



TECHNICAL MANUAL

GB



SIXEN

REVERSE FLAME STEAM BOILER

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1 TECHNICAL CHARACTERISTICS

1.1 GENERAL

SIXEN model is a reverse flame steam boiler, with flanged head welded plates.

This boiler is equipped with accessories able high quality saturated steam, owing to its wide evaporation area which avoids water intake even with fast steam demand.

If matched with electrical panel and accessories its handling is completely automatic.

The boiler inner parts are easy-to-control both for cleaning and maintenance by the user and following all the national regulations.

Safety, reliability, high efficiency and high quality saturated steam are the characteristics of our boilers. Please consult the instructions with attention.

This is a high-pressure steam (12-15 kgf/cm²) generator.

1.2 TECHNICAL DATA

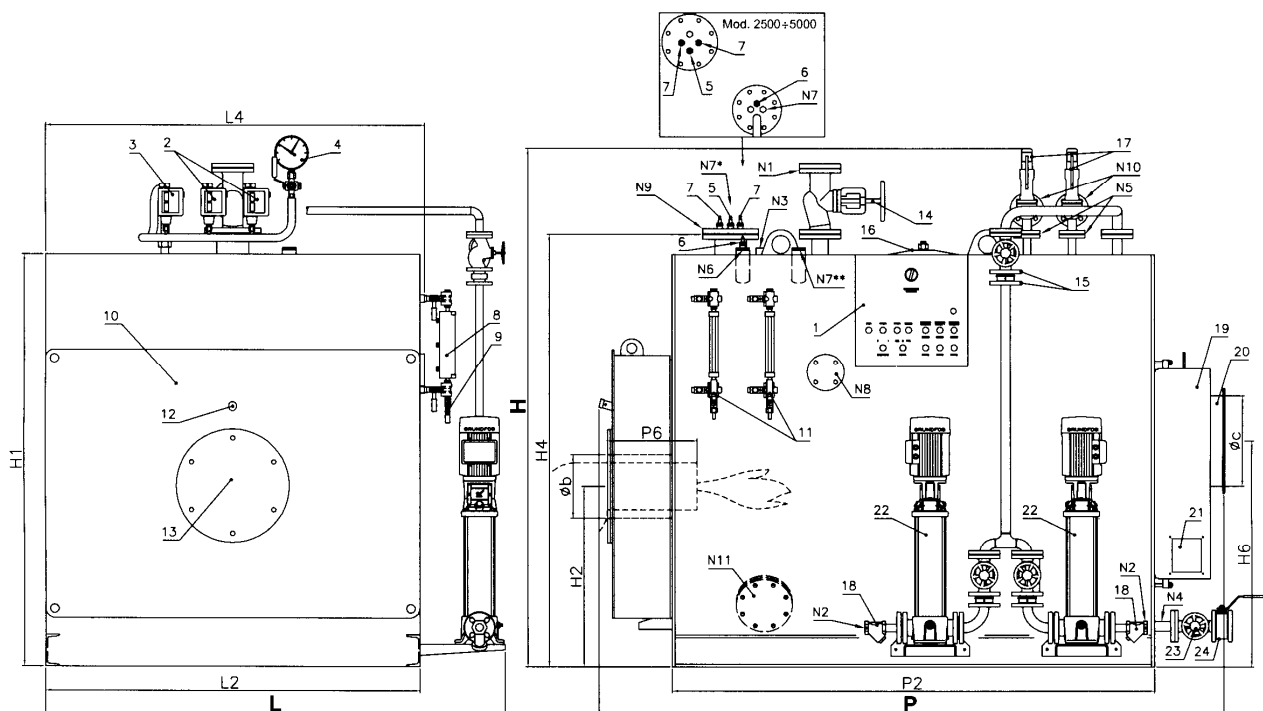


Fig. 1

LEGEND

- | | | |
|---|---------------------------|--|
| 1. Switchboard | 13. Burner plate | N1. Steam intake |
| 2. Control pressure switches | 14. Steam take-off | N2. Feed |
| 3. Safety pressure switch | 15. Non return valve | N3. Instrumental fitting (mod. 350÷2000) |
| 4. Pressure gauge | 16. Inspection door | N4. Boiler exhaust |
| 5. 1 st safety level probe (minimum) | 17. Safety valves | N5. Safety valves fitting |
| 6. 2 nd safety level probe (minimum) | 18. Feed filter | N6. 2 nd safety level probe fitting |
| 7. Level control probes (start/stop) | 19. Back smokebox | N7. Maximum level fitting |
| 8. Level gauge | 20. Smokestack connection | * mod. 350÷800 ** mod. 1000÷2000 |
| 9. Level gauge drain | 21. Cleaning door | N8. Salinity check fitting |
| 10. Front plate | 22. Feed pumps | N9. Probes holder barrel |
| 11. Level test valves | 23. Exhaust valve | N10. Safety valves exhaust |
| 12. Flame inspection hole | 24. Rapid exhaust valve | N11. Inferior inspection |

Characteristics	Heat output		Heat input		Pressure losses flue gas side mbar	Design Pressure bar	Total capacity l	Evaporating surface m ²	Steam capacity* kg/h	Total weight kg	Electric supply Volt -	Frequency Hz	Insulation class IP	Electric power W	Fuel			
	kW	kcal/h	kW	kcal/h											Nat. gas	Lpg	Gasoil	Heavy oil
SIXEN 350	238	205.100	265	227900	5,0	12	810	1,14	350	1500	3/N 400	50,0	IP55	7000	X	X	X	X
SIXEN 500	341	293.000	379	325600	6,5	12	920	1,37	500	1620	3/N 400	50,0	IP55	7000	X	X	X	X
SIXEN 650	443	380.900	492	423200	5,0	12	1120	1,44	650	2000	3/N 400	50,0	IP55	7000	X	X	X	X
SIXEN 800	545	468.800	606	520900	5,0	12	1250	1,65	800	2120	3/N 400	50,0	IP55	7000	X	X	X	X
SIXEN 1000	681	586.000	757	651100	7,0	12	1830	2,09	1000	2720	3/N 400	50,0	IP55	7000	X	X	X	X
SIXEN 1350	920	791.100	1.022	879000	6,5	12	2190	2,59	1350	3250	3/N 400	50,0	IP55	7000	X	X	X	X
SIXEN 1700	1158	996.200	1.287	1106900	9,5	12	2640	2,69	1700	3700	3/N 400	50,0	IP55	7000	X	X	X	X
SIXEN 2000	1363	1.172.000	1.514	1302200	10,0	12	3050	3,14	2000	4250	3/N 400	50,0	IP55	15000	X	X	X	X
SIXEN 2500	1703	1.465.000	1.893	1627800	6,5	12	3380	3,43	2500	5000	3/N 400	50,0	IP55	15000	X	X	X	X
SIXEN 3000	2044	1.758.000	2.271	1953300	9,0	12	4020	4,12	3000	5650	3/N 400	50,0	IP55	15000	X	X	X	X
SIXEN 3500	2385	2.051.000	2.650	2278900	9,0	12	5000	4,43	3500	6950	3/N 400	50,0	IP55	-	X	X	X	X
SIXEN 4000	2726	2.344.000	3.028	2604400	10,0	12	6950	5,75	4000	8550	3/N 400	50,0	IP55	-	X	X	X	X
SIXEN 5000	3407	2.930.000	3.786	3255600	11,0	12	7400	6,46	5000	9600	3/N 400	50,0	IP55	-	X	X	X	X

Dimensions	H	H1	H2	H4	H6	L	L2	L4	P	P2	P6	Øb	Øc	N1	N2	N3	N4	N5	N6	N7	N8	N9	N10	N11
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	DN/in	DN/in	DN/in	DN/in	DN/in	DN/in	DN/in	DN/in	DN/in	DN/in	DN/in
SIXEN 350	1810	1340	585	1470	800	1510	1180	1230	1840	1260	280-330	180	250	32	25	1"	32	25	1/2"	1/2"	50	100	40	125
SIXEN 500	1810	1340	585	1470	800	1510	1180	1230	2090	1510	280-330	225	250	32	25	1"	32	25	1/2"	1/2"	50	100	40	125
SIXEN 650	1930	1460	630	1560	800	1630	1300	1350	2130	1520	320-370	225	300	40	25	1"	32	25	1/2"	1/2"	50	100	40	125
SIXEN 800	1930	1460	630	1560	800	1630	1300	1350	2350	1740	320-370	280	300	40	25	1"	32	25	1/2"	1/2"	50	100	40	125
SIXEN 1000	2140	1670	660	1840	800	1840	1510	1560	2350	1740	350-400	280	350	50	25	1"	32	25	1/2"	1/2"	50	125	40	125
SIXEN 1350	2140	1670	660	1840	800	1840	1510	1560	2760	2150	350-400	280	350	50	25	1"	32	25	1/2"	1/2"	50	125	40	125
SIXEN 1700	2300	1830	800	1945	1000	1990	1660	1710	2790	2150	370-420	280	400	65	32	1"	32	25	1/2"	1/2"	50	125	40	125
SIXEN 2000	2300	1830	800	1945	1000	1990	1660	1710	3150	2510	370-420	320	400	65	40	1"	32	25	1/2"	1/2"	50	125	40	125
SIXEN 2500	2460	1990	1080	2060	1080	2170	1840	1880	3200	2510	420-470	360	450	80	40	-	32	25	1/2"	1/2"	50	125	40	125
SIXEN 3000	2530	1990	1080	2060	1080	2210	1840	1880	3700	3010	420-470	360	450	80	40	-	32	32	1/2"	1/2"	50	125	50	150
SIXEN 3500	2720	2180	895	2340	1225	2350	1980	2020	3770	3010	480-530	360	500	80	50	-	32	40	1/2"	1/2"	50	150	65	150
SIXEN 4000	2840	2300	915	2460	1250	2470	2100	2140	4280	3500	480-530	400	550	100	50	-	32	32	1/2"	1/2"	50	150	50	150
SIXEN 5000	2960	2420	1000	2580	1350	2590	2220	2260	4530	3750	480-530	400	600	125	50	-	32	32	1/2"	1/2"	50	150	50	150

* 80°C feeding water

2 ACCESSORIES

SIXEN steam boilers are fitted with a series of accessories that can be subdivided as follows:

- Safety accessories (safety valves, water level limits, safety pressure switches).
- Observation accessories (level gauge, pressure gauge, flame inspection).
- Control accessories (level and pressure switches).
- Feed water accessories (centrifugal pump, injector or alternating steam pump).
- Manual operation accessories (stop valves, purge valve).

In the following description the accessories are subdivided as to the physical parameter they control (pressure and level).

2.1 PRESSURE

2.1.1 Pressure gauge (Fig. 2)

The pressure gauge is Bourdon type consisting of a flat elliptical section metal tube, bent to an arc. One end of the tube is open and communicates with the boiler where the pressure is to be measured; the other end, closed and free to move is connected by a lever system to a toothed arc and to the gauge indicator hand.

The gauge shows in red the design pressure.

The gauge is carried on a three-way valve to allow the following operations:

- Communication between boiler and gauge (normal operation position).
- Communication between gauge and the atmosphere (position necessary to purge the siphon).
- Communication between the boiler, the gauge and a test gauge (position necessary to verify the gauge).

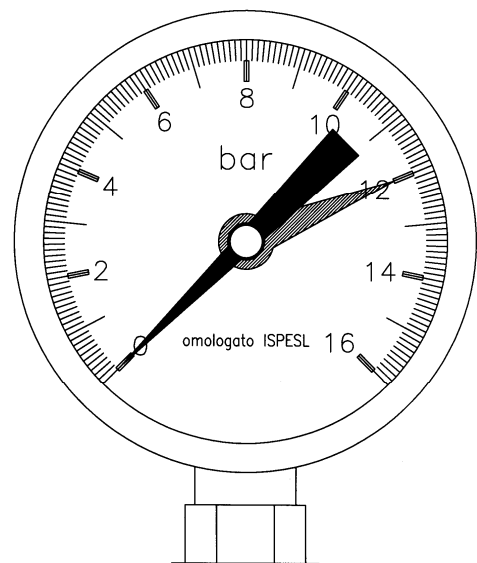


Fig. 2

2.1.2 Operation pressure switch

Device that controls the boiler pressure and holds the pressure between the set maximum and minimum values.

2.1.3 Safety valves

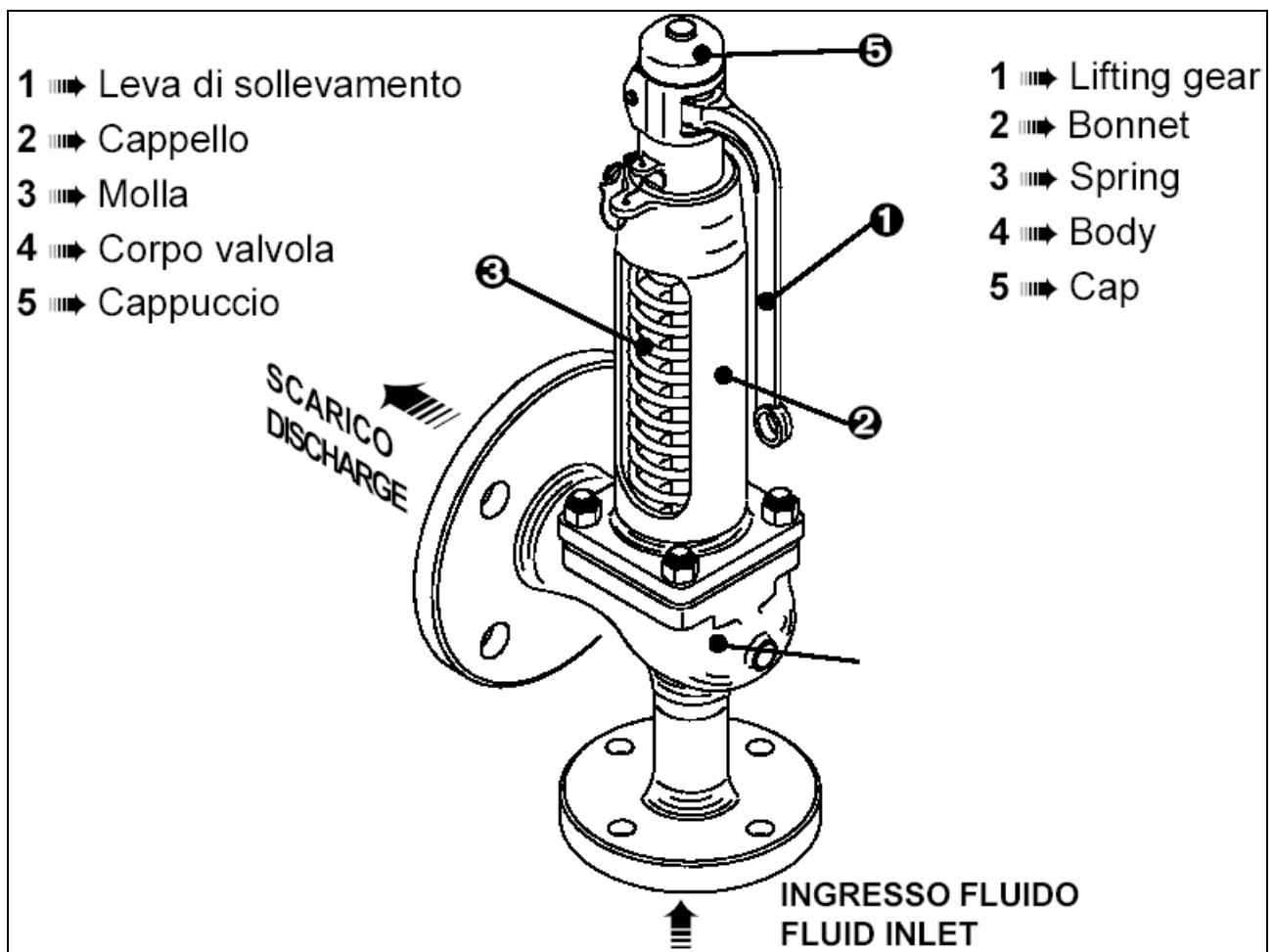
These valves have the function of discharging steam when the maximum design pressure of the boiler is reached.

These valves follow precise national and international regulations. They are designed, tested, fitted and controlled following all current regulations and the instructions in this manual.

Security valves come after many years of experience fulfilling all the safety regulations of pressure devices.

They are completely able to avoid maximum pressure exceed, even when all the other safety devices are out of order.

The safety valve main parts are displayed in Fig. 3



In case of conveyed discharge, be sure to clamp the conveying pipe so as to compensate the strength when discharging the water. (Fig. 4).

It is good practice to provide conveyed pipes with one or more drainage holes for the discharge of possible condensate.

The drainage must be on air, be sure to place the valves away from persons and things.

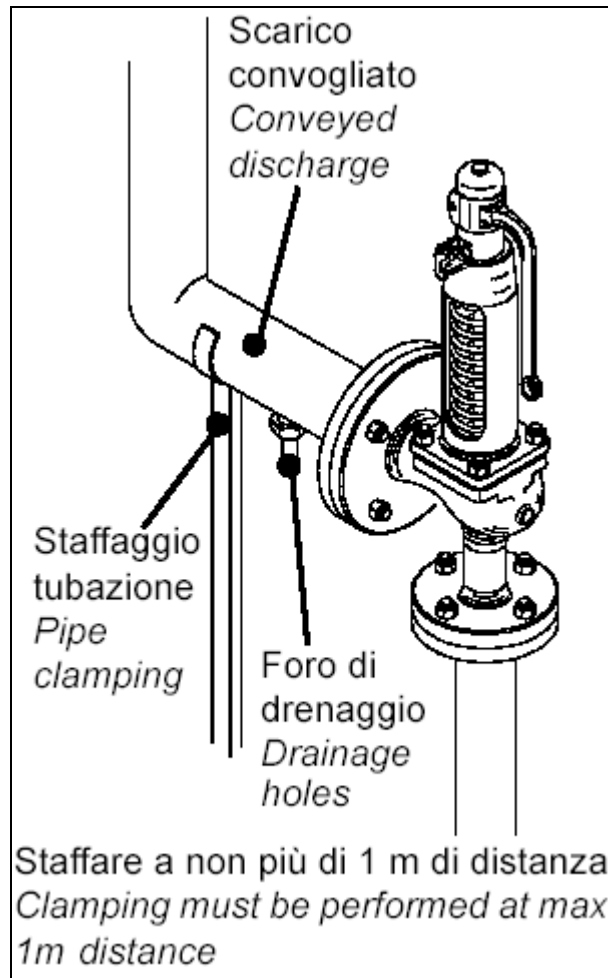


Fig. 4

It is good practice to check the valves once a week when the boiler is on pressure, by acting on the manual lever. Be sure to check the valve adjustment once a year directly on the plant or by test-bed.

The valves should be replaced every 10 years.

Valves operation is particularly sensitive to pressure drops in conveyed drainage pipes when opened.

Regarding pressure drops in the drainage pipe, the maximum value must not exceed setting pressure by 15%.

Maintenance

These are the main instructions for control and maintenance of the valves:

- Be sure that no circuits are on pressure in every part of the plant.
- Allow the parts to cool below 30°C.
- The valve must go under maintenance every two years.

Valve is a very sensitive accessory. The boiler operator must pay attention and control its working order.

If necessary, please contact a technician authorised by the manufacturer.

The safety valves are designed and manufactured to work without greasing; be sure to keep them clean and efficient.

2.1.4 Pressure switch (Fig. 5)

The pressure switch is equipped with a lever. Its contact position depends on the pressure at the connection and on the set value.

This switch is set at a higher pressure than the maximum of the control pressure switch, but always lower than the opening pressure of the safety valves.

This device is provided with two mounting holes, that can be easily accessed when removing the cover.

The pressure switch can be installed in every position; however it is good practice to fit it with the cable pipe to the lower part.

The safety pressure switch acts in the case of a fault to the control pressure switch and stops the burner permanently.

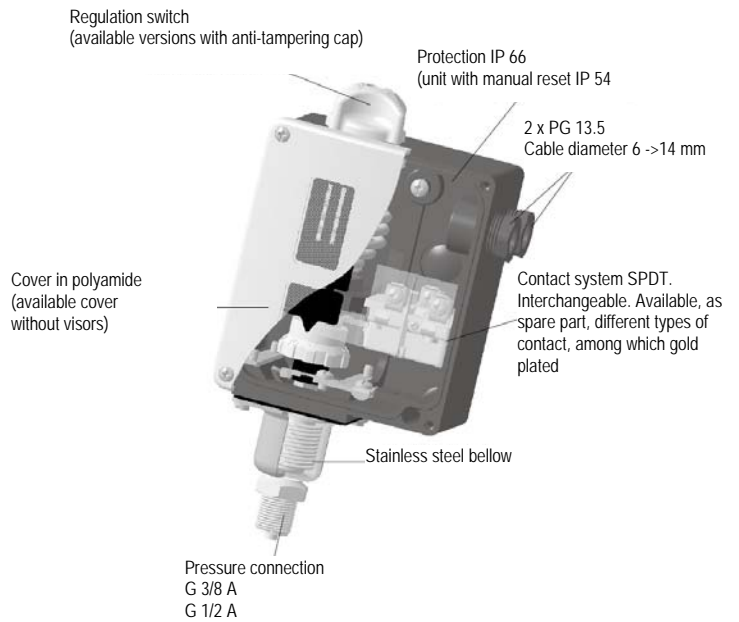
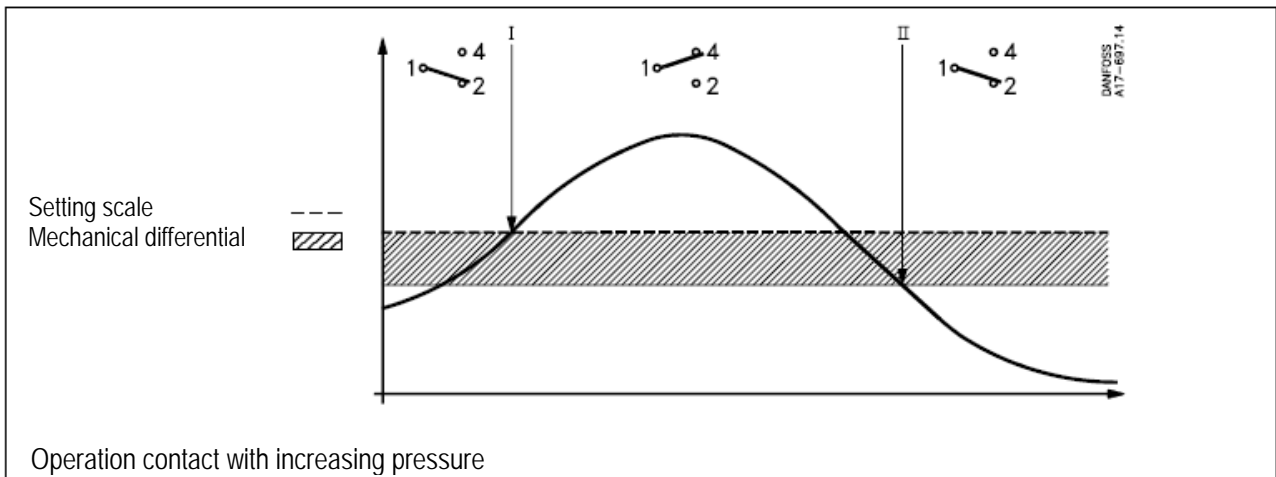


Fig. 5

OPERATION (Fig. 6)

On reaching the set pressure, the contact 1-4 turns to 1-2. When the pressure goes below the set pressure, the contacts are back to their start position, minus the differential switch.

- I. Alarm starting when the pressure goes above the set value
- II. Alarm starting when the pressure decreases below the set value, minus the differential switch.

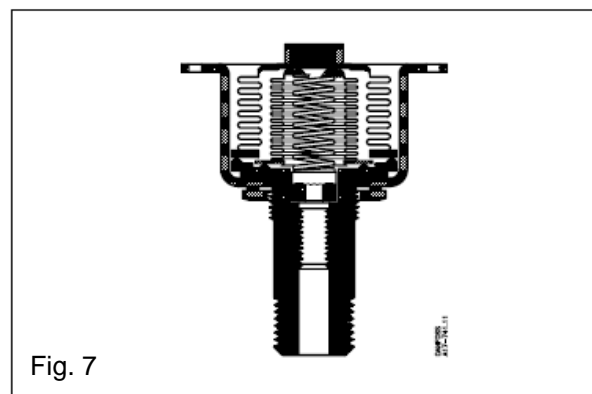


Operation at actual safety for increasing pressure. Picture no. 7 shows, a section of the bellows for increasing pressure.

On increasing the pressure, the lever blocks the contact between terminals 1 and 2.

If the inner bellow is pierced, pressure is turned to the outer ones. The outer bellow is three times bigger than the inner one.

The connection between terminals 1 and 2 is blocked. If the outer bellow is pierced, the pressure will be atmospheric between the two ones. The system blocks the contact between terminals 1 and 2. Owing to its double bellow structure, in case of breaking, no fluid will be drop inside the room.



2.2 LEVEL

2.2.1 Level indicator gauge

The level indicator consists of a pair of valves connected to a sight glass box containing a prismatic glass. This device is connected to the boiler both above and below the normal water level, while the lower part is fitted with a purge valve so that any sludge can be removed, to keep the glass clean. Using these valves, the efficiency of the level control system can be verified periodically by carrying out the following operations:

- Open for a few seconds and then close the purge valve. If the water disappears from the sight glass and then appears again with ample level oscillation, then it can be considered that the level operates correctly. If on the other hand the water returns slowly or stops at a level differing from the preceding level, then one of the communications may be obstructed. To make sure which of the two is obstructed, and to attempt a purge, close the steam valve leaving the water valve open, then open the purge valve. This valve must release water taking with it any sludge formed in the pipes. Then close the water valve and open the steam valve: steam should be released from the purge valve. Closing the purge valve and leaving the two water and steam valves open, the water should return to the initial level. If this does not occur, the communication pipes between the level and the boiler must be cleaned. During normal operation, the isolating valves must be completely open.

To avoid possible leaks, the indicators must be periodically isolated to check that the bolt clamping is at least 30 N.m.

Be sure to proceed with maintenance if:

- Boiler pressure is like the atmospheric one.
- Temperature indicator shows the same temperature as the room one.

Maintenance must be performed when:

- The glass loses its clearness, is partially opaque, shows inner signs of erosion or corrosion, coming into a difficult reading.
- Even slight leaks are noticed in gaskets or isolating groups.

2.2.2 Automatic level regulator and water level limits (Fig. 8)

The physical principle employed to detect and control the water level is based on the electrical conductivity of the water. The control device consists of a part sited in the control panel (electronic relays) and of probes of differing lengths immersed in the boiler shell.

Operation of the system provides for:

- **Automatic pump start and stop:** Two probes inserted in the boiler, of which the longer starts, and the shorter stops the pump, connected to a single control relay in the control panel.
- **Burner stop at low water level:** two probes of the same length, inserted in the boiler and connected to two distinct control relays in the control panel, stop the burner permanently if the water level drops below the admissible level.

Boiler probes:

- 6 Pump stop
- 7 Pump start
- 8 1st safety burner stop and alarm on.
- 9 2nd safety burner stop and alarm on.

N.B.: we suggest that as well as the acoustic alarm in the boiler room, a further acoustic alarm be provided in an area where personnel is normally present.

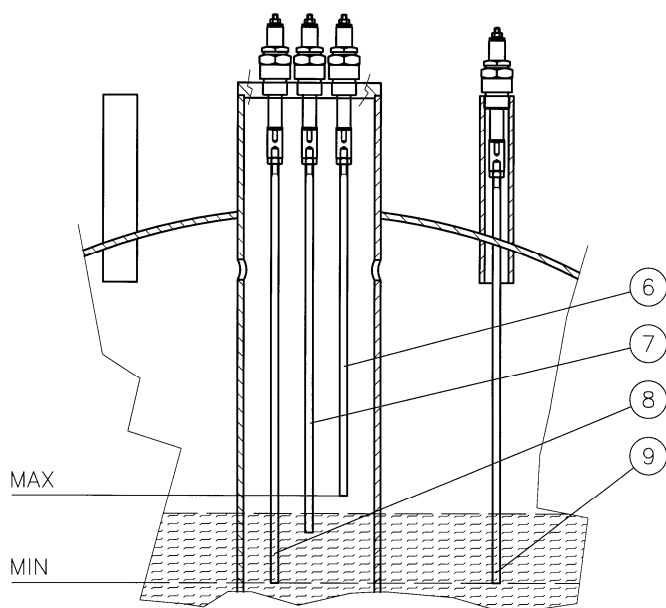


Fig. 8

2.3 FEED WATER

An electric centrifugal pump supplies the water. The inlet side of the pump must never be under suction pressure, but always under positive pressure due to the difference in height between the pump itself and the feed water tank. While a pump can operate under suction head from a cold water tank (up to 5-6 m), if the water is hot the pump cannot operate and indeed needs the water to be delivered under a certain pressure. The height of the feed water tank varies with the temperature, as shown in the following table:

Feed water temperature (Celsius)	Positive water head (metres)
60	1
70	2
80	3
90	4,5

WARNING

- **Avoid the use of feed water at temperatures lower than 60 Celsius, being rich in Oxygen and therefore such as to cause corrosion.**
- **To avoid pump cavitation problems, the feed water temperature should not be higher than 90 Celsius.**

2.3.1 Water characteristics

All the values listed as follow are taken by tables 5.1 and 5.2, figure 5.1 and 5.2 contained in the EN 12953-10 (rules related to quality features of feeding and working of boiler water).

For steam generators **there are some regulations that require limit values for water characteristics.**

However, limits should be adopted for all generators as stated by qualified companies that recommend the type of treatment to be carried out basing on careful analysis of the available water. **Many faults and sometimes serious accidents are caused by the use of water with non-conforming features.**

FEEDWATER - LIMIT VALUES (entering the boiler)

Tab. 1

Characteristics	Unit of measurement	Pressure ≤ 20 bar
Aspect	Clear, limpid, no foam, suspended solids	
Direct conductivity at 25 °C	μS/cm	< 6000
pH at 25°C	---	> 9,2
Total hardness (Ca+Mg)	mmol/l	< 0,01
Iron (Fe)	mg/l	< 0,3
Copper (Cu)	mg/l	< 0,05
Silica (SiO ₂)	mg/l	See chart 1.1
Oxygen (O ₂)(2)	mg/l	< 0,05
Oily substances	mg/l	< 1
Organic concentration	-----	Note 1

Note 1. Organic substances are generally a mixing of residues. Their composition and acting is difficult to predict. The organic substances can be dissolved to form carbonic acid or other dissolving silicates which increase acid conductivity causing corrosion and deposits. They can also foam and/or trig which will be kept as low as possible.

Chart. 1.1

Alkalinity	Silicate
0,5 mmol/l	80 mg/l
5 mmol/l	105 mg/l
10 mmol/l	135 mg/l
15 mmol/l	160 mg/l

Note 2. These values are to be accepted when a thermal deaerator is installed. If not so, it is good practice to heat the water in the tank at least to 80°C (refer to Chapt. 2.7 – Feed water) to reduce the content of dissolved gasses (O₂ e CO₂). Be sure to use chemical conditioners to deoxygenate feed water and to reduce CO₂ corrosion.

OPERATING WATER - LIMITING VALUES

Chart. 2

Characteristics	Unit of measurement	Pressure ≤ 20 bar
Aspect	Clear, limpid, no foam, suspended solids	
Direct conductivity at 25 °C	μS/cm	< 6000
pH at 25 °C	-----	from 10,5 to 12
Total alkalinity	mmol/l	from 1 to 15
Silica (SiO ₂)	mg/l	See chart 1.1
Phosphates (PO ₄)	mg/l	from 10 to 30
Organic concentration	-----	Note 1

FREQUENCY OF THE ANALYSES

The frequency of analysis is determined evidently as a function of the use of the boiler and of the quality of the water used; it is advisable in any case to check the pH, the total hardness and the alkalinity of the feed and boiler waters at least every two days. Once a month, especially under conditions of variable operation, it is advisable to subject meaningful samples of the boiler and feed waters to complete analysis.

It is also advisable to inspect the return condensate for traces of any highly contaminating oily substances (reduction of evaporation from the water surface in the boiler caused by a layer of oil).

3 INSTALLATION

3.1 SITING

Our steam boilers are supplied as units and do not need any foundation work. A flat even floor only is needed, that can be raised by 5-10 cm.

3.2 WATER CONNECTIONS

The steam boilers once positioned are connected to the system as follows:

Water

From the condensate collection tank (if existing; otherwise from the treated water tank) to the suction side of the feed water pump.

Steam

From the main steam take-off valve to the user services (distributor or others), from the safety valve outlets (6) to outside the boiler room in a safe position.

Drains

From the level indicator drains, the boiler drain to the drainage network.

Fuel

Connection to the burner foreseen for fuel oil or natural gas.

3.3 ELECTRIC CONNECTIONS

The boilers are provided with a switchboard (protection level IP 55) completely assembled to the various boiler accessories. Before connecting the switchboard, make sure that the electric system has been correctly installed, checking in particular the efficiency of the earthing system.

Wiring diagram

Refer to the diagram supplied with the specific switchboard.

3.4 SMOKESTACK

The connection from the boiler to the base of the smokestack must slope upwards in the direction of the gas flow, with a slope that should be at least 10%. The path should be as short and as possible and the bends and connections designed as to the rules used in the design of air ducts.

For lengths of up to 2 metres, the same diameter as the boiler flue gas outlet can be used (see the technical specification table). For more tortuous paths, the diameter must be suitable increased.

The smokestack must in any case be dimensioned as to applicable regulations. It is advisable to pay great attention to the inside diameter, insulation, gas tightness, ease of cleaning and to the fitting required for taking flue gas samples for combustion analysis.

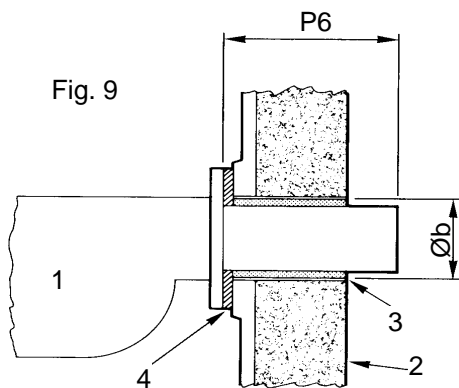
3.5 BURNER

To better answer to steam demand, it is advisable to install a **two-stage burner** or a **modulating burner**; this avoids large pressure variations consequent on sudden steam demands.

Further, and above all with natural gas, every burner start-up is preceded by a long period of pre-ventilation of the combustion chamber, with consequent loss of heat to the smokestack.

3.5.1 Boiler - Burner coupling

Verify that the spaces between the burner sleeve and the boiler door are suitable filled with flame-resistant ceramic insulation (Fig. 9).



KEY:

1. Burner
2. Manhole
3. Thermoinsulating material
4. Flange

All details on the draught tube length (**P6**), the diameter of the burner hole (**Øb**) and the pressurization are included in the par. Technical Specifications.

4 BOILER OPERATION

4.1 FIRST START-UP

- Verify that all fittings are tight.
- Verify that the feed water pipes are clean, carrying out a series of washing operations with drainage to waste before final boiler filling.
- Close the drain valves, the steam take-off valve and the level drains.
- Open the level control valves and the feed water valve (upstream of the feed water pump).
- Check that the upper man-way is correctly closed.
- Start the boiler as follows:
 - 1) Switch on the control panel by turning the main switch.
 - 2) Check that the drive shaft of the feed water pump is free to turn. By starting the pump manually for an instant, check that the shaft turns in the correct direction.
 - 3) Set the pump switch to AUT and verify that burner cannot start before the attainment of the minimum level;
 - 4) Check that the pump stops when the maximum level is reached by observing the level indicators and checking the positions of the indicator valves.
 - 5) Press and keep pressed the safety water level reset button for at least 10 seconds, the conductivity relay being of the delayed type.
 - 6) Open the boiler drain and check on the level indicator at what level the pump-start probe acts.
 - 7) Set the pump switch to "0" leaving the drain open and check the actuation level of the safety probes with respect to the minimum level reference plate.
 - 8) Close the drain and set the pump switch to AUT
 - 9) Switch on the burner and bring the boiler up to pressure adjusting the operation pressure.

WARNING: On boilers with a man-way, during the first start-up it is important to tighten progressively the nuts on the man-way cover as the pressure increase. Otherwise a hazardous situation is created due to steam leaks that quickly deteriorate the gasket creating a dangerous situation for the boiler room personnel.

4.2 NORMAL OPERATION

With cold start-ups, verify that:

- The boiler is full of water to the minimum level;
- The increase of the water volume due to heating does not raise the water level too far: if necessary drain the boiler at regular intervals to bring the visible level back to the centre of the water level sight glasses;
- On reaching the set pressure, the steam take-off valve can be opened very gradually in order to heat the steam delivery lines eliminating any condensate that may be present in the pipework;
- The man-way gasket does not leak.

5 MAINTENANCE

5.1 ORDINARY

- Periodically purge the level gauges, probe holder if fitted and the boiler, to avoid the accumulation of sludge;
- Check the efficiency of the control and regulation instruments, examining carefully the electrical parts (connections included) and the mechanical parts (pressure switches); it is advisable to replace every year the ceramic probe-holders;
- Carry out burner maintenance (as to the specific instructions);
- Check the tightness of flange bolts and the state of the gaskets;
- Check the conditions of the boiler door internal covering;
- Clean the flue-gas tube bundle and the turbolators;
- Carry out correct maintenance to the pump (bearings, mechanical seal),
- Check for wear to the discharge valves; these tend to wear more quickly, due to the abrasive effect of the sludge during blow-down.

5.2 PERIODIC

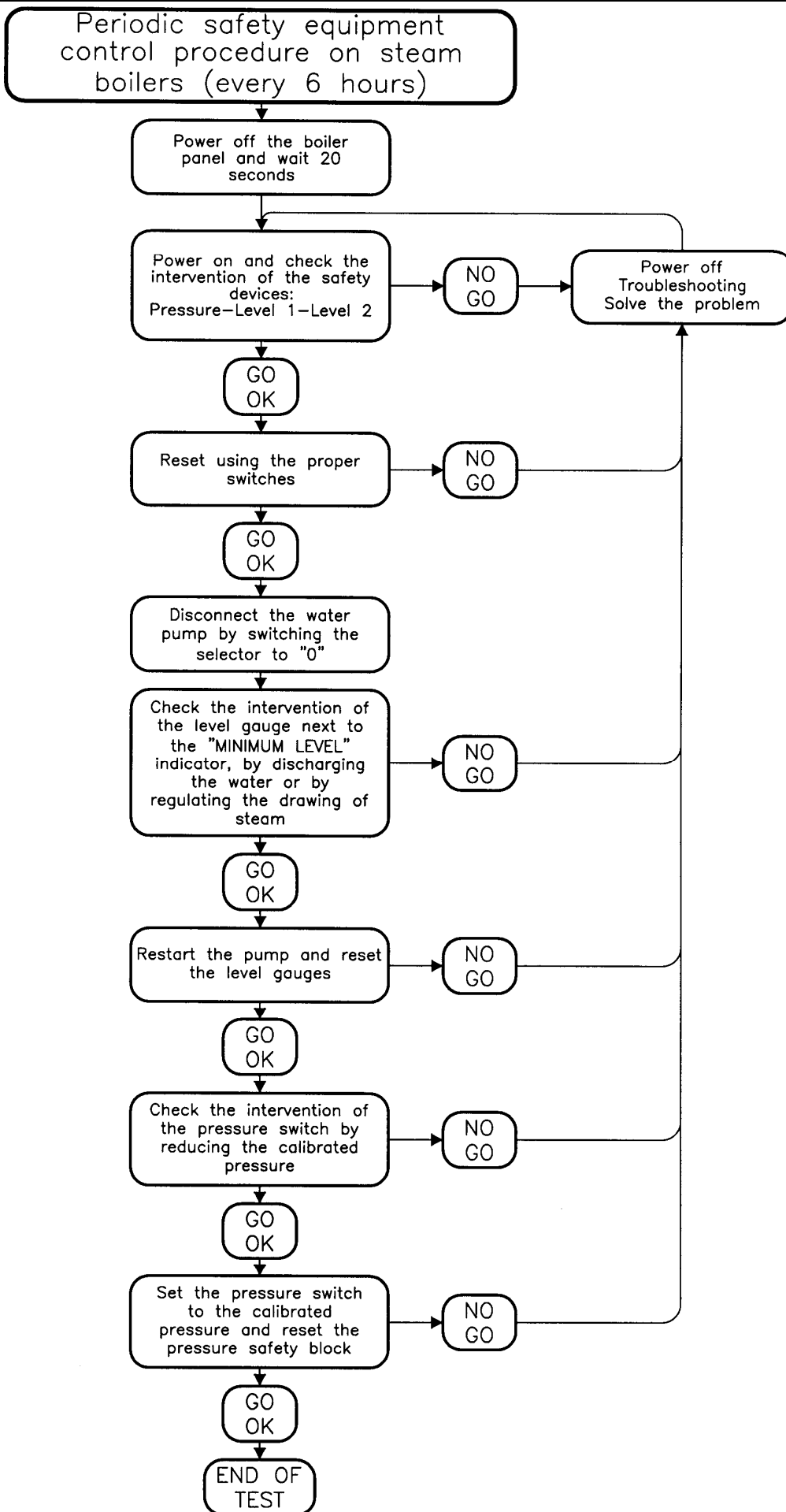
5.2.1 Periodic control (every 6 hours of use)

From time to time (every 6 hours of use) the thermal plant must be inspected by qualified personnel to check the efficiency of all safety accessories:

- Safety pressure switch
- Water level limits

The system can be reset if no anomalies have been encountered: power off the panel for approx. 20 seconds, power on the main switch and press the reset buttons.

For further details follow the flow chart below:



5.3 SCHEDULED

All boilers must be periodically stopped for careful inspection and maintenance: the time interval between stops is established by experience, by the operating conditions, by the quality of the feed water and by the type of fuel used.

Before entering the boiler shell for inspection or for cleaning, check carefully that there is no possibility of entry of water or steam via the pipework to which the boiler is connected. Every valve must be locked and if necessary isolated by removing a piece of pipework or by inserting a blind flange.

The parts under pressure must be carefully examined internally to identify any encrustation, **corrosion** and other potential **sources of danger linked to the feed water**.

All deposits must be removed mechanically or chemically and **the effective thickness of the structures must be verified using suitable instruments to determine that they are equal to or greater than the design values**. All pustules or other types of corrosion must be scraped and cleaned with a steel wire brush to white metal. Leaks between fire tubes and tube plates must be carefully examined: any welding must be done in all cases observing legal obligations, without forgetting that a steam boiler is a pressure vessel with danger of explosion and subject to control by competent authorities.

During inspection also verify all the accessories, with priority to safety valves, level probes and pressure switches.

5.4 CONSERVATION DURING WHEN OUT OF SERVICE

Often during periods of disuse the worst cases of corrosion appear. The operations to be carried out to guarantee correct conservation of the boiler depend essentially on the duration of the stop.

The boiler can be subjected to dry conservation if the period of disuse is long, or to a wet conservation for short stops or if the boiler has a back-up function and must be ready to come on-line in a short time.

In both cases, the necessary operations tend to eliminate the causes of possible corrosion.

5.4.1 Dry conservation

The boiler must be drained and dried carefully, then placing in the boiler shell a hygroscopic substance (for example lime or silica gel etc)

5.4.2 Wet conservation

The boiler must be filled completely, given that corrosion is a phenomenon that appears due to the simultaneous presence of water and Oxygen. Therefore all traces of Oxygen must be removed from the water, also avoiding the successive infiltration of air. There are substances that absorb Oxygen, such as hydrazine and Sodium Sulphite, but after their use the water alkalinity must be checked.

5.5 REMARKS

This manual is an essential part of the product.



In case the body is sold or moved, please ensure that this manual is forwarded to the new owner.

This boiler body has to be used according to its own purpose.

Any contractual or extra-contractual responsibility is excluded when referring to damages occurred to people, animals or things caused by failure of maintenance, scheduled control or misuse.

1. Verify the proper valve opening according to the boiler design pressure.
2. Verify the correct status of the safety pressostat that will be able to block the burner and avoid pressure increase
3. Verify that the connection of the accessories to the boiler is made properly (check the status of the gaskets).
4. Special care should be taken when moving and fitting the boiler.
5. Verify the accessories status periodically (no fractures).
6. Verify the proper valve operation by hydraulic testing (at the test pressure shown on plate) when installation is completed.
7. Verify the proper status of the safety level indicator, as on the user's guide.
8. Verify the water conductivity referring to the values shown in this manual.
9. Check the correct status of the feed water pump (pump wear, suction head, feed water temperature, pump connection and disconnection according to the level probes).
10. Check water as required, controlling that the values are in the range shown on this manual. Be sure to check the probe plugs and the level control by lowering the water below the minimum level required.
11. Manually check the boiler operation every 6 hours.
12. Do not step on or damage the cable sheath.
13. Do not consider boiler connections as a weight support for the tubes
14. Provide dilation joints and tube supports for the connection of the boiler to the plant.
15. Verify the power supply of the control panel referring to the electrical diagram attached.
16. Check the proper connection to ground.
17. Check the electrical system of the plant.
18. Before opening the manhole, be sure to check that the boiler inner pressure is at atmospheric level. (0 atm)
19. Before opening the boiler door, be sure to check that the burner is not operating and with no power supply.
20. Before closing the deviating valve, be sure to switch off both burner and pump.
21. Avoid contact between non insulated parts of the device during operation. When regulating or controlling during operation, be sure to use adequate protections and garments.
22. During maintenance, when getting up and down the boiler roof, be sure to use equipment according to local regulations.
23. Watch out for sharp corners on the boiler and its accessories.
24. The boiler body must be protected from low temperature (-10 Celsius) and rain.
25. When projecting the plant, be sure to consider the seismic risk of your location.
26. After an earthquake, non-destructive testing for possible damages should be carried out by technical personnel.
27. The manufacturer is not responsible in case of damages during boiler disconnection.
28. The boiler operators must prove adequate knowledge of the control and safety accessories, be confident with the instructions shown in this manual and in good health.
29. When moving the boiler, place yourself at least 5 meters away from the area.
30. In case of a hard collision during boiler moving, verify its integrity and carry out a new hydraulic test.
31. For possible declassing, please follow your local regulations.
32. No welding or repair is allowed, please contact your verifying producer for boiler operation

5.6 DATA LABEL

VB05			
ICI CALDAIE S.p.A. Via G.Pascoli, 38 - 37059 ZEVIO (VR) - ITALIA -			
<i>Tipo - Type - Typ - Modelos</i>			
SIXEN			
<i>Codice - Code - Code - Codice</i>		<i>Data - Date</i>	<i>N° Fabbrica</i>
GENERATORE DI VAPORE - STEAM BOILER GENERA TEUR DE VAPEUR - GENERADOR DE VAPOR			
PORTATA TERMICA - HEAT INPUT DEBIT THERM. - POTENC. TERM.		POTENZA UTILE - HEAT OUTPUT DEBIT THERM. UTILE - POTENCIA UTIL	
MIN		MIN	
MED/MIN		MED/MIN	
MAX		MAX	
	<i>kW</i>		<i>kW</i>
	<i>Kcal/h</i>		<i>Kcal/h</i>
	<i>kW</i>		<i>kW</i>
	<i>Kcal/h</i>		<i>Kcal/h</i>
TS min. = 10 °C		Riferimento disegno:	
PS 12 BAR		corpo: SIXEN	
TS max esercizio 191,7 °C		insieme:	
COMBUST. LIQUIDO - LIQUID FUEL		GAS CATEG. v. categ. bruc.	
GASOLIO - LIGHT OIL - FIOUL - GASOLEO		TIPO - TYPE - TYP gas bruciatore	
NAFTA - HEAVY OIL			
BRUCIAT. - BURNER - BRULEUR - QUEMADOR			
ALIM.ELETT.-VOLTAGE-ALIM.ELECT.-TENSION D'ALIMENT.		3/N 400	
CLASSE PROT.-PROTECT.CLAS.-CLASE DE PROC.-PROTEC.		IP65	
DESTINAZIONE - DESTINATION - DEST.		CE	
(DATI CARATTERISTICI VEDI DICHIARAZ.CONFORMITA)			
			
		1370	
TARGA DATI CORPO GENERATORE: RIMUOVERE LOGO FRONTALE "ICI" IN ALLUMINIO LA TARGA DATI LIVELLOSTATO E' SITUATA ALL'INTERNO DEL QUADRO ELETTRICO.			



Appartenente al Gruppo Finluc, iscritto R.I. VR n. 02245640236

Via G. Pascoli, 38 - 37059 Zevio - fraz. Campagnola - VERONA - ITALIA

Tel. 045/8738511 - Fax 045/8731148

info@icicaldaie.com - www.icicaldaie.com

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