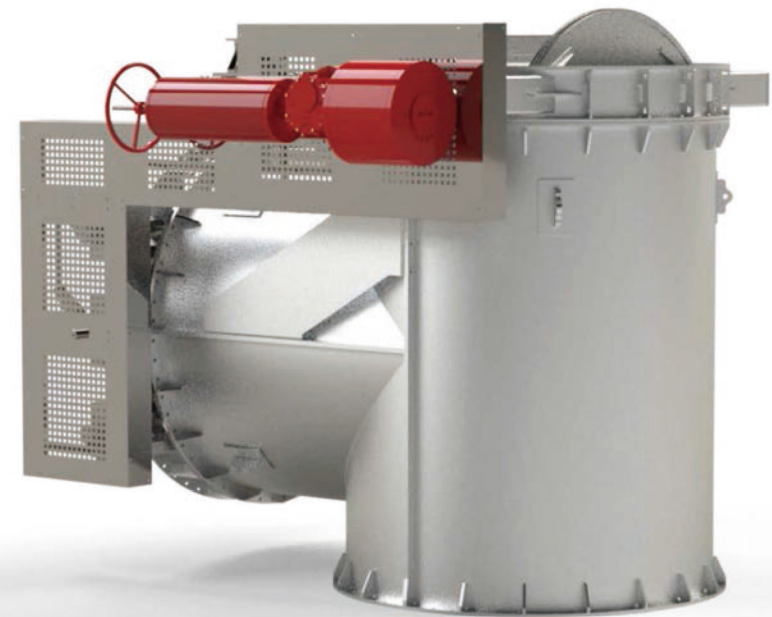


# FLUE GAS DAMPERS

**COST-EFFECTIVE  
FOR ALL WORKING CONDITIONS**



**FORENSERVTEK**

# FORENSERVTEK

## INTRODUCTION

Forenservtek (Shandong) Industrial Equipment Co., Ltd. was established in 2010, focusing on the research, produce and sales of two-way and three-way dampers for high-temperature flue gas systems and matching gear box electric and pneumatic valve driving mechanisms.

Our company has profound experience in research and development and on-site service of valves and actuators, and has developed a number of technologies to improve the sealing performance of dampers, such as sealing disc structure, metal ring elastic sealing structure, three-way mechanical chain bypass valve, etc. It greatly improves the applicability of traditional shock absorber valve to increasingly stringent environmental emission requirements, while also bringing cost savings to customers.

At present, these innovative technologies have been well applied in EGCS, EGR, FGD, SCR, HRSG, CCS, and RTO systems in Marine, petrochemical, metallurgy, power generation, cement, and VOCs treatment and other industries.

We will continue to be committed to using new materials, new technologies, and new service concepts to improve customer experience, and committed to being a full-process solution provider for flue gas system dampers!





# FLUE GAS DAMPERS

## APPLICATIONS



**MEDIUM:** Flue gas, Exhaust gas, Stack gas, Hot air, etc

**INDUSTRY:** Ship, petrochemical, steel, metallurgy, power generation, cement, VOCs treatment, etc

**SYSTEM:** EGCS, EGR, FGD, SCR, HRSG, CCS, RTO, etc

**PARTNERS:** Scrubber tower, Boilers, heating furnaces, kilns, waste incinerators boiler, drying oven, Regenerative Thermal Oxidizer, gas turbines, steam turbine, etc

