HOT WATER VAPORIZERS

with electric preheat

VAPORIZZATORI AD ACQUA CALDA

con preriscaldo elettrico

Matr. VE1341

Original document

Documento originale

made for

VAPOR GAS EQUIPMENTS LTD

ref. your order N°4945 of 13/01/2021

PEGORARO GAS TECHNOLOGIES Srl - Sele: Via Meucci 77 Arcugnano ITALY
– Tel.+39 0444 289382 – Fax +39 0444 963056 – E-mail:info@pegoraro.it – C.F.e P.IVA 03402960243

PEGORARO GAS TECHNOLOGIES S.R.L.
Viale Della Tecnica, 28, 36100 Vicenza (VI), Italia

DICHIARAZIONE DI CONFORMITA' UE
in accordo all'allegato IV della direttiva 2014/68/UE

EU DECLARATION OF CONFORMITY
in accordance to annex IV of directive 2014/68/EU

N. 039/21

Io sottoscritto, nella figura di rappresentante autorizzato, dichiaro sotto la mia esclusiva responsabilità che la progettazione, la fabbricazione, i controlli e le prove delle attrezzature a pressione sotto specificate sono conformi alle disposizioni applicabili della direttiva 2014/68/UE
I undersigned, in the figure of authorized representative, declare under my responsibility that the design, manufacture, inspections and testing of pressure equipment specified below comply with the applicable provisions of Directive 2014/68 / EU

Descrizione insieme *Assembly description*	**VAPORIZZATORE GPL "ECOVAP 150E"** ***LPG VAPORIZERS "ECOVAP 150E"***		
Famiglia/ tipo *Family/ type*	EV2	N. fabbrica *Serial no.*	VE 1341
Pressione max ammissibile PS *Max allowable pressure PS*	20 bar		ATM
	GAS SIDE		***WATER SIDE***
Temperatura min/ max TS [°C] *min/ max temperature TS [°C]*	-40/120°C		-10/105°C
Capacità fluido (GPL) *Fluid volume (GPL)*	4,1 L	Capacità fluido (Acqua) Fluid volume (Water)	98 L
Fluido gruppo *Fluid group*	1		2
Categoria PED	*II*		Art. 4.3
Procedure di valutazione della conformità utilizzate *Conformity assessment procedures used*	Modulo H		
Ente notificato *Notified body*	TUV Italia S.r.l. - n. 0948 Via Carducci,125 - ed.23 - 20099 Sesto San Giovanni (MI)		
Modulo *Module*	H	Certificato n. *Certificate n.*	PED-0948-QSH-522-18 Rev.1
Norme tecniche utilizzate *Technical standards used*	VSR-M-S ISPESL Ed.99 integrate da EN 13445-5		
Altre direttive applicate *Other directives applied*			

Attrezzature componenti l'insieme machiato CE *Other devices data with CE mark*	Costruttore *Producer*	Ente di notifica *Notified body*	Numero di serie *Serial number*	Modulo *Module*
Ecovap 150E 24KW 415V 3ph	Pegoraro G.T.	CE 0948	VE1341	H
Lpg Control Valve Mini-DM 1"	Pegoraro G.T.	---	01/21	N.A.
Safety Valve mod. R3129G 250 PSI	Rego	---	7C20	N.A.
Electrical resistance 1"1/2 24KW 415V 3ph	Masterwatt	CE0477	21347	---
Thermometer 1/2" Ø63 0/120°C	Frat.lli Magni	---	---	N.A.
Automatic air vent valve 1/2" Mod. 5020	Caleffi	---	---	N.A.
Needle valve 1/4" PN50	Guglielmi D.	---	---	N.A.
Pressure gauge D63 0-25 Bar 1/4"	Wika	---	---	N.A.
Ball valve 3/4" PN10 H2O	Effebi	---	1220	N.A.
Control box EEXD 24KW	Pegoraro G.T.	---	637/21	---

Luogo e data
Location and date

Vicenza, 15/03/2021

Pegoraro Gas Technologies Srl
Marco Corato
(Responsabile Qualità)
(Quality Manager)

PEGORARO

PEGORARO GAS TECHNOLOGIES S.R.L. *Via Meucci, 77, 36057 Arcugnano (VI), Italia*	**VERBALE DI PROVA IDRAULICA** ***HYDRAULIC TEST REPORT***	Nr del pag	1341-21 15/03/2021 1 di 1

CLIENTE/*Customer*						
ORDINE NR./ *Job Nr.*	N° 4945 of 13/01/2021					
Descrizione insieme Assembly description	**VAPORIZZATORE GPL "ECOVAP 150"** **LPG VAPORIZERS "ECOVAP 150"**					
Famiglia/ tipo Family/ type	**EV2/150**		N. fabbrica Serial no.		**VE1341**	
	LATO GAS/ *GAS SIDE*			***LATO AQCUA/*** *WATER SIDE*		
Pressione max ammissibile (PS) Max allowable pressure (PS)	**20 BAR**			**ATM**		
Temperatura min/ max (TS) min/ max temperature (TS)	**-40/ +120 °C**			**-10/ +105 °C**		
PRESSIONE DI PROVA IDRAULICA (PT) Hydraulic pressure Test (PT)	**28,6 BAR**			***/***		
MANOMETRO (SCALA) Manometer range	**0/50 BAR**	MATRICOLA: *Serial N.*	**505953 (n°16)**	**0/10 BAR**	MATRICOLA: *Serial N.*	**115722 (N°15)**
FLUIDO DI PROVA TEST FLUID	**ACQUA/*WATER***					
VOLUME (LITRI) Volume (Liter)	**4,1**			**98**		
TEMPERATURA DI PROVA (°C) Test Temperature (°C)	AMBIENTE (10°C) Room Temperature (10°C)					
TEMPO DI PERMANENZA IN PRESSIONE Test duration at Test Pressure	MIN./MAX: 4 ORE Min./Max: 4 Hours					

RISULTATO DELL'ESAME Test Result	**POSITIVO** ***Positive***	**X**	**NEGATIVO** ***Negative***	

NOTE/ NOTE

	EMESSO/ Issued	OPERATORE/ Operator	ISPETTORE/ Inspector
FIRMA /Sign	15/03/2021	Operatore Alessandro Manfio	

PEGORARO GAS TECHNOLOGIES S.R.L.
Viale Della Tecnica, 28, 36100 Vicenza (VI), Italia

DICHIARAZIONE DI CONFORMITA' UE
in accordo all'allegato IV della direttiva 2014/68/UE (SEP)

EU DECLARATION OF CONFORMITY
in accordance to annex IV of directive 2014/68/EU (SEP)

N. 039/21

Io sottoscritto, nella figura di rappresentante autorizzato, dichiaro sotto la mia esclusiva responsabilità che la progettazione, la fabbricazione, i controlli e le prove delle attrezzature a pressione sotto specificate sono conformi alle disposizioni applicabili della direttiva 2014/68/UE
I undersigned, in the figure of authorized representative, declare under my responsibility that the design, manufacture, inspections and testing of pressure equipment specified below comply with the applicable provisions of Directive 2014/68 / EU

Descrizione apparecchiatura *Device description*	**VALVOLA DI CONTROLLO TERMOSTATICO PER GPL "MINI-MINI/D-MINI/DM"** **LPG *THERMOSTATIC CONTROL VALVE "MINI-MINI/D-MINI/DM"***		
Modello/ tipo *Model/ type*	**MINI-D**	N. fabbrica/Lotto *Serial no./Lot.*	**01-21**
Pressione max ammissibile (PS) *Max allowable pressure (PS)*	20 bar	Dimensione DN Size DN	1"
Temperatura min/ max TS *min/ max temperature TS*	-40/+120 °C	Fluido Fluid	GPL *LPG*
Categoria PED *PED category*	Art. 4.3 (SEP) *Art. 4.3 (SEP)*		
Procedure di valutazione della conformità *Conformity assessment procedures used*	l'attrezzatura a pressione è stata progettata, fabbricata, provata e controllata secondo una corretta prassi costruttiva, come prescritto dalla Direttiva sulle Attrezzature a Pressione 2014/68/UE all' articolo 4 comma 3. *the pressure equipment has been designed, manufactured, tested and inspected in accordance with sound engineering practice as prescribed by Pressure Equipment Directive 2014/68/UE, article 4 point 3*		
Norme tecniche utilizzate *Technical standards used*	VSR-M-S ISPESL Ed.99 integrate da EN 13445-5		
Altre direttive applicate *Other directives applied*	D.M. 16 aprile 2008 (Italia) D.M. 16 of april 2008 (Italy)		

TEST E TARATURE/TEST AND SETTINGS

	Sensore Acqua *Water sensor*	Sensore Pressione *Pressure Sensor*	Sensore gas *Gas Sensor*	Note Notes
Taratura/settings	**50°C**	//	**25°C**	
Prova di tenuta/Leak test	(1.1 x PS)	22 bar	Fluido/fluid:	aria/air

MATERIALI/ MATERIALS

Corpo/Body	Ottone/brass UNI EN 12164 CW614N
Stelo pistone/ Piston shaft	AISI 303 EN 10088-3: 2005
Pistone/Piston	AISI 303 EN 10088-3: 2005
Otturatore/Shutter	Ottone+Gomma 70 Sh UNI EN 12164 CW614N Brass+rubber 70 Sh UNI EN 12164 CW614N
Tenute/Seals	NBR 70 Sh PB 701

Luogo e data
Location and date

Vicenza, 11/01/2021

Pegoraro Gas Technologies Srl
Marco Corato
(Responsabile Qualità)
(Quality Manager)

“ECOVAP” HOT WATER VAPORIZER

“ECOVAP” HOT WATER VAPORIZER WITH ELECTRIC PREHEATING

USE AND MAINTENANCE INSTRUCTIONS

Edition 09.2019 Rev.3

3	General revision	S.C.	L.P.	04/09/2019
2	Editing and integration	S.C.	L.P.	20/12/2018
REVISION	DESCRIPTION	ISSUE BY	APPROVED BY	DATE

INDEX

1. INTRODUCTION

1.1 FOREWORD AND IMPORTANT WARNINGS

The **USE AND MAINTENANCE MANUAL** describes the plant operation and the correct procedures for carrying out the main use and routine maintenance.

The indications given in this manual are destined to a professional user who must have specific knowledge on the plant procedures of use, who must be suitably authorised, instructed and trained for the correct use and commissioning of the system so as to guarantee uninterrupted plant operation.

It is advised to read it careful before commissioning the plant. The manual must be kept in its specific housing on the plant or in an easily accessible place, protected against damage and always available for whatsoever future consulting requirements.

This manual must be complete and readable in all its parts, all operators who use the plant, or the person responsible for maintenance or regulation operations, must know where it is kept and must be able to consult it at any moment.

Should it be damaged or lost, you must ask for a new copy from the plant manufacturer. Should the plant be transferred to another owner, the manual must be handed over to the new user.
The manual is considered an integral part of the plant.

For all components and appliances produced by third parties, please refer to the instructions included in their respective manuals.

The manual has been conceived so as to provide the user with all necessary information for using the plant in safe conditions, from the transport phase to scrapping.

The instructions given by this Use & Maintenance Manual are complementary to the accident regulations in force in the country of use of the plant (the instructions are not exhaustive but complementary to the safety provisions and/or requirements issued by the individual countries)

1.2 MANUAL UPDATING

The information, descriptions and illustrations contained in this manual respect the state of the art at the moment the plant is placed on the market for the first time.

The Manufacturer reserves the right to make any changes to the type of plant at any time for technical or commercial reasons. Said changes do not require the Manufacturer to intervene on the plants that have already been placed on the market until that moment nor to consider this manual inadequate.
Any additions that the Manufacturer may deem appropriate to provide on a later date must be kept together with the manual and considered an integral part of it.

Although this manual contains the most up-to-date information, there may be minor differences between your plant and the one described in this booklet.
If you find any printing errors or indications that are unclear to you, or if you have any other concerns, contact your supplier.

1.3 COPYRIGHT

The copyright of this manual belongs to the plant Manufacturer.
This manual contains texts, drawings and illustrations of a technical nature that may not be disclosed or transmitted to third parties, in whole or in part, without the written authorisation of the machine Manufacturer.

Plant manufacturer
PEGORARO GAS TECHNOLOGIES S.r.l.
Legal premises: via E. Fermi, 253
Executive Premises: viale della tecnica, 28
36100 Vicenza (Italy)

1.4 DESCRIPTION OF PICTOGRAMS AND SYMBOLS

In the manual the following symbols are employed to highlight particularly important instructions and warnings:

ATTENTION
This symbol indicates safety standards for the operator and/or any persons exposed

WARNING:
This symbol indicates that there is the possibility of causing damage to the product and/or its components.

NOTE:
This symbol indicates useful information

ATTENTION
Read the instruction manual before doing anything

MANDATORY AND REQUIRED
Use personal safety equipments and tools

Helmet | Ears protection | Safety shoes | Gloves | Mask | Glasses | Overalls | Safety harness

DANGER
Explosion with the presence of shrapnel under pressure

DANGER
Potentially explosive atmosphere

DANGER
Voltage

DANGER
Burns

1.5 APPLIANCE INTENDED PURPOSE

The vaporizer has been devised, designed and manufactured to be installed in LPG vaporizing and decompression stations for heating and vaporizing liquid LPG passing through the plant, into has before this is decompressed.

PEGORARO GAS TECHNOLOGIES s.r.l. declines all responsibility for any damage to things or persons in the event of:

- Handling, installation, commissioning, maintenance of the individual installed appliances and scrapping by non-qualified personnel;
- improper use of the plant;
- modifications, welding or damage;
- failure to comply with the current applicable safety standards and health and safety laws and regulations.
- operation at temperature and pressure higher than those specified in the rating plate;
- alteration or removal of safety protection components (electrical, electronic, electro-pneumatic, electro-mechanical).
- removing, painting over or covering plant identification plates and warning symbols.
- installation errors;
- lack of proper maintenance;
- failure to comply with the content of this user manual

2. TECHNICAL CHARACTERISTICS

The data are also given on the rating plate fixed to the vaporizer (see fig. 2-1)

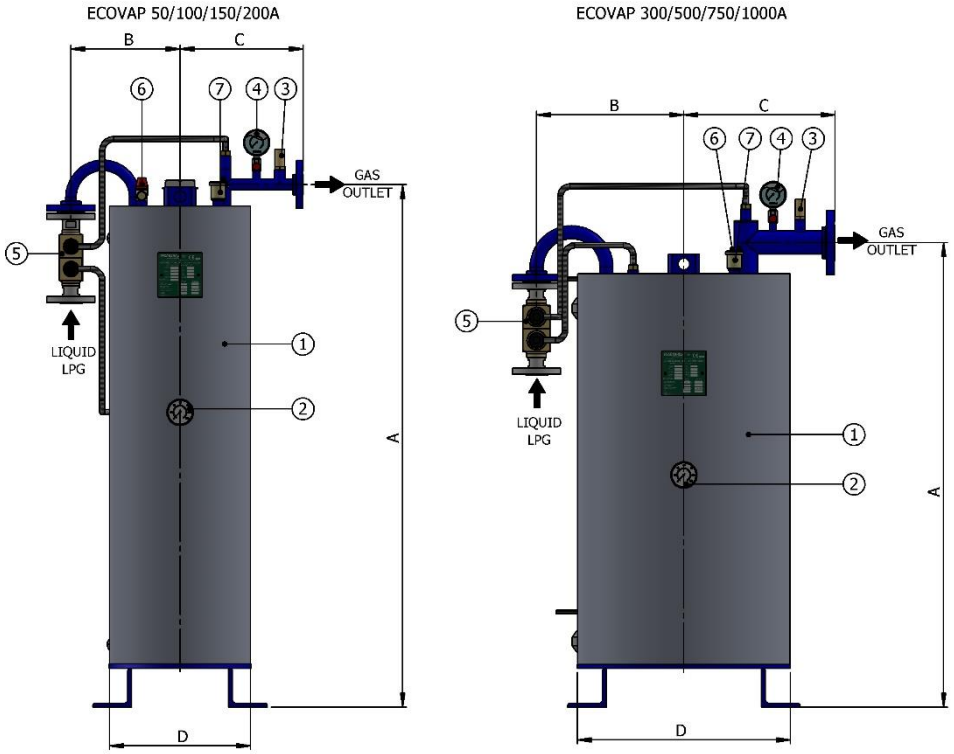
Fig. 2.1

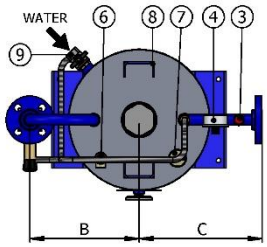
The tables and figures given below illustrate the technical characteristics of the vaporizer:

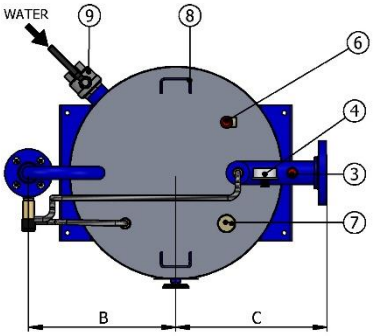
ECOVAP Hot Water Version

	ECOVAP 50A	ECOVAP 100A	ECOVAP 200A	ECOVAP 300A	ECOVAP 500A	ECOVAP 750A	ECOVAP 1000A
A [mm]	850	1350	1350	1230	1200	1300	1300
B [mm]	282	282	282	294	380	490	490
C [mm]	318	318	318	330	390	410	410
D [mm]	324	324	324	410	550	750	750
WEIGHT [kg]	100	130	130	170	380	430	430
WATER [lts]	50	90	90	96	180	340	340
DN GAS IN/OUT	1”x1” ANSI300	1”x1” ANSI300	1”x1” ANSI300	1”x1” ANSI300	1”x2” ANSI300	2”x2” ANSI300	2”x2” ANSI300
DN WATER IN/OUT	3/4”	3/4”	3/4”	1”	1”1/2	1”1/2	1”1/2
PS GAS SIDE	20 bar	20 bar	20 bar	20 bar	20 bar	20 bar	20 bar
PS WATER SIDE	3 bar	3 bar	3 bar	3 bar	3 bar	3 bar	3 bar
PT GAS SIDE	28,6 bar	28,6 bar	28,6 bar	28,6 bar	28,6bar	28,6 bar	28,6 bar
PT WATER SIDE	4.5 bar	4.5 bar	4.5 bar	4.5 bar	4.5 bar	4.5 bar	4.5 bar
TS GAS SIDE	-40 / + 120 °C						
TS WATER SIDE	-10 / + 105 °C						
STANDARD	European Directive 2014/68/EU PED, ISPESL VSR-M-S Ed.99 Rev.95 completed with EN13445-5, ASME VIII Div.1						

Tab. 2.1







1. Vaporizzatore - Vaporizer
2. Termometro Acqua - Water thermometer
3. Valvola di sicurezza Gas - Gas safety valve
4. Manometro Gas - Gas Pressure Gauge
5. Valvola di controllo GPL - LPG control valve
6. Valvola di sicurezza H2O - H2O safety valve
7. Valvola di sfiato Aria - Air Vent Valve
8. Agganci per la movimentazione - Hanging for handling
9. Valvola H2O - H2O Valve

ECOVAP 50A-100A-200A **ECOVAP 300A-500A-750A-1000A**

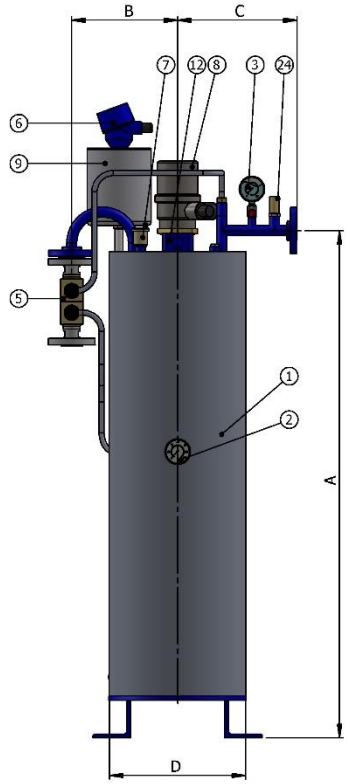
Fig. 2.2

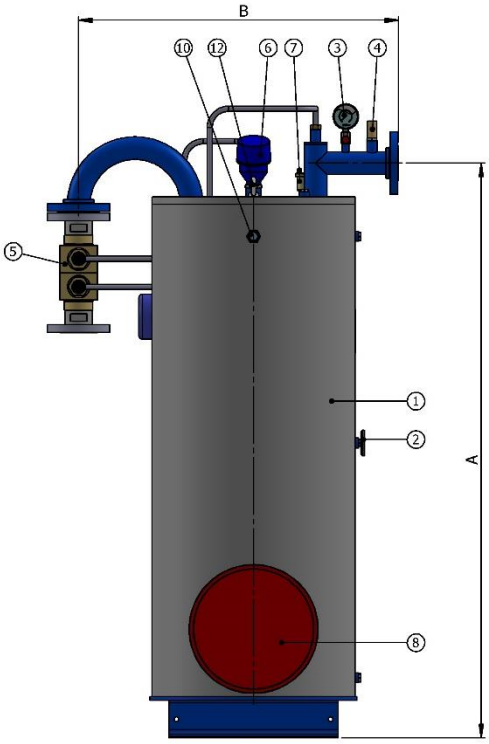
The tables and figures given below illustrate the technical characteristics of the vaporizer:

