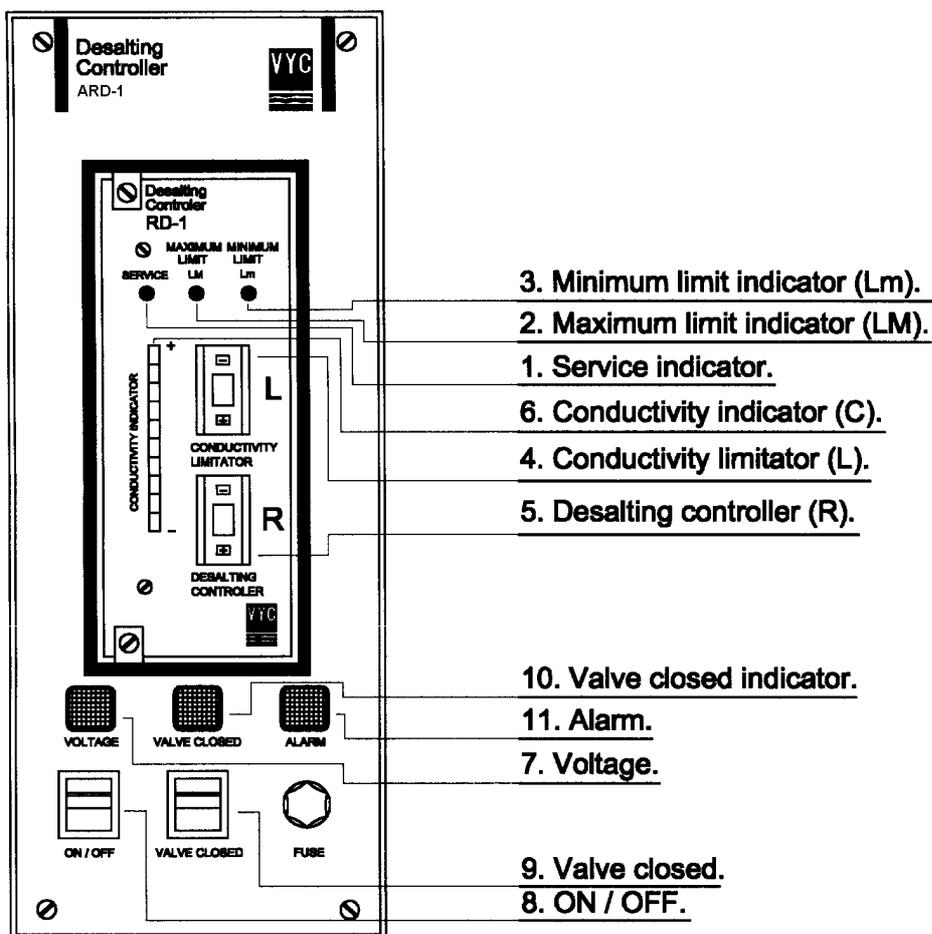


Desalting controller RD-1

The RD-1 desalting controller, installed in the cupboard, limits and controls the conductivity of the water in the boiler. If this is within the limits allowed, the valve continually cleans the water to maintain the required levels of conductivity inside the boiler. If conductivity increases, reaching the maximum value permitted, this causes the alarm to switch on and / or the burner to stop.

1.- Description of the regulator.



2.- Limiting the conductivity.

In order to keep to the limit values specified in the german TRD-611 norms, the conductivity limiter (L) 4 must be placed at the position indicated in the table below, according to the working pressure of the boiler.

<i>Position of conductivity limiter L</i>	<i>Working pressure in bar.</i>	<i>Maximum conductivity permitted, in mili siemens (mS)</i>	<i>Temperature °C</i>
1	22,1 to 32,0	40	238
2	1,0 to 6,0	50	164
3	6,1 to 13,0	60	194
4	13,1 to 22,0	70	218

The position of the conductivity indicator (C) 6 shows us the real conductivity of the water inside the boiler. If the needle is inside the red area, this means that conductivity is excessively high, and the service indicator 1 cuts out, the alarm 11 is activated and, if required, the burner is stopped.

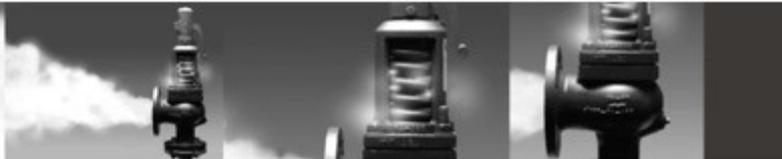
3.- Regulating the desalination.