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# FLUE GAS DAMPERS

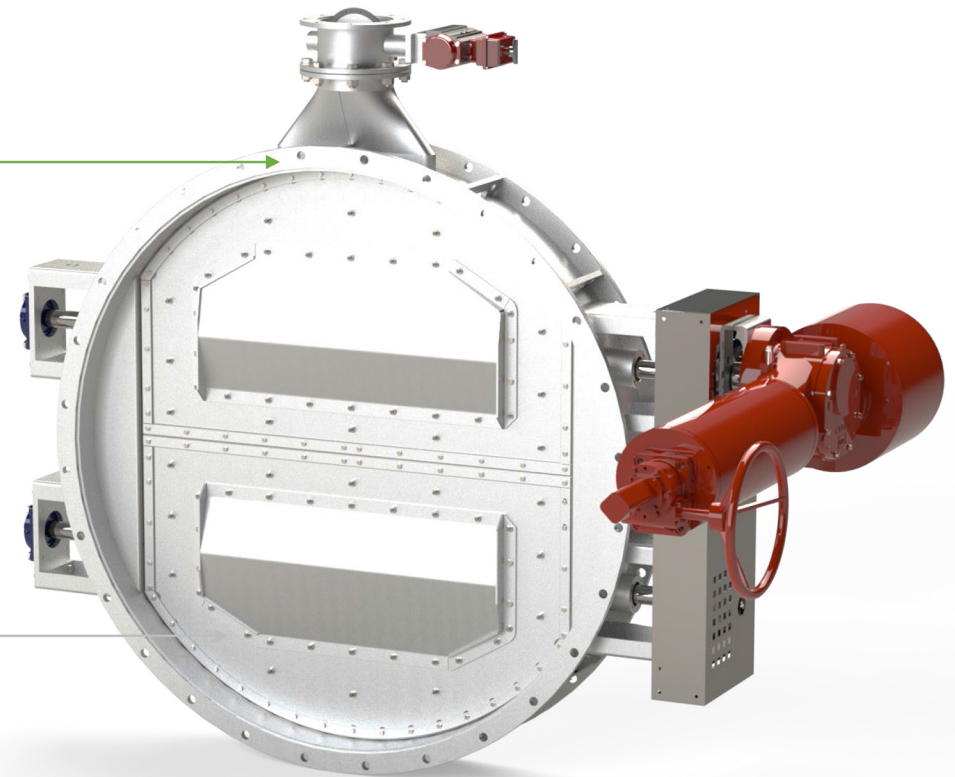
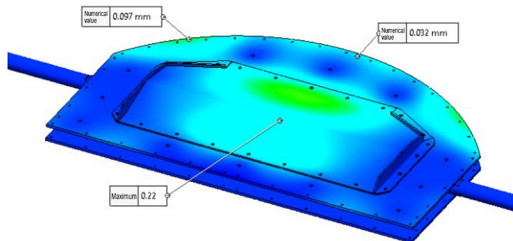
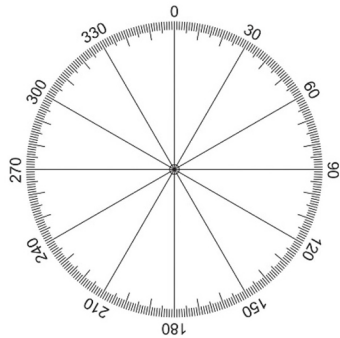
## Features

### Roundness of the valve body is precise

The valve body is made of steel plate. The roundness is strictly controlled to ensure the sealing effect, reduce the possibility of the baffle interfering with it, and reduces the stress after installation with the pipe flange. Stress relief treatment after welding, so that the effect of roundness control can be maintained for a long time

### Baffle is highly rigid and resistant to deformation

The assembled baffle is used instead of the welded baffle, which eliminates the welding stress. The reinforcement member not only improves the streamline shape of the valve plate, but also effectively increases the overall rigidity. The high rigidity of the baffle itself can effectively resist the deformation force brought by its own weight and medium pressure difference, and ensure the smooth operation of opening and closing during long-term use.



**Dampers are manufactured to butterfly valve standards**

**FORENSERVTEK**



# FLUE GAS DAMPERS

## Features



### The bearing positioning is accurate and the concentricity is high

Two groups of tapered spherical roller bearings are installed concentrically to ensure the concentricity of the valve stem and eliminate the bending moment during the rotation process, so that the output torque of the actuator can be effectively used and the switching action is stable. The support frame adopts a bending structure, and the same thickness of material increases the torsion resistance by 2 times, ensuring the reliable positioning of the bearing.



### Reliable position limit of the valve stem

Anti-movement valve stem uses a locking sleeve to cooperate with the bearing to realize the external limit, prevents position movement caused by factors such as inclined installation, thermal expansion, reduces the possibility of interference between the baffle plate and the valve body, and operates stably for a long time

