

IMPORTANT USER GUIDANCE: ENVIRO-VAC BS8520:1

WET INJECTION EQUIPMENT

READ THESE INSTRUCTIONS BEFORE USING THE APPLIANCE

GENERAL: The Enviro-Vac wet-injection system is designed for compliance with BS8520:1 2009 Controlled Wetting Equipment for ACM.

The machine comprises a 125 litre fluid reservoir on a chassis equipped with heavy duty castors for ease of movement. It employs a pump with by-pass, a series of fluid filters, and a pressure regulating device to ensure consistent fluid delivery. The main pump-unit should remain outside the working area; a 15mm bore hose supplies wetting fluid to a pressure control unit (PCU) which may be located within the working area, and elevated above the pump unit. The PCU regulates the pressure of fluid to the needle arrays, it has two delivery ports and each port can supply from 1 – 50 needles (maximum 100 needles / machine).



The fluid supply to each needle is controlled by self-compensating, flow-regulating valves; these valves are tamper-proof (encased in the T-piece immediately above the needle), require no user adjustment, and are pre-set to deliver 35 ml/min (+/- 10%) from each needle.

Fluid can be delivered to the ACM constantly, or you can select a cyclical feed; in the case of cyclical feed fluid is pumped to the needle array for a period of five minutes, followed by a rest period of five minutes to allow the ACM to absorb the fluid, before the cycle automatically repeats again.

THE FOLLOWING MUST BE OBSERVED AT ALL TIMES

USERS MUST:

- refer to local safety regulations applicable to the materials you are working with - in the U.K. if you are working with material containing asbestos observe the requirements of the Control of Asbestos Regulations 2012, its supporting guidance ACoP L143 Work with Materials containing Asbestos, and HSG 247 The licensed contractors' guide.
- familiarise themselves with instructions and information, and undertake appropriate training concerning the use of this type of equipment, the materials for which it is used, including the safe method of removal and disposal of the material collected. A number of organisations provide training in the use and application of wet-injection equipment (see www.ukata.org.uk, Tel. 01325-460 112). Alternatively If you require product-specific training contact Enviro-vac www.enviro-vac.co.uk, Tel. 01162-255 3960.

DO:

- wear personal protective equipment - as advised in the COSHH sheet supplied by the manufacturer of the wetting agent.
- exercise care when handling injection needles as they are extremely sharp and can easily cause injury - use protective gloves.
- store in frost free conditions to avoid damage when not in use.
- regularly examine the equipment for damage.
- use only under the supervision of trained personnel.

DON'T:

- inject or spray near live electrical cables or appliances, danger of electric shock!
- inject or spray where contact between water and chemicals may generate a toxic / fire risk!
- operate in a flammable /explosive atmosphere.
- attempt routine maintenance or cleaning unless disconnected from power supply.
- lift the appliance whilst it contains fluid (it weighs in excess of 160 Kgs when filled).
- in any circumstances use PVA based agents !

EQUIPMENT SPECIFICATION

Electrical supply:	110 volt, 50 hertz, current consumption 2 amps.
Pump-Unit Dimensions:	850mm L x 590mm W x 940mm H, Dry Weight 40 kgs approx.
Supply Hose Lengths:	Yellow Hose 30m, Clear Tube 15m, 50 Needle Array 16m (needles max. 320mm apart)
Recommended fluids:	Envirovac stripping agent, glycol based fluids. PVA based must NOT be used.
Delivery pressure:	From main injection unit 60 psi (4.0 bar); Outlet pressure from PCU 35 psi (2.3 bar)
Injection Needles:	standard: straight 60mm long needle, max. 100 needles, supplied in sets of 50. special option: angled 160mm long needle, max. 100 needles, supplied in sets of 25.
Flow rate from needles:	35 ml per minute [+ or – 10%] each needle, self-compensating.

