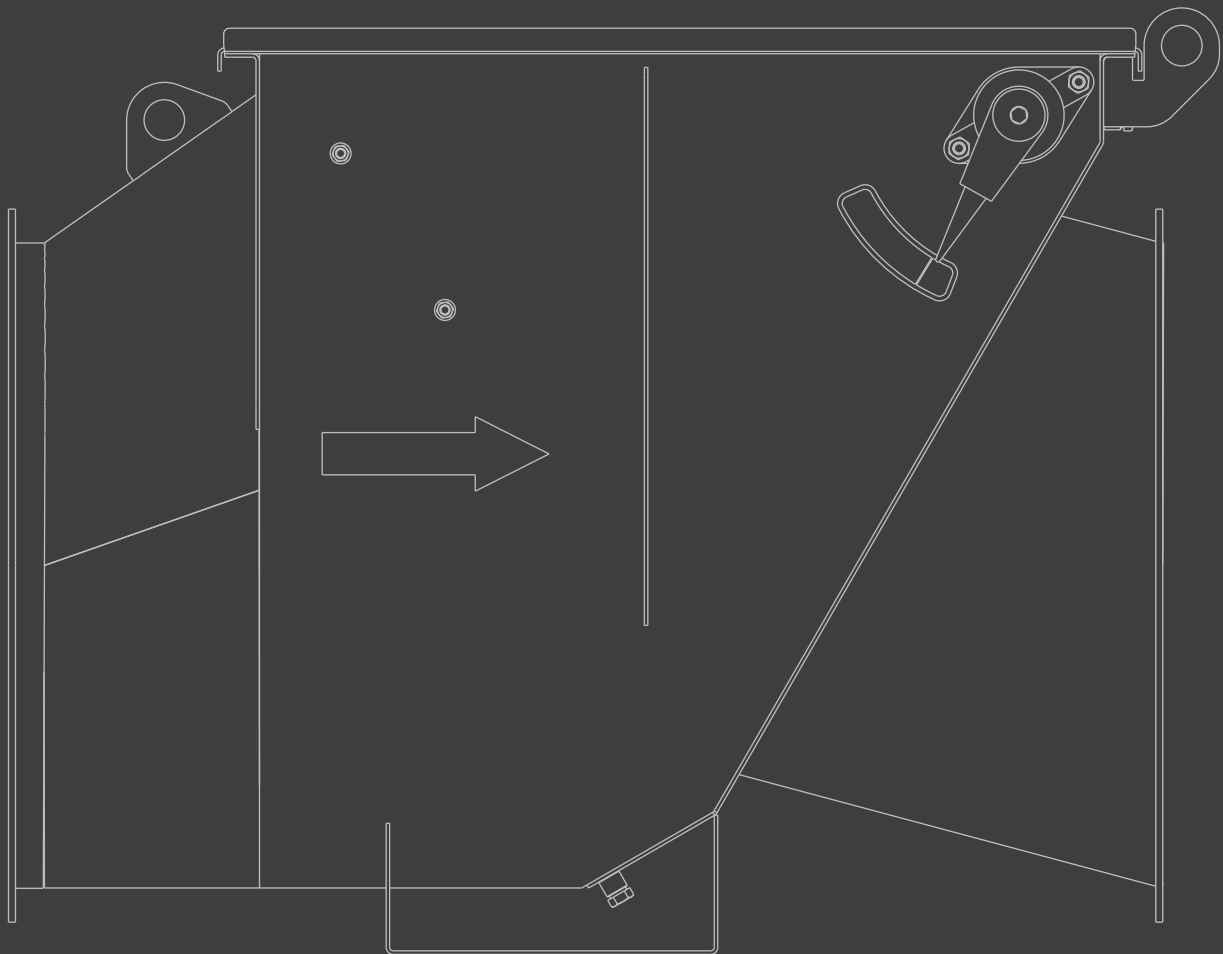




# INSTALLATION AND OPERATING INSTRUCTIONS

NON-RETURN VALVE, TYPE: VIGIFLAP






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## TABLE OF CONTENT

1. SAFETY INFORMATION .....	3
2. STANDARDS AND CERTIFICATES .....	3
2.1 VIGIFLAP RANGE ACCORDING TO THE FOLLOWING STANDARDS .....	3
2.2 MANUFACTURING ACCORDING TO QUALITY STANDARDS .....	3
2.3 CONFORMITY OF COMPLEMENTARY STANDARD .....	3
3. WORKING FEATURES .....	4
3.1 WORKING RANGE .....	4
3.2 WORKING AIR FLOW .....	4
3.3 VIGIFLAP INSTALLATION FEATURES (Tab-1): .....	5
4. VIGIFLAP WORKING .....	6
4.1 AIR FLOW RULES .....	6
4.2 EXPLOSION RISK DIRECTION .....	6
4.3 VIGIFLAP WORKING MODES .....	7
4.4 SETTING OF WORKING MODE .....	8
4.4.1 FLOATING FLAP MODE .....	8
4.4.2 FLAP KEPT OPEN MODE BY MECHANIC SYSTEM .....	9
4.4.3 FLAP POSITION INDICATOR, WHEN ITS OPENED .....	11
4.4.4 FLAP POSITIONS IN WAITING POSITION (ONLY FOR FLOATING FLAP MODEL) .....	11
4.4.5 FLAP INDICATOR IN WAITING POSITION .....	12
4.4.6 FLAP LOCKED IN CLOSED POSITION .....	12
4.4.7 INDICATOR POSITION WITH FLAP LOCKED CLOSED .....	13
5. VIGIFLAP INSTALL OPERATION .....	13
5.1 RULES TO INSTALL THE VIGIFLAP .....	13
6. GENERAL DIMENSIONS (THE LIST OF MODELS IS NOT EXHAUSTIVE) .....	20
6.1 VIGIFLAP RANGE WITH METRIC « DN » (TAB-4) .....	20
6.2 VIGIFLAP RANGE WITH IMPERIAL « DN » (TAB-5) .....	21
7. FLAP SENSOR IN LOCKING CLOSED POSITION .....	21
7.1 INDUCTIVE SENSOR Ø12 OUT OF ATEX ZONE (DN≤350 - DN≤14"): .....	22
7.2 ON OPTION: INDUCTIVE SENSOR Ø12 FOR ZONE ATEX -  II 2 D (DN≤350 - DN≤14"): .....	22
7.3 ON OPTION: INDUCTIVE SENSOR Ø18 OUT OF ATEX ZONE (DN≥400 - DN≥16"): .....	23
7.4 ON OPTION: INDUCTIVE SENSOR Ø18 FOR ZONE ATEX -  II 2 D (DN≥400 - DN≥16"): .....	23
8. Dust build up sensor .....	24
8.1 CAPACITIVE SENSOR Ø12 FOR ATEX ZONE -  II 1 D: .....	25
9. ATEX MARKING .....	26
9.1 CERTICATION FEATURES .....	26
9.1 MARKING EXAMPLE .....	26
10. AERAULIC PRESSURE DROPS .....	27
10.1 PRESSURE DROP GRAPHS .....	27
10.2 PRESSURE DROP VALUES (IN MM H2O /INCH WG) MEASURED AT 20 M/S (4000 FT/MIN) (TAB-8). ..	29
11. MAINTENANCE OPERATIONS AND PERIODIC INSPECTIONS .....	29

11.1 STANDARD REQUIREMENTS ..... 29

11.2 PERIODIC INSPECTION OPERATIONS ..... 30

11.3 CHECK THE FOLLOWING POINTS (TAB-9) ..... 30

11.4 PROCEDURE IN EXPLOSION CASE: ..... 31

11.5 WASTE DISPOSAL PROCEDURE: ..... 31



**Caution:** All instructions written in this manual have to be fully understood and absolutely followed in order to guarantee the proper functioning of the VIGIFLAP non-return valve. If you have any questions, especially in specific case, please contact Safevent ApS.

## 1. SAFETY INFORMATION

VIGIFLAP is protection device for dust ATEX zone (EX II D). The facility manager has to implement the European regulation 1999/92CE. To be sure that this device is correctly used, the authorized workers have to be trained to the warning signs and safety rules to assure the safety of people and facilities.



Non-return valve safety rules according to the standards EN 16447 The non-return valve of explosion have not to be used to protect installation with following substances, neither these alone materials nor mixing with these materials:

- a) Gas, steam or hybrid mixing
- b) Unstable chemical substances
- c) Explosive substances
- d) Pyrotechnic substances



Absolutely observe the pipe length between the protected vessel and the VIGIFLAP according to minimum length ( $L_{min}$ ) and maximum one ( $L_{max}$ ) to assure the pipe isolation in case of explosion.



The vessel(s) connected to the VIGIFLAP be protected:  
- Either by an explosion protection device (vent panel, flameless)  
- Or suppression system



VIGIFLAP is design to isolate vessel which pressure resistance is  $\leq 0.5$  bar ( $P_{red}$ ). In case of the vessel has higher resistance, the explosion discharge device has to be defined with maximum reduce pressure in it ( $P_{red}$ )  $\leq 0.5$  bar. The pipes in upstream and downstream of the VIGIFLAP has to resist at 2 bar (as VIGIFLAP).



Don't use the VIGIFLAP to support the pipe in upstream or/and downstream. It should not be subjected to strong vibration to keep its isolation integrity in case of explosion.



Assure the electrical continuity of installation (grounding) by connection of VIGIFLAP earth braids to both pipes.

## 2. STANDARDS AND CERTIFICATES

### 2.1 VIGIFLAP RANGE ACCORDING TO THE FOLLOWING STANDARDS

- 2014/34/UE ATEX regulation
- EN 16447 : 2014 Explosion isolation flap valves
- EN 1127-1 :2019 Explosion prevention and protection - Part 1
- EN 14460 : 2018 Explosion



### 2.2 MANUFACTURING ACCORDING TO QUALITY STANDARDS

- INERIS 08ATEXQ406 Production quality assurance notification
- 0080 N° of notified body in charge of checking (INERIS)
- INERIS 19ATEX0016X N° of EU type examination certificate
- ISO9001 : 2015 Quality management



### 2.3 CONFORMITY OF COMPLEMENTARY STANDARD

- NFPA 69 : 2019 Explosion Prevention Systems



### 3. WORKING FEATURES

VIGIFLAP is ATEX protective device equipped of mobile flap which will close under explosion overpressure and will lock in closed position to avoid to propagate the flame from the pipe to another part of the facility (suction inlet, filter...).

VigiFlap is certified to protect the facility either in pull flow situation or push flow situation.

VIGIFLAP seal the pipe to stop explosion spread, either if explosion come from in opposite direction of the air+dust flow (example: see picture 1: "position **A**") or if the explosion come from in the same direction of clean air flow (example: see picture 2: "position **D**"). In this second case, you need to use the keep opened system of the flap.

**i** Working limits of the VIGIFLAP range which assure the safety of workers and of facility. The user manager is responsible for ensuring the application of these limits.

#### 3.1 WORKING RANGE


DN 160 to DN800 (DN 6" to DN 32")

#### 3.2 WORKING AIR FLOW

Air flow in vacuum (pull flow).

Air flow in pressure (push flow).

- Elbows are allowed in upstream and downstream of VIGIFLAP without quantity limit or position restrictions
- VIGIFLAP can be installed in vertical position (Pictures 15+16)

Kst max	≤250 bar.m/s	Pred max*	≤ 0.5bar	Air flow speed	15m/s ≤ V ≤ 30m/s 3000 ≤ v ≤ 6000 ft/min
Kst min	50 bar.m/s	VIGIFLAP resistance	2.0 bar	Working	Air + dust circuit Clean air circuit
Pmax	10 bars	Marque ATEX	 II D	Air flow range	Pull flow Push flow
MIE	≥ 10 mJ	ATEX inside	Zone 20 (II 1 D)	Working pressure	500mbar max
MIT	≥ 400°C	Dust**	All dusts kinds	Working vacuum	-800mbar max
MESG	1.7mm	Dust concentration	No limit	Elbows quantity	No limit

\* vessel (potential explosion source)

\*\* Organic dust, synthetic dust or metal dust according to the limits defined above.

WORKING TEMPERATURE	
Common device: Flap gasket in EPDM	-30°C to +70°C / -22°F to 158°F
Option: Flap gasket in SILICONE	-10°C to +180°C*** / 14°F to 356°F***

\*\*\*Caution: With standard sensor, the working temperature is limited at 70°C / 158°F. Option is available until 150°C/302°F only for locking sensor.

### 3.3 VIGIFLAP INSTALLATION FEATURES (Tab-1):

Diameter	Volume Vmin	Lmin	Lmin+2m	Lmax
Ø160 (6")	0,70 m <sup>3</sup> / 24.7 ft <sup>3</sup>	4,0 m / 13.1 ft	6,0 m / 19.7 ft	17 m / 55.8 ft
Ø160 (6")	1,35 m <sup>3</sup> / 47.7 ft <sup>3</sup>	3,0 m / 9.9 ft	5,0 m / 16.4 ft	17 m / 55.8 ft
Ø180 (7")	0,70 m <sup>3</sup> / 24.7 ft <sup>3</sup>	4,0 m / 13.1 ft	6,0 m / 19.7 ft	17 m / 55.8 ft
Ø180 (7")	1,35 m <sup>3</sup> / 47.7 ft <sup>3</sup>	3,0 m / 9.9 ft	5,0 m / 16.4 ft	17 m / 55.8 ft
Ø200 (8")	1,35 m <sup>3</sup> / 47.7 ft <sup>3</sup>	4,6 m / 15.1 ft	6,6 m / 21.6 ft	17 m / 55.8 ft
Ø250 (10")	1,35 m <sup>3</sup> / 47.7 ft <sup>3</sup>	4,0 m / 13.1 ft	6,0 m / 19.7 ft	17 m / 55.8 ft
Ø300 (12")	2,90 m <sup>3</sup> / 102 ft <sup>3</sup>	4,6 m / 15.1 ft	6,6 m / 21.6 ft	17 m / 55.8 ft
Ø350 (14")	2,90 m <sup>3</sup> / 102 ft <sup>3</sup>	4,2 m / 13.8 ft	6,2 m / 20.3 ft	17 m / 55.8 ft
Ø400 (16")	4,50 m <sup>3</sup> / 159 ft <sup>3</sup>	5,2 m / 17.0 ft	7,2 m / 23.6 ft	17 m / 55.8 ft
Ø450 (18")	4,50 m <sup>3</sup> / 159 ft <sup>3</sup>	4,7 m / 15.4 ft	6,7 m / 22.0 ft	17 m / 55.8 ft
Ø500 (20")	6,05 m <sup>3</sup> / 214 ft <sup>3</sup>	5,8 m / 19.0 ft	7,8 m / 25.6 ft	17 m / 55.8 ft
Ø550 (22")	6,05 m <sup>3</sup> / 214 ft <sup>3</sup>	5,5 m / 18.0 ft	7,5 m / 24.6 ft	17 m / 55.8 ft
Ø600 (24")	7,65 m <sup>3</sup> / 270 ft <sup>3</sup>	7,2 m / 23.6 ft	9,2 m / 30.2 ft	17 m / 55.8 ft
Ø650 (26")	7,65 m <sup>3</sup> / 270 ft <sup>3</sup>	6,7 m / 22.0 ft	8,7 m / 28.5 ft	17 m / 55.8 ft
Ø700 (28")	7,65 m <sup>3</sup> / 270 ft <sup>3</sup>	6,4 m / 21.0 ft	8,4 m / 27.6 ft	17 m / 55.8 ft
Ø750 (30")	10,00 m <sup>3</sup> / 353 ft <sup>3</sup>	7,3 m / 24.0 ft	9,3 m / 30.5 ft	17 m / 55.8 ft
Ø800 (32")	10,00 m <sup>3</sup> / 353 ft <sup>3</sup>	6,9 m / 22.6 ft	8,9 m / 29.2 ft	17 m / 55.8 ft

**Vmin** Minimum volume of the enclosure to be isolated.

**Lmax** Maximum installation distance.

**Lmin** Minimum installation distance of the floating valve on straight horizontal pipe without elbow.

**Lmin+2m** Minimum installation distance under at least one of the following conditions:

- Valve kept open by its mechanical system.
- Pipe with elbow before the valve, horizontal valve  $\pm 10^\circ$  (see instruction manual).
- Pipe with elbow before the valve, valve with an inclination greater than  $10^\circ$  (absolute value) from the Horizontal, with the following additional conditions:
  - Minimum installation distance =  $L_{min} + 2 \text{ m}$ , if the distance between the elbow and the valve  $> 5 \times \emptyset$  or
  - Minimum installation distance =  $L_{min} + 2 \text{ m} + 5 \times \emptyset$ , if the distance between the elbow and the valve =  $5 \times \emptyset$ . ( $\emptyset$  being the diameter of the pipe)

The installation of the valve with an inclination greater than  $10^\circ$  (absolute value) from to the horizontal requires a straight length between the elbow and the valve at least equal to  $5 \times \emptyset$  (see instruction manual).