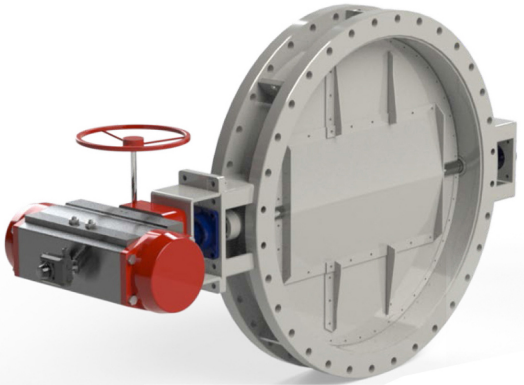


**Integrating beauty,  
lightness and reliability**

**FORENSERVTEK**

# FLUE GAS DAMPERS

MANUFACTURING SCOPE  
TWO-WAY



**Complete series,  
matching process requirements**

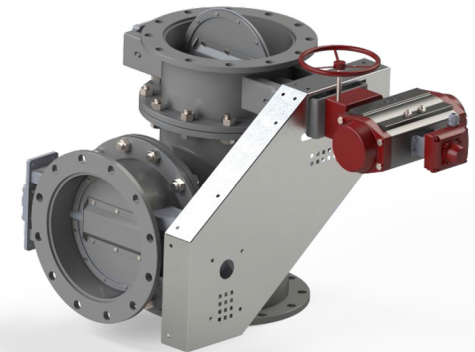
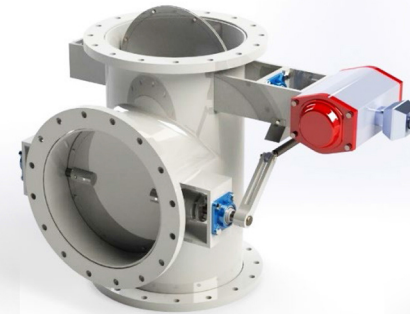
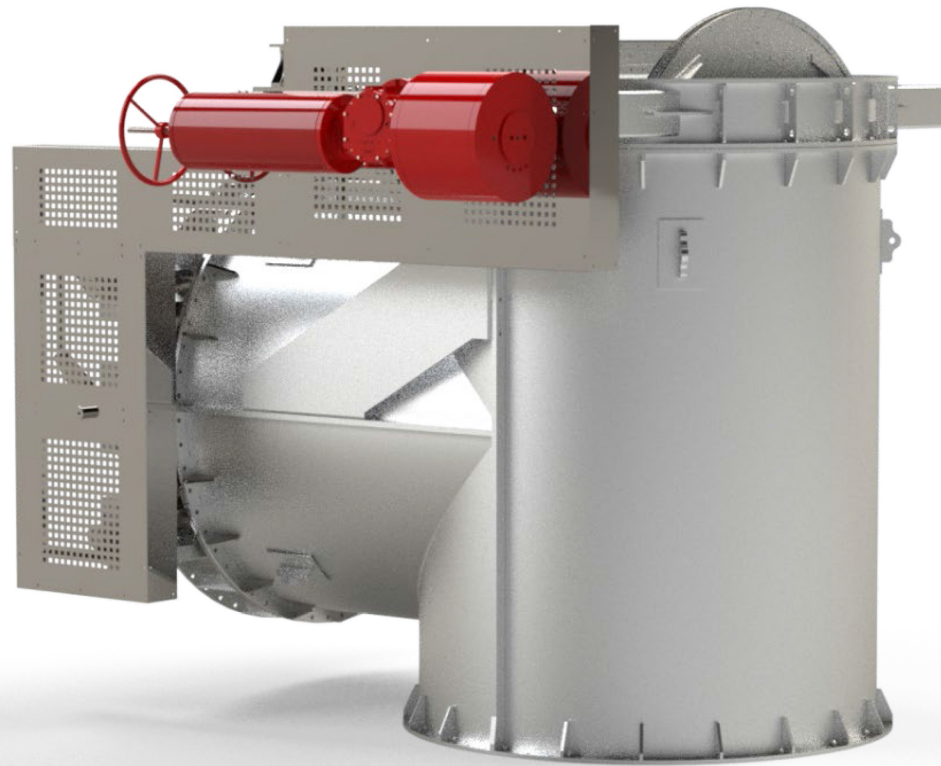
- Pressure level: PN0.5~PN6
- Valve body material: carbon steel, alloy steel, stainless steel
- Size range: DN80~DN4000
- Connection form: flange, butt welding, butt clamp

