



Exploration & Production

GENERAL SPECIFICATION

HVAC

GS EP HVA 220

Shut-off Dampers

02	01/2012	Integration of Data Sheet
01	10/2009	Updating of "Reference documents"
00	10/2005	First issue
Rev.	Date	Notes

Owner: DEV/TEC	Managing entity: DEV/TEC/MTH
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1. Scope

The purpose of this document is to define the minimum requirements for design, construction and supply of Shut-off Dampers.

The words and expressions in capital characters are defined inside the general specification **GS EP HVA 801**.

When other words require a definition only for using within that document, the definition is given in a paragraph of that document and the defined word is marked in small and *italic* letters.

2. Reference documents

The reference documents listed below form an integral part of this General Specification. Unless otherwise stipulated, the applicable version of these documents, including relevant appendices and supplements, is the latest revision published at the EFFECTIVE DATE of the CONTRACT.

Equipment and installations must be in accordance with (in order of precedence):

1. The country local regulations where equipment and/or installations shall be operated
2. Total General Specifications as listed in **GS EP HVA 000**
3. The International Standards
4. The French Regulation (when Country local regulation does not exist).

Notes:

- In case of discrepancy between documents the more stringent requirements shall apply.
- The HVAC VENDOR or CONTRACTOR may propose proven improvements to the reference documents but shall obtain written approval of the COMPANY prior to implementation.
- An International Standard is a good "engineering practice" which shall be recognised and taken into consideration by VENDOR, SUPPLIER, MANUFACTURER and/or CONTRACTOR. If required, the translation of the standards must be included into HVAC scope.
- The latest revision of Standards, codes, regulations and the published errata if any must be used and applied by VENDOR, SUPPLIER, MANUFACTURER and CONTRACTOR.

Standards

Reference	Title
EN 1751	Ventilation for buildings. Air terminal devices. Aerodynamic testing of dampers and valves
EN 10204	Metallic materials - Types of inspection documents
EN 50262	Metric cable glands for electrical installations



Reference	Title
ISO 15607	Specification and qualification of welding procedures for metallic materials - General rules
ISO 15614 (Parts 2; 8)	Specification and qualification of welding procedures for metallic materials - Welding procedure tests - (Parts 2; 8)

Professional Documents

Reference	Title
SMACNA	Sheet Metal and Air Conditioning CONTRACTORS' National Association

Regulations

Reference	Title
Not applicable	

Codes

Reference	Title
Not applicable	

Other documents

Reference	Title
SI	International System of Units

Total General Specifications

Reference	Title
GS EP COR 350	External protection of offshore and coastal structures and equipment by painting
GS EP HVA 000	List of HVAC Specifications
GS EP HVA 100	HVAC Basis of design
GS EP HVA 801	Terminology, Definitions, Abbreviations



3. Definitions

Frame: part of the damper that is used as a duct to drive air from the upstream ducting to the downstream ducting.

Height: vertical dimension (horizontal duct) or more important dimension (vertical ducting) measured inside the section of the damper, where air is passing.

Width: horizontal dimension (horizontal duct) or smaller dimension (vertical ducting) measured inside the section of the damper, where air is passing.

4. Operation

Shut off dampers shall be used to shut off airflow in high or low-pressure ductwork. Dampers shall meet international standards for rectangular and round ducts.

5. Construction

The outer frame shall be made of galvanized steel or stainless steel in accordance with used ductwork metal. With regards to the painting, see COMPANY painting specification.

Blades shall be contained in the damper frame length.

The stainless steel bearings and shafts shall be maintenance-free.

