall be cleaned only with water or steam, using compression air to clean the valve automation devices is strictly prohibited. For cleaning operation, first step is put the valve bore perpendicular to the ground and clean, ensure all the dusts are be removed from the bore. The second step is to check and clean all the connecting pipe bore and connection area. No flush, rust and foreign bodies are allowed to avoid the blocking and leakage.

3.3 Manual Operation

DIE ERSTE Concentric Butterfly Valve, Series 81L(E)/81W(E)/81F(E) have ¼ turn operation opening in a counter-clockwise direction. When the handle is positioned across the pipeline, this indicates that the valve is closed. When the handle is positioned parallel with the pipeline, this indicates the valve is open.

3.4 Remote Operation

Although there is a ISO 5211 mounting pad on the Series 81(E) Butterfly Valve, it is mainly designed for manual and gearbox operation. We don't recommend the valve is applied to actuation automation. If frequent ON/OFF operation is required in the application of the valve, we recommend that you use our Standard 81 Series Butterfly Valves, or contact your DIE ERSTE personnel.

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Chapter IV: Maintenance

> ⚠ **CAUTION:**
> Do not dismantle the valve or remove it from the pipeline while the valve is pressurized.

4.1 General Notes

Routine maintenance includes regular valve opening and closing. Long-term closed status without opening may cause the valve too much torque to open properly.

4.2 Maintenance Frequency

The maintenance frequency is determined based upon the application of the valve. User should consider the following factors when determining the maintenance time internally: fluid type, flow velocity, operation frequency, pressure and temperature.

> **Note:**
> For the Concentric Butterfly Valve, Series 81L(E)/81W(E)/81F(E), DIE ERSTE recommends inspecting the valve at least every (1) year.

> **Note:**
> Please use the original spare parts to ensure the valve functions well.

> **Note:**
> When sending back the valve to DIE ERSTE for investigation, do not disassemble it. Clean the valve carefully and flush the valve internals. If possible, inform us about the medium used in the valve.

> ⚠ **CAUTION:**
> Pipeline and valve must be depressurized by shutting off the valve and bleed line, cycle the valve once and leave it half open to relieve the pressure from the body cavity.

4.3 Assembly

1. Place valve in its full open position, remove handle or operator.
2. Remove Taper Pin (5). (Pins will have to be replaced).
3. Remove the Stem (4) from Body (1).
4. Remove the Disc (2) from Seat (3) and store in such a manner so as to not to damage its sealing surface. (If damaged, disc and stem must be replaced.)
5. Remove the Seat (3) from body.

4.4 Reassembly

1. Inspect and clean all parts to be used.
2. Insert the Disc (2) into the Seat (3) with aligning stem holes.
3. Press the Seat (3) into the Body (1) with aligning stem holes.
4. Insert the Stem (4). Take care not to dislodge and or damage the Seat (3).
5. Close the valve and align the pin hole on center part of the Disc (2) and the pin hole on the Stem (4).
6. Place Taper the Pin (5) and knock the pin into place.
7. Clean valve free of shavings.

4.5 Troubleshooting

The following table lists the possible malfunctions.

