

9.1.1 TECHNICAL DATA

MAX OPERATING PRESSURE (PS): sizes 6, 20: 400 bar
 size 10: 630 bar
 size 30: 315 bar

PRESSURE SETTING (P): (upon request)
 sizes 6, 20: $6 \div 400$ bar
 size 10: $6 \div 630$ bar
 size 30: $30 \div 315$ bar

NOMINAL SIZE: 6, 10, 20, 30

LIFT: 2 mm

WORKING TEMPERATURE: $-20 \div +150$ °C

REPETIBILITY: $\pm 3\%$ of P

CALIBRATION ERROR: 3%

OVERPRESSURE BY FULL FLOW: 10% of P

BLOW DOWN: 10% of P

FLUID VISCOSITY RANGE: $10 \div 400$ cSt

RECOMMENDED VISCOSITY: 36 cSt

FLUID CONTAMINATION DEGREE:
 class 20/18/15 according to ISO 4406/99

BODY MATERIAL: - phosphated carbon steel or galvanized carbon steel
 in compliance with Directive 2002/95/EC (RoHS) to resist to corrosion.
 - stainless steel (only DBDS 10 K)

SEALING MATERIAL: - **P** = Nitrile rubber (NBR)
 - **V** = Fluorocarbon (FKM)

CONNECTIONS: see Table 9.1d

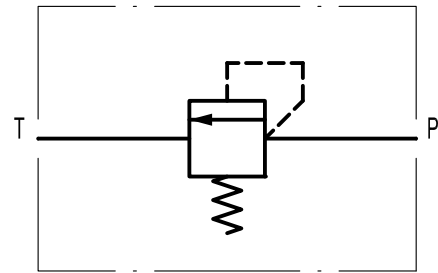
FLOW RATE: see Table 9.1d

WEIGHT: see Table 9.1d



9.1a

9.1.2 HYDRAULIC SYMBOL



9.1b

9.1.3 DESCRIPTION

Valves DBDS type are pressure direct command relief valves. Their function is to limit the pressure of a hydraulic system. The calibration of the system pressure is carried out continuously through the calibration device, which, by the spring, pushes the wedge against the seat.

The P channel is connected to the pressure line of the system, entering the valve, and acts on the active area of the wedge (or of the ball for the DBDS 10 at 630 bar).

When the pressure in channel P exceeds the value set on the spring, the wedge or the ball raises in contrast to the spring. The fluid now flows from the channel P to the channel T. The stroke of the wedge is limited by a pin in the damping chamber.

To obtain a good resolution of the pressure setting from 0 to 400 (630) bar, this has been divided into 7 pressure ranges. Each range has a specific spring for adjusting a maximum working pressure.

9.1.4 STRUCTURE

Body: in high strength steel, obtained by mechanical processing, in which are obtained the seats.

Poppet: obtained by mechanical processing from bar, it ensures the necessary seal degree on the valve seat. The poppet is well led by the damping piston and pushed by the spring against the seat.

Spring: it counteracts the pressure and the dynamic actions of the fluid and always ensures the closing of the valve after the discharge. The

coils of the spring, even when the obturator has reached its maximum lift, are never at pack.

The poppet has a mechanical lock and when it has reached it, the arrow of the spring does not exceed 85% of the maximum deviation.

Calibration system: threaded hexagon head screw which screws into the top of the valve by compressing the spring below. After the calibration, the position of the adjusting screw is kept unaltered by locking the counter nut and sealing the adjusting screw (valve with PED/EC certification).

9.1.5 CALIBRATION

All valves are calibrated on the working bench with a flow rate of 2 l / min. and with an atmospheric counter pressure. The repeatability error of calibration is less than 3% than the pressure P. Up to a pressure equal to 97% of the calibration pressure verifying that there's no leakages.

