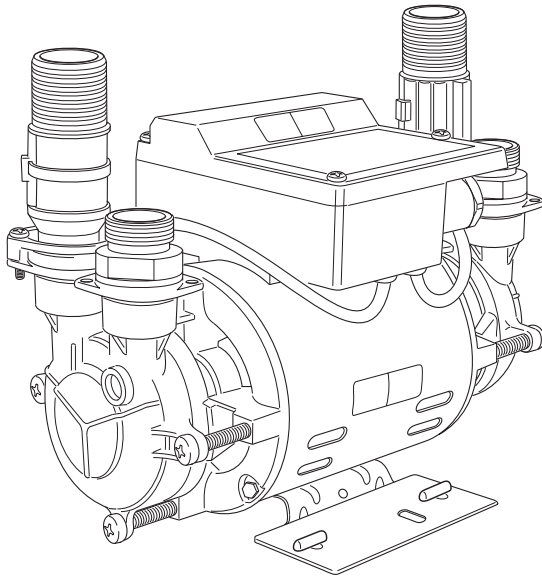


# ***mira*** ***enduro***



**SHOWER PUMP**

**Installation & User Guide**

**THESE INSTRUCTIONS ARE TO BE LEFT WITH THE USER**

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# IMPORTANT SAFETY INFORMATION



## 1. Warning!

- 1.1. Products manufactured by us are safe and without risk provided they are installed, used and maintained in good working order in accordance with our instructions and recommendations.
- 1.2. **THIS APPLIANCE MUST BE EARTHED. ENSURE SUPPLEMENTARY BONDING COMPLIES WITH THE "REQUIREMENTS FOR ELECTRICAL INSTALLATIONS".**

In accordance with the current edition of 'The Plugs and Sockets (Safety) Regulations' in force at the time of installation, this Mira Enduro is intended to be permanently connected to the fixed electrical wiring of the mains system.
- 1.3. The Mira Enduro must not be fitted where it may be exposed to freezing conditions. Make sure that any pipework that could become frozen is properly insulated.
- 1.4. **DO NOT** operate the Mira Enduro if it is frozen. Allow the Mira Enduro to thaw before using again.
- 1.5. **DO NOT** operate the Mira Enduro if water leaks from the unit, maintenance will be required before the Mira Enduro can be safely used.
- 1.6. **DO NOT** allow the Mira Enduro to be run dry.
- 1.7. **DO NOT** run the pump without the guards and covers correctly fitted.
- 1.8. The flow of air around the motor must be dust free and unimpeded as the pump motor is air cooled.
- 1.9. The inclusion of a Residual Current Device (RCD) (Earth trip) with a trip current of 30mA is recommended. This may already be part of the consumer unit.
- 1.10. There are no user serviceable components beneath the cover of the Mira Enduro. Only a competent tradesperson should remove the cover.
- 1.11. If any of the following conditions occur, isolate the electricity and water supplies and refer to "**Consum r Car** ", on the back page of this guide.
  - 1.11.1. If the guards and covers are not correctly fitted and water has entered.
  - 1.11.2. If the guards or covers are damaged.
  - 1.11.3. If the Mira Enduro begins to make an odd noise, smell or smoke.
  - 1.11.4. If the Mira Enduro shows signs of a distinct change in performance, indicating a need for maintenance.
  - 1.11.5. If the Mira Enduro is frozen.
- 1.12. Turn off the electrical and water supplies before removing guards or covers. The electricity must be turned off at the mains and the appropriate circuit fuse removed, if applicable.

- 1.13. Mains connections are exposed when the guards and covers are removed.
- 1.14. Moving parts are exposed when the guards and covers are removed.
- 1.15. Refer to the wiring diagram before making any electrical connections.
- 1.16. Ensure all electrical connections are tight, to prevent overheating.

## 2. Caution!

- 2.1. Read all of the instructions and retain this guide for later use.
- 2.2. Pass on this guide in the event of change of ownership of the installation site.
- 2.3. Follow all warnings, cautions and instructions contained in this guide.
- 2.4. Follow all warnings, cautions and instructions contained on or inside the Mira Enduro.
- 2.5. The electrical installation must comply with the "Requirements for Electrical Installations" commonly referred to as the IEE Wiring Regulations, or any particular regulations and practices specified by the local electricity supply company, in force at the time of installation. The installation should be carried out by an electrician or contractor who is registered or is a member of an association such as:

2.5.1. Connect Councils for Electricity (Installations and Contractors) Tj0-1.152 T-0.0001  
 2(2.2.)T/F1 1 Tf2.844 0 Tc-0.1326 Tc-0.1622 Tn. Tor El ctri Cr contrac An

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 Socias)ghBuildWiring Regulatins, or w(particular regulations and pra

# INTRODUCTION

Thank you for purchasing a quality Mira product. To enjoy the full potential of your new product, please take time to read this guide thoroughly, having done so, keep it safe for future reference.

## DESCRIPTION

The Mira Enduro twin impeller regenerative pump is designed to receive a hot and cold gravity supply and provide a pressurised hot and cold supply to a mixing valve, refer to Figure 2.

