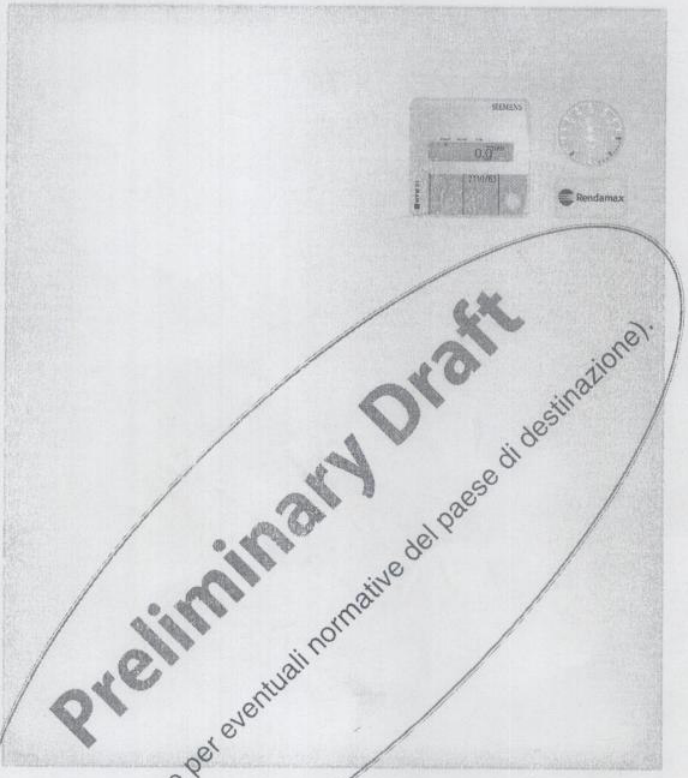
NEXUS

Installation Instructions

HEAT METER



Rendamax

2000022299983157311220400000000

TABLE OF CONTENTS

1. GENERAL INFORMATION

This manual is an integral and essential part of the product. It should be kept with the appliance so that it can be consulted by the user and our authorised personnel.

Please carefully read the instructions and notices about the unit contained in this manual, as they provide important information regarding the safe installation, use and maintenance of the product.

For operating instructions please consult the separate Users Manual.

1.1 GENERAL INFORMATION

Read the instructions and recommendations in these Installation carefully to ensure proper installation, use and maintenance of the appliance.

Keep this manual in a safe place. You may need it for your own reference while Servicing Technicians or your installer may need to consult it in the future.

Le note ed istruzioni tecniche contenute in questo documento sono rivolte agli installatori per dar loro modo di effettuare una corretta installazione a regola d'arte.

This is a combined appliance for the production of central heating (C.H.) and domestic hot water (D.H.W.).

This appliance **must be used only** for the purpose for which it is designed.
The manufacturer declines all liability for damage caused by improper or negligent use.

Installation, maintenance and all other interventions must be carried out in full conformity with the governing legal regulations and the instructions provided by the manufacturer.
Incorrect installation can harm people and animals and damage property; the manufacturing company will not be held responsible for such damage.

The heat meter is delivered in a cardboard box. Once you have removed all the packaging, make sure the appliance is intact and that no parts are missing. If this is not the case, contact your supplier.
Keep all packaging materials (clips, plastic bags, polystyrene foam, etc.) out of children's reach as they are hazardous.

In the case of faults or failure, switch off the appliance. Do not tamper with the appliance.

Always disconnect the appliance either by unplugging it from the mains or turning off the mains switch before cleaning the appliance or carrying out maintenance.
For repairs, call your local Authorised Servicing Agent and request the use of original spare parts. For in-guarantee repairs contact MTS (GB) Limited.

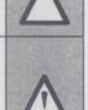
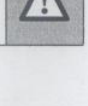
Turn the heat meter off and move the external switch to "OFF" to clean the exterior parts of the appliance.
Clean with a damp cloth dipped in soapy water.
Do not use aggressive detergents, insecticides or toxic products.

1.2 Norme di sicurezza

Legenda simboli:

Il mancato rispetto dell'avvertenza comporta rischio di lesioni, in determinate circostanze anche mortali, per le **persone**	
Il mancato rispetto dell'avvertenza comporta rischio di danneggiamenti, in determinate circostanze anche **gravi, per oggetti, piante o animali**	

NORMA	*RISCHIO*	
Installare l'apparecchio su parete solida, non soggetta a vibrazioni.	Rumorosità durante il funzionamento.	
Non danneggiare, nel forare la parete, cavi elettrici o tubazioni preesistenti.	Folgorazione per contatto con conduttori sotto tensione. Esplosioni, incendi o intossicazioni per perdita gas dalle tubazioni danneggiate.	
	Danneggiamento impianti preesistenti. Allagamenti per perdita acqua dalle tubazioni danneggiate.	
Eseguire i collegamenti elettrici con conduttori di sezione adeguata.	Incendio per surriscaldamento dovuto al passaggio di corrente elettrica in cavi sottodimensionati.	
Proteggere tubi e cavi di collegamento in modo da evitare il loro danneggiamento.	Folgorazione per contatto con conduttori sotto tensione.	
	Esplosioni, incendi o intossicazioni per perdita gas dalle tubazioni danneggiate.	
	Allagamenti per perdita acqua dalle tubazioni danneggiate.	
Assicurarsi che l'ambiente di installazione e gli impianti a cui deve connettersi l'apparecchiatura siano conformi alle normative vigenti.	Folgorazione per contatto con conduttori sotto tensione incorrettamente installati.	
	Danneggiamento dell'apparecchio per condizioni di funzionamento improprie.	
Adoperare utensili ed attrezzature manuali adeguati all'uso (in particolare assicurarsi che l'utensile non sia deteriorato e che il manico sia integro e correttamente fissato), utilizzarli correttamente, assicurarli da eventuale caduta dall'alto, riporli dopo l'uso.	Lesioni personali per proiezione di schegge o frammenti, inalazione polveri, urti, tagli, punture, abrasioni.	
	Danneggiamento dell'apparecchio o di oggetti circostanti per proiezione di schegge, colpi, incisioni.	
Adoperare attrezzature elettriche adeguate all'uso (in particolare assicurarsi che il cavo e la spina di alimentazione siano integri e che le parti dotate di moto rotativo o alternativo siano correttamente fissate), utilizzarle correttamente, non intralciare i passaggi con il cavo di alimentazione, assicurarle da eventuale caduta dall'alto, scollegare e riporle dopo l'uso.	Lesioni personali per proiezione di schegge o frammenti, inalazione polveri, urti, tagli, punture, abrasioni, rumore, vibrazioni.	
	Danneggiamento dell'apparecchio o di oggetti circostanti per proiezione di schegge, colpi, incisioni.	
Assicurarsi che le scale portatili siano stabilmente appoggiate, che siano appropriatamente resistenti, che i gradini siano integri e non scivolosi, che non vengano spostate con qualcuno sopra, che qualcuno vigili.	Lesioni personali per la caduta dall'alto o per cesoiamento (scale doppie).	
Assicurarsi che le scale a castello siano stabilmente appoggiate, che siano appropriatamente resistenti, che i gradini siano integri e non scivolosi, che abbiano mancorrenti lungo la rampa e parapetti sul pianerottolo.	Lesioni personali per la caduta dall'alto.	
Assicurarsi, durante i lavori eseguiti in quota (in genere con dislivello superiore a due metri), che siano adottati parapetti perimetrali nella zona di lavoro o imbragature individuali atti a prevenire la caduta, che lo spazio percorso durante l'eventuale caduta sia libero da ostacoli pericolosi, che l'eventuale impatto sia attutito da superfici di arresto semirigide o deformabili.	Lesioni personali per la caduta dall'alto.	

