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Oil Check Valve DAROC Series DS and EDS-R

Cat: 06DSCATR03-E Rev: 03 – 03/2010

06 – Automatic Conservator Oil Check Valves DAROC Series DS - EDSR

1 General Information

Transformer conservators are usually arranged in such a way, that, even at minimum level, the oil is always above the highest point of the transformer lid. Therefore, when a leak occurs in the tank, due for example to a broken bushing, the oil in the conservator pours out, thus considerably increasing the danger of fire and pollution.

The automatic conservator oil check valves ETI DAROC Series DS and EDS-R have been designed to prevent the oil contained in the conservator from flowing out when a leak occurs and, for Series EDS-R, to signal this by an electric contact.

Main features of the DAROC check valve Series DS and EDS-R are:

- It is fitted on the pipe from tank to conservator, in series with the Buchholz relay; so it can be used on conservators with free oil surface as well as on conservators with air bag;
- The operation is completely automatic; when, due to a leakage in the tank, the oil flow rate from conservator to tank exceeds a set value, the DAROC valve closes the pipe thus preventing the loss of the conservator oil;
- Should the DAROC valve trip unduly, because of a malfunction or of particular working conditions, a pre-set by-pas valve operates automatically and prevents the internal depression in the tank from becoming excessive;
- The DAROC check valve has to be rest manually after tripping; if requested an additional by-pass pipe allows to reset the valve from ground level.

The shutting-off of the pipe between tank and conservator is always an abnormal operating condition; it is therefore preferable to choose the DAROC Series EDS-R check valve in order to have a warning by electric contact that the valve has tripped.

2 Production Range and Operating Conditions

DAROC Series DS and EDS-R check valves can be fitted to pipelines of nominal diameter 50, 80 or 100 mm; they can have one or two electric contacts and can operate under following conditions:

- Operating conditions – standard execution
  - ◊ Oil and ambient temperature range - 25°C to + 120°C
  - ◊ Relative humidity 95% to 20°C - 80% to 40°C - 50% to 50°C
- Oil features – standard execution
  - ◊ Mineral oil
  - ◊ Oil viscosity 30 cStk at 20°C
  - ◊ Please note: with other oil viscosity the flow rates change according to the setting diagram
- Vibration resistance 3 g on all axis
- Chock resistance 10 g on all axis
- Maximum operating pressure 1,5 bars
- Maximum test pressure 3 bars
- By-pass valve setting – standard execution 0,4 bars
- Degree of protection of terminal box IP 65

3 Construction

With reference to drawings N° 6.500.00, N° 6.650.20 and N° 6.500.10 and nomenclature N° 06DSNOMRxx-E, which also indicates the materials, the device's construction is as follows:

- Casing 1.0 is made of cast aluminium and has two flanges 1.0.1 and 1.0.2 to assemble it onto the piping which connects the tank to the conservator. Flange 1.0.1 has threaded holes and a gasket groove so that the device can be fitted directly to the Buchholz relay, as show by drawing N° 6.500.001. On casing 1.0 two visors 1.2 allow to check the operation of the device visually and two oil drain screws 1.3 and 1.4 allow to empty the casing of oil if needed. The adjusting device 2.0 and, if requested, the resetting by-pass pipe 7.0 are also assembled on casing 1.0;

- Casing 1.0 is closed by head 6.0, which includes the terminal box 6.0.1 for DAROC valves series EDS-R. Gas drain cock 6.1 and nameplate 6.2, which shows also the direction in which to mount the DAROC valve on the pipe, are attached to head 6.0;

With reference to drawing N° 6.500.10, inside casing 1.0 following components can be found:

- adjusting device 2.0 which allows to adjust the stroke of main valve 3.3 and to open it after it has tripped to reset the device;
- the assembly of the main valve 3.3 , which consists of the main valve 3.3, the valve seat 3.2 and the float 3.1; the valve 3.3 is guided by rod 3.4 and closes the oil passage between chambers C1 (1.0.3) and C2 (1.0.4) when resting on valve seat 3.2, thus closing the pipe to oil passage from conservator to tank;
- for DAROC series EDS-R the contact mounting frame 5.1 holds the contact's assembly which includes the contacts 5.2 and the driving magnet 5.3; the contacts are connected through the bushings 5.2.1 mounted in terminal box 6.0.1; the magnet 5.3 is driven by rod 3.4 that follows the movements of valve 3.3;
- overpressure valve 4.0, which opens the oil passage from chamber C2 to chamber C1 if the pressure difference between the two chambers reaches the setting value of valve 4.0, after the main valve 3.3 has closed.

4 Operation

During the operation of an electric transformer several conditions may occur which cause an oil flow in the pipe between tank and conservator:

- During the **heating phase** an oil flow from tank to conservator is observed, due to oil expansion as the transformer heats up; the flow rate is usually **<= 30 dm^3/min**;
- During the **cooling phase** an oil flow from conservator to tank is observed, due to oil shrinking as the transformer cools down; again the flow rate is usually **<= 30 dm^3/min**;
- If a **leakage from the tank** occurs, for instance if a bushing breaks or a pressure relief valve pops up and doesn't close correctly, a flow from conservator to tank is observed, which has a flow rate usually **>> 30 dm^3/min**.

The first two conditions occur in normal service and should not cause the DAROC Series DS and EDS-R valve to trip.

The DAROC check valve is designed to trip automatically when the third condition occurs, thus stopping the oil flow from conservator to tank and preventing the oil in the conservator from being lost and slowing down the rate at which the oil seeps out at the leak.

The DAROC check valve doesn't operate when the oil flows from tank to conservator; it trips when the oil flow from conservator to tank exceeds a set value.

4.1 Main Valve Operation

4.1.1 Main Valve Tripping

Main valve 3.3 is placed between chamber C1 (1.0.3), connected to the pipe towards the tank, and chamber C2 (1.0.4), connected to the pipe towards the conservator; when the device is operating and therefore full of oil, main valve 3.3 is kept open by float 3.1. The stroke of the float 3.1, and therefore of the valve 3.3, can be adjusted using device 2.0 in the range from 0 to 11 mm.

During the **heating phase**, the oil flowing from tank to conservator enters chamber C1 and pushes open valve 3.3 completely; the oil flow is not slowed down in any way by the valve.

During the **cooling phase** and if a **leakage occurs in the tank**, the oil flowing from conservator to tank enters chamber C2 and passes through valve 3.3, **which is held open by float 3.1**. The oil flow though valve 3.3 is associated with a loss of hydraulic load, which depends on:

- the oil viscosity;
- the flow speed, which depends from cooling conditions and, for short periods of time, from accidental occurrences, such as start up of pumps, elasticity of the tank or the radiators etc.;
- the setting of the valve's 3.3 stroke, regulated by float 3.1.