### Pump Location

The pump is more effective when pushing water along a pipe rather than pulling. Thus the pump is best positioned as close to the hot water or blend water source as possible to reduce cavitation (air bubbles) in the pipes. The greater the static (inlet) water pressure on the pump the better it will operate (see Fig. 2). Thus positioning a pump at high level is not advantageous, and may result in inferior performance.

If it is not possible to locate the pump in the preferred area due to site limitations and it is necessary to position the pump at high level, or in a position above the secondary tapping that feeds the pump, then there is an increased risk of air locks. This risk must be eliminated.

Due consideration should be given to the pump position as any noise generated may be amplified by installation conditions such as reverberant panels, bare floorboards, etc.

Make sure adequate free ventilation is provided (minimum clearance of 80 mm around all sides of pump).

The hot water storage temperature should not exceed 60°C. Operation at this temperature will also reduce the rate of formation of limescale in the system.

The stored hot and cold water volumes should be sufficient for the required duty, typical flow rates for a shower outlet are 10 l/min. Instantaneous or combination heaters are not suitable. It is not recommended that other services use the same feed pipework as the mixer valve or pump unit as operation problems may occur.

## OPERATION

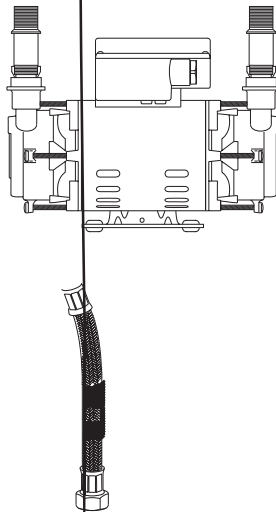
The pump would normally start automatically when the mixing valve is set to open. When the flow rate through the outlet pipe is more than 0.5 l/min a magnetic float lifts and closes the contacts of the flow switch sensor. When this occurs the electrical circuit to the motor is completed and the pump operates. The opposite action occurs when the flow stops.

A vertical distance of 100 mm between the water discharge point of the shower outlet and the base of the cistern would typically achieve the flow rate required. However, long pipe runs or restrictive terminal fittings will increase the gravity head required to produce the required flow.

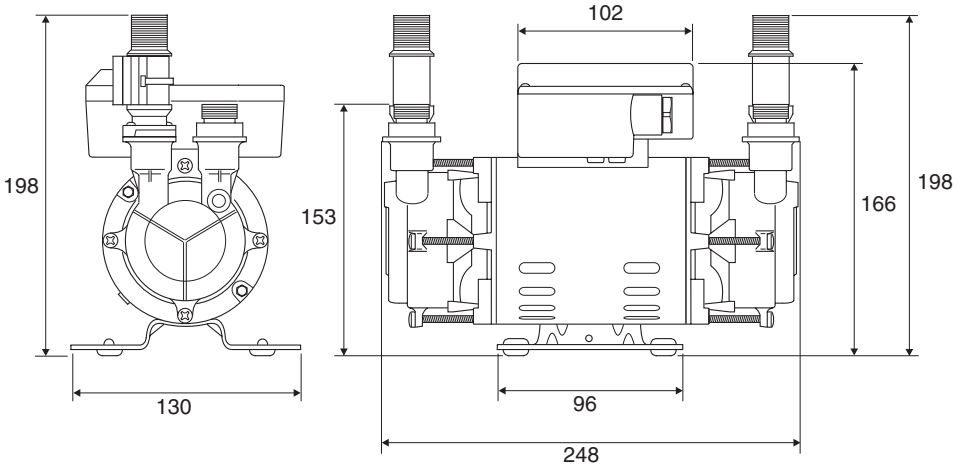
To overcome an initial low flow rate in the outlet pipe it is possible to by-pass the function of the flow switch by the addition of a momentary action switch connected in parallel with the flow switch (as shown in figure 8). When the mixing valve is set to on and the switch operated, the pump will run. The pump will maintain the necessary flow rate in the outlet pipe and will continue to operate until the mixing valve is set to off.

## PACK CONTENTS

- Examine the contents of the pack and tick the appropriate boxes to familiarise yourself with the part names and to confirm that all parts are included.



# DIMENSIONS



All dimensions are nominal and in millimetres

Figure 1

# SPECIFICATIONS

## 1. Weight

Mira Enduro Shower Pump = 7.7 kg (Packed)

## 2. Ambient Temperature

The ambient temperature around the pump must not exceed 40°C.

## 3. Electrical

**3.1. Protection** - the motor is fitted with a self-resetting thermal overload trip. Enclosure protection to IP22 Class F insulation.

**3.2. Duty** - continuously rated.

**3.3. Power Supply** - single phase 230 - 240 V, 50 Hz fused supply through a double pole, switched connection unit fitted with a 5A fuse and with a minimum of 3mm contact separation gap between terminals.