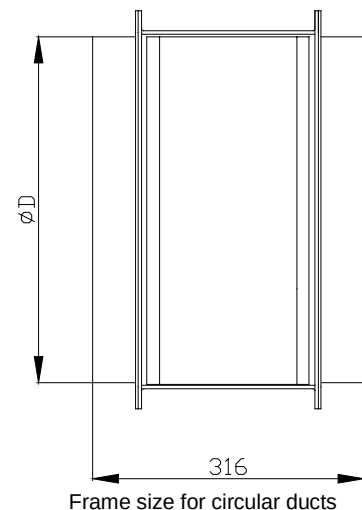
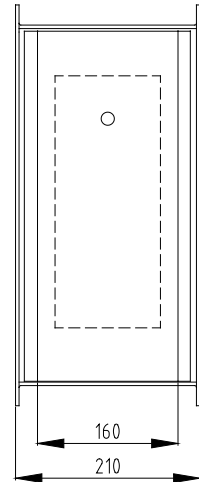
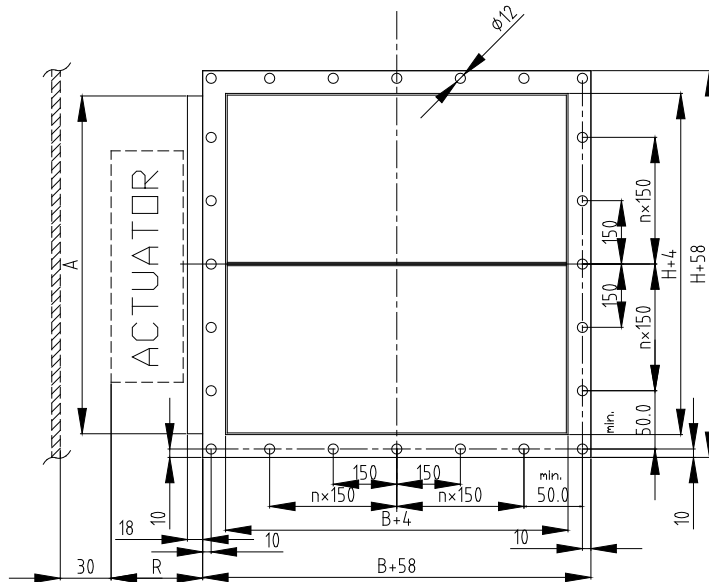
The damper must have silicon gaskets between each blade and between the *frame* and blades.

The leakage class of a closed damper according to [EN 1751](#) is class 3 at 2000 Pa.

The shut off damper shall withstand a maximum operation pressure of 5000 Pa and maximum velocity of 15 m/s.

5.1 Frame

The Shut off dampers shall be manufactured to international standards for both rectangular (*width* B 100-1200 mm, *height* H 100-1200 mm) and circular ducts ($\varnothing$ D 100-1250 mm). Modular construction sizes up to 2400x2400 mm shall be possible with the same international standards. The damper *frame* shall be constructed from 3 mm galvanized, painted or stainless steel depending on the metal used for the ductwork.



Note: If H cannot be divided by 50 then the real H is smaller.

Example: If $H = 770$, then real H is $750+4$

If $H = 340$, then real H is $300+4$

Outer dimension of the damper is still close to the (H+58) value.

All the above sizes can be adapted. If needed, contact the COMPANY in order to have the agreement.

Actuator effect on dimensions.

Actuator		Dimensions	
		R	A
Manual	Handle	95	H
Electrical	24V or 230V	90	H
Pneumatic	Linear actuator 245/300 N	110	$H \leq 500 = 500$ $H > 500 = H$
Pneumatic	Rotating actuator	170	H

The damper shall be fitted with a device to indicate the open/close position with associated indication plate.



Actuator, limit switches, and blades mechanism shall be located out of the air stream and protected by an enclosure. Free and easy access shall be left to internal devices by removal of a cover which shall not require removal of thermal insulation.

5.2 Blades / shafts

In open position, the blades face the direction of flow and do not cause a significant pressure loss with aerofoil-section blades.

The blades must be double sheet construction to obtain a blade with minimum thickness of 20 mm (mandatory). The blade movement must be opposed type.

Blade operating linkages should be located out of the air stream. Linkage stops shall be provided to prevent over-travel in both open and closed position.

When material of the blades and shaft is stainless steel, it shall be stainless steel AISI 316L with C < 0.03% and Mo > 2.5%. Material Certificate type 3.1 according to [EN 10204](#) must be supplied by the MANUFACTURER (mandatory).