## 4. VIGIFLAP WORKING

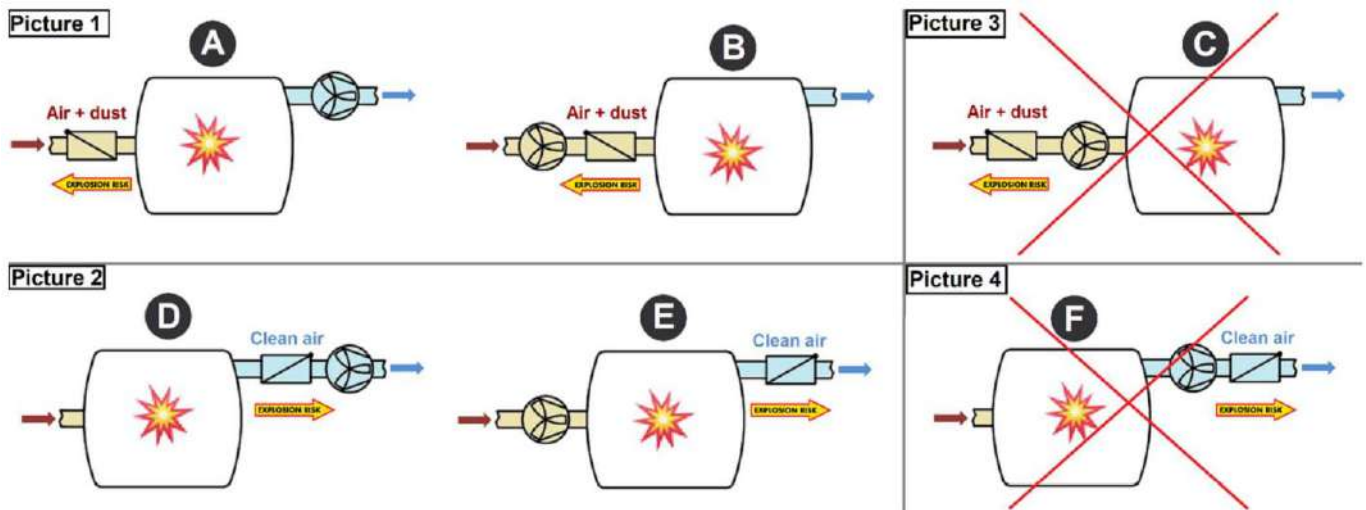
### 4.1 AIR FLOW RULES

VIGIFLAP is certified to work with vacuum air flow (Pull flow) or pressure air flow (Push flow).

VIGIFLAP can be installed in position A and B (picture 1) on the Dust air side or in position D and E (picture 2) on the clean air side. In position D and E the VIGIFLAP needs to be locked open with the mechanical system.

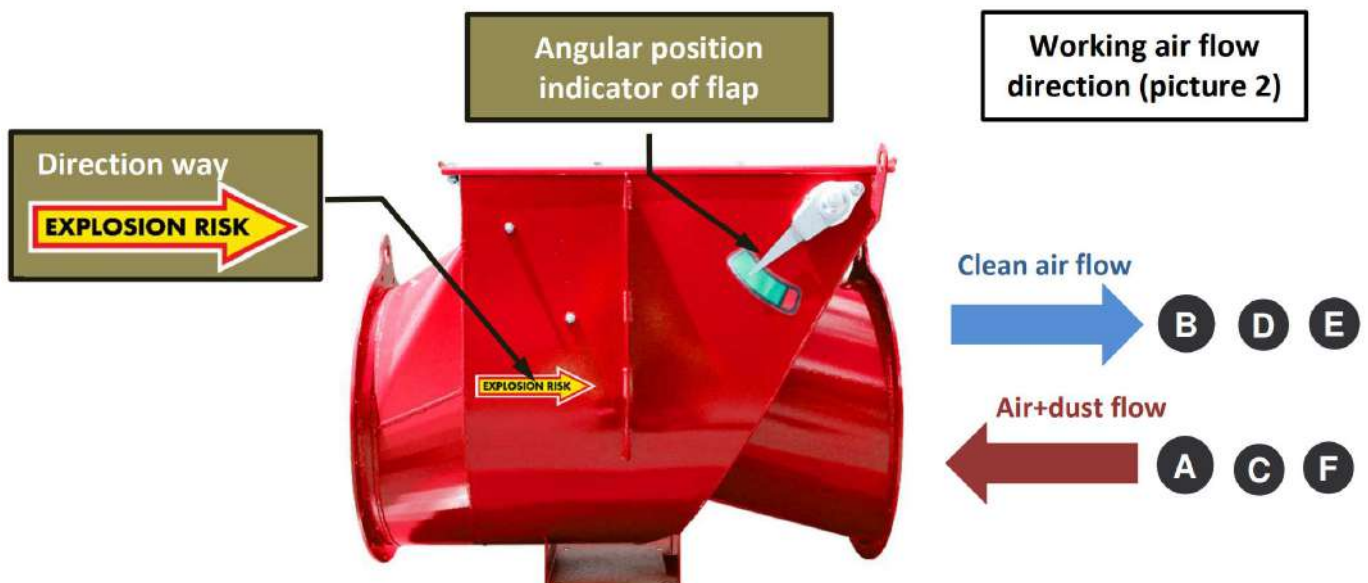
The working direction of air flow (Push flow or Pull flow) has no influence on the min installation distance.

**i** The working position D and E are advised to inject back the clean air inside the workhouse. It's recommended to no use the position C (picture 3) and F (picture 4).



### 4.2 EXPLOSION RISK DIRECTION

**!** VIGIFLAP installation has to observe direction of the "EXPLOSION RISK" arrow. In fact, this arrow indicates the direction of explosion flame which has to be stopped by VIGIFLAP, not the working air flow.



### 4.3 VIGIFLAP WORKING MODES

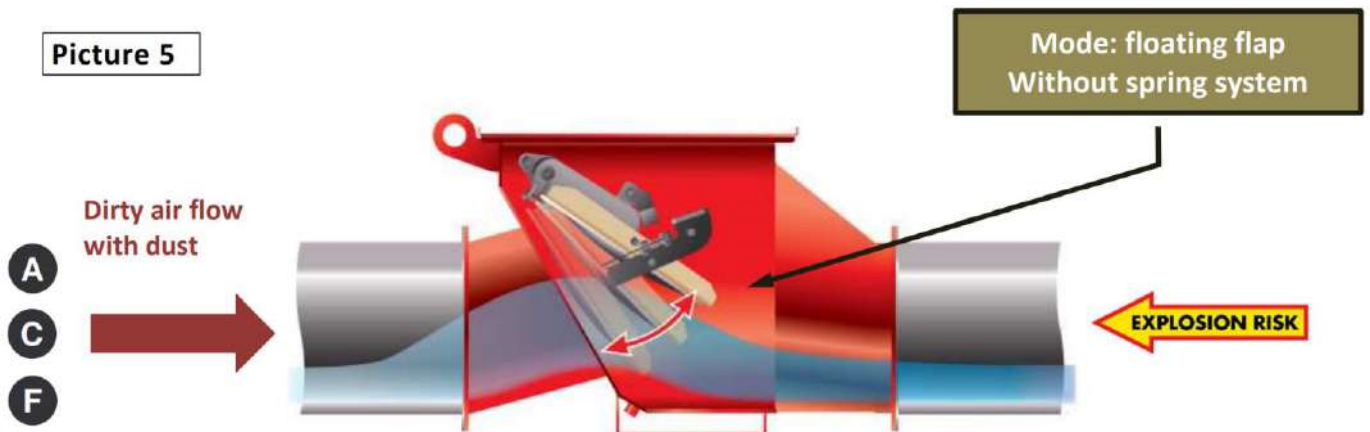
**!** VIGIFLAP can work following 2 modes: either with floating flap (picture 5) or flap kept open (picture 6). According to the chosen mode, you have to observe the installation distance  $L_{min}$  and  $L_{max}$ . These values have to be checked following chosen mode. Check the volume of vessel with ignition risk too (see Tab-1).

**i** Floating flap mode, the flap is opened by the working air flow. When the fan stop, the flap close itself by its weight without to lock (wait to open).

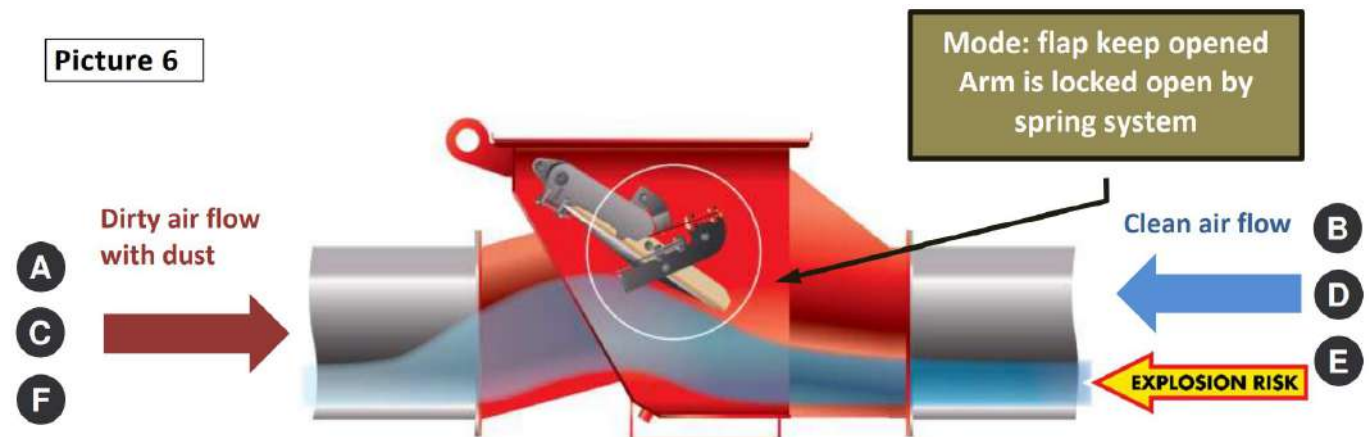
**i** Kept open flap mode, flap is kept open by strip spring system in max opened position. With this mode the VIGIFLAP can be installed in clean air side. The kept open flap position until 30m/s (6000 ft/min) without to close it. It also can be installed in dirty air to reduce the pressure drop especially with low air flow speed.

We advise to use VIGIFLAP in floating flap mode when it's installed in dirty air flow (working flow in opposition direction of explosion). However, VIGIFLAP has to be used in keep opened flap mode when it's installed in clean air side (explosion flame in same direction than working flow) according to direction of explosion risk.

Picture 5



Picture 6





**i** Only the overpressure of an explosion is capable of activating the locking system of the valve.

The arm and flap are locked in closed position by mechanic locking system



#### 4.4 SETTING OF WORKING MODE



The VIGIFLAP is delivered from factory in mode: **Flap kept open by mechanic locked system.**

If you want use the mode: floating flap, you have to take off the protection cover and realize the following operations: Check before to operate that the installation is switch off before to remove the protect cover (fan is switch off).

##### 4.4.1 FLOATING FLAP MODE

To set up the VIGIFLAP in mode: floating flap, you have to take off the spring strip(s) to allow at the flap to move freely (picture 7 and 7b).



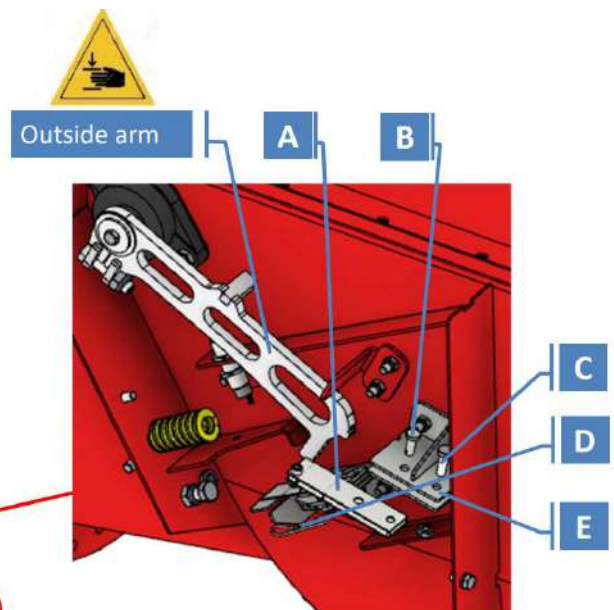
Caution... the outside arm is included on the moving part. The weight of this subassembly is high for the VIGIFLAP  $\geq$ DN 400 (16"). Be careful to handle it especially don't put your hand neither in the moving zone nor in the gasket zone of the flap inside the body.

Picture 7

##### VIGIFLAP floating flap mode DN160 (6") to DN450 (18")

Take off the following parts:

- A) Spring strip
- B) Pin
- C) Bolt
- D) Pin lock
- E) Kept open spring support



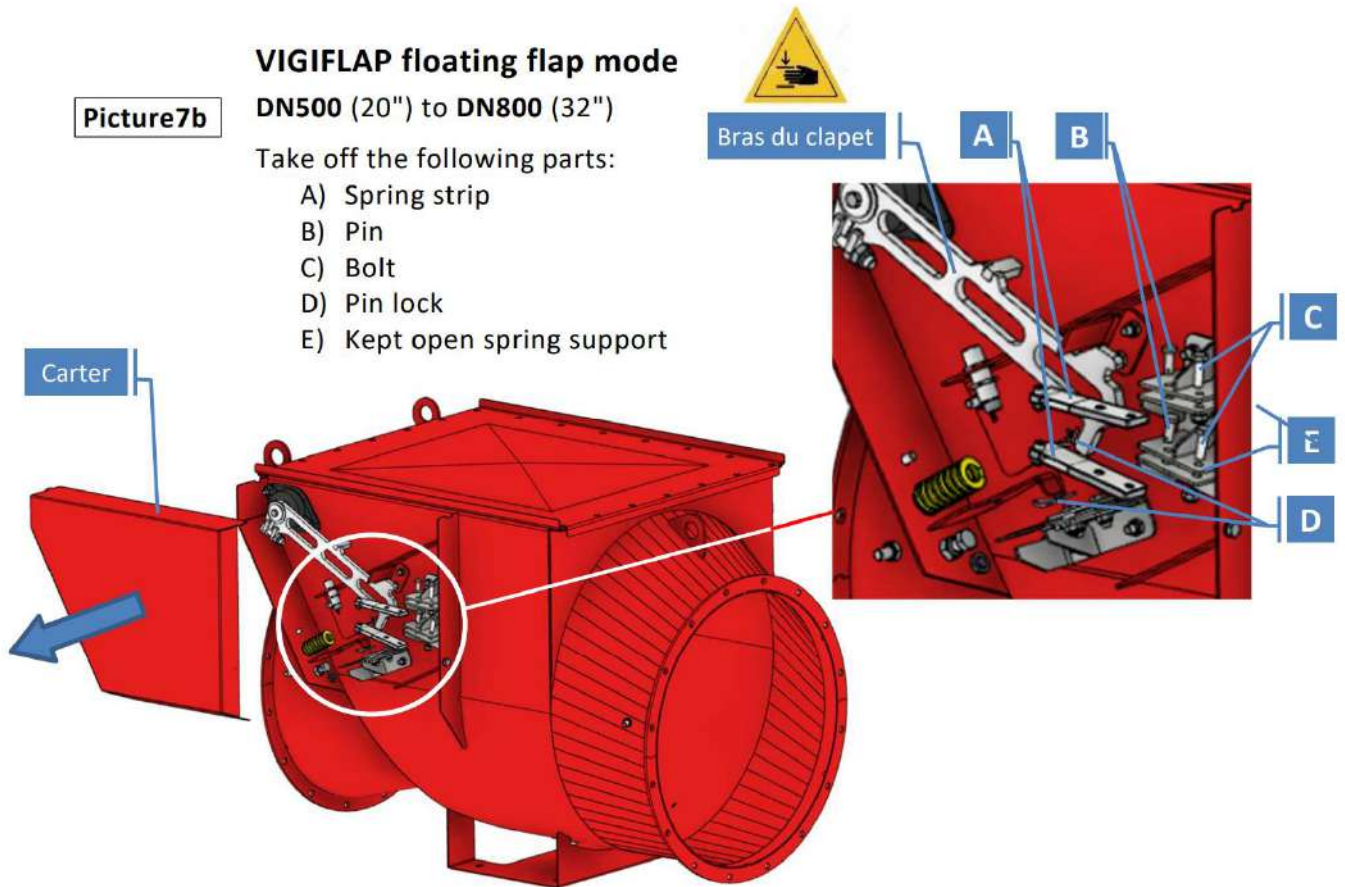
## VIGIFLAP floating flap mode

Picture 7b

DN500 (20") to DN800 (32")

Take off the following parts:

- A) Spring strip
- B) Pin
- C) Bolt
- D) Pin lock
- E) Kept open spring support



### 4.4.2 FLAP KEPT OPEN MODE BY MECHANIC SYSTEM



The VIGIFLAP is delivered from factory in mode: **Flap kept open by mechanic locked system**. If you have to change the working mode into floating flap position, to set back the VIGIFLAP in flap locked open position mode or to place again the flap in kept open position, you have to take off the protection cover and realize the following operations:

- 1) To set back on mode: flap kept open by mechanic system, you have to put in place the spring strip(s) ref. A on the bracket(s) ref. E operate in opposite way as described in the pictures 7 or 7b. Then tighten the bolt to 5Nm and loosen of  $\frac{1}{4}$  rotation.
- 2) To place again the flap in kept open position by mechanic system (picture 8 and 8b). Step 1, you have to turn the spring strip(s) ref. A to outside position in order to raise the arm against the top stop part ref. F. Step 2, you have to turn back the spring strip(s) under the outside arm and slowly release the arm. Now, you have to lock the spring strip(s) in position by the pin ref. B and pin lock ref. D.