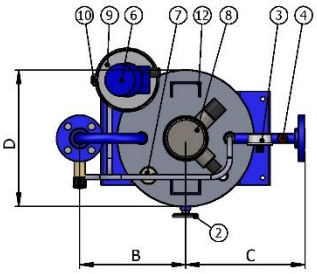
ECOVAP hot water version with electric preheating

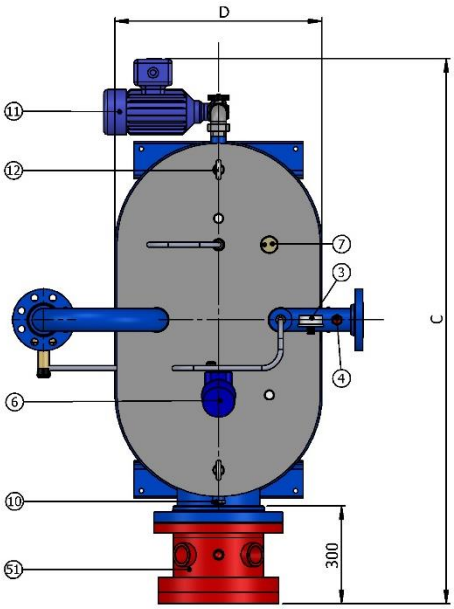
	ECOVAP 50E	ECOVAP 100E	ECOVAP 150E	ECOVAP 200E	ECOVAP 300E	ECOVAP 500E	ECOVAP 750E
A [mm]	850	1350	1350	1350	1350	1530	1530
B [mm]	282	282	282	374	374	730	850
C [mm]	318	318	318	410	410	1250	1250
D [mm]	324	324	324	508	508	550	550
WEIGHT [kg]	110	140	140	240	240	315	315
WATER [liters]	50	90	90	200	200	400	400
DN GAS IN/OUT	1”x1” ANSI300	1”x1” ANSI300	1”x1” ANSI300	1”x1” ANSI300	1”x2” ANSI300	2”x2” ANSI300	2”x2” ANSI300
POWER [kW]	8	16	24	32	48	80	120
VOLTAGE	380V	380V	380V	380V	380V	380V	380V
PS GAS SIDE	20 bar	20 bar	20 bar	20 bar	20 bar	20 bar	20 bar
PS WATER SIDE	ATM	ATM	ATM	ATM	ATM	ATM	ATM
PT GAS SIDE	28,6 bar	28,6 bar	28,6 bar	28,6 bar	28,6 bar	28,6bar	28,6 bar
PT WATER SIDE	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
TS GAS SIDE	-40 / +120 °C						
TS WATER SIDE	-10 / +105 °C						
STANDARD	European Directive 2014/68/EU PED, ISPESL VSR-M-S Ed.99 Rev.95 completed with EN13445-5, ASME VIII Div.1 Other Standards applied: European Directive 94/9/EC ATEX (electrical heater)						

Tab. 2.2









1. Vaporizzatore - Vaporizer
2. Termometro acqua - Water thermometer
3. Valvola di sicurezza gas - Gas safety valve
4. Manometro gas - Gas Manometer
5. Valvola controllo GPL - LPG Control valve
6. Livellostato - Level switch (Optional)
7. Valvola di scarico aria - Air vent valve
8. Riscaldatore elettrico - Electric heater
9. Vaso espansione aperto - Open expansion vessel
10. Spia indicatore di livello visivo - Water level visual indicator
11. Pompa ricircolo H2O - H2O circulation pump (only 750E)
12. Agganci per la movimentazione - Hanging for handling

ECOVAP 50E-100E-150E-200E-300E **ECOVAP500E-750E**

Fig. 2.3

3. HANDLING

Handling and transport operations must be carried out by qualified personnel. Do not damage the vaporizer during transport and handling.
The vaporizer has been supplied complete with a support base, a fork-lift truck with a lifting capacity suitable for the weight to be lifted must be used.
To handle it, lift it by the base or sling it with cable or ropes having lifting capacity suitable for the weight to be supported, which must be placed around the circumference or on inlet and outlet flanged gas piping, taking care not to damage the insulation.

ATTENTION
It is good practice to use lifting equipment with sufficient lifting capacity to hold the weight of the plant increased by about 20%.

WARNING
The plant is supplied painted or galvanised. However, accidental knocks during handling and installation could cause loss of efficiency of the paint or zinc coating, triggering a slow process of oxidation (rust), so it is recommended to restore the original protection with paint or cold zinc coating.

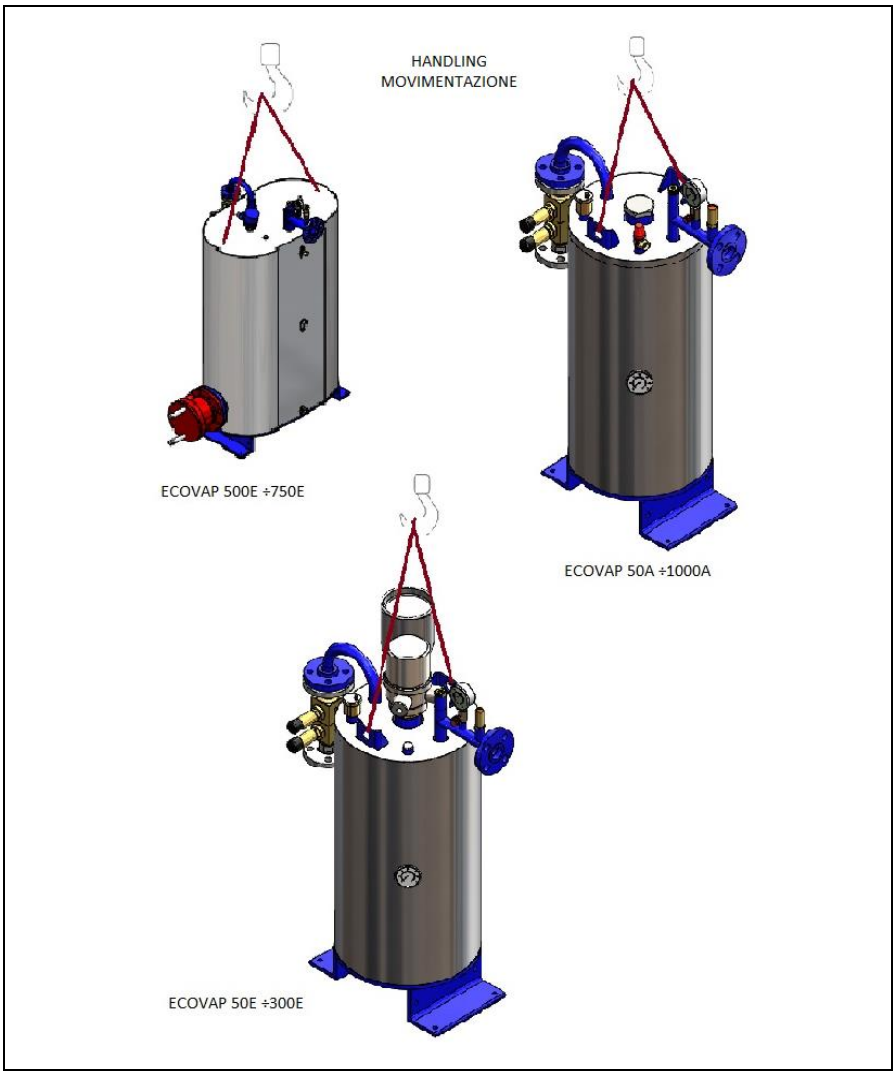


Fig. 3.1

4. INSTALLATION

- The Ecovap vaporizer must be installed VERTICALLY
- Do not subject the plant to static or dynamic loads or to bending movements.
- The installation must be carried out by suitable personnel.
- The plant is delivered to the buyer after having carried out the inspection and seal tests: however, some connections could work loose during transport and handling, so it is necessary to:

- check the mechanical connection between the individual parts;
- Carry out a pressure test with air and check any leaks with a suitable revealing medium (we suggest soapy water) on both the flanges and the couplings.

ATTENTION
For correct and safe use an adequate earth connection must be provided using the hole on the support feet of the vaporizer, indicated by the symbol:

PRECAUTIONS
The electric resistances have an explosion-proof housing with IP65 level. The vaporizer can be used outdoors but it is advised to protect it with canopy or with a cabinet.

The heat exchanger has been calculated so as to guarantee the flow under normal operating conditions: but if it is located in sites subject to low temperatures, heat loss could cause diminished performance of the fitted equipment.

Consequently we highly recommend that the vaporizer be protected by a specific cubicle or closed environment, equipped with a specific ventilation system and if possible insulated.

4.1 VERSION WITH ELECTRIC PREHEATING

4.1.1 ELECTRICAL CONNECTION
(Electrical panel for safe area with a degree of protection of IP65)

- Open the electric panel installed in a “Safe Zone”.
- Wire up the cable for connecting the panel to the electrical resistance, passing the cable through the provided hole on the panel and fix the cable with a cable clamp. The terminals of the electrical heater are located inside the Eexd housing under the thermostats.

To access the terminals:

1. Unscrew the housing lid
2. Unscrew the two nuts that secure the bracket holding the thermostats
3. Extract the thermostats from their sheath

Fig. 4.1
Versione flangiata

Fig. 4.2
Versione filettata

- Once the connection has been made, repeat the above operations in inverse order.
- Connect the cable between the electrical panel and the thermostats, inserted in the Eexd casing of the electrical heater, passing the cable through the provided hole on the panel and fixing it with a cable clamp (cable recommended for a distance of 10-15 m type FG7 3x1.5).
- Connect the electric power supply cable to the panel, passing the cable through the hole provided on the panel.
- For the connections follow the instructions provided in the enclosed diagrams.
- There are two cable entries in the electrical resistance casing:

  The larger one for connecting the supply cable

  The smaller one for connecting the cables of the thermostats

The connections between panel and the electric resistance must be made with flexible cables of type FG7 4Gxmmq (see following table for mm^2).

We remind you that both the cable and its respective cable clamp must comply with the standards for plants in areas subject to explosion or fire hazard.

The cable section varies according to the installed power and to the distance between the vaporizer and the electric control board.

For the cable sections to be used, follow the table below:

DIMENSIONS OF ELECTRICAL CABLES CONNECTING
OF THE VAPORIZER WITH THE ELECTRICAL PANEL

LPG Flow Kg/h	Power kW	Cable glands	Electrical connection	Voltage Volt	Intensity Ampere	Cable section mm^2 (1 cable)			
						Length. 30 m	Length. 60 m	Length. 100 m	Length. 150 m
50	8	1" GK	Three-phase	380/400	12	2.5	4	6	10
100	16	1" GK	Three-phase	380/400	24	4	6	10	16
150	24	1" GK	Three-phase	380/400	36	6	10	16	25
200	32	2 x 1" GK	Three-phase	380/400	49	10	16	25	35
300	48	2 x 1" ½ GK	Three-phase	380/400	73	10	25	35	50
500	80	2 x 1" ½ GK	Three-phase	380/400	122	16	35	50	95
750	120	2 x 1" ½ GK	Three-phase	380/400	182	25	50	75	120
						Cable section mm^2 (2 cables)			
50						-			
100						-			
150						-			
200						4	6	10	16
300						10	16	25	35
500						10	16	35	50
700						16	35	50	75

Tab. 4.1

Note:
The calculated section is indicative and refers to multicore cables with a voltage drop of ≤2 % for three-phase and ≤4 % for single-phase.
The indicated current intensity refers to single-phase.
In case of an electric resistance with a power above 32Kw it is advised to use of nos. 2 supply cables in order to maintain reduced cable sections.

Do not turn electrical resistance head before disconnecting the thermostats. If you turn head without disconnecting thermostats you will break the probes.

Close the door of the electric panel with the key provided and put it in a safe place.

4.1.2 ELECTRICAL CONNECTION
(Eexd electrical panel already fitted to the vaporizer)

If the vaporizer is already fitted with a connected Eexd electrical control panel you only have to power the panel with an electrical energy source, usually three-phase 380/400V.

4.1.3 WATER LEVEL SWITCH (OPTIONAL)

It is possible to install an electromagnetic level switch for water, with a float and a “Reed” contact, complete with an aluminium Eexd watertight casing, allowing to monitor the water level inside the vaporizer.

Follow the detailed instructions for the connection provided in the manual.

If the level switch is not Eexd, but Ex-ia, the electric power supply has to come from a galvanic isolator.

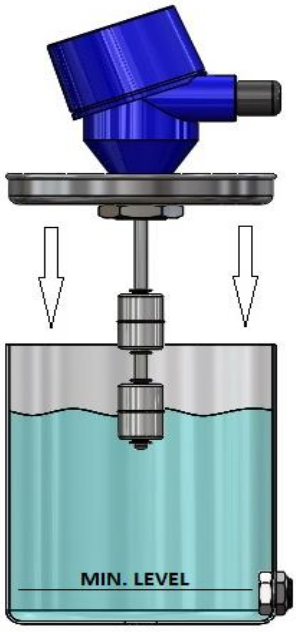
WARNINGS

The position of the level switch must be more than 5 cm from the upper heating limit of the electric resistances.

4.1.4 FILLING THE WATER CIRCUIT

Vaporizers from 50E to 300E are available equipped with an open expansion tank, to allow water to flow out when its temperature increases.
To fill up the water circuit follow the instructions below (see also fig. 4.2):

- Remove the expansion tank cap. If the vaporizer is fitted with a vent valve slacken its black cap.
- Pour water into the expansion tank
- Fill up the whole heat exchanger until the visual water level indicator installed on the expansion tank is covered.
- Replace the expansion tank cap.

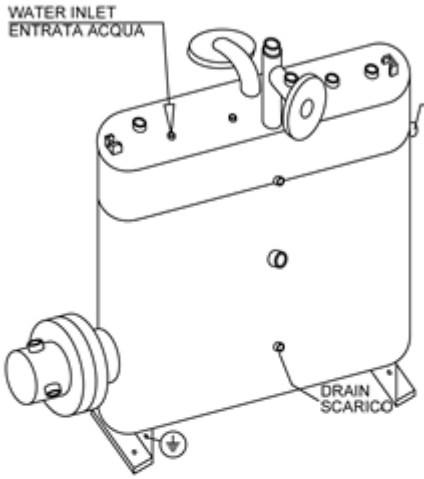


Do not exceed the 75% of the tank

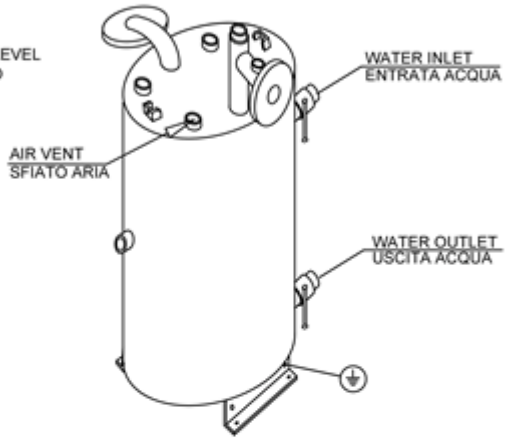
Any excess water must be removed by opening the discharge valve fitted at the bottom of the vaporizer itself

FILLING THE WATER CIRCUIT
RIEMPIMENTO CIRCUITO ACQUA

ECOVAP 500E ÷ 750E



ECOVAP 50A ÷1000A



ECOVAP 50E ÷ 300E

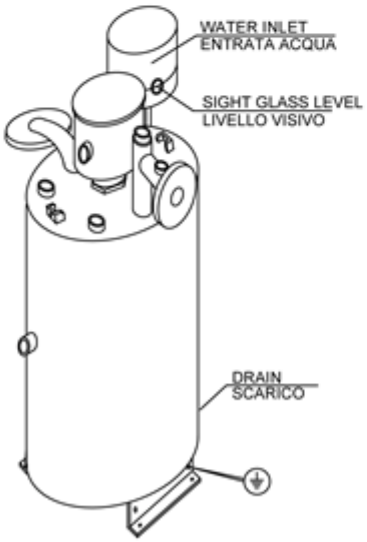


Fig. 4.2

Vaporizers from 500E to 750E have an internal expansion tank: in fact the water circuit is at ambient pressure. So as to let out the water (steam) when the temperature increases, the vaporizer must be filled up with water half way up to the visual level indicator. The vaporizer water is also fitted with an overflow plug labelled as “maximum water level”.
To fill up the water circuit follow the instructions below (fig. 4.2):

- Remove the filling cap on the top of the vaporizer labelled “Water Inlet”.
- Remove the overflow plug on the side of the vaporizer, (the one labelled as maximum and minimum water level). If an air vent valve is present, remove or loosen its black cap.
- Fill with water.
- The level required for correct operation is when water reaches the visual indicator and starts flowing out from the overflow plug on the side of the vaporizer.
- Replace the filling cap and the overflow plug

The vaporizers have different capacities on the water side: see tables 2-1 and 2-2.

WARNINGS
It is recommended to use water coming from the city waterworks, not sourced from water wells or production processes. Using aggressive water could increase the possibility of creating oxides inside the vessel, with the risk of corrosion.

In particularly cold places the water may be diluted with antifreeze. It is recommended to use only “ETHYLENE GLYCOL” as antifreeze as it guarantees complete WATER-SOLUBILITY and can be bought from specialised dealers. The use of ordinary antifreeze is not advised as it is aggressive for the circuit itself and favours the phenomenon of stratification in the case of plant stoppage. This means that the water moves with difficulty when the plant is switched on again.

See the chart below for percentage of ethylene glycol:

Minimum Temperature °C	Ethylene Glycol Percentage
0	0
-5	8
-10	20
-15	28
-20	32
-25	40
-30	45
-35	48

Tab. 4.2

4.2 HOT WATER VERSION

4.2.1 CONNECTIONS

The Vaporizer must be supplied with hot water coming from an external boiler.

WARNING
The boiler flow rate must be such as to cover the amount of calories required by the declared flow rate of the vaporizer, as indicated on the vaporizer rating plate, necessary to supply hot water at a temperature of 70°C.

Connect the delivery and return boiler water lines by means of the taps fitted to the vaporizer (see Fig. 2.2)

4.2.2 BOILER REQUIREMENTS

The boiler that supplies hot water to the vaporizer must have the following technical characteristics:

Ecovap		50A	100A	200A	300A	500A	750A	1000A
Water flow	[m^3/h]	1.0	1.5	3.0	4.5	7.5	12.0	15.0
Power	[kW]	8	15	30	45	76	113	151
Inlet Temp.	[°C]	75	75	75	75	75	75	75
Outlet Temp.	[°C]	67	67	67	67	67	67	67
Pressure drop	[bar]	0.04	0.06	0.10	0.21	0.26	0.29	0.31

Tab. 4.3

WARNING
If you respect these points, as well as the others illustrated, you will have the maximum capacity of the heat exchanger at your disposal. Failure to satisfy these requirements causes a notable and appreciable drop in the total flow rate of the vaporizer, causing difficulties in starting up and in normal operation of the vaporizer. The vaporizer has been designed to supply the adequate flow rate in normal operating conditions. However, if it is located in sites with a low ambient temperature, heat loss could cause reduced performance. To avoid situations of this kind it is highly suggested to install the vaporizer in an insulated cabinet

ATTENTION
The temperature of the water circuit could cause injury to personnel if they come in contact with hot parts, so the use of insulation material protection is recommended. The vaporizer and the boiler must be installed by qualified personnel.

4.2.3 FILLING THE WATER CIRCUIT

Refer to section 4.2.1

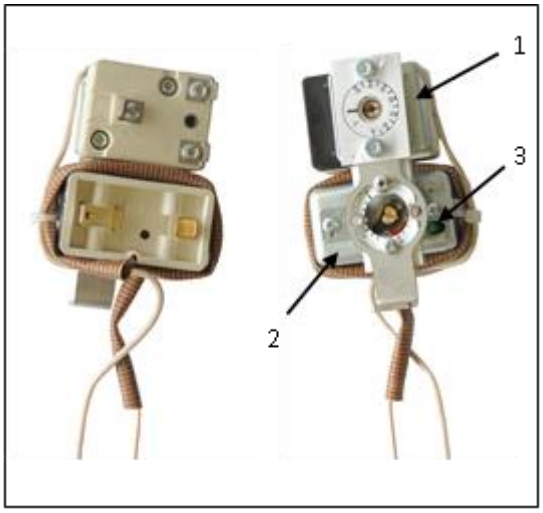
5. COMMISSIONING

ATTENTION
During the commissioning phase, absolutely avoid smoking and using naked flames, explosion hazard. Failure to observe these conditions may cause severe damage to persons and to the plant.