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# FLUE GAS DAMPERS

MANUFACTURING SCOPE  
THREE-WAY



**Modular complete set, easy  
installation and commissioning**

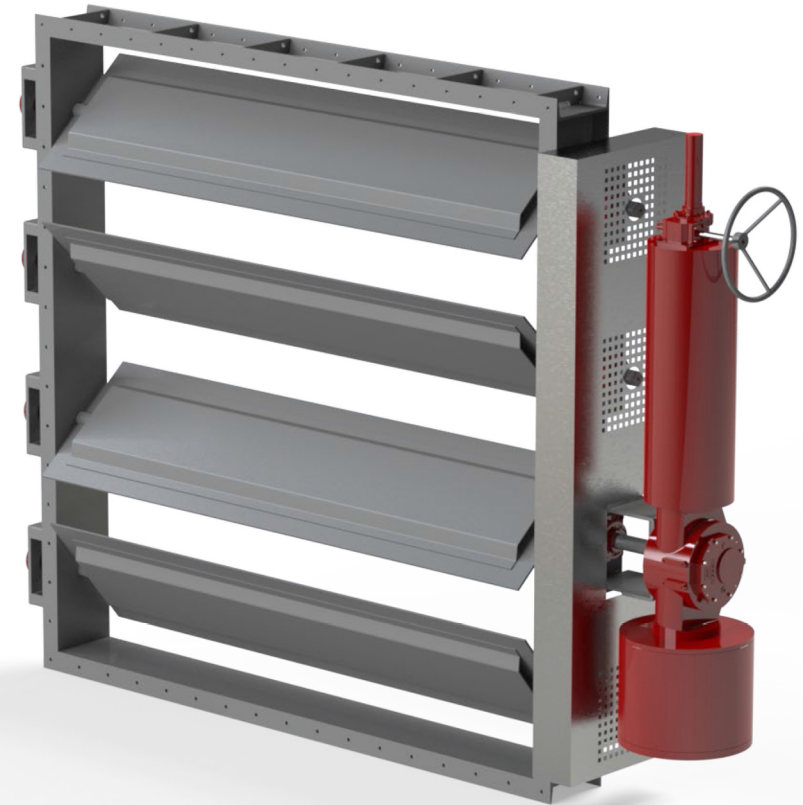
- Pressure level: PN0.5~PN6
- Size range: DN200~DN2500

- Body material: carbon steel, stainless steel
- Connection form: flange

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# FLUE GAS DAMPERS

MANUFACTURING SCOPE  
LOUVER



**Rectangular multi-blade  
good control performance**

- Pressure level: PN0.5~PN6
- Valve body material: carbon steel, alloy steel, stainless steel
- Size range: DN80~DN4000 · D
- Connection form: flange, butt welding, butt clamp

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# FLUE GAS DAMPERS

MANUFACTURING SCOPE  
GUILLOTINE



**Simple structure and  
low resistance loss**

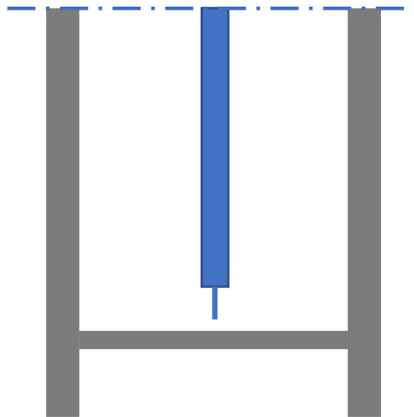
Pressure rating: PN0.5~PN6  
Size range: DN80~DN4000

- Valve body material: carbon steel, alloy steel, stainless steel
- Connection type: flange

**FORENSERVTEK**

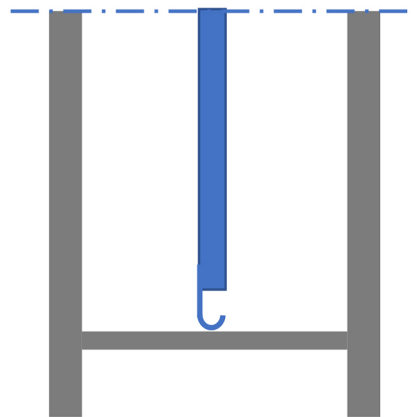
# FLUE GAS DAMPERS

## Centerline sealing structure



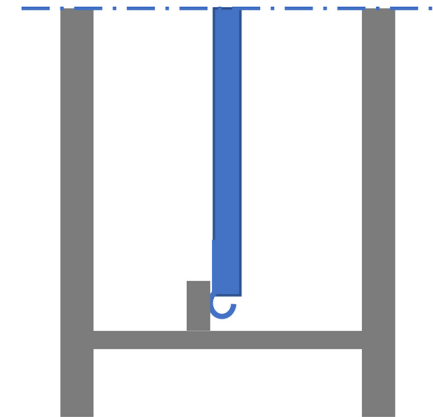
### Type F (sealing sheet open type)

Leakage rate:  $\leq 0.5\%$  when the valve is closed, the metal sealing sheet on the valve plate cooperates with the valve body to prevent sticking. It is suitable for working conditions where the content of flue gas impurities is high (particulate matter concentration  $\geq 1000\text{mg}/\text{Nm}^3$ ), and it is easy to coke and stick.



### Type C (elastic ring open type)

Leakage rate:  $\leq 0.3\%$  when the valve is closed, the elastic metal ring on the valve plate is in interference fit with the valve body to form a seal. It is suitable for working conditions below  $350^\circ\text{C}$ , with low impurity content and no coking and bonding.



### Type S (elastic ring back seat type)

Leakage rate:  $\leq 0.1\%$  When the valve is closed, the valve plate and the elastic metal ring are pressed into contact with the valve seat to form a double seal. The upgraded structure of the traditional backseat type is suitable for various working conditions where coking and bonding are not serious.