It's forbidden to use the VIGIFLAP without protection cover. You have to put back in place with fixing screws after each operation.



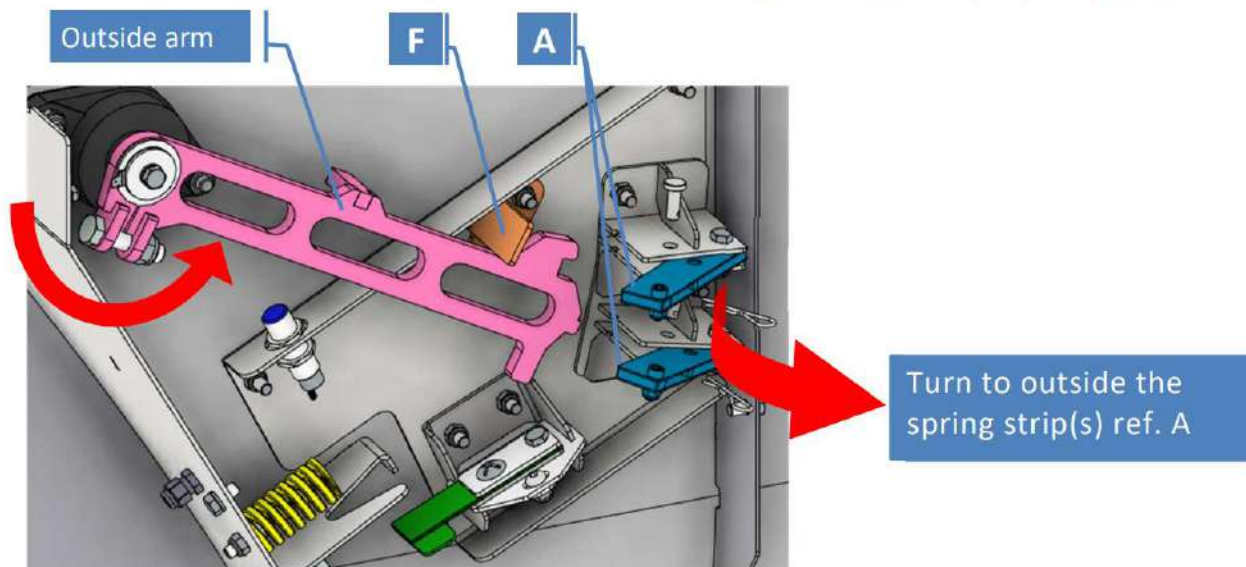
Picture 8

## VIGIFLAP's flap kept open by mechanic system

1<sup>er</sup> step: raise the arm against the top stop part

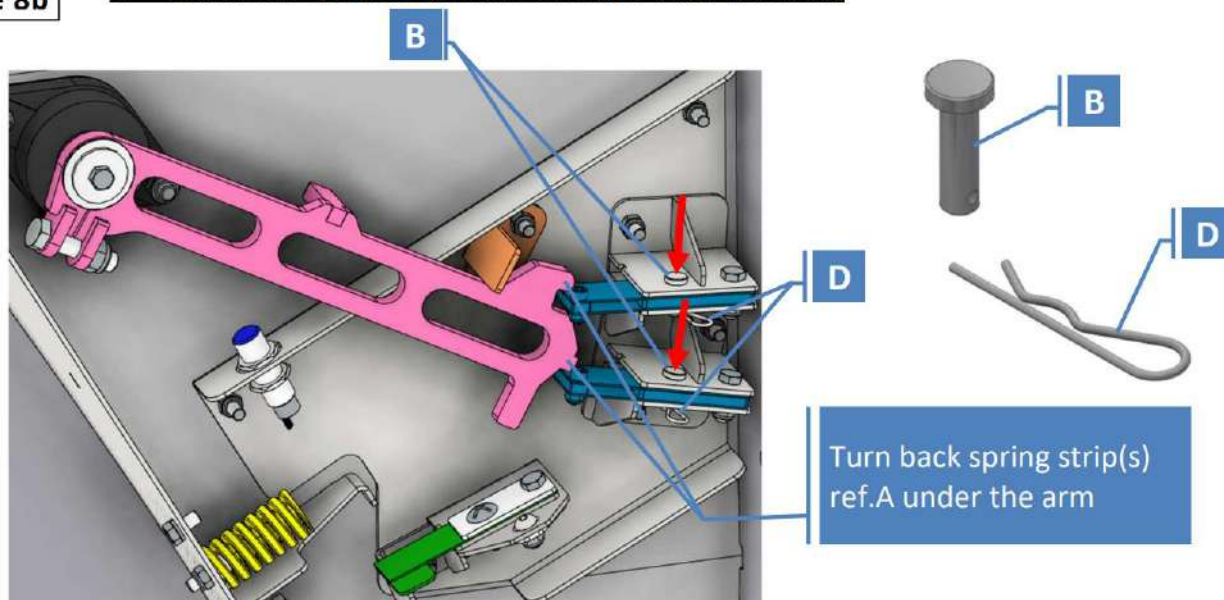
Example of VIGIFLAP DN≤500 (20") with double spring strips.

Operation is the same for all other sizes, only difference about spring strip number.

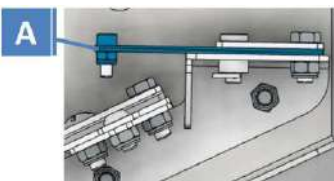
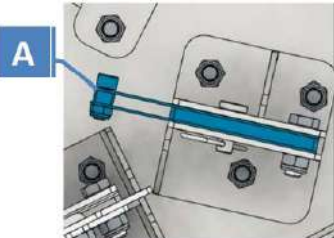
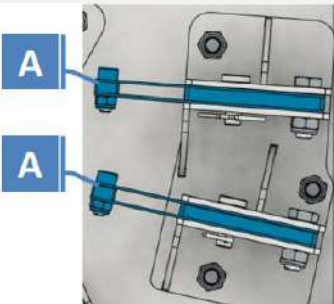


Picture 8b

2<sup>nd</sup> step: lock opened the outside arm (and the flap)



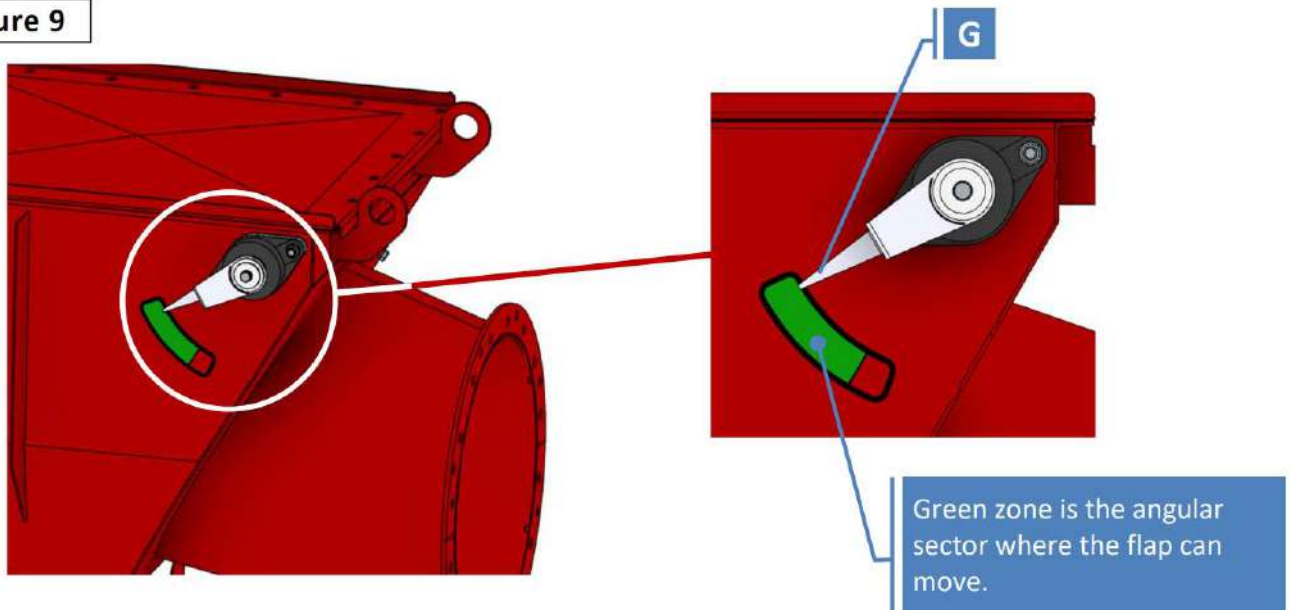
3 kinds of flap kept open system exist according to the VIGIFLAP size. Number and design of spring strips are defined in this table (Tab-2):

VIGIFLAP range	Ø160 au Ø350 Ø6" au Ø14"	Ø400 au Ø450 Ø16" au Ø18"	Ø500 au Ø800 Ø20" au Ø32"
Kind of ref.A	Flexible	Rigide	Rigide
Qté ref.A	x1	x1	x2
Drawing			

#### 4.4.3 FLAP POSITION INDICATOR, WHEN ITS OPENED

Totally open position is visible from outside via angular indicator ref. G (picture 9) independently of the running mode: flap kept open position from mechanic system or floating flap. When the flap is open, the indicator ref. G is on the top of the green part.

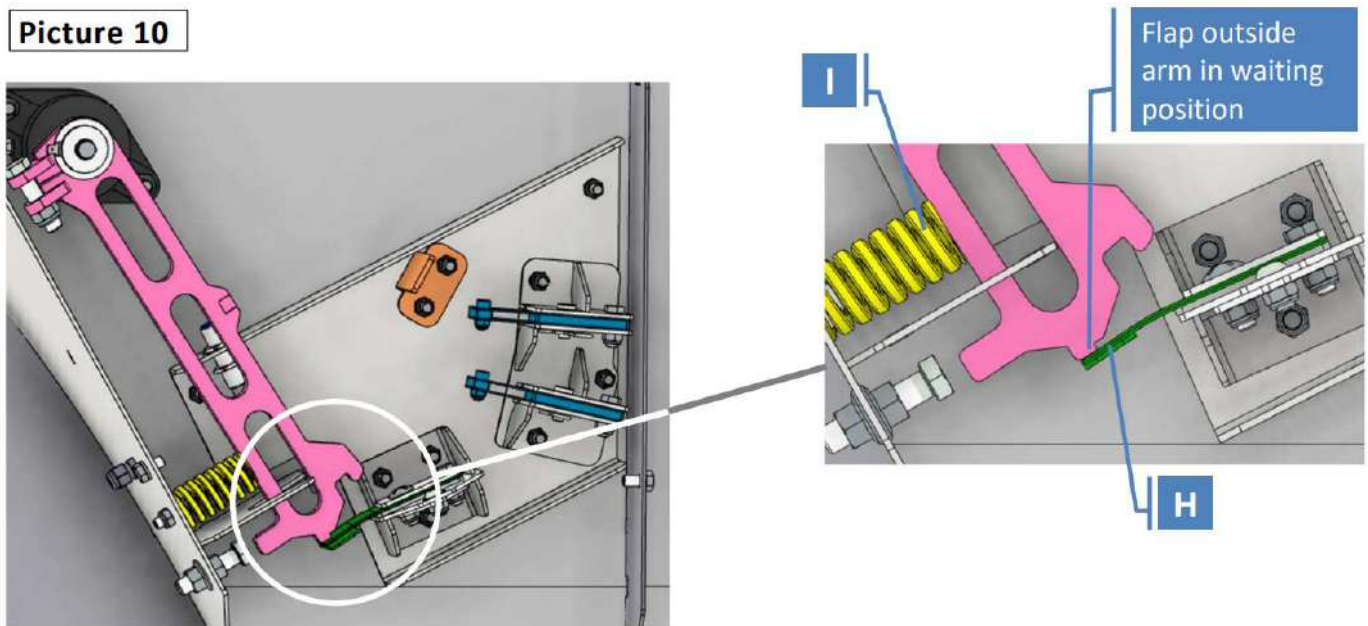
Picture 9



#### 4.4.4 FLAP POSITIONS IN WAITING POSITION (ONLY FOR FLOATING FLAP MODEL)

In floating flap mode the VIGIFLAP flap is simply opened by air flow generate by fan. When the fan is stopped, the flap fall down and the outside arm is placed on the locking spring strip ref. H but unlocked by bottom spring(s) ref. I (picture 10).

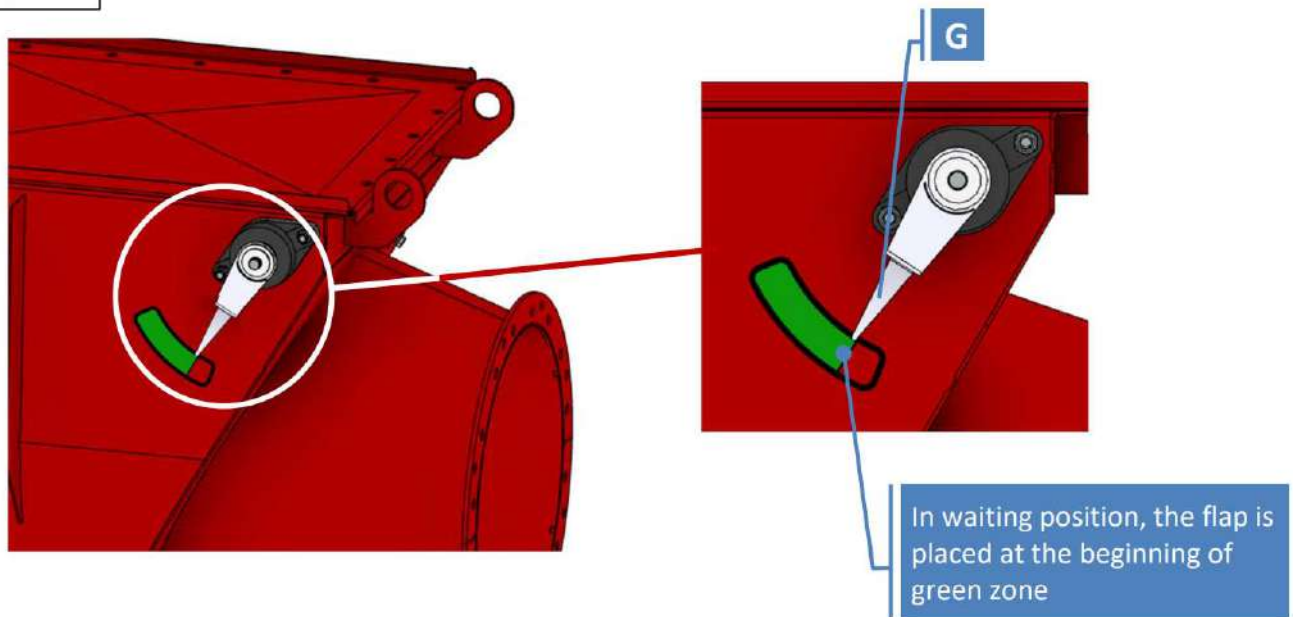
Picture 10



#### 4.4.5 FLAP INDICATOR IN WAITING POSITION

Flap position in waiting is visible from outside by the indicator ref. G placed in limit of green and red zones. (Picture 11).

