



1. DESCRIPTION

The valve in object is a safety valve with direct load in which the closing mechanical strength is obtained through spring.

The valve is realized for use in agricultural field to be employed on tankers carrying slurries (fluids belonging to group 2 – ref. Art.9 point 2.2 DIR 97/23/CE) with allowable maximum pressure of 4 bar and classified in class III (ref. annex II – table 2 DIR 97/23/CE). These tankers are emptied through an increasing of pressure of the air-pocket which is between the fluid level and the upper part of the tanker. The function of the valve is to avoid that the pressure inside the tanker would exceed the established limit. Through the valve there is only a discharge of air, there isn't passage of fluid or of fumes in pressure.

The working temperature of the valve changes according to climatic conditions to which the slurry –tank is exposed. Due to the big size of the tankers, the working pressures are usually included within 1,5 bar.

2. CLASSIFICATION

The valves object of this dossier could be classified in class III according to what established at point 2 of the annex II of the directive 97/23/CE. These valves are in fact used to protect specific equipments (tankers carrying slurries) classified in class III, are not useable on equipment in pressure in IV category.

To affix the CE mark has been applied the H form.

3. MANUFACTURER

The valves object of this issue are manufactured by :

Metaltecnica srl - Via G. Matteotti, 151 - 28077 Prato Sesia (NO)

Company with certified Quality System UNI EN ISO 9001:2008 by BUREAU VERITAS ITALIA spa (certificate n. IT257297 dated 25/07/2014).



4. INSTALLATION

With the aim to guarantee the user physic integrity or materials damages during the valve movement and installation it is necessary to observe the following warnings:

- The valve must be used and maintained by prepared and authorized personnel.
- Use adequate personal protection accessories (gloves, safety shoes, ...).
- Install the valve in accordance with the actual standards.
- Discharge the pressure inside the tank before performing any maintenance activity and/or valve disassembly.

Before installing the valve, check it to verify that has not suffer damages during the sending or the storage.

In case of accidental impact (also of modest identity), verify the valve integrity and perform one or more manual opening before putting in service the valve.

The installation optimum position is the vertical valve one. In this position we obtain the best valve functionality and the internal parts maximum protection from the atmospheric agents.

Use to different installation positions (inclined axle) only in case of exceptional needs.

We recommend to install the valve in positions protected against accidental impacts.