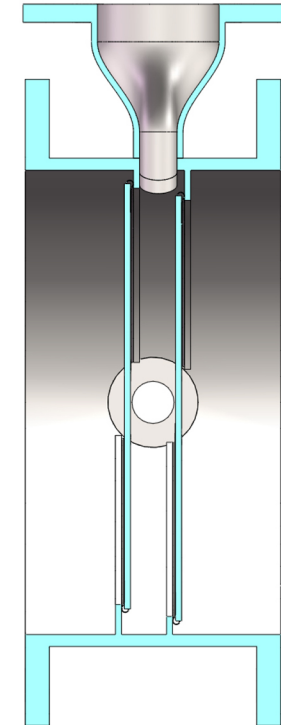
# FLUE GAS DAMPERS

**GAS-SEALED  
100% SEAL STRUCTURE**



**Type A (seal sheet air-seal type)**

when valve is closed, the sealing air enters the inner chamber of the double valve plate to form an air-sealed chamber with a pressure higher than that of the flue gas to achieve zero leakage of the flue gas. Seat free design, additional purging effect of sealing air flow. It is suitable for working conditions where the content of flue gas impurities is high (particulate matter concentration  $\geq 1000\text{mg/Nm}^3$ ), and it is easy to coke and stick.



**The elastic ring backseat**

air seal type has low air consumption and is suitable for various working conditions where coking and bonding are not serious.

**FORENSERVTEK**

# FLUE GAS DAMPERS

## INSPECTION AND TESTING

**FORENSERVTEK has a well-equipped testing and inspection laboratory. We can perform material chemical composition testing, mechanical property testing, hardness testing, sealing testing, air volume testing, torque testing, vibration testing, etc. on various valves and actuators, and use penetration, ultrasonic, ray, magnetic particle and other flaw detection methods ensure the quality of damper welding.**