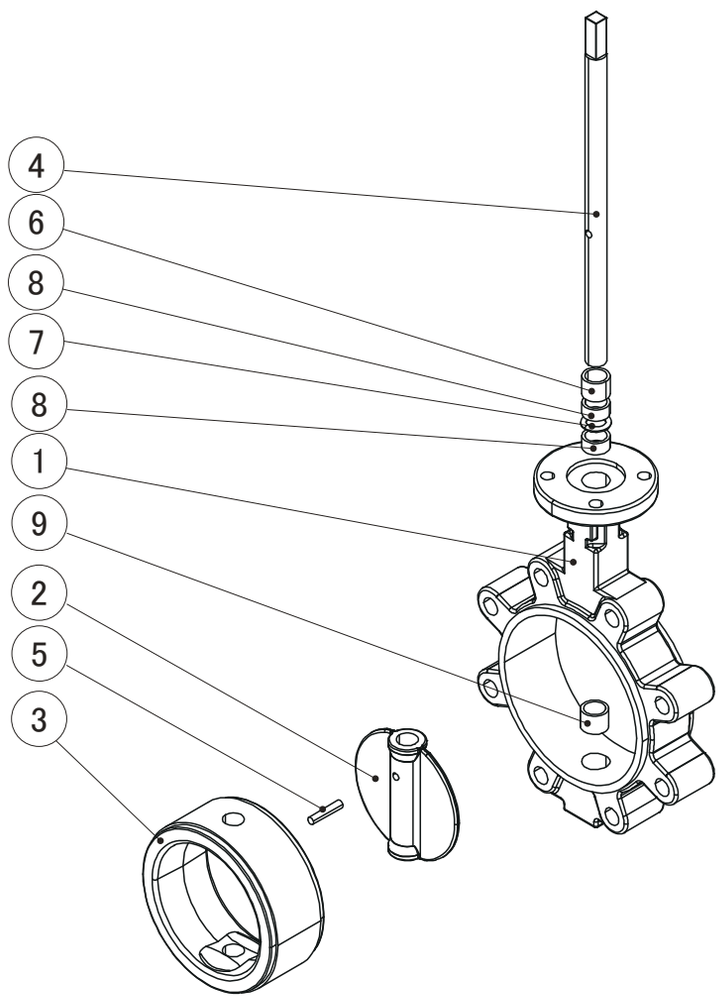
Table 4.1 Troubleshooting Table

Symptom	Possible fault	Actions
Leakage through a closed Valve (Internal Leakage)	Disc edge wear or damage	Clean and/or repair disc edge
	Seat wear or damage	Adjust or replace valve seat
Valve leaking from shaft (External Leakage)	O-ring is worn or damaged	Clean stem bore and replace O-Ring
	Pin off	Knock the pin into place
Valve too hard to operate	Foreign material in valve	Remove obstructions
Operator fails	Adaptor is sheared	Replace the adaptor and check the torque of operator
	Taper pin is sheared	Replace the pin and check the torque of operator
	Gear Operator fails	See the munual of gear operator

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4.6 Technical Data and Product Information

Series 81(E)



NO	PART NAME	MATERIAL
1	Body	
2	Disc	
3	Seat	
4	Stem	
5	Taper Pin	
6	Upper Bushing	
7	O-Ring	
8	O-Ring Bushing	
9	Lower Bushing	

NO	PART NAME	MATERIAL

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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.

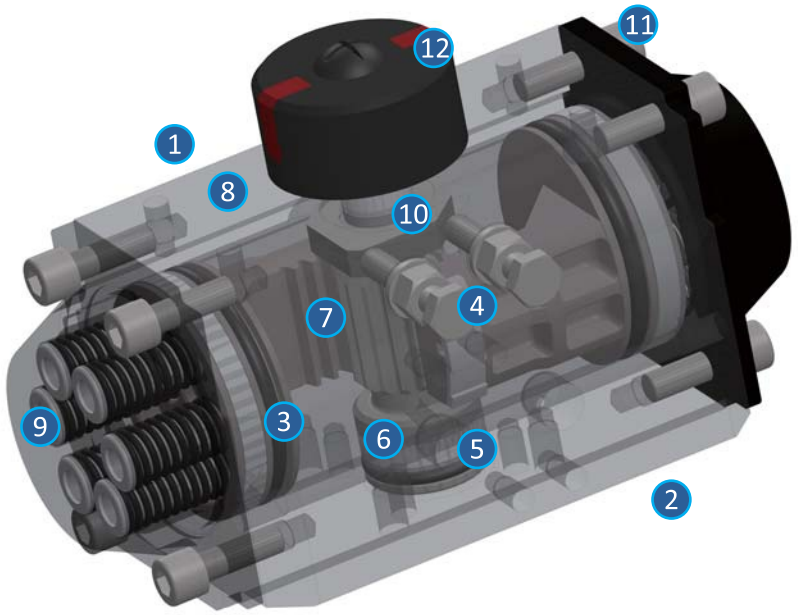
4. Two independent external travel stop adjustments permit easy and precise adjustment of +/- 5° in both directions. This adjustment may be made in either the open or closed position and provides for accurate valve alignment.

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.