- Before commissioning, we recommend checking that the operating conditions conform with the characteristics on the appliance rating plate. (Fig. 2.1)
- Before carrying out any maintenance work it is important to ensure that the upstream and downstream stop valves have been closed and that the pressure in the lengths of pipe between the two valves has been discharged.
- Ensure that the water circuit has been correctly installed and primed (hot water version) or that the vaporizer has been filled with water

5.1 VERSION WITH ELECTRIC PREHEATING

- Ensure that the electrical connections between the resistance and of the thermostats have been made correctly, refer to section 4.1.1
- Unscrew the resistance casing: inside there are 2 thermostats. One operating thermostat (1) and one safety thermostat (2). The latter has a little green button for manual resetting (3).
- Check the proper operation of the thermostat when switching on and off: by rotating the thermostat regulation you should hear a “click” guaranteeing the correct operation of the thermostat; if you cannot hear the “click” it means that the thermostat is not operating correctly.
- Set the operating thermostat at 70°C.
- Set the safety thermostat at 95°C.
- Press the green button to reset the thermostat.
- Close the resistance casing.
- Turn on the power supply of the electrical panel (“voltage” light on and “resistance on” lamp on)
- Wait 15/20 minutes until the water reaches the required temperature (“heater off” lamp on): check the water temperature on the vaporizer thermometers.
- Check that there are no leaks in the water circuit gaskets.



1. Working thermostat
2. Safety thermostat
3. Reset bottom

Fig. 5.1

ATTENTION

When starting up for the first time the hot water will take 30/60 minutes (according to the water volume) to reach the required temperature to open the control valve.

After this phase open the liquid gas inlet valve very slowly. Opening this valve too quickly may cause irreversible damage to the vaporizer, for instance causing the input of liquid LPG at low temperature causing freezing and the consequent breakage of the vaporizer heat exchange coil: this is why great attention must be payed when carrying out this operation. This situation could be extremely dangerous and may lead to the explosion of the vaporizer.

- Liquid LPG enters the vaporizer automatically.

ATTENTION

If gas does not start to flow inside the coil, a fine adjustment of the control valve screws is required. Consequently:

- slowly tighten (clockwise movement) the regulation screw fitted under the black plastic protections (se chap. 8.3)
- do not turn it more than half a turn
- start turning the first regulation screw clockwise, the WATER SIDE one (closest to the inlet)
- should this not be enough, also turn the second regulation screw, the GAS SIDE one, always not more than half a turn.

- Check that there are no leaks in the gas circuit connections.
- Slowly open the downstream valve towards the reducers.
- It is now possible to start gas consumption.

ATTENTION

For the first hours of operation it is recommended to increase the withdrawal of gas very gradually, so as to allow the activation of the movement of the aqueous solution in the circuit, and to allow the regulating system to adapt to the working conditions.

5.1.1 CHECKS AND CONTROLS

- Check the temperature of the water, because the flow rate of the gas in the vaporizer self-adjusts according to the difference in temperature of the aqueous solution between the upper and the lower level of the vaporizer.
- If the water temperature in the lower part of the vaporizer falls below 50°C, the control valve closes.
- The water is kept at the desired temperature by the regulation thermostat set at 70°C which activates or deactivates the resistance.
- If the regulation thermostat breaks down, a second thermostat TS, set at 95°C, intervenes and deactivating the resistance. This thermostat is manually reset, it is reset manually as in fig. 5.1.
- It is recommended to check the water level periodically and refill when necessary.

5.2 HOT WATER VERSION

- Start up the boiler.
- Ensure that the vaporizer inlet and outlet valves are completely closed.
- Ensure that the water circuit has been completely filled up.
- Wait for the water temperature to reach the required value, reading it on the thermometer on the fitted on the vaporizer.
- Check that there are no leaks in the water circuit.

ATTENTION

At this point open the liquid gas inlet valve very slowly. Opening this valve too quickly may cause irreversible damage to the vaporizer, for instance causing the input of liquid LPG at low temperature causing freezing and the consequent breakage of the vaporizer heat exchange coil: this is why great attention must be payed when carrying out this operation.

- Liquid LPG enters the vaporizer automatically. You can read the pressure on the pressure gauge fitted on the vaporizer outlet.

ATTENTION

If gas does not start to flow inside the coil, a fine adjustment of the control valve screws is required. Consequently:

- slowly tighten (clockwise movement) the regulation screw fitted under the black plastic protections
- do not turn it more than half a turn
- start turning the first regulation screw clockwise, the WATER SIDE one (closest to the inlet)
- should this not be enough, also turn the second regulation screw, the GAS SIDE one, always not more than half a turn.

- Check that there are no leaks in the gas circuit gaskets.
- Slowly open the downstream valve towards the reducers.
- It is now possible to start gas consumption.

ATTENTION

For the first hours of operation it is recommended to increase the withdrawal of gas very gradually, so as to allow the activation of the movement of the aqueous solution in the circuit, and to allow the regulating system to adapt to the working conditions.

ATTENTION

If the vaporizer outlet gas temperature is above 60°C using the resistance operating thermostat lower its operating temperature to about 5/10°C (see chap. 5.1 for the thermostat settings.)

5.2.1 CHECKS AND CONTROLS

- Check the temperature of the water, because the flow rate of the gas in the vaporizer self-adjusts according to the difference in water temperature between the upper and the lower level of the vaporizer.

- If the water temperature in the lower part of the vaporizer falls below 50°C, the control valve closes.

5.3 GENERAL WARNINGS FOR THE CORRECT OPERATION OF THE VAPORIZER

- Once the vaporizer has been put into operation, switch it off only in the case of maintenance operations or for long periods of inactivity of the downstream reduction unit.
- It is advisable to leave the vaporizer on overnight or at the weekend, because consumption is negligible, and it avoids having to repeat the switch-on procedures.
- When switching off the plant, always close the stop valve on the vaporizer inlet, located on the vaporizer inlet.
- Before starting up the plant again it is indispensable to discharge the liquid gas downstream from the vaporizer, which has formed after switching off the plant.
- The filter on the inlet (incorporated in the thermostatic valve) avoids the entry of impurities which could settle on the seat of the valve (causing leaks of liquid gas). So it must be cleaned as indicated in chap. 8.1)
- When LPG is very dirty it is recommended to install an additional filter, before the control valve (liquid phase. vaporizer inlet).

6. TROUBLESHOOTING

NO.	DIFFICULTY	CAUSES	WHAT TO DO
1	Low water level alarm (if present) (alarm lamp) Note: resistance switched off Note: the level switch is an optional	Water level too low	- Fill the vaporizer with water, through the expansion tank or through the cap on the top of the vaporizer marked with "water inlet". Then close the cap tightly. - There is a level visual indicator on the expansion tank or on the front side of the vaporizer (a glass circular window). This is maximum water level if you have cold water inside the vaporizer. This is the. minimum water level if you have hot water inside the vaporizer - During normal operation (i.e. with hot water inside) fill up the vaporizer with water up to the expansion tank or up to the inlet valve. - If the alarm does not disappear from the panel, check the correct operation or the connection of the level switch.
2	Water overheating alarm (alarm lamp) Note: resistance switched off	Excessively high water temperature inside the vaporizer	Possible causes: a) Transitory warming of the resistance may sometimes cause the trip of the safety thermostat. Reset the thermostat as indicated. Note: the water temperature has to decrease below the thermostat setting temperature b) The settings of the two thermostats are too close. Recommended settings are 70°C for the regulation thermostat and 95°C for the safety one. Reset the thermostat as indicated. Note: the water temperature has to decrease below the thermostat setting temperature. c) Damage to the regulation thermostat: if you do not hear a "click" when you turn on or off the thermostat, it is damaged. Replace the thermostat.
3	Water overheating alarm and no gas (alarm lamp)	Resistance switched off because of water overheating. Water temperature has decreased below minimum limit and the control valve has stopped the gas.	The water overheating has switched off the resistance (see point no.2) Water temperature has decreased below the minimum limit (usually 50°C) The control valve stops gas flow when water temperature inside the vaporizer is below the minimum limit (usually 50°C) Refer to point no. 2 to solve the problem. When the correct water temperature is restored, the control valve opens automatically, restoring the gas flow.
4	Low water temperature and no gas (without water overheating alarm)	The Water temperature in the vaporizer is too low. The control valve has stopped the gas.	Possible causes: Check regulation thermostat setting (recommended setting 70°C) a) Even if the heater keeps on warming the water, the water temperature decreases until the control valve stops the gas flow. This means that the required gas flow rate is too high for the capacity of the vaporizer or of the boiler. b) If the water temperature is correct and the gas consumption is not above the vaporizer or boiler capacity: - Check that there is no damage to the resistance or to its elements, - Check the boiler - Check the water pump - Check the water connection piping between boiler and vaporizer
5	Correct water temperature but no gas	No gas is entering the vaporizer and the control valve is still closed	Check if there is pressure in the tank or if there are valves upstream from the vaporizer are open correctly Check that the water temperature inside the vaporizer is above 50°C. If it is below this temperature refer to point no.4 If all valves are open and water is at the correct temperature but still there is no gas flow, it means that the control valve has got blocked and it needs a fine setting adjustment. Proceed as indicated in Chap.5.1 or 5.2

7. HOW THE CONTROL VALVE WORKS (called the “VALVE”) AND HOW TO SET IT

7.1 HOW THE VALVE WORKS

Our Ecovap vaporizers are fitted with a double-safety thermostatically operated control valve that detects the temperature inside the vaporizer and accordingly regulates the inlet flow of gas:

- the 1st safety operates depending on the water side temperature.

- the 2nd safety operates depending on the gas side temperature.

This valve has a completely mechanical operation: it does not require any electrical connections.

7.2 VALVE SETTING

The pressure and the propane/butane mixture (LPG) that is to be used define the best setting of the valve. Each valve is equipped with setting screws, by means of which the temperature setting can be regulated (see figure 7.1).

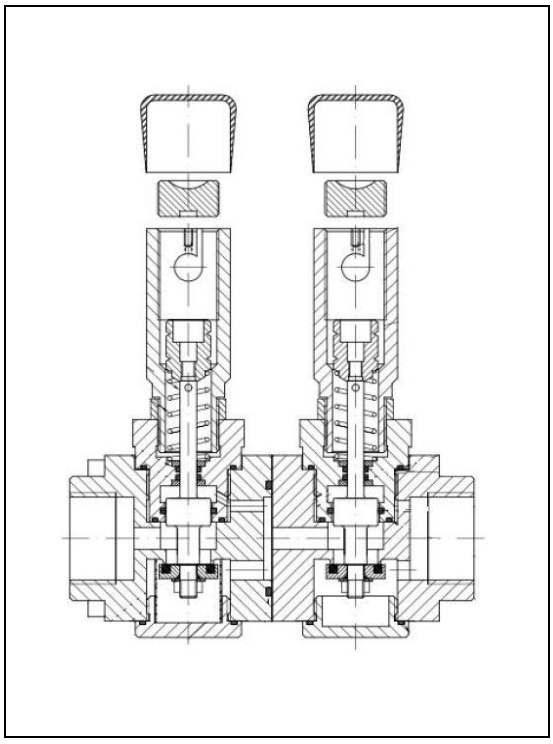


Fig. 7.1

ATTENTION

Do not touch the setting of the screws. Their setting position must not be modified. It is our duty to take care of valve settings in our laboratory, by tightening or slackening the screw the setting will be altered for ever. This manoeuvre may affect the correct operation of the vaporizer, putting it in great danger.

7.2.1 CHECKS AND CONTROLS

Each vaporizer is delivered with its valve suitably set according to the composition of the mixture of gas of the final user. This information must be supplied by the customer, who is considered liable for the provided data.

The 1st safety operates depending on the water temperature inside the vaporizer, the 2nd safety operates depending on the temperature of the gas flowing out of the vaporizer.

The 1st safety is usually set at a temperature between 50°C and 60°C.
The 2nd safety is set according to the operating conditions.

The valve is delivered with a label indicating the setting temperatures.

LPG enters its gaseous state at different temperatures, depending on the pressure and the propane/butane mixture: this is why the second safety setting must be dedicated. The following table shows how the gasification temperature depends on the pressure and the propane/butane mixture.

The 2nd valve safety has a wide setting range, from 20°C to 50°C, which covers all the LPG applications and operating conditions.

If the LPG composition is unknown, we use standard settings (55°C for water and 25°C for Gas)

Temperature [°C]	**Propane-butane mixture**										
Tank Pressure [barg]	100%	90/10	80/20	70/30	60/40	50/50	40/60	30/70	20/80	10/90	0%
2	-14	-6	0	5.5	10	14	17.5	21.5	24.5	28	31
4	1	9	15.5	21	25.5	30	34	38	42	45.5	49
6	12	20	27	32.5	37.5	42	46.5	51	55	59	62.5

Tab. 7.1

ATTENTION
For safety reasons it is important to know the following characteristics of the Lpg:
- maximum LPG pressure during the year;
- maximum butane percentage in the LPG mixture which is to be used.

8. MAINTENANCE

LPG is not a clean gas: usually it contains particles of dirt and oily substances that can cause the vaporizer to malfunction. If the gas is correctly filtered upstream, the vaporizer generally does not require any specific maintenance.

In the event of faulty operation or of a plant breakdown, before beginning any maintenance operation, switch off the power on the electric panel (version with electric preheating) or close down the boiler (hot water version), close the stop valve upstream from the vaporizer and discharge any gas left in the piping.

If the flow rate of the vaporizer decreases it is necessary to carry out maintenance. The components that require maintenance are in particular the inlet filter (housed inside the valve), the valve and the heat exchanger.

8.1 FILTER FITTED ON THE VALVE WATER SIDE

It is recommended to clean up the filter at least once a year. If the filter is particularly dirty or clogged, it is advisable to clean it more frequently.

Check the filter also when the vaporizer does not work properly, that is when its flow rate decreases.

- Switch off the vaporizer and remove all the LPG from inside:
  - Ensure that all the valves upstream and downstream from the vaporizer are closed.
  - Remove the pressure gauge.
  - Predisporre un tubo di corretta lunghezza nella valvola di intercettazione manometro e portarlo lontano dell'area del vaporizzatore

Open the valve to eliminate all the residual gas.

- Using a size 36 spanner unscrew the cap under the water side safety valve (see Chap. 8.3)
- Remove the stainless steel filter from inside.
- Clean the filter with compressed air or with solvent for hydrocarbons
- Change the filter if necessary.
- Refit the cap.
- Close the pressure gauge stop valve, remove the pipe ad refit the pressure gauge

8.2 EXCHANGER

The Ecovap heat exchanger is designed to work with a minimum maintenance.

It is recommended to clean the coil and the shell every 3-5 years, in order to avoid a decrease of the exchanging surface due to scaling of impurities and oily substances.

1. Switch off the vaporizer and remove all the LPG from inside.
2. Ensure that all the valves upstream and downstream from the vaporizer are closed.
3. Remove the pressure gauge.
4. Prepare a pipe of suitable length to connect to the pressure gauge stop valve for in order to lead far from the area in which the vaporizer is installed;
5. Open the valve to eliminate all the residual gas.
6. Remove the screws connecting the flange on the inlet and outlet.
7. Extract the vaporizer from its position.
8. Run solvent for hydrocarbons through the coil to remove all impurities from inside.
   - USE SCALE-REMOVING ACID compatible with the exchanger material (DISINEX diluted to 10%-20% with water) followed by a NEUTRAL neutralizer
   - The solvent must be introduced using suitable and compatible means (e.g. DISINEX PUMP 18K)
9. Repeat the operations in inverse order, taking care to change the flange gaskets.

8.3 CONTROL VALVE

If the gas is properly filtered, the valve does not require frequent maintenance.

Therefore it is recommended to clean the valve filter regularly. For the procedure, see par. 8.1.

WARNING
If when carrying out the regular filter maintenance you observe that even the other components are dirty, it is recommended to clean all the other valve components or at least the most important ones such as the shutters.

8.3.1 ROUTINE MAINTENANCE

For all periodical valve servicing operations (all versions including the one with the viewer), that can be of use for checking the filter and shutter, refer to the following instructions (besides referring to the enclosed documents)

ensure that the stop valves, located upstream and downstream from the vaporizer, are in closed position	
remove the pressure gauge downstream from the vaporizer	
connect a pipe of suitable length to connect to the pressure gauge stop valve for in order to lead far from the area in which the vaporizer is installed	
Open the stop valve to eliminate all the residual gas.	
unscrew the cap on the base of the valve WATER SIDE using a size 36 spanner and remove the filter	
unscrew the WATER SIDE AND GAS SIDE shaft fixing nut using a size 10 spanner, remove the washer, remove the o-ring with the tool provided	
clean the mechanical components with a solvent such as Cyclohexane or, if required, replace the o-ring and the shutter (refit the or-rings using some grease)	
repeat the operations in reverse	
check that there is no leakage using air or nitrogen	
Check that there are no leaks on the gaskets or threads	

8.3.2 SPECIAL MAINTENANCE

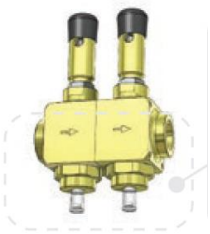
To properly disassemble the valve and replace its components refer to the following instructions (and also to the enclosed documents):

ensure that the stop valves, located upstream and downstream from the vaporizer, are in closed position	
remove the pressure gauge downstream from the vaporizer	
connect a pipe of suitable length to connect to the pressure gauge stop valve for in order to lead far from the area in which the vaporizer is installed	
unscrew the socket-head screw used to retain both sensor bulbs on the water side and gas side	 
delicately extract the bulbs from their respective housing	
open the valve to eliminate all the residual gas and remove the control valve from its flanges	
mark a reference point of the position of regulation screw and using a calliper measure its height or depth bearing in mind that after maintenance the screw must return in its original position	
remove the four screws fitted on the body of the valve by means of a 5mm Allen wrench)	 
unscrew the regulation screw using a screwdriver with a minimum 10 mm thickness and remove the bellows from inside by unscrewing the dowels using a 1.5mm Allen wrench	  

unscrew the cap on the base of the valve WATER SIDE using a size 36 spanner and remove the filter	
unscrew the ring nut of the cylinder that houses the bellows using a size 27 spanner and remove it	
unscrew the shaft fixing nut using a size 10 spanner, remove the washer, remove the o-ring with the tool provided	
push the spring downwards and remove the shutter	
block the shaft with a pair of pliers or by hand and using a 10mm screwdriver unscrew the spring support	
extract the shaft	
clean the mechanical components with a solvent such as Cyclohexane or, if required, replace the o-ring and the shutter (refit the or-rings using some grease)	

repeat the operations in reverse order and bring the regulation screw back to its original position **(tolerance +/- ¼ of a turn)**	
check that there is no leakage using air or nitrogen	
Check that there are no leaks on the gaskets or threads	

8.4 CONTROL VALVE WITH OPENING AND CLOSING VIEWER



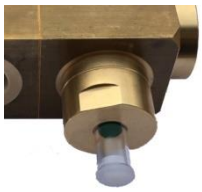
If the gas is properly filtered, the viewer valve does not require frequent maintenance.

Therefore it is recommended to clean the valve filter regularly. For the procedure, see par. 8.1.

WARNING
If when carrying out the regular filter maintenance you observe that even the other components are dirty, it is recommended to clean all the other valve components or at least the most important ones such as the shutters.

8.4.1 SPECIAL MAINTENANCE

ensure that the stop valves, located upstream and downstream from the vaporizer, are in closed position	
remove the pressure gauge downstream from the vaporizer	
unscrew the socket-head screw used to retain both sensor bulbs on the water side and gas side	
delicately extract the bulbs from their respective housing	
mark a reference point of the position of regulation screw and using a calliper measure its height or depth bearing in mind that after maintenance the screw must return in its original position	

remove the four screws fitted on the body of the valve by means of a 5mm Allen wrench)	
unscrew the regulation screw using a screwdriver with a minimum 10 mm thickness and remove the bellows from inside by unscrewing the dowels using a 1.5mm Allen wrench	
unscrew by hand the plastic cap supporting the viewer on the base of the valve	
unscrew the cap on the base of the valve using a size 36 spanner and remove the filter (filter present only on the valve WATER SIDE)	
unscrew the ring nut of the cylinder that houses the bellows using a size 27 spanner and remove it	
unscrew the shaft fixing extension screw using a size 13 box spanner, remove the washer, remove the o-ring with the tool provided	
push the spring downwards and remove the shutter	

block the shaft through the hole present on it by means of the o-ring tool or by hand and using a 10mm screwdriver unscrew the spring support	
extract the shaft	
clean the mechanical components with a solvent such as Cyclohexane or, if required, replace the o-ring and the shutter (refit the or-rings using some grease)	
repeat the same operations even on the second valve GAS SIDE	
repeat the operations in reverse order and bring the regulation screw back to its original position **(tolerance +/- ¼ of a turn)**	
check that there is no leakage using air or nitrogen	
Check that there are no leaks on the gaskets or threads	

WARNING
It is highly recommended to clean the shutter after periods of vaporizer inactivity (even after a week) as the LPG deposits inside the valve with the risk of malfunction.