9.1.6 ORDER CODE

1	2	3	4	5	6	7	8	9			
DBD	S	10	K	13	/	360	-	8P	-	C	P

1	Series
Fluid safety valves	= DBD

2	Type of adjustment
Size 6, 10, 20	
Hexagon socket set screw	= S
Rotary knob	= H
Size 30	
Hexagon socket set screw	= S

3	Nominal diameter
6 mm	= 6
10 mm	= 10
20 mm	= 20
30 mm	= 30

4	Type of connection
Screw cartridge valve	= K
Threaded connection	= G
Sub-plate mounting	= P

5	Series number	5
Overall and mounting dimensions remain unchanged from 10 to 19.		

9	Sealing material
Nitrile (NBR)	= P
Viton (FKM)	= V

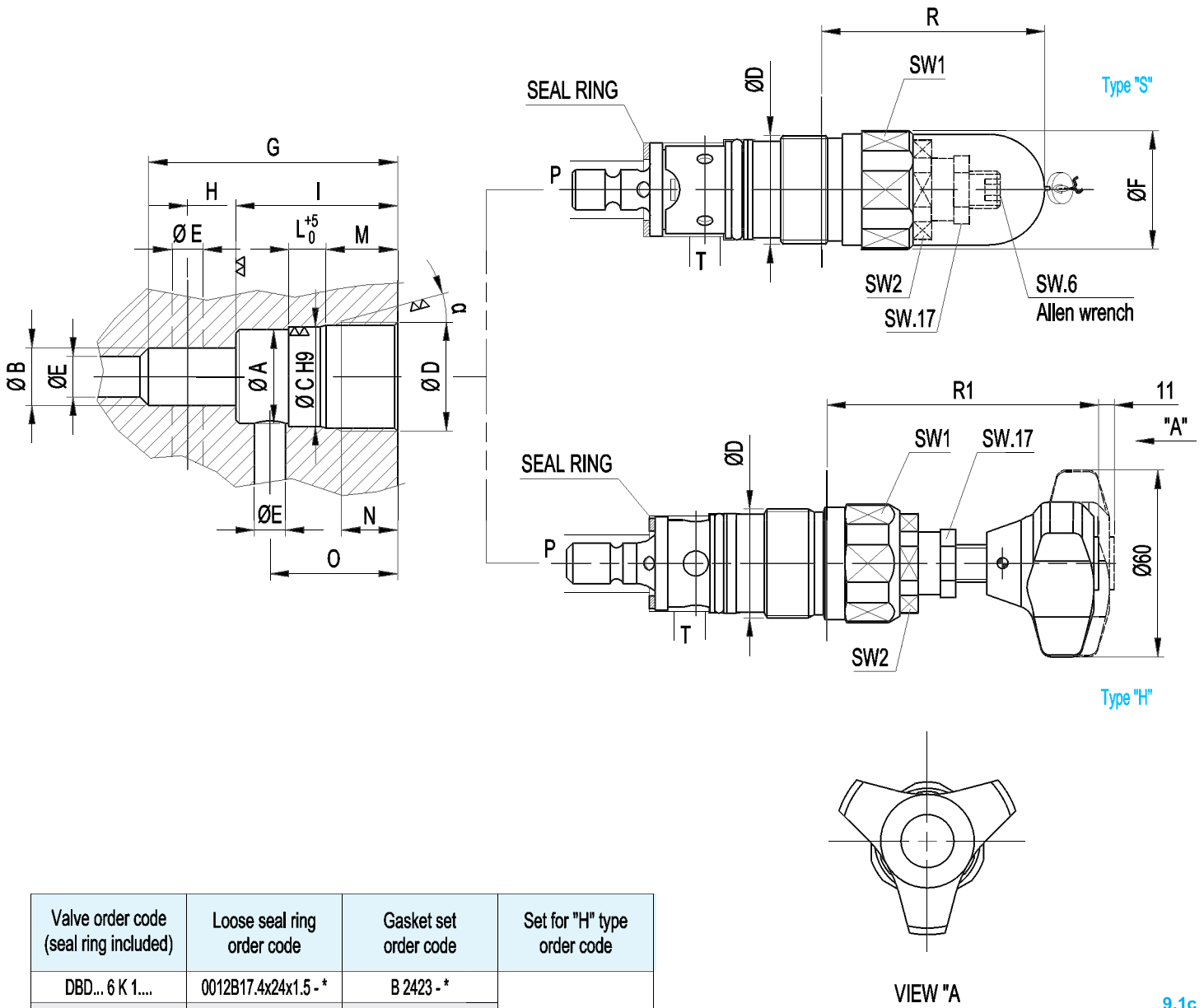
8	Body material
Carbon steel	= C
Stainless steel	= X

