ACCESS MIST IRRIGATION SYSTEM KITS

Description of kits MAH/MAV.
All kits include professional quality mist nozzles and fittings.

Supply connections

Solenoid valve
The solenoid valve (**ESVA3**) should be fitted in a position lower than the top of the mist nozzles and shielded from direct mist spray. We recommend that a stopcock is fitted in the inlet pipework so that the system can be turned off for maintenance or filter cleaning. The solenoid valve is in the **MNSP** fittings pack. The direction of flow is marked on the underside of the solenoid valve.

Connecting to 20mm MDPE pipe
Fit the inlet side of the solenoid valve with a ¾" BSPF compression fitting to take 20mm MDPE pipe (**FLF20-3**). Seal the male thread using Teflon tape (**EPTFE-G**) supplied. If preferred, this fitting can be changed for a 15 or 22mm x ¾"F copper fitting, if the in-coming pipework is in copper.

Connecting to a ¾" tap
Fit the inlet side of the solenoid valve with a ¾" BSPF socket (**FPTS3**) seal the male thread using Teflon tape (**EPTFE-G**) supplied. Seal the male thread of the tap outlet using the Teflon tape and screw on the assembled socket/solenoid.

Solenoid outlet fittings
The solenoid valve outlet must be fitted with a barbed snout to accept 16mm polythene pipe. This is created by screwing on a ¾"BSPF/barbed fitting (**FBK16-3F**). This fitting has a built-in sealing washer for the solenoid outlet and a barbed snout for a length of polythene pipe (**PB16-1.2M**). This will link the solenoid valve to the mist line. Two barbed elbows (**FBE16**) are included for turning through a right angle, together with clips for holding the pipe neatly in position. Use hot water to soften the pipe before pushing fully onto the barbs of the fitting. Trim the polythene pipe so that it terminates at the beginning of the run of uPVC pipework.

MNBP pack
This basic pack gives the start and finishing fittings for each mist line. Assemble these fittings before gluing the lines together. The compression female elbow with a ¾" female thread (**FLE16-3F**) screws into a glued 20mm x ¾" BSPM connector (**FMK20-3**). Seal the male thread of the fitting using Teflon tape (**EPTFE-G**) supplied and screw onto the compression elbow.

Mist line pipework

Cementing the uPVC pipework
All chemicals will be supplied with a Safety Data Sheet please read carefully before using. Do not smoke and work in a well ventilated area. Before using the cement abrade all joining surfaces with clean emery cloth including the pipe ends and the insides of all the tees, elbows and sockets. If there is any sign of grease or dirt, clean with uPVC pipe cleaner before cementing.

The glue is quick setting so do one joint at a time. Cement the inside of the socket fitting first, and the outside of the pipe second. Ensure the plastic surfaces are completely coated with a

film of the cement, and push the two fittings firmly together whilst twisting. Wipe off any excess glue immediately and leave to set for a minute before starting on the next joint.

Wait 12 hours (summer)/24 hours (winter) before applying full pressure.

Depending upon kit supplied there will either be overhead horizontal pipework, or bench pipework with vertical risers.

Overhead mist line

Where overhead mist nozzles have been supplied, a straining wire is fitted down the midline of the bench fixed at a height of approximately 0.5m above the cuttings. It should rise slightly to the end to help expel trapped air. The straining wire will be under a great deal of tension when fitted so it is important to ensure the structure it is attached to will take the strain and it is securely fixed. At the required position anchor one end of the straining wire by wrapping it round a suitable structure. When finally fixed wrap tape around the cut wire ends. To tension the wire, fit a strainer at one end, anchoring it to a suitable structure using a length of wire. Cut the main suspension wire to reach just past the strainer, thread the cut end through the entry hole and the hole in the ratchet drum, and tighten with a 7mm spanner or grips. If necessary fit dropper wires at intervals along the run, to reduce catenary sag.

Wear suitable hand and eye protection when handling and cutting the straining wire.