ATTENTION
During maintenance it is absolutely forbidden to smoke and use naked flames: explosion hazard.
Failure to observe this conditions may cause severe damage to persons and to the plant.
The appliance and the connections will have to be controlled by qualified personnel.
NEVER attempt to repair or restart the appliance on your own.
In case of improper repairs Pegoraro Gas Technologies will not be held responsible for any consequent damage.

8.5 SUMMARY OF THE MAINTENANCE TO BE CARRIED OUT

ADVISED MAINTENANCE PLAN

(Referred to optimal working conditions)

YEARLY	EVERY FIVE YEARS	ACCORDING TO THE OPERATING CONDITIONS (e.g. the quality of the liquid)
Clean the valve internal filter* Clean the valve shutter** **if the filter is damaged replace it* ***if the shutter no longer seals replace it*	Clean the coil pipe	Clean the valve internal filter* Clean the valve shutter** Replace the o-ring*** Clean the coil pipe **** **if the filter is damaged replace it* ***if the shutter no longer seals replace it* ****in the event of valve leaks*

WHAT TO USE

*FOR THE FILTER, **SOLVENT FOR HYDROCARBONS (SEE CHAP. 8.1)**

FOR THE CONTROL VALVE AND ITS COMPONENTS, **CYCLOHEXANE (SEE CHAP. 8.3)

***O-RING, **INDUSTRIAL GREASE (SEE CHAP. 8.3)**

****FOR THE COIL, **SOLVENT FOR HYDROCARBONS (SEE CHAP. 8.2)**

WARNINGS

THE VALVE MAINTENANCE MUST NOT BE CARRIED OUT ON THE SPOT, BUT IN SUITABLE LOCATIONS (LABORATORY or EQUIPPED WORKSHOP).

ALWAYS KEEP A SPARE VALVE IN STOCK.

OTHERWISE WE ADVISE YOU TO SEND THE VALVE TO PEGORARO GAS TECHNOLOGIES WHO WILL TAKE CARE OF THE MAINTENANCE ON YOUR VALVE.

9. DEMOLITION

At the end of its useful life, refer to the applicable regulations in the country of installation for its demolition or recycling.

10. ENCLOSED DOCUMENTATION

List of enclosures:

- Electrical resistance data sheet and manual (for Ecovap electric version);
- Electrical resistance wiring diagram (for Ecovap electric version);
- Electrical control panel wiring diagram (if included in the supply);
- Electrical resistance declaration of conformity (for Ecovap electric version);
- General Assembly of control valve;
- Exploded view of the control valve with each individual component.

SUGGESTED SPARE PARTS LIST LPG VAPORIZERS MOD. ECOVAP FEED-OUT

DESCRIZIONE RICAMBIO/ ***SPARE PART DESCRIPTION***	**CODICE/** ***PART CODE***
Kit per valvola controllo/*Spare part kit for control valve* MINI-D 1" (50-100-150-200 KG)	04100007
Kit per valvola controllo/*Spare part kit for control valve* MINI-DM 1" (300-500 KG)	04100005
Kit per valvola controllo/*Spare part kit for control valve* MINI-DM 2" NEW (750-1000 KG)	04100029
Kit per valvola controllo con visore/*Spare part kit for control valve* with viewer MINI-D 1" (50-100-150-200 KG)	04100020
Kit per valvola controllo con visore/*Spare part kit for control valve* with viewer MINI-DM 1" (300-500 KG)	04100021
Kit per valvola controllo con visore/*Spare part kit for control valve* with viewer MINI-DM 2" NEW (750-1000 KG)	04100034
Tappo per visore/*Cap for viewer*	04100032
Sonda termostatica Ø12 lato acqua e gas/*Thermostatic probe Ø12 water and gas side*	36080045
Tasca Ø12 per sonda termostatica/*Socket Ø12 for thermostatic probe*	36080047
Spia indicatore livello acqua ½" / *Water level viewer ½"* 50-100-150-200-300 KG	36090002
Spia indicatore livello acqua ¾" / *Water level viewer ¾"* 500-750 KG	36090037
Termostato di regolazione resistenza elettrica/*Working thermostat for heater* (70°C)	12020000
Termostato di sicurezza resistenza elettrica/*Safety thermostat for heater* (90°C)	12020001
O-ring 4137 per raccordo scorrevole flangia DN25/*O-ring 4137 for sliding joint flange DN25*	02160053
O-ring 164 per raccordo scorrevole flangia DN50/*O-ring 164 for sliding joint flange DN50*	02160063
O-ring NB70 per tappo 2"1/2 vaporizzatori ad acqua/*O-ring NB70 for cap 2"1/2 for hot water vaporizers* (50-100-200 KG)	02160080
Guarnizione per raccordo flangia 1" ANSI300/*Gasket for joint flange 1" ANSI300*	02160076
Guarnizione per raccordo flangia 2" ANSI300/*Gasket for joint flange 2" ANSI300*	02160077
O-ring 834 per resistenza elettrica 2"/O-ring *for electric resistance 2"* (50 KG)	02160083
O-ring 232 per resistenza elettrica 2"1/2/O-ring *for electric resistance 2"1/2* (100-150-200-300 KG)	02160082
Guarnizione per resistenza elettrica 6" ANSI150/*Gasket for electric resistance 6" ANSI150* (500-750 KG)	02160078
Pressacavo Eexd ½"GK UNI 6125/Eexd cable gland ½"GK UNI 6125 (50-100-150-200-300)	37040046
Pressacavo Eexd 1"GK UNI 6125/Eexd cable gland 1"GK UNI 6125 (50-100-150-200-300)	37040042
Pressacavo Eexd ½" NPT/Eexd cable gland ½" NPT (500-750 KG)	37040039
Pressacavo Eexd 1"1/2 NPT/Eexd cable gland 1"1/2 NPT (500-750 KG)	37040049

WE HIGHLY SUGGEST TO KEEP STOCK OF COMPLETE CONTROL VALVE (SEE PRICE LIST OR ASK TO OUR SALES DEPT)

MAINTENANCE TOOLS FOR THERMOSTATIC CONTROL VALVE

POS.	DESCRIZIONE/*DESCRIPTION*	APPLICAZIONE/*APPLICATION*	IMMAGINE/*IMAGE*
1	**CHIAVE BRUGOLA 5 MM** *Allen Wrench size 5 mm*	VITI CORPO *Body screws*	
2	**CHIAVE BRUGOLA 1.5 MM** *Allen Wrench size 1.5 mm*	SENSORE TEMPERATURA CILINDRO VITE DI REGOLAZIONE/ *Temperature sensor regulation screw cylinder*	
3	**CIACCIAVITE A TAGLIO 10 MM** *Flathead Screwdriver 10 mm thk*	VITE DI REGOLAZIONE *Regulation screw*	
4	**CHIAVE INGLESE 27** *Wrench Size 27*	CILINDRO DI REGOLAZIONE *Regulation cylinder*	
5	**CHIAVE INGLESE 36** *Wrench Size 36*	TAPPO INFERIORE PER FILTRO TAPPO SUPERIORE ALBERO OTTURATORE *Bottom cap for filter* *Upper cap for shutter shaft*	
6	**CHIAVE INGLESE 10** *Wrench size 10*	DADO OTTURATORE *Shutter screw*	
7	**CHIAVE TUBOLARE ESAGONALE 13X13** *Hexagonal Tubolar Wrench 13x13*	DADO OTTURATORE (VERSIONE CON VISORE) *Shutter screw (Viewer Version)*	
8	**CALIBRO** *Caliper*	MISURA TARATURA Setting measurement	
9	**PINZA** *Nipper*	ALBERO OTTURATORE *Shutter shaft*	
10	**CAVA O-RING** *O-Ring removal hook*	O-RING	

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	Document n°: 2.02.99.15078 Date: 17.12.2014



USE

The Explosion-Proof Plug-Mounted Armoured Heaters (Type 78/162) are electrical resistance heaters designed to tailor the customer's specific needs. Limitations to their use (which are additional to those already specified in the customer order) are detailed by Masterwatt upon delivery. As a general rule, these heaters are designed to be exclusively employed in plants dedicated to direct heating of solids, non flammable fluids or of flammable fluids which operate within plants with no presence of air or of oxygen. They can also be used for in-room ambient air heating.
The heaters Type 78/162 shall be exclusively employed under the operational characteristics which have been specified to Masterwatt by its Customer and are recalled in the certificate of conformance. The technical characteristics of these heaters (total power, specific power, supply voltage, dimensions, protection degree, explosion-proof category, protection mode) satisfy these characteristics.

With the implementation of the nameplate identifying the product, Masterwatt guaranties that the electrical construction has been designed and manufactured in accordance with the prescriptions of the product-related CE-type certificate. The user shall follow the prescriptions for a correct use detailed in this manual as well as those imposed by good technique and by the applicable plant specifications with regard to the heated solid or fluid. In particular, the user shall insure that the specific power characterizing the heating itself, and its resulting maximum surface temperature, are compatible with the thermal characteristics (e.g. stability) of the heated fluids. In addition the user shall insure that the maximum temperature reached by the heated solid is compatible with the mechanical properties expected from that solid.

In addition, the user shall make sure that, in the case of direct heating of non flammable liquids, it must be insured that the heater is powered only when the liquid level is at least 50 mm above the highest heating section of the heater itself as specified by Masterwatt in the documentation provided upon delivery.

The IP degree of protection of the electrical connection box, is insured to the extent requested by Masterwatt Customer. Should the user add parts or components or modify in any way the supplied heater, this shall be done in accordance with the same protection standard as the one granted by the Masterwatt construction. **The heaters cannot be used if modified or altered without following the requirements of the protection standard pertaining to its construction.**

If the heater is used in a potentially explosive atmosphere, the user shall insure that the operating and environmental conditions which characterize the heater operation are compatible with the protection mode (Ex d – gas group IIC or dusts group IIIC) granted by the heater. In addition, the user shall verify that the operating temperature of the plant in which the heater operates is compatible with the temperature class the heater belongs to and that is specified onto the heater label.

Explosion-Proof Heaters cannot be used in environments whose operational conditions are not consistent with the mode of protection granted by Masterwatt at delivery.

NOTE:
Due to their intrinsic characteristics, the heaters tend to absorb ambient humidity. This may lead to a reduction of the electrical insulation insured by Masterwatt at the moment of the delivery to its Customer.

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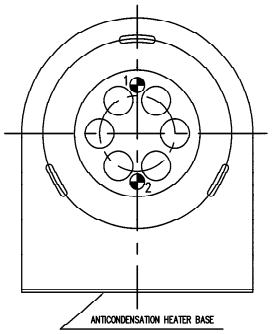
ASSEMBLING
It is recommended to install the heater following the procedures detailed in EN 60079-14 specifications.

The heater is best operated in horizontal position. In case of heating of liquids, the heater operates only if the liquid level is at least 50 mm above the highest heating section of the heater itself as specified by Masterwatt in the documentation provided upon delivery.
Anticondensation Heaters shall be installed preferably on the pavement in order to insure that the safety and regulation sensors are positioned as shown in the figure aside.



1 – Regulation Thermostat
2 – Safety Thermostat

The heater shall be mounted in tanks or shells which grant the build up of a sufficient natural convection flow, thus preventing the creation of hot spots with too high temperatures (as an example, the heater shall not be mounted in tubes or narrow areas).

The heater shall never be activated if fluid (liquid or gas) is not present. In case the heater has been designed to operate in forced convection, the user shall insure that the fluid flow rate is never below the design value or the minimum flow rate specified by Masterwatt in the documentation provided upon delivery.

If heating fluids, the user shall foresee a proper seal at the mounting location of the heater. This seal shall be selected on the basis of the maximum working temperature and of the physical and chemical characteristics of the heated fluid.
In addition the user shall visually check the surface of the heating elements that are in contact with the fluid to verify that it is clean, exempt from local deposits of material or particles which may alter the heat exchange efficiency. When these verifications are successfully completed it is possible to proceed, introducing the heater in its manifold, screwing and tightening with a proper wrench.

In the heating of solids, the heater must be mechanically connected to the solid to be heated. The connection shall be sufficiently efficient to insure that the heat exchange via conduction is adequate to the process needs.

In some cases the heater is provided with a contact box whose orientation can be adjusted by unscrewing it for a maximum of one turn (360°) to make the connection of the power supply cables and/or of the safety/control sensor cables easier. The presence of a contact box with adjustable orientation is highlighted by the heater nameplate. This one in fact reports, in the second field of the “COD.” section, the value 90 or 162. If the contact box does not allow an adjustment of its orientation, the heater nameplate reports, in the same field, the values 78 or 150.
To rotate the contact box in accordance with the installation needs, it is required to untighten the screw that blocks the anti-unscrewing bracket. After that, the contact box can be rotated in the unscrew direction (maximum 360°) to reach the desired position. Once the positioning is completed, the anti-unscrewing bracket shall be blocked again to lock the contact box in its new position.

ELECTRICAL CONNECTION
The user shall verify that the supply voltage corresponds to the value specified onto the heater label and that the safety devices dedicated to the protection of the heater itself are operational. The alarm threshold shall be set by the user taking into account all the applicable regulations relevant to plants and the restrictions detailed by Masterwatt in the documentation provided upon delivery.
Before starting the plant, the user shall verify the correct operation of the safety chain (sensor, connection cables and safety actuators). In addition, if the process side area is classified as Zone 1, the safety device for the control of the heating elements maximum temperature shall be part of a SIL 1 certified safety chain in accordance with the requirements of standard EN 50495. Under this respect, the device provided by Masterwatt has characteristics that are consistent with the requirements applicable to this type of certification.

Before connecting the terminals, the user shall remove the Silica Gel pack located within the connection box (if provided) and shall make sure that the internal and external ground connection terminals are connected and tightened to the points made available by the manufacturer, using a cable compliant to the requirements of IEC/EN 60079-0 specification, par. 15.3, 15.4 and 15.5.

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The electrical connection of the terminals (R-S-T or L-N) shall be done making sure (with a proper Ohm-meter) that the electrical insulation between each phase and the ground is ≥ 2 MOhm at 500 VDC (see also section dedicated to plant start-up). Upstream the power supply circuit, a properly sized earth leakage trip shall be installed at user's care.

The user shall verify that the cross section, the material and the electrical insulation of the power supply harness is compatible with the current and the cable design temperature as specified by Masterwatt in the documentation provided upon heater delivery. In particular, the current density through the conductors shall never exceed 2 A/mm^2.

The user shall design the power supply cable connection device to fit directly the electrical connection box, without any interposition, making use of a coupling nipple or of a cable gland that are certified in accordance with IEC/EN 60079-0 and IEC/EN 60079-1 specifications. The coupling threads shall be exclusively those specified in the documentation supplied upon delivery.

Being the electrical connection terminals of screw type, the user shall provide the supply cable with an eyelet. The connection shall be executed using two wrenches, one operating on the nut and the other blocking the lock nut: this will prevent a break of the insulation device placed on any heating element.

The safety thermostats are set before delivery by Masterwatt. The set point has been defined to insure a safe operation of the heater and cannot be modified by the user. Masterwatt declines any responsibility in case of damages to persons or goods which is caused by a modification of the thermostat set point which has not been performed by Masterwatt itself.
If the heater is provided with one or more thermocouples or thermoresistances, the user shall provide the thermal regulation system which is required to operate them. In this case, the alarm threshold to be set inside the control system shall be the one specified by Masterwatt in the documentation provided upon delivery. The intervention of the thermal safety device shall be followed by a transition of the plant to a safe state. In addition, the re-start of the safety device shall not be automatic.

PLANT START-UP
Before starting up the plant, all the thermal and safety characteristics shall be verified by an expert or by the manufacturer.

In addition, in case of gas heating, the user shall adopt proper purging procedures which make use of inert gases and insure that no explosive atmosphere is present inside the plant at start-up.

If the electrical insulation value, measured as described in the section "Electrical Connection", is below 2 Mohm it is still possible to proceed with the plant start up but one of the 2 following procedures shall be followed:

Procedure 1: reduced voltage supply
1. Start the plant insuring a forced convection of the process fluid at a speed not below 1 m/s all around the armored heating elements and provide power supply to the heater at a voltage not exceeding 50 % of the nominal value
2. If an adequate forced convection of the process fluid cannot be insured, the procedure can be applied in "dry" conditions (i.e. in static air, without the process fluid) but in this case the power supply voltage to the heater shall not exceed 5 % of the nominal value.
3. Keep working for at least 12÷24 hours
4. Stop the plant, wait for cool-down and check again electrical insulation.
5. in case the electrical insulation is still below 2 MOhm repeat the procedure from point 1).

Procedure 2: heating in an electrical oven
After having removed the electrical protection, remove the heater and put it in an oven at 130 °C for 24÷48 hours.

STORAGE
The plug-mounted heaters shall be stored in areas which are suitable for the storage of electrical products and shall be protected from humidity. The sealing caps located on the couplings (where the cable glands will be installed) prevent the entrance of humidity and shall be removed only when performing the electrical connection of the heater.

The storage temperature must not drop below 10 °C.
Storage time must not exceed 6 months. If the heater must remain inactive for over 6 months, it is advisable to check the level of electrical insulation every 6 months and to restore it to the nominal values (> 2 MOhm) by means of one of the procedures described in the paragraph “Plant start-up”.
If storage time exceeds 30 days, it is necessary to carry out a thorough examination before starting the unit.

MAINTENANCE
It is recommended to perform heater maintenance following the procedures detailed in EN 60079-17 specification.

Electrical Resistance Control
Remove power supply and disconnect power supply harness. Measure Electrical resistance at room temperature with a Ohm-meter of appropriate characteristics, making sure that it has been properly calibrated. The measurement shall be performed between Line and Neutral in case of monophase power supply while it must be performed between phase and phase if the power supply is three-phase. The measured values shall be compared to those shown on the wiring diagrams and/or on the acceptance testing certificates provided by Masterwatt together with the product.

Connections Control
Verify the tightness of all electrical connectors, electrical bridges and screws at least once every 6 months. If the contact box is subject to cyclic oscillations of the temperature, this verification shall be performed at least every 3 months. In addition it shall be verified that power supply harness and its insulation is in perfect conditions, exchanging it in case of questionable adequacy.

Safety Devices verification
Disconnect temperature sensor electrical connection cables from their control and the thermostat connections from the power relais, verifying the electrical continuity with a tester. Should the temperature sensors require substitution, this shall be done by Masterwatt personnel.

Heating Elements shell verification
Perform a periodic visual inspection of the heating elements shell and remove timely potential deposits accumulated during the normal operation of the plant. The removal shall be executed making use of not-abrasive devices.

Silica Gel Pack Replacement
In case of long storage periods or of storage in a humid environment, the Silica Gel pack color shall be verified. The pack shall be replaced if the Silica Gel color is pink.

Internal cartridge replacement in Monotube heaters having internal interchangeable element
If the heater is a monotube provided with a n internal interchangeable element, it is possible to replace the cartridge which constitutes the heating element. To proceed in this operation the procedure detailed below shall be followed:

- Remove power supply to the heater
- Unscrew the contact box cover and remove all the electrical connections inside
- Unscrew the cartridge using a socket wrench and acting on the nut located at the centre of the cartridge itself. The Nut size is M8 for cartridges Ø45 and M10 for cartridges Ø57.
- Extract the cartridge to be replaced and insert the new one (see photo 1 and 2)
- Clean with compressed air both the female thread that will host the new cartridge (photo 3) and the male thread of the new cartridge itself (photo 4)
- Cover with Teflon tape the thread of the new cartridge (photo 5)
- Tighten the cartridge acting on the nut located at the centre of the cartridge and using a socket wrench
- Blow nitrogen inside the cartridge to make sure that the gas volume inside the tube which hosts the cartridge to be replaced does not contain oxygen. To obtain this result it is required to proceed as follows:
    - Unscrew the 1/8"Gas nipple and the M4 screw located on the head of the cartridge (photo 6)
    - Connect to a nitrogen bottle the filling device that is provided with the heater as maintenance tool (photo 7)

- Insert the filling device into the 1/8"Gas female nipple (photo 8 and 9) and blow nitrogen at a flow rate of at least 5 lt/min (photo 10) for at least 3 minutes per meter of length of the tube (e.g.: for a tube whose length is 2.5 m the blowing time shall be about 7 minutes and half) letting the air that is inside the cartridge go out from the M4 hole (photo 11)
- Keep close at hand the screws that close the 1/8"Gas and M4 holes together with the corresponding mounting tools (photo 12). Then stop the nitrogen flow and screw quickly the M4 screw closing in this way the exit hole of the gas coming from inside the tube (photo 13)
- Disconnect the nitrogen bottle and close quickly the bottle connection point using the 1/8” Gas nipple (photo 14 and 15)

- Re-install the electrical connections

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SPECIAL CONDITIONS FOR A SAFE USE

- The heater temperature class (as specified by Masterwatt in the documentation provided upon delivery) is defined and stamped onto the heater label, as a function of the plant operating temperature, by the manufacturer.

