

• SHUT-OFF DAMPERS

REV 0112

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**MARINE
SHUT-OFF DAMPERS**

Shut-off dampers are used to stop the air flow within ductworks or behind air intake grilles for ships and offshore installations.

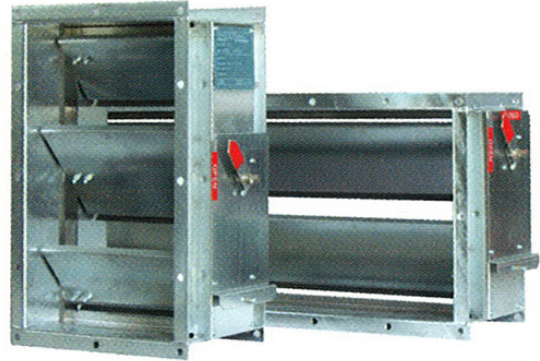
They can be required for safety reasons as a fire protection component as they isolate sections of air conditioning or ventilation systems in case of fire on board.

They are designed for open or close position, with manual or automatic operation.

Shut-off dampers are available with remote electrical (standard or ATEX), pneumatic (linear or rotating) or manual actuators.

If fitted with an automatic control device, they are operated by means of a remote electric or pneumatic signal (usually from a fire damper installed on the same duct).

With electrical or pneumatic actuated dampers, the closing/opening blades tests can be made at any moment by remote control.



CONSTRUCTION

- Damper housing is made out of strong bath-galvanized steel sheet, with thickness of 3 mm.
- Double sheet blades are made of electrolytic galvanized steel, with 1 + 1 mm thickness.
- Housing and blades are available on request in varnished steel, AISI 304 or AISI 316 stainless steel.
- Shafts, mounted into bronze self lubricating bearings, are made of AISI 316 stainless steel.
- Connections to circular ducts are available on request.

OPERATION

- Shut-off dampers are designed for open or close normal working condition.
- When they are open, the blade aerodynamic profile allows air flow into the duct without any significant noise or pressure drop. When they are closed, special gaskets guarantee a perfect seal with very low gas leakage.

INSTALLATION

- Shut-off dampers are suitable for horizontal or vertical applications, with airflow in any direction.
- The blade aerodynamic profile allows to obtain very low pressure drop and noise levels with the damper in the open position.
- Is available for high levels of sealing (gas tight) with leakage value of only 0.04 m³/s for each m² of air flow section with a negative pressure of 2000 Pa.
- Dampers are suitable both for deck and bulkhead installation.
- All models can be fitted on rectangular or circular ducts.

General Features	
Material	Galvanized steel, AISI 304, AISI 316, mixed solutions
Installation	Deck, bulkhead, connected to grilles and drops eliminator
Drive	Manual / electrical / electrical ATEX / pneumatic
Maximum air inlet dimensions in single arrangement *	2000 x 2000 mm
Gas leakage EN 1751 (Ambient temperature Pressure: 2000 Pa)	Class C Class 3
Flanges dimensions	30 mm (HVAC systems) or 50 mm (engine ventilation)
Drilling	Standard D 12 or on demand
Special versions	With net, compact assembly (damper + grille + drops eliminator)
Accessories	Circular connections, junction box, quick connections

* Dampers can be supplied on request with special dimensions by multiplewelded arrangement.