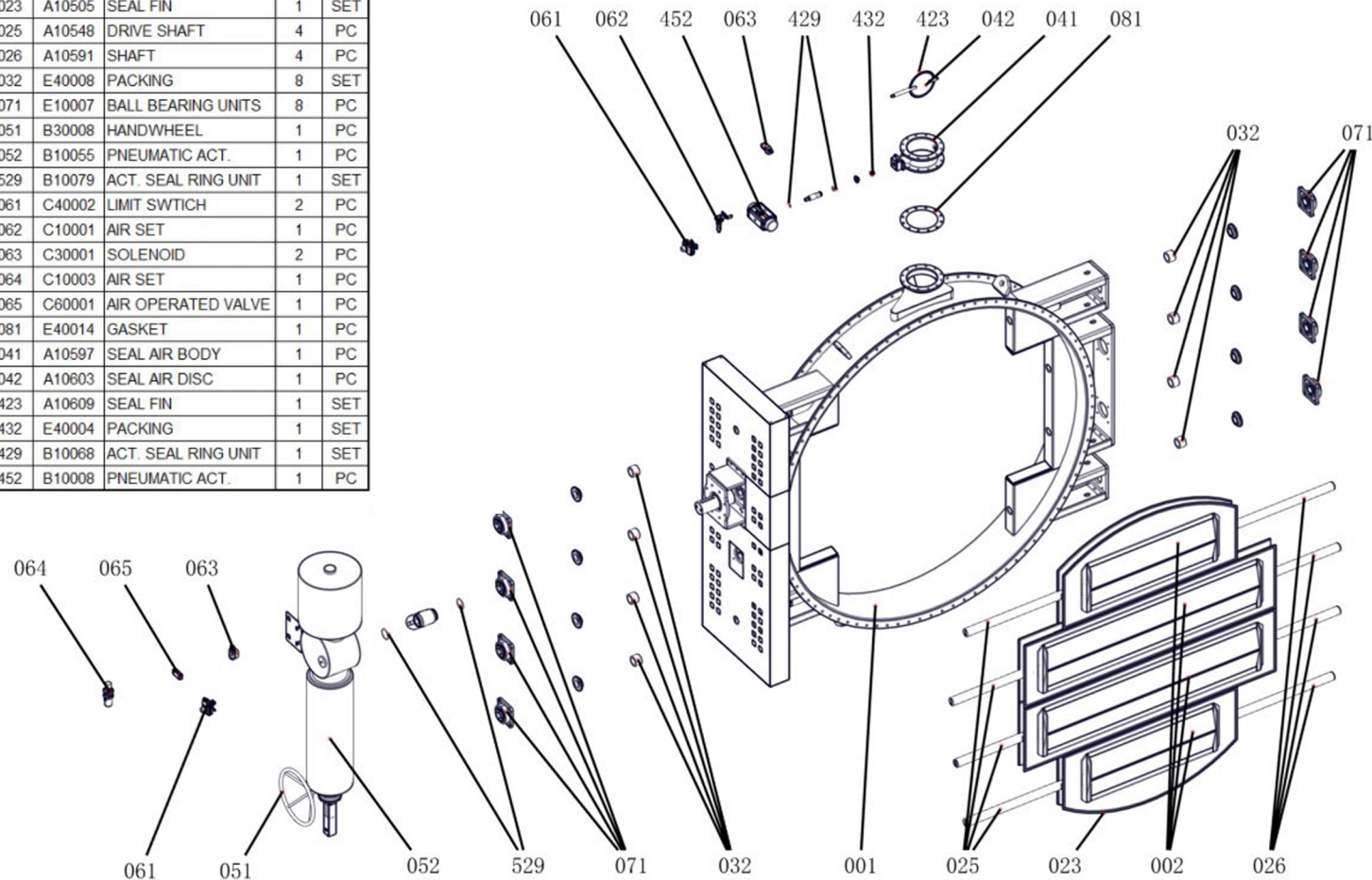




# FLUE GAS DAMPERS

## DIAGRAM OF THE PART

Smoke valve DN3000 D1-3000-0.5-Q355GNH-FAP				
001	A10419	BODY	1	PC
002	A10462	DISC	4	PC
023	A10505	SEAL FIN	1	SET
025	A10548	DRIVE SHAFT	4	PC
026	A10591	SHAFT	4	PC
032	E40008	PACKING	8	SET
071	E10007	BALL BEARING UNITS	8	PC
051	B30008	HANDWHEEL	1	PC
052	B10055	PNEUMATIC ACT.	1	PC
529	B10079	ACT. SEAL RING UNIT	1	SET
061	C40002	LIMIT SWITCH	2	PC
062	C10001	AIR SET	1	PC
063	C30001	SOLENOID	2	PC
064	C10003	AIR SET	1	PC
065	C60001	AIR OPERATED VALVE	1	PC
081	E40014	GASKET	1	PC
041	A10597	SEAL AIR BODY	1	PC
042	A10603	SEAL AIR DISC	1	PC
423	A10609	SEAL FIN	1	SET
432	E40004	PACKING	1	SET
429	B10068	ACT. SEAL RING UNIT	1	SET
452	B10008	PNEUMATIC ACT.	1	PC



