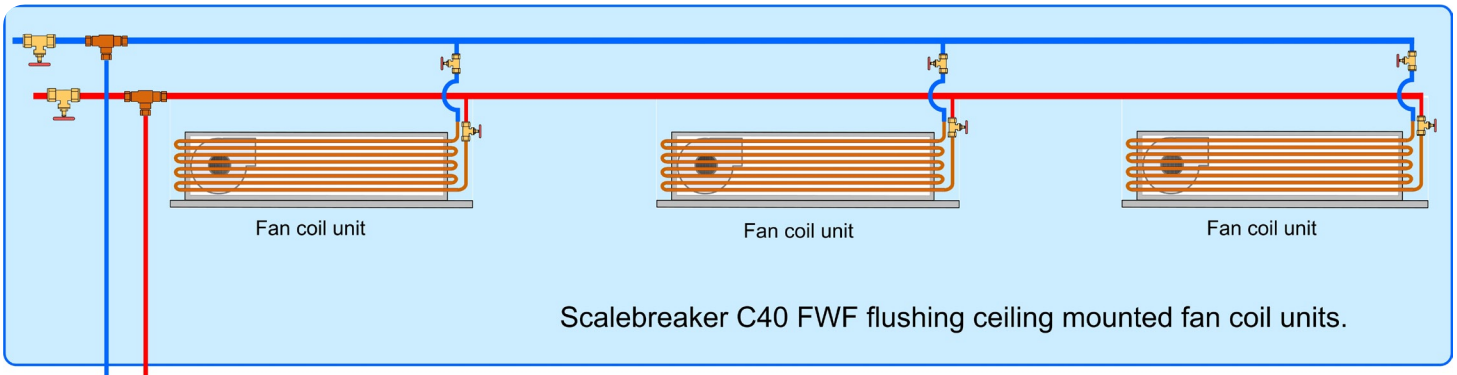
Kamco
Solutions to Scale

Guidance notes on descaling fan coil units



Scalebreaker C40 FWF flushing ceiling mounted fan coil units.

CHOICE OF DESCALING / FLUSHING CHEMICAL AND QUANTITY REQUIRED:

Use either SCALEBREAKER SR or SCALEBREAKER FX, dependent on the type of fouling. Scalebreaker FX will remove both hard water deposits and corrosion deposits, whilst Scalebreaker SR is effective only on hard water scale.

Calculate the amount of descaling chemical required. As a guide, if the volume of water in the circuit is approximately 100 litres, use 10 litres descaling chemical (i.e. a 10% solution by volume). A weaker solution may be used, but will take longer to remove a given amount of scale.

NB. When descaling with any acid, some hydrogen gas may be evolved. Hydrogen is a flammable gas, and the working area should be well ventilated. Avoid smoking nearby, or any other means of ignition.

PROCEDURE

1. Ensure an adequate water supply to dilute or neutralise any chemical leaks, or the spent descaling chemical, so that disposal does not contravene local regulations.

2. A C40 can handle a run of eight to twelve fan coil units at one time, whilst a C90 can handle larger quantities. Isolate the selected section of fan coils from the main flow and return circuits of chilled / hot water, capping these off if necessary.

The choice of whether to flush all the fan coil units of the chosen run together or to flush each fan coil unit individually is up to the operator. If the chilled water circuit is not heavily fouled it may not be necessary to flush every fan coil unit individually.

To flush each fan coil unit individually, giving the highest flow rate through each unit in turn, it is not necessary to relocate the Scalebreaker pump close to each fan coil. Simply use the individual fan coil unit isolating valves to close off all units except one. Flush that unit alone for five minutes, and then isolate. Open up and flush the next fan coil unit for five minutes, and continue along the run, flushing each unit in turn.

3. Couple the flow and return hoses from the descaling pump to the section of fan coils to be descaled.

4. If it is anticipated that descaling is to be a routine maintenance procedure, consider installing valved tee-pieces in the flow and return connections to the fan coils, terminating in 1/2" or 3/4" BSP male threads. This will enable immediate coupling of the descaling pump whenever descaling is required.

5. Pump connections to the flow and return circuits of the fan coil units should be through valves, as a precaution. Failing this, power failure to the pump would result in the head of water overflowing the pump tank, unless prevented by closing the valves. (Scalebreaker FWF models have integral valves suitable for this.)

6. Connections should be made so that there is a closed circuit between the descaling pump output hose, through the fan coil units to the return hose.

7. Venting of the carbon dioxide gas evolved during descaling is achieved through the pump tank filler cap aperture. The cap should be screwed on by no more than one quarter of a turn. This is sufficient to vent the gas, but at the same time reduces fumes and prevents splashes.