- The power supply cable shall be suitable for an operating temperature that is equal or higher than the temperature stamped onto the heater label and that is also detailed in the documentation provided by Masterwatt upon delivery.

- In order to prevent operational conditions that are dangerous or, any case, that are outside the nameplates limitations, each heater is provided with the safety devices listed below. These devices shall be operated so as to turn out to be additional to those dedicated to the heater nominal operation and shall be provided with a non-automatic reset.
  In addition, in the cases of gas heating where the process side is classified as Zone 1, the safety device for the control of the heating elements maximum temperature shall be part of a SIL1 certified safety chain in accordance with the requirements of standard EN 50495

  - *Heating of solids:*
    The heaters are provided with a safety device that limits the maximum plant operational temperature (solid surface temperature exposed to the explosive atmosphere).

  - *Heating of liquids:*
    The heaters are provided with a safety device that limits the maximum plant operational temperature (internal heater coupling surface, process side).
    The user shall adopt adequate measures (e.g. making use of a liquid level measurement device) to insure that the heater operates only if the liquid level is at least 50 mm above the highest heating section of the heater itself as specified by Masterwatt in the documentation provided upon delivery.

  - *Heating of gases:*
    The heaters are provided with a safety device that limits the maximum plant operational temperature (internal heater coupling surface, process side).
    For flammable gases, an additional safety device which controls the maximum temperature of the heating elements is foreseen. If in addition, the process side area is classified as Zone 1, the safety device for the control of the heating elements maximum temperature is suitable to set up a safety chain that is certified SIL1 in accordance with the requirements of standard EN 50495.

  - *Heating of fluids flowing in forced convection characterised by a hot-head execution adopted as an exception:*
    In addition to the above specified safety sensors, these heaters are provided with a safety device dedicated to control the fluid temperature in the neighbourhood of the heater coupling device to the plant. This sensor intervenes when the temperature of the fluid in contact with the heater coupling device to the plant exceeds the value based on which the maximum contact box temperature has been defined. Should this device intervene, the heater shall be switched off and a transition of the plant to a safe state shall be performed.

- The replacement of the internal heating cartridge in monotube heaters shall be performed making sure that the air inside the monotube metal sheath does not contain combustible materials (gases or liquids or dusts) and following strictly the prescriptions detailed in the MAINTENANCE paragraph

- The compliance of the heater and of the overall plant to the applicable plant specifications and to the prescriptions of this manual shall be verified by the plant manufacturer or by properly skilled personnel.

NOTE
SHOULD THE INFORMATION REPORTED IN THIS MANUAL PROVE NOT TO BE EXHAUSTIVE, THIS SHALL BE NOTIFIED TO MASTERWATT.

MASTERWATT

Riscaldatori Elettrici

CE

EXPLOSION-PROOF PLUG-MOUNTED ARMORED HEATERS Type GTF 78/162 INSTRUCTIONS FOR ASSEMBLING, ELECTRICAL CONNECTION, START UP AND MAINTENANCE

Document n°: 2.02.99.15078 Date: 17.12.2014

DESCRIPTION

The armoured immersion heaters type GTF 78/162 are designed and manufactured in accordance with ATEX Directive 94/9/CE, group II, category 2 GD, with reference to norms IEC/EN 60079-0, IEC/EN 60079-1, EN 60079-7, IEC/EN 60079-31.

The protection mode with respect to the external explosive atmosphere is:

Ex d IIC T6 ÷T2 Gb (-60°C≤Ta≤+70°C)
Ex tb IIIC T400°C-T85°C Db (-60°C≤Ta≤+70°C) IP68 (optional indication)

The protection mode with respect to a potentially explosive environment at the process side is:

Ex e IIC T6 ÷T1 Gb

The heater label defines both the protection mode at the process side ("-" in case of no protection or "e" in case of increased safety protection) and towards the external environment ("d", explosion proof). The two markings are separated by the sign "/" with the process side marking shown first and the external environment one that follows (e.g. "-/d" or "e/d").

ELECTRICAL CHARACTERISTICS

Maximum nominal voltage:	750	V
Maximum current:	56	A
Nominal frequency:	50/60	Hz

LABELLING

CE **1131** (Ex) **II 2 G Ex e[1]/d[2] IIC T6 ÷T2 Gb Tcavo/cable xxx°C Tamb tt/TT °C COD. XXXXX-HHH anno/year IP6X**
II 2 D Ex e[1]/tb[2] IIIC Txxx°C Db **50/60Hz V xxx/y aaa A ppp kW Timp. xxx°C NR. Nnnn**

1131	**nr. Of the Notified Body (for ATEX surveillance)**
II	**group II (surface)**
2	**category 2 apparatus**
G	**explosive atmosphere with presence of gases, vapours, fogs**
D	**explosive atmosphere with presence of dusts**
Ex e[1]/d[2] IIC T6÷T2 Gb	**type of protection against explosive gases, temperature class, gas group IIC**
Tcavo/cable xx°C	**maximum temperature that the power supply cables shall withstand**
Tamb tt/TT	**allowable ambient temperature range. If not specified it corresponds to-20/+40 °C**
COD. XXXXX-HHH	**Product Code, Type of Product (within the range 78÷162)**
anno/year	**year of manufacturing of the product**
IP6X	**IP degree of protection of the electrical contact box**
Ex e[1]/tb[2] IIIC Txxx°C Db	**type of protection against explosive powders, type of powders, maximum allowable surface temperature inside an atmosphere containing explosive powders**
V xxx/y aaa A ppp kW	**electrical data (supply voltage, current, power)**
Timp.	**maximum allowable plant operating temperature**
NR. Nnnn	**product serial number**

Dangerous Area		**Installation Category in accordance with ATEX Directive 94/9/CE**
gases, vapours or fogs	Zone 1	2 G
gases, vapours or fogs	Zone 2	3 G
Dusts	Zone 21	2 D
Dusts	Zone 22	3 D

[1] The labelling "e/d" or "e/tb" can be present if the heater is ATEX certified but not if the heater is IECEx certified.
[2] the labelling "-/d" o "-/tb" is also possible. It is applied if there is no protection mode at the process side.

MASTERWATT	**ATTESTATO DI CONTROLLO SPECIFICO**	**n° 62/2021**
Riscaldatori elettrici	Secondo Norma EN 10204 - 3.1 **X0927**	*Data :* 12/03/2021

Cliente : 4701	*Comm.:* 2021/233-1/1	*Disegno n.* 18604	*Quantità* 1
Ordine n. 41 dd. 19/01/2021			*Ordinata*
Codice ***MASTERWATT***			*Quantità*
78ZTC240D000005	*Tensione* **415 V/3**	*Potenza* **24000 W**	*Collaudata* 1

Riscaldatore Certificato secondo EN 60079-0/-1/-31

II -/2G Ex db IIC -/Gb - II -/2D Ex tb IIIC -/Db

Gruppo dei Gas **IIC**		*n° Certificato:*	**18 ATEX 2960 X**
Classe di temp. riscaldat. **T4**		*n° matr. riscaldatore:*	**21347**
Temperat. progetto cavo: **90**		*grado di prot. custodia:*	**IP65**

Prova di sovrappressione statica della custodia: NON RICHIESTA

1

CONTROLLI VISIVI E DIMENSIONALI

presenza e continuità guarnizione:	*Controllo dimensionale*	*Controllo sensori di sicurezza*
POSITIVO	***POSITIVO***	***POSITIVO***

PROVA IDRAULICA DEL RISCALDATORE — **Codice adattatore da utilizzarsi: M270FE72143878**

Durata della prova : **> 2 min.** *pressione :* **10 bar** *ESITO :* **POSITIVO**

2

VERIFICHE ELETTRICHE — Valore OHMICO misurato alla temperatura ambiente (Rilevato fra Fase e Fase)

	VALORE NOMINALE Ω	**Ω +5%**	**Ω –5%**	**RILEVATO**
Stadio n. 1 -	**14.35**	**15.07**	**13.63**	13,68 ÷ 13,71

RIGIDITA' DIELETTRICA — a 1000 V + 2 x Tensione Nominale - durata 60 secondi oppure a (1000 V + 2 x Tensione Nominale) x 1.2 - durata > 0.1 secondi

Tensione di prova	*Corrente dispersione max*	*Tensione rilevata*	*Corrente di dispersione rilevata*
2280 V	**2.87 mA**	**2280 V**	1,72 **mA**

RESISTENZA DI ISOLAMENTO — 500 V.c.c. — **MEGGER**

Valore Nominale	**200** MΩ	*Valore Rilevato*	**> 200** MΩ

3

Osservazioni :

Il Responsabile

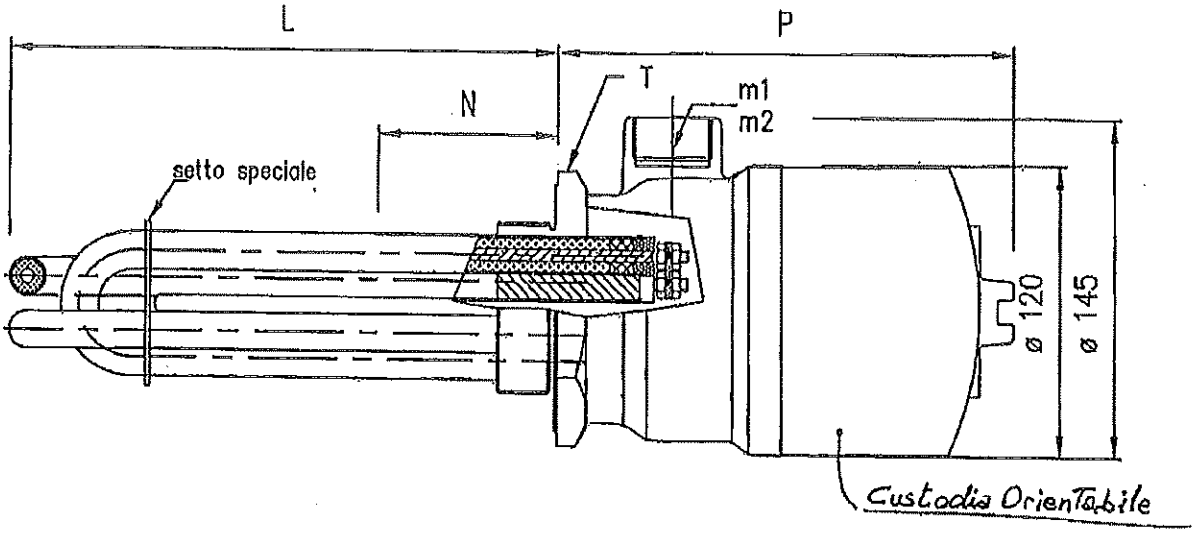
MASTERWATT

MASTERWATT
RISCALDATORI ELETTRICI

ELECTRICAL HEATERS DATA SHEET

Cod.
Disegno n° 18604
Cliente: PEGORARO GAS TECHNOLOGIES
Codice Art. 782TC240D-
Ref.
Data 24.10.12

The sketch is just illustrative



NOTA: Verificare compatibilità fluido con l'alta potenza specifica

Release. 01

L	N	R	T	P	m1	m2	T° esercizio
1150	80	0	2_1/2" Gas	180	1"GK	1/2"GK	max 95

Riscaldatore su Tappo 2_1/2" Gas in Acciaio inox AISI 316
Potenza 24,00 kW - Tensione 415 V / 3Ph. - Corrente = 36,5 A

Composto da:
- n° 3 riscaldatori elettrici corazzati in Acciaio inox AISI 316Ti - diametro 16 mm
- Sviluppo: 2343 mm - Piegati ad U - Lunghezza sotto battuta: 1150 mm
- Potenza Unitaria 8000 W - Tensione 415 V - Potenza Specifica 7,5 W/cm²
- Elettrosaldati su Tappo 2_1/2" Gas in Acciaio inox AISI 316 - tipo tappo: pieno

Riscaldatore Testa Calda Certificato CEC: EN 60079-0/1/7/31 II 2GD Exde IIC T4 - Ex tb IIIC T 135 °C
Custodia Protetta IP65 con temperatura massima sul cavo < 122 °C
Certificato valido per Classe I / Zona 1 / 2 / 21 / 22 - T° ambiente -20 ÷ 40°C - T° esercizio max 99 °C

Dispositivi di Sicurezza:
· n° 1 - Termostato Riarmo Manuale Scala 0/150 °C per controllo della SOVRATEMPERATURA fluido set point = 95 °C

· n° 1 - Termostato Riarmo Automatico Scala 30/90 °C per controllo di temperatura del Fluido set point = 70 °C

Coerenza con il Certificato CEC 10_ATEX_022X verificata positivamente

TP_TC_EExd_ALTA.DWG

MASTERWATT s.r.l. Via Collegno 31 10044 PIANEZZA (TO) - Tel. (011) 966.16.26 Fax (011) 967.14.22
INTERNET: www.masterwatt.it E-mail: info@masterwatt.it

MASTERWATT

Pianezza 20/01/2021

Spett.le
PEGORARO GAS TECHNOLOGIES SRL
VIA DELLA TECNICA 28
36100 VICENZA (VI)

DICHIARAZIONE DI CONFORMITA' UE / UE DECLARATION OF CONFORMITY
DECLARATION DE CONFORMITE UE / KONFORMITÄTSERKLÄRUNG UE

Apparecchiatura Elettrica / Electrical Equipment / Equipment Electrique / Elektrische Ausrüstung

Gruppo / Group / Groupe / Gruppe II 2G / II 2D

Riscaldatore corazzato / Armoured Heater / Rechauffeur Cuirassé / Gepanzerte Heizung

TIPO / TYPE / TYPE / ART **GTF 90/162**

78ZTC024D000005 - Riscaldatore su Tappo 2" 1/2 Ex db IIC T4 Gb 415V/3 24 kW
78ZTC024D000005 - Plug-Mounted Heater 2" 1/2 Ex db IIC T4 Gb 415V/3 24 kW
78ZTC024D000005 - Réchauffeur sur Bouchon 2" 1/2 Ex db IIC T4 Gb 415V/3 24 kW
78ZTC024D000005 - Heizung auf Stöpsel 2" 1/2 Ex db IIC T4 Gb 415V/3 24 kW

Conferma d'Ordine/Confirmation de Commande/Order Confirmation/Auftragsbestätigung :

233_2021 - S/N: 21347

Dichiariamo sotto la nostra esclusiva responsabilità che il prodotto al quale questa dichiarazione si riferisce è conforme prescrizioni della Direttiva CEE 2014/34/UE e delle Norme Europee EN 60079-0: 2018, EN 60079-1:2014 ed EN 60079-31:2014
- L'organismo notificato 0477 (**) ha effettuato un esame UE di Tipo ed ha rilasciato il Certificato EPT 18 ATEX 2960 X
- Garanzia della qualità dei prodotti rilasciata dall'Organismo Notificato 0477 (**)

We declare, under our sole responsibility, that the product referred to in this declaration complies with the prescriptions of EEC Directive 2014/34/UE, and of European Specifications EN 60079-0:2018; EN 60079-1:2014 and EN 60079-31:2014
- The Notified Body 0477 (**) has performed an EU-Type examination and has issued the Certificate") EPT 18 ATEX 2960 X
- Products Quality Assurance verified by Notified Body 0477 (**)

Nous Déclarons sous notre responsabilité exclusive que le produit auquel cette déclaration se réfère est conforme aux prescriptions de la Directive CEE 2014/34/UE, et des Normes Européennes EN 60079-0:2018, EN 60079-1:2014 et EN 60079-31:2014
- L'Organisme Notifié 0477(**) a effectué une examen UE du Type et il ° émis le Certificat EPT 18 ATEX 2960 X
- Garantie de Qualité des produits contrôlé par Organisme Notifié 0477 (**)

Wir erklären unter unserer ausschließlichen Verantwortung, dass das in der vorliegenden Erklärung beschriebene Produkt an EWG Norme 2014/34/UE, europäischen Norme EN 60079-0:2018, EN 60079-1:2014 und EN 60079-31:2014 entspricht.
- Der Zustellerbüros 0477 (**) hat eine EU-Artprüfung durchgeführt und hat die Bescheingung EPT 18 ATEX 2960 X ausgestellt
- Qualitätsgarantie den Produkten von Zusteller Büros 0477 geprüft (**)

Masterwatt S.r.l.
R. Ravaglia
Presidente/President

(**) EPT - Eurofins Product Testing Italy S.r.l. - Via Cuorgnè, 21 - 10156 Torino - Italia

Internet: www.masterwatt.it
e-mail: info@masterwatt.it

MASTERWATT S.r.l. Via Collegno, 31 - 10044 Pianezza (TO)
Tel. +39-011-9661626 - Fax. +39-011-9671422 - Fax Acquisti +39-011-9675549
C.C.I.A.A. Torino N. 607746 Tribunale Torino Reg. Soc. N. 609/82
Codice Fiscale / Partita IVA IT 02777110012 - N : Meccanografico Export TO 000843

External Hydrostatic Relief Valves
3125, 3127, 3129, SS8001, SS8002, SS8021 and SS8022 Series

Application

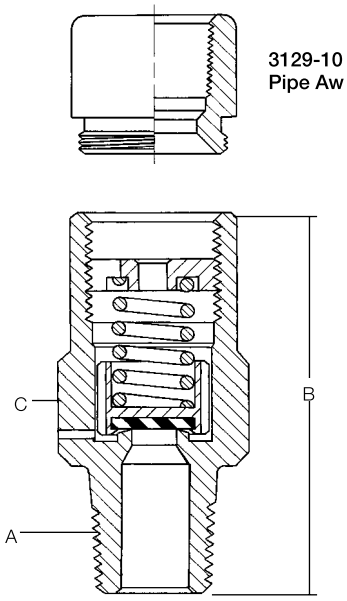
Designed especially for the protection of piping and shut-off valves where there is a possibility of trapping liquid LP-Gas or anhydrous ammonia. They may be installed in pipelines and hoses located between shut-off valves or in the side boss of RegO shut-off valves.

Features

- Relief valve designed to automatically reseat firmly after discharge.
- Resilient seat disc provides a “bubble-tight” seal.
- Available in both brass and stainless steel.
- Available in configurations that permit direct attachment of vent piping when required.

Materials

Body (3125, 3127, 3129)..... Brass
Body (SS8001, SS8002, SS8021, SS8022)..... Stainless Steel
Spring ..... Stainless Steel
Seat Disc ..... Resilient Rubber

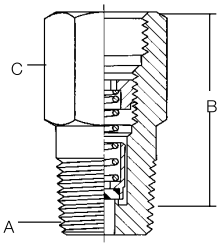


3125 Series (.161 Orifice)
3127 Series (.274 Orifice)
3129 Series (.386 Orifice)

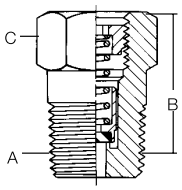
Ordering Information

Part Number	Start To Discharge Setting PSIG	Valve Body Material	Container Connection M. NPT	Height (Approx.)	Wrench Hex Section	Accessories	
						Protective Cap	Pipeaway Adapter or Threads
SS8001G	250	Stainless Steel	¼”	⅞”	11/16”	-	-
SS8002G			½”		⅞”		
SS8021G			¼”	1⅜”	11/16”		¼” NPSM Thrds
SS8022G			½”		⅞”		⅜” NPT Thrds
3127G		Brass	¼”	131/32”		9103-54	-
3129G			½”	219/32”	1⅛”	3129-40P	3129-10*
3127H	275		¼”	131/32”	⅞”	9103-54	-
3129H			½”	219/32”	1⅛”	3129-40P	3129-10*
3127P	300		¼”	131/32”	1⅛”	9103-54	-
3129P			½”	219/32”	1⅛”	3129-40P	3129-10*
SS8022P		Stainless Steel		1⅜”	⅞”	-	⅜” NPT Thrds
3127J	350	Brass	¼”	131/32”	⅞”	9103-54	-
3129J			½”	219/32”	1⅛”	3129-40P	3129-10*
SS8001J		Stainless Steel	¼”	⅞”	11/16”	-	-
SS8002J			½”		⅞”		
SS8021J			¼”	1⅜”	11/16”		¼” NPSM Thrds
SS8022J			½”		⅞”		⅜” NPT Thrds
3127K	375	Brass	¼”	131/32”		9103-54	-
3129K			½”	219/32”	1⅛”	3129-40P	3129-10*
3125L	400		¼”	19/16”	⅝”	3125-40P	-
3127L				131/32”	⅞”	9103-54	
3129L			½”	219/32”	1⅛”	3129-40P	3129-10*
SS8001L		Stainless Steel	¼”	⅞”	11/16”	-	-
SS8002L			½”		⅞”		
SS8021L			¼”	1⅜”	11/16”		¼” NPSM Thrds
SS8022L			½”		⅞”		⅜” NPT Thrds
3127U	450	Brass	¼”	131/32”		9103-54	-
3129U			½”	219/32”	1⅛”	3129-40P	3129-10*
SS8001U		Stainless Steel	¼”	⅞”	11/16”	-	-
SS8002U			½”		⅞”		
SS8021U			¼”	1”	11/16”		¼” NPSM Thrds
SS8022U			½”		⅞”		⅜” NPT Thrds

SS8022G



SS8021, SS8022 Series (.156 Orifice)



SS8001, SS8002 Series (.156 Orifice)

* ½” F. NPT outlet connection.