7	Certification
Without certification	= 0
EAC (Russia)	= 11
PED 2014/68/EU	= 8P

Fixed Pressure setting (with certifications)	
DBDS6	6 ÷ 400 : upon request
DBDS10	6 ÷ 400 : upon request
DBDS20	6 ÷ 630 : upon request
DBDS30	30 ÷ 315 : upon request

6 Pressure rating (without certification)	
DBDS6	up to 25 : 25
	up to 50 : 50
	up to 100 : 100
	up to 200 : 200
	up to 315 : 315
DBDS10	up to 25 : 25
	up to 50 : 50
	up to 100 : 100
	up to 200 : 200
	up to 315 : 315
DBDS20	up to 25 : 25
	up to 50 : 50
	up to 100 : 100
	up to 200 : 200
	up to 315 : 315
DBDS30	up to 200 : 200
	up to 315 : 315

9.1.7.1 "K" VERSION DIMENSIONS



Valve order code (seal ring included)	Loose seal ring order code	Gasket set order code	Set for "H" type order code
DBD... 6 K 1....	0012B17.4x24x1.5 - *	B 2423 - *	B 2427
DBD... 10 K 1....	0012B24.7x31x2 - *	B 2424 - *	
DBD... 20 K 1....	0012B31x39x2 - *	B 2425 - *	
DBD... 30 K 1....	0012B42x52x3 - *	B 2426 - *	