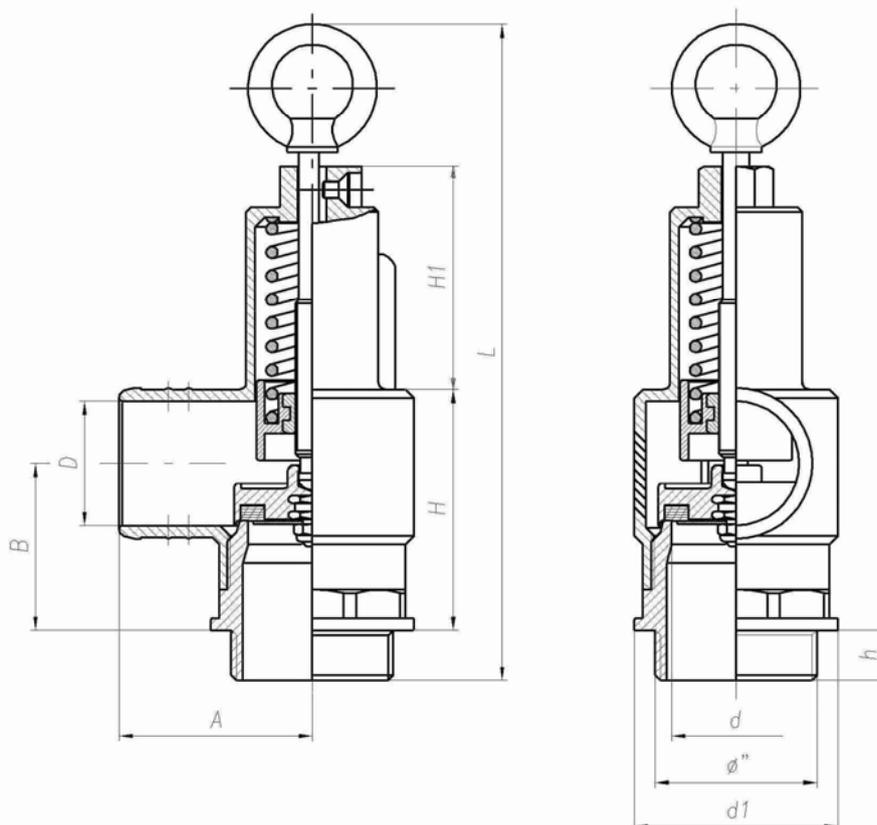
5. WORKING RESTRICTION

The safety valve in object **can not be used** in the following cases:

- Use on equipments classified in class IV according to the Directive 97/23/CE;
- Use on equipments designed for the carrying and/or treatment of fluids belonging to group 1 (ref. Art.9 point 2.1 DIR97/23/CE);
- Working conditions different from those indicated at point 5;
- Use with temperatures lower than -15 °C;
- Use with liquids too aggressive in relation to the materials in the valve is made of;
- Applications in cases in which there is passage of liquids through the valve;
- Use in the food field.

ART. 0870

	CODE
Safety valve 1"1/4 with hose connection	ARZO 0870 032 000
Safety valve 1"1/2 with hose connection	ARZO 0870 040 000
Safety valve 2" with hose connection	ARZO 0870 050 000
Safety valve 2"1/2 with hose connection	ARZO 0870 070 000



Ø"	d	d1	h	H	H1	L	D	B	A	Weight gr
1"1/4	32	54	14	70	67	195	41,5	45	54	870
1"1/2	38	60	15	71,5	66,5	195	45	49,5	57	1.030
2"	47	72	16	70	67	195	51,5	51	63,5	1.190
2"1/2	65	89	16	57,5	68,5	193	67	70,5	85	1.560



8. WORKING RESTRICTIONS

In the following table are indicated the working conditions of the safety valves article 0860 and article 0870

ART	DN	Working temperture (°C)	Setting range	
			(Bar)	(PSI)
0860	1"	-10 +50	0,3 ÷ 1,5	4 ÷ 22
0860 - 0870	1"1/4	-10 +50	0,3 ÷ 1,5	4 ÷ 22
0860 - 0870	1"1/2	-10 +50	0,3 ÷ 1,5	4 ÷ 22
0860 - 0870	2"	-10 +50	0,3 ÷ 1,5	4 ÷ 22
0860 - 0870	2"1/2	-10 +50	0,2 ÷ 0,7	3 ÷ 10

9. MATERIALS

- Body: brass ΔC UNI EN 1982 cast
superficial treatment: sandblasting

Chemical composition percentage

Cu	Pb	Sn max	Al	Ni	Fe	Mn max	Si max	Zn
57,5 ÷ 59,5	1,5 ÷ 2,5	1,2	0,4 ÷ 0,8	0,3 ÷ 0,6	0,3 ÷ 0,8	0,3	0,10	rest

- Seat connection (nosepiece): brass ST UNI EN 12165 CW617N moulded
superficial treatment: sandblasting

chemical composition percentage

Cu	Pb	Sn max	Fe max	Ni max	Al max	other impurities max	Zn
57 ÷ 59	1,6 ÷ 2,5	0,3	0,3	0,3	0,05	0,2	rest

- Screw M5 × 10, self-locking nut, washer: zinc plated steel
- Stem: brass TN UNI EN 12164 CW614N drawn
- Spring: stainless steel AISI 302
- Gasket holder: nylon
- Ring: acetalic resin
- Gasket: NBR rubber

THE OVER STATED CHEMICAL ANALYSIS REFERS TO EMPLOYED RAW MATERIALS AND IS VALID ONLY AS AN INDICATION.



10. CORROSION RESISTANCE

The following is a table of the cases brass in various aggressive environments.