With manual control



With pneumatic control



With electrical control



Damper components materials

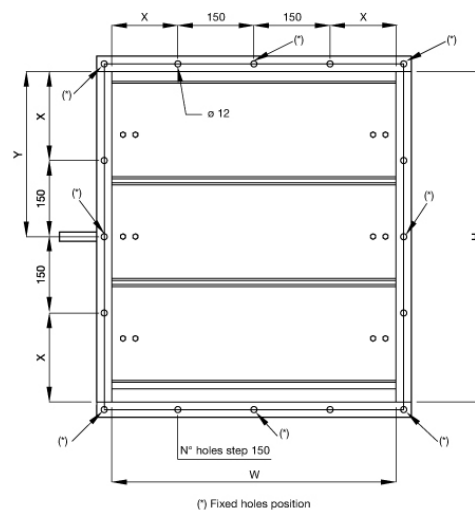
Type	0	1	2	4	6
Casing	Hot bath galvanized steel, tk. 3 mm	Hot bath galvanized steel, tk. 3 mm	Hot bath galvanized steel, tk. 3 mm	AISI 304 s.s., tk. 3 mm	AISI 316 s.s., tk. 3 mm
Blades	Galvanized steel, tk. 1.5 + 1.5 mm	AISI 304 s.s., tk. 1 + 1 mm	AISI 316 s.s., tk. 1 + 1 mm	AISI 304 s.s., tk. 1 + 1 mm	AISI 316 s.s., tk. 1 + 1 mm
Shafts	AISI 304 s.s., Ø 18.1 x 1.5 mm	AISI 304 s.s., Ø 18.1 x 1.5 mm	AISI 304 s.s., Ø 18.1 x 1.5 mm	AISI 304 s.s., Ø 18.1 x 1.5 mm	AISI 304 s.s., Ø 18.1 x 1.5 mm
Levers	Galvanized steel	Galvanized steel	Galvanized steel	AISI 304 ss	AISI 304 ss
Bearings	Self lubricating, bronze 9010	Self lubricating, bronze 9010	Self lubricating, bronze 9010	Self lubricating, bronze 9010	Self lubricating, bronze 9010
Connecting rod	Galvanized steel	Galvanized steel	Galvanized steel	AISI 304 s.s.	AISI 304 s.s.
Air seal	Galvanized steel tk. 1 mm	AISI 304 s.s., tk. 1 mm	AISI 304 s.s., tk. 1 mm	AISI 304 s.s., tk. 1 mm	AISI 304 s.s., tk. 1 mm
Side gaskets	AISI 301 s.s.	AISI 301 s.s.	AISI 301 s.s.	AISI 301 s.s.	AISI 301 s.s.
Screws and bolts	Galvanized steel M6 x 30 mm	AISI 304 s.s., M6 x 30 mm	AISI 304 s.s., M6 x 30 mm	AISI 304 s.s., M6 x 30 mm	AISI 304 s.s., M6 x 30 mm
Actuator support	Galvanized steel	Galvanized steel	Galvanized steel	AISI 304 s.s.	AISI 304 s.s.
Position indicator	Galvanized steel	Galvanized steel	Galvanized steel	AISI 304 s.s.	AISI 304 s.s.

Different materials available on request.

DIMENSIONS OF FLANGES AND DRILLING

Damper depth 215 mm

Air inlet dimensions W / H	N° holes	X	Y	N° blades
150	1	75	75	1
200	1	100	100	1
250	1	125	125	1
300	1	150	50	2
350	3	25	75	2
400	3	50	100	2
450	3	75	125	2
500	3	100	250	3
550	3	125	275	3
600	3	150	300	3
650	5	25	325	3
700	5	50	450	4
750	5	75	475	4
800	5	100	500	4
850	5	125	525	4
900	5	150	450	5
950	7	25	475	5
1000	7	50	500	5
1050	7	75	525	5
1100	7	100	450	6
1150	7	125	475	6
1200	7	150	500	6
1250	9	25	525	6
1300	9	50	650	7
1350	9	75	675	7
1400	9	100	700	7
1450	9	125	725	7
1500	9	150	650	8
1550	11	25	675	8
1600	11	50	700	8
1650	11	75	725	8
1700	11	100	850	9
1750	11	125	875	9
1800	11	150	900	9
1850	13	25	925	9
1900	13	50	850	10
1950	13	75	875	10
2000	13	100	900	10



DAMPER WEIGHTS (Kg)