**3.4. Absorbed Power** - approximately 518W at 2.3 amps.

## 4. Water

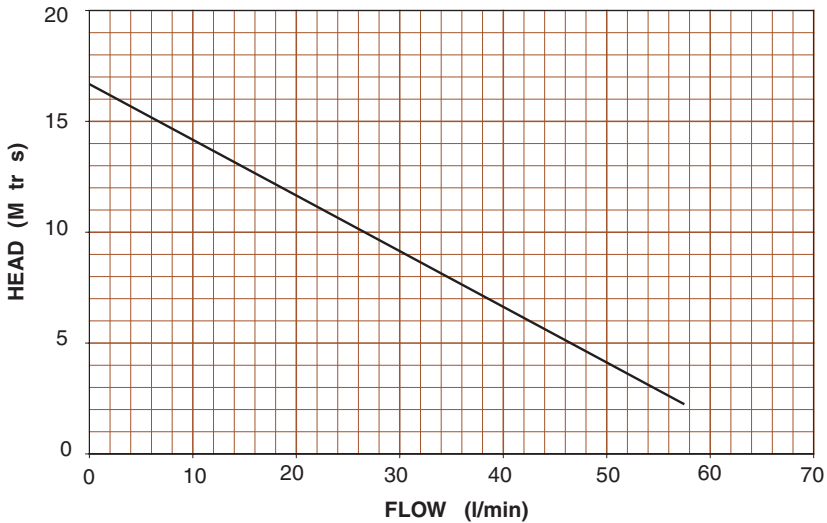
**4.1. Maximum Hot Water Temperature** - 65°C. The use of hot water above 60°C is not recommended as this may lead to an increased risk of cavitation, (air bubbles) which increases the pump noise generated and can lead to a reduction in the ultimate service life. It is recommended that the stored temperature of water should never exceed 65°C. A stored water temperature of 60°C is considered sufficient to meet all normal requirements and will minimize the deposition of scale in hard water areas.

**4.2. Delivery Rates** - See Pump Performance Graph. This is for the pump with external flow switch only. Terminal fittings and associated pipe work will reduce this figure.

**4.3. Inlet Pressure** - Minimum inlet static pressure 0.1 bar must be maintained at all times. Maximum static inlet pressure 1.4 bar

## 5. Standards and Approvals

The Mira Enduro complies with all relevant directives for CE marking.



Mira Enduro Shower Pump Performance Graph

## 6. Plumbing Connections

**6.1.** Inlet and outlet - Kohler Mira recommend only the use of their 22 mm flexible hoses.

The hose is fitted with plastic push-in connectors on one end, which **must** only be connected with the following:

- a) 22 mm diameter copper pipe to BS EN 1057-R250 (half hard) - Table 3.
- b) 22 mm plastic pipe to BS 7291 part 1 and part 2 (Table 1) or part 3 (Table 1) plus internal support sleeve.

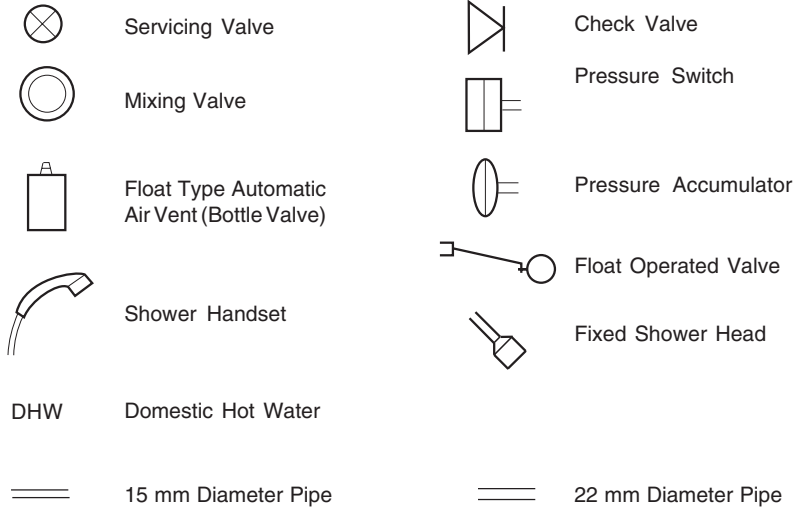
**Not !** The internal bore of the plastic pipe must be supported against collapse with the pipe manufacturers recommended support sleeve (pipe insert).

c) Appropriate plumbing fittings from the John Guest 'speedfit' push-in plumbing fitting range.

