AQUALISA

Opto®

Thermostatic shower valve with adjustable height head

Installation guide

Contents

Important information

Introduction

The Opto product range is available as either built in or surface mounted shower valve variants with flexible shower heads. Opto thermostatic valves provide close temperature stability and fail safe protection on appropriate high and low pressure systems. For optimum performance the Opto product range has been designed to suit each specific water system. Please refer to the product specification section below.

The Opto range is supplied with a 2 year comprehensive guarantee. In the event of any product problems, please contact the Aqualisa customer helpline on 01959 560010.

Safety information

This product must be installed by a competent person in accordance with all relevant current Water Supply Regulations.

Opto is designed for domestic use only.

Product specification

Low pressure systems (gravity), systems beginning with the prefix OPG – incorporate a thermostatic cartridge part number 022809, identified by an ORANGE ring on the face of the concealed valve cartridge and an ORANGE band on the temperature side of the surface mounted valve cartridge assembly, part number 265509. Product is suitable for gravity stored systems. Pressure range 0.1 – 10.0 bar max (static).

Unbalanced systems (combination boilers), systems beginning with the prefix OPC – incorporate a thermostatic cartridge part number 022802, identified by a PINK ring on the face of the concealed valve cartridge and a PINK band on the temperature side of the surface mounted valve cartridge assembly, part number 265502.

The Opto systems suitable for combination boilers are designed to give optimum temperature control and stability from fully modulating combination boilers and instantaneous gas water heaters. As assembled, a YELLOW flow regulator is fitted into the hot entry of the 'cartridge' to meet the performance requirements of an 80,000 Btu appliance. For appliances of a higher rating, the regulator must be replaced in accordance with the table below:

100,000 Btu	=	OLIVE regulator
120,000 Btu	=	BLUE regulator

DO NOT CONNECT THIS PRODUCT TO AN APPLIANCE RATED AT LESS THAN 80,000 BTU.

Please refer to the flow regulator fitting instructions on pages 8 & 12 if the replacement of the factory fitted regulator is necessary.

High pressure systems, systems beginning with the prefix OPH – incorporate a thermostatic cartridge part number 022803, identified by an GREEN ring on the face of the concealed valve cartridge and an GREEN band on the temperature side of the surface mounted valve cartridge assembly, part number 265501. Product is suitable for balanced high pressure systems e.g. unvented storage etc. Pressure range 2.0 – 10.0 bar max (static).

Connections

The Opto shower range incorporates 'push fit' type connections for use with 15mm British Standard copper tube. Tube should be cut with a rotary type cutter and lubricated using a silicone based lubricant or petroleum jelly (Vaseline or similar) prior to insertion into the fitting. If a hacksaw is used, the pipe ends must be thoroughly deburred and chamfered prior to insertion to the product. Supply lines must be flushed clear of any debris before installation of the unit.

Any debris accumulation in the shower valve and head may result in damage and poor performance.

The Opto shower range is designed for conventional supplies with HOT on the LEFT and COLD on the RIGHT as viewed from the front. However, built in Opto may be adapted for use with reversed supplies. Please refer to the reversed supplies fitting instructions on page 19. Surface mounted Opto can be adapted for use with reversed supplies, but it will be necessary to contact Aqualisa customer services on 01959 560010 to purchase reversed graphics to enable this operation. Please refer to the reversed supplies fitting instructions on page 19.

Flushing

Some modern fluxes can be extremely corrosive and, if left in contact, will attack the working parts of this unit. All soldering must be completed and the pipe work thoroughly flushed through in accordance with current Water Supply Regulations prior to connection of the product.

Filters

To ensure optimum ongoing performance, the 'CARTRIDGE' control mechanism is protected by a two part filter system in the internal waterways. Debris accumulation may result in progressively reduced flow through the showerhead and noisy operation.

As this condition is not covered by our standard warranty terms, it is suggested that the cartridge is removed and the filters checked by a competent person. In the event of any difficulties please contact the Aqualisa customer helpline for assistance.