8. Connect the pump to a suitable earthed power supply. As the pump will be used in a damp location, a residual current circuit breaker plug should be used.

9. The flow reverser handle points in the direction of flow of the liquid. If the handle points towards the hose connected the normal water inlet to the coil, that will be the direction in which the descaling pump will pump, and the other hose will then be the return to the pump tank.

10. Prior to adding descaling chemical to pump tank, first 'prove' the circuit with fresh water alone. Add water to pump tank to approx. 4" (10cm) above minimum liquid level, switch on descaling pump, and immediately open the isolating valve (see point 5) to allow circulation to commence. If water level drops initially, add more water to pump tank, and check that all connections are tight.

11. To commence descaling, slowly add descaling chemical into pump tank. Once liquid is returning into the tank from the circuit, check to see if there is a build up of foam on top of the liquid in the pump tank. This may happen when there is a large build up of reactive limescale in the coil. If this is excessive, add FOAMBREAKER carefully to the tank to reduce the foaming.

12. As circulation commences, bubbles will be seen in the return hose to the pump, indicating that limescale is being dissolved.

13. Continue circulation through the fan coils and descaling pump, briefly reversing the direction of flow periodically.

14. Check all connections regularly for tightness and leaks, and if foaming is excessive, carefully remove descaling pump tank cap and add more FOAMBREAKER to the descaling pump tank.

15. Scale removal can be considered complete when bubbles are no longer seen in the return pipe, and the descaling solution is still sufficiently strong to remove hard water deposits.

16. SCALEBREAKER descaling chemicals contain a built-in colour change to monitor strength.
A simple check may be made by dropping a sample of limescale into the solution, and observing if there is any effervescence.

17. For more accuracy, a pH meter, or pH indicator paper, may be used to check the pH of the descaling solution. Once the pH has risen to 3.5 to 4, its ability to dissolve limescale is effectively spent, and more descaling chemical or a fresh solution will be required.

18. If, after descaling has ceased, the pH of the descaling solution is still below 5, then the remaining solution must be neutralised to bring the pH level above 5, and as close to 7 as practicable. This may be done by slowly adding NEUTRALISING CRYSTALS or Neutralising Liquid to the tank of the descaling pump until there is no more effervescence, or alternatively the spent solution may be pumped into a separate container and neutralised there before discharge to waste. When using Neutralising Crystals, if foaming is a problem during this operation, add FOAMBREAKER antifoam.

19. After draining off the spent descaling chemical, flush the fan coil circuit with fresh water. Many natural waters are slightly alkaline, and water flushing may be all that is required. Alternatively, circulate a 1% solution of NEUTRALISING CRYSTALS through the coil for 15 minutes, drain, and then flush with clean water once more.

If you have a Scalebreaker C40 or C90 FWF descaling pump, this has an integral fresh water flushing facility: When descaling is complete, the spent descaling solution may be pumped to waste along the dump hose as follows:

If the flow reverser lever is to the left, twist the right-hand dump valve through 180° to show the word 'dump', ensuring that the left-hand valve remains in the 'circulation' position.

(If the flow reverser lever is to the right, twist the left-hand dump valve through 180° to show the word 'dump', ensuring that the right-hand valve remains in the 'circulation' position.)

When 'dumping', the water level in the pump tank will fall by the same volume as is being dumped. Open the mains water supply valve and adjust to allow fresh water to enter the tank at the same rate as water is exiting the dump hose. Make sure that the tank water level remains at least 10 cm (4") above the minimum mark.

Continue dumping until fresh water is leaving the end of the dump hose.

Turn the valve which is in 'dump' mode through 180° to restore full circulation through the pump and the system. Close the water supply inlet valve once the level in the reservoir has stabilised between minimum and maximum markers.

Allow fresh water to circulate through the descaled equipment for ten minutes.

IMPORTANT: When working with acidic descaling chemicals, always wear suitable protective clothing and goggles. Refer to instructions on labels of descaling chemicals, and refer to Material Safety Data Sheets.

Caps should be kept securely on all chemical containers whilst not in use. To avoid splashes, operators should not stand directly over the open neck of either chemical containers or the filling neck of the descaling pump whilst pouring or adding chemicals.

Legal disclaimer: It is stressed that these are guidance notes only, and the above information is based on the present state of our knowledge of calorifiers in general. It is given in good faith, but due to the diverse and varied nature of such equipment, the user must satisfy himself that the above procedure is viable in the prevailing situation.