**Picture 11**

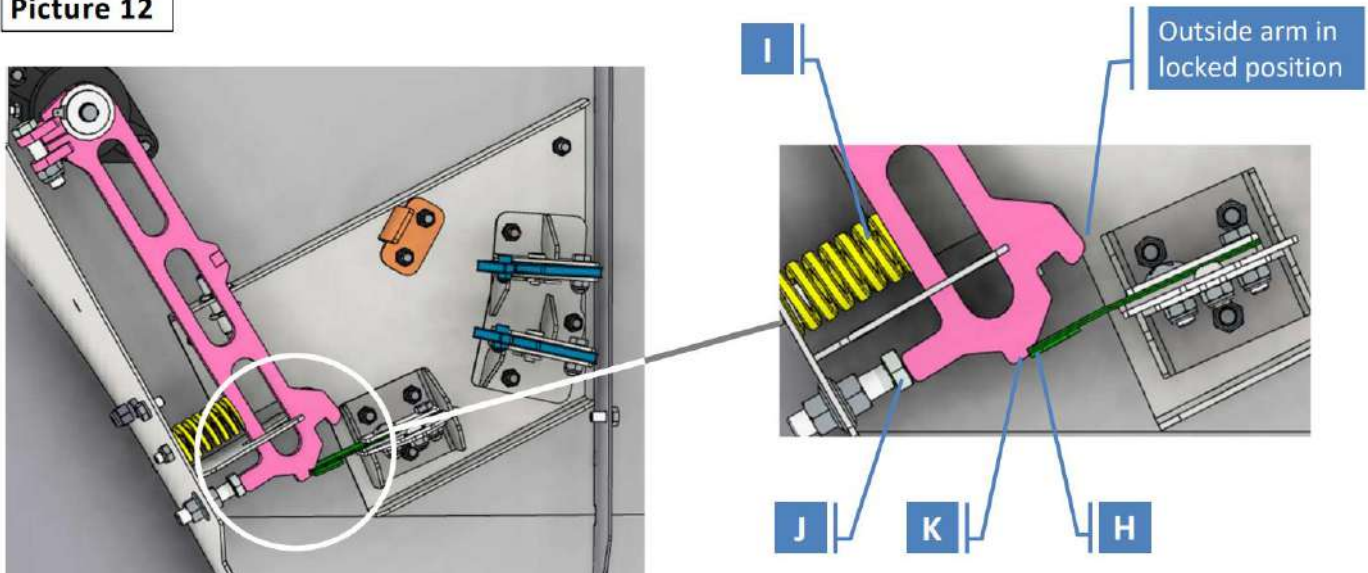


#### 4.4.6 FLAP LOCKED IN CLOSED POSITION

The flap can be closed by explosion overpressure or by air flow  $> 35\text{m/s}$  in case of VIGIFLAP installed on clean air pipe, position **D** (picture 2). In this case, at the end of the fall, the outside arm pushes the spring(s) ref. I until the stop part ref. J, so the locked spring strip ref. H comes and lock the outside arm of VIGIFLAP ref. K (picture 12).

**i** To unlock the flap, you have to press on the spring ref. I with the outside arm. So, you can push down on the locked spring strip ref. H in order to release the moving part.

**Picture 12**

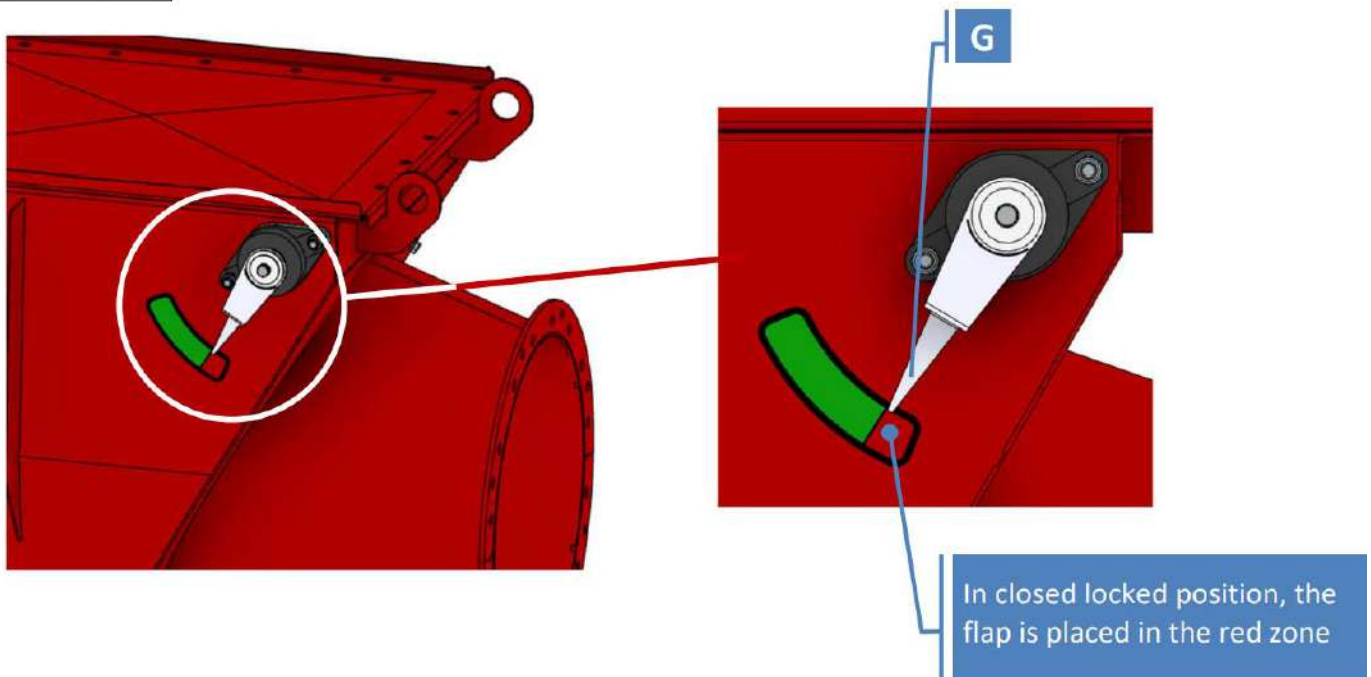




#### 4.4.7 INDICATOR POSITION WITH FLAP LOCKED CLOSED

Flap position when it's closed locked (flame is stopped) is visible from outside by the indicator ref. G placed in the red zone (picture 13).

Picture 13



## 5. VIGIFLAP INSTALL OPERATION



Checks before to start to install it:

Installer has to check before to start that the delivered material hasn't suffered any distortion.

VIGIFLAP installation has to be realized by qualified staff, especially regarding safety rules for workers when they can be in ATEX risk zone following European regulation n°1999/92/CE.

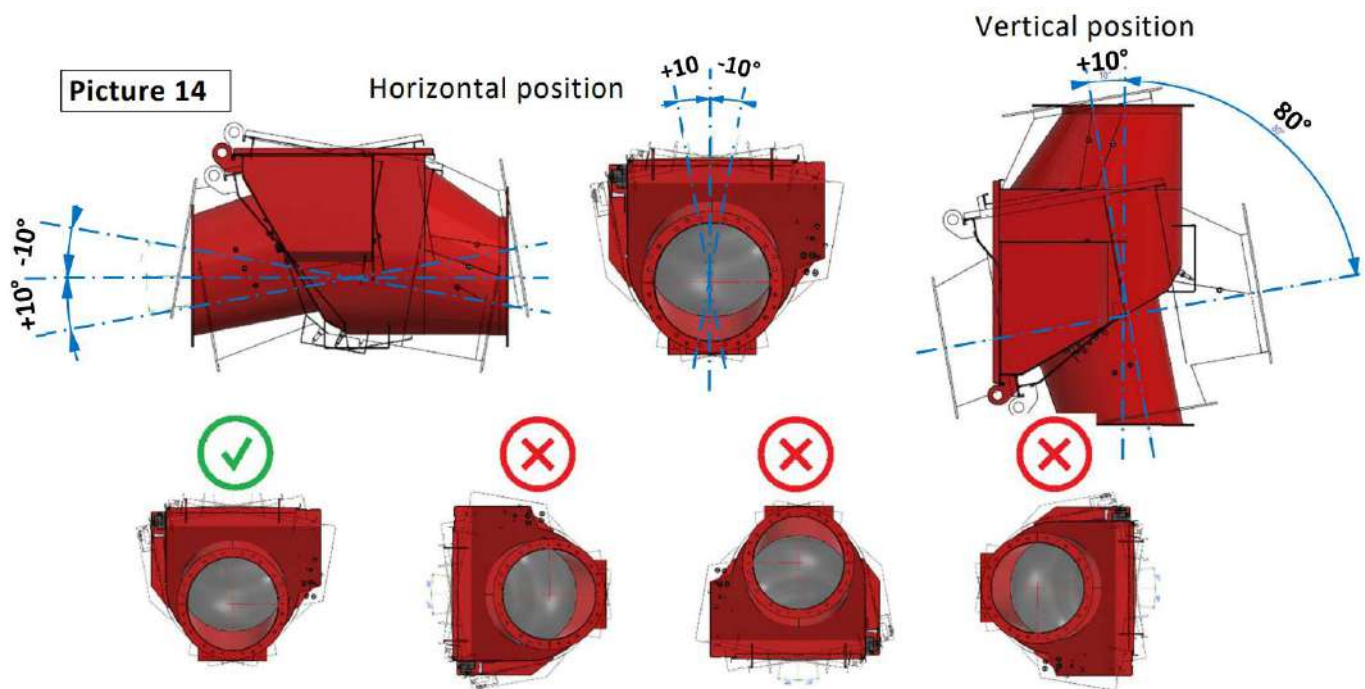
The pipes in upstream and downstream of the VIGIFLAP must have a resistance of 2 bar (as the VIGIFLAP).

### 5.1 RULES TO INSTALL THE VIGIFLAP

- 1) Always use lifting rings ref. L to handling the VIGIFLAP (picture 19).
  - 2) Respect the installation distances  $L_{min}$ ,  $L_{max}$  and also volumes  $V_{min}$  according to the VIGIFLAP size (pictures 16, 17, 18 and see TAB-1).
  - 3) Fix VIGIFLAP on bracket to avoid that the pipe support any device weight.
  - 4) To put back the access door ref. P, you have to tighten M10 bolts with torque 20Nm to avoid leak (Picture 19)
  - 5) Put gasket between VIGIFLAP flange and pipe ones.
  - 6) Respect the tighten torque according to the bolt size of fixing flange (TAB-3).
- | Screw class $\geq 6.8$ | Tightening torque |
|------------------------|-------------------|
| M6 = 1/4"              | 5 N.m             |
| M8 = 5/16"             | 10 N.m            |
| M10 = 3/8 "            | 20 N.m            |
- 7) Select the working mode of VIGIFLAP before putting into service (see §4 - VIGIFLAP working)

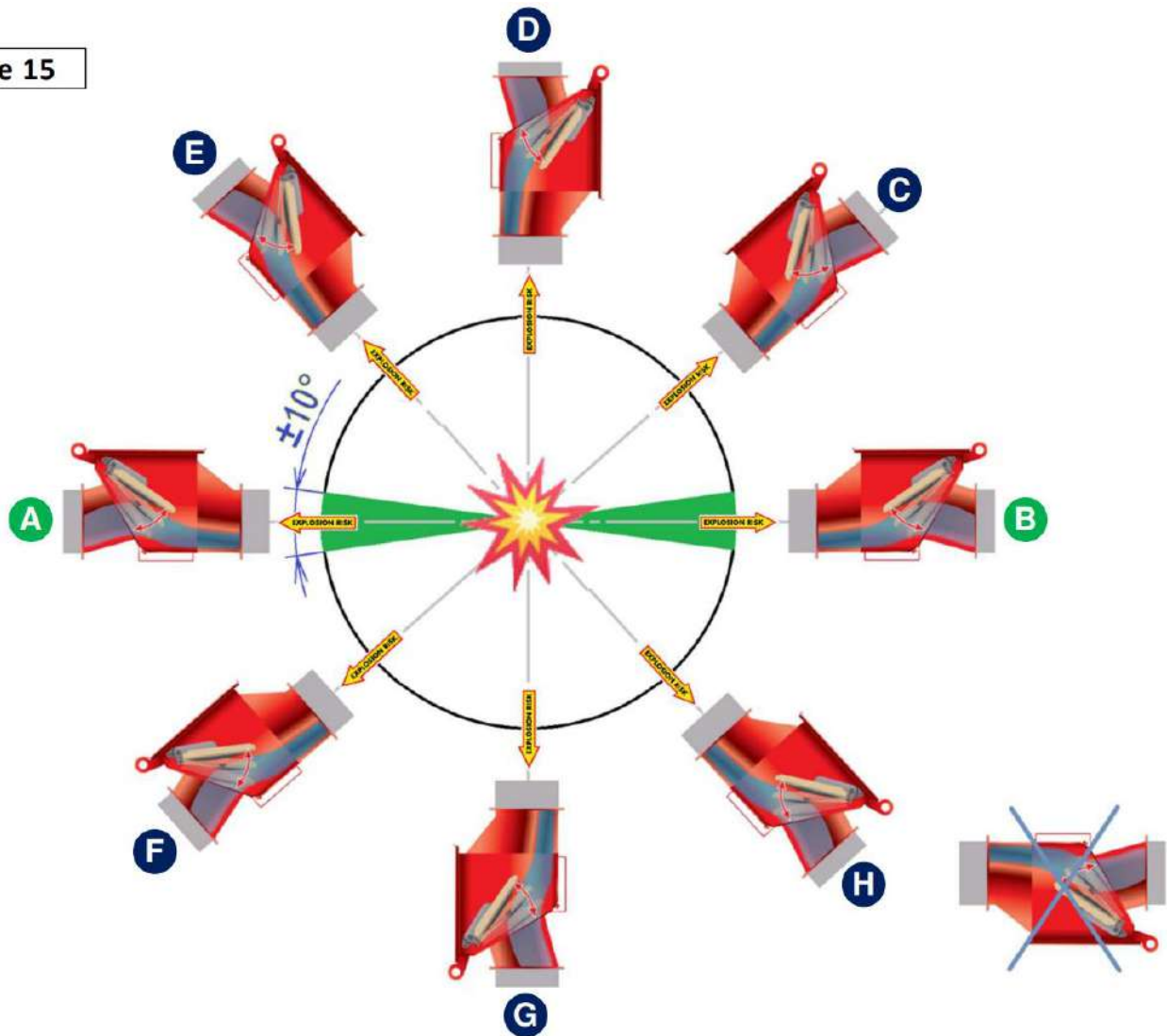
**i** Remember: VIGIFLAP is deliver from manufactory with flap kept open

- 8) Respect installation tolerance according if the VIGIFLAP is installed in horizontal or vertical position (picture 14).



- 9) Allowed Orientation of VIGIFLAP for horizontal and vertical installations (picture 15).
- The positions **A** and **B** are according to VIGIFLAP installs in horizontal position  $\pm 10^\circ$ .
  - The positions C, D, E, F, G and H are according if the VIGIFLAP is installed in angled or vertical position (over  $\pm 10^\circ$ ).

Picture 15



10) Allowed installing rules regarding the safety length from isolated vessel to VIGIFLAP:

- The system is functional with elbow on the pipe in upstream or downstream of VIGIFLAP, without quantity or positioning limits, according to the installation distance limit  $L_{min}$  and  $L_{max}$  (see TAB1).
- $L_{max}$  is 17m, it includes all pipe elements (especially the elbows) and it's measured on the axis.

$L_{min}$ : Min distance in floating flap working, on straight horizontal pipe ( $\pm 10^\circ$ ), without elbow (picture 17, see TAB 1).