Isolating valves

Suitable isolation valves such as gate valves must be fitted to both supplies in accordance with current Water Supply Regulations and our terms of warranty. Due to their restrictive characteristics, stopcocks and ball type valves that reduce the pipe bore size must not be used on gravity or pumped installations.

Pressures

Opto shower valves are designed to control static pressure up to 10 bar. Where pressures are likely to exceed 10 bar, a pressure reducing valve (PRV) must be fitted into the incoming mains supply. A setting of 3 bar is recommended. It should be noted that daytime pressures approaching 8 bar can rise above the stated maximum overnight.

Opto shower valves are not suitable for mixed supply systems e.g. Gravity hot and mains cold.

Gravity systems

Services must be installed according to good plumbing practice having regard to pipe sizing, long pipe runs and low-head situations.

The cold supply for the valve assembly must be taken directly from the cold storage system.

The hot supply may be taken from the vent/draw off pipe of the hot water cylinder at a point below the cylinder connection or alternatively from the underside of the horizontal draw off. Rising pipe work must not be connected into the horizontal draw off from the cylinder or to any point in the vent/draw off pipe above the cylinder connection.

CYLINDER TEMPERATURE IN EXCESS OF 65°C MAY RESULT IN POOR SHOWER PERFORMANCE.

To minimise pressure loss we recommend that the hot and cold supplies are run in 22mm as close as reasonably possible to the mixing valve before reducing to 15mm.

Siting

For optimum performance, with gravity fed systems, the distance between the bottom of the storage cistern and the shower head should not be less than 1m (when using an adjustable height shower head). If using a fixed head, the highest point of the pipe work must be not less than 1m below the underside of the cistern. Please refer to the system layout on page 20.

Pump installation

UNDER NO CIRCUMSTANCES MUST A PUMP BE FITTED DIRECTLY TO THE WATER MAIN.

A pump must only be used to boost the pressure from tank-fed supplies. A typical layout is shown on page 20.

Stored water capacities

The minimum capacity of the cold storage cistern should not be less than 225 litres (50 gallons). The capacity of the hot cylinder must be capable of meeting the anticipated demand.

Balanced high pressure system

The high pressure Opto cartridge (GREEN) is designed to operate with unvented hot water storage systems up to a maximum pressure of 10 bar. A PRV must be used if either supply exceeds 10 bar. The cold water supply must be drawn from the same mains supply as that to the hot water system (down stream of the cylinder manufacturers pressure limiting valve, where supplied) and the hot supply from the nearest convenient draw off point. Account must be taken of pressure drops that may occur when other draw off points are used while the shower is in use.

Pipe work can generally be run in 15mm.

A typical layout is shown on page 21.

Combination boiler/multipoint system

This product MUST NOT be fitted to an appliance rated at less than 80,000 Btu.

The Opto cartridge is designed to operate from the mains at a maximum of 10 bar. If the mains pressure exceeds 10 bar a 'drop tight' PRV must be fitted on the supply pipe after the main stopcock.

For optimum performance the Opto product specifically for combination boiler systems is supplied with flow regulators to control the incoming hot water pressure into the cartridge. The Opto combination boiler cartridge (PINK) is factory fitted with a YELLOW regulator suitable for an 80,000 Btu boiler. The regulator should be changed to suit the relevant rated boiler as listed below:

YELLOW	=	80,000 Btu boiler
OLIVE	=	100,000 Btu boiler
BLUE	=	120,000 Btu boiler

Please refer to pages 8 & 12 for changing the regulator instructions.

The cold supply can be taken from the nearest convenient mains supply and the hot supply can be taken from the nearest hot water draw-off point. Account must be taken of the pressure drops that will occur when other draw-off points are used while the shower is in use.

Pipe work can generally be run in 15mm.

A typical layout is shown on page 21.