**Not !** Other manufacturers fittings are not necessarily compatible and may not provide a water tight connection.

# INSTALLATION

Key to symbols used in the system layouts:

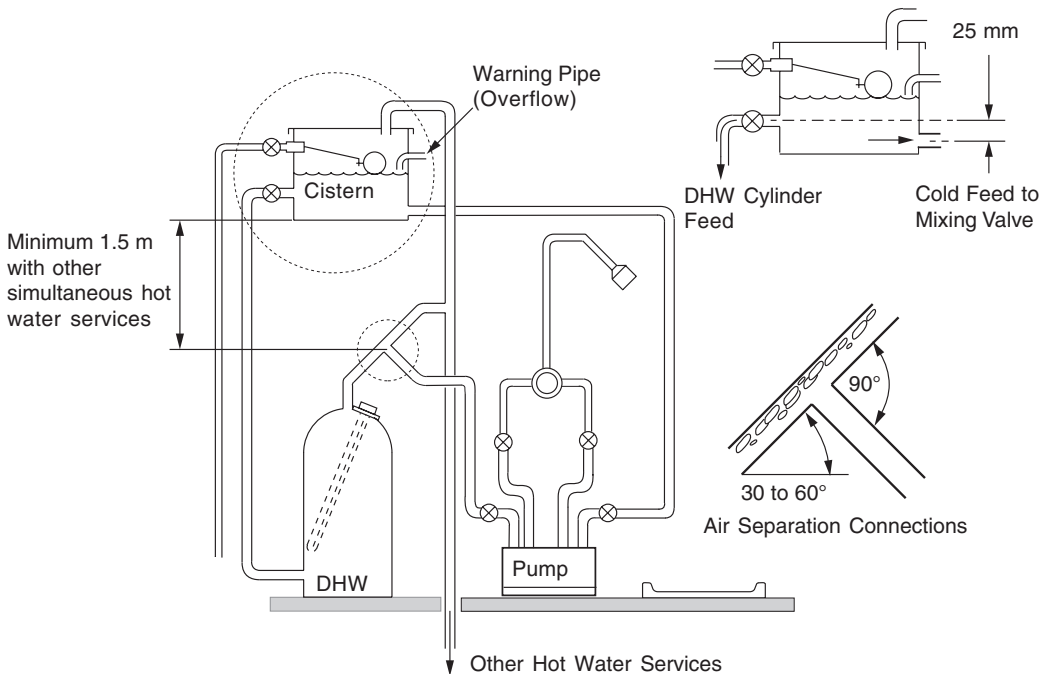


## Plumbing

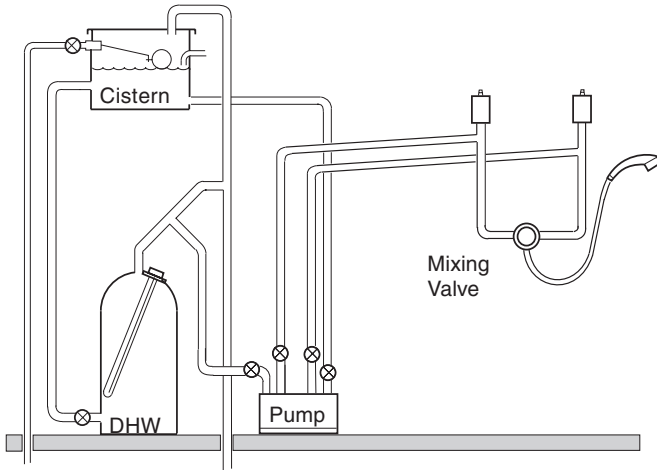
Installation must be carried out in accordance with these instructions, and must be conducted by designated, qualified and competent personnel.

- 1. ATTENTION!** Damage is likely to occur to the pump unit if it is allowed to run dry. A minimum pump inlet head pressure of 1 metre must be ensured at all times.
2. Do not fit a non return valve in suction line (inlet) pipework to the pump. The pump must be free to vent to the supply tanks at all times.
3. Pressure loss throughout the inlet pipework network must be kept to the minimum possible to avoid operational difficulties. This will mean the use of shortest pipe-runs, adequately sized for the maximum flow demand, and with the minimum of restriction through elbows and fittings. Long pipe-runs should be avoided and are best reserved for pipework from the pump outlet to shower fittings.
4. Pipework configurations which can allow air locks to form should be avoided. For inlet pipework, this should be achieved by utilising pipe-runs with a continuous fall. For outlet pipework, either provide a continuously rising pipe-run, or if an "up and over" pipe-run is unavoidable, fit a float type automatic air vent at the highest point as shown in Figure 3 and 4.
5. The pump must be sited as low as possible in relation to the water source and mounted in a horizontal position with the outlet connection vertically upwards. The operation of the flow switch will be impaired in any other position.