NORMA	*RISCHIO*	
Assicurarsi che il luogo di lavoro abbia adeguate condizioni igienico sanitarie in riferimento all'illuminazione, all'aerazione, alla solidità.	Lesioni personali per urti, inciampi, ecc.	
Proteggere con adeguato materiale l'apparecchio e le aree in prossimità del luogo di lavoro.	Danneggiamento dell'apparecchio o di oggetti circostanti per proiezione di schegge, colpi, incisioni.	
Movimentare l'apparecchio con le dovute protezioni e con la dovuta cautela.	Danneggiamento dell'apparecchio o di oggetti circostanti per urti, colpi, incisioni, schiacciamento.	
Indossare, durante le lavorazioni, gli indumenti e gli equipaggiamenti protettivi individuali.	Lesioni personali per folgorazione, proiezione di schegge o frammenti, inalazioni polveri, urti, tagli, punture, abrasioni, rumore, vibrazioni.	
Organizzare la dislocazione del materiale e delle attrezzature in modo da rendere agevole e sicura la movimentazione, evitando cataste che possano essere soggette a cedimenti o crolli.	Danneggiamento dell'apparecchio o di oggetti circostanti per urti, colpi, incisioni, schiacciamento.	
Le operazioni all'interno dell'apparecchio devono essere eseguite con la cautela necessaria ad evitare bruschi contatti con parti acuminate.	Lesioni personali per tagli, punture, abrasioni.	
Ripristinare tutte le funzioni di sicurezza e controllo interessate da un intervento sull'apparecchio ed accertarne la funzionalità prima della rimessa in servizio.	Esplosioni, incendi o intossicazioni per perdita gas o per incorretto scarico fumi.	
	Danneggiamento o blocco dell'apparecchio per funzionamento fuori controllo.	
Svuotare i componenti che potrebbero contenere acqua calda, attivando eventuali sfiati, prima della loro manipolazione.	Lesioni personali per ustioni.	
Effettuare la disincrostazione da calcare di componenti attenendosi a quanto specificato nella scheda di sicurezza del prodotto usato, aerando l'ambiente, indossando indumenti protettivi, evitando miscelazioni di prodotti diversi, proteggendo l'apparecchio e gli oggetti circostanti.	Lesioni personali per contatto di pelle o occhi con sostanze acide, inalazione o ingestione di agenti chimici nocivi.	
	Danneggiamento dell'apparecchio o di oggetti circostanti per corrosione da sostanze acide.	
Nel caso si avverta odore di bruciato o si veda del fumo fuoriuscire dall'apparecchio, togliere l'alimentazione elettrica, aprire le finestre ed avvisare il tecnico.	Lesioni personali per ustioni, inalazione fumi, intossicazione.	

2. INSTALLATION

HEAT METER INSTALLATION MUST BE CARRIED OUT BY QUALIFIED PERSONNEL IN CONFORMITY WITH NATIONAL INSTALLATION REGULATIONS AND WITH ANY REQUIREMENTS LAID DOWN BY LOCAL AUTHORITIES AND PUBLIC HEALTH BODIES.

