We hereby declare that this product complies with the essential requirements of the Electromagnetic Compatibility Directive (EMC) 89/336/EEC and the safety requirements of the Electrical Equipment Directive (LVD) 73/23/EEC.

Product Description: Enviro Liner Welding Gun, Geomembrane Repair Tool
Manufactured in the UK for: Layfield Environmental Systems (www.geomembranes.com)

This product has been designed and manufactured in accordance with the following transposed harmonised European Standards:

- EN 60335-2-45:1990 (Electrical Safety) (LVD)
- EN 55014-1: 1997 Electromagnetic Compatibility (EMC) (Emission)
- EN 61000-3-2:1995 (EMC) (Emission)
- EN 61000-3-3:1995 (EMC) (Emission)
- EN 55014-2: 1997 (EMC) (Emission)

PLEASE READ THESE INSTRUCTIONS CAREFULLY BEFORE USE
STEPS 1 & 2 SHOULD BE FOLLOWED BEFORE CONNECTING TO POWER

1. Insert plastic stand provided onto the base of the tool and set on provided metal base. Set tool on a flat surface.
2. Load tool by inserting repair rod into rear of tool. Operate trigger to feed rod forward until resistance is felt.
3. Connect tool to power supply and switch on (see Data Plate for Voltage). Red indicator light will illuminate.
4. Wait 10 minutes for tool to reach operating temperature. Do not attempt to use the tool until this time has elapsed, as unnecessary strain may be put on the feed mechanism.
5. Squeeze trigger to extrude repair material – release to stop extruding – material flow is regulated by trigger pressure. Due to the tool’s large capacity heater housing, it will be necessary to operate the trigger several times, reloading a new rod, before repair material is extruded. This will only be necessary once, on initial start up when new, to evacuate air from the material reservoir.
6. RELOADING: As the trigger is operated the repair rod will be pulled into the tool. When the rod disappears into the rear of the tool a new rod should be inserted.
To switch tool off, disconnect from the power supply.

SPECIAL PRECAUTIONS

When using repair rods certain procedures need to be followed to ensure trouble-free use of this tool.

If the tool is left switched on for long periods without use, heat from the housing will eventually conduct through the repair rod which protrudes from the inlet tube area. The rod in this area will then begin to soften. As the repair rod at this point is used by the feed mechanism to drive the rod forward through the heater housing, it is necessary to keep it as cool as possible. If the rod softens restricted or no flow will be experienced. This will result in “bunching” or distortion of the rod as the trigger is operated, visible in the tools open breach - see maintenance section.

- The heated head on this tool is extremely hot (approx. 290ºC/554ºF) – use caution and avoid contact.
- If molten repair material is accidentally deposited on the skin, immerse immediately in cold water. Do not attempt to remove large amounts of repair material from your person without seeking proper medical advice first.
- Use caution in wet areas or outdoors to make sure the tool does not get wet. Ensure that the tool is connected via a correctly grounded power outlet. If user elects to use an extension cord, examine carefully for defects and ensure that it is properly grounded.
- Ensure tool is unplugged from power supply before attempting repair. Repairs should only be undertaken by competent persons who have adequate electrical knowledge. If in doubt consult your supplier.

SWITCH TOOL OFF IF NOT TO BE USED FOR 10 MINUTES OR MORE.
MAINTENANCE SECTION

BEFORE ATTEMPTING ANY REPAIR OR MAINTENANCE OPERATION DISCONNECT TOOL FROM THE POWER SUPPLY. USE OF PROTECTIVE GLOVES IS RECOMMENDED.

Other than those areas detailed below, we recommend that maintenance be limited to:-

- Keeping the nozzle externally clean (by wiping after use and while still warm).
- Periodic cleaning of the nozzle (to ensure smooth repair material application).

FOR OTHER REPAIRS CONTACT YOUR SUPPLIER.

REPAIR ROD “BACK UP”

This is when molten repair rod material is forced between the repair rod and inlet tube wall. It normally occurs if the nozzle is blocked, or if the tool has been operated before having reached operating temperature.

Remedy :- Allow tool to stand for a few minutes and try again. If nozzle blockage suspected clean nozzle.

“Back up” is normally self-clearing during normal operation due to the tool's non-stick inlet tube.

If the tool has been switched off in a “backed up” state after previous use, it may show symptoms of slow warm up, and may take a little longer than normal before repair material can be extruded

REPAIR ROD “BUNCHING” AT INLET TUBE.

This will only occur when the tool is left unused for longer than the recommended time. To clear any bunching, cut the repair rod as close to the inlet tube as possible. Remove the unused portion, reload with a fresh rod and operate normally.

FAULT LOCATION:

<table>
<thead>
<tr>
<th>PROBLEM</th>
<th>POSSIBLE CAUSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>No heat or little heat</td>
<td>Blown fuse (if applicable).</td>
</tr>
<tr>
<td></td>
<td>No power at wall socket.</td>
</tr>
<tr>
<td></td>
<td>Broken or cut Power cord. Replace as necessary.</td>
</tr>
<tr>
<td></td>
<td>Faulty thermostat/temperature controller. Contact your supplier for service.</td>
</tr>
<tr>
<td>Overheating</td>
<td>Faulty thermostat/temperature controller. Contact your supplier for service.</td>
</tr>
<tr>
<td>Reduced Repair Material Flow</td>
<td>Improper heating of repair material.</td>
</tr>
<tr>
<td></td>
<td>Nozzle contamination or damage.</td>
</tr>
<tr>
<td></td>
<td>Restricted feed mechanism operation.</td>
</tr>
<tr>
<td></td>
<td>Repair rod stuck in chamber due to material “back up”.</td>
</tr>
<tr>
<td></td>
<td>See relevant section above.</td>
</tr>
<tr>
<td>Excessive Nozzle Drip</td>
<td>Repair material “back up”. See relevant section above.</td>
</tr>
</tbody>
</table>
Enviro Liner Welding Gun Instructions

Using the Enviro Liner Welding Gun

The Enviro Liner Welding Gun is a low cost, manually operated, extrusion welder for small repairs in thermoplastic geomembranes. The Enviro Liner Welding Gun will repair all Enviro Liner® brand geomembranes. The Enviro Liner Welding Gun will also repair other polyolefin materials if compatible welding sticks are available. Check with your Layfield distributor or representative for available welding sticks.