The PVC piping is supplied as pre-cut lengths of 1m (40in.) for benches up to 1m wide, and 1.25m for wider benches. Tee assemblies are provided to receive the nozzles and to join the pipe lengths together. The first pipe should be cut in half to be used at the start and finish of the run.

Cement the first pipe length to its tee assembly. Cement the next pipe length into the open side of the first tee assembly. Fit the next tee assembly, as before. Take great care to keep the mist nozzles outlets in line. Once the line has been completed, it can be suspended from the overhead straining wire. Two ratchet straps are provided for each pipe length. Once the line is in position on the wire, check that the first and last nozzles are equally spaced from the ends of the bench, and trim the length of pipe at the entry end as required until it is immediately above the polythene pipe bringing water from the solenoid valve. Cement on the connector/compression elbow assembly from the MNBP pack with the inlet end pointing downwards. Cement onto the other end of the line connector (**FMK20-3**) with the threaded cap (**FMC3**).

Anti-drip inserts

For overhead systems anti-drip valves are supplied to fit turn the mist nozzle upside down and remove the filter from the nozzle housing, insert the anti-drip valve into the filter then re-insert the assembly. Before fitting the mist nozzles it is a good idea to flush through the pipework this should be done with a low pressure water supply only. After this screw in the mist nozzle assemblies sealing the threads with PTFE tape.

Riser mist line

The pipework is made up of 20mm x 0.5m risers which are cemented onto 20mm tees linked together with 1m lengths of 20mm piping (1.25m for benches over 1m wide). The first nozzle should be fitted approximately 0.5m from the end of the bench. The precise distance will depend on the actual length of the bench – the first and last nozzles in the run should be the

same distance from the end. Cut the pipe length to suit and pre-assemble the pipework before fitting to the bench.

To ensure the line of nozzles stay upright, cement the 0.5m riser into the odd leg of each tee as you go, keeping the risers flat on the floor as you progress along the line. After completing the full line, go back again and cement the 20mm X ½" sockets (**FMS20-2F**) to the tops of the risers. Transfer the pipework to the bench, and clamp down to the bench top using the pipe clips and screws provided, one per tee. The clips can be screwed down to a flat square of exterior grade plywood if preferred.

Cement on the connector/compression elbow assembly from the MNBP pack with the inlet end pointing downwards or towards the polythene supply pipe if not coming from below and fit into the last tee the remaining half length of PVC pipe. Glue on to the end the connector (**FMK20-3**) with the threaded cap (**FMC3**). If preferred, the piping can be passed out through the end of the bench, and the connector and cap fitted on the outside.

Connecting mist line to supply pipework
Slacken the cap on the compression fitting on the mist line inlet, and push the polythene pipe right in so that it bottoms out on the stop. It must go through the rubber ring inside the fitting, then tighten the lock nut.

Fixing the controller
Fix the controller in a position well clear of the mist, and out of direct sunlight. To gain access to the fixing holes unscrew the 4 x plastic screws securing the front cover and hinge open the cover. The fixing holes are located in the shafts of the securing screws.

Electrical connections
The controller should be protected with an RCD. The controller is pre-wired to a 13 amp plug. This should be fitted to a suitable 230vac 13 amp socket out of the reach of the mist. The solenoid cable is pre-wired, the terminal receptacles push on to the spade terminals on the solenoid valve coil.

The wet leaf has 2.5m length of cable pre-wired

The Wet Leaf sensor
The wet leaf sensor should be pushed into a pot or tray with the top horizontal, and in a position where it will receive the mist. Do not finger the top of the wet leaf, or it will leave a greasy fingerprint which will make the water stand up in bubbles instead of spreading over as a thin film. It may help to wet the top with a very weak household detergent.