# FLUE GAS DAMPERS

**TWO-WAY SIZE**

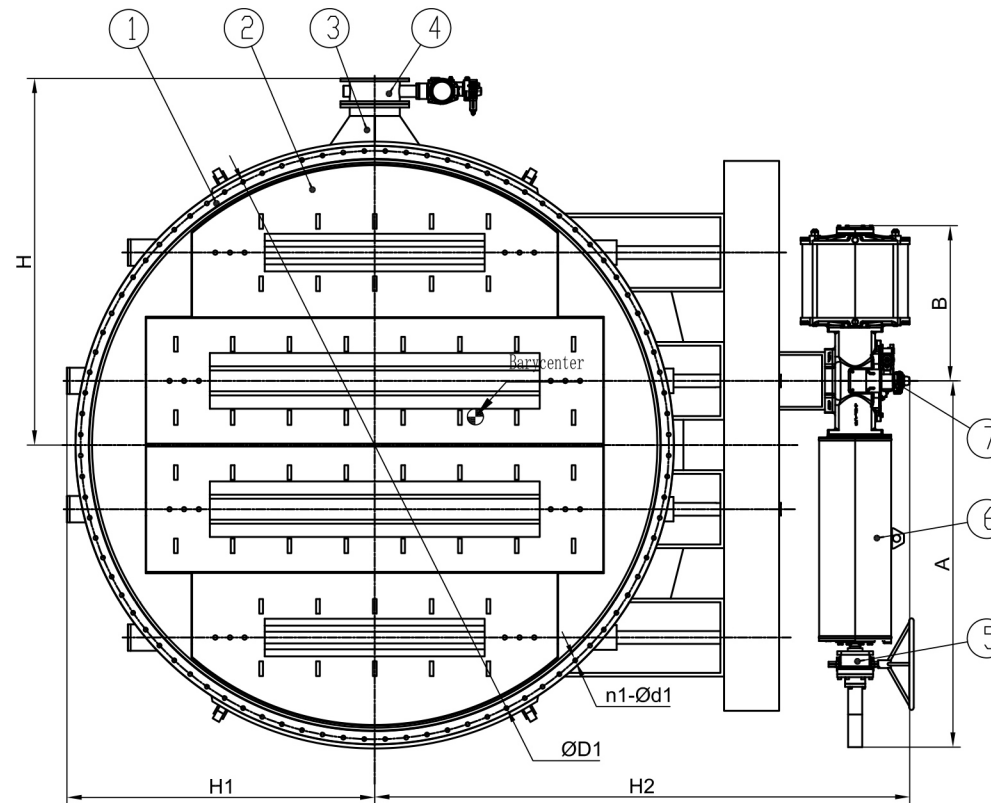
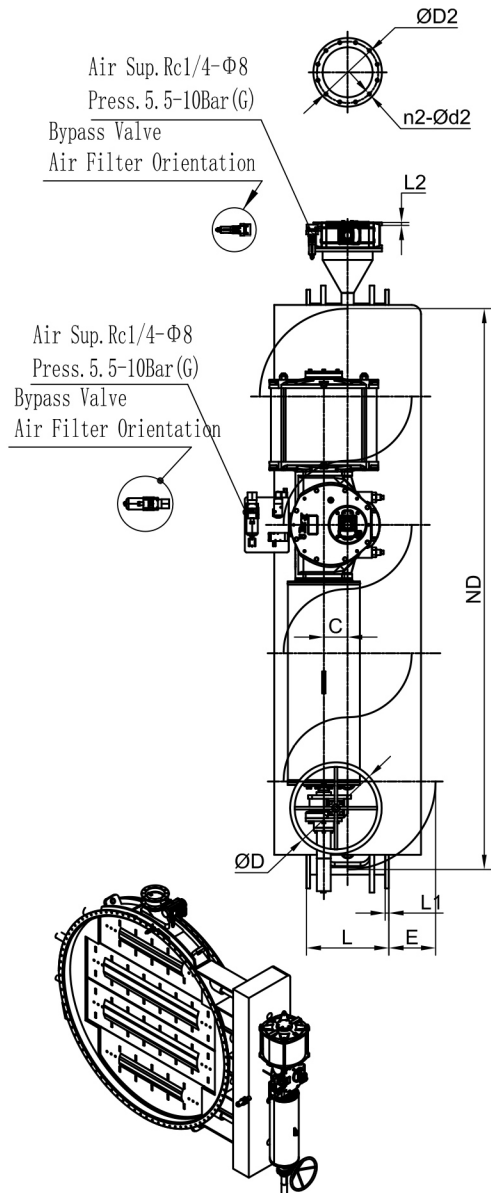
Notes:

PIPING LAYOUT AND DAMPER INSTALLATION, ENSURE DAMPER VALVES SHAFT HORIZON;

IF THERE ARE OTHER INSTALLATION REQUIREMENTS, PLEASE CONTACT OUR TECHNICAL DEPARTMENT;

DAMPER VALVE FLANGE Std. : DIN 86044-1-2017

SEALING AIR VALVE FLANGE Std. : CB/T3766-2014 AJ I.