You will need four things to perform a repair with this welding gun.

- The welding gun itself
- Power source (grounded)
- Welding Sticks (compatible with the geomembrane)
- Enviro Liner welding tape (for tacking welds)
- Repair material (left over materials from site or order new material)

Prepare the site for a welding repair. The area needs to have all liquids drained and the surface of the geomembrane needs to clean and dry. Clean the surface of the geomembrane with water and rags.

Note!

Complete a site safety hazard assessment before using the Enviro Liner Welding Gun. Obtain all work permits required (including a hot work permit if necessary). Do not use this gun in a potentially explosive atmosphere as it is not intrinsically safe (the thermostat in this device may create a spark). Follow all electrical safety requirements on site. Use grounded outlets and extension cords only. Use of ground fault interrupter devices is recommended.

Gather your tools and equipment to make the repair. You will normally be using left over material from the project installation. Make sure this material is clean. If it has been in contact with solvents, fuels, or oils then order new repair material from Layfield. You will need a knife to cut material, rags to keep the area clean, and a spare piece of liner (or a piece of plywood) to prevent your tools from damaging the geomembrane. Use the stand provided to hold the Welding Gun when not in use.

Note!

Wear all personal protective equipment required by the job. In addition we recommend that you wear safety glasses in case the welding gun sputters and gloves to guard against hot plastic.

Prepare the patch and tack the patch over the defect. The Enviro Liner weld tape is used to hold the patch in place during welding. Cut your patch first and then apply the weld tape to the edge of the patch. The tape should come right up to the edge of the patch, approximately 2 mm (0.1”) from the edge. Place the weld tape continuously around the edge of the patch. If for some reason your weld is not perfect, the weld tape can form a back-up seal.

Once you have outlined the patch with the weld tape, remove the backing paper and apply the taped patch to the defect. Press the patch in place. Your patches should extend about 50mm (2”) past the defect in all directions. You should also round the corners of your patches. Round the last 25mm (1”) of your corners. Try and apply the patch smoothly.

Outline the patch with EL weld tape. You will have to tear the release paper to get the tape around the corners.
weld tape as close to the corner as possible (bend the tape around the corner—see picture). In cold temperatures you may have to warm the patch and the liner to get the tape to stick.

When it is safe to do so, plug in the Enviro Liner Welding Gun and let it warm up 10 minutes. A light on the switch will light when the unit is plugged in and operating. Start pressing the trigger to extrude plastic through the tip. Keep the tool over the scrap geomembrane or plywood working surface when warming up and when testing. Wait until plastic flows freely through the tip when you pull the trigger before starting welding.

The welding tip has a step on it. Arrange the tool so that the lower part of the step is on the lower sheet of plastic and the higher part of the step is on the plastic patch. This will require that you weld in a particular direction (counter-clockwise around a patch). Arrange yourself and your extension cord to weld in this direction.

The shoe of the welder is heated so that it preheats the surface of the plastic (grinding or scuffing is not required). Place the shoe on the plastic surface and pull the trigger repeatedly to extrude plastic. As extruded plastic comes out of the shoe guide the welding gun towards the trigger. It takes a bit of practice to coordinate squeezing the trigger with moving the gun. Practice before attempting a repair.

Keep the shoe aligned on the overlap. You will probably have to get down and look between the gun and the plastic to keep things lined up. There is also an arrow on the top of the welding shoe to help you line it up. Practice on scrap material before making a repair.

Try to keep the welding shoe in full contact with the liner. This will normally require a bit of practice to keep the gun level while pulling the trigger of the gun repeatedly. Be careful not to press too hard on the gun. The weight of the gun is sufficient to keep the shoe in contact with the liner. You don’t need to press down.

Allow the extrudate to cool naturally—do not cool with water. Inspect the patch carefully. Make sure the extrudate covers both sides of the material. If an area of the weld is missed then apply additional extrudate to fill. Use a small screwdriver to pick at the inside and outside edges of the weld to make sure you have a good bond. If your first patch is not successful then cut a patch 150 mm (6") larger than the first one and repeat these instructions to cover entire first patch.
GUARANTEE

This tool is guaranteed against faulty workmanship, materials and malfunction for a period of 12 months from the date of purchase.

This guarantee does not apply:

1. If the tool has been dropped, damaged due to careless handling or has not been used in accordance with the manufacturer’s instructions.

2. If the tool has been modified in any way.

3. If the tool has been opened or the serial number removed or defaced or the electrical cable has been damaged or replaced.

The manufacturer undertakes to repair or replace at their discretion. The tool must be returned to the distributor or manufacturer freight prepaid.

Seller’s and Manufacturer’s only obligation shall be to replace such quantity of the product proved to be defective. Neither Seller or Manufacturer shall be liable for any injury, loss or damage direct or consequential, arising out of the use or inability to use the product. The user shall determine the suitability of the product for his/her intended use and the user assumes all risks and liability whatsoever in connection therewith.