The shaft of each blade must be solid diameter 15 mm stainless steel AISI 316L with C < 0.03% and Mo > 2.0%. Material Certificate type 3.1 according to [EN 10204](#) must be supplied by the MANUFACTURER (mandatory).

5.3 Actuator and limit switches

When damper is operated with an actuator, it shall be capable of overcoming the maximum torque imposed by the damper in operation.

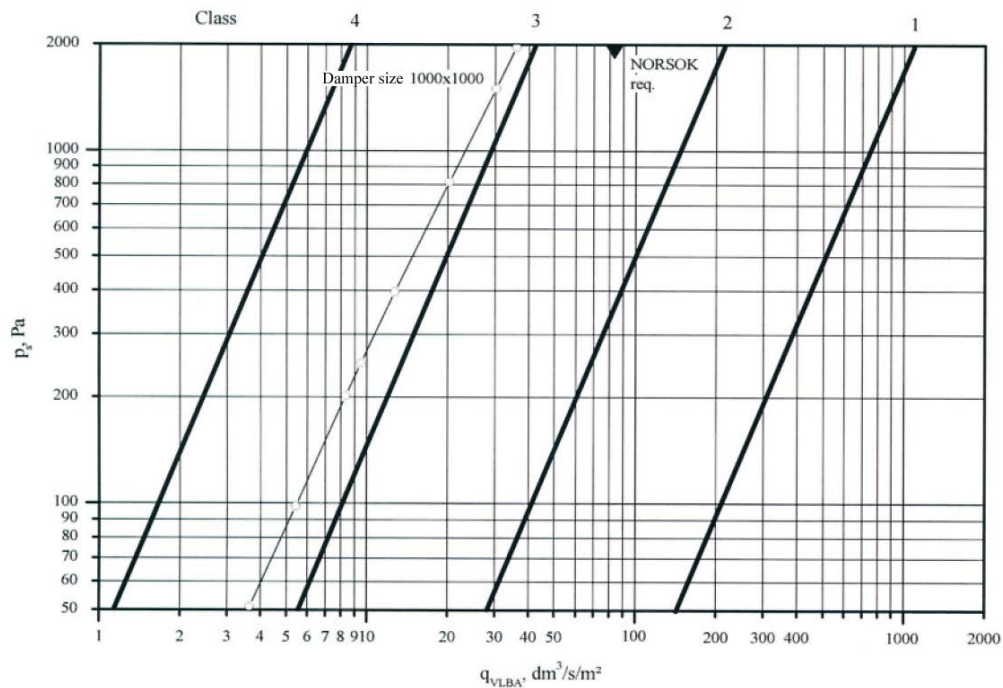
The damper shall be fitted with limit switches to indicate the fully open/closed position to HVAC PLC. The limit switches shall be proximity sensor type and shall operate with 24 VDC power supply. The proximity switches shall react on the shaft or on the motion mechanism.

5.4 Tagging

Tagging shall be in accordance with COMPANY rules.

6. Performances

Shut off dampers must have the maximum following leakage (size 1000x1000):



Symbols and units:

- P_s Static test pressure (Pa)
- q_{VLBA} Closed blade leakage air flow per duct cross sectional area ($\text{dm}^3/\text{s}/\text{m}^2$)

7. Installation

Shut off dampers must be able to be installed in any position.

8. Other references

Following documents are applicable:

- Standards: [EN 50262](#), [ISO 15607](#), [ISO 15614 \(Parts 2; 8\)](#)
- Professional Documents: [SMACNA](#)
- Other documents: [SI](#)
- Total General Specifications: [GS EP COR 350](#), [GS EP HVA 100](#).



Appendix 1 Shut-off Damper(s) - Data Sheet



Exploration & Production

GENERAL SPECIFICATION

HVAC

DS EP HVA 220

Shut-off Damper(s) - Data Sheet

01	10/08	General updating
00	10/07	First issue
Revision	Date	Notes



HVAC

SHUT-OFF DAMPER(S) - DATA SHEET

Data sheet presentation

This data sheet is composed of the following sheets:

- Shut-off damper - ("Main" sheet - Page 1)
This sheet mentions the main data concerning the shut-off damper(s).
- Main dimensions of shut-off damper(s) - ("Dimensions" sheet - Page 2)
Depending on number of shut-off dampers on Project, this page can be copied to create the number of requested folios. In this case, page numbering has to be updated.
- Performances of the shut-off dampers ("SO Performances" sheet - Page 3) which indicates the performances of shut-off damper(s).
Depending on number of shut-off dampers on Project, this page can be copied to create the number of requested folios. In this case, page numbering has to be updated.