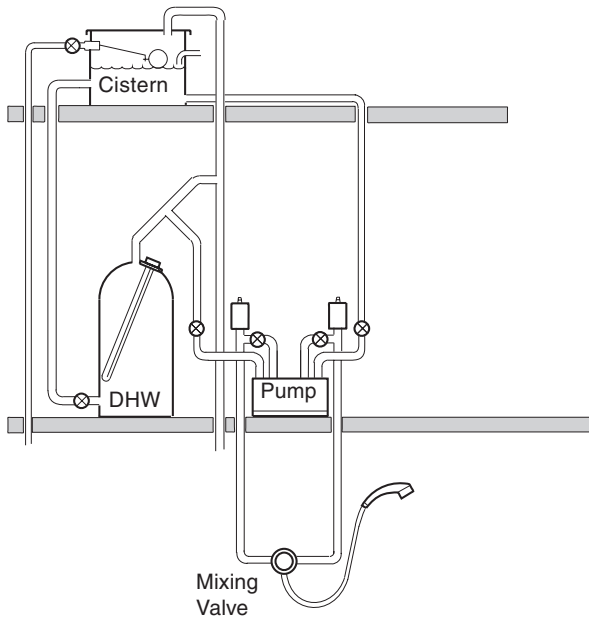
6. The hot feed from the cylinder must be be as illustrated in Figure 2. Side entry cylinder bosses are not recommended. A drop in cylinder water level could expose a top entry immersion element. Air in water gathers at the edge of the cylinder, and in the centre, during the heating process, before travelling up the vent.
7. Water pumps can develop leaks and should, therefore, not be located where seepage may go undetected or cause damage. The pump must be installed such that it is accessible for servicing or removal. When servicing or disconnecting, small amounts of water may drain from the unit and pipework.
8. Care should be taken when using soldering fluxes. Protect the pump from damage whilst making soldered connections as some fluxes cause damage to plastic components.
9. It is recommended that inlet and outlet isolation valves (eg. gate valves) are fitted to permit isolation of the pump for servicing.



System Layout for Mira Enduro Pump  
Figure 2

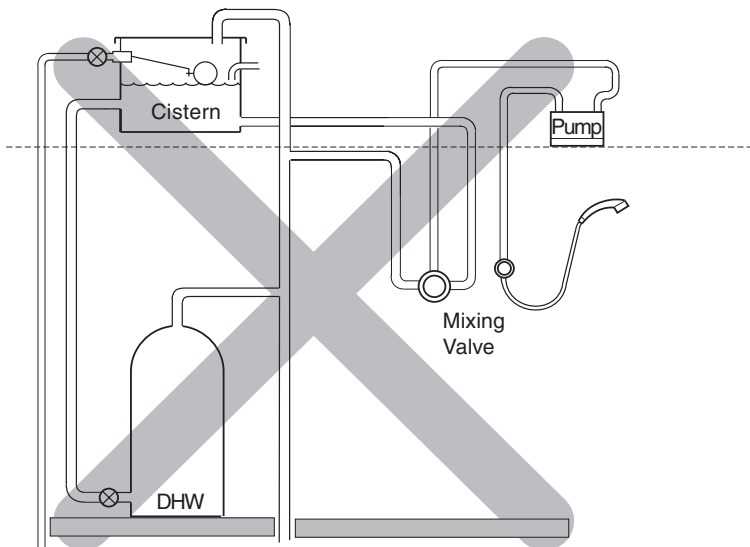


System Layout for Mira Enduro Pump  
Figure 3

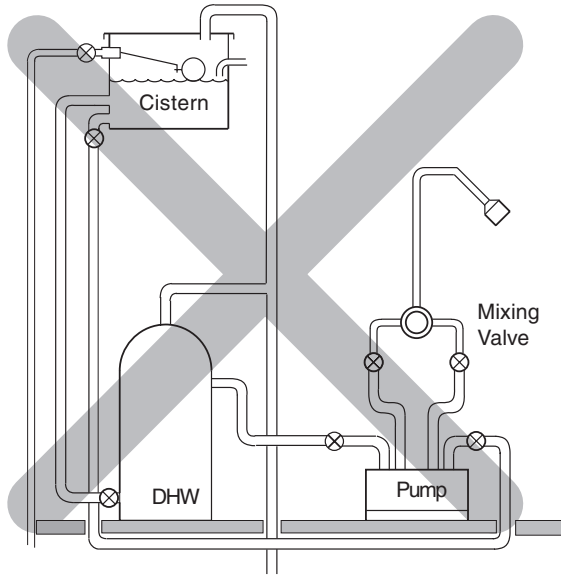


System Layout for Mira Enduro Pump  
Figure 4

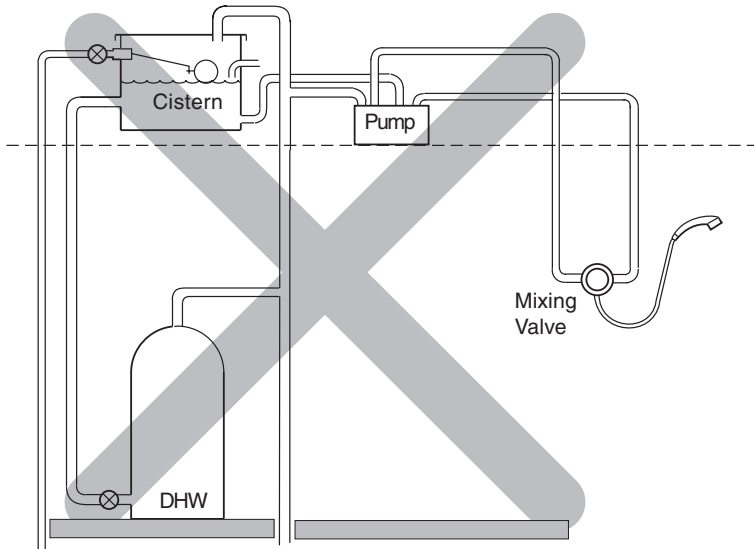
10. Care should be taken to ensure that all pipework fittings and connections are secure. This is particularly important on the pump inlet pipework network, due to the potential for air to be drawn into the system should suction conditions exist.
11. All connection pipework must be adequately and rigidly supported.
12. The flexible hoses supplied are primarily for vibration isolation, and should be installed straight. They may be bent to a maximum of 30°, in which case they must be allowed to form a uniform swept curve, and must not be stressed in any way by the plumbing configuration.
13. The pump motor is air cooled and it is important that the flow of air is not impeded around the appliance. Damage to fabrics may occur if allowed to foul the motor air vents - avoid a position in which the product could become frozen.
14. Do not rigidly secure pump unit to the mounting surface.
15. Install inlet and outlet pipework to meet pump flexible hoses, **flush through pipework fully before connecting to pump**, and then complete plumbing installation.