$L_{min}+2m$ : Min distance between isolated vessel and VIGIFLAP in at least one of following cases:

- Flap kept open by its spring system (picture 18, see TAB 1)
- Pipe with elbow between isolated vessel and VIGIFLAP, flap in horizontal position  $\pm 10^\circ$  (see picture 18).
- Pipe with elbow between isolated vessel and VIGIFLAP, flap in vertical position (over  $10^\circ$ ), observe following rules (pictures 16, TAB 1))

① \* Min installing distance =  $L_{min}+2m$ , if vertical pipe from elbow to VIGIFLAP  $> 5x \varnothing_{pipe}$  Or

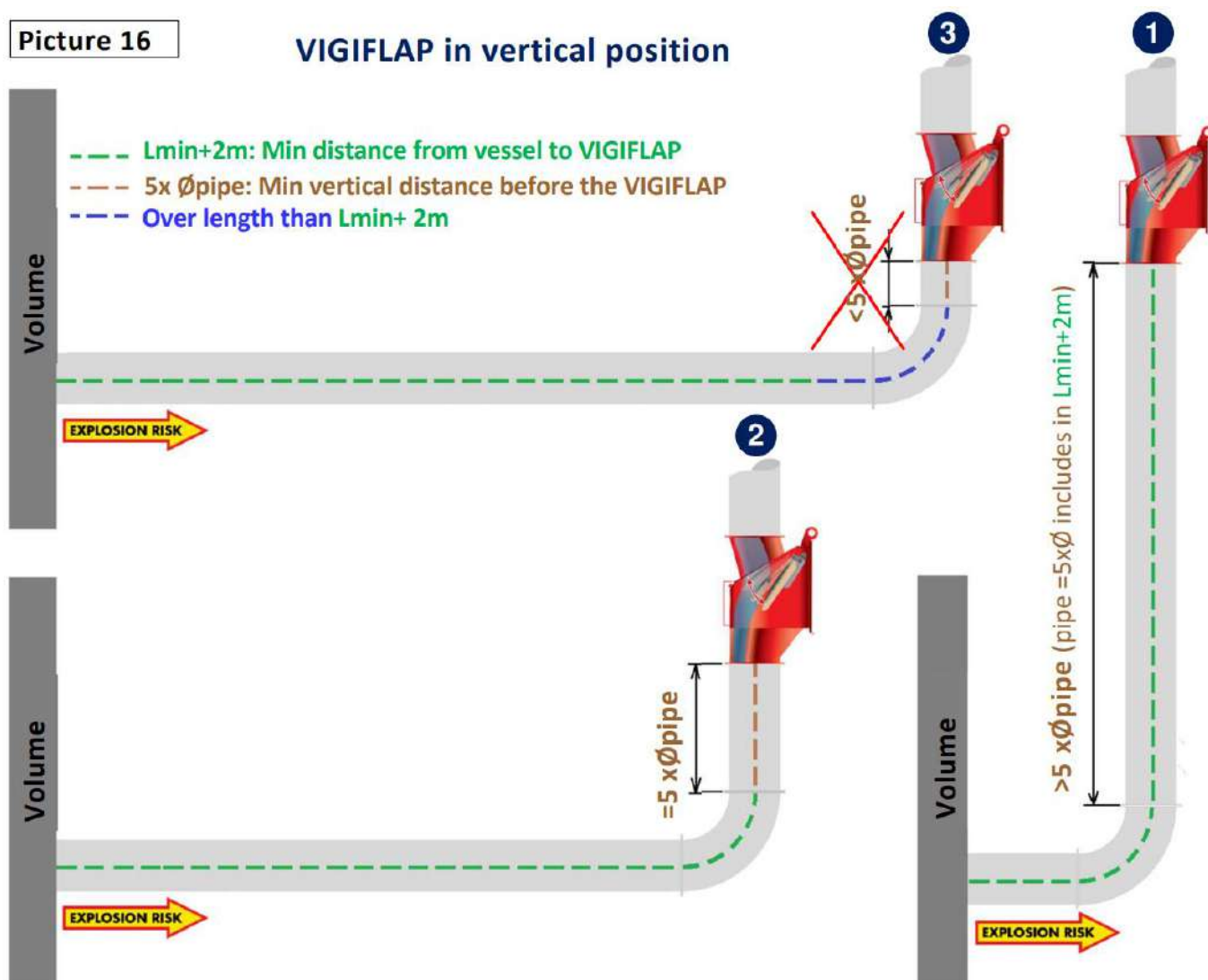
② \* Min installing distance =  $L_{min}+2m + 5x \varnothing$ , if vertical pipe from elbow to VIGIFLAP =  $5x \varnothing_{pipe}$

③ \* Installation of VIGIFLAP in vertical position must be done with vertical pipe of min  $5x \varnothing$  pipe between elbow and VIGIFLAP.



Picture 16

## VIGIFLAP in vertical position



11) Reminder about install conditions of VIGIFLAP in horizontal position:

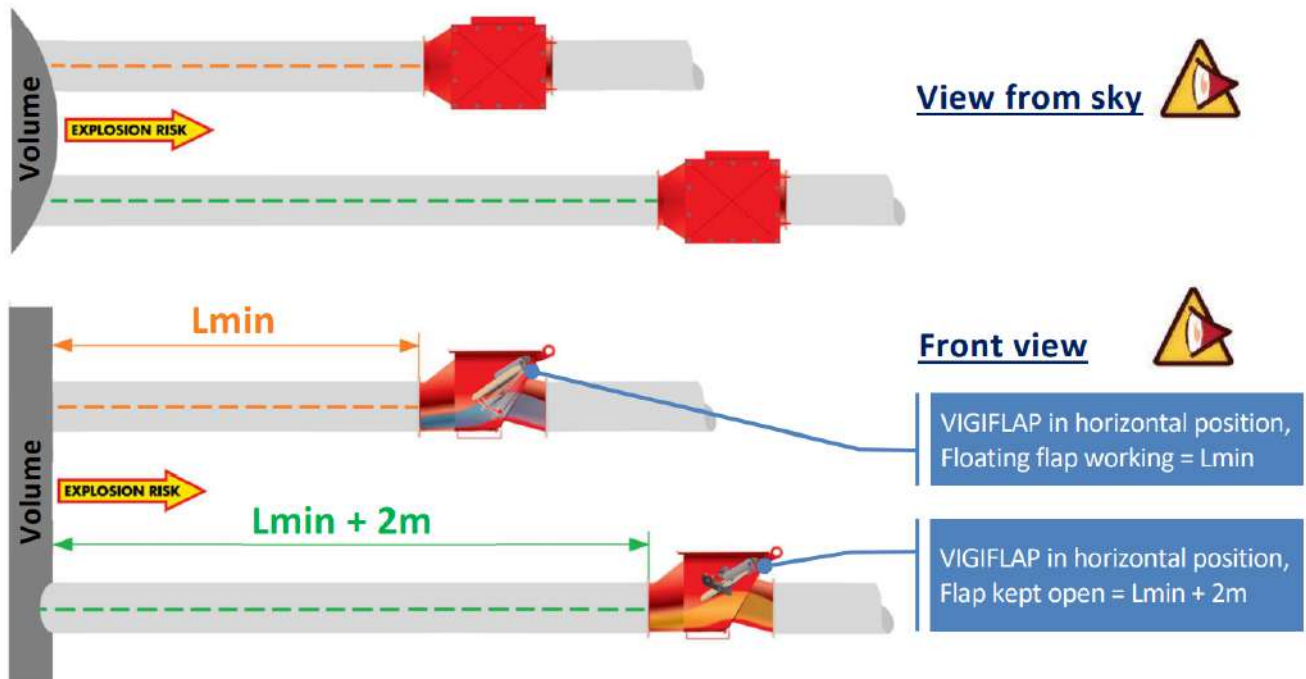
$L_{min}$ : In floating flap working, on straight horizontal pipe, without elbow (picture 17, see TAB 1).

$L_{min} + 2m$ : Min distance between isolated vessel and VIGIFLAP in at least one of following cases:

- Flap kept open by its spring system (pictures 17, 18, see TAB 1)
- Pipe with elbow between isolated vessel and VIGIFLAP, flap in horizontal position  $\pm 10^\circ$  (see picture 18).

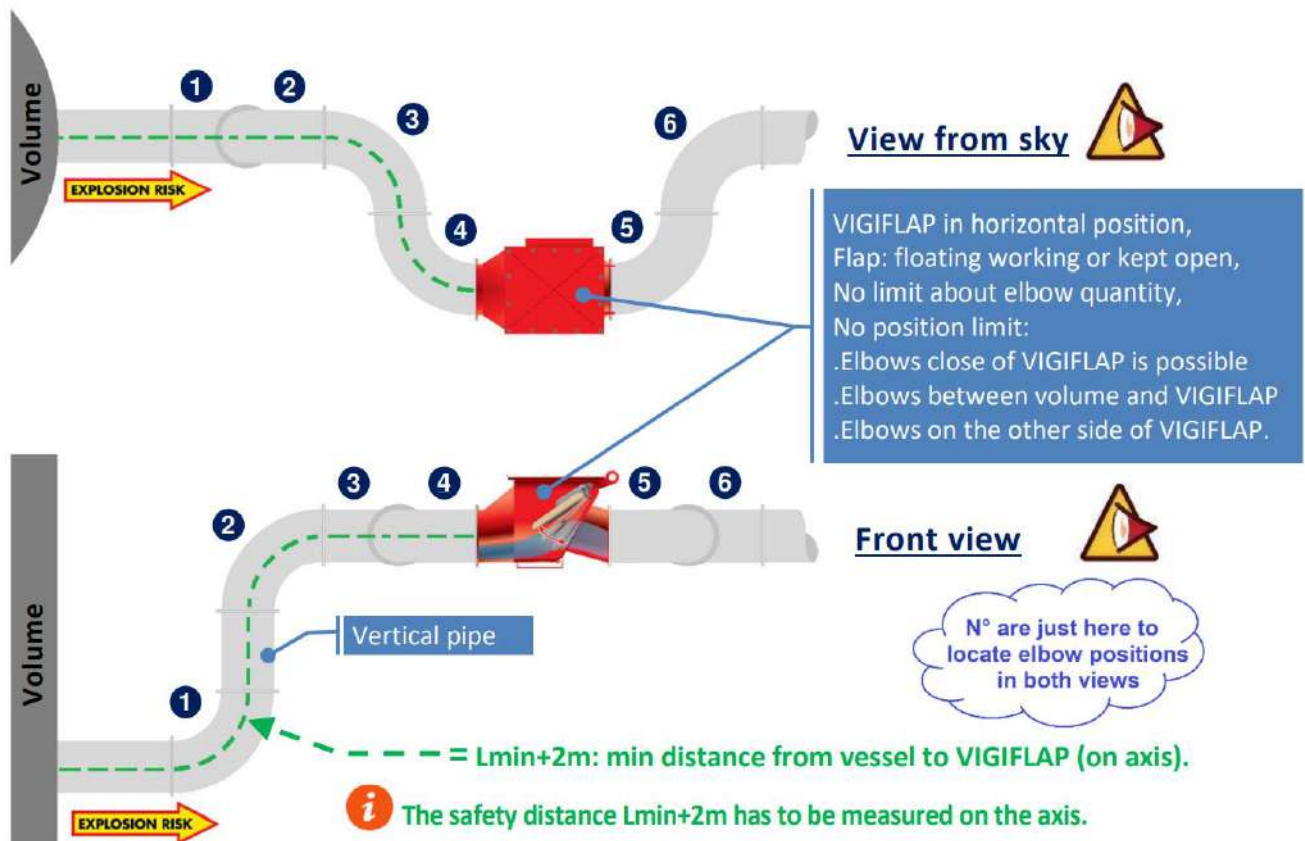
Picture 17

### VIGIFLAP in horizontal position, straight pipe



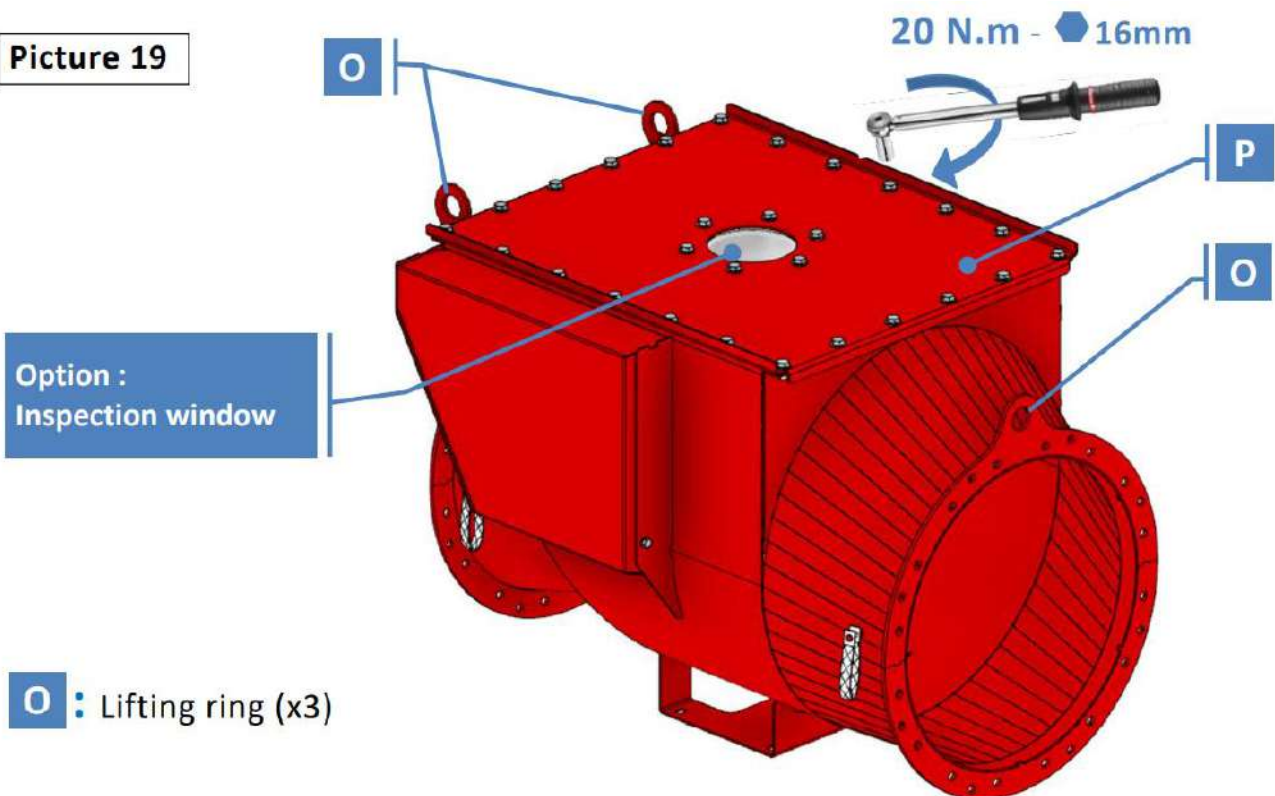
Picture 18

## VIGIFLAP in horizontal position, pipes with elbows



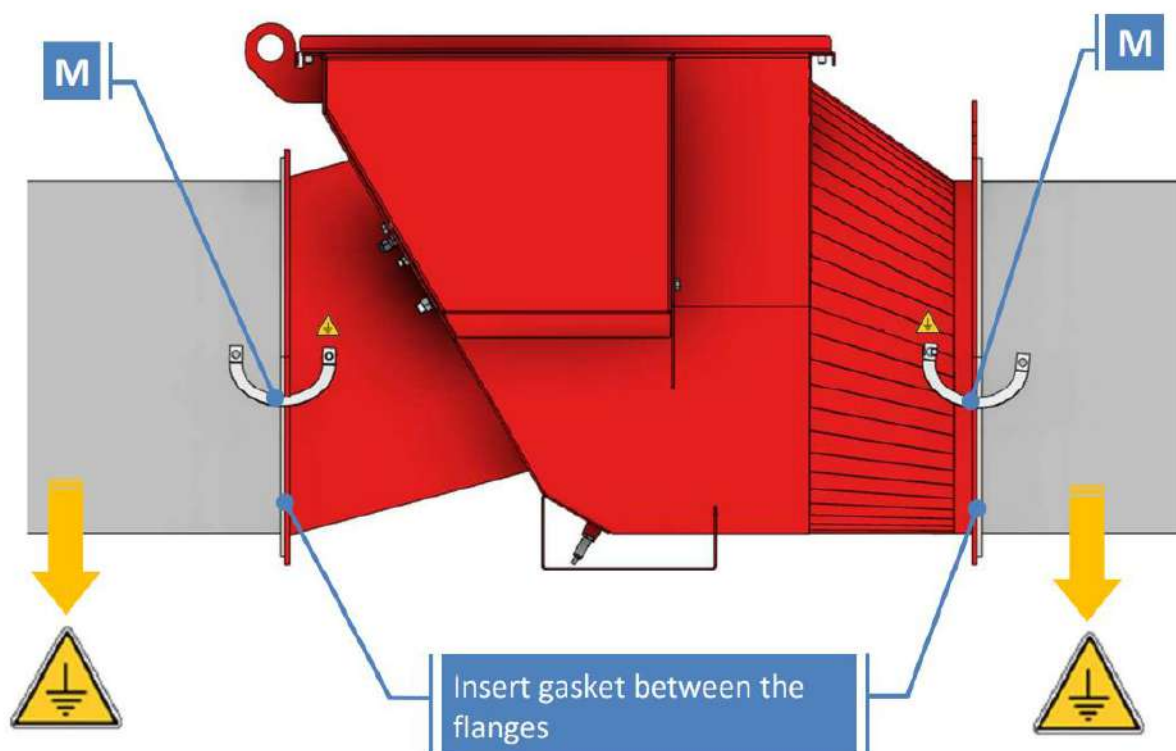
12) The inspection door is fixed in manufactory, after each maintenance operation, be sure to tighten all holes: M10 @ 20Nm.

