



**CHOICE OF DESCALING CHEMICAL AND QUANTITY REQUIRED:**

If the mould tool is constructed in steel, 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. SCALEBREAKER HD should not be used.

1. Check the water capacity of the tool or equipment to be descaled and calculate the amount of descaling chemical required.
2. As a guide, for a tool of 20 litres water capacity, use 2 litres of descaling chemical (ie. a 10% solution by volume). A weaker solution may be used, but will take longer to remove a given amount of scale.
3. For tools with waterways containing larger volumes of water, consider a descaling pump with larger pump and pressure output.
4. If it is anticipated that descaling is to be a routine maintenance procedure, consider installing valved tee-pieces in the standard flow and return connections to the mould tool, terminating in 1/2" or 3/4" BSP male threads. This will enable immediate coupling of the descaling pump across the tool whenever descaling is required.
5. The pump connection to the lower point of the mould tool should be through a valve, as a precaution. Failing this, if the descaling pump is mounted below the mould tool, power failure to the pump would result in the head of water in a larger tool overflowing the pump tank, unless prevented by closing the valve.
6. Connections should be made so that there is a closed circuit between the pump output hose, through the mould tool 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. Turn the handle so that it initially points towards the hose going to the lower mould tool connection. The hose from the top of the mould tool 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 pump, and immediately open the valve detailed in point 5 above, to allow circulation to commence. If water level drops initially, add more water to pump tank, and check that all connections are tight.

**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.

11. To commence descaling, slowly

add descaling chemical into pump tank. Wait until liquid is returning into the descaling pump tank from the mould tool, and check to see if there is a build up of foam on top of the liquid in the pump. If so, carefully add FOAMBREAKER to the tank. This may happen when there is a large amount of limescale in the tool waterways.

12. As circulation commences, bubbles and foaming will be seen in the return hose to the pump, indicating that limescale is being dissolved. If foam formation is excessive, carefully remove descaling pump tank cap, and add FOAMBREAKER to the descaling pump tank to stop the foaming.
13. Reverse the direction of flow periodically, checking all connections for tightness and absence of leaks.
14. Scale removal can be considered complete when bubbles are no longer seen in the return pipe, and yet the descaling solution is still sufficiently strong to remove hard water deposits.

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

15. For greater 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 and corrosion deposits is effectively spent, and more descaling chemical or a fresh solution will be required.
16. After draining off the spent descaling chemical, flush the mould tool with fresh water. Many natural waters are slightly alkaline, and water flushing may be all that is required. Alternatively, circulate a 0.5 to 1% solution of NEUTRALISING CRYSTALS through the tool for 15 minutes, drain, and then flush with clean water.

#### 17. FWF Scalebreaker pumps

Scalebreaker C40, C90 and C210 descaling pump are available as FWF models. These have 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:

18. 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.)

19. 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.

20. 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.

21. Operators may prefer to neutralise the spent descaling solution "in situ" whilst the liquid is still circulating, by carefully adding Neutralising Crystals or Neutralising Liquid to the solution until the pH is brought up to a value of 7, and then flushing to drain. When using Neutralising Crystals, if foaming is excessive, carefully add a little FOAMBREAKER to the descaling pump tank.

**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.

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

**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 mould tools and other heat exchangers 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.**