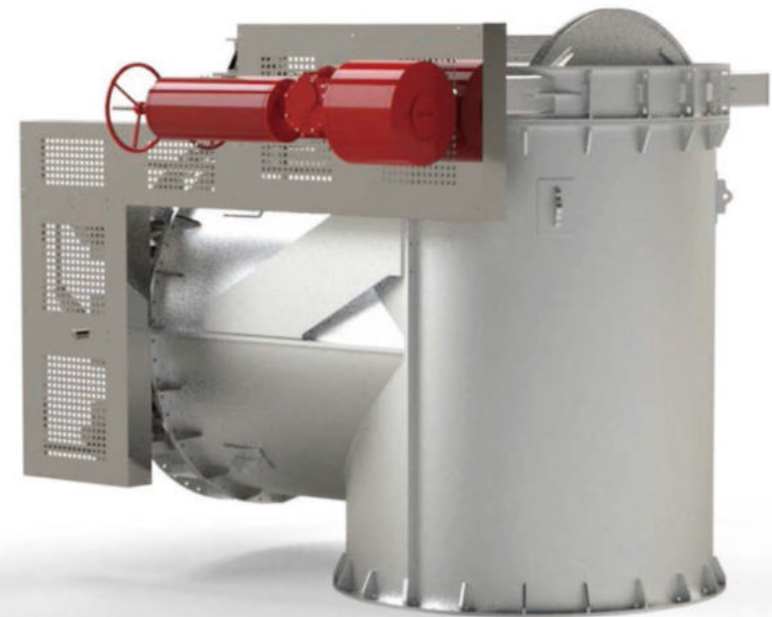


FLUE GAS DAMPERS

**COST-EFFECTIVE
FOR ALL WORKING CONDITIONS**



FORENSERVTEK

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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 electric actuator.

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

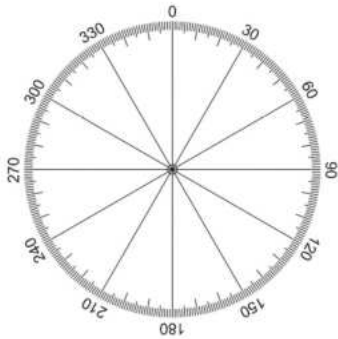
SYSTEM: EGCS, EGR, FGD, SCR, HRSG, CCS, RTO, etc

PARTNERS: Scrubber towers, Boilers, heating furnaces, kilns, waste incinerators, drying ovens, gas turbines, steam turbines, etc

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FLUE GAS DAMPERS

FEATURES

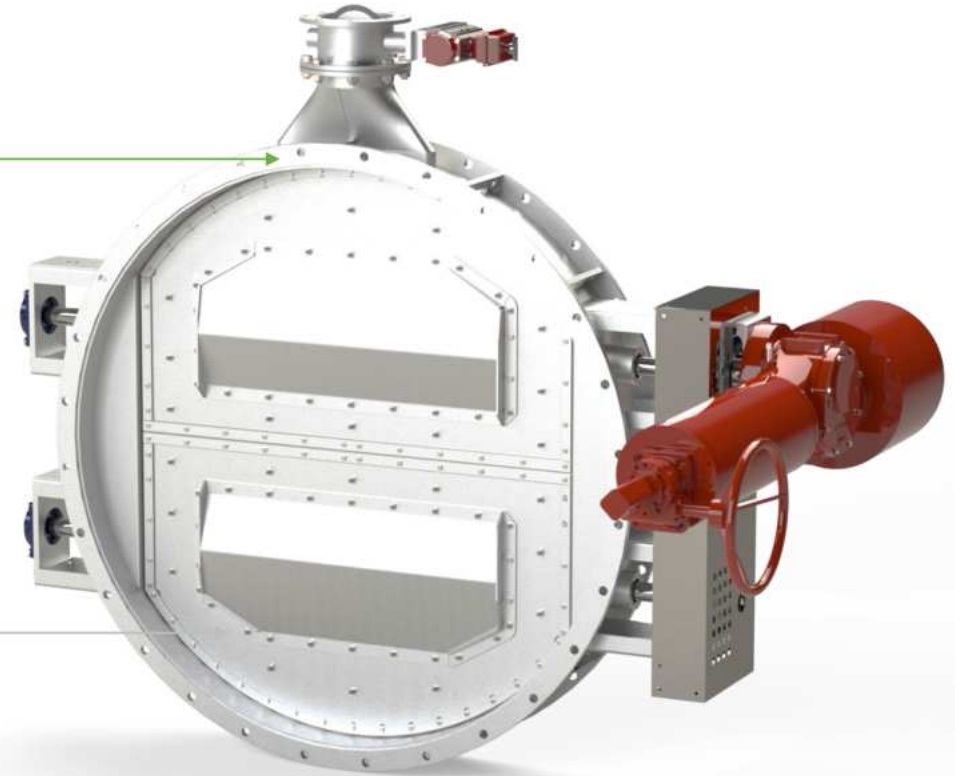
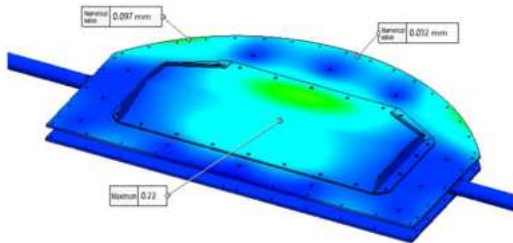