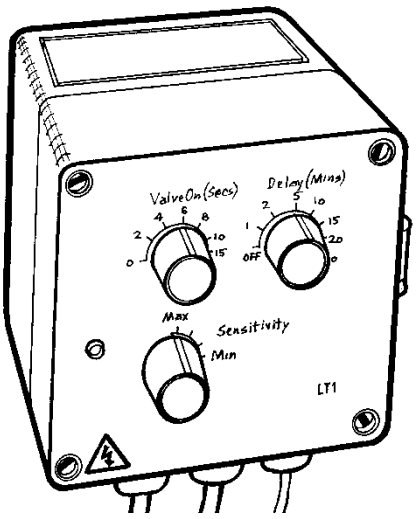
Testing
Set the controller "Valve on" time to 20 sec. And the "Delay" time to zero. Turn the water on, and turn the power on to the controller. Loosen the end cap slightly to release any trapped air when there is no more air coming round the threads of the loose end cap, screw up tightly. Then check that no joints are leaking. The system may give several bursts initially to bring the leaf up to the required degree of wetness.

Operating pressure
Mist propagation lines need an operating pressure of 3.5 bar (50 psi) to obtain a fine particle size and good cover right to the edges of the bench.

Operating instructions

The controller can be used in 3 modes:

1) As a wet leaf controller, fully under control of the wet leaf.
2) On a timed basis, with the wet leaf over-riding to prevent operation if the leaf is still wet.
3) On a timed basis only, without the leaf.



Leaf operated only

Set the time on the right hand DELAY knob to 0. Set the left hand VALVE ON knob to the required mist burst time – start with 10 or 15 sec. As cuttings root, this time can be reduced to wean the cuttings.

Time operated only

In very hard water areas avoid problems with limescale on the leaf by disconnecting the leaf. The unit will then operate at whatever interval is set on the right hand DELAY knob and give bursts the length of which are controlled by the left hand VALVE ON knob. If you do not want the unit to operate at night, the controller can be plugged into a plug-in time switch

Combination leaf and time

This utilises both the leaf and a time interval, so ensuring that if there is any problem with the leaf, the unit will continue to operate at preset intervals. Set the right hand DELAY knob to say 2 mins. Set the left hand VALVE ON knob to the required mist burst length, say 5 seconds. If the leaf is still wet after the set delay time interval it will over-ride the timer and the mist burst will not operate. The timing clock will be reset and will recycle until the leaf dries out. This combination ensures the cuttings will not get too wet in dull weather or at night time. The sensitivity of the leaf can be adjusted by turning the control knob on the case.

Weaning

As the cuttings root they can be weaned from the mist by decreasing the mist burst length or increasing the interval if using the timer mode.

Sensitivity switch

This will determine how dry the leaf must be before the irrigation is started. Minimum sensitivity means the leaf will be wetter when it starts its irrigation cycle. Start off on the middle setting. Different water sources vary in their conductivity, and this knob allows adjustment.

The Flashing LED Light

The red LED light will flash every ½" second when the controller is in the delay between misting cycles.

The red LED light will stay on when the solenoid valve is on, and return to its flashing state after the valve switches off.

To switch unit off temporarily

Set the burst knob to 0. Unplug the unit for longer-term switch off.

Positioning the wet leaf

The position of the leaf will have a marked effect on the operation of water to the mist jets. As soon as sufficient water is collected on the surface of the leaf misting will stop.

The quicker water is collected on the leaf surface the shorter the mist burst length and vice versa.

The most effective position will have to be determined by moving the sensor to suit your requirements.

With the leaf set mid-way between jets fig 2-1.), mist is collected by2 mist jets, which will give a short mist burst. With the leaf set at the edge of a bench but opposite a mist jet (fig2-3.) the length of mist will be at its longest. With the leaf set at the edge of the bench but opposite 2 mist jets (fig 2-2.) will afford an intermediate mist burst.

The height at which the leaf sensor is set will also have an effect on the mist burst length.

If the leaf is set just below the mist jets (fig3.) the burst length will be short, and if the leaf is set lower (fig3.) this will result in a longer mist burst.