Unsuitable Layout for Mira Enduro Pump  
Figure 5



Unsuitable Layout for Mira Enduro Pump  
Figure 6



Unsuitable Layout for Mira Enduro Pump  
Figure 7

# Plumbing - push-in connectors

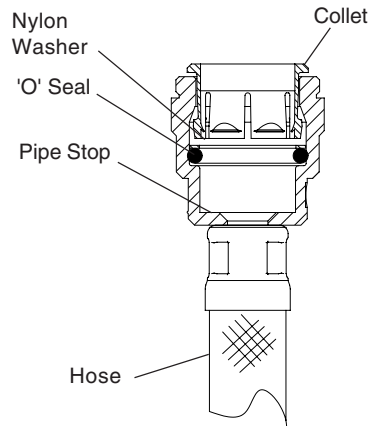
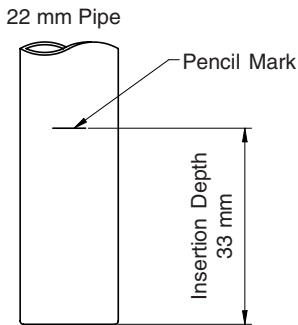
**Do not** use stainless steel, chrome or nickel plated pipe with the flexible hose push-in plumbing connections.

**Do not** introduce solder flux into the joint or surrounding area, as plastics will be attacked and may fail.

All solder joints should be completed before final connection to push-in connections, on the flexible hose. Flux residues must be removed.

**Do not** allow contact with oil or cellulose based paints, paint thinners or strippers, acid based descalents or aggressive cleaning agents.

1. Make sure that the pipe is free from all score marks and deformities in the area of the insertion depth and cut the pipe square removing all burrs and sharp edges to prevent damage to the 'O' seal.
2. Before inserting the pipe into the fitting, mark the insert depth on the wall of the pipe with a soft pencil at a distance of 33 mm from the end to be inserted (refer to illustration).
3. Check in the mouth of the fitting that the 'O' seal, nylon washer and collet are in position (refer to illustration).



4. Push the pipe firmly into the fitting, until the pencil mark is level with the top of the collet and the pipe stop resistance is felt. Pull on the pipe to make sure that it is secure and fitted correctly.
5. To release the joint, push the pipe firmly into the fitting, hold the collet down and gently remove the pipe.

**Caution!** Be careful when draining any residual water.

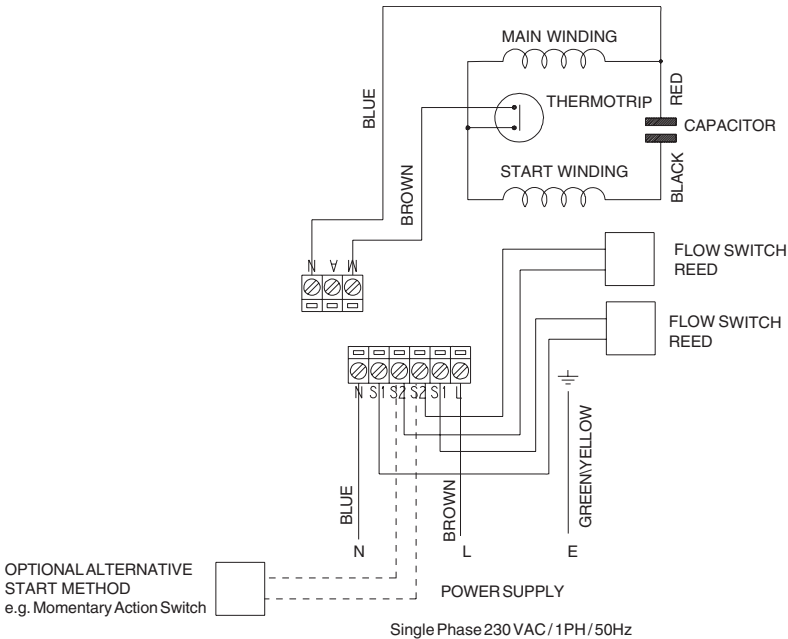
# Electrical



Before starting work on the electrical installation, ensure that the power supply is isolated. Cable selection and corresponding fuse size should be chosen in accordance with the current involved and surrounding conditions.