When the hydraulic loss increases over the force of the float 3.1, the valve 3.3 closes, stopping the flow from conservator to tank. For any given oil viscosity and instant oil flow speed there exists a setting of the valve's stroke, which will close the valve 3.3.

To operate correctly, the valve's stroke has to be set so that the admitted oil flow from conservator to tank is the maximum that will occur during the cooling phase. So, when a leak in the tank causes the oil flow to exceed the set maximum the valve 3.3 will close and prevent the oil in the conservator from being lost.

Table 1 shows which flow rate causes the valve 3.3 to close for any give float stroke and with different oil viscosity.

4.1.2 Damping System

To take into account peaks of flow speed caused by accidental occurrences such as start up of pumps, elasticity of the tank or the radiators, the closing of the main valve 3.3 is delayed by a hydraulic damping system, which stops the valve from closing for flow peaks. For example, the valve will allow a flow peak of 150 dm3/min for 5 sec without closing.

4.1.3 Main Valve opening after tripping

After tripping due to an oil leak from the tank, the main valve 3.3 has to be reset manually, either by the adjusting device 2.0 or by the optional by-pass pipe 7.0. With the device 7.0 the opening of the valve can be effected also from the ground by the ground level reset device 8.0.

If the valve trips during the cooling phase, notwithstanding the damping system described above, the valve will open again automatically during the heating phase, when the oil will start to flow from tank to conservator.

4.2 Overpressure Valve Operation

As already said, the main valve 3.3 may close even in absence of a leak in the tank, for example when the oil in the pipe is very cold and therefore has a viscosity much higher than expected, or if the initial regulation has not been correctly done.

In this case, the shrinking of the oil due to the cooling will cause an increasing negative pressure in the tank, while the cooling phase lasts. To limit the value of this negative pressure the overpressure valve 4.0 has been built into the DAROC check valve.

Overpressure valve 4.0, which is usually set at 0,4 bars, will open when the pressure difference between chambers C1 and C2 reaches this value and will allow an oil flow from conservator to tank to feed the oil shrinkage.

When the overpressure valve 4.0 is operating, the oil in the tank is submitted to a negative pressure and may release gasses which will collect in the Buchholz relay; the alarm for gas accumulation of the Buchholz relay is likely to be tripped. It is therefore even more advisable to install the DAROC valve Series EDS-R which will permit to evaluate the situation by showing with it's electric contact that the main valve 3.3 is closed.

5 Installation, Setting and Putting in Service

5.1 Installation

The DAROC check valve must be fitted onto the pipe between tank and conservator as shown by drawing 6.500.001. Flange 1.0.1 has a gasket groove and threaded holes in order to be able to fit it directly to the Buchholz relay. The gasket is supplied with the valve.

If DAROC Series EDS-R is chosen, the electrical connection to the terminals 5.2.1 has to be made according to the wiring diagram attached inside the cover 6.0.2 of terminal box 6.0.1.

5.2 Setting

The DAROC check valve is supplied set to the maximum stroke of main valve 3.3. In fact, when there is a leak in the tank, the flow rate is usually considerably higher than the flow rate admitted by the valve at full stroke with oil of normal viscosity, as shown by the diagram of Table 1.

With reference to drawing 6.500.10 and remembering that the distance measured from nut 2.6 to the end of tie rod 2.4 screwed inside nut 2.6 corresponds to the stroke of float 3.1, in order to change or check the setting of the main valve 3.3 proceed as follows:

- Remove cover 2.1 from setting device 2.0; gaskets on tie rod 2.4 and screw 2.3 prevent excessive oil loss if the DAROC valve is full of oil;
- Check that screw 2.3 for forced opening of main valve 3.3 is unscrewed up to the stop;
- Loosen locking nut 2.5 on tie rod 2.4;
- Completely unscrew tie rod 2.4 with a screwdriver placed inside nut 2.6, up to the edge of nut 2.6; with the tie rod 2.4 in this position the stroke of the float 3.1 s reduced to zero;
- Screw tie rod 2.4 into nut 2.6 until achieving the depth which corresponds to the required float stroke, according to the diagram on Table 1;
- Lock nut 2.5 against locking nut 2.6;
- Fasten cover 2.1.

5.3 Putting in service

After installation and setting it is possible to put the device DAROC in service by filling it up with oil.

If the filling up is done by pumping oil into the tank, the oil will enter the DAROC valve from chamber C1 (1.0.3) and the float 3.1 will open main valve 3.3 as soon as chamber C1 is filled.

If the filling up is done from the conservator, the oil will enter the DAROC valve from chamber C2 (1.0.4) and it is necessary to force the main valve open in order to fill also chamber C1; to do so:

- Remove cover 2.1;
- Tighten screw 2.3 down completely into mount 2.2; the screw 2.3 will push open float 3.1 and main valve 3.3.

After filling the DAROC valve, release the air through drain tap 6.1 on head 6.0 and check that the valve operates correctly as follows:

- Unscrew screw 2.3 completely right to the stop to free float 3.1;
- Push nut 2.6 against screw 2.3 to give float 3.1 the set stroke;
- Through visors 1.2 check that the float 3.1 keeps main valve 3.3 open;
- Pull nut 2.6 downwards and thus float 3.1; check through visors 1.2 that the main valve 3.3 closes too; the electric contacts of DAROC valve Series EDS-R have to operate too;
- Repeat steps described above several times in order to fill completely with oil the damping system;
- Replace cover 2.1; the cover will push nut 2.6 against screw 2.3 so freeing again float 3.1;
- Check through visors 1.2 that the main valve 3.3 has been pushed open by float 3.1.

The DAROC valve is now ready for service.

5.4 Maintenance

The DAROC check valve doesn't need any particular maintenance; it is however advisable to check the correct operation regularly with the procedure described at the chapter "Putting in Service".

6 Resetting of Main Valve 3.3

If main valve 3.3 closes accidentally during the cooling phase of the transformer, it may be necessary to reset it without having to wait for the heating phase. This can be done either by the forced opening screw 2.3 or by the resetting by-pass 7.0. The resetting by-pass 7.0 can be operated from ground level by the ground level reset device Type CCC (8.0).

6.1 Resetting by Opening Screw 2.3

To reset the main valve 3.3 by resetting screw 2.3 proceed as follows:

- Remove cover 2.1;
- Tighten screw 2.3 down completely into mount 2.2; the screw 2.3 will push open float 3.1 and main valve 3.3;
- Follow the procedure of chapter "Putting in Service" to check the correct operation of the valve;
- Replace cover 2.1.