By adjusting the height and position of the leaf sensor it is possible to finely tune the application rates as necessary for your specific requirements

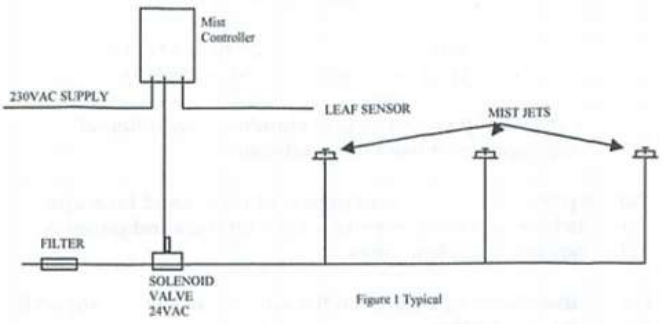


Figure 1 Typical

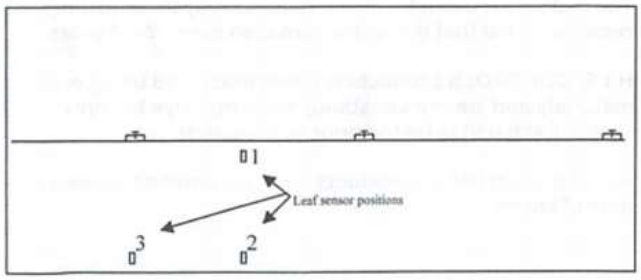


Figure 2

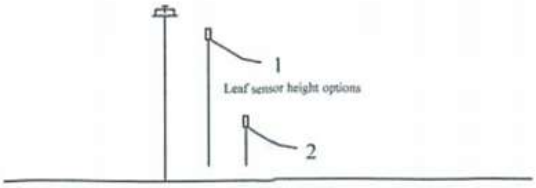


Figure 3

Periodic maintenance of wet leaf sensor

It is important from time to time to clean the top of the wet leaf, particularly if in a hard water area. Switch off the mains electricity supply, turn the wet leaf upside down, and rub it round gently in a circle on a piece of fine sandpaper or emery cloth laid face up on a flat surface. Clean the wet leaf until the two electrodes are free from deposits and flush with the surface. Do not touch the wet leaf top with your fingers, or this will leave a greasy film that will give erratic results. It helps to deliberately de-grease the top of the wet leaf with a weak detergent solution. When replacing the wet leaf, remember to keep the top absolutely level.

Caution

Never leave the system operating with the mains water supply turned off**.** In this situation, the wet leaf is continuously calling for water, but no water comes through the solenoid valve, which means that the coil runs hot and will after a time, burn out.

If the system is installed in a greenhouse or building which is subject to **frost** in winter, the solenoid valve and pipework should be drained before the cold weather arrives. Switch off the mains electricity supply, and turn off the mains water stopcock. Loosen the compression fitting at the start of the mist line and pull the pipe free so that the water can run out from the solenoid valve and from the mist line itself.

Troubleshooting

Dry edges to bench area

If the edges of the bench are dry, first check the spec of the mist nozzles. The nozzles with the 0.6mm (MA24) have an **anvil** which is turned down to give a chimney pot appearance. This nozzle is suitable for benches up to 1m (3ft.) wide. For wider benches, the 0.8mm (MA32), which has a plain, square anvil is required. If these are correct, check for operating pressure.

If the pressure range is less than 3.5bar (50 psi), the mist will not spread far enough. If your mains pressure is too low, a pressure booster set may be required.

If the edges of the bench have been wetted thoroughly in the past, but are now dry, this could be due to dirt building up on the solenoid valve filter screen. To inspect the filter, turn off the mains water supply and loosen the cap on the compression fitting on the inlet of the solenoid valve and dis-connect the in-coming mains pipe. Unscrew the compression fitting. Wash out the filter screen. When re-fitting the compression fitting inside the solenoid inlet, ensure that the rubber sealing ring is present inside.

Irregular Spray Pattern with some Plant Trays Dry

If after some time, the spray pattern from one or more of the nozzles appears to be ragged, first check for blockage of the jet itself by removing the anvil and taking out the jet. Take care not to damage the hole – use a fine wire to poke it clear. If this does not improve the pattern, there may be a build up of lime both on the nozzle tip and the anvil. If you look down into the water film spreading away from the anvil when the nozzle is working, there should be a clean, complete circle or plate moving away from the anvil, with no 'fingers' or gaps. Cleaning the jet and anvil will make a dramatic difference to the pattern, restoring the nozzle to its original performance. Use fine 'wet and dry' paper, sliding a strip of this between jet and anvil. Press the centre of the anvil frame towards the jet to trap the water gently. Slide the paper backwards between jet and anvil, then turn it upside down and repeat the process with the opposite face. Take care not to remove any metal – the object is simply to burnish the jet tip and anvil.