All electrical installation work should be carried out by a competent person

1. The unit is fitted with 1.3 metres of supply cable. Should this cable be too short, a suitable length of three-core cable (minimum 0.75mm per core) should be obtained and connected to the terminal block in the electrical box as shown in Figure 8. Remove the electrical box cover by unscrewing the four retaining screws.
2. Do not use long cable lengths, as this may cause substantial voltage drop, poor pump performance, and could also result in motor overload.



Schematic Wiring Diagram  
Figure 8

# COMMISSIONING

Commissioning must be carried out in accordance with the instructions, and must be conducted by a signed, qualified and competent personnel.

1. Ensure pump is isolated electrically.
2. Ensure that all isolating valves are fully open and pump chamber is flooded.
3. Open an outlet (e.g. shower control). Water should flow from outlet under pressure of gravity. Leave outlet open for a short period to allow air to be expelled from system.

**ATTENTION!** The flow rate must be at least 0.5 l/min for flow switch operation.

4. Close outlet.
5. Switch on power supply to pump. (If pump operates, repeat commissioning steps 1 - 5, if this fails refer to **Fault Diagnosis**).



**WARNING!** The motor casing can become very hot under normal operating conditions. Care should be taken to ensure that it cannot be touched or covered during normal operation.



6. Open an outlet and check that pump operates automatically.
7. If pump does not operate repeat commissioning procedure, refer to **Fault Diagnosis**.

# FAULT DIAGNOSIS

Symptom	Caus	R ctification
<p>1. Pump does not start.</p>	<p>(a) No power.</p>	<p>1. Check all fuses and RCD. Ensure power is available at pump terminal box. If fuse "blows" repeatedly, refer to 6(b).</p>
	<p>(b) No/low flow through terminal fittings (flow switch needs typically 0.5 l/min).</p>	<p>1. Clean shower heads, ensure flow controls are operating correctly. 2. Check for air locks. 3. Check for isolating valves not fully open, other restrictions. 4. Check system has adequate static head and flow potential (refer to <b>Op ration</b> on page 6) . 5. Flow switch mechanism sticking.</p>
	<p>(c) Internal problem.</p>	<p>1. (New installation). Check wiring in electrical boxes (refer <b>Fig. 8</b>). 2. Check continuity of flow-switch reed (see Note 1 at end of section). 3. Pump impeded internally, refer to 6(b).</p>
<p>Pump has been in use and stopped within short period</p>	<p>(d) Motor thermal switch tripped.</p>	<p>1. Allow motor to cool (up to 1 hour). Refer to 6 (c).</p>
<p>2. Pump operates momentarily when not required.</p>	<p>(a) Flow-switch operating due to water movement in pipework.</p>	<p>1. Air pocket after pump. Locate and ensure adequate venting. 2. Air pocket in pump supply (hot) expanding due to system heating. Correct pipework layout to eliminate thermal flow, fit a single check valve close to and after pump outlet (see Note 2 at end of section).</p>
	<p>(b) Flow-switch reed/PCB tripping.</p>	<p>1. Local source of strong electro-magnetic/radio transmission. Shield flow-switch reed (tin foil).</p>

Symptom	Caus	R ctification
<p><b>3.</b> Pumped flow/pressure is initially adequate, but reduces after short time.</p>	<p>(a) Water supply fault.</p>	<ol style="list-style-type: none"> <li>1. Check that hot and cold storage volumes are sufficient for demand.</li> <li>2. Check that all supply strainers (including mixing valve) are clean.</li> <li>3. Pipework configuration and/or water supply conditions are allowing air induction.</li> </ol>
<p><b>4.</b> Pump is noisy in operation. N.B. All pumps generate some noise. Installation conditions may allow this to be amplified.</p>	<p>(a) Installation fault.</p> <p>(b) Pump impeded internally.</p>	<ol style="list-style-type: none"> <li>1. Vibration from pump body transmitted through reverberant material. Check pump position and pipework securings. <b>Not !</b> The pump should be free standing on its rubber feet, and not screwed down.</li> <li>2. Fault in supply to pump. Refer to 3.</li> </ol> <ol style="list-style-type: none"> <li>1. Check for debris and/or damage in impeller housing.</li> <li>2. Mechanical seal worn/damaged. Renew.</li> <li>3. Motor fault. Refer to 5 (d).</li> </ol>
<p><b>5.</b> Pump switches off while in use.</p>	<p>(a) Power supply fault.</p> <p>(b) Water supply fault.</p> <p>(c) Motor thermal switch tripped.</p>	<ol style="list-style-type: none"> <li>1. Check all fuses and RCD. Ensure power is available at pump terminal box.</li> <li>1. Refer to 3.</li> <li>1. Allow the motor to cool (up to 1 hour)</li> <li>2. Check ambient air temperature around pump does not exceed 40°C.</li> <li>3. Make sure adequate free ventilation is provided (minimum clearance of 80 mm around all sides of pump).</li> <li>4. Pump impeded internally. Refer to 4(b).</li> </ol>