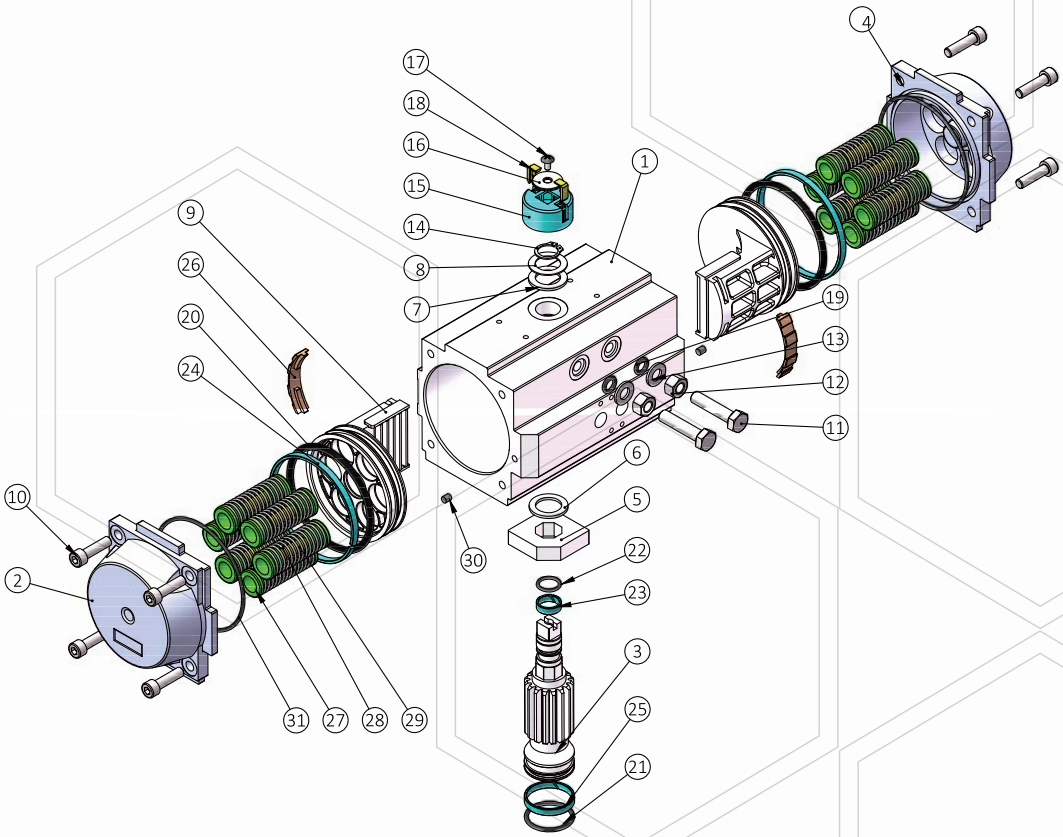
QUALITY MANAGEMENT

- 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

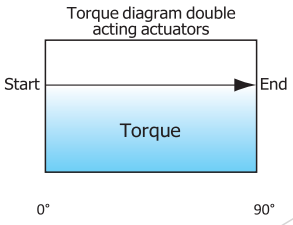
(6) Air supply pressure 5.5 bar (7)Actuator without external resistance load

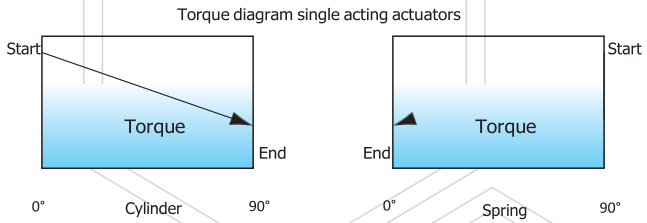
Cautions: obviously on the field applications when one or more of the above parameter are different, the moving time will be di fferent