REGO 100 RegO Dr. Elon, NC 27244 USA www.regoproducts.com +1 (336) 449-7707

Rego GmbH
Industriestr. 9 35075 Gladenbach, Germany
Phone +49 (0) 6462-9147-0, Fax -9147-29
info@rego-europe.de - www.rego-europe.de

EU DECLARATION OF CONFORMITY

Directive 2014/68/EU - Pressure Equipment

The undersigned, mandated by ***Engineered Controls International***, declares that the following RegO® products which are listed hereunder and manufactured by Engineered Controls International LLC, of Elon, North Carolina, NC 27244, USA :

LPG-Pressure Relief Valves Series: 3125, 3127, 3128, 3129, 3131, RS3131, 3132, RS3132, KZ3132, W3132, EP3132, EPW3132 3133, 3135, RS3135, RS3136, RS3145, A3149, UA3149

- Are in accordance with the requirements of Directive 2014/68/EU for pressure equipment.

  Examination Certificate NO.: CE-0085CNO220 (Module B)

- Are Safety Accessories and classified in category lV.

- Follow conformity assessment procedure module D (Production Quality Control) of annex lll of Directive 2014/68/EU

  EU Examination Certificate NO.: DGR-0036-QS-1050-17 Sept. 07, 2017

- are marked **CE** together with the identification number of the Notified Body responsible for surveillance – **0036**

- Test specifications: DIN EN 14129

- Temperature range: -40°C to +65°C

RegO GmbH Industriestraße 9, 35075 Gladenbach / Germany is a Division of RegO® ECI, NC, USA
RegO GmbH is the authorized representative of RegO® Products established within the European Union.

Datum: 11.09.2017

Freddy Deyk, Operations-Manager, RegO GmbH

Engineered Controls, LLC

George A. McGonagle

Vice President Quality Assurance
RegO ECI

TÜV SÜD

Industrie Service GmbH
Westendstraße 199
80686 München

B-Decl. 2.2.1-0917

MINICAL – VALCAL
Automatic air vent valves

series 5020 - 5021 - 5022

cert. n° 0003 ISO 9001

01054/05 GB

Replaces 01054/99 GB

Function

Automatic air vent valves are designed to remove the air that accumulates in heating and air conditioning systems without the need for manual intervention. This prevents harmful phenomena that may compromise the life and the performance of the heating system and which include:
- corrosion due to the oxygen;
- pockets of air trapped in the heating emitters;
- cavitation in the circulation pumps.

WRAS APPROVED PRODUCT

Product range

Series 5020 MINICAL Automatic air vent valve	Sizes 3/8” and 1/2” M
Series 5020 MINICAL Automatic air vent valve, chrome plated	Sizes 3/8” and 1/2” M
Series 5020 MINICAL Automatic air vent valve, with safety hygroscopic cap	Sizes 3/4” and 1” M
Series 5020 MINICAL Automatic air vent valve, with safety hygroscopic cap, chrome plated	Sizes 3/4” and 1” M
Series 5021 MINICAL Automatic air vent valve, complete with automatic shut-off cock	Sizes 3/8” and 1/2” M
Series 5021 MINICAL Automatic air vent valve, complete with automatic shut-off cock, chrome plated	Sizes 3/8” and 1/2” M
Series 5022 VALCAL Automatic air vent valve, chrome plated	Sizes 1/4”, 3/8, 1/2” M

Technical specification

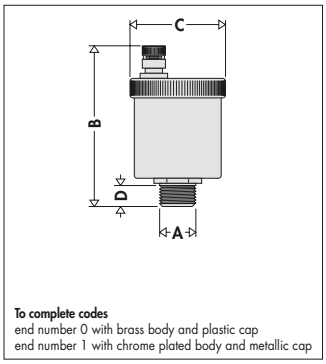
Materials:

Body and cover:	brass EN 12165 CW617N
Float:	PP
Obturator stem:	brass EN 12164 CW614N
Spring:	stainless steel
Seals:	EPDM
Shut-off cock seal:	PTFE

Performance:

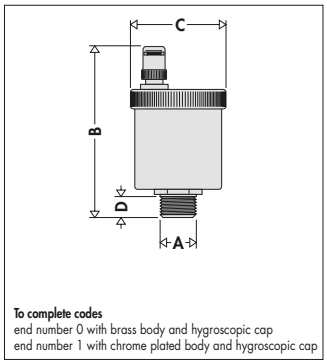
Medium:	water and glycol solution
Max. percentage of glycol:	30%
Max. working pressure:	10 bar
Max. discharge pressure:	5020, 5021: 2,5 bar 5022: 4 bar.
Max. working temperature:	5020, 5022: 120°C 5021: 110°C

Dimensions



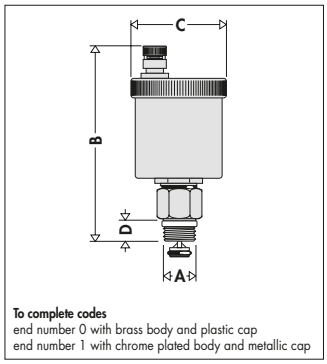
To complete codes
end number 0 with brass body and plastic cap
end number 1 with chrome plated body and metallic cap

Code	A	B	C	D	Weight (kg)
50203.	3/8”	79	Ø 48	11	0,18
50204.	1/2”	79	Ø 48	11	0,18



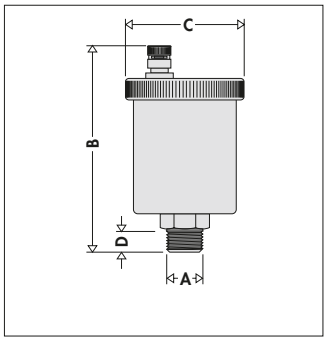
To complete codes
end number 0 with brass body and hygroscopic cap
end number 1 with chrome plated body and hygroscopic cap

Code	A	B	C	D	Weight (kg)
50205.	3/4”	86	Ø 48	11	0,18
50206.	1”	86	Ø 48	11	0,18



To complete codes
end number 0 with brass body and plastic cap
end number 1 with chrome plated body and metallic cap

Code	A	B	C	D	Weight (kg)
50213.	3/8”	96	Ø 48	11	0,21
50214.	1/2”	96	Ø 48	11	0,23



Code	A	B	C	D	Weight (kg)
502221	1/4”	94	Ø 55	9	0,29
502231	3/8”	97	Ø 55	11	0,29
502241	1/2”	97	Ø 55	11	0,29

Operation

The accumulation of air bubbles in the valve body causes the float to drop so that the air vent valve opens.
This phenomenon occurs, and consequently the valve functions correctly, as long as the water pressure remains below the maximum discharge pressure.

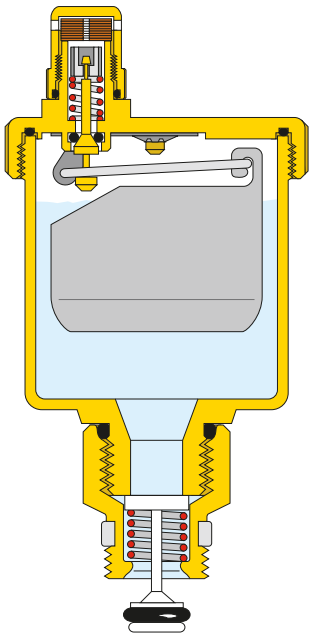
Construction details

Hygroscopic cap

All MINICAL and VALCAL models are equipped with a hygroscopic safety cap. Its functionality is based on the properties of the cellulose fibre discs that serve as the seal cartridge and whose volume increases by 50% as soon as they become wet and thus cause the valve to close. This way, possible damages are avoided in case of leakage.

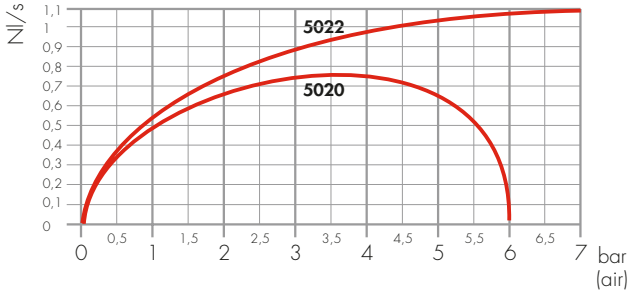
Models with shut-off

The automatic shut-off valve, which forms a seal with the valve body by means of an O-ring made of EPDM, facilitates maintenance operations by shutting off the water flow when the valve is removed and also allows for easy inspection of the air vent device.



Flow curves

Air flow (when the system is being filled)



Installation

- The valve is installed in the vertical position, on the air separator, on manifolds, on riser pipes and generally in parts of the system where a concentration of air pockets is to be expected.
- During operation the upper cap in the standard version must be loosened whilst it must be completely hand tightened in the hygroscopic version.
- It is not advisable to fit the valve in places which could be subject to freeze. In such cases the Caleffi Maxcal Series 501 automatic deaerator can be used.
- It is advisable to **replace the valve cap with a Caleffi Series 5620 safety hygroscopic cap in all fitting locations which cannot be inspected.**

Accessories

- Check valve series 561 for air vent valves series 5020 and 5022 is available. 3/8" and 1/2" connections. Available in brass or chrome plated version. PTFE sealing on thread.
- Hygroscopic safety plug AQUASTOP series 5620 for MINICAL and VALCAL series is available in brass or chrome plated.
- Small anti-suction valve series 5621 for air vent valves for MINICAL and VALCAL series.

SPECIFICATION SUMMARIES

Series 5020
Automatic air vent valve. 3/8"M (or 1/2"M) threaded connection. Brass and chrome plated versions. Brass body and cover, PP float, brass obturator stem, EPDM O-Rings. Medium: water and glycol solutions. Maximum percentage of glycol 30%. Maximum working pressure 10 bar, maximum discharge pressure 2,5 bar. Maximum working temperature 120°C.

Series 5020
Automatic air vent valve. 1/2"M (or 3/4"M) threaded connection. Brass and chrome plated versions. Brass body and cover, PP float, brass obturator stem, EPDM O-Rings. Medium: water and glycol solutions. Maximum percentage of glycol 30%. Maximum working pressure 10 bar, maximum discharge pressure 2,5 bar. Maximum working temperature 120°C. Complete with hygroscopic safety cap.

Series 5021
Automatic air vent valve with automatic shut-off cock. 3/8"M (or 1/2"M) threaded connection. Brass and chrome plated versions. Brass body and cover, PP float, brass obturator stem, EPDM O-Rings. Medium: water and glycol solutions. Maximum percentage of glycol 30%. Maximum working pressure 10 bar, maximum discharge pressure 2,5 bar. Maximum working temperature 110°C.

Series 5022
Automatic air vent valve. 1/4"M (3/8", 1/2"M) threaded connection. Chrome plated with metallic cap. Brass body and cover, PP float, brass obturator stem, EPDM O-Rings. Medium: water and glycol solutions. Maximum percentage of glycol 30%. Maximum working pressure 10 bar, maximum discharge pressure 4 bar. Maximum working temperature 120°C.

CALEFFI

CALEFFI S.P.A. · I · 28010 FONTANETO D'AGOGNA (NO) · S.R. 229, N.25 · TEL. +39 0322 8491 R.A. · FAX +39 0322 863723
· Http://www.caleffi.com · E-mail: info@caleffi.it ·

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ACS

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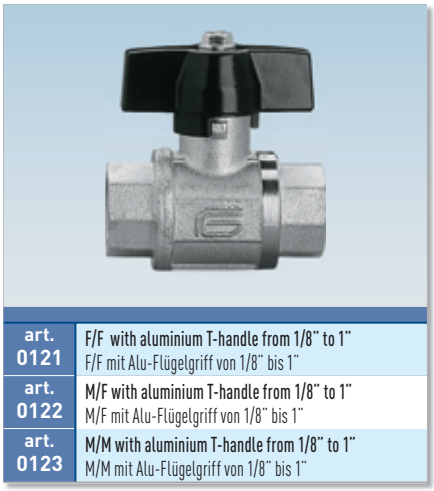
DIN
DVGW
product
GAS

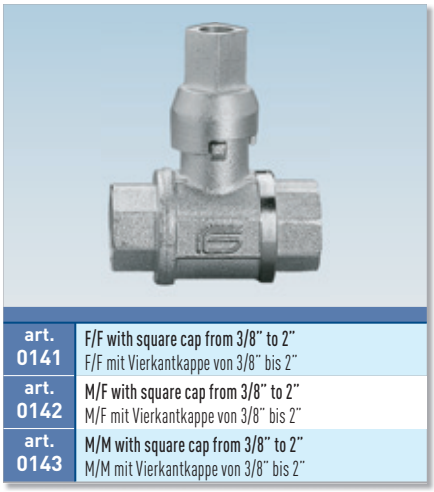
Atex CE Ex II 2 G D

** Marking Atex on request*
** Atex Markierung auf Anfrage*

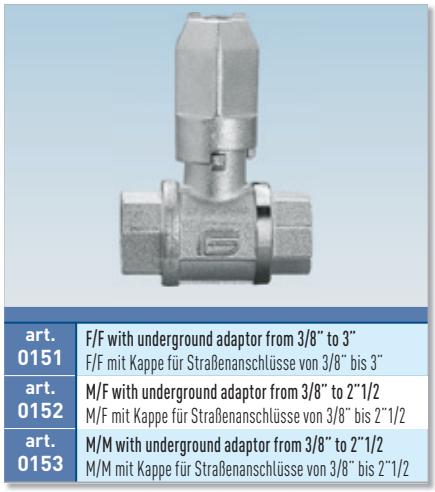
art. 0101	F/F with aluminium lever from 1/8" to 3" F/F mit Alu-Handhebel von 1/8" bis 3"	art. 0102	M/F with aluminium lever from 1/8" to 3" M/F mit Alu-Handhebel von 1/8" bis 3"	art. 0103	M/M with aluminium lever from 1/8" to 2"1/2 M/M mit Alu-Handhebel von 1/8" bis 2"1/2	art. 0101W	F/F degreased from 1/4" to 2" F/F entfettet von 1/4" bis 2"



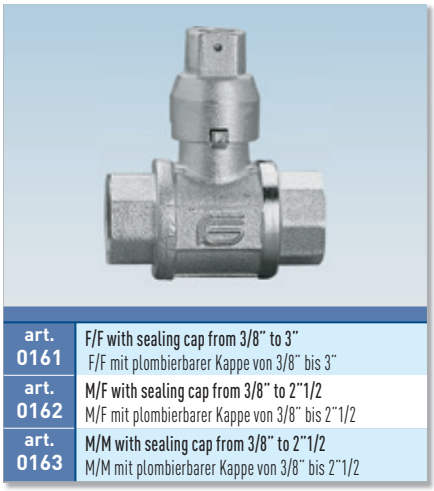
art. 0121	F/F with aluminium T-handle from 1/8" to 1" F/F mit Alu-Flügelgriff von 1/8" bis 1"
art. 0122	M/F with aluminium T-handle from 1/8" to 1" M/F mit Alu-Flügelgriff von 1/8" bis 1"
art. 0123	M/M with aluminium T-handle from 1/8" to 1" M/M mit Alu-Flügelgriff von 1/8" bis 1"



art. 0141	F/F with square cap from 3/8" to 2" F/F mit Vierkantkappe von 3/8" bis 2"
art. 0142	M/F with square cap from 3/8" to 2" M/F mit Vierkantkappe von 3/8" bis 2"
art. 0143	M/M with square cap from 3/8" to 2" M/M mit Vierkantkappe von 3/8" bis 2"



art. 0151	F/F with underground adaptor from 3/8" to 3" F/F mit Kappe für Straßenanschlüsse von 3/8" bis 3"
art. 0152	M/F with underground adaptor from 3/8" to 2"1/2 M/F mit Kappe für Straßenanschlüsse von 3/8" bis 2"1/2
art. 0153	M/M with underground adaptor from 3/8" to 2"1/2 M/M mit Kappe für Straßenanschlüsse von 3/8" bis 2"1/2



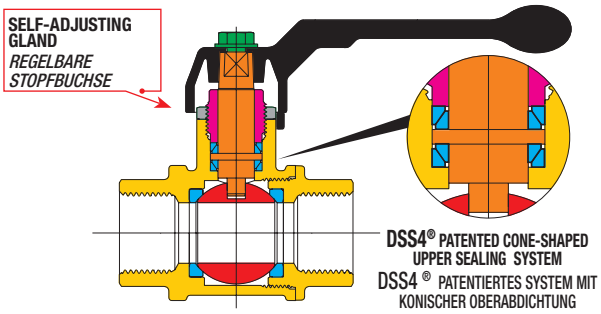
art. 0161	F/F with sealing cap from 3/8" to 3" F/F mit plombierbarer Kappe von 3/8" bis 3"
art. 0162	M/F with sealing cap from 3/8" to 2"1/2 M/F mit plombierbarer Kappe von 3/8" bis 2"1/2
art. 0163	M/M with sealing cap from 3/8" to 2"1/2 M/M mit plombierbarer Kappe von 3/8" bis 2"1/2

art. 0181	F/F with extension and lever from 3/8" to 3" F/F mit Spindelverlängerung von 3/8" bis 3"

art. 0161..L	F/F lockable from 3/4" to 3" F/F verschließbar mit Vorhängeschloss von 3/4" bis 3"

TOTAL®

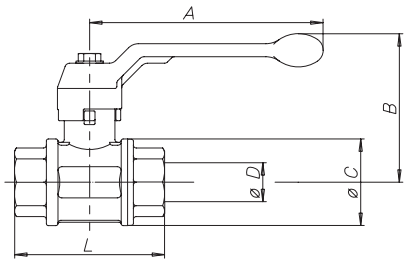
SECTION / QUERSCHNITT



LIST OF COMPONENTS: description/materials/treatments
TEILELISTE: Beschreibung / Werkstoffe / Behandlungen

Body and threaded end Gehäuse und Gewindemuffe		**CW617N (Pb ≤ 2,2% DIN 50930T6)**
Gland Stopfbuchse		**CW614N**
Gland nut Gegenmutter		**CW614N**
Stem Betätigungsspindel		**CW617N (Pb ≤ 2,2% DIN 50930T6)**
Chromium pl. polished ball Blank verchromte Kugel		**CW617N (Pb ≤ 2,2% DIN 50930T6)**
Seats Dichtungen		**PTFE**
Operating device Betätigungselement		**aluminium alloy** / alu-Legierung
Fixing screw Befestigungsschraube		**zinc plated steel** / zinkstahl
Surface treatment Außenbehandlung	-	**brilliant nickel-plating** / glänzend vernickelte Oberfläche

DIMENSIONS / ABMESSUNGEN



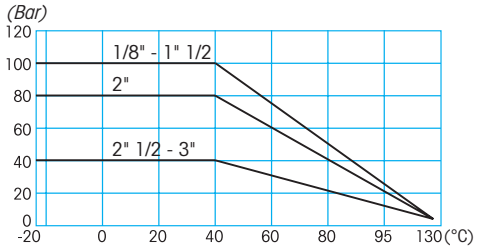
VALVE DIMENSIONS PER TYPE AND SIZE
KUGELHAHNGRÖSSE NACH TYP UND MASS

nominal diameter mm / Nenndurchmesser mm	6	8	10	15	20	25	32	40	50	65	80
size in inches / Zoll Abmessung	1/8"	1/4"	3/8"	1/2"	3/4"	1"	1"1/4	1"1/2	2"	2"1/2	3"
Ø D bore mm / Ø D durchgang mm	8	8	10	15	20	25	32	40	50	65	80
A mm	75	75	100	100	120	120	150	150	175	280	280
B mm	52	52	61	64	76	80	98	104	119	155	167
Ø C mm	23	23	29	36	45	54	65	79	96	119	144
F/F - L mm	48	51	55	69	77	89	103	114	134	160	185
M/F - L mm	49	55	60	75	86	99	113	125	147	166	195
M/M - L mm	52	55	66	82	94	108	123	136	161	172	-
Kv	5	6	8	15	28	39	84	156	243	476	770

PRESSURE/TEMPERATURE DIAGRAM - DRUCK/TEMPERATURDIAGRAMM

For Specifications about the Pressure-temperature Diagram and installation instructions, see page 381

Für Spezifizierungen bezüglich des Diagrammes Druck-Temperatur und Verwendungs-vorschriften, siehe Seite 381



TECHNICAL FEATURES:

Temperature limits: for fluids from –20°C to + 130°C

Pressure limits: for fluids from 100 bar to 40 bar

SPECIFIC FEATURES:

Bore: full.
Stem: security system with self-adjusting gland.
Seats: high resistance virgin PTFE.
Upper seal: **DSS4® Dynamic Sealing System (international patent)** 4 anti-friction self-adjusting cone-shaped seals, in PTFE and dynamic seals. Ideal system to ensure long life cycles, high and low pressure, and vacuum (tested at $1 \cdot 10^{-2}$ mbar).