1.2 OVERALL VIEW

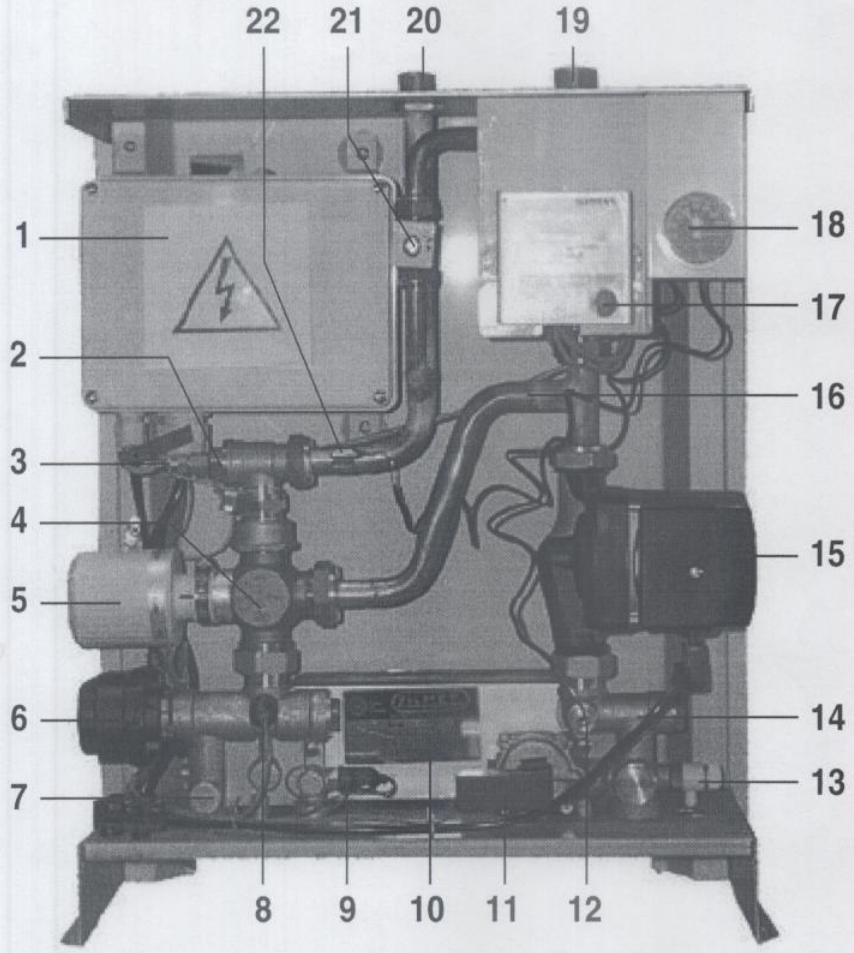


Fig. 2.1

Legenda:

1. P.C.B. Box
2. Water Filter
3. Flow sensor Heat meter
4. Mixing valve
5. Mixing valve Motor
6. Motorised Valve
7. Flow group
8. Central Heating Temperature Probe
9. Domestic Hot Water Temperature Probe
10. Secondary Heat Exchanger
11. D.H.W. Flow Switch
12. Pressure gauge connections
13. Drain Valve
14. Retourn group
15. Circolatore
16. MIxing pipe
17. Heat meter
18. C.H. Termperature and Pressure Gauge
19. Retourn pipe
20. Flow pipe
21. By-pass - valve
22. C.H. temperature probe

2.2 General Instructions

The heat meter must be connected to a heating system and domestic water system , both of which are dimensioned according to its performance and power. (See Technical Data).

Before connecting the heat meter make sure that you:

- - carefully wash the system pipes in order to remove any residues of screw thread, welding or dirt which might impede the correct operation of the boiler;
- in the case of particularly hard water, there is the risk of a build-up of limescale which will reduce the efficiency of the heat meter's components.

2.3 Sitting the heat meter

In order to ensure trouble-free operation, the installation position of the heat meter must be suitable for the limit operating temperature and be protected against atmospheric agents.

The heat meter is designed for wall mounting and may not be installed on bases or floors.

The heat meter must be installed on a wall capable of supporting its weight. The wall must be of sound condition and non-removable so that the live electrical parts cannot be accessed through the rear frame opening.

When creating a space for the boiler, observe the minimum clearances that ensure accessibility to the boiler components, as indicated in section 2.5.

ATTENZIONE

Installare l'apparecchio su parete solida, non soggetta a vibrazioni.

Nessun oggetto infiammabile deve trovarsi nelle vicinanze della caldaia.

Assicurarsi che l'ambiente di installazione e gli impianti a cui deve connettersi l'apparecchiatura siano conformi alle normative vigenti.

2.4 Mounting the Heat meter

Position the heat meter based on the measurements given alongside.

Secure the metal bracket to the wall using screw anchors, which must be inserted correctly (in line with good engineering practice) and hang the heat meter.

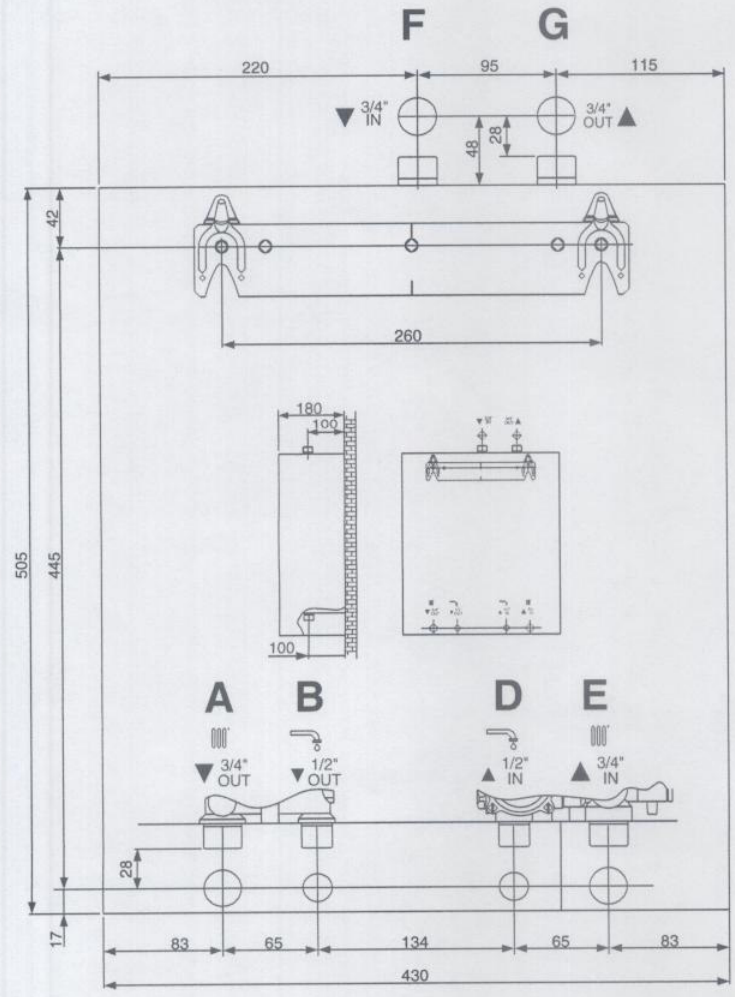


Fig. 2.2

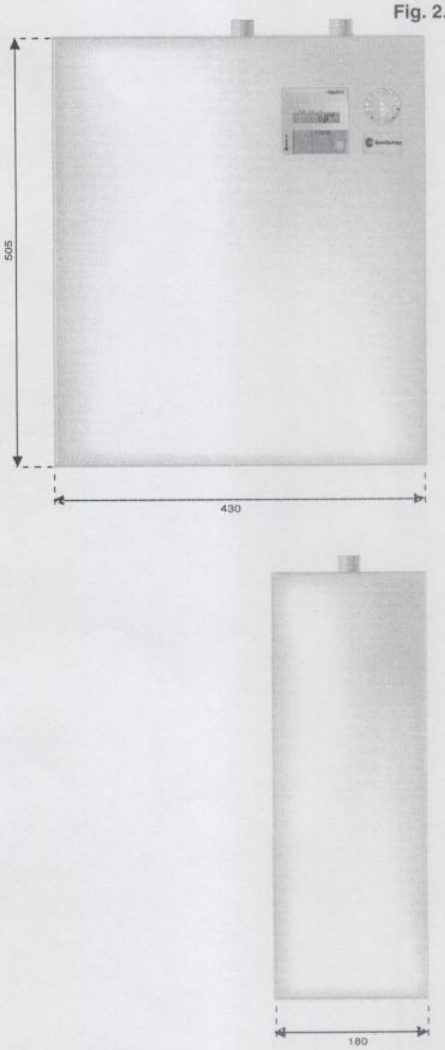


Fig. 2.3

Legend:

A = Central Heating Flow
B = Domestic Hot Water Outlet
D = Domestic Hot Water Inlet
E = Central Heating Return
F = Primary Flow Connection
G = Primary Return Connection

ATTENZIONE

Non danneggiare, nel forare la parete, cavi elettrici o tubazioni preesistenti.

2.5 CLEARANCES

In order to allow access to the interior of the boiler for maintenance purposes, the boiler must be installed in compliance with the minimum clearances indicated in FIG. 2.4

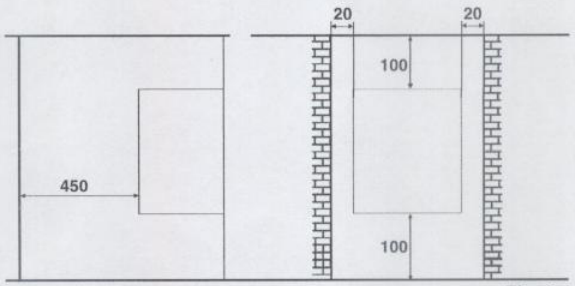


Fig. 2.4

2.6 Water Connections

Legend:
A = Central Heating Flow
B = Domestic Hot Water Outlet
D = Domestic Hot Water Inlet
E = Central Heating Return
F = Primary Flow Connection
H = Drain Valve

WARNINGS
Before making the hydraulic connection, you must arrange for the system to be cleaned thoroughly to eliminate any residue or dirt that could compromise the proper operation of the heat meter. Check that the expansion tank capacity is adequate for the system's water content and check that pressure relief devices are fitted.

ATTENZIONE

Proteggere i tubi di collegamento in modo da evitare il loro danneggiamento

VIEW OF THE HEAT METER CONNECTIONS

Figures 2.5 and 2.6 illustrate the upper connections for the hydraulic connection to the primary circuit and the lower connections for connecting to the secondary domestic circuit.

UPPER VIEW

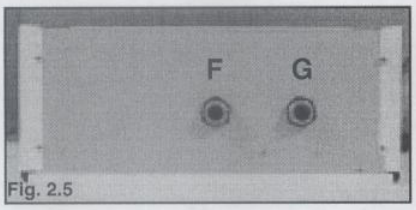


Fig. 2.5

LOWER VIEW

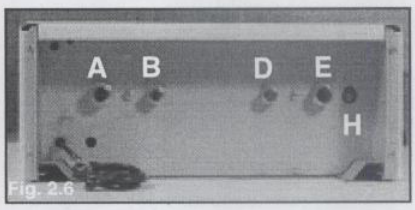


Fig. 2.6

When connecting the heat meter to the primary system, check that this system is suitable and compatible with the product:
- check that the pressure on the primary system does not exceed 3.5 bar;
- the flow temperature is 85°C at most;
- the system includes all the safety and operating devices required to ensure the trouble-free operation of the heat meter, such as a suitable expansion tank and pressure relief valves.

It is recommended that shut-off faucets be fitted upstream and downstream the heat meter to facilitate its maintenance and inspection.
When connecting to the domestic circuit check that:
- the maximum mains pressure does not exceed 6 bar; if it does, it is necessary to install a pressure reducing valve.
- the minimum mains pressure is above 0.2 bar, the threshold below which the devices regulating domestic hot water production do not function.

To dimension the heating system's piping and radiant elements, calculate the circulation pump's head value and the residual head value in relation to the flow required, in accordance with the values given in the graph (Fig. 2.7).

Fig. 2.7

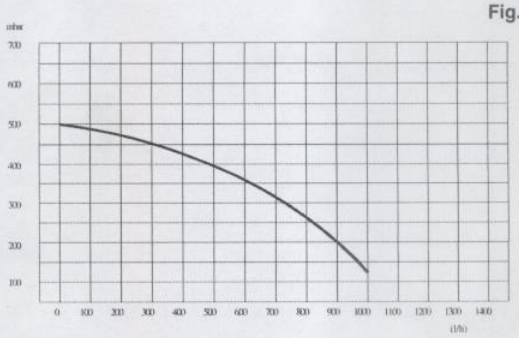
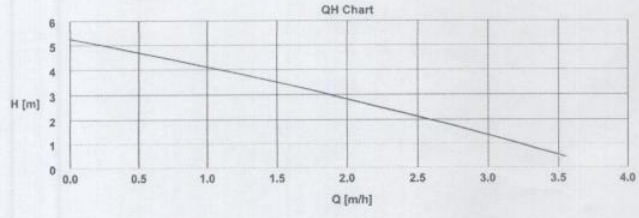


Fig. 2.8



2.7 Electrical Connection

WARNING
Before working on the heat meter disconnect the electrical supply using the external switch since the appliance is always switched on.

ATTENZIONE

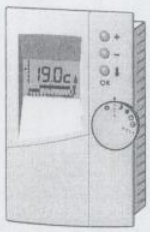
Proteggere tubi e cavi di collegamento in modo da evitare il loro danneggiamento

Eseguire i collegamenti elettrici con conduttori di sezione adeguata.

For greater safety, have qualified personnel carry out a careful inspection of the electrical system; the manufacturer will not be liable for any damage caused by the lack of earthing of the system or for faults in the supply of electricity..
Check that the system is suitable for the heat meter's maximum power consumption indicated on the plate and check that the cable section is not less than 1.5 mm².
It is essential that the appliance is properly connected to an efficient earthing system to ensure its safe operation.
The heat meter comes complete with a plugless power supply cable. The supply cable must be connected to a 230V-50Hz mains system observing L-N polarity and the earth connection ⏚ .
Important!
The mains connections are to be made with a fixed connection (not with a wander plug) and provided with a double-pole switch having a 3 mm contact opening distance at least.
Contact qualified staff for the replacement of the power supply cable.
The use of multiplugs, extensions or adaptors is strictly prohibited.
It is strictly forbidden to use the piping from the hydraulic system for the appliance earthing connection.
The appliance is not protected against the effects caused by lightning.
If the mains fuses have to be changed, use rapid 2A fuses.