Roundness of the valve body is precise

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

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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

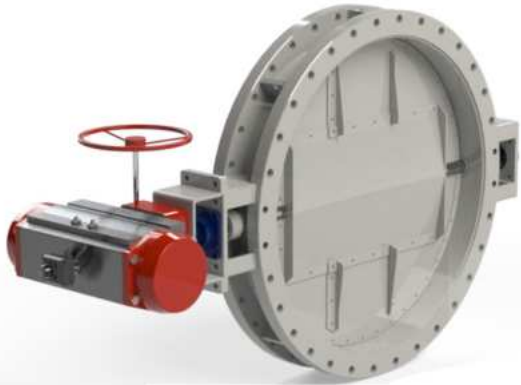


**Integrating beauty,
lightness and reliability**

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FLUE GAS DAMPERS

MANUFACTURING SCOPE
TWO-WAY



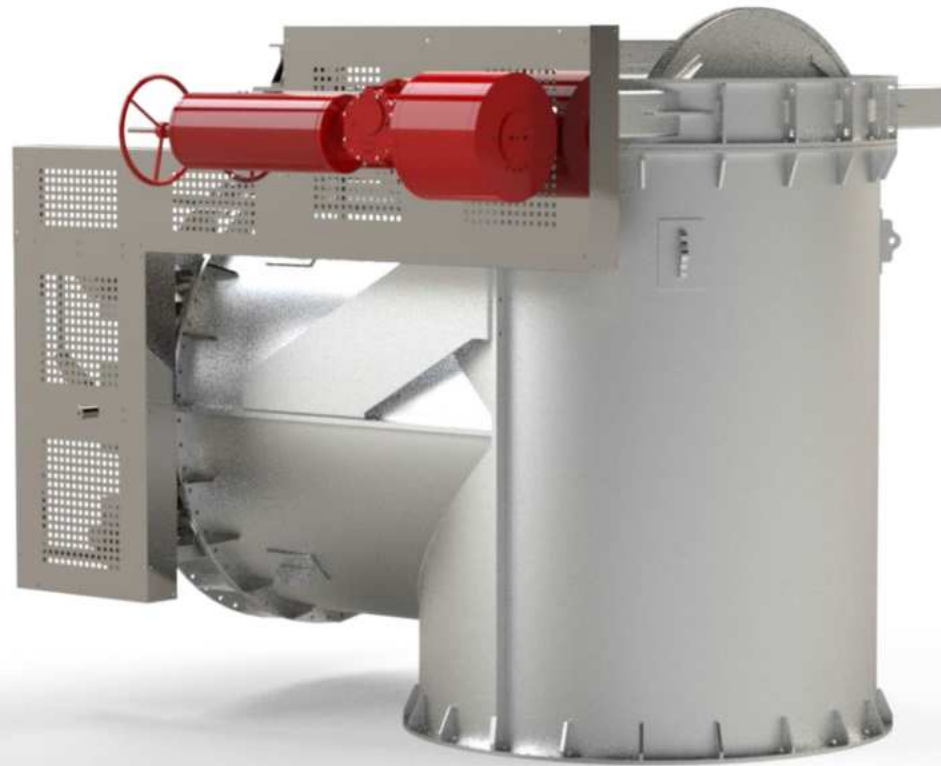
**Complete series,
matching process requirements**