Application fields:
The TOTAL series is extremely tough and is used where special performance is required, for example in the installations of gas and water distribution, industrial and civil heating, water plants at medium and high pressure, hydraulics and pneumatics, oil and petrochemical fields, non aggressive fluids, steam and vacuum (tested at $1 \cdot 10^{-2}$ mbar).
• On request available in **degreased** version.

Threaded end connections:
• Standard female and male according to UNI ISO 7/1 (UNI EN 10226).
• On request NPT and BSPT.

Operation devices:
Aluminium lever, aluminium T-handle, square cap, underground adaptor, lockable sealing cap from 3/4".
Available colours: black, red, yellow.

All the valves comply with the regulation CE 97/23/CE and are tested 100% on pneumatic seal with electronic control.

ALLGEMEINE DATEN DER STANDARDAUSFÜHRUNG:

Temperaturbereich: für Flüssigkeiten von -20°C bis +130°C

Betriebsdruck: für Flüssigkeiten von 100 bis 40 bar

SONSTIGE VORTEILE DER STANDARDAUSFÜHRUNG:

Durchgang: voll.
Spindel: mit Sicherheitssystem bestehend aus regelbarer Stopfbuchse.
Sitzdichtungen: reines, hochfestes PTFE.
Obere Abdichtung: **DSS4® Dynamic Sealing System (internationales Patent)** 4 konische, reibungsverhindernde PTFE gegen PTFE Dichtungen mit automatischer Regelung und dynamischer Dichtung. Ideales System für Anwendungen mit hoher Lastspielzeit, bei Hoch- und Niederdruck sowie Vakuum ($1 \cdot 10^{-2}$ mbar geprüft).

Anwendungsbereich:
Die Baureihe TOTAL wird in jenen Anlagen eingesetzt, in denen Sondereinsatzbedingungen herrschen. Hierzu gehören Gas- bzw. Wasserversorgungsanlagen, Zivil- bzw. Industrieheizanlagen, hydraulische Anlagen bei mittlerem und hohem Druck, ölhydraulische und pneumatische Anlagen, Chemie- und Petrochemieanlagen, für Vakuum und Dampf sowie für alle nicht ätzenden Medien.
• auch **entfettet** erhältlich.

Gewindeanschlüsse:
• Innen- und Außengewinde nach UNI ISO 7/1 (UNI EN 10226).
• Auf Anfrage NPT und BSPT.

Betätigungselemente:
Alu-Handhebel, Alu-Flügelgriff, Vierkantkappe, Kappe für Straßenanschluss, plombierbare Kappe, mit Vorhängeschloss verschließbare Kappe zu 3/4".
Erhältliche Farben: schwarz, rot, gelb.

Alle Kugelhähne berücksichtigen die EG-Richtlinie 97/23/EG und werden 100% mit einem Verfahren kontrolliert, das eine elektronisch gesteuerte Luftdichtheitsprüfung vorsieht.

GUGLIELMI DANILO

ISO 9001 : 2008
Certificato n° 50700288 QM08

Guglielmi Danilo S.r.l.
Via dell'Artigianato, 31 - 36050 Bolzano Vicentino (VI) - Italia
Tel. 0444/350025 - Fax 0444/351250
E-mail: guglielmi.danilo@artigiani.vi.it - Web Site: www.guglielmidanilo.it
Reg.imp.Vicenza, Cod.Fisc.e Part. IVA:02951940242
Cap.Soc.Euro 60,000,00 i.v.

-COSTRUZIONI APPAR. E ACCESSORI PER IL GAS
-MANUFACTURING OF EQUIPMENT AND DEVICES FOR GAS
-VALVOLE E FILTRI
-VALVES AND FILTERS
-LAVORAZIONI MECCANICHE
-MACHINING

CERTIFICATO DI COLLAUDO CONFORME A: UNI EN 10204 - 3.1
TESTING CERTIFICATE ACCORDING TO: UNI EN 10204 - 3.1

VALVOLA PORTA MANOMETRO A SPILLO
NEEDLE COCK VALVE

ART./*ITEM CODE:* **14030 - 14032**

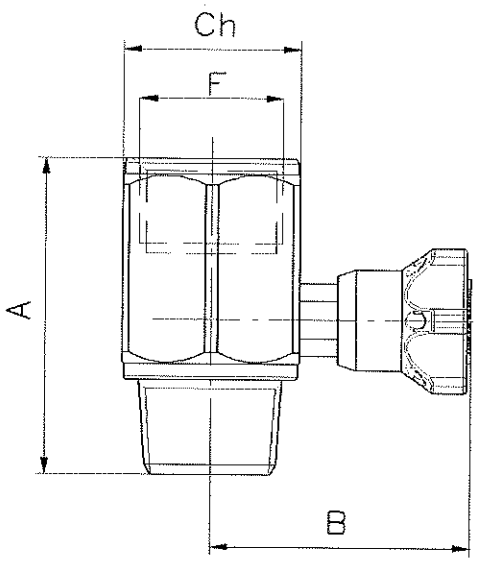
Cliente/*Customer*: **PEGORARO GAS TECHNOLOGIES SRL**
Ordine/*Order*: **142**

Data/*Date*: **01/03/2021**

CARATTERISTICHE GENERALI/
MAIN SPECIFICATIONS

Connessioni/*Connections:* **RP 1/4" - 1/2" UNI-ISO 7/1**
Press.Max.di eserc./*Max working Pres.:* **50 bar**

CORPO/*BODY:* **11SMnPb37 UNI EN 10277**
PERNO/*PIN:* **CW614N UNI EN 12164:98**
ANELLI OR/*RING OR:* **NBR**



Prova pneumatica/*Pneumatic test:* **55 bar**

CODE	A	B	F	Ch
14030	47	37	G 1/4"	20
14032	50	40	G 1/2"	26

NOTE/*NOTES:*

Firma del cliente/*Customer signature*

Firma del costruttore/*Manufacturer signature*

GUGLIELMI DANILO S.R.L.
Via dell'Artigianato, 31
Tel/Fax 0444/350025 - 36050 BOLZANO VIC.NO
Codice Fisc. e Partita IVA 02951940242

Bourdon tube pressure gauge
Model 213.53, liquid filling, stainless steel case

for further approvals
see page 2

Applications

- For measuring points with high dynamic pressure loads or vibrations
- For gaseous and liquid media that are not highly viscous or crystallising and will not attack copper alloy parts
- Hydraulics
- Compressors, shipbuilding

Special features

- Vibration and shock resistant
- Especially sturdy design
- NS 63 and 100 with German Lloyd and Gosstandart approval
- Scale ranges up to 0 ... 1,000 bar

Bourdon tube pressure gauge, model 213.53.100, lower mount

Description

Design
EN 837-1

Nominal size in mm
50, 63, 100

Accuracy class
NS 50, 63: 1.6
NS 100: 1.0

Scale ranges
NS 50: 0 ... 1 to 0 ... 400 bar
NS 63, 100: 0 ... 0.6 to 0 ... 1,000 bar
or all other equivalent vacuum or combined pressure and vacuum ranges

Pressure limitation

NS 50, 63:	Steady:	3/4 x full scale value
	Fluctuating:	2/3 x full scale value
	Short time:	Full scale value
NS 100:	Steady:	Full scale value
	Fluctuating:	0.9 x full scale value
	Short time:	1.3 x full scale value

Permissible temperature
Ambient: -20 ... +60 °C
Medium: +60 °C maximum

Temperature effect
When the temperature of the measuring system deviates from the reference temperature (+20 °C):
Max. ±0.4 %/10 K of the span

Ingress protection
IP 65 per EN 60529 / IEC 60529

Data sheets showing similar products:
Standard version with liquid filling; model 113.53; see data sheet PM 01.08

Standard version

Process connection
Copper alloy,
lower mount (LM) or back mount (BM),
NS 50, 63: G ¼ B (male), 14 mm flats
NS 100: G ½ B (male), 22 mm flats

Pressure element
NS 50:
Copper alloy, C-type or helical type

NS 63:
≤ 400 bar: Copper alloy, C-type or helical type
> 400 bar: Stainless steel 316L, helical type

NS 100:
< 100 bar: Copper alloy, C-type
≥ 100 bar: Stainless steel 316L, helical type

Movement
Copper alloy

Dial
NS 50, 63: Plastic ABS, white, with pointer stop pin
NS 100: Aluminium, white, black lettering

Pointer
NS 50, 63: Plastic, black
NS 100: Aluminium, black

Window
Plastic, crystal-clear

Case
Natural finish stainless steel, with blow-out device with
NS 50: in case back, 12 o'clock
NS 63, 100: at case circumference, 12 o'clock
O-ring seal between case and connection.
Scale ranges ≤ 0 ... 16 bar with compensating valve to vent case.

Bezel ring
Crimp ring, glossy finish stainless steel, triangular bezel

Filling liquid
Glycerine

Options

- Other process connection
- Sealings (model 910.17, see data sheet AC 09.08)
- Measuring system and movement from stainless steel (model 233.53)
- NS 100: Zero adjustment (in front)
- Increased medium temperature with special soft solder
  - NS 50, 63: 100 °C
  - NS 100: 150 °C
- Ambient temperature resistant -40 ... +60 °C with silicone oil filling
- NS 50: Higher scale ranges up to 0 ... 1,000 bar
- Panel mounting flange, stainless steel, for back connection
- Surface mounting flange, stainless steel (not NS 50)
- Mounting clamp (for back connection)

CE conformity

Pressure equipment directive
97/23/EC, PS > 200 bar, module A, pressure accessory

Approvals

- **GL**, ships, shipbuilding (e.g. offshore), Germany
- **EAC**, import certificate, customs union Russia/Belarus/Kazakhstan
- **GOST**, metrology/measurement technology, Russia
- **KBA,** automotive, European Community
- **CRN**, safety (e.g. electr. safety, overpressure, ...), Canada

Certificates [1)]

- 2.2 test report per EN 10204 (e.g. state-of-the-art manufacturing, material proof, indication accuracy)
- 3.1 inspection certificate per EN 10204 (e.g. indication accuracy)

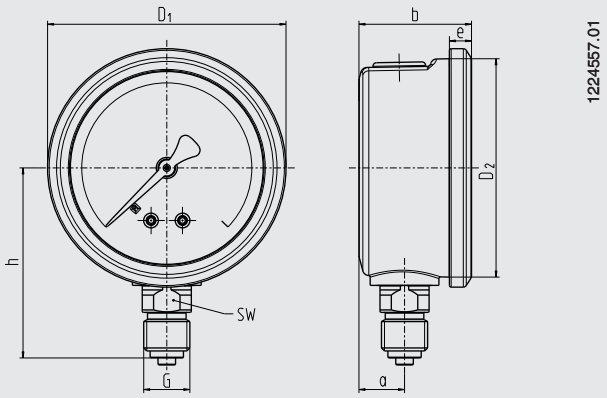
1) Option

Approvals and certificates, see website

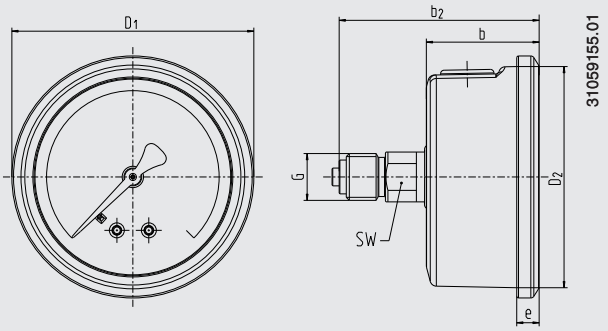
Dimensions in mm

Standard version

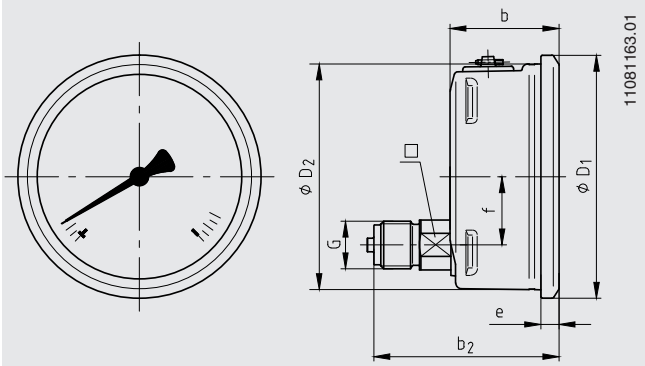
Lower mount (LM)



NS 50, 63, centre back mount (CBM)



NS 100, lower back mount (LBM)



NS	Dimensions in mm										Weight in kg
	a	b ±0.5	b_2 ±0.5	D_1	D_2	e	f	G	h ±1	SW	
50	12	30	55	55	50	5.5	-	G ¼ B	48	14	0.15
63	13	32	56	68	62	6.5	-	G ¼ B	54	14	0.21
100	15.5	48	81.5	107	100	8	30	G ½ B	87	22	0.80

Process connection per EN 837-1 / 7.3

Ordering information

Model / Nominal size / Scale range / Connection size / Connection location / Options

WIKA Alexander Wiegand SE & Co. KG
Alexander-Wiegand-Straße 30
63911 Klingenberg/Germany
Tel. +49 9372 132-0
Fax +49 9372 132-406
info@wika.de
www.wika.de

TERMOMETRI BIMETALLICI

BIMETALLIC THERMOMETERS

I **termometri bimetallici radiali** oltre al normale utilizzo negli impianti termici vengono usati in tutte quelle applicazioni industriali dove il mercurio è vietato dalla normativa in corso. Es.: impianti petroliferi, alimentari e farmaceutici.
Sono strumenti che ricevono le variazioni di temperatura sfruttando la dilatazione di una spirale bimetallica alla cui estremità è posta la lancetta indicativa. Costruzione secondo EN 13190.

Radial bimetallic thermometers *in addition to their normal use in heating systems, are also used in all industrial applications where the use of mercury is prohibited by current regulations. E.g.: in oil refineries, food and pharmaceutical process plants.*
They are instruments which detect temperature variations by measuring the expansion of a bimetallic spiral at the end of which a indicator hand is placed. Construction according to EN 13190.

CARATTERISTICHE COSTRUTTIVE

Classe di precisione: 1,6 secondo EN 13190

Dimensione nominale: 60, 80, 100 e 150 mm

Cassa e anello: AISI 430 (DN 60-80-100)
AISI 304 (DN 150)

Gambo: in ottone nichelato, Ø 9 mm, lunghezza 50÷600 mm

Elemento di misura: spirale bimetallica

Movimento amplificatore: in ottone

Quadrante: in alluminio bianco con graduazioni in nero

Lancetta: in alluminio ossidato nero

Azzeramento: sul terminale del gambo

Trasparente: in vetro

Guarnizione: in neoprene

Grado di protezione: IP44 - IP55 (solo per DN 150)
secondo CEI EN 60529

Limite temperatura ambiente: -20...+60°C

Campo scala: vedi tabella campi scala (pag. 4)

Limite: non superare il 75% del valore di fondo scala e/o del valore estremo della scala per temperature inferiori a 0°C

Sovratemperatura: +30% A.C. per temperature ≤400°C, sovratemperatura limite 500°C

TECHNICAL CHARACTERISTICS

Accuracy class: *1,6 as per EN 13190*

Nominal size: *60, 80, 100 and 150 mm*

Case & Ring: *AISI 430 (DN 60-80-100)*
AISI 304 (DN 150)

Shank: *in nickel-plated brass, Ø 9 mm, length 50÷600 mm*

Temperature element: *coiled bimetal*

Amplifying movement: *in brass*

Dial: *in white aluminium with black scale*

Pointer: *in black oxidised aluminium*

Reset: *at the end of shank*

Dial cover: *in glass*

Seal: *in neoprene*

Protection degree: *IP44 - IP55 (only for DN 150)*
as per CEI EN 60529

Ambient temperature: *-4...+140°F (-20...+60°C)*

Scale ranges: *see table scale ranges (pg. 4)*

Limit: *not exceed 75% of the full scale value and/or the end value of the scale for temperatures below +32°F (0°C)*

Overrange: *+30% F.S. for temperature ≤700°F (400°C), max 900°F (500°C)*

I **termometri bimetallici posteriori** oltre al normale utilizzo negli impianti termici vengono usati in tutte quelle applicazioni industriali dove il mercurio è vietato dalla normativa in corso. Es.: impianti petroliferi, alimentari e farmaceutici.
Sono strumenti che ricevono le variazioni di temperatura sfruttando la dilatazione di una spirale bimetallica alla cui estremità è posta la lancetta indicativa. Costruzione secondo EN 13190.

Rear connection bimetallic thermometers *in addition to their normal use in heating systems, are also used in all industrial applications where the use of mercury is prohibited by current regulations. E.g.: in oil refineries, food and pharmaceutical process plants.*
They are instruments which detect temperature variations by measuring the expansion of a bimetallic spiral at the end of which a indicator hand is placed. Construction according to EN 13190.