QUICK SET-UP GUIDE:

Locate the pump-unit on a level, secure area, which can support the weight of the unit once filled with water [allow 200 kgs], and lock the braked castors to prevent it from moving. Examine the 110v power supply cable and plug [do not use if any damage is found] and make a visual inspection of the valve and needle assemblies; replace any that are obviously damaged. Inspect the external filter fitted on the front panel - replace the 25 micron cartridge if it is fouled. When re-assembling the filter housing ensure the sealing gasket is fitted correctly.

Decide on the dilution rate of the wetting agent; most manufacturers of wetting agent will provide guidance specific to their product. The fluid reservoir holds 125 litres when filled to the top mark; as a guide to dilution 5 litres of concentrated wetting agent in a full tank is a 25 X dilution; 2.5 litres in a full tank is a 50 X dilution.

Add appropriate quantity of wetting agent and clean water to the reservoir, and fill to the level mark. If the wetting agent manufacturer doesn't specify how to mix the agent it is recommended to add water to the tank first, then the wetting agent afterwards.

Turn the lever valve to the position marked "Mixing", switch machine on and allow a few minutes for the wetting agent to mix and the system to purge of air [if necessary press the bleed valve on top of the water filter to purge completely]. At this time the switch marked "Continuous Feed" and "Cyclical Feed" should be switched to "Continuous Feed".



During "Mixing" the beacon will flash to indicate that fluid is not being delivered to the needle array (it is being returned to the reservoir).

Connect the yellow hose from the fluid outlet of the pump-unit to the inlet of the Pressure Control Unit (PCU). Now connect the needle arrays to the outlet(s) of the PCU. For your convenience standard needle arrays are supplied in sets of 50 needles configured in a "T" shape [with the feed being the vertical line and 25 needles extending in each direction as the arms of the "T"]. These sets can be re-configured with any number of needles from 1 - 50, providing no "arm" has more than 35 needles.

For up to 50 needles use only one outlet from the PCU; for 50 plus needles use both outlets.

Insert the needles into the asbestos containing material ensuring that they are at a depth that covers all the drilled holes in the stem. In certain types of hard or encased material pre-drilling holes [using a dust suppression technique] may be necessary to avoid damaging the needle. **DO NOT HAMMER THE NEEDLES IN.**

When ready to commence injection turn the lever valve from "Mixing" to the position marked "Delivery"; at this point you may, if you wish, select "Cyclical Feed" on the control panel switch - the machine will then feed fluid for five minutes, then pause for 5 minutes, and continue to repeat this cycle; at any time you can switch back to "Continuous Feed".

When in "Delivery" mode the light beacon will go out. If it starts to flash this is a warning that the delivery pressure to the needle array is low. Check the reservoir has plenty of fluid, ensure the filter housing is tight and the sealing 'O' ring is in place, and ensure the valve lever is turned to "Delivery". If the beacon still flashes call the supplier for advice.

When in use the reservoir tank may have to be re-filled; if so turn the control valve to "Mixing" [light beacon will start to flash], add clean water and wetting agent, and leave to mix for a few minutes. Turn control valve to "Delivery" and re-commence injection [light beacon will stop flashing].

Whenever possible injection should be from the top so that gravity will assist penetration; during the injection process, the effectiveness of fluid penetration needs to be checked regularly to determine whether the pattern of injection points is appropriate. Injection effectiveness will also vary according to the composition of the material to be treated and whether the substance is hydrophobic (hates water) or hydrophilic (likes water). Once the ACM is saturated switch the machine off, remove the needles and wipe clean. Clean and decontaminate hosing which has been in the working area, the PCU, and needle arrays. Dispose of wipes as contaminated waste.

AFTER USE: Pump out any residual fluid. Partially fill with clean water and operate pump to flush out chemical from pump, hose and needles; a small amount of washing up liquid will facilitate this. Drain all water from tank, hoses, and water filter. **ALWAYS PROTECT THIS EQUIPMENT FROM FROST !**

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