6.2 Resetting with Resetting By-pass 7.0

In service the resetting by-pass pipe is closed by a tap operated by handle 7.0.2 or, from ground level, by the device CCC through a shaft and a cardan joint 7.0.3. When the valve 3.3 closes during the cooling phase, the shrinking of the oil creates a pressure difference between chambers C1 and C2 that will keep the main valve closed. By opening the tap on the by-pass pipe 7.0 oil will flow from chamber C2 to C1 so feeding the shrinkage of the cooling oil and gradually reducing the pressure difference between the two chambers. When the pressure difference is reduced to zero, the float 3.1 will open the main valve 3.3.

7 Finish

In standard execution, all cast parts are protected by one coat of two-pack epoxy primer and one coat of two-pack polyurethane paint, final colour RAL 7031 and screws and washer are of stainless steel. Therefore the device is suitable for fitting in the open even in tropical climate and with high industrial pollution. Special versions are available for particularly severe climatic and/or aggressive atmospheric conditions.

8 Wiring Diagrams and Contact Performance

As mentioned above, oil check valves ETI DAROC Series EDS-R can be supplied with one or two electric contacts, set out according to one of the wiring diagrams shown in the specification N° 06SCHRxx-E, which indicates also the numbering of the terminals as well as the performance of the contacts.

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1 Performance and description of the wiring diagrams and contacts

The specification has a complete description of the performance and function of the wiring diagrams as well as of the contacts.

2 Wiring diagrams

2.1 Identification by numbering of the wiring diagrams

The identification numbering of the wiring diagrams follows criteria that allow to identify the type and approximate operation of the wiring diagram from it's number.

2.1.1 Key to numbering of wiring diagrams

Every position in the number identifying a wiring diagram is related to a function of the Buchholz relay. Taking as an example the standard wiring diagram 04-101C, the numbering has the following meaning:

06-xxx = Wiring diagram of oil check valve DAROC EDSR;

06-**X**xx = Total number of contacts;

06-x**X**x = Type of contacts;

0 = Normally open contact; 1 = normally closed contact; 3-9 = changeover contact

06-xx**X** = Function of contacts; 1 =Contacts show operation of main valve.

2.2 Notes on tables of function and performance of wiring diagrams

The most commonly used wiring diagrams are described in detail in the following tables; they make use of some acronyms; for a full understanding they are explained in the following:

NE = Normal exercise; the DAROC valve is full of oil and the main valve is open;

Contact NO = Contact open in normal exercise

Contact NC = Contact closed in normal exercise

Contact SC = Changeover contact

N° Terminals = Numbers that identify the terminals

Pos. in NE = State of the contact in normal exercise.

3 Tables of function and performance of wiring diagrams

The most commonly used wiring diagrams are described in detail in the following tables.

3.1 Wiring diagram N° 06-101

Terminal N°	Contact in NE	Functional description of wiring diagram
1-2	Open	1 normally open contact, closes at closing of main valve

3.2 Wiring diagram N° 06-111

Terminal N°	Contact in NE	Functional description of wiring diagram
1-2	Closed	1 normally closed contact, opens at closing of main valve

3.3 Wiring diagram N° 06-131

Terminal N°	Contact in NE	Functional description of wiring diagram
1-2	Open	1 changeover contact, switches at closing of main valve
1-3	Closed	

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3.4 Wiring diagram N° 06-201

Terminal N°	Contact in NE	Functional description of wiring diagram
1-2 3-4	Open	2 normally open contacts, close at closing of main valve

3.5 Wiring diagram N° 06-211

Terminal N°	Contact in NE	Functional description of wiring diagram
1-2 3-4	Closed	2 normally closed contact, open at closing of main valve

3.6 Wiring diagram N° 06-291

Terminal N°	Contact in NE	Functional description of wiring diagram
1-2 4-5	Open	2 changeover contacts, switch at closing of main valve
1-3 4-6	Closed	

3.7 Wiring diagram N° 06-301

Terminal N°	Contact in NE	Functional description of wiring diagram
1-2 3-4 5-6	Open	3 normally open contacts, close at closing of main valve

3.8 Wiring diagram N° 06-311

Terminal N°	Contact in NE	Functional description of wiring diagram
1-2 3-4 5-6	Closed	3 normally closed contacts, open at closing of main valve

4 Performance of contacts

Magnetically operated, normally open, normally closed or changeover contacts.

- Contacts, material — gold
- Operating temperature — - 50°C - + 125°C
- Breaking power — 150 W – 400 VA
- Insulation to earth at 20°C — 2.500 V
- Insulation of the open contact at 20°C:
  - Normally open or normally closed contact 1.200 V
  - Changeover contact 1.000 V
- Insulation of the open contact at 20°C – special execution — 2.500 V
- Maximum current — 2 A
- Maximum admitted current for 1 sec — 100 A
- Minimum and maximum tension — 24 –240 V
- Contact resistance — 500 mΩ

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Nomenclature N° :	Reference drawings N° :	Page N° :
06DSNOMR01-E	**6.500.00 – 6.500.10 – 6.650.10 – 6.650.20**	**1 of 2**

Product:	Revision N° :
Oil Check Valve DAROC Series DS and EDS-R	**01 of 04.06.2006**

Pos.	Part denomination	N°	Material
1.0	Casing	1	Aluminium
1.0.1	Mounting flange towards tank		
1.0.2	Mounting flange towards conservator		
1.0.3	Chamber C1		
1.0.4	Chamber C2		
1.2	Visor holes	2	Glass
1.2.1	Visor holes frame	2	Nylon + 30% glass fibre
1.3	Venting screw of chamber C1	1	Nickel coated brass
1.4	Venting screw of chamber C2	1	Nickel coated brass
2.0	Setting and blocking device	1	
2.1	Cover	1	Aluminium
2.2	Mount	1	Aluminium
2.3	Forced opening screw	1	Brass
2.4	Tie rod	1	Stainless steel
2.5	Locking nut	1	Brass
2.6	Nut	1	Brass
3.1	Float	1	Closed cell ebonite
3.2	Valve seat of main valve 3.3	1	Brass
3.3	Main valve	1	Aluminium
3.4	Contacts operating rod	1	Stainless steel
4.0	Overpressure valve	1	
5.1	Contact mounting frame	1	Steel galvanised
5.2	Magnetically operated electric contact	1/2	
5.2.1	Terminals for electrical connection	2-6	
5.3	Magnet	1	Magnetic steel
5.4	Magnet operating fork	1	Aluminium
6.0	Head	1	Aluminium
6.0.1	Terminal box with cable entries		
6.0.2	Terminal box cover	1	Aluminium
6.1	Gas or air drain tap	1	Nickel coated brass