2.8 Fitting the room-thermostat

NOTE:
ENSURE LOW VOLTAGE AND HIGH VOLTAGE CIRCUITS ARE CABLED SEPARATELY TO AVOID INDICED VOLTAGES IN THE LOW VOLTAGE CIRCUITS



WARNING:
Before working on the heat meter disconnect the electrical supply using the external switch since the appliance is always switched on..

To connect the room thermostat, it is necessary to:
- Remove the casing as indicated in paragraph **3.1**;
- open the control unit box as indicated in paragraph **3.2**;
- slide the room thermostat cable through the glands on the tray and control unit;
- connect the room thermostat cable to the electrical terminal located above to the right, removing the connecting jumper;
- reclose the control unit box and casing in sequence.

Use at least 1.5 mm section cables for the room thermostat connection²

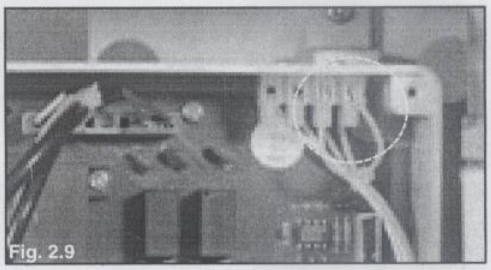


Fig. 2.9

2.9 Fitting the external sensor

WARNING:
Before working on the heat meter disconnect the electrical supply using the external switch since the appliance is always switched on..

NOTE:
ENSURE LOW VOLTAGE AND HIGH VOLTAGE CIRCUITS ARE CABLED SEPARATELY TO AVOID INDICED VOLTAGES IN THE LOW VOLTAGE CIRCUITS

WARNING:
Before connecting the external probe provided remove the probe simulation resistance on the back of the circuit board.

To connect up the external probe, it is necessary to:
- Remove the casing as indicated in paragraph **3.1**;
- open the control unit box as indicated in paragraph **3.2**;
- slide the external probe cable through the glands on the tray and control unit;
- connect the probe cable to the electrical terminal above to the right;
- reclose the control unit box and the casing in sequence.

Use at least 1.5 mm² section cables for the room thermostat connection

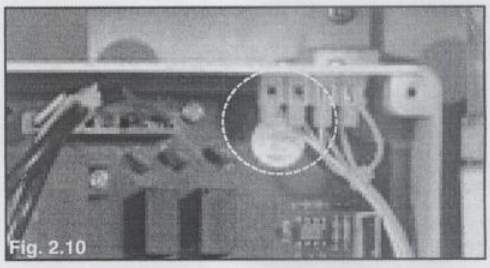


Fig. 2.10

2.10 Water circuit diagram

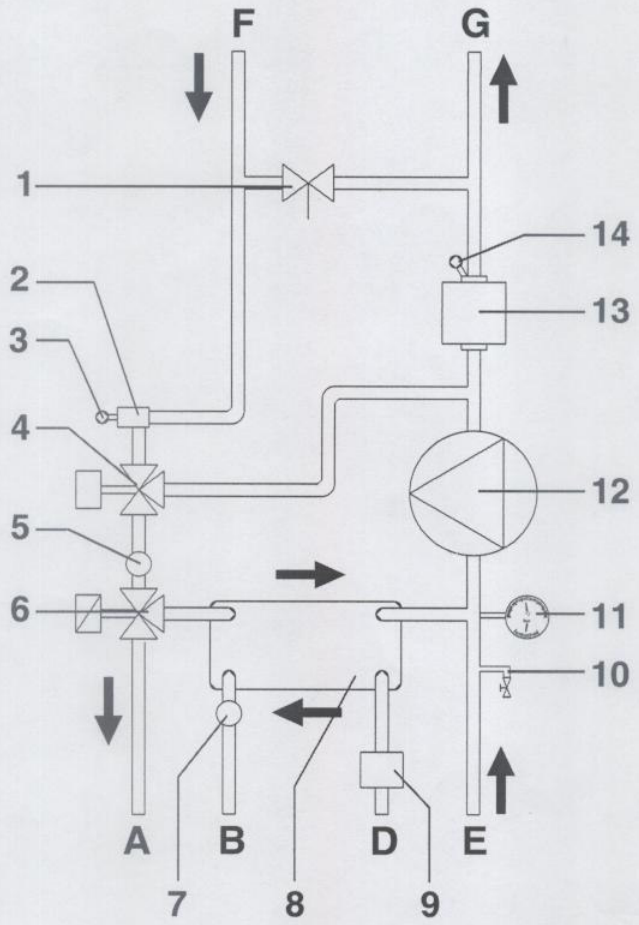


Fig. 2.11

Legend:

1. By-pass
2. Water Filter
3. Flow sensor Heat Meter
4. Mixing valve
5. Central heating tempertature probe
6. Motorised valve
7. Domestic Hot Water Temperature probe
8. Secondary Heat Exchanger
9. Domestic Hot Water Flow Switch
10. Drain valve
11. C.H. Termperature and Pressure Gauge
12. Circulation Pump
13. Heat Meter
14. Return sensor heat Meter

A = Central Heating Flow
B = Domestic Hot Water Outlet
D = Domestic Hot Water Inlet
E = Central Heating Return
F = Primary Flow Connection
G = Primary Return Connection

2.11 Electrical Diagram

Legend:

A = Microswitchs- see parag. 5.4
B = Interface wire
C = Display
D = Menu Switch
E = domestic Hot Water Temperature adjustment
F = Operating status Led
G = Operating status Led
H = Transformer

A01 = Motorised valve
A02 = Circulation Pump
A03 = Primary flow Temperature Probe
A04 = sDomestic Hot Water Temperature Probe
A05 = External sensor
A07 = Room Thermostaat
A08 = DHW Flow Switch
A09 = External alarm (optional)
A10 = Mixing valve