DAMPER WEIGHT (KG)																						
H (height)	W (width)																					
	150	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000		
150	7	8	10	13	15	17	19	22	24	26	28	31	33	35	37	40	42	44	46	49		
200	8	10	12	15	17	20	22	25	27	30	32	35	37	40	42	45	47	50	52	55		
300	11	12	15	18	20	23	26	29	32	35	37	40	43	46	49	52	54	57	60	63		
400	13	15	18	21	24	28	32	34	37	41	44	47	50	54	57	60	63	67	70	73		
500	15	17	21	24	28	31	35	39	42	46	49	53	57	60	64	67	71	74	78	82		
600	18	20	24	27	32	37	40	44	48	51	56	60	64	68	72	76	80	84	88	92		
700	20	22	26	31	35	39	44	48	52	57	61	66	70	74	79	83	87	92	96	100		
800	22	25	29	34	39	47	48	53	58	63	68	72	77	82	87	91	96	101	106	111		
900	24	27	32	37	42	47	53	58	61	68	73	78	83	88	93	99	104	109	114	119		
1000	27	30	35	41	46	52	57	63	68	73	79	85	90	96	102	107	113	118	124	129		
1100	29	32	38	44	50	55	61	67	73	79	85	91	97	102	108	114	120	126	132	138		
1200	31	35	41	47	53	60	66	72	79	85	91	98	104	110	116	123	129	135	142	148		
1300	34	37	44	50	57	63	70	77	83	90	97	103	110	117	123	130	136	143	150	156		
1400	36	40	47	54	61	68	75	82	89	96	103	110	117	124	131	138	145	152	160	167		
1500	38	42	49	57	64	72	79	86	94	101	109	116	123	131	138	146	153	160	168	175		
1600	41	45	52	60	68	76	84	91	99	107	115	123	131	138	146	154	162	170	177	185		
1700	43	47	55	63	71	80	88	96	104	112	120	129	137	145	152	161	170	177	186	194		
1800	45	50	58	67	75	84	92	101	110	118	127	135	144	153	161	170	179	184	195	204		
1900	47	52	61	70	79	87	96	105	114	123	132	141	150	159	168	177	186	195	204	212		
2000	50	55	64	73	83	92	101	111	120	129	139	148	157	166	176	185	195	204	213	223		

Average values valid for all standard types (approx. +- 5%)

Values in the table refer to the standard material manufacturing types. Different material manufacturing does not have significant variance to the above mentioned values. Controls and actuators weights are not included.

PERFORMANCES

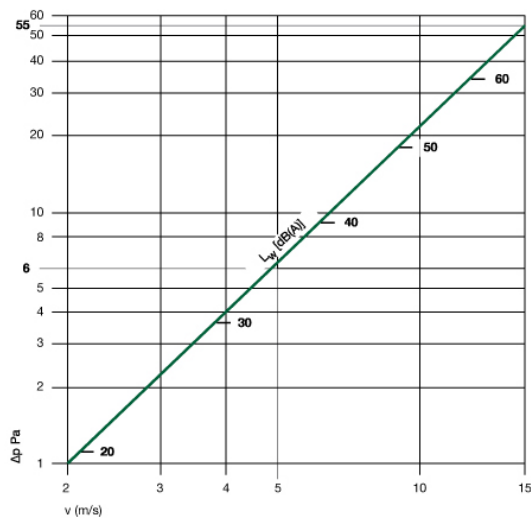
Max noise level: 60 dB(A)

Standard pressure drop: 6 Pa *

* With damper fully open and air speed of 5 m/s at maximum rate.