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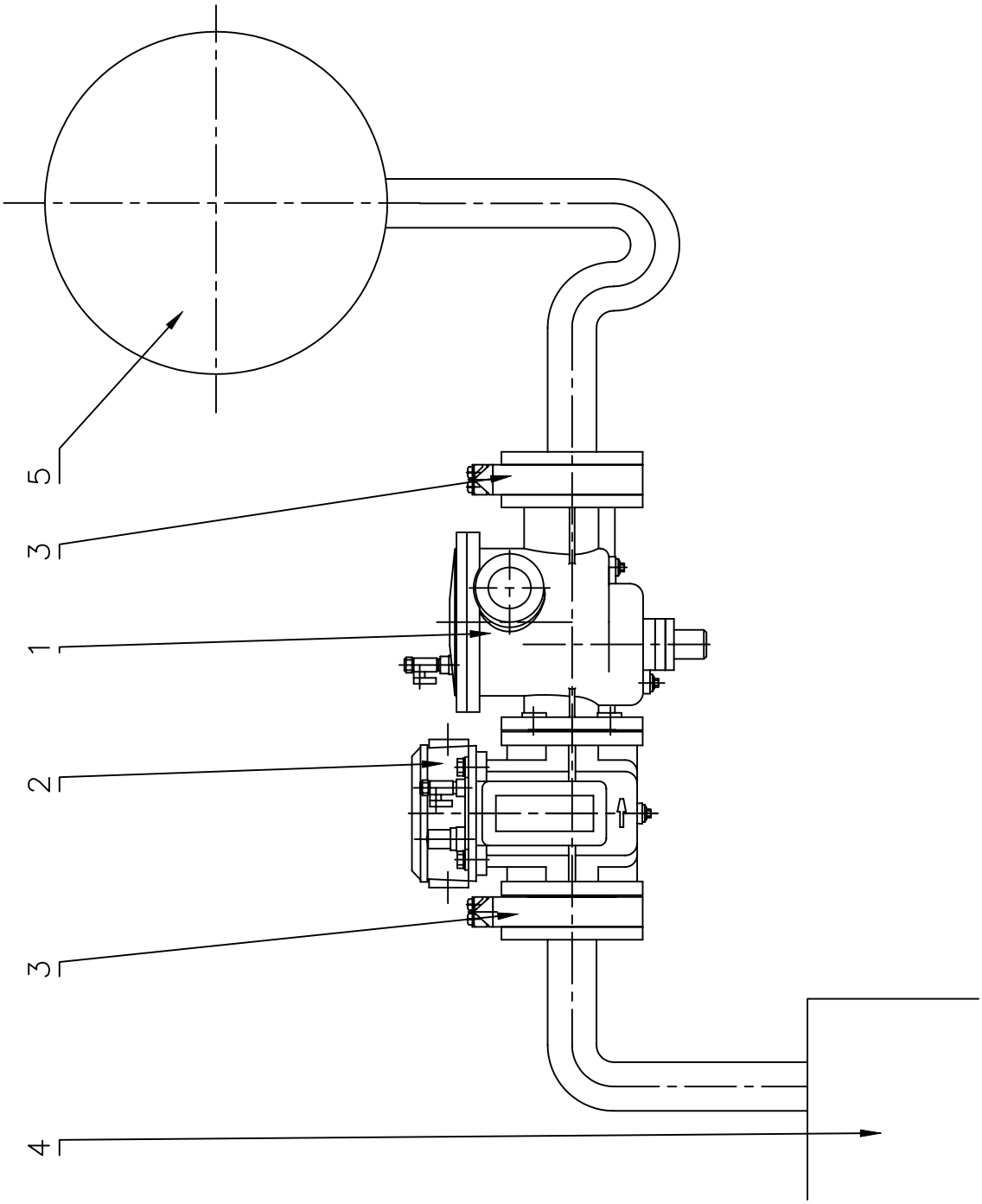
Nomenclature N° :	Reference drawings N° :	Page N° :
06DSNOMR01-E	**6.500.00 – 6.500.10 – 6.650.10 – 6.650.20**	**2 of 2**

Product:	Revision N° :
Oil Check Valve DAROC Series DS and EDS-R	**01 of 04.06.2006**

Pos.	Part denomination	N°	Material
6.2	Identification plate	1	
7.0	Resetting by-pass	1	Steel galvanised
7.0.1	By-pass pipe	1	Copper
7.0.2	Handle - for operation of resetting by-pass from the top of tank		
7.0.3	Cardan joint - in alternative to 7.0.2 for operation of re-setting by-pass from ground level		
7.1	Transmission shaft - not supplied		
8.0	Ground level reset device Type CCC		

N.rev	Nota sulla revisione	Data	Firma	Controllo



5		Conservatore – Conservator – Conservateur	
4		Cassa – Tank – Cuve	
3		Valvola a farfalla–Butterfly valve–Vanne papillon	
2		Relè – Relais Buchholz	
1		Valvola – Valve – Clapet DAROC	
Rif.	Quantità	Titolo/Nome, designazione, materiale, dimensione, etc.	N. articolo/Riferimento

Progettato da	Controllato da	Approvato da – data	Nome file	Data	Scala
				02-03-93	//