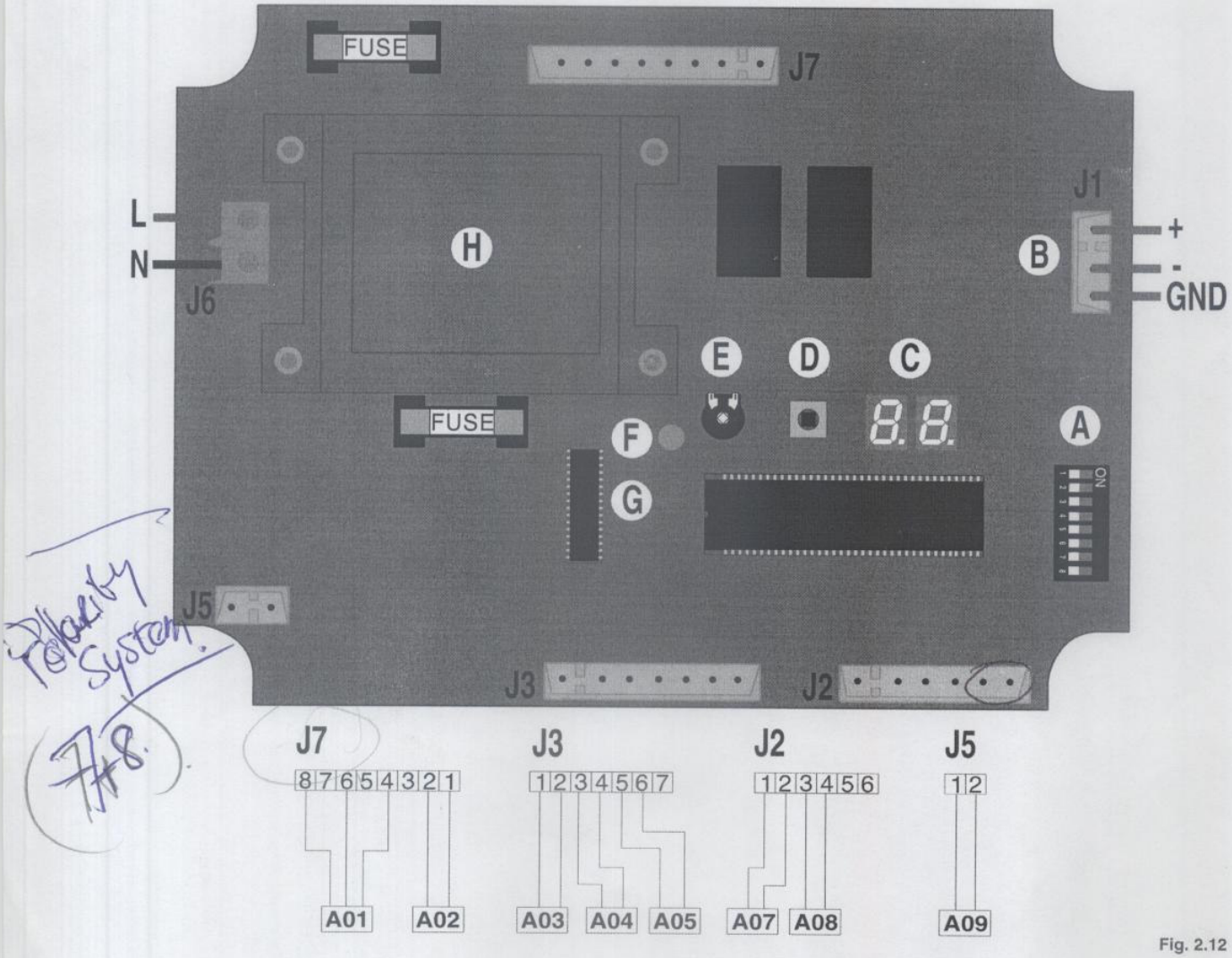


Fig. 2.12

4.COMMISSIONING

ATTENZIONE

Non intraprendere alcuna operazione senza un previo accertamento di assenza di fiamme libere o fonti di innesco.

WARNING:
Before working on the heat meter disconnect the electrical supply using the external switch since the appliance is always switched on..

THE HEAT METER MUST BE STARTED UP BY A LEGALLY REGISTERED QUALIFIED ENGINEER TO ENSURE ITS SAFETY AND TROUBLE-FREE OPERATION.

4.1 Initial preapration

The following checks and operations must be carried out before the heat meter enters into commission:

- check that the circulation pump has not seized up; if necessary release it by removing the plug and applying a screwdriver to the drive shaft;
- open the radiator bleed valves;
- check that the plug of any bleed valve fitted to the system is slackened;
- gradually open the shut-off faucet fitted upstream the heat meter and close the radiator bleed valves as soon as water escapes;
- check that the pressure in the secondary circuit in communication with the primary circuit stabilises between 0.5 and 3.0 bar.

Electricity supply:

- check that the electrical connection has been carried out in the correct manner by assembling a double-pole switch with a minimum opening distance for the contacts of 3 mm; also check that the earthing wire has been correctly attached.
- check that the operating voltage and frequency match the data given on the heat meter plate;
- check the L-N polarity of the connection;
- check the efficiency of the earthing connection.

5. Operating parameters

WARNING:
Before working on the heat meter disconnect the electrical supply using the external switch since the appliance is always switched on..

5.1 general informations

The heat meter is an appliance that allows:
- the centralised heating system and an individual apartment's heating system to be connected;
- the energy required to heat and produce domestic hot water to be supplied and metered.

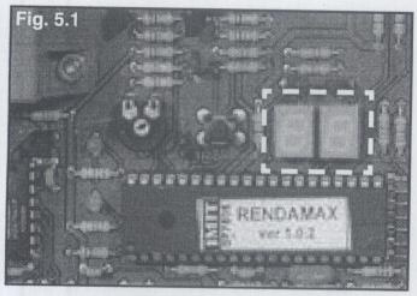
When the heat meter is connected to a room thermostat, it allows the heating system in each apartment to operate in an independent and automatic manner.

Heat meter operation may be optimised by changing certain parameters as indicated below.

5.2 Data and alarm display

The circuit board inside the control unit incorporates a display (Fig. 5.1) where it is possible to indicate a set of data and where the fault codes for the appliance are shown.