* Gasket material

9.1d

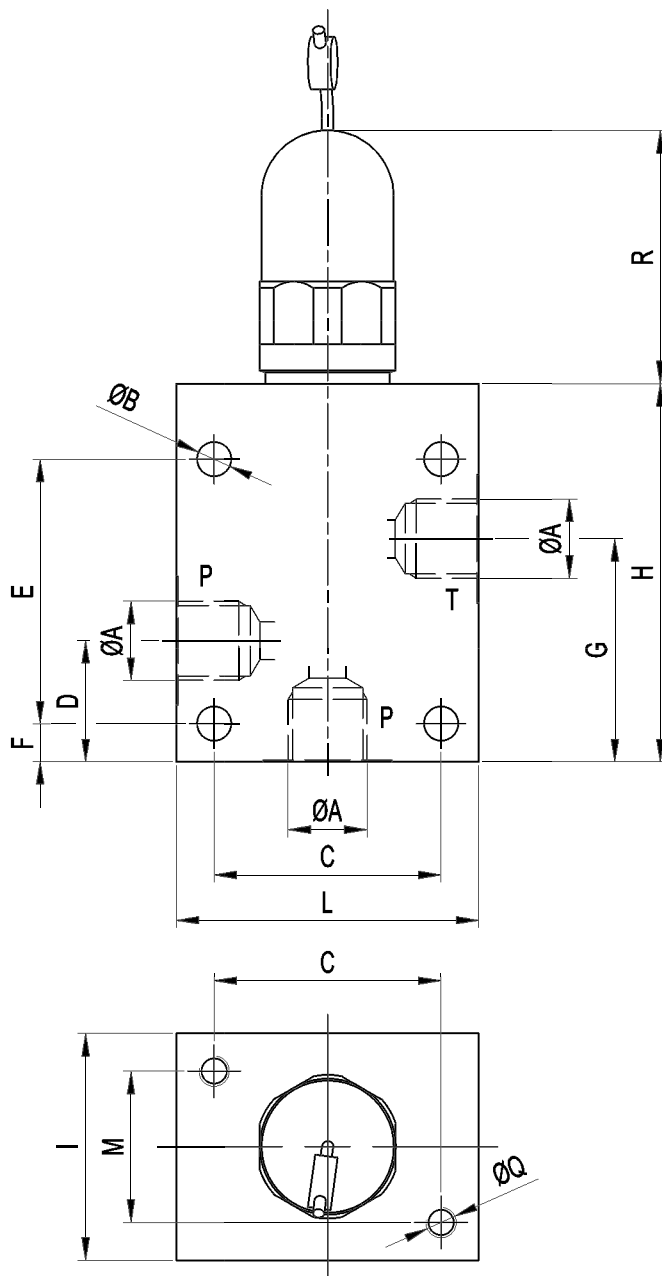
9.1c

Valve order code (seal ring included)	Ø A mm	Ø B mm	Ø C mm	Ø D	Ø E mm	Ø F Type S mm	G mm	H mm	I mm	L mm	M mm	N mm	O mm	R S type mm	R1 H type mm	SW1 mm	SW2 mm	α	Weight Kg
DBD... 6 K 1....	Ø24.9	15	Ø25 H9	M28x1.5	6	34	65	11.5±5.5	45	11	19	15	36	72	83	32	30	15°	0.36
DBD... 10 K 1....	Ø31.9	18.5	Ø32 H9	M35x1.5	10	38	80	15.5±7.5	52	12	23	18	41.5	68	79	36	30	15°	0.48
DBD... 20 K 1....	Ø39.9	24	Ø40 H9	M45x1.5	20	48	110	21.5±8.5	70	18	27	21	55	65	77	46	36	20°	0.86
DBD... 30 K 1....	Ø54.9	38.75	Ø55 H9	M60x2	30	63	140	29.5±11.5	84	16	29	23	63	83	-	60	46	20°	2

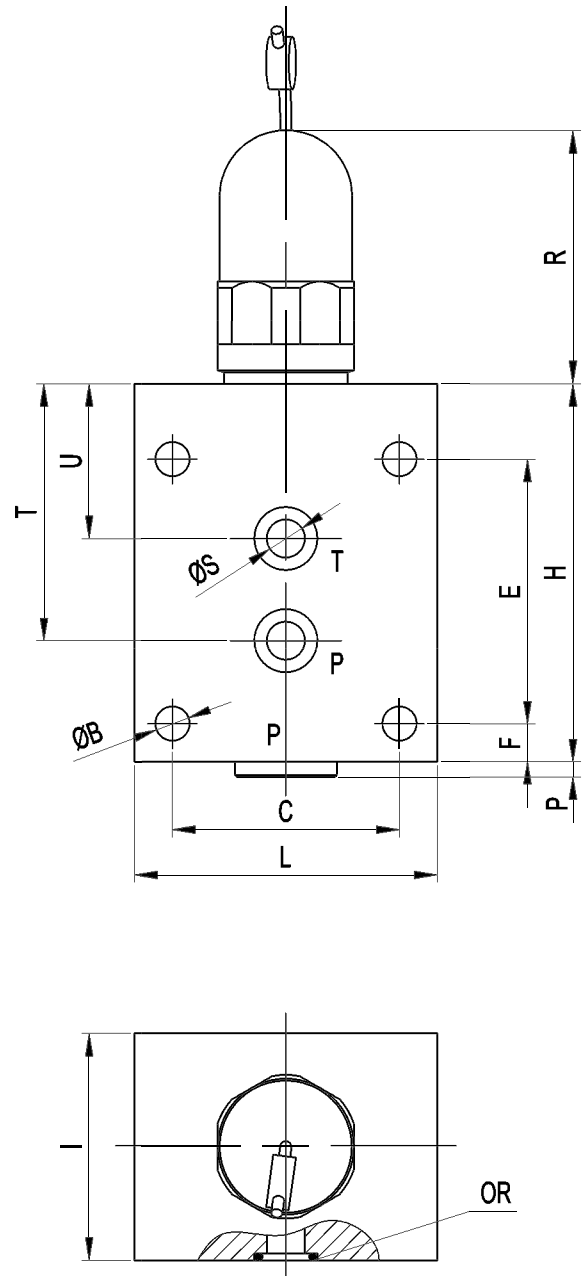
DBD... 30 K 1.... type "H" not available