Each nozzle has a filter built into the ½" thread. Check that the nozzle filter has not become blocked. If all the nozzles are showing a ragged pattern, suspect a drop in pressure (see filter cleaning, above).

Dripping from Anti-Drip Lines

If mist nozzles in the overhead line drip for some while after the solenoid valve has switched off, and the build-up of mist is also slow, suspect trapped air in the pipework. There may be a leak in the pipework between the solenoid valve and the beginning of the mist line, which is allowing air to enter. Re-check the tightness of the threaded joints. With long runs of mist line, it helps to slope the straining wire upwards slightly to the stopend, to make sure that air bubbles do not stick partway along the pipe run. Slacken the end cap and bleed off any accumulated air. Re-tighten when satisfied all the air has been driven out.

Erratic Operation

If the system sometimes stays on for longer than it should, check that the wet leaf is horizontal, and that the surface is smooth and free from lime deposits. Clean the top of the wet leaf, as described under 'Periodic Maintenance', above. With time, the electrodes in the wet leaf corrode, and the average life of wet leaf is usually 3-4 years. Replacements are available. (MWL-2.5M).

System Stuck On

If the mist nozzles continue to spray after the electricity to the controller has been switched off, the solenoid valve has stuck in the 'open' position. This is usually due to debris becoming trapped under the diaphragm inside the solenoid valve. Remove the coil from its spindle, and unscrew the white stem over which the coil fitted. If the solenoid has 4 screws dismantle by removing these screws instead. Take care to catch the plunger and spring, which may easily fall to the ground. Lift up the diaphragm, and inspect the seating to remove any foreign objects. Inspect the pilot in the centre of the diaphragm, to make sure it is clear, and also the smaller hole in the diaphragm itself, below the nylon disc. Replace the diaphragm, spring and plunger, making sure that the rubber seal in the bottom of the plunger is facing downwards.

Tighten the top firmly, replace the coil on its spindle, and try the system again.

Heat Mats
Where heat mats are used, it is possible for a voltage to be induced in the wet leaf lead, giving a false signal to the control panel. This can be avoided if the cable runs at least 0.3m (1ft.) away from the foil.

Blanking off mist nozzles
Individual nozzles can be blanked off by using a ½" X ¾" threaded nipple (FPTN3-2) and blanking cap (FMC3).

Controller faults
If the controller LED never comes on, then there is a problem with the controller or there is no mains supply.

You should check the mains supply first.

If the LED never goes off then there is a problem with the controller. Reset the controller by disconnecting the mains supply and switching it back on.