CORROSION AGENT		CORROSION AGENT		CORROSION AGENT	
Acetylene	0	Metan and GPL	2	Aluminum sulphate	0
Acetone	1	Glycerine	2	Anhydrous ammonium hydroxide	2
Acetic acid <50%	0	Ethylene glycol	2	Humid ammonium hydroxide	0
Acetic acid glacial	0	Glucose	2	Ammonium chloride	0
Boric acid	2	Hydrogen	2	Ammonium idroside	0
Citric acid	2	Lacquer	2	Nitrate of ammonium	0
Hydrogen chloride	0	Magnesium chloride	0	Ammonium sulphate	0
Chromic acid	0	Magnesium hydroxide	1	Anhydrous carbon dioxide	2
Hydrogen fluorides	1	Magnesium sulphate	0	Humid carbon dioxide	0
Fluorosilicic acid	0	Mercury and salts	0	Anhydrous sulphur trioxide	2
Formic acid	0	Chloride nickel	2	Anhydrous sulphur trioxide	2
Phosphoric acid	0	Nickel sulphate	2	Humid sulphur trioxide	0
Lactic acid	0	Fuel oil	2	Aniline	0
Nitric acid	0	Potassium carbonate	0	Asphalt	2
Oleic acid	0	Potassium cyanide	0	Barium chloride	0
Oxalic acid	0	Potassium chloride	0	Barium sulphide	0
Picric acid	0	Potassium sulphate	0	Petrol and benzene	2
Anhydrous hydrosulfidric acid	0	Copper sulphate	0	Butane	2
Humid hydrosulfidric acid	0	Sodium bicarbonate	2	Calcium bisulphate	0
Sulphuric acid <78%	0	Sodium phosphate	2	Anhydrous calcium chloride	0
Sulphuric acid >78%	0	Sodium hypochlorite	0	Alkaline calcium chloride	0
Stearic acid	2	Sodium nitrate	1	Calcium hydroxide	0
Tannic acid	2	Sodium peroxide	1	Calcium hypochlorite	0
Tartaric acid	2	Sodium silicate	0	Anhydrous carbon tetrachloride	2
Salt water	0	Sodium sulphate	0	Humid carbon tetrachloride	1
Hydrogen peroxide	0	Sodium sulphite	0	Anhydrous chlorine	0
Condensed water	2	Ferric sulphate	0	Humid chlorine	0
Black water	0	Ferrous sulphate	0	Chloride ferric	0
Drinking water	1	Soap-suds solutions	0	Chloride ferrous	0
Acid subterranean water	0	Acetates solvents	1	Glue	2
Aluminium chloride	0	Toluene	1	Creosote	0
Ether	2	Turpentine	2	Bisulphate sodium	0
Formaldehyde	2	Trichloroethylene	2	Sodium carbonate	0
Freon	2	Paints	2	Sodium cyanide	0
Furancarboxaldehyde	2	Zinc chloride	0	Sodium chloride	0
Sulphur chloride	0	Sulphate zinc	0	Solid sulphur	0

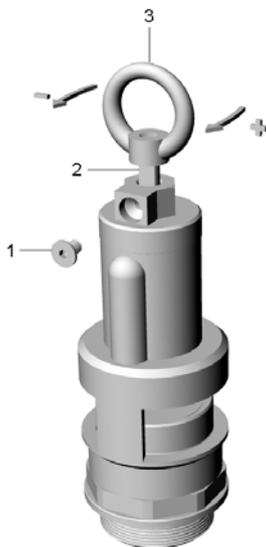
LEGENDA: 0= not enough 1= enough 2= good

The following is the chemical resistance of the nitrilic rubber NBR

CORROSION AGENT			
Mineral, vegetal and animal oils and fat	3	Synthetic lubricants with diestere basis	1
Water, sea water and saline solutions	3	Chetons and hesteres	0
Aliphatic hydrocarbons and fuels	3	Benzene and chlorirated hydrocarbons	0
Alcohols (except the benzilic one)	2	Concentrated strong mineral acids,	0
Alkaline solutions concentrated till 50°C	2	Alkaline hot solutions	0
Several types of freon	2	Ozone and atmosferic agent	0
Hydraulic fluids with petrolifer	2	Phenol	0
Xylene and toluene	1	Hydraulic fluids with phosphoric hestere bases	0
Diluted acid solutions	1	Several liquids for brakes with ono petrolic bases	0

LEGENDA: 0= not enough 1= enough 2= good 3= very good

11. SETTING



In lack of directions from the Customer, the safety valves are delivered without setting.