9.1e

9.1.7.2 "G" & "P" VERSIONS DIMENSIONS



BLOCK "G" TYPE



BLOCK "P" TYPE

9.1f

Complete valve order code	Ø A BSP	Ø B mm	C mm	D mm	E mm	F mm	G mm	H mm	I mm	L mm	M mm	P mm	Ø Q mm	R mm	S mm	T mm	U mm	OR* metric	Weight Kg
DBDS6G1....	1/4"	6.6	45	25	55	10	45	80	40	60	25	4	M6	72	6	-	-	-	1.5
DBDS10G1....	1/2"	9	60	32	70	10	59	100	60	80	40	4	M8	68	10	-	-	-	3.7
DBDS20G1....	1"	9	70	50	100	15	81	135	70	100	50	5.5	M8	65	20	-	-	-	6.4
DBDS30G1....	1 1/2"	11	100	70	130	25	120	180	90	130	60	5.5	M10	83	30	-	-	-	13.9
DBDS6P1....	1/4"	6.6	45	25	55	10	45	80	40	60	25	4	M6	72	6	55	35	0010M7x1.5-*	1.5
DBDS10P1....	1/2"	9	60	32	70	10	59	100	60	80	40	4	M8	68	10	68	41	0010M12.3x2.4-*	3.7
DBDS20P1....	1"	9	70	50	100	15	81	135	70	100	50	5.5	M8	65	20	85	54	0010M22x3-*	6.4
DBDS30P1....	1 1/2"	11	100	70	130	25	120	180	90	130	60	5.5	M10	83	30	110	55	0010M22x3-*	13.9

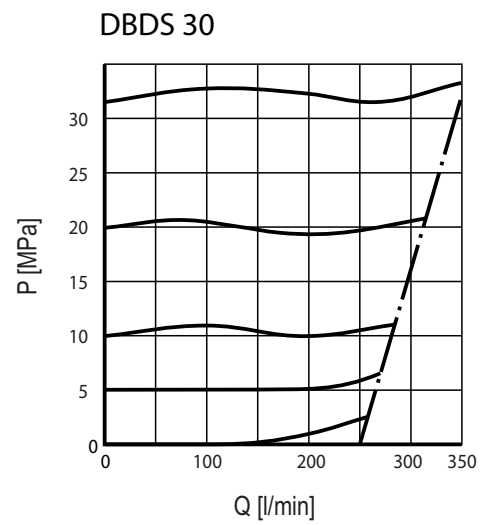
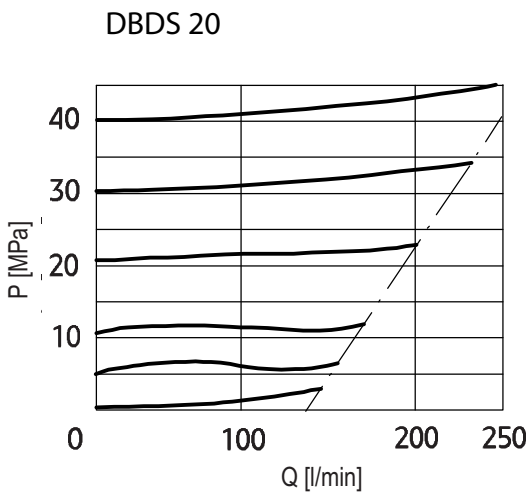
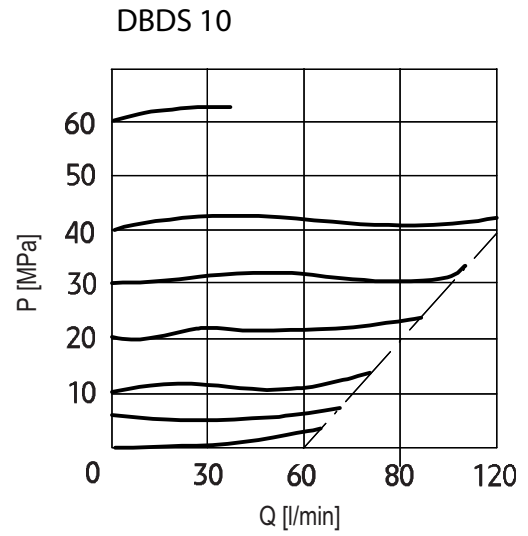
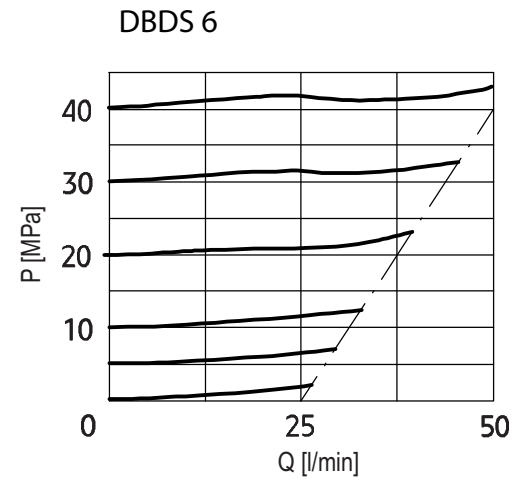
DBD... 30 K 1.... type "H" not available