Max pressure drop: 55 Pa **

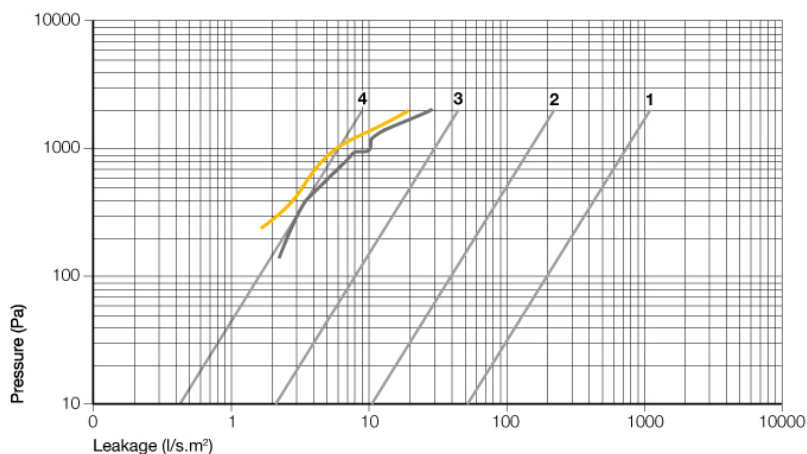
**With damper fully open and air speed of 15 m/s at maximum rate.



gas leakage according to EN1751

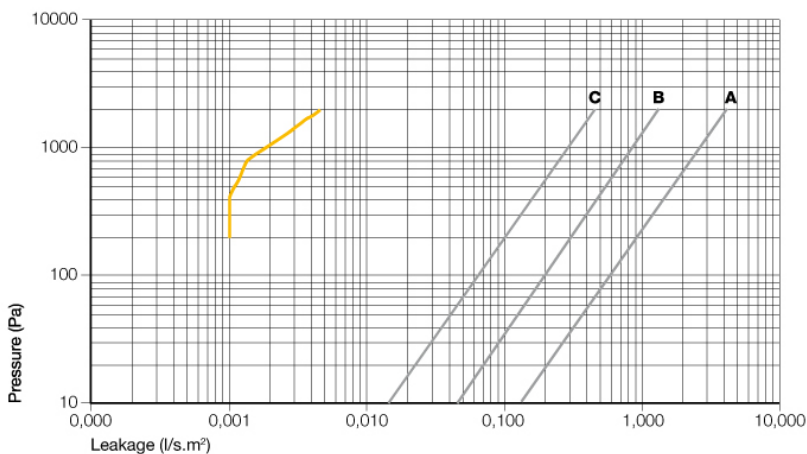
Leakage test across closed blades

— Positive pressure
— Negative pressure



Leakage test casing

— Positive pressure



DAMPER CONTROLS

Type C 22 - Manual drive

This damper version is provided with a control handle (C22).

Shut-off dampers + C22 can be used also as a balancing damper; in fact the handle can be fixed in all different positions from fully open to fully closed.

A safety clamp blocks the handle in the selected position.



Damper fully open



Damper fully closed

DAMPER CONTROLS

Type **E** - **Electrical actuator**

Type **X** - **Electrical ATEX zone approved actuator**

Marine shut-off dampers can be provided with more than 50 different electrical actuators in order to fulfill to all technical specifications or customer demands:

- deflecting torque (5,10,15,30..Nm)
- voltage input (24V...230V AC,DC)
- additional micro switches
- cable length (1, 3, 5 metres)
- spring return speed (20, 15, 10, 3 s)
- ATEX zone approved (1,2, 21, 22)
- Accessories (junction box, quick plugs connections)

While the actuator is connected to the voltage input, the damper opens and the internal spring recharges.

In case of voltage feed failure or alarm signal (from main panel) the safety internal spring return system closes blades immediately,

All actuators have two internal microswitches (signal for damper fully open or fully closed).

Additional microswitches are available.

By remote control is possible to check actuator operation and free blades movement by in/out voltage switching.

Shut-off damper + electric + circular connections



DAMPER CONTROLS

Type P - Pneumatic actuator

Shut-off dampers can be equipped with the following types of pneumatic actuators:

- Linear (1/2 bar)
- Rotating (6/8 bar)

Operation

Compressed air regulated thanks to a pressure regulator, dry and degreased, enters into the solenoid valve which is normally open thus allowing the damper actuation.

In case of air feed failure or alarm signal, the valve causes the venting of the compressed air contained in the actuator and consequently the damper closing.

Also the external operation on the solenoid valve causes the venting of the air through the valve itself. Resetting can be made from remote control.

Shut-off damper + pneumatic + mouse and leaves protection net