# FLUE GAS DAMPERS

TWO-WAY SIZE

DN	DIMENSION TABLE										Damper Valve Flange				Sealing Air Valve Flange				W. t. (Kg)	
	L	H	H1	H2	A	B	C	ΦD	E	ND	L1	ΦD1	n1	Φd1	dn	L2	ΦD2	n2		Φd2
300	170	390	260	790	160	160	55	140	85	310	16	390	12	23	80	12	145	4	19	80
350	170	415	285	815	160	160	55	140	110	365	16	435	12	25	80	12	145	4	19	85
400	190	440	325	855	160	160	55	140	125	410	16	495	16	25	80	12	145	4	19	95
450	190	510	350	880	160	160	55	140	150	465	16	555	16	25	100	12	165	8	19	110
500	190	535	395	985	180	180	85	400	175	515	16	605	20	25	100	12	165	8	19	140
550	210	545	420	1010	180	180	85	400	180	545	16	620	16	23	100	12	165	8	19	150
600	210	570	445	1035	180	180	85	400	205	595	16	670	16	23	100	12	165	8	19	160
650	210	595	470	1060	180	180	85	400	230	640	16	720	16	23	100	12	165	8	19	170
700	210	620	500	1170	200	200	85	400	255	695	16	775	16	23	100	12	165	8	19	230
750	210	680	525	1195	200	200	85	400	280	745	16	825	20	23	150	14	230	8	19	250
800	210	705	555	1225	200	200	85	400	305	795	16	875	20	23	150	14	230	8	19	260
850	250	730	590	1260	200	200	85	400	310	845	16	925	20	23	150	14	230	8	19	300
900	250	755	615	1285	200	200	85	400	335	895	18	980	20	25	150	14	230	8	19	310
950	250	780	640	1400	250	250	120	500	360	945	18	1030	20	25	150	14	230	8	19	360
1000	250	840	680	1470	250	250	120	500	385	1000	18	1080	20	25	150	14	230	8	19	420
1100	250	890	735	1525	250	250	120	500	440	1100	18	1180	24	25	150	14	230	8	19	450
1200	250	940	785	1575	250	250	120	500	490	1200	18	1280	24	25	150	14	230	8	19	500
1300	300	990	850	1670	250	250	120	500	515	1300	18	1380	28	25	150	14	230	8	19	640
1400	300	1040	900	1755	250	250	120	500	565	1400	20	1480	28	25	150	14	230	8	19	760
1500	300	1100	950	1835	370	370	120	500	615	1500	20	1590	28	27	150	14	230	8	19	860
1600	300	1220	975	1880	370	370	120	500	365	1600	20	1690	28	27	200	14	280	8	23	1020
1700	300	1270	1025	1965	370	370	150	600	390	1700	20	1790	28	27	200	14	280	8	23	1150
1800	300	1320	1070	2015	370	370	150	600	415	1800	20	1895	32	27	200	14	280	8	23	1200
1900	300	1375	1120	2065	370	370	150	600	440	1900	20	1995	32	27	200	14	280	8	23	1370
2000	300	1425	1170	2135	370	370	150	600	460	2000	20	2095	36	27	200	14	280	8	23	1410
2100	300	1500	1340	2020	1240	525	65	400	350	2100	20	2210	60	22	200	14	280	8	23	1905
2200	350	1550	1390	2070	1240	525	65	400	350	2200	20	2310	64	22	200	14	280	8	23	2050
2300	350	1600	1440	2130	1240	525	65	400	375	2300	20	2410	64	22	200	14	280	8	23	2270
2400	350	1650	1490	2200	1370	600	80	400	400	2400	20	2510	68	22	200	14	280	8	23	2450
2500	350	1700	1540	2250	1370	600	80	400	425	2495	20	2610	72	22	200	14	280	8	23	2665
2600	350	1750	1675	2390	1370	600	80	400	450	2595	20	2710	72	22	250	16	345	12	23	3460
2700	400	1800	1725	2440	1370	600	80	400	450	2695	20	2810	76	22	250	16	345	12	23	3635
2800	400	1850	1775	2490	1370	600	80	400	500	2795	20	2910	80	22	250	16	345	12	23	3810
2900	400	1900	1785	2510	1370	600	80	400	350	2895	20	3010	80	22	250	16	345	12	23	4410
3000	400	1950	1835	2560	1370	600	80	400	350	2995	20	3110	84	22	250	16	345	12	23	4640

# FLUE GAS DAMPERS

## HOW TO ORDER

1		2		3		4		5	5	7
D1	-	500	-	25	-	Q345B	-	F	F	P

Model examples: D1-500-2.5-0345R-FFP, Dampers, Size DN500, Pressure registration V PN2.5, Body material 0345B, Flanged FF connection, Seal type Equipped with pneumatic actuator.

1	Model
D1	Two-way dampers
D5	Three-way dampers

2	
100-4000	Size DN100-DN4000

3	Pressure registration
2.5	PN2.5
6	PN6
10	Pn10
20	Class150 (PN20)
1K	JIS 1K
5K	JIS 5K

4	Body material
WCB	GB/T 12229 WCB
WC6	JB/T 5263 WC6
Q235B	GB/T 700 Q235B
Q345B	GB 713 Q345B
304	ASTM A240 304

316	ASTM A240 316
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5	Form of connection
W	Wafer
L	Luggcd
F	FF
R	RF
W	BW

6	Sealed form
S	Swing through
L	Back seat
F	Sealing fir

\*Please contact our company for special sealing requirements.

7	Type of Actuator
M	Manual actuator
P	Pneumatic actuator
E	Electric actuator

\*Please contact our company for special sealing requirements.



# FORENSERVTEK



## **FOSTER(SHANDONG)INDUSTRIAL EQUIPMENT CO.LTD**

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Fax: 0535-6200579

Zip code: 264003

Email: [sales@forenservtek.com](mailto:sales@forenservtek.com)

Web: [www.forenservtek.com](http://www.forenservtek.com)

Address: Address: Room 503,Block C, Laishan E-commerce Industria Park,  
102 Aucma Street.Laishan District,Yantai City,Shandong Province

All instructions, technical data and recommendations in this document are for general application only.Please consult the sales representative or manufacturer of Forenservtek about the special requirements of customers and the selection of materials.We reserve the right to change or change the product design without notice.