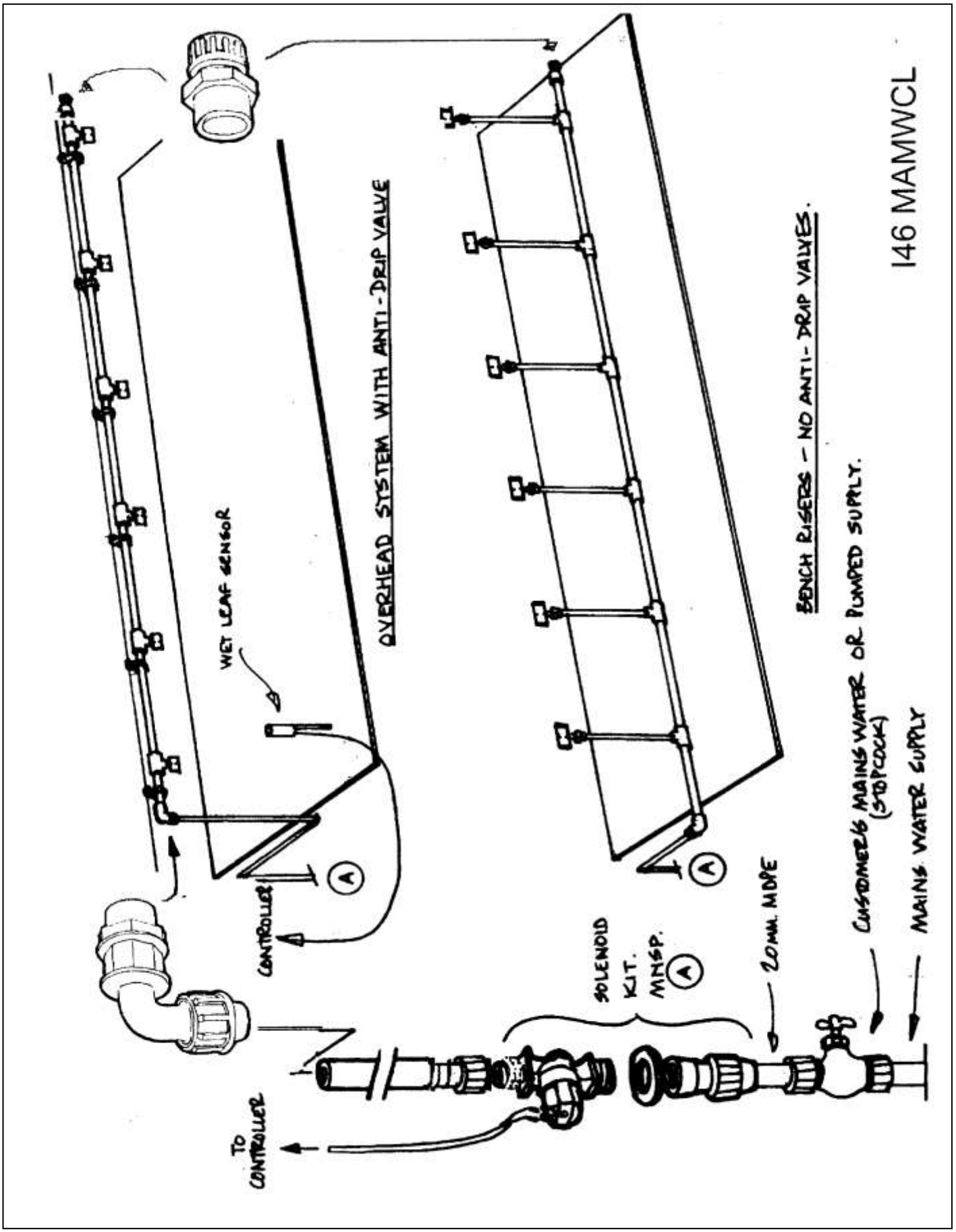
Fuses
There are two internal fuses:-

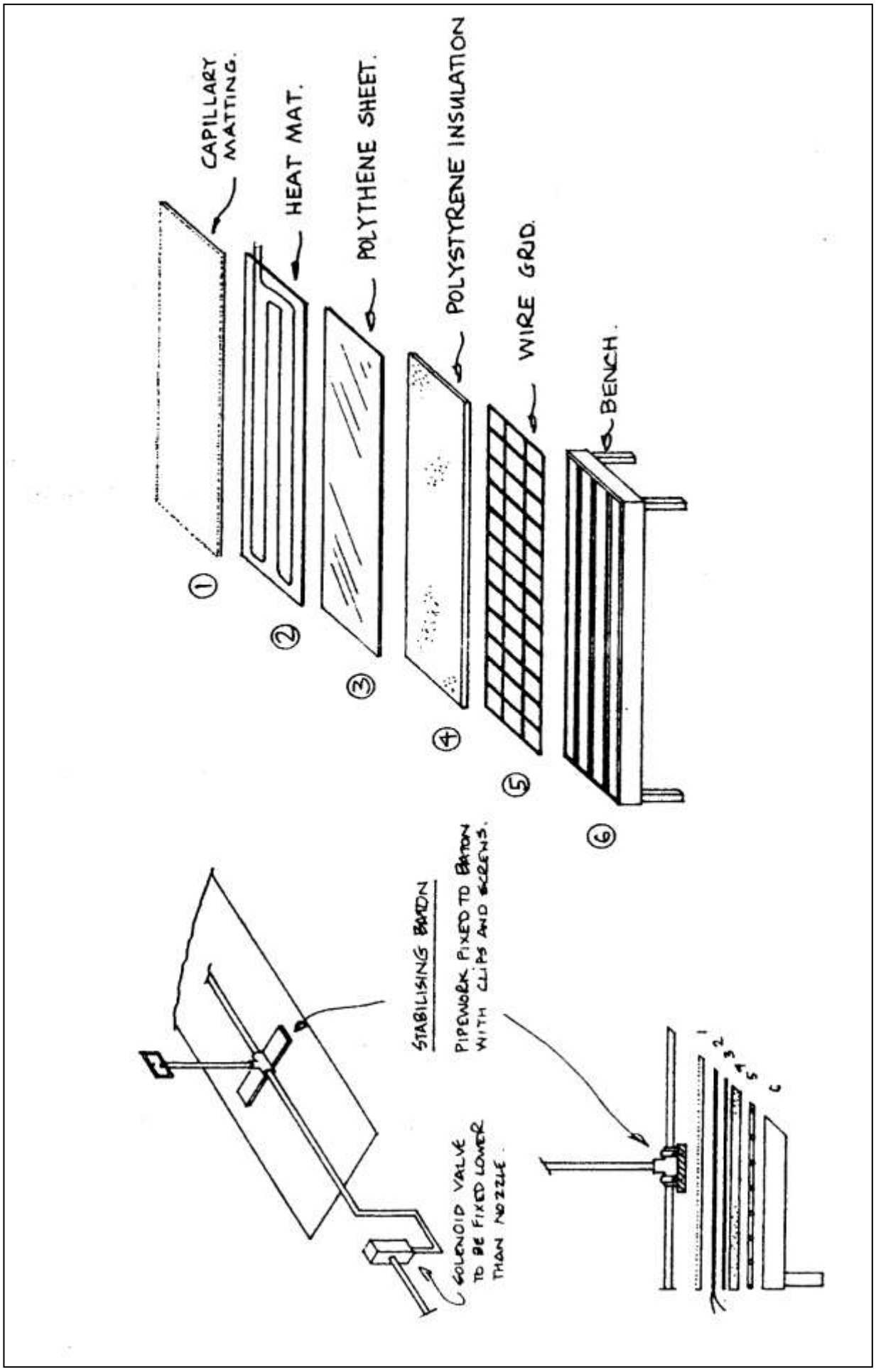
Solenoid Valve Output Fuse: (in lid of controller) 0.3A slow blow. **Mains Input Fuse**: (in base of controller) 0.25A slow blow.

UK water regulations require backflow prevention. The Local Water Authority must be consulted for specific requirements prior to installing this system.

Irrigation systems should only be installed by a competent person

ACCESS Irrigation Ltd, Crick, NORTHAMPTON NN6 7XS
Tel: 01788 823811 Fax: 01788 824256
web: www.access-irrigation.co.uk e-mail: sales@access-irrigation.co.uk


I46 MAMWCL
OVERHEAD SYSTEM WITH ANTI-DRIP VALVE
WET LEAF SENSOR
CONTROLLER
BENCH RISERS – NO ANTI-DRIP VALVES.
CUSTOMERS MAINS WATER OR PUMPED SUPPLY.
(STOPCOCK)
MAINS WATER SUPPLY
20mm MDPE
SOLENOID KIT. MHSP.
TO CONTROLLER


CAPILLARY MATTING.
HEAT MAT.
POLYTHENE SHEET.
POLYSTYRENE INSULATION
WIRE GRID.
BENCH.
1
2
3
4
5
6
STABILISING BATON
PIPEWORK FIXED TO BATON WITH CLIPS AND SCREWS.
SOLENOID VALVE TO BE FIXED LOWER THAN NOZZLE.