Picture 19



- 13) Connect the both ground strips ref. M from VIGIFLAP to both pipes, upstream and downstream (Picture 20). Before to start to use VIGIFLAP, check electric continuity and that the ground connection are efficient.

**Picture 20**



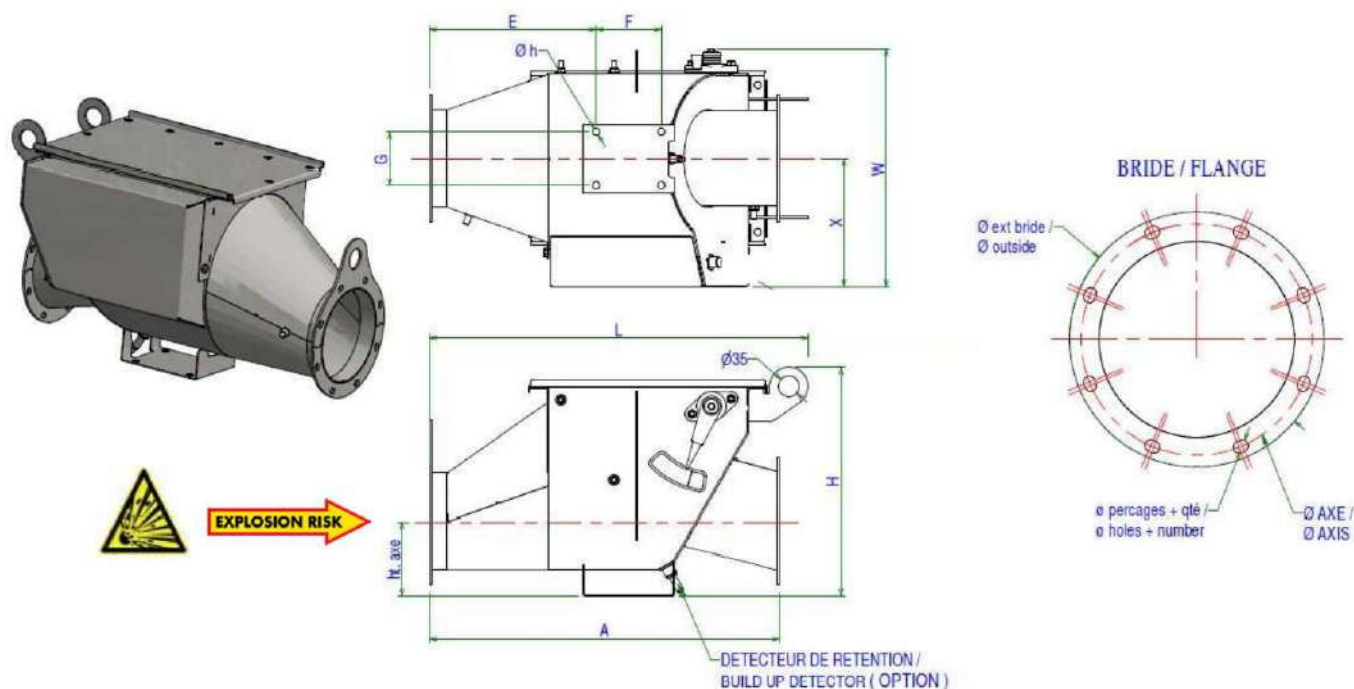
## 6. GENERAL DIMENSIONS

### (THE LIST OF MODELS IS NOT EXHAUSTIVE)

The VIGIFLAP range is declined in seven main bodies. The main bodies are indicate by “x” in the tables TAB-4 and TAB-5, they are used for one or two other connected pipe sizes.

The connected pipe sizes can by indicated in measure unity: metric (TAB-4) or imperial TAB-5).

The VIGIFLAP name is according to the pipe size, example DN200.



### 6.1 VIGIFLAP RANGE WITH METRIC « DN » (TAB-4)

Ø VIGIFLAP		OVERALL SIZE				FLANGE				CONDUIT / PIPE			FIXING PLATE			weight
DN	Body	L	H	W	X	Ø outside	Ø axis	qté/n.	Ø holes	A	Ht axe	E	F	G	Ø holes	
		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	Kg
160	X	640	386	400	216	215	195	8	10	591	126	282	110	90	12	21
180		612				235	215	8	10	531	136	254				20
200		857	466	490	261	255	235	12	10	857	138	325	160	140	12	35
250	X	717				305	285	12	10	671	163	253				33
300		966	575	590	311	355	336	12	10	966	197	373	160	160	12	44
350	X	817				415	389	12	12	776	222	302				50
400		1088	705	740	385	465	439	16	12	1089	249	431	180	260	12	81
450	X	945				515	515	16	12	893	274	359				77
500		1197	815	840	434	565	540	16	12	1199	309	441	200	300	12	106
550	X	1045				615	590	16	12	996	334	369				104
600		1549	1038	992	508	665	640	16	12	1549	366	588	200	400	12	150
650		1363				715	690	24	12	1364	391	517				150
700	X	1207				785	750	24	12	1155	416	446				150
750		1751				835	800	24	12	1752	443	514				285
800	X	1563	1213	1200	602	885	850	24	12	1564	468	442	400	500	12	285



## 6.2 VIGIFLAP RANGE WITH IMPERIAL « DN » (TAB-5)

Ø VIGIFLAP		OVERALL SIZE				FLANGE				CONDUIT / PIPE			FIXING PLATE				weight	
DN	Body	L	H	W	X	Ø outside	Ø axis	qté /n.	Ø holes	A	Ht axe	E	F	G	Ø holes			
		mm	mm	mm	mm	mm	mm      inch	mm	mm      inch	mm	mm	mm	mm	mm	mm	Kg		
6"	X	649	386	400	216	209	185,7	7-5/16	6	7,1	9/32	628	120	291	110	90	12	21
7"		616				238	215,9	8-1/2	6	9,5	3/8	559	133	258				20
8"		857				263	242,9	9-9/16	6	9,5	3/8	857	138	325				35
10"	X	717	466	490	261	327	300	11- 13/16	6	11,1	7/16	670	163	253	160	140	12	33
12"		966				384	355,6	14	8	11,1	7/16	965	197	373				50
14"	X	817				435	406,4	16	8	11,1	7/16	776	222	302				50
16"		1089	705	740	385	486	457,2	18	8	11,1	7/16	1089	249	431	180	260	12	81
18"	X	945				536	508	20	8	11,1	7/16	893	274	359				77
20"		1199				587	552,5	21-3/4	12	11,1	7/16	1199	309	441				110
22"	X	1039	815	840	434	638	603,3	23-3/4	12	11,1	7/16	981	336	364	200	300	12	110
24"		1541				689	657,2	25-7/8	12	11,1	7/16	1538	368	582				178
26"		1353				766	720,7	28-3/8	16	11,1	7/16	1353	393	512				170
28"	X	1200	1038	992	508	816	771,5	30-3/8	16	11,1	7/16	1138	419	438	200	400	12	170
30"		1739				867	822,3	32-3/8	16	11,1	7/16	1739	444	508				285
32"	X	1548				918	873,1	34-3/8	16	11,1	7/16	1545	470	435				285

## 7. FLAP SENSOR IN LOCKING CLOSED POSITION

The VIGIFLAP is equipped by outside inductive sensor which indicate when the flap is locked in closed position (picture 21). It switch off when the sensor see the target screw (ref. Q) in closed position (explosion is isolated).

❗ The VIGIFLAP is equipped in common version with sensor which installed out of ATEX zone. In option, ATEX sensor is available for ATEX II2 D (zone 21).

Sensors are with different sizes according to VIGIFLAP size:

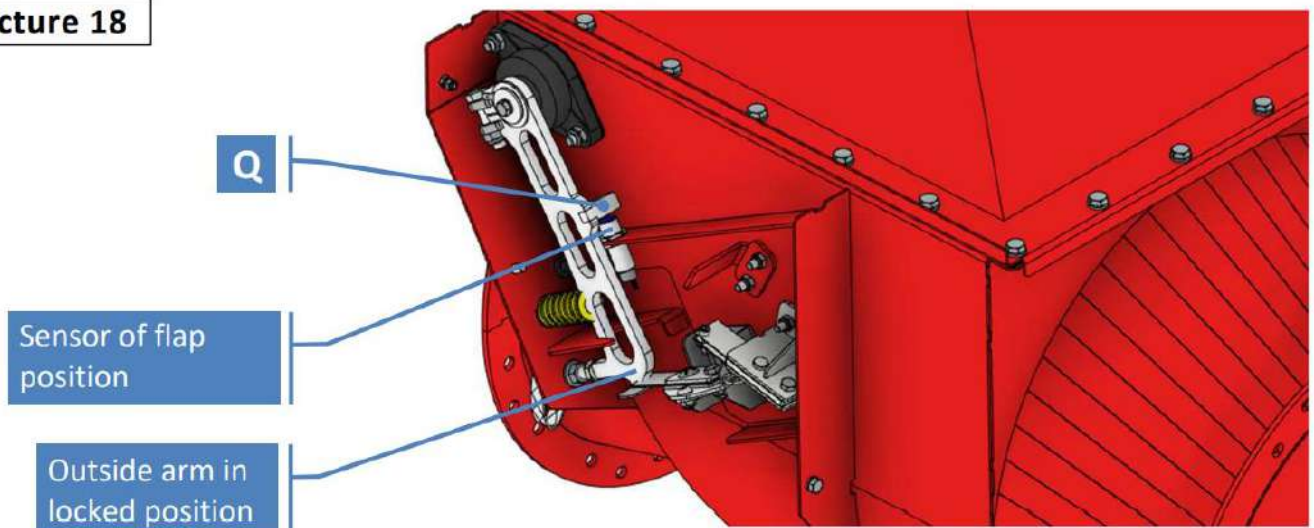
- Inductive sensor Ø12 for VIGIFLAP DN≤350 (DN≤14")
- Inductive sensor Ø18 For VIGIFLAP DN≥400 (DN≥16")

We advise to connect the position sensor to sound alarm, light alarm or process PLC to have information regarding the locking closed position of flap following explosion accident or unusual running.

⚠ The sensor works in positive safety running, (NC switch) when the flap is not locked in closed position.

⚠ The sensor set up is realised in factory. In case of its replacement, you have to simulate the locked in closed position of outside arm in order to set the target screw (ref. Q) in front of the sensor in detection condition. You will have to adjust the length of the target screw (ref. Q) until the sensor statue is changing (switch off), then tighten the counter nut to fix the setting.

Picture 18

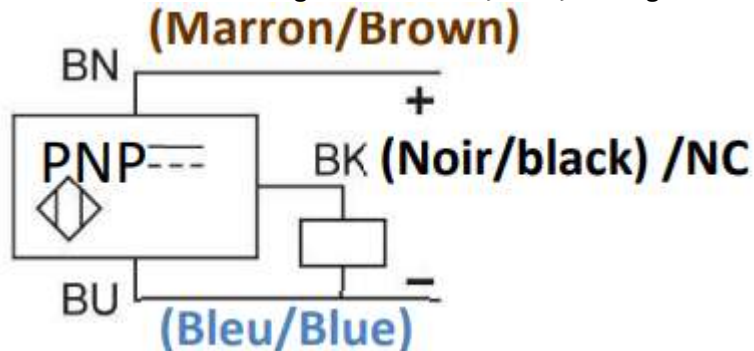


## 7.1 INDUCTIVE SENSOR Ø12 OUT OF ATEX ZONE (DN≤350 - DN≤14"):

Supply voltage:	Ue 12...48 V DC
Switching current max:	Ie 200 mA
Degree of protection:	IP68
Output function:	NC
Output function kind:	PNP
Operation temperature:	-25°C<Ta<+70°C
Cable:	2m - 3 wires of 0.34 mm <sup>2</sup>
Indication LED:	Indication LED:



**i** Electric connecting sketch: +BN, -BU, Charge BK/BU

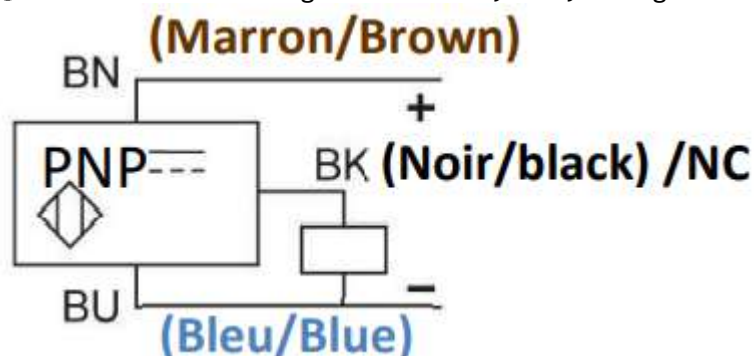


## 7.2 ON OPTION: INDUCTIVE SENSOR Ø12 FOR ZONE ATEX - II 2 D (DN≤350 - DN≤14"):

Supply voltage:	Ue 12...48 V DC
Switching current max:	Ie 200 mA
Degree of protection:	IP68
Output function:	NC
Output function kind:	PNP
Operation temperature:	-20°C<Ta<+60°C
Cable:	10m - 3 wires of 0.34 mm <sup>2</sup>
Indication LED:	Output indication 1 yellow LED
ATEX marking:	II 2 D_Ex tb IIIC T90°C Db
ATEX/IECEx Certificate:	INERIS 04ATEX0022 / INE 17.0006



**i** Electric connecting sketch: +BN, -BU, Charge BK/BU

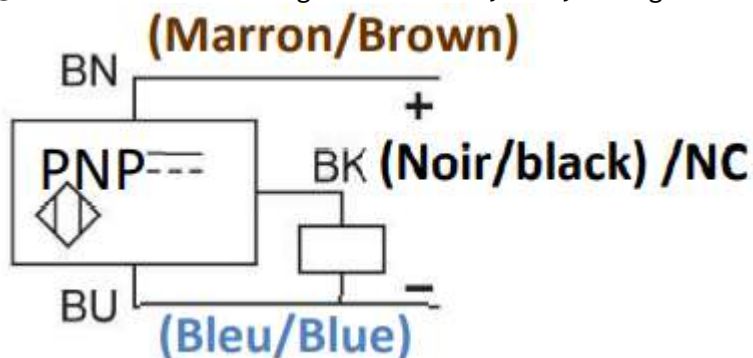


### 7.3 ON OPTION: INDUCTIVE SENSOR Ø18 OUT OF ATEX ZONE (DN≥400 - DN≥16"):

Supply voltage:	Ue 12...24 V DC
Switching current max:	Ie 200 mA
Degree of protection:	IP67
Output function:	NC
Output function kind:	PNP
Operation temperature:	-25°C<Ta
Cable:	2m - 3 wires of 0.14 mm²
Indication LED:	Output indication 1 yellow LED