* Gasket material

9.1g

9.1.8 CHARACTERISTIC CURVES

Measured with viscosity of 36 cSt at 50°C.



9.1h

9.1.9 EUROPEAN MARKET

Directive 2014/68/EU provides that pressure equipment, in which it's reasonably expected to be exceeded the allowable limits, should be provided with adequate protective equipment; for example, safety accessories such as the valves DBDS "G"/ DBDS "P" or the safety blocks type BS. These devices shall prevent that pressure permanently exceeds the maximum allowable pressure PS of the equipment protected by them. However, it is permissible a pressure peak of short duration limited to 10% of the maximum allowable pressure. For the choice and sizing of the adequate safety device, the user should refer to specific standards. In accordance with the regulations 2014/68/EU, the safety valves are classified in Category IV.

9.1.10 ACCESSORIES

Blocks for relief valves, see section 9.2

Safety blocks, see section 9.3

9.1.11 COMMISSIONING AND MAINTENANCE

Installing the valves

Regarding the installation of the safety valves, you should be kept in mind the following key points:

- safety valves must be installed in correspondence of the area to be protected by any overpressures; the vessels, connected each other by appropriate piping with a diameter adapted by the Manufacturer and User and on which there weren't interposed the interceptions, can be considered for the installation of the safety valves as a single vessel;

- the connection between the valve and the equipment to be protected should be as short as possible and must not have a cross section smaller than the one of the valve inlet. In any case, the standard EN 13136:2001/A1: 2005 states that the pressure drop between the protected vessel and the safety valve, at flow rate of full discharge, should not exceed 3% of the pressure value P, including any accessory inserted on the line;

- the choice of the safety valve displacement should consider that the operation of the valve results in the discharge of the fluid under pressure to be sent into the tank. The discharging pipe must be sized as not to affect the operation of the valve. Standard EN 13136:2001/A1:2005 requires that this pipeline should not generate, at full capacity, a pressure higher than 10% of the value of the calibration pressure.

Disassembly

Before removing the valve, make sure that the system on which it is mounted is not under pressure and that there is no pressure within the valve.

Ordinary maintenance

Check the system in order to verify that there are no leakages of oil into the tank, with overheating of the assembly.

Periodic retest according to the related standards of the country of installation. In Italy, see the Ministerial Decree 329 dd. 12/01/2004: for fluids of the group 1: every 2 years you must carry out a functional test and every 10 years you must check the integrity; for fluids of the group 2, every 3 years, you must carry out a functional test and every 10 years you must check the integrity.

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