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

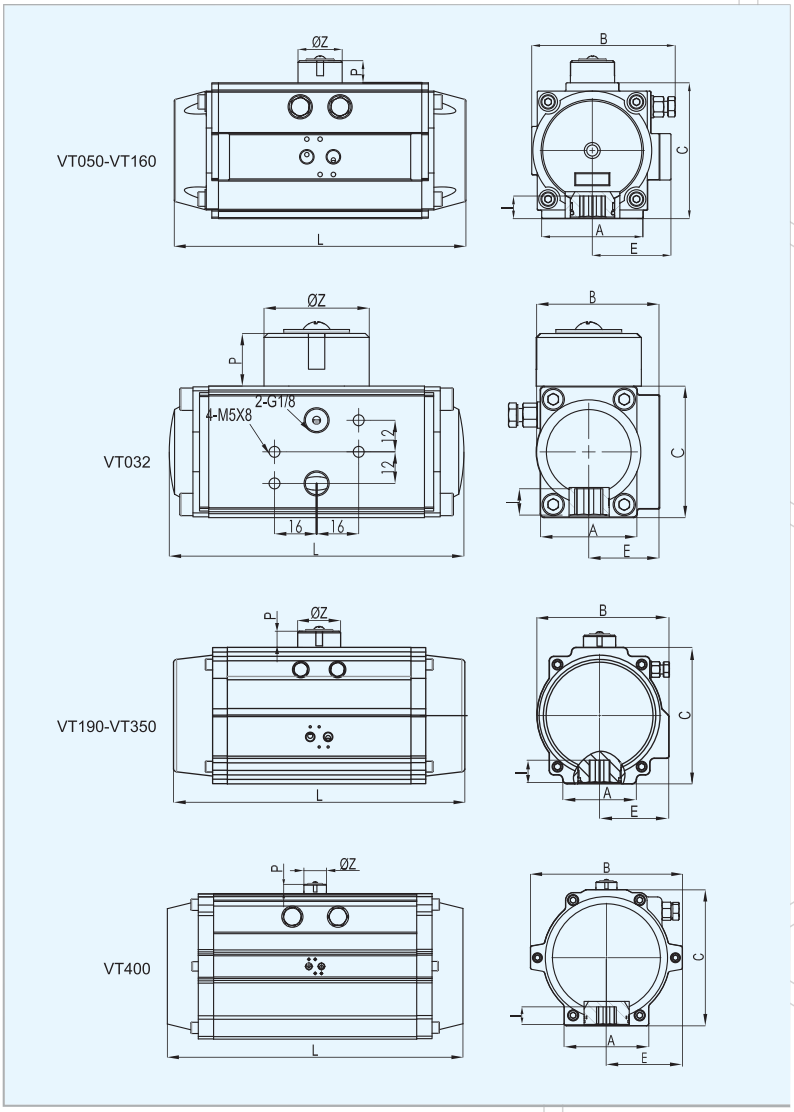
JYL®

SINGLE ACTING TORQUE RATINGS IN Nm

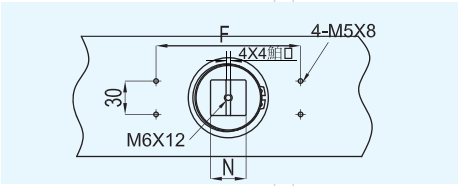
Model	Supply Pressure (Unit: bar)																				Spring stroke	
	2.5		3		3.5		4		4.5		5		5.5		6		7		8			
	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	90°	0°
AP125 S05	**77.7**	**48.2**	108.5	78.9	136.5	106.9	164.4	134.9	192.4	162.9	220.4	190.9	248.4	218.4	276.4	246.8	332.3	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

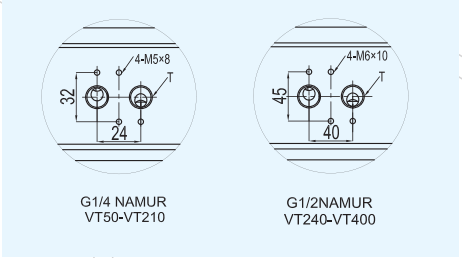
FRONT VIEW SIDE VIEW



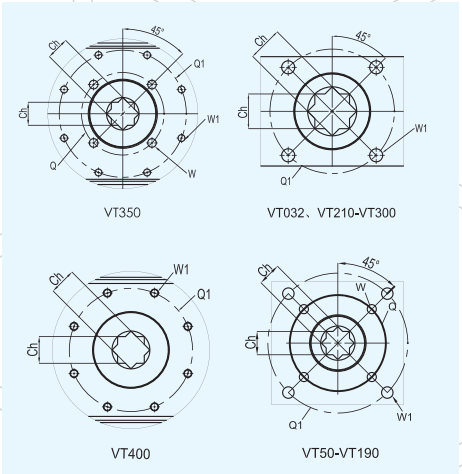
TOP



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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