❗ Electric connecting sketch: +BN, -BU, Charge BK/BU

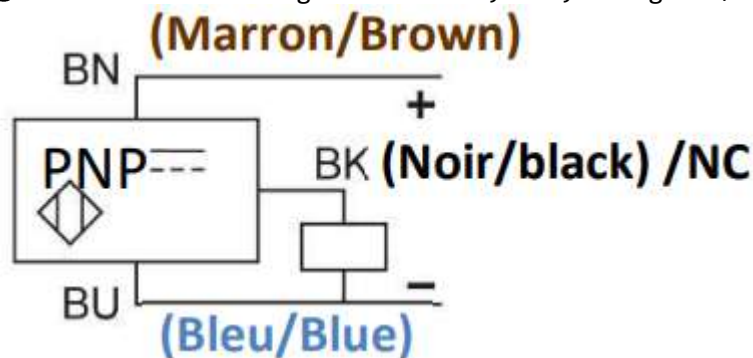


### 7.4 ON OPTION: INDUCTIVE SENSOR Ø18 FOR ZONE ATEX - $\text{Ex}$ II 2 D (DN≥400 - DN≥16"):

Supply voltage:	Ue 12...48 V DC
Switching current max:	Ie 200 mA
Degree of protection:	IP68
Output function:	NC
Output function kind:	PNP
Operation temperature:	-20°C<Ta<+60°C
Cable:	10m - 3 wires of 0.34 mm²
Indication LED:	Output indication 1 yellow LED
ATEX marking:	II 2 D_Ex tb IIIC T90°C Db
ATEX/IECEx Certificate:	INERIS 04ATEX0022 / INE 17.0006



❗ Electric connecting sketch: +BN, -BU, Charge BK/BU



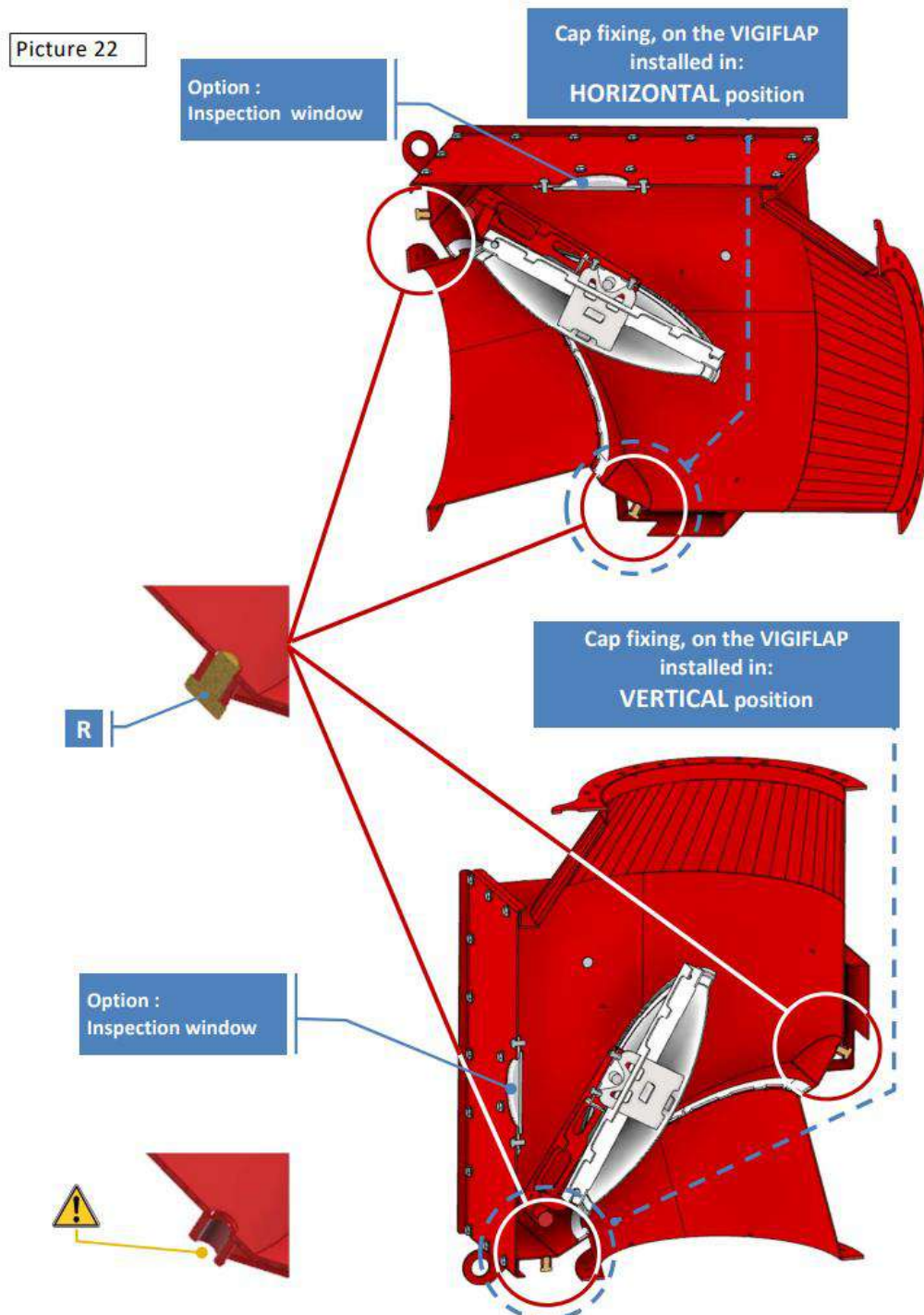


## 8. Dust build up sensor

VIGIFLAP can be equipped, on option, of capacitive sensor and/or inspection window which allow to check unusual dust build up layer in the isolated zone of flap, for VIGIFLAP installed in horizontal or vertical position.

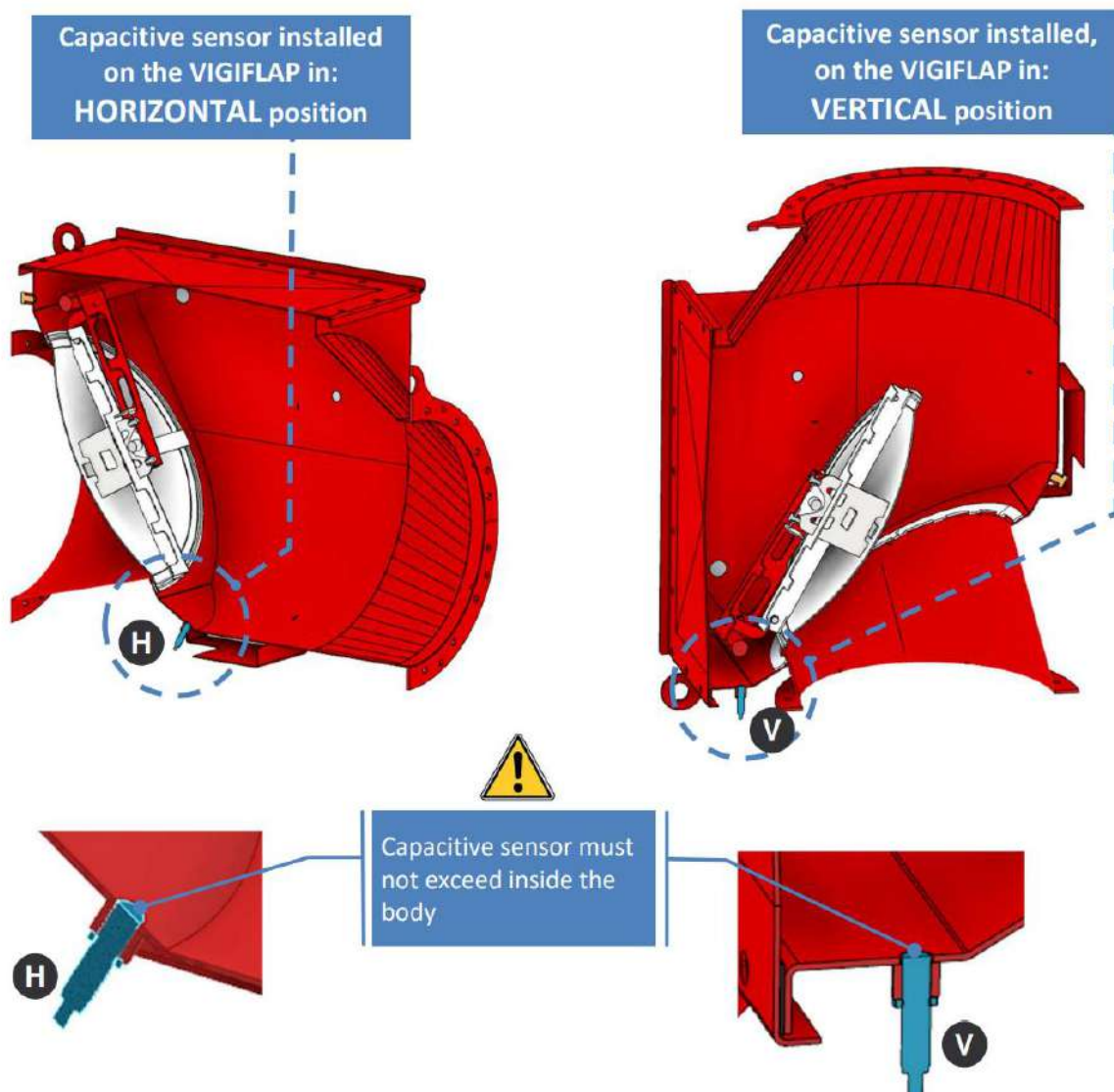
This option helps to check dust build-up which can avoid the correct flap closing in explosion case (pictures 22 and 23).

In common version, the VIGIFLAP is equipped of 2 brass caps ref. R which are tightened at 20Nm. These caps allow to close the sleeve holes of the capacitive sensor (picture 22).



Never use VIGIFLAP if the sleeve holes are not obstructed either by the brass cap ref. R or by the capacitive sensor  $\varnothing 12$ .  
Never use VIGIFLAP if the inspection window has damage or missing (if this option is present).

Picture 23



### 8.1 CAPACITIVE SENSOR Ø12 FOR ATEX ZONE - $\text{Ex}$ II 1 D:



Output function kind:	NAMUR DIN 60947-5-6
Supply voltage:	$U_B$ 5 - 15 V DC, $U_i$ = 15 V DC
Switching current out of detection:	$\leq 1,5$ mA
Switching current during detection:	$\geq 2,5$ mA
Degree of protection:	IP67
Indication LED:	Yellow
Operation temperature:	Operation temperature:
Cable:	2m - 3 wires of $0.14 \text{ mm}^2$
ATEX marking:	II 1 D_Ex ia IIIC T101°C Da
ATEX/IECEx Certificate:	DMT 03 ATEX E 048 / BVS 07.0031



Namur sensors have to be use with switch amplifier approved for intrinsic mode according to EN 60079-11: 2012.



## 9. ATEX MARKING


ATEX marking  II D is according to requirement of ATEX European regulation 2014/34/UE.  
 The marking II D on the label indicate that the VIGIFLAP is a protected device for dust explosive atmosphere.

### 9.1 CERTIFICATION FEATURES

- 0080 Notified body number of supervision, INERIS
- INERIS Certificate number delivered by INERIS  
19ATEX0016X
- EN 16447 : 2014 Certificate number delivered by INERIS

### 9.1 MARKING EXAMPLE



1)  II D	Protected device for dust ATEX
2) Ø250	Pipe connecting size
3) Body material	Body raw material (example : painted steel )
4) Kst max	Max explosion speed level of the dust (bar.m/s)
5) Pmax	Max explosion pressure of this dust in closed vessel (bar)
6) Vessel Pred,max	Max explosion reduced pressure in the vessel (bar)
7) Body pressure resistance	Pressure resistance of the VIGIFLAP body (bar)
8) Process temperature	Working temperature range in C°
9) P/N	STIF Item of the device
10) S/N	Serial number of this device
11) Year	Manufacturing year
12) 20 N.m	Bolt torque of access door

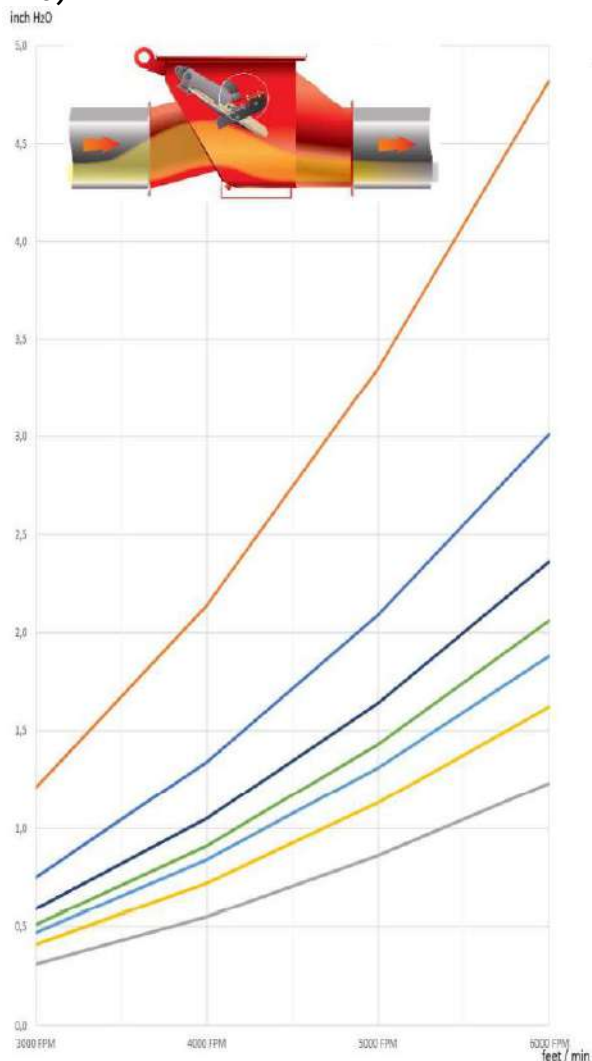
## 10. AERAULIC PRESSURE DROPS

The pressure drop ( $\Delta P$ ) is different depending on the VIGIFLAP is installed in dirty air side (TAB-6) or in clean air side (TAB-7).

The values are available on the air flow range from 15m/s (3000 ft/min) to 30m/s (6000 ft/min).

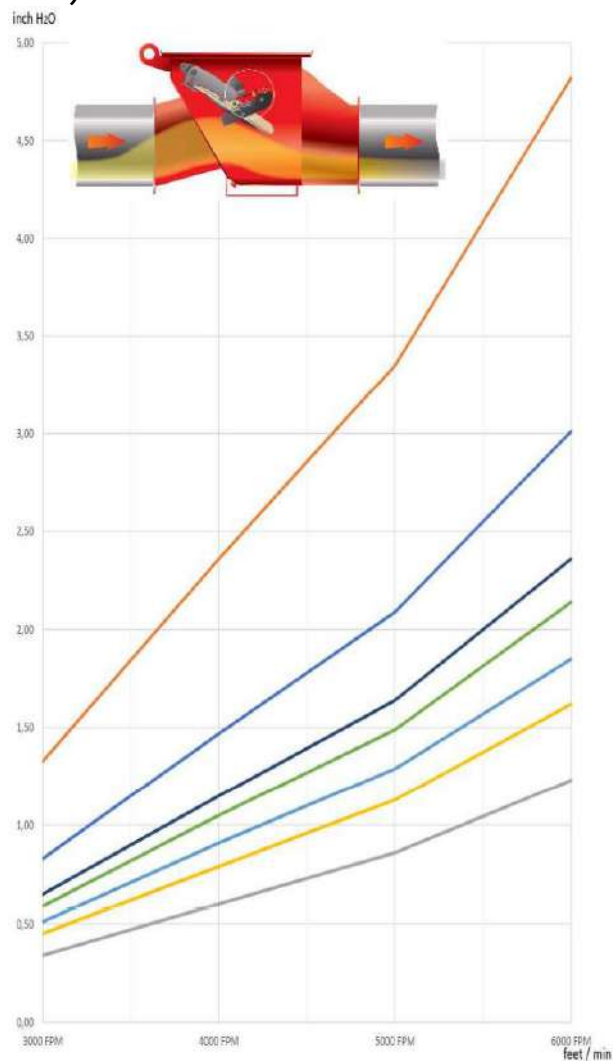
### 10.1 PRESSURE DROP GRAPHS

Dirty air side: air + dust, Flap kept open (TAB-6)



—  $\varnothing$  160/250/350/450/550/700 —  $\varnothing$  180 —  $\varnothing$  200 —  $\varnothing$  300/600 —  $\varnothing$  400/750 —  $\varnothing$  500/650 —  $\varnothing$  800  
 —  $\varnothing$  6"/10"/14"/18"/22"/28" —  $\varnothing$  7" —  $\varnothing$  8" —  $\varnothing$  12"/24" —  $\varnothing$  16"/30" —  $\varnothing$  20"/26" —  $\varnothing$  32"