Opto valve installation - Concealed shower valve

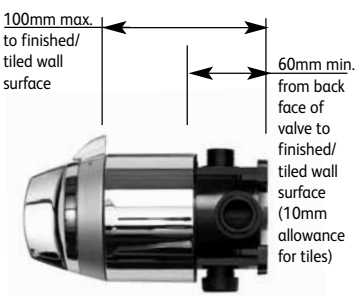
! **In addition to the guide below it is essential that the written instructions overleaf are read and understood and that you have all the necessary components (shown below) before commencing installation. Failure to install the product in accordance with these instructions may adversely affect the warranty terms and conditions. Do not undertake any part of this installation unless you are competent to do so. Prior to starting, ensure that you are familiar with the necessary plumbing regulations required to install the product correctly and safely.**

Opto shower valves are supplied with universal fittings.

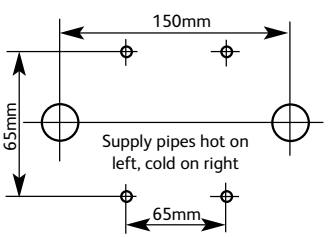
Components

1 If installing the product built in to a solid wall, chase out a suitable recess in the wall to receive the valve and pipe work. If installing the valve in a concealed panel mounted situation, in most cases it will be necessary to first install a suitable sound fixing in the cavity area before fixing the valve. A hole of Ø130mm is required to install the valve and gain access to inlet and outlet connectors.

! Minimum mounting depth 60mm, maximum depth 100mm, measured from mounting surface to finished/tiled wall surface.



2 Mark the position for the four fixing points as indicated.



3 Carefully remove the valve from its packaging and retain the mortar guard for later use.

4 Set the temperature lever to the mid-blend (12 o'clock) position as a point of reference. Undo the four temperature screws securing the temperature lever to the valve and remove the temperature lever.

5 Carefully remove the shroud from the valve assembly.

6 Fit the elbows to the valve body hand tight, ensuring that the rubber washers are correctly engaged (these are supplied in the screw pack).

! **IF FITTING AN OPG3111, GRAVITY OPTO OR AN OPH3111 HIGH PRESSURE OPTO, PLEASE PROCEED TO STEP 13.**

If the valve is being installed for use with a gas fired instantaneous (multipoint) water heater or a combination boiler, an OPC3100 system should be fitted. The PINK cartridge is factory fitted with a YELLOW flow regulator in the hot inlet port, suitable for use with an 80,000 Btu rated combi boiler. If fitting to a system supplied by a 100,000 Btu combi boiler, the regulator should be replaced by a OLIVE regulator. If fitting to a system supplied by a 120,000 Btu combi boiler, the regulator should be replaced by a BLUE regulator. The replacement regulators are supplied as part of the system components.

7 If the removal and replacement of the factory fitted regulator is necessary, undo the four screws securing the cartridge assembly to the valve body and remove the cartridge, noting the gasket orientation.

8 Remove the flow regulator assembly from inside of the filter in the rear of the cartridge T tube, using a small flat bladed screwdriver if necessary.

9 Remove the relevant replacement regulator assembly from the packaging and position in the hot inlet filter in the rear of the T tube, ensuring the O ring faces the incoming flow of water.

10 Refit the gasket to the cartridge ensuring the filter is correctly aligned with the banana shaped cold water port and reposition back into the valve body.

11 Secure the cartridge to the valve body with the cartridge screws sufficiently to create a watertight seal, taking care not to over-tighten.

12 The Opto built in valve is supplied with an outlet cap on the bottom of the valve allowing for a top outlet connection. The bottom outlet can be used by simply removing the cap and repositioning it on the top outlet. If the cap is removed please ensure that when replaced, the membrane in the cap is in place and that the cap is done up tight.

13 Fit the outlet connector ensuring the rubber washer is correctly engaged (supplied in the screwpack), on the required outlet ensuring a tight fit. Offer the valve up to the required fixing position to check the four fixing points are correct and there is adequate space available around both the inlet elbows and outlet connector. Prepare the wall fixings as required.

14 Using a silicone based lubricant, lubricate the supply pipe ends and whilst supporting the elbows, push home the supply pipes ensuring the correct orientation for the inlet pipes (HOT left and COLD right as shown on the valve body). Push the valve fully home until a definite stop is reached (tube insertion depth is 25mm). Secure the valve