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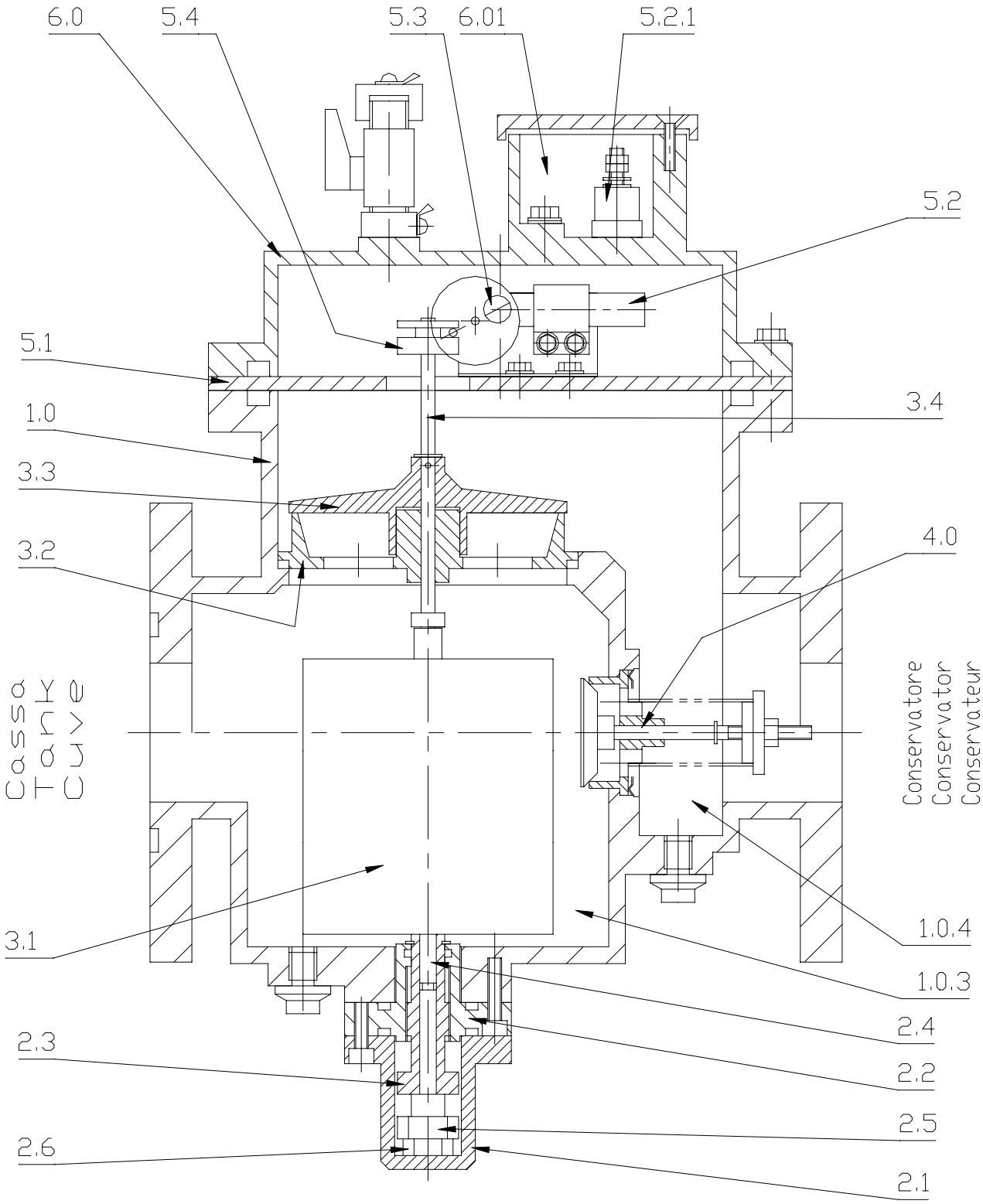
Titolo/Nome
Valvola D.A.R.O.C – Valve D.A.R.O.C. – Clapet D.A.R.O.C.
Schema di montaggio – Assembly – Schèma de montage
Serie: DS – EDS

Numero disegno	Modifica	Foglio
6.500.001		

Non misurare le dimensioni dal disegno

N.rev	Nota sulla revisione	Data	Firma	Controllo



Rif.	Quantità	Titolo/Nome, designazione, materiale, dimensione, etc.		N. articolo/Riferimento	
Progettato da	Controllato da	Approvato da – data	Nome file	Data 12-02-93	Scala //

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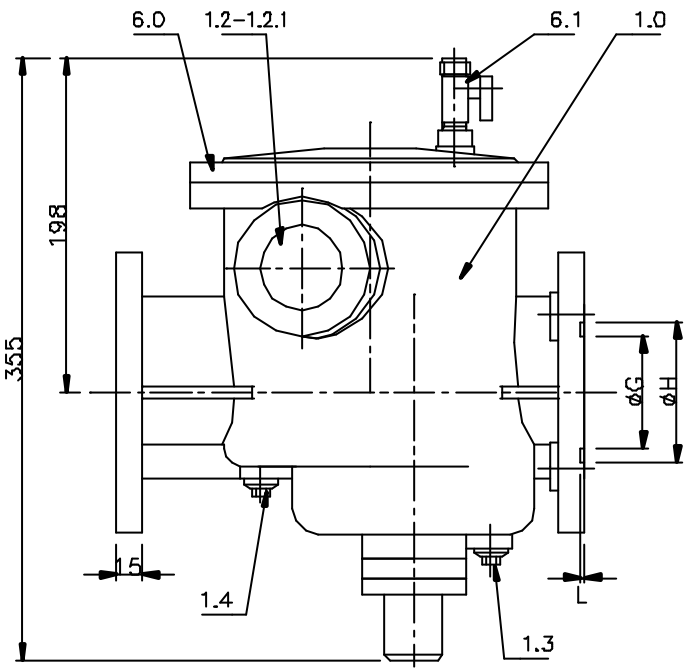
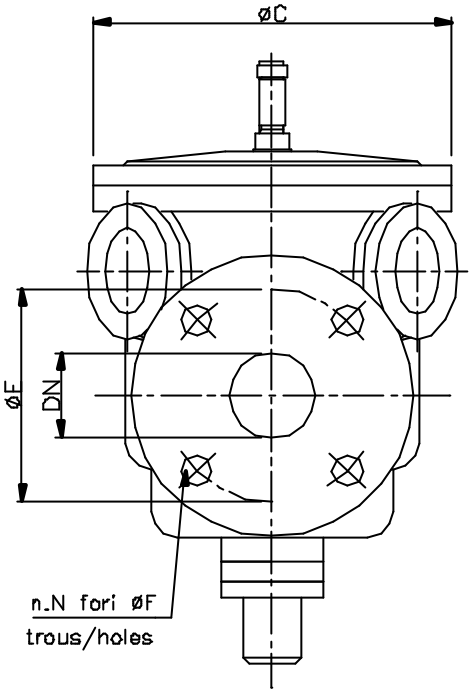
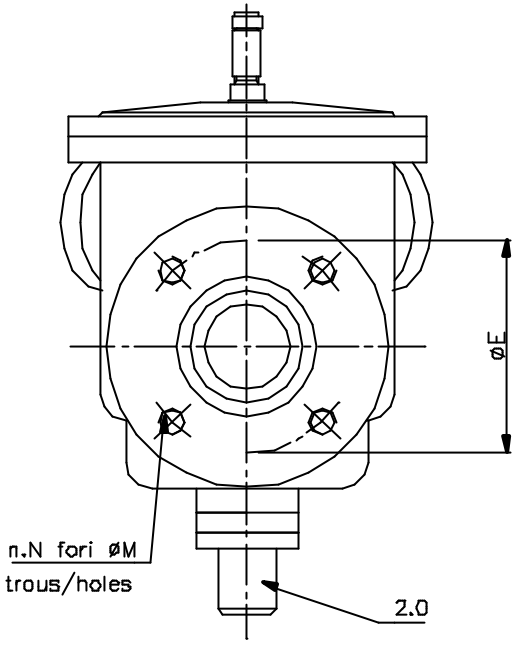
Titolo/Nome
Valvola D.A.R.O.C. - Valve D.A.R.O.C. - Clapet D.A.R.O.C.
Serie: DS – EDS
Sezione – Section – Section