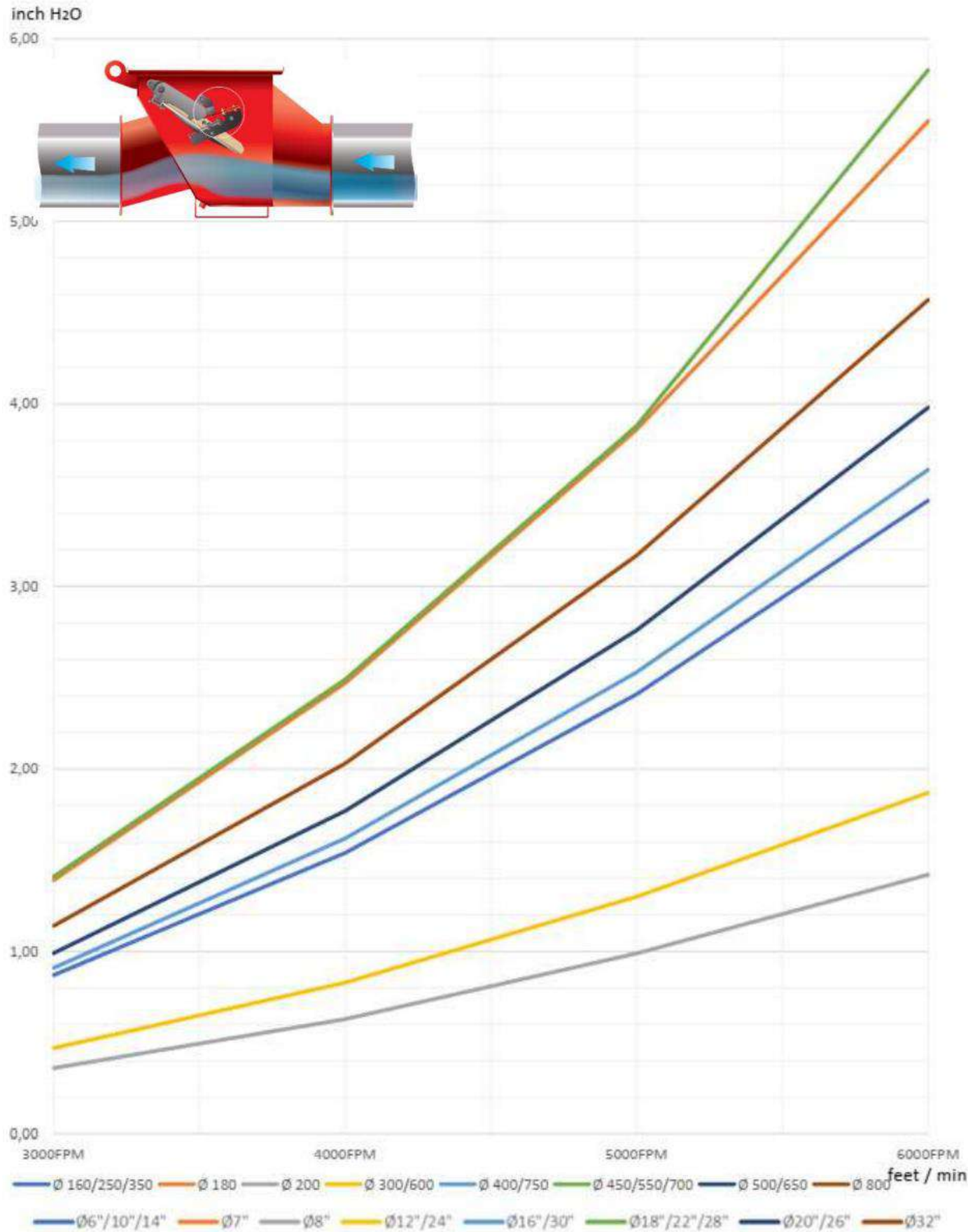
Dirty air side: air + dust, Floating flap (TAB-7)



—  $\varnothing$  160/250/350/450/550/700 —  $\varnothing$  180 —  $\varnothing$  200 —  $\varnothing$  300/600 —  $\varnothing$  400/750 —  $\varnothing$  500/650 —  $\varnothing$  800  
 —  $\varnothing$  6"/10"/14"/18"/22"/28" —  $\varnothing$  7" —  $\varnothing$  8" —  $\varnothing$  12"/24" —  $\varnothing$  16"/30" —  $\varnothing$  20"/26" —  $\varnothing$  32"



Clean air side (TAB-8)



## 10.2 PRESSURE DROP VALUES (IN MM H2O /INCH WG) MEASURED AT 20 M/S (4000 FT/MIN) (TAB-8).

VIGIFLAP DN	160 6"	180 7"	200 8"	250 10"	300 12"	350 14"	400 16"	450 18"	450 18"	550 22"	600 24"	650 26"	700 28"	750 30"	800 32"
Air+dust Flap kept open	33mm 1"9/32	53mm 2"3/32	13mm 1/2"	33mm 1"9/32	18mm 11/16"	33mm 1"9/32	20mm 25/32"	33mm 1"9/32	22mm 7/8"	33mm 1"9/32	18mm 11/16"	22mm 7/8"	33mm 1"9/32	20mm 25/32"	26mm 1"1/32
Air+dust Floating flap	37mm 1"15/32	59mm 2"5/16"	15mm 19/32"	37mm 1"15/32	20mm 25/32"	37mm 1"15/32	22mm 7/8"	37mm 1"15/32	25mm 31/32"	37mm 1"15/32	20mm 25/32"	25mm 31/32"	37mm 1"15/32	22mm 7/8"	29mm 1"5/32
Clean air Flap kept open	38mm 1"1/2	61mm 2"3/8	15mm 19/32"	38mm 1"1/2	20mm 25/32"	38mm 1"1/2	40mm 1"9/16	63mm 2"1/2	43mm 11/16"	63mm 2"1/2	20mm 25/32"	43mm 11/16"	63mm 2"1/2	40mm 1"9/16	50mm 1"31/32

## 11. MAINTENANCE OPERATIONS AND PERIODIC INSPECTIONS

### 11.1 STANDARD REQUIREMENTS

According to EN16447, you have to plan specific periodic inspections to assure that the VIGIFLAP keep all the time its efficient isolation function against explosion propagations. From these inspections, you have to check that the VIGIFLAP running keep high safety level, for example from corrosive defect, abrasive effect, dust build up in the flap gasket zone.

Periodic inspection frequency has to be enough short to avoid dangerous running (cases of higher risk of bad VIGIFLAP running).

**i** To define the periodic inspection frequency, we advise to wait short time between first inspections when you start the VIGIFLAP to define well the necessary time between inspection operations, following installation and VIGIFLAP condition evolution. The time between 2 inspection operations mustn't be higher than 1 year. Adjust it following of the VIGIFLAP status.

Only trained and entitled workers in maintenance procedures for ATEX equipment are authorized to realize periodic inspections of the VIGIFLAP. Periodic inspection results have to be recorded in register.

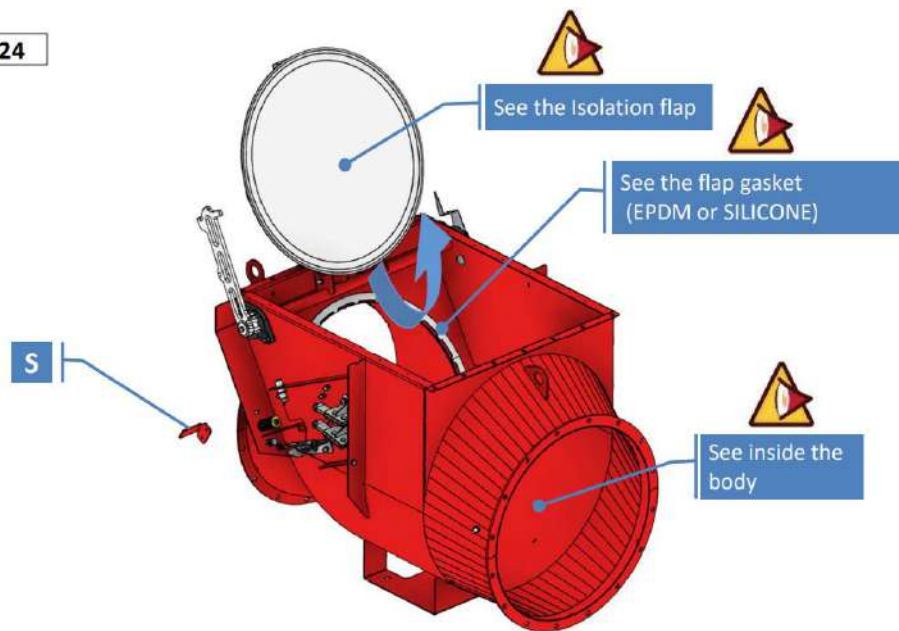


Before to start inspection or maintenance operation on the VIGIFLAP, you have to get safe the zone, especially you have to check and be sure that the air flow is switch off and that no risk to bring it inadvertently into operation.

## 11.2 PERIODIC INSPECTION OPERATIONS

Start to take off the side safety cover and the top access door. Then, take off the top stop piece ref. S of the outside arm of the flap and turn the moving parts on the top, outside of the VIGIFLAP body (picture 24).

Picture 24



## 11.3 CHECK THE FOLLOWING POINTS (TAB-9)

INSPECTION	CHECKING ZONE	OBSERVED DEFECT	MAINTENANCE
Dust build up	Inside the body	Dust layer >1mm (0.04")	Clean the dirty zones
Abrasive effect	Flap	High abrasive damage ☼	Replace the flap *
	Inside the body	High abrasive damage ☼	Replace the VIGIFLAP *
Airproof	Flap gasket	Gasket distortion	Replace the gasket according to original raw material *
	Top access door gasket		
Corrosive effect	Inside and outside the VIGIFLAP	High corrosive damage ☼	Replace the VIGIFLAP *
Chock	Inside and outside the VIGIFLAP	High body distortion	Replace the VIGIFLAP *
	Flap	Flap distortion	Replace the flap *
Running	Mobile parts	Not normal stress on the shift	Replace the VIGIFLAP *
Lock in closed position	Locking system	Locking spring strip lack Damage on the locking system	Return the device to do manufacture maintenance
Grounding	Grounding strip fixing	Equipotential link interruption	Tighten the fixing points of the ground strip.
Pipe connection	Fixing bolts (pipe flanges)	Defect of bolt tightening	Check the bolt tightening according to advise torque, see TAB-3
Locking signal	Locking position sensor	The sensor don't switch off when the flap is locked in closed position	Set up the gap with target ≤2mm Replace the sensor (same item) *
Bottom sleeve hole	Under the flap	Brass cap lack or capacitive dust build-up sensor lack	Put the capacitive sensor or the brass cap *

☼ Wear over 15% of original thickness is considered as high level. Replace the defect device.

\* Only replace the components by original spare parts



For all other maintenance operation, you have to send request to Safevent ApS.

**After inspection and/or maintenance operation**, the mobile equipment has to be place again in the initial position (floating flap §picture 7 or flap keep in opened position § picture 8).

The top stop piece ref. S has absolutely to put in place. The top access door has to be closed and tighten according to advice torque (20Nm) and the side protected cover of the mechanism has to be in place.



The device hasn't to be used if the top stop piece ref. S has not in place.

#### 11.4 PROCEDURE IN EXPLOSION CASE:

After an explosion, the VIGIFLAP mechanism can have damaged, case of the shock violence (welding crack, flap surface distortion...). It's reason that you have to replace the VIGIFLAP.

#### 11.5 WASTE DISPOSAL PROCEDURE:

The user has to look after to follow specific waste disposal of the VIGIFLAP and bring to collect at center the separate components following the raw material (plastic, steel, rubber...).



In case of the VIGIFLAP will be used or checked in opposite conditions of the described manner of this notice, Safevent responsibility can't engage for any damage get on person, animal, environment or material goods.

## SUPPLIER INFO

### SAFEVENT ApS

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DK-9800 Hjoerring  
Denmark

TEL: +45 88 63 89 00  
MAIL: [sales@safevent.dk](mailto:sales@safevent.dk)  
URL: [www.safevent.dk/en](http://www.safevent.dk/en)

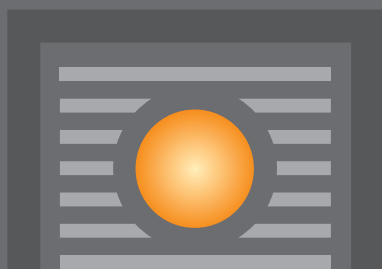
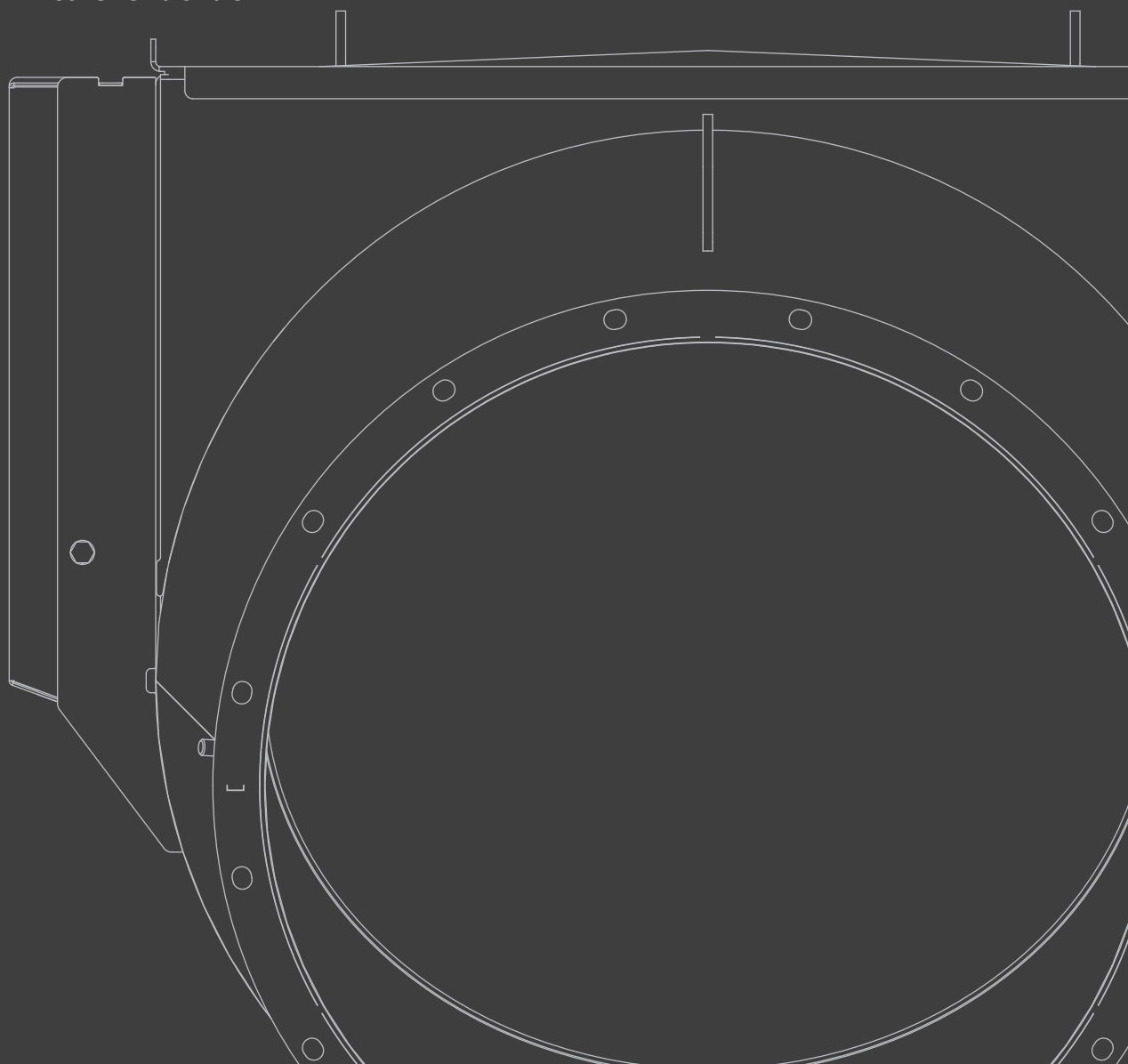




## **SAFEVENT ApS**

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