Fig. 5.1



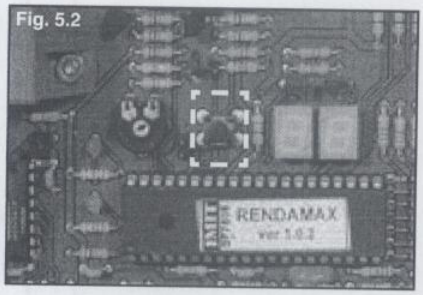
The following parameters may be displayed:

- External temperature (t E)
- System flow temperature (t I)
- Setpoint flow temperature to the system;
- Domestic hot water temperature (t S);
- Setpoint domestic hot water temperature;
- Fault code

The data are displayed in sequence, each item being identified by a mnemonic code followed by the values below: E.g.: t I-20- 70
system flow temperature - recorded value 20°C - setpoint value 70°C

Pressing the setting button on the control board (Fig. 5.2) changes the sequence displayed, in the order described above. The fault codes are displayed automatically

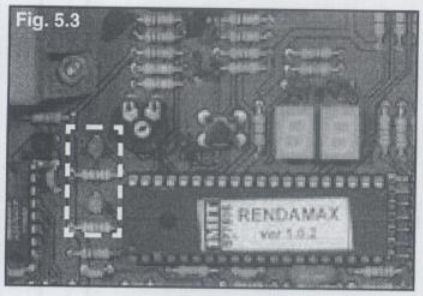
Fig. 5.2



Fault code	Description
E 0	fault on the system water flow temperature probe
E 1	system maximum flow temperature alarm
E 2	fault on external temperature probe
E 3	fault on domestic hot water temperature probe
E 4	domestic hot water maximum temperature alarm
E 5	external alarm

Operating status is displayed through two leds (Fig. 5.3), fitted to the board inside the control unit.

Fig. 5.3



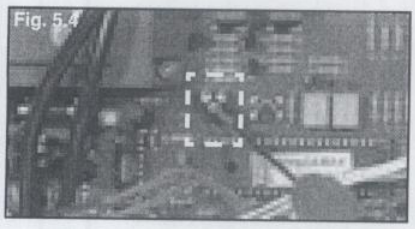
LED	on	off	flashing
green	function control board	- no power - faulty control board	N.A.
red	serious fault (total interruption in operation)	no fault	partial fault (partial interruption in operation)

More information is provided on the fault conditions in section 6.

5.3 Setting domestic hot water temperature

The domestic hot water delivery value may be changed using the potentiometer (Fig. 5.4) fitted to the board inside the control unit. The potentiometer is not provided with a graduated scale; the minimum settable value (a full turn anti-clockwise) is 30°C. The maximum settable value (a full turn clockwise) is 50°C.

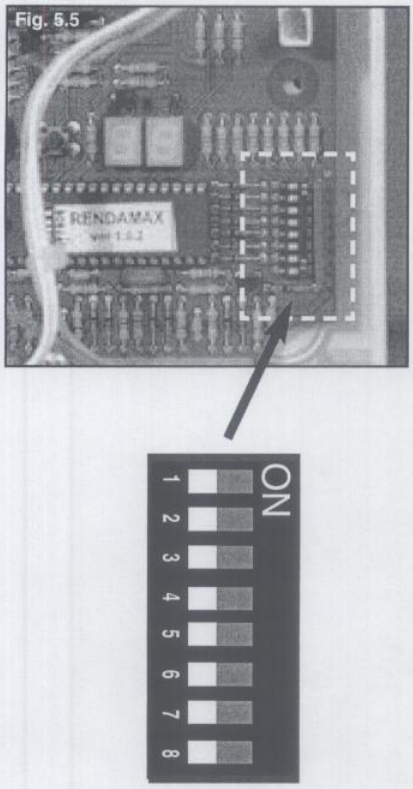
Fig. 5.4



5.4 Setting heating system features and temperatures

A number of settings can be made on the heat meter depending on the features of the heating system where it is to be installed and the performance requirements. The settings take place through a set of eight microswitches (Fig. 5.5) on which the required combinations can be obtained.

Fig. 5.5



Microswitch	Function
1	selects compensation curve
2	
3	selects type of system
4	selects communication address
5	
6	
7	
8	

The type of heating system on which the heat meter is to operate can be set using microswitch "**3**" .

microswitch no. 3	type of system
ON	radiator system
OFF	Floor radiant tube system

This determines the limit value of the flow temperature, which is linked to the external temperature recorded and the compensation curve set.

Floor radiant tube system

External T (°C)	Curve 1 (°C)	Curve 2 (°C)	Curve 3 (°C)	Curve 4 [°C]
-10	42	40	38	36
0	40	38	36	34
10	30	28	25	24
15	25	23	20	20

Radiator system

External T (°C)	Curve 1 (°C)	Curve 2 (°C)	Curve 3 (°C)	Curve 4 [°C]
-10	85	80	75	70
0	75	65	55	55
10	60	50	40	40
15	40	35	35	30

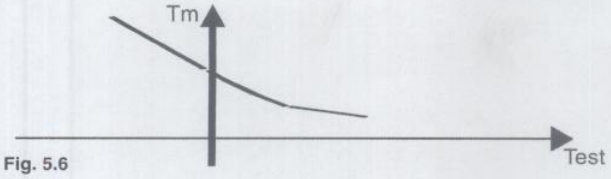


Fig. 5.6

The compensation curve is selected through the two microswitches "**1**" and "**2**"; this fixes the flow water temperature in relation to external temperature. The compensation curve is formed by three segments with a different slope.

microswitch no. 1	microswitch no. 2	compensation curve
ON	ON	Curve 1
OFF	ON	Curve 2
ON	OFF	Curve 3
OFF	OFF	Curve 4

The selection is made from four curves pre-set according to the positions described below

The curve values are given in the previous tables.

5.5 Setting the communication address

The heat meter's functional and design features make it particularly suited for inclusion in a centralised heating system where provision is also made for the display and overall management of the operating data.