- 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
- Size range: DN80~DN4000 · D

- Valve body material: carbon steel, alloy steel, stainless steel
- Connection form: flange, butt welding, butt clamp

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FLUE GAS DAMPERS

MANUFACTURING SCOPE SWING-OPEN QUICK-OPENING DAMPER



**Maintenance-free and
zero leakage**

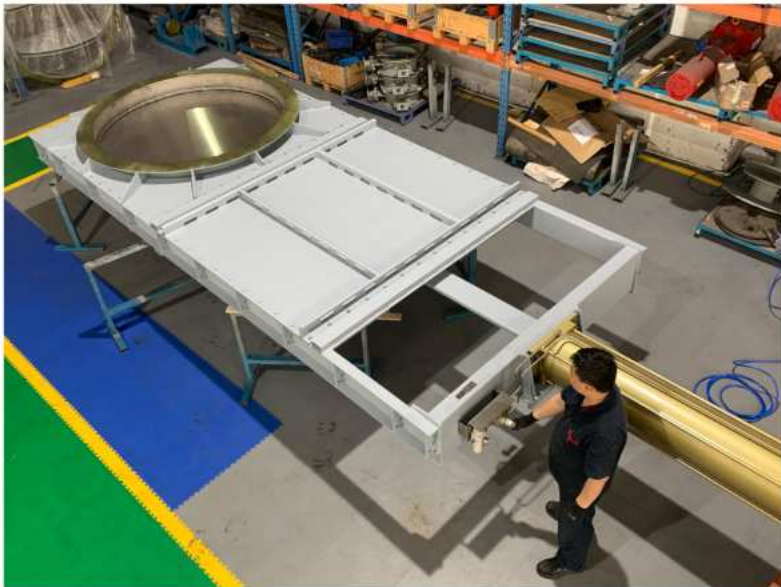
- Pressure level: 3~4 KPa
- Size range: DN50 ~ DN1000

- Body material: carbon steel, stainless steel
- Operating temperature: 200°C ~ 250°C

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FLUE GAS DAMPERS

MANUFACTURING SCOPE
GUILLOTINE



**Simple structure and
low resistance loss**


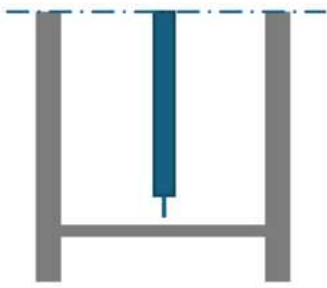
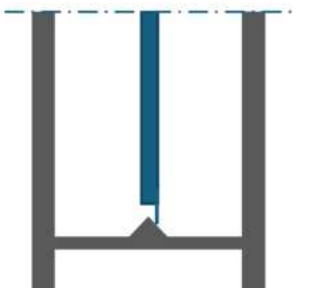
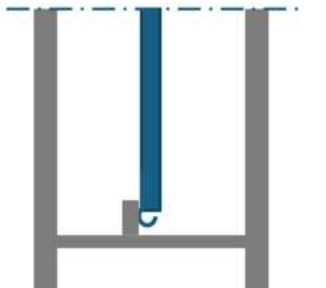
Pressure rating: PN0.5~PN6
Size range: DN80~DN4000