Numero disegno	Modifica	Foglio
6.500.10		

 | Non misurare le dimensioni dal disegno







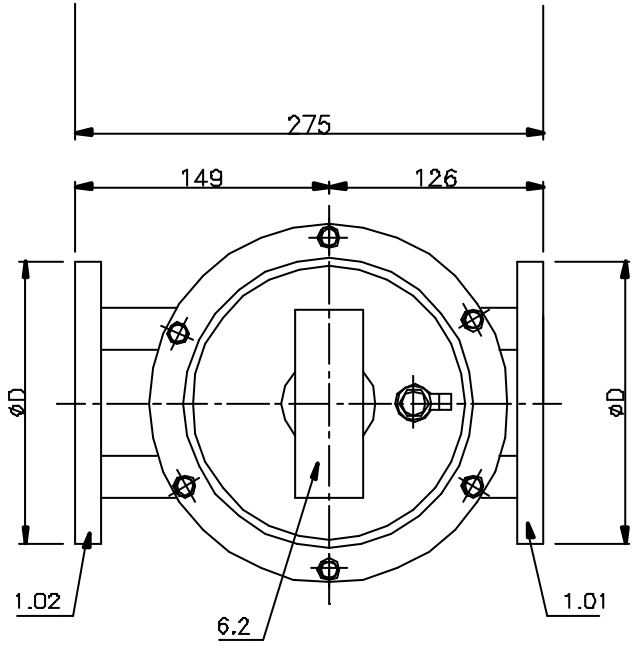


Fig.1

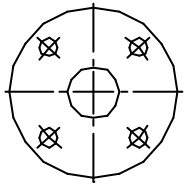
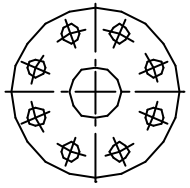


Fig.2



Tipo-Type	DN	øD	øC	øE	øF	øG	øH	L	øM	N	Fig.
DS-B 50	50	165	210	125	18	69	86	3	M16	4	1
DS-B 80	80	200	210	160	18	98	115	3	M16	4	1
DS-B 80-B	80	200	210	160	18	98	115	3	M16	8	2
DS-B 100	100	220	210	180	18	114	135	4	M16	8	2

Rif.	Quantità	Titolo/Nome, designazione, materiale, dimensione, etc.	N. articolo/Riferimento
Progettato da		Controllato da — data / Approvato da — data / Nome file	Data 22-02-93 / Modo //

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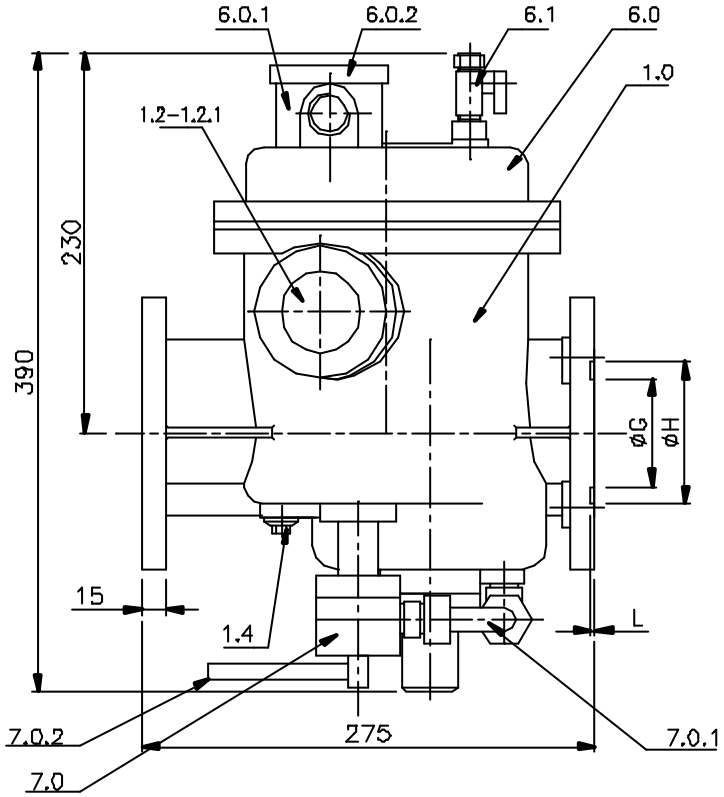
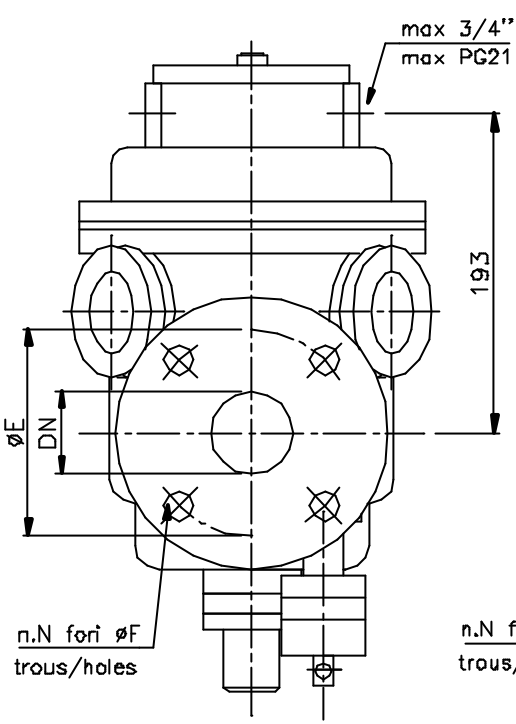
Titolo/Nome: Valvola D.A.R.O.C. - Valve D.A.R.O.C. - Clapet D.A.R.O.C.
Serie: DS

Numero disegno 6.500.00 | Modifica A | Foglio

Riproduzione vietata | Non misurare le quote dal disegno

N.rev	Nota sulla revisione	Data	Signatura	Controllo
A	Aggiunta versine DS80 B fori e figure	14/05/04	GL	