In this case the setting will be done by the person who install the valve according to the under stated proceedings.

SI!



NO!



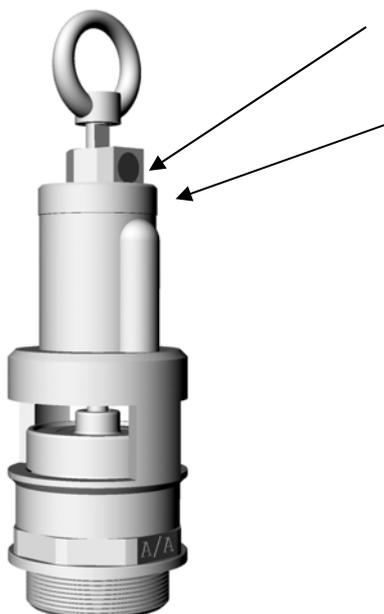
NO!



After having released the anti-rotation screw (pos. 1), is sufficient to wheel the upper ring (pos. 3) to increase (clockwise rotation) or decrease (anti-clockwise rotation) the setting pressure. When you have reached the desired pressure, you must verify that plane obtained on the stem (pos. 2) finds corresponding to anti-rotation screw (pos. 1). On the contrary it is necessary to wheel lightly the upper ring till to reach the exact correspondance. At last you have to screw completely the anti-rotation screw (pos. 1) and the setting is completed.

ATTENTION: when setting is over, please verify that the stem can not wheel, but can only slide vertically. **DO NOT REPLACE:** for no motivations, the standard anti-rotation screw with other types or blocking systems: use exclusively Metaltecnica spare parts.

At customer request, the valve could be delivered setted and plumbed at a demanded pressure. In this case on the valve there will be an identification code and a lead seal with Metaltecnica stamp (MZ).



LEAD SEAL WITH STAMP MZ

IDENTIFICATION CODE

The first two numbers mean the progressive number of the lot of setted valves.

The second two numbers mean the year of production.

By this code it is possible to correlate the valve to the technical documentation (setting and testing sheet, setting certificate).

On the valve, in addition to Metaltecnica stamp, you will find:

- Name of the manufacturer
- Setting pressure
- CE mark
- Identification number allowed from Notified Body
- Article number (for ex. ART. 0860 - ART. 0870)



12. MAINTENANCE

During the maintenance phase it is necessary to observe the following warnings:

- The valve must be used and maintained by prepared and authorized personnel.
- Use adequate personal protection accessories (gloves, safety shoes, ...).
- Discharge the pressure inside the tank before performing any maintenance activity and/or valve disassembly.

The valve maintenance operation is to perform periodically the internal parts washing to guarantee the correct functioning of the valve.

In unused case for periods superior to 15 days or in case of use in very low or very high temperature conditions, it is necessary to perform one or more manual opening before putting in service again the valve.

13. DISPOSAL

Don't remove this product in the not separated refuses municipal harvest. The product is recyclable and it must be recycled on the basis of local standards.

14. TESTS CARRIED OUT

TYPE OF TEST	NORM - METHODOLOGY	FREQ.	P (bar)	T (°C)
Acceptance	Internal control plan	See table	-	-
Production	Internal control plan	See table	-	-
Final (standard production)				
• Hydraulic test	Internal control plan	100%	6	15 - 35
• Functionality	Internal control plan	100%	-	15 - 35
Final (setted valves)				
• Hydraulic test	Internal control plan	100%	6	15 - 35
• Functionality	Internal control plan	100%	-	15 - 35
• Seal structure	Internal control plan	100%	0,5	15 - 35
• Setting	Internal control plan	100%	(*)	15 - 35

(*) setting made of the pressare settino indicated by the Customers.