CARATTERISTICHE COSTRUTTIVE

Classe di precisione: 2,5 (DN 32-40-50) secondo EN 13190
1,6 (DN 60-80-100-150) secondo EN 13190

Dimensione nominale: 32, 40, 50, 60, 80, 100 e 150 mm

Cassa e anello: ottone cromato o lega leggera (DN 32-40-50)
AISI 430 (DN 60-80-100)
AISI 304 (DN 150)

Gambo: in ottone nichelato, Ø 9 mm, lunghezza 40÷600 mm

Quadrante: in alluminio bianco con graduazioni in nero

Lancetta: in alluminio ossidato nero

Azzeramento: sul terminale del gambo

Trasparente: in vetro

Guarnizione: in neoprene

Grado di protezione: IP44 - IP55 (solo per DN 150)
secondo CEI EN 60529

Limite temperatura ambiente: -20...+60°C

Campo scala: vedi tabella campi scala (pag. 4)

Limite: non superare il 75% del valore di fondo scala e/o del valore estremo della scala per temperature inferiori a 0°C

Sovratemperatura: +30% A.C. per temperature ≤400°C, sovratemperatura limite 500°C

TECHNICAL CHARACTERISTICS

Accuracy class: *2,5 (DN 32-40-50) as per EN 13190*
1,6 (DN 60-80-100-150) as per EN 13190

Nominal size: *32,40, 50, 60, 80, 100 and 150 mm*

Case & Ring: *chrome-plated brass or light alloy (DN 32-40-50)*
AISI 430 (DN 60-80-100)
AISI 304 (DN 150)

Shank: *in nickel-plated brass, Ø 9 mm, length 40÷600 mm*

Dial: *in white aluminium with black scale*

Pointer: *in black oxidised aluminium*

Reset: *at the end of shank*

Dial cover: *in glass*

Seal: *in neoprene*

Protection degree: *IP44 - IP55 (only for DN 150)*
as per CEI EN 60529

Ambient temperature: *-4...+140°F (-20...+60°C)*

Scale ranges: *see table scale ranges (pg. 4)*

Limit: *not exceed 75% of the full scale value and/or the end value of the scale for temperatures below +32 °F (0 °C)*

Overrange: *+30% F.S. for temperature ≤700°F (400°C), max 900°F (500°C)*

501/F

Termometri bimetallici per fumi

Bimetallic thermometers for fumes

504

Termometro bimetallico con staffa per canale

Bimetallic thermometer with bracket for channel

519

Termometro bimetallico con flangia

Bimetallic thermometer with flanges

505

Termometro a bracciale con molla

Bracelet thermometer with spring

CARATTERISTICHE COSTRUTTIVE

Classe di precisione: 1,6 (mod 501/F-504-519) secondo EN 13190
2,5 (mod 505) secondo EN 13190

Dimensione nominale: 60 e 80 mm (mod. 501/F)
60, 80 e 100 mm (mod. 504)
65 mm (mod. 505)
80 mm (mod. 519)

Cassa e anello: AISI 430 (mod. 501/F - 504 - 519)
in ottone nichelato con anello in ferro cromato (mod. 505)

Gambo: in AISI 304, Ø 9 mm, L 100÷500 mm (mod. 501/F)
in ottone nichelato, Ø 9 mm, L 100÷600 mm (mod. 504)
in ottone nichelato, Ø 9 mm, L 50÷500 mm (mod. 519)

Elemento di misura: spirale bimetallica

Quadrante: in alluminio bianco con graduazioni in nero

Lancetta: in alluminio ossidato nero

Azzeramento: sul terminale del gambo

Trasparente: in vetro

Molla: AISI 302 (solo per mod. 505)

Grado di protezione: IP44 secondo CEI EN 60529

Limite temperatura ambiente: -20...+60°C

Campo scala: vedi tabella campi scala (pag. 4)

Limite: non superare il 75% del valore di fondo scala e/o del valore estremo della scala per temperature inferiori a 0°C

Sovratemperatura: +30% A.C. per temperature ≤400°C, sovratemperatura limite 500°C

TECHNICAL CHARACTERISTICS

Accuracy class: *1,6 (mod. 501/F-504-519) as per EN 13190*
2,5 (mod. 505) as per EN 13190

Nominal size: *60 and 80 mm (mod. 501/F)*
60, 80 and 100 mm (mod. 504)
65 mm (mod. 505)
80 mm (mod. 519)

Case & Ring: *AISI 430 (mod. 501/F - 504 - 519)*
in nickel-plated brass with ring in chrome-plated iron (mod. 505)

Shank: *in AISI 304, Ø 9 mm, L 100÷500 mm (mod. 501/F)*
in nickel-plated brass, Ø 9 mm, L 100÷600 mm (mod. 504)
in nickel-plated brass, Ø 9 mm, L 50÷600 mm (mod. 519)

Temperature element: *coiled bimetal*

Dial: *in white aluminium with black scale*

Pointer: *in black oxidised aluminium*

Reset: *at the end of shank*

Dial cover: *in glass*

Spring: *AISI 302 (only for mod. 505)*

Protection degree: *IP44 as per CEI EN 60529*

Ambient temperature: *-4...+140°F (-20...+60°C)*

Scale ranges: *see table scale ranges (pg. 4)*

Limit: *not exceed 75% of the full scale value and/or the end value of the scale for temperatures below +32°F (0°C)*

Overrange: *+30% F.S. for temperature ≤700°F (400°C), max 900°F (500°C)*

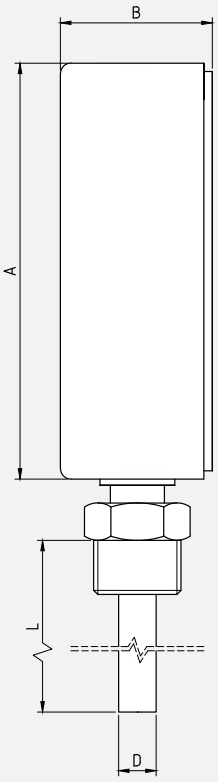
CAMPI SCALA per DN >60 — SCALE RANGES for DN >60

-40° +40° C	-30° +50° C	-20° +40° C	-10° +40° C	0° +50° C	0° +200° C
		-20° +50° C	-10° +50° C	0° +60° C	0° +250° C
		-20° +60° C	-10° +110° C	0° +80° C	0° +300° C
		-20° +80° C	-10° +120° C	0° +100° C	0° +400° C
		-20° +120° C		0° +120° C	0° +500° C
				0° +160° C	

art. 500

DIMENSIONI — *DIMENSIONS*

DN	A	B	D	L
60	60	30	12	40÷500
80	81	36,5	12	40÷500
100	99	39	12	40÷500
150	167	50	12	40÷500

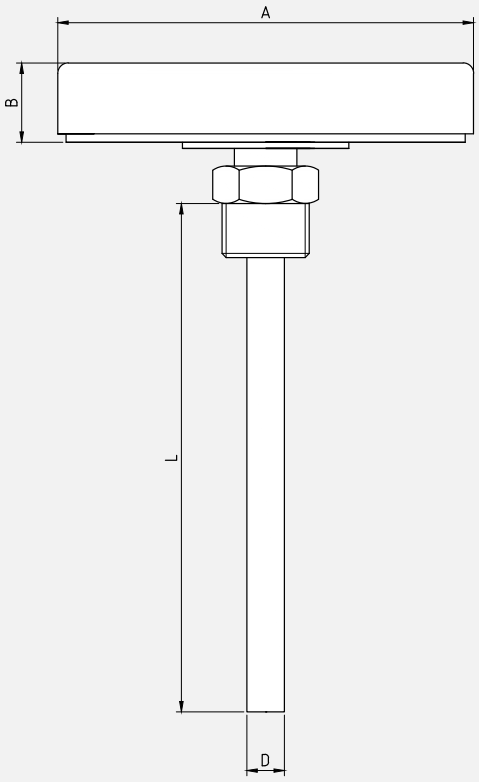


Radiale — *Lower connection*

art. 501

DIMENSIONI — *DIMENSIONS*

DN	A	B	D	L
32	32,5	10	12	50÷500
40	41	11	12	50÷500
50	50,5	11	12	50÷500
60	60	12	12	50÷500
80	80	13,5	12	50÷500
100	99	15	12	50÷500
150	167	22	12	50÷500



Posteriore — *Back connection*

OPZIONI E ACCESSORI

- scala speciale
- pozzetto termometrico ricavato da barra o da tubo, con attacco al processo filettato

OPTIONS AND ACCESSORIES

- *special scale*
- *barstock type of from pipe thermowell with threaded or flanged process connection*

I **pozzetti** conferiscono al bulbo una protezione meccanica, inoltre lo proteggono da effetti corrosivi. Permettono l'intecambiabilità dell'apparecchio garantendo la tenuta del recipiente. La conduzione termica tra bulbo e pozzetto può essere assicurata con olio minerale o polveri d'alluminio.

Pockets *provide mechanical protection for the bulbs, and additionally protect them from corrosive effects. They permit the interchangeability of the instruments, ensuring the tightness of the container. Heat conduction between the bulb and the pocket can be ensured by means of mineral oil or aluminium powders.*

CARATTERISTICHE COSTRUTTIVE

Ø interno: 10 mm

Ø esterno: 12 mm, a norme INAIL (ex ISPESL)

Lunghezza minima: 40 mm (compreso filetto)

Lunghezza massima: 500 mm (compreso filetto)

Si costruiscono in: ottone con saldatura stagno o argento
acciaio C40 con saldatura argento
acciaio inox AISI 316 con saldatura T.I.G.

Tipologia: ricavato da tubo

Collegamento alla sonda: attacco liscio (senza filettatura) con grano di bloccaggio

Limite di impiego: 16 bar / 150°C (per OT58/rame)

TECHNICAL CHARACTERISTICS

Ø internal: *10 mm*

Ø external: *12 mm, in compliance with INAIL standards*

Minimum lenght: *40 mm*

Maximum lenght: *500 mm*

Manufactured in: *brass with soft or silver soldering*
C40 steel with silver soldering
AISI 316 stainless steel with T.I.G. soldering

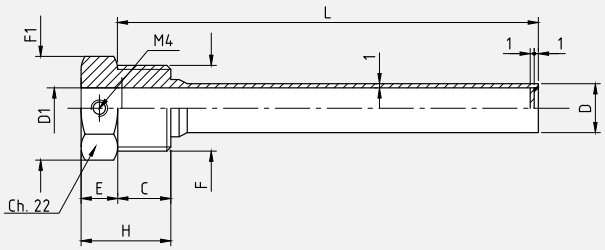
Type: *pocket from tube*

Connection to thermometer: *smooth connection (without threads) with locking dowel*

Working limit: *16 bar / 150°C (for OT58/copper)*

Collegamento alla sonda con attacco liscio

Connection to thermometer with smooth connection



D	D1	F	F1	C	E	H	L
12	10	1/2"G	25	13	9	22	40÷500

FRATELLI MAGNI s.r.l. Uffici e Stabilimento - 20064 GORGONZOLA (MI) - VIA PARINI, 60
TELEFONO 02.95.30.28.68-69-60 - FAX 02.95.30.00.91 - email: info@fratellimagni.com - website: www.fratellimagni.com

FRATELLI MAGNI s.r.l.

info@fratellimagni.com www.fratellimagni.com

TERMOMETRI-MANOMETRI PER COSTRUZIONI INDUSTRIALI

GORGONZOLA (MI) - VIA PARINI, 60 - telefono 02.95.30.28.68-69-60

CLIENTE CUSTOMER	–

PROGETTO PROJECT	ECOVAP 150 Q.E. 24 kW + LS (IP65)

CODICE ARTICOLO CODE	–

DATI DI PROGETTO PROJECT DATA	POTENZA COMPLESSIVA TOTAL POWER	24 kW
	TENSIONE NOMINALE VOLTAGE	415 V
	SISTEMA ELETTRICO ELECTRIC SYSTEM	3F + PE
	CORRENTE NOMINALE (COS φ = 0.9) CURRENT	63 A
	CONTEMPORANEITA' CONTEMPORANEITY	100 %P
	CORRENTE DI CORTO CIRCUITO (Icu) SHORT-CIRCUIT CURRENT	10 kA

PEGORARO
GAS INNOVATIVE TECHNOLOGIES

REV.	MODIFICA	DATA	FIRMA		
002				DATA	20.01.2021
001				DISEG.	S.C.
000	PRIMA EMISSIONE	20.01.2021		CONTR.	S.C.
				APPROV.	

PEGORARO
GAS INNOVATIVE TECHNOLOGIES

CLIENTE	FOGLIO
	1
N° DISEGNO	DI
ECO 24_415_071_0	3

MAIN POWER
415V, 50–60Hz

ATTENTION
COMPULSORY INSTALLATION
AT CUSTOMER CARE

CIRCUIT BREAKER

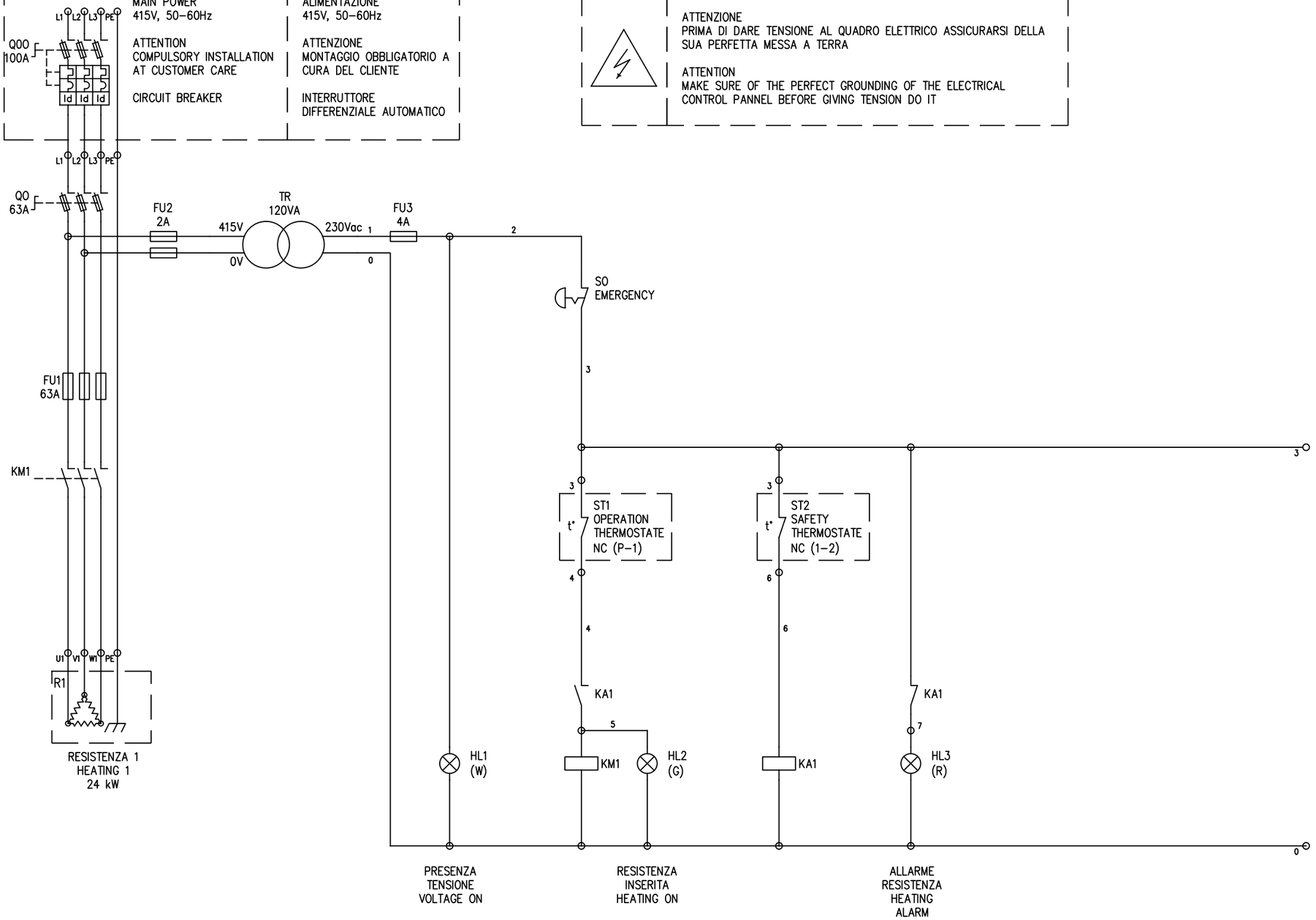
ALIMENTAZIONE
415V, 50–60Hz

ATTENZIONE
MONTAGGIO OBBLIGATORIO A
CURA DEL CLIENTE

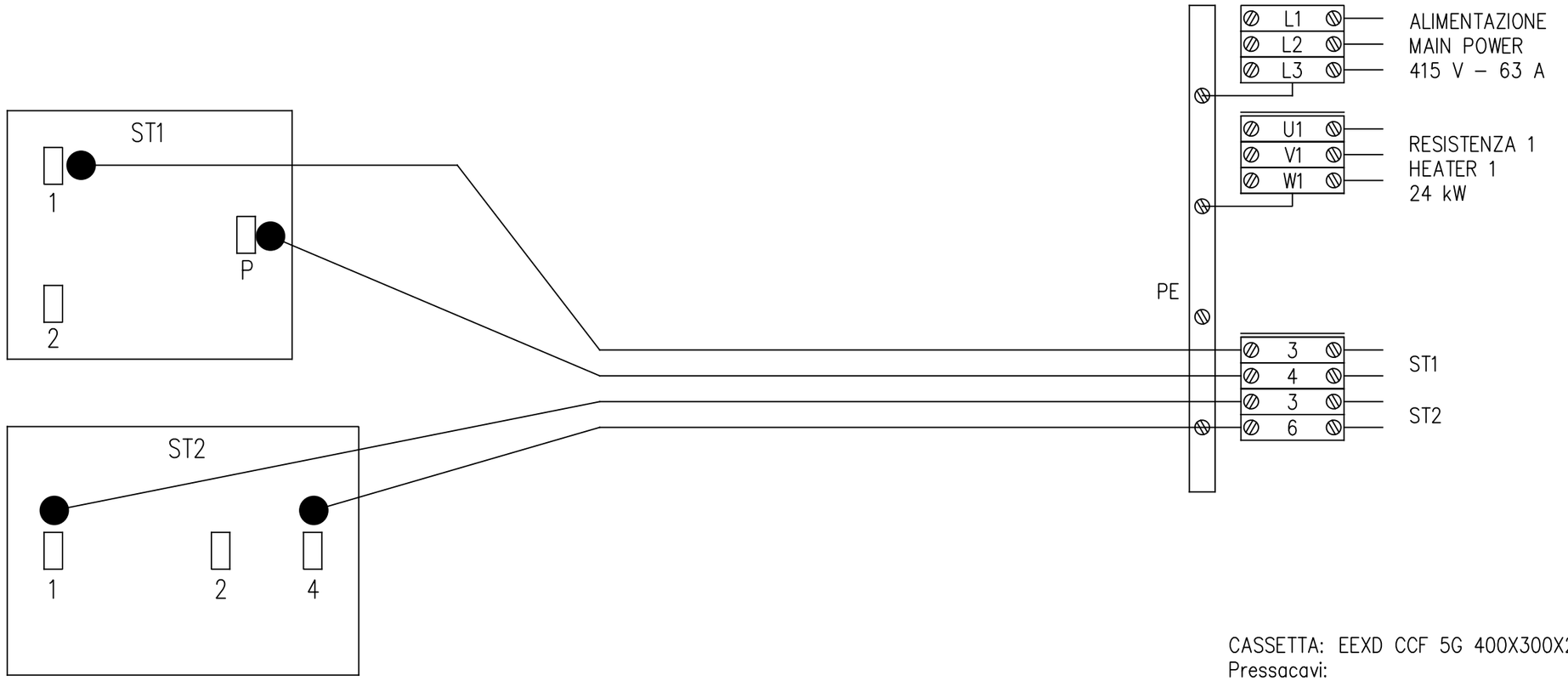
INTERRUTTORE
DIFFERENZIALE AUTOMATICO

ATTENZIONE
PRIMA DI DARE TENSIONE AL QUADRO ELETTRICO ASSICURARSI DELLA
SUA PERFETTA MESSA A TERRA

ATTENTION
MAKE SURE OF THE PERFECT GROUNDING OF THE ELECTRICAL
CONTROL PANNEL BEFORE GIVING TENSION DO IT



REV.	MODIFICA	DATA	FIRMA				CLIENTE	FOGLIO
002				DATA	20.01.2021	PEGORARO GAS INNOVATIVE TECHNOLOGIES		2
001				DISEG.	S.C.			
000	PRIMA EMISSIONE	20.01.2021		CONTR.	S.C.		N° DISEGNO	DI
				APPROV.			ECO 24_415_071_0	3



CASSETTA: EEXD CCF 5G 400X300X200
Pressacavi:
1x NPT 1"1/2
1x NPT 1/2"
1x NPT 1"

002				DATA	20.01.2021		CLIENTE	FOGLIO
001				DISEG.	S.C.			3
000	PRIMA EMISSIONE	20.01.2021		CONTR.	S.C.		N° DISEGNO	DI
REV.	MODIFICA	DATA	FIRMA	APPROV.			ECO 24_415_071_0	3

PEGORARO
GAS INNOVATIVE TECHNOLOGIES

IT

Noi, FORALBA Srl con sede in Via dell'Economia n. 131 36100 VICENZA (Italia), dichiariamo sotto la nostra esclusiva responsabilità che il quadro elettrico modello

QUADRO EL. COD: 37010242 EEXD per Ecovap 24KW 415V
MATRICOLA: 637/21 ordine 51

fornito alla società PEGORARO GAS TECHNOLOGIES Srl con sede in Via della Tecnica n. 28 36100 VICENZA (Italia)
è conforme a:

1. Apparecchiature assiemate di protezione e di manovra per bassa tensione (quadri BT) secondo la norma EN 60204-1
2. I componenti utilizzati sono conformi alla Direttiva CE

La presente dichiarazione è rilasciata secondo le prescrizioni della Direttiva Bassa Tensione della Comunità Europea del 19 Febbraio 1973 recepita in Italia con legge n. 791 del 18.10.1977.

NB: IL FATTO CHE LE PROVE SIANO STATE EFFETTUATE PRESSO L'OFFICINA DEL COSTRUTTORE, NON ESONERA L'INSTALLATORE DELL'APPARECCHIATURA DALL'OBBLIGO DI VERIFICARE LA STESSA DOPO IL TRASPORTO E L'INSTALLAZIONE

EN

We, FORALBA Srl with headquarter in Via dell'Economia n. 131 36100 VICENZA (Italy), declare under our responsability that the control box

CONTROL PANEL COD. 37010242 EEXD for Ecovap 24KW 415V
SERIAL NUMBER: 637/21 order 51

supplied to PEGORARO GAS TECHNOLOGIES Srl with headquarter in Via della Tecnica n. 28 36100 VICENZA (Italy)

is conformed to:

1. *EN 60204-1 Low voltage of switchgear and protection control box*
2. *The components used are in accordance to CE*

This declaration of conformity is issued in accordance to EC Low Tension Directive dated 19 February 1973 – Italian Law no. 791 dated 18 October 1977.

PS: THE INSTALLER MUST CHECK THE EQUIPMENT AFTER RECEIVING THE GOODS AND BEFORE COMMISSIONING

Vicenza 15/02/2021

foralba srl