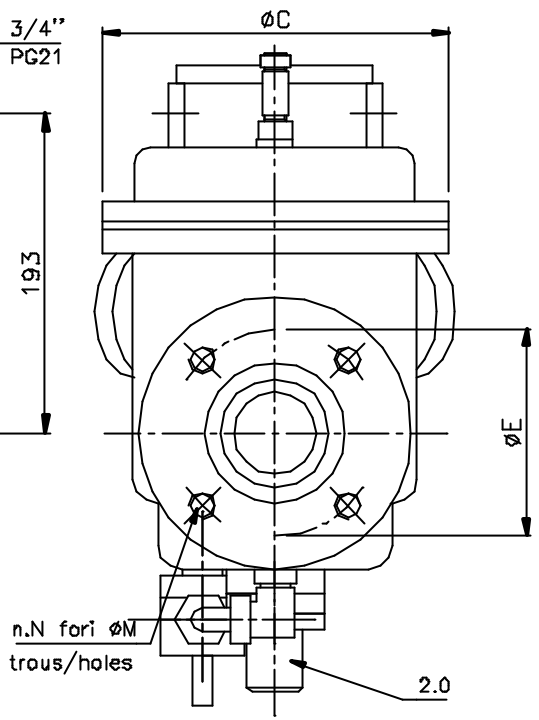


Fig.1

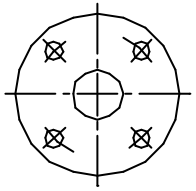
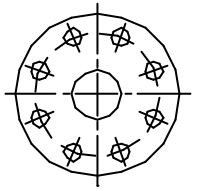
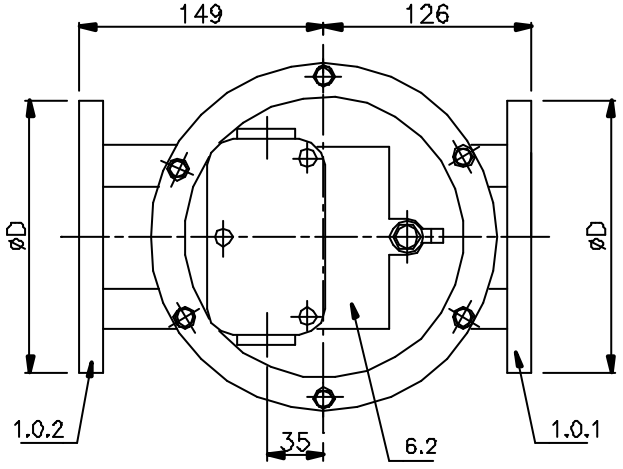
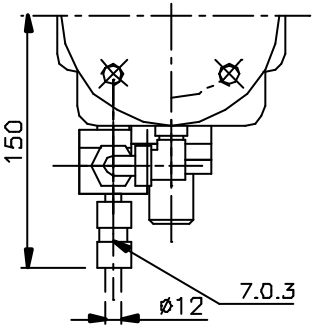


Fig.2



(*)
Con by-pass di ripristino 7.0
With resetting by-pass 7.0
Avec by-pass de réammorçage





Tipo-Type	DN	øD	øC	øE	øF	øG	øH	L	øM	N	Fig.
EDS-R 50	50	165	210	125	18	69	86	3	M16	4	1
EDS-R 80	80	200	210	160	18	98	115	3	M16	4	1
EDS-R 80-8	80	200	210	160	18	98	115	3	M16	8	2
EDS-R 100	100	220	210	180	18	114	135	4	M16	8	2

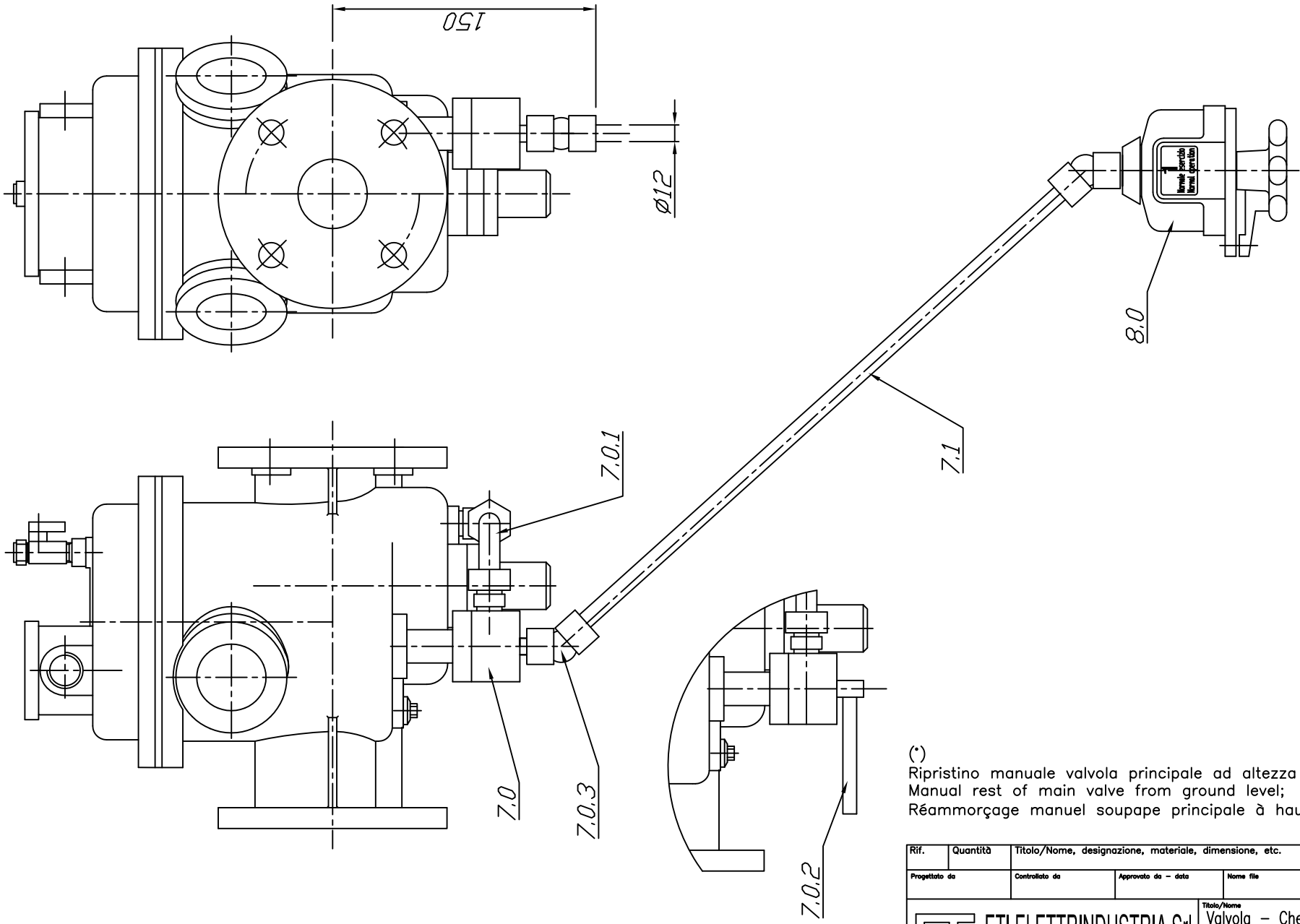
Rif.	Quantità	Titolo/Nome, designazione, materiale, dimensione, etc.	N. articolo/Riferimento
Preparato da	Controllato da	Approvato da - data / Nome file	Data 02/11/2000 / Foglio //

ETI ELETTRINDUSTRIA Srl
20032 CORMANO ITALY

Titolo/Nome
Valvola - Check valve - Clapet DAROC (*)
Serie: EDS-R

Numero disegno 6.650.20 | Modifica A | Foglio

N.rev	Nota sulla revisione	Data	Firma	Controllo
A	Aggiunta versione EDS80 8 fori e figure	14/05/04	GL	



(*)
Ripristino manuale valvola principale ad altezza d'uomo;
Manual rest of main valve from ground level;
Réammorçage manuel soupape principale à hauteure d'homme.