15. VOLUMETRICAL FLOW

The following are the specifications concerning the volumetrical flows (liters of the air per minute at 20°C - 1013 mbar)

ART.0860 SAFETY VALVE

		DISCHARGE PRESSURE										
DN	S.T.	0,5	0,6	0,7	0,8	0,9	1,0	1,1	1,2	1,3	1,4	1,5
1"	0,3	25	180	1.370	10.150							
	0,5				100	1.850	3.500					
	0,7						50	190	950	4.980		
	0,8								75	430		
	1										100	950

		DISCHARGE PRESSURE													
DN	S.T.	0,5	0,6	0,7	0,8	0,9	1,0	1,1	1,2	1,3	1,4	1,5	1,6	1,7	1,8
1"1/4	0,3	780	1.320	1.860	2.420	2.950									
	0,5			600	1.080	1.760	2.380	2.960	3.660	4.260					
	0,7					535	1.395	2.230	3.090	3.920	4.800				
	0,8							1.020	1.880	2.570	3.320	4.080			
	1,0									1.340	2.890	4.450	5.770	7.315	
	1,2											1.020	4.100	6.330	9.050

		DISCHARGE PRESSURE													
DN	S.T.	0,6	0,7	0,8	0,9	1,0	1,1	1,2	1,3	1,4	1,5	1,6	1,7	1,8	
1"1/2	0,5	3.110	6.330	9.650	12.700	16.000									
	0,7				6.500	10.140	13.460	16.950							
	0,8					4.900	7.450	9.730	12.220	14.000					
	1,0							6.480	10.670	12.850	16.000				
	1,2									7.180	11.320	14.900			
	1,5											4.700	9.160	13.460	

		DISCHARGE PRESSURE													
DN	S.T.	0,4	0,5	0,6	0,7	0,8	0,9	1,0	1,1	1,2	1,3	1,4	1,5	1,6	
2"	0,3	800	2.600	4.400	6.080	7.990	9.830	11.460							
	0,5				3.890	7.620	11.550								
	0,7						5.020	8.840	12.230						
	0,8						1.400	6.090	10.730						
	1,0									4.420	8.500	12.450			
	1,1										3.730	7.100	11.760		
	1,3												5.580	10.940	

		DISCHARGE PRESSURE								
DN	S.T.	0,4	0,5	0,6	0,7	0,8	0,9	1,0		
2"1/2	0,3	1.300	3.800	7.460	10.400					
	0,4		610	3.180	10.380	11.260				
	0,5			150	8.560	12.450				
	0,6					6.920	15.450			
	0,7						5.780	14.380		



ART. 0870 SAFETY VALVE WITH HOSE CONNECTION

DISCHARGE PRESSURE								
DN	S.T.	0,4	0,5	0,6	0,7	0,8	0,9	1,0
1"1/4	0,3		250	750	2.000	2.450		
	0,5				550	1.100	1.700	2.200

DISCHARGE PRESSURE															
DN	S.T.	0,5	0,6	0,7	0,8	0,9	1,0	1,1	1,2	1,3	1,4	1,5	1,6	1,7	1,8
1"1/2	0,3	1.030	1.800	2.530	3.250	3.990	4.720	5.500							
	0,5			1.050	2.150	3.290	4.335	5.470							
	0,7					680	1.730	2.790	3.860	4.920	5.480				
	0,8						490	1.820	3.120	4.430	5.740				
	1,0									1.760	3.670	5.430			
	1,2											1.000	2.690	4.320	5.930

DISCHARGE PRESSURE														
DN	S.T.	0,6	0,7	0,8	0,9	1,0	1,1	1,2	1,3	1,4	1,5	1,6	1,7	1,8
2"	0,3	2.200	3.380	4.820	6.500									
	0,5		830	2.250	3.110	4.170	6.200	8.300						
	0,7				850	2.670	4.130	6.050	7.670					
	0,8					800	2.500	4.100	6.060	7.000	9.250			
	1,0								1.400	3.250	5.500	7.650	10.500	13.000
	1,3											5.790	8.240	10.614

DISCHARGE PRESSURE									
DN	S.T.	0,4	0,5	0,6	0,7	0,8	0,9	1,0	1,1
2"1/2	0,3	1.700	4.625	9.400	13.100				
	0,5			1.492	6.100	9.180	11.850	13.330	
	0,6				3.430	6.085	9.641	12.700	
	0,7						6.000	9.080	13.500

S.T. = Setting pressure (bar)

The indicated data are average values stated only as an indication. In all the applications in which a flow too close to the indicated limits is required, we suggest the assemblage of 2 valves.

Data and measures indicated in this technical sheet, could be modified and are quoted as an indication.