Symptom	Caus	R ctification
<p>5. Pump switches off while in use (continued)</p>	<p>(d) Motor fault.</p>	<p>1. If free movement:-  - if motor winding and bearings are satisfactory, renew capacitor.  - test continuity of motor windings. If no continuity, short-circuit exists in windings (non-serviceable assembly). Renew Mira Enduro pump.  If no free movement:-  - refer to 4(b).  - probable motor bearing failure (non-serviceable assembly). Renew Mira Enduro pump.</p>
<p>6. Leak from pump housing.</p>	<p>(a) Seal worn/damaged.  (b) Inlet pressure above maximum permitted</p>	<p>1. If leak is from rear of impeller housing, at junction with motor assembly, mechanical seal requires renewal.  2. If leak is from perimeter of impeller housing, then housing seals require renewal.  3. See <b>Sp cifications</b> on page 8.</p>

**Not 1.** Flow-switch continuity should be checked with power switched off and one flow-switch lead disconnected. Use appropriate continuity meter. Correct operation is open circuit with no flow, and closed circuit with flow.

**Not 2.** Fitting a check valve is a secondary measure, initially the cause of water surge should be investigated and rectified. The single check valve should be of spring-loaded pattern and fitted in discharge pipework. This may increase the minimum head pressure required to operate flow-switch.

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# SPARE PARTS

## Spare Parts List

465.01	'O' Seal Pack - including Mechanical Seal (components identified 'A')
465.02	Flow Switch Module
465.03	Flow Switch Mechanism
465.04	Flexible Hose Assembly
465.05	Rubber Feet
465.06	Screw Pack (not illustrated)
465.07	PCB (not illustrated)
465.08	Impeller Assembly
465.09	Push Fit Pack (for flexible hose)
465.10	Capacitor (not illustrated)
465.11	Inlet Connector Housing
872.56	Cable Tie



# Customer Service

## Guarantee of Quality

Mira Showers guarantee your product against any defect in materials or workmanship for the period shown in the Guarantee Registration Document included with your shower.

Alternatively, to confirm the applicable guarantee period please contact Customer Services.

To validate the guarantee, please return your completed registration card.

Within the guarantee period we will resolve defects, free of charge, by repairing or replacing parts or modules as we may choose.

To be free of charge, service work must only be undertaken by Mira Showers or our approved agents in Northern Ireland and Republic of Ireland.

Service under this guarantee does not affect the expiry date. The guarantee on any exchanged parts or product ends when the normal product guarantee period expires.

Not covered by this guarantee:

Damage or defects arising from incorrect installation, improper use or lack of maintenance, including build-up of limescale.

Damage or defects if the product is taken apart, repaired or modified by any person not authorised by Mira Showers or our approved agents.

This guarantee is in addition to your statutory and other legal rights.

## Before using your shower

Please take the time to read and understand the operating and safety instructions detailed in this manual.

## What to do if something goes wrong

If when you install your shower, you find it does not work correctly, first contact your installer. If you are not satisfied with the installation and commissioning are satisfactory and in accordance with the instructions in this manual. We are on-hand to offer you any advice you may need.

Should this not resolve the difficulty, please contact our Customer Services who will give every assistance. If necessary arrange for our service engineer to visit.

If later the performance of your shower declines, consult this manual to see whether simple home maintenance is required. Please contact our Customer Services to talk the difficulty through, request a guarantee if applicable, or take advantage of our complimentary Sales service.

As part of our quality and training programme call us for advice or monitored.

Our Customer Services Team is comprehensive and will provide every assistance you may need: help and advice, or a service visit.

## Spare Parts

We maintain an extensive stock of spares, and aim to have functional parts available for ten years from the date of final manufacture of the product.

Spares can be purchased from approved stockists or merchants (locations on request) or direct from Customer Services.

Spares direct will normally be despatched within two working days. Payment can be made by Visa or Mastercard at the time of ordering. Should payment by cheque be preferred a pro-forma invoice will be sent.

**Not!** In the interests of safety, spares requiring exposure to mains voltages can only be sent to competent persons.

## Service

Our Service Force is available to provide a quality service at a reasonable cost. You will have the assurance of a Mira trained engineer/agent, genuine Mira spares – and a 12 month guarantee on the repair.

Payment should be made directly to the Service Engineer/Agent, using Visa, Mastercard or any other card supported by a banker's card.

## To contact us

England, Scotland & Wales

**Mira Showers Customer Service**

Telephone: 0870241 0888

8:30 am to 5:00 pm Working days

8:30 am to 12:30 pm Saturdays

E-mail: [customer@mirashower.com](mailto:customer@mirashower.com)

Fax:

By Post:

Northern

Wm

Tr

## Mira Showers

Kohler Mira

Cromwell

Chelmsford