Instruction for use of sheets:

Only fields to be filled-in by the *CONTRACTOR* are accessible.

For major part of these fields, contextual help is accessible when roll-over with the mouse.

The contextual help includes a definition of field to avoid misunderstanding.

The "Cover" and "Data sheet presentation" have not to be attached to the data sheet submitted to *COMPANY* for approval.

A "Highlighting" button allows to identify the fields to modify or to fill in for each sheet.

Before printing a sheet, press "Without highlighting" button.

Data sheets approval:

The data sheets have to be fully filled in by *CONTRACTOR*.

The filled data sheet (including all sheets) has to be approved by the *COMPANY*'s Specialist before purchasing the equipment.

Within *HVAC* documents, expression in capital characters and *ITALIC* are defined within

Appendix 1

COMPANY
PROJECT NAME

DATA SHEET

SHUT-OFF DAMPERS

Doc. number:

Contractor document N°:

Equipment location:
Tag No:

System No:

Sub-system No:

Supplier:

Manufacturer:

Reason for issue	Rev.	Stat.	Date	By:	Checked by:	Approved by:

Technical data

Air flow rate (m³/h) through damper: Refer to page 4

Leakage class air flow rate: Refer to page 4
(as per EN 1751)

Maintenance-free bearings: Yes ☐ No ☐

Operating pressure design: Pa

Maximum air velocity design: m/s

ATEX classification: Refer page 4

Certified Body's name:

ATEX certification document reference:

Casing thickness: mm

(if thickness is not constant, refer to page 3)

Flanges thickness: mm

Flanges width: mm

Double skin construction for blades:

Yes ☐ No ☐

Blades driving system:

Gears ☐ Lever ☐

Main drive shaft end (actuator coupling):

Square ☐ Round ☐ mm

Main drive shaft extremity size: mm

Materials

Casing:

Blades:

Gasket:

Blades driving system:

Blades insulation:

Driving system housing:

Shaft:

Bearings:

Rivets:

Screws:

Nuts:

Washer:

Construction

Maintenance



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General Specification

Date: 01/2012

GS EP HVA 220

Rev: 02

Appendix 1

 TOTAL Exploration & Production	COMPANY PROJECT NAME DATA SHEET SHUT-OFF DAMPERS		Project Logo
			Page 2 /
1	Shut-off dampers components		
2	Description:	Refer to data sheet:	
3	Actuator (electrical or pneumatic actuator)		
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Appendix 1

 TOTAL Exploration & Production	COMPANY PROJECT NAME DATA SHEET SHUT-OFF DAMPERS									
	MAIN DIMENSIONS									
1	Page 3 /									
2	Shut-off damper tag number	Dimensions (mm)						Weight (kg)	Casing metal thickness (mm)	Actuator location (refer to "Observation point" on drawing page 1)
3		Nominal			Maintenance					
4		DI	Dh	Dw	Mt	Mb	MI			
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Appendix 1

 TOTAL Exploration & Production	COMPANY PROJECT NAME DATA SHEET SHUT-OFF DAMPERS	
	MAIN DIMENSIONS	



 TOTAL Exploration & Production		COMPANY		PROJECT NAME		DATA SHEET		PERFORMANCES		Page 4 /	
		SHUT-OFF DAMPERS									
1	2	3	4	5	6	7	8	9	10	11	12
Tag number	Inside room	Outside	Area classif. (0,1,2)	ATEX classification (when required)	Leakage air flow rates (l/s) under differential pressure of		Air flow rate through shut-off damper m³/h	Requested torque on shut-off damper main shaft N.m			
					1000 Pa	2000 Pa					
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