This is possible through a serial communication interface type **EIA RS-485**. In fact, using microswitches **"4" - "5" - "6" - "7" - "8"** (Fig. 5.5), it is possible to set up to 32 different communication addresses so that the same number of heat meters can be managed with a single centralised unit.

microswitch n. 8	microswitch n. 7	microswitch n. 6	microswitch n. 5	microswitch n. 4	address
ON	ON	ON	ON	ON	0
ON	ON	ON	ON	OFF	1
ON	ON	ON	OFF	ON	2
ON	ON	ON	OFF	OFF	3
ON	ON	OFF	ON	ON	4
ON	ON	OFF	ON	OFF	5
ON	ON	OFF	OFF	ON	6
ON	ON	OFF	OFF	OFF	7
ON	OFF	ON	ON	ON	8
ON	OFF	ON	ON	OFF	9
ON	OFF	ON	OFF	ON	10
ON	OFF	ON	OFF	OFF	11
ON	OFF	OFF	ON	ON	12
ON	OFF	OFF	ON	OFF	13
ON	OFF	OFF	OFF	ON	14
ON	OFF	OFF	OFF	OFF	15
OFF	ON	ON	ON	ON	16
OFF	ON	ON	ON	OFF	17
OFF	ON	ON	OFF	ON	18
OFF	ON	ON	OFF	OFF	19
OFF	ON	OFF	ON	ON	20
OFF	ON	OFF	ON	OFF	21
OFF	ON	OFF	OFF	ON	22
OFF	ON	OFF	OFF	OFF	23
OFF	OFF	ON	ON	ON	24
OFF	OFF	ON	ON	OFF	25
OFF	OFF	ON	OFF	ON	26
OFF	OFF	ON	OFF	OFF	27
OFF	OFF	OFF	ON	ON	28
OFF	OFF	OFF	ON	OFF	29
OFF	OFF	OFF	OFF	ON	30
OFF	OFF	OFF	OFF	OFF	31

6. HEAT METER PROTECTION AND SAFETY SYSTEMS

6.1 Anti-freeze protection

This function is carried out by the room thermostat (supplied as standard with the heat meter) which requests heat if the ambient temperature falls below the limit set (by default +5°C)

6.2 Maximum flow temperature

Based on the type of heating system selected, the control board regulates flow water temperature subject to the condition

Flow temperature < maximum flow temperature.

with:

Max flow temperature = 90°C for radiator system (pre-set value, non-changeable) Max flow temperature = 45°C for floor radiant tube system

(pre-set value, non-changeable)

6.3 Limescale protection

In order to ensure maximum efficiency of the domestic plate exchanger, the temperature in the domestic hot water system should not exceed 60°C, so as to reduce the likelihood of limescale forming. In the "domestic hot water production" operating mode, the control board regulates the domestic hot water temperature subject to the following conditions

Domestic hot water temperature < Max domestic hot water temperature Flow temperature < Max flow temperature for production of domestic hot water

with

Max. domestic hot water temperature = 60°C (pre-set value, non-changeable)
Max flow temperature for production of domestic hot water = 90°C

(pre-set value, non-changeable)

At the end of each domestic hot water production cycle, the control board also executes a post-circulation in the exchanger's primary circuit at the temperature of 30°C (pre-set value, non-changeable), for a period of 10 seconds.

6.4 Circulation pump anti-seizure

This function automatically activates the circulation pump for about 10 seconds if it is out of use for long periods (6-12 hours).

6.5 Temperature probe fault diagnostic function

This function checks regularly that the temperature probes are functioning correctly. The check is carried out on the external temperature probe, flow water temperature probe and the domestic hot water probe. When a fault occurs on the:

1 - external temperature probe, this involves:

A heat meter set for floor radiant tube system

- setting the setpoint for regulating the flow water temperature

Flow T = ALL flow T

with alarm flow temperature = 35°C (pre-set value, non-changeable)

- a visual signal through a red flashing led (located on the board inside the control unit)

B heat meter set for radiator system

- setting the setpoint for regulating the flow water temperature

Flow T = ALL flow T

with alarm flow temperature = 70°C (pre-set value, non-changeable)

- a visual signal through a red flashing led (located on the board inside the control unit)

2 - flow water temperature probe, this involves:

A heat meter set for floor radiant tube system
- heat meter operation interrupted (mixing valve closes);
- a visual signal with the red led on continuously (located on the board inside the control unit).

B heat meter set for radiator system
- exclusion of automatic regulation of mixer position. In the different operating modes, the mixer can only occupy the intermediate mid-way position.
- a visual signal through a red flashing led (located on the board inside the control unit)

3 - domestic hot water temperature probe, this involves:
- exclusion of the automatic regulation of the domestic hot water delivery temperature;
- regulation of the flow water temperature to

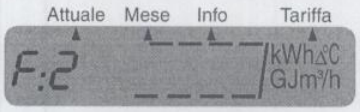
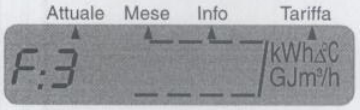
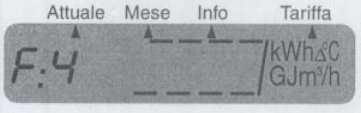
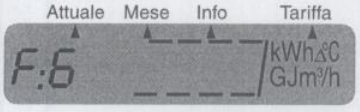
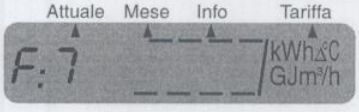
Flow T = ALL flow T

with alarm flow temperature = 70°C (pre-set value, non-changeable)
- a visual signal through a red flashing led (located on the board inside the control unit)

6.6 Alarm input

A digital input is available on the board for managing alarms detected by external devices. When the input is activated:
- the heat meter ceases to operate (mixing valve closes;
- a visual signal is given with the red led on continuously (located on the board inside the control unit).

6.6 Calorie meter fault display and management

Error display on LCD	Description of the error	Corrective measures/notes
	- (appears only in Info level) Wrong flow direction	- Check assembly (pay attention to the arrow on the meter body) - Check the hydaulic connections - Check that the circulation pumps and thermostats are working correctly
	- (appears only in the Info level) - Flow temperature below return temperature	- Check that the flow meter is installed in the return circuit and/or check that the temperature sensor is assembled correctly.
	- Temperature outside measurement range - (appears only in the Info level) - Voltage too low, exceeded	- The device must be sent for repair
	- Hardware error	- Check that there is no external damage to the flow sensor, connecting cable or processing unit
	- Device fault	- A major functional error has been recorded
	- Interruption in the flow measurement circuit	- The recorded errors may be read using the maintenance tool. - The device must be sent for repair
	- Short circuit in the flow measurement circuit	- Check for any mechanical damage to the temperature sensor and connections - The device must be sent for repair