Rif.	Quantità	Titolo/Nome, designazione, materiale, dimensione, etc.			N. articolo/Riferimento	
Progettato da		Controllato da	Approvato da – data	Nome file	Data 28/06/2000	Scala //

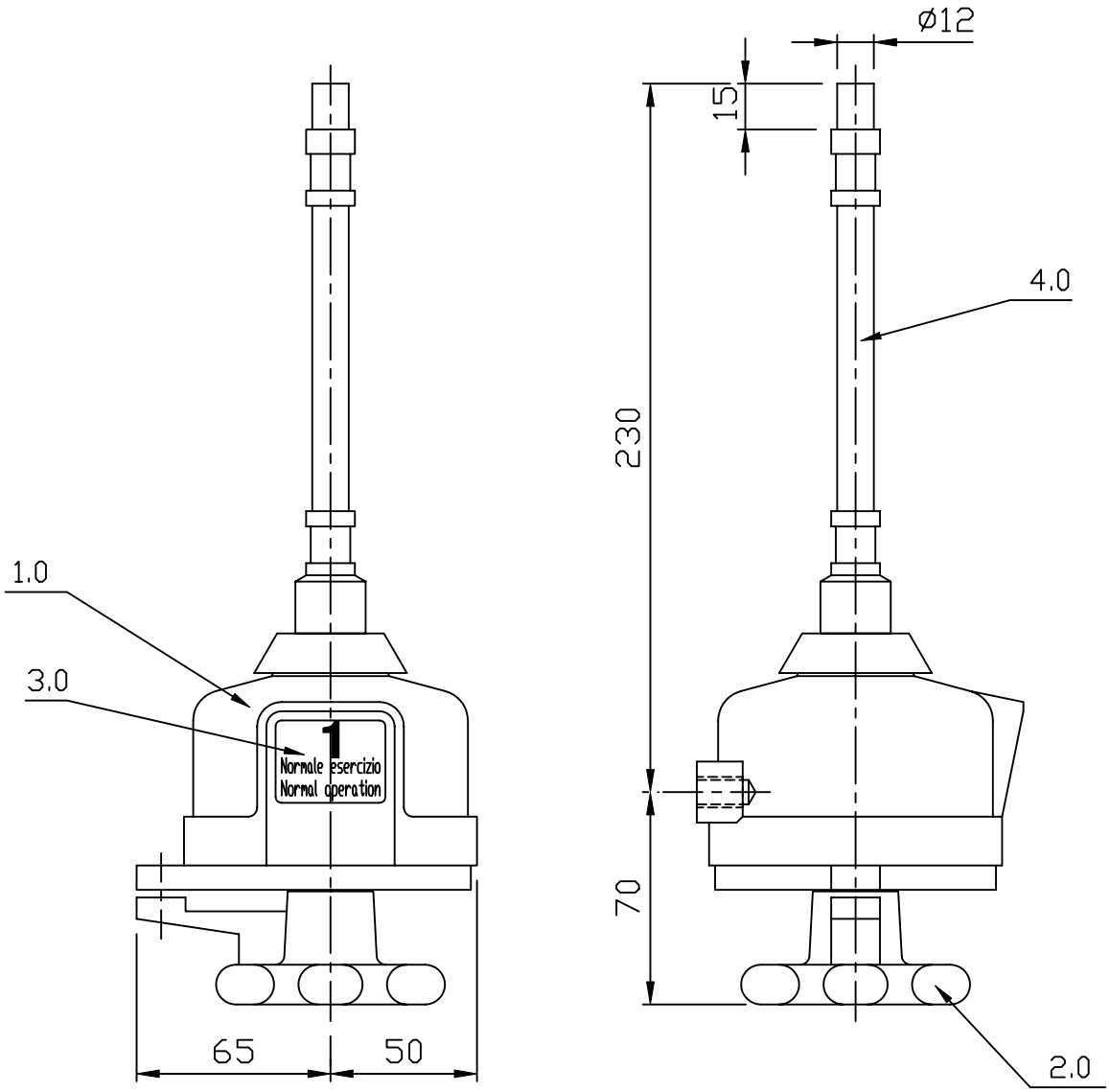
ETI ELETTRINDUSTRIA Srl
20032 CORMANO ITALY

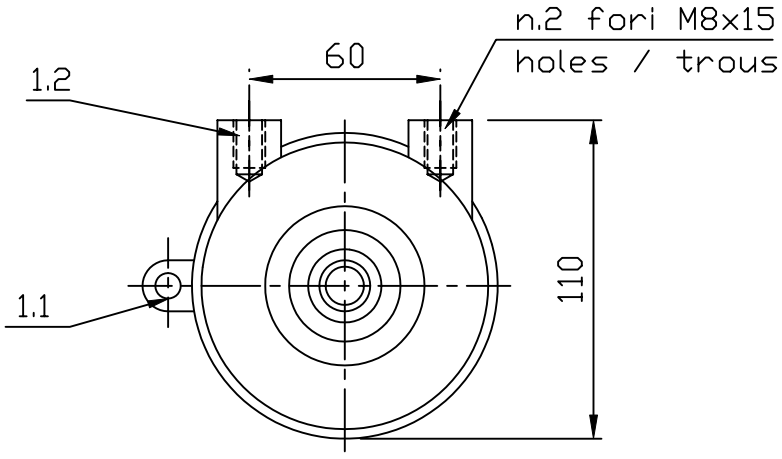
Titolo/Nome
Valvola – Check valve – Clapet DAROC (*)
Serie: EDS–R

Numero disegno 6.650.10 | Modifica | Foglio

N.rev	Nota sulla revisione	Data	Signatura	Controllo

N.rev	Nota sulla revisione	Data	Firma	Controllo





Rif.	Quantità	Titolo/Nome, designazione, materiale, dimensione, etc.			N. articolo/Riferimento	
Progettato da		Controllato da	Approvato da – data	Nome file	Data 05-05-99	Scala //

ETI ELETTINDUSTRIA S.r.l.
20032 CORMANO ITALY

Titolo/Nome
Comando controllo circuiiti - Contacts check device - Appareil essai contacts
Serie: CCC

Numero disegno	Modifica	Foglio
8.160.000		

Non misurare le dimensioni dal disegno