

# LCSR4000 Level Control Systems

## Typical installation

This document does not contain sufficient information to install the system safely. See the Installation and Maintenance Instructions supplied with the products for full details.

The Spirax Sarco LCSR4000 boiler water level control and alarm system is suitable for automatically controlled steam boilers and provides the control and alarm functions specified by Standard BS EN12953 and in the BG01 which is a joint document by the CEA and SAFed, originally produced in consultation with the HSE. The low level alarms are of the high integrity type and whilst a competent boiler operator should check the plant daily, he need not be on site at all times. There should, however, always be someone available on site who is suitably trained to respond to alarms and take appropriate action.

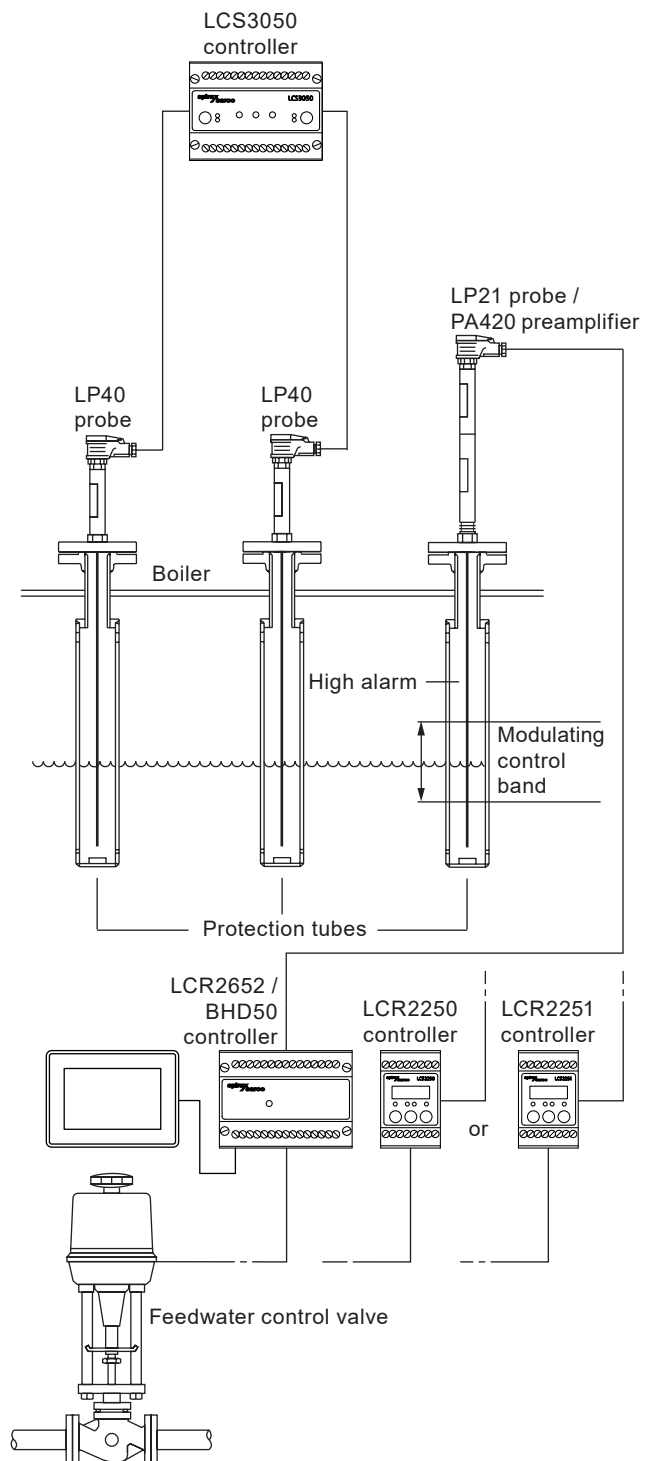
The level controls and level alarms are probably the most important controls on the boiler for ensuring safety and should only be installed and maintained by suitable trained personnel. Spirax Sarco can install, commission and provide a regular maintenance service.

	<b>LCS3050</b>	30 $\mu$ S/cm or 30 ppm
<b>Minimum conductivity</b>	<b>LCR2652/ BHD50</b>	5 $\mu$ S/cm or 5 ppm
	and	Note: Consult Spirax Sarco if conductivity is less than 100 $\mu$ S/cm and is likely to vary by more than 2:1
	<b>LCR2250</b>	

## Weekly test

High integrity self-monitoring level alarms do not require daily testing but the weekly test should be carried out or witnessed by a responsible person who appreciates the hazards involved and has been suitably trained in the safe operation of the boiler and its controls. At no time during the test should the water be lowered to the extent that it disappears from the gauge glass.

1. With the feedpump switched off, or the control valve forced closed, allow the water level to fall by evaporation until the burner and the panel lockout at the low alarms.
2. Raise the water level to normal, reset the lockout and allow the burner to re-fire.
3. To independantly test inputs of a 2 probe system external test buttons have to be installed that create low level alarms on each probe input. For each probe input press the test button and ensure the burner shuts down, afterwards reset the lockout and allow burner to re-fire.
4. Include in monthly test - Under hand control raise the water level to the high alarm level. Check that the high alarm sounds.
5. Return all valves and controls to normal and monitor the boiler until satisfied that it is operating normally.



## Quarterly inspection

The Health and Safety Executive recommend that boiler controls should be serviced at least at quarterly intervals. Where the regular tests are carried out properly in a well run boiler house with good water treatment, it may be that only an annual inspection of the probes etc. is required. This is a matter, however, for the user to decide in liaison with their insurance company inspector in order to determine a sensible inspection programme to suit the individual boiler plant. We recommend a regular inspection as follows:

1. Inspect the probe plugs for moisture.
2. Unscrew the probes and wipe away any dirt from the probe tips. If any hard scale is present it may be an indication of more serious scale formation elsewhere in the boiler. Investigate water treatment.
3. Remove the actuator cover from the feedwater control valve and inspect the actuator linkages etc. for tightness and correct operation, and inspect wiring. Test the feedwater control valve for correct operation over its full stroke, for gland leakage and for tight shut-off.
4. Inspect the wiring and controllers for damage.
6. Reassemble, refill the boiler and carry out a full functional check.