The 10 scaled positions of the desalting controller (R) 5 allow correct adjustment of the commutation point. Position 9 corresponds to the highest permissible conductivity, so position 0 allows a greater desalination.

When the boiler is switched on and at working pressure, the conductivity indicator (C) 6 should be two or three points before the red limit. This position ensures that there is sufficient margin between the point of commutation and the conductivity limiter. The optimum point of commutation should be set with the help of a firm which specializes in water treatment, by carrying out periodic analyses of the water.

The regulation of the continuous deslating valve, within the indicated value for permissible conductivity, is indicated by the maximum limit indicator (LM) 2 and minimum limit indicator (Lm) 3 lights.

The table below shows the sequential development of the valve in relation to the conductivity value.

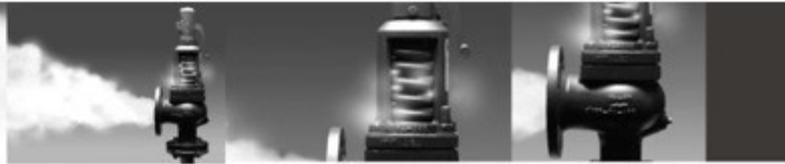


Position		Light	Position of conductivity indicator	Conductivity of water	Position of the continuous desalting valve
1		<input type="radio"/> Disconnected <input checked="" type="radio"/> Connected <input type="radio"/> LM <input type="radio"/> Lm		Under minimum working value	CLOSED No need for desalination
2	a.	<input type="radio"/> LM <input checked="" type="radio"/> Lm		Within permissible working values	CLOSED Increased salinity of water
	b.				SERVICE Decrease in salinity of water
3		<input checked="" type="radio"/> LM <input checked="" type="radio"/> Lm		Over maximum working value	OPEN High desalination to reach position 2b as fast as possible

4.- Start-up and operation.

When the appliance is switched on, regardless of conductivity, the servomotor opens the continuous desalting valve to clean out any static impurities. The maximum limit (LM) 2 and minimum limit (Lm) 3 indicators are connected and the conductivity indicator (C) 6 may be in any position. After about 60 seconds, the servomotor brings the valve to position 1 or 2, depending on the real conductivity of the water in the boiler. Only if the conductivity is higher than the maximum limit will the valve be completely opened, reaching position 3. It is important that position 2b be set as the final working position. At the end of the day, turn on the valve closed switch 9. Once the valve is completely closed, the valve closed indicator 10 will light up, preventing any unnecessary loss of water. Then turn the valve closed switch 9 once more, as well as the on / off switch 8, to leave the boiler turned off.

If the burner should stop due to a fault, or due to normal operation, this will not affect the automatic desalination regulation. The valve continues to operate as usual.



5.- Periodic testing.

Run the following tests at least once a year:

- 1- Induce a short circuit in the connection cable of the EC-1 conductivity electrode:
The maximum limit (LM) 2 and minimum limit (Lm) 3 indicators will light up. The service indicator 1 will cut out and the conductivity indicator (C) 6 will move into the red area. Finally, the alarm 11 will go off and / or the burner will stop.
- 2- Check the connections, avoiding the accumulation of any deposits or impurities.

6- Problems-Causes and solutions.

If any problems should occur, check:

- Whether there is any voltage available.
- The condition of the fuses (80mA) and whether they need to be replaced.

PROBLEMS

I. The RD-1 desalting controller will not connect, and the service indicator 1 is off.

II. When the RD-1 desalting controller is connected, the conductivity indicator (C) 6 moves into the red area and the controller cuts out again. The service indicator 1 turns off.

III- The desalting controller does not turn off in test 5.1.

SOLUTIONS

I.1-Check to see if there is any voltage available.

I.2-Check the condition of the fuses (80 mA) and whether they need to be replaced.

I.3-Check the connections of the EC-1 conductivity electrode with the RD-1 desalting controller.

I.4-Change the RD-1 desalting controller.

II.1-Check the properties of the water with the help of a firm which specializes in water treatment.

II.2-Check the connections of the EC-1 electrode conductivity to see if there is a short circuit (earth or ground).

II.3-Change the RD-1 desalting controller.

III.1-Check to see whether there is any voltage available.

III.2-Check the condition of the fuse (80 mA) and replace if necessary.

III.3-Change the RD-1 desalting controller.

NOTE: If the system should not work after all these checks have been run, please do not hesitate to contact the technical department of VYC Industrial, S.A. in order to correct the fault.

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Operating Diagram RD-1