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

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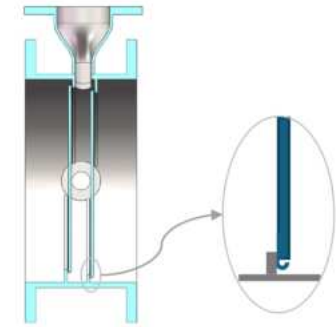
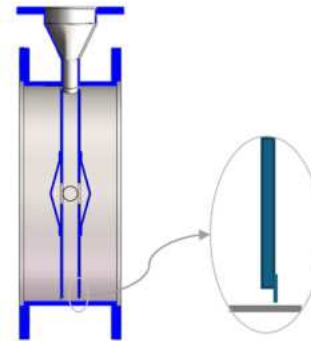
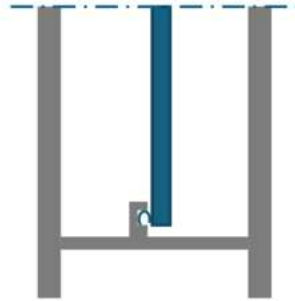
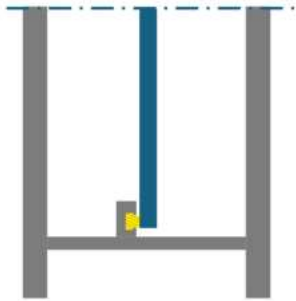
FLUE GAS DAMPERS

CENTERLINE SEALING STRUCTURE

Type T Swing Through	Type F Fin Swing Through	Type V Fin-Back Seat	Type R Ring-Back Seat
			
Leakage 2 ~ 3 %	Leakage 1 ~ 2 %	Leakage 0.3 ~ 0.5 %	Leakage 0.1 ~ 0.3 %
When valve is closed, valve disc have a clearance fit with the valve body to prevent adhesion and seizure.	When valve is closed, sealing fin have a clearance fit with the valve body to prevent adhesion and seizure.	When valve is closed, sealing fin on the valve disc comes into close contact with the inverted V-shaped valve seat, forming a seal.	When valve is closed, valve disc and the elastic metal ring are pressed tightly against the valve seat, forming a double seal.
Suitable for the working conditions with high flue gas impurity and easy coking and bonding.	Suitable for the working conditions with high flue gas impurity content and easy coking and bonding.	Suitable for conditions with medium flue gas impurity content and coking adhesion.	An upgraded structure of the traditional back seat type, suitable for various conditions where coking adhesion is not severe.

FLUE GAS DAMPERS

100% SEALING STRUCTURE



Type Z Carbon Seal

Leakage **0 %**

When valve is closed, the valve disc fits tightly against the carbon seal ring, achieving zero leakage.

Advanced sealing design, suitable for applications with strict sealing performance requirements and operating temperatures below 450° C.

Type L Metal Ring Seal

Leakage **Class V**

When valve is closed, the valve disc fits tightly against the metallic elastic sealing ring, achieving a low leakage rate.

Advanced sealing design, suitable for high-temperature applications requiring high sealing performance.

Type AF Fin-Air Sealing

Leakage **0 % / 0.3 %**
With / Without sealing air

When valve is closed, the sealing air enters the inner cavity of the double valve disc, forming a gas sealing chamber with a pressure higher than that of the flue gas.

Seatless design, suitable for working conditions with high flue gas impurity content, prone to coking and sticking.

Type AR Ring-Back Seat-Air Sealing

Leakage **0 % / 0.2 %**
With / Without sealing air

When valve is closed, the sealing air enters the inner cavity of the double valve disc, forming a gas sealing chamber with a pressure higher than that of the flue gas.

With valve seats, the seal air consumption is lower, suitable for conditions where coking and sticking are not severe..

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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.



Gas leak testing



Sealing gas usage testing



High temperature thermal expansion testing



Stress testing



Chemical composition inspection



Penetrant flaw inspection



Metallographic inspection

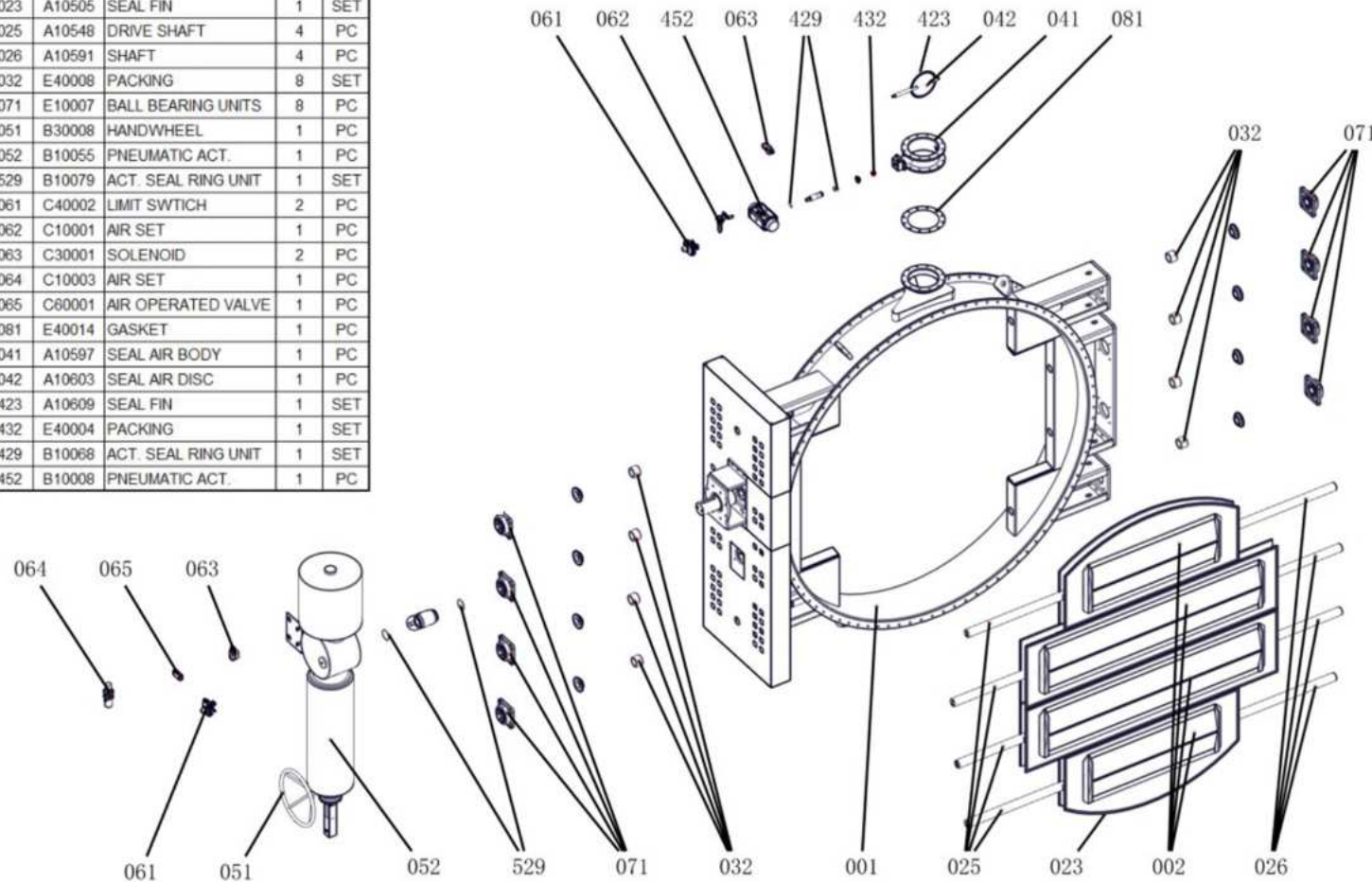


Magnetic particle inspection

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 SWTICH	2	PC
062	C10001	AIR SET	1	PC
063	C30001	SOLENOID	2	PC
064	C10003	AIR SET	1	PC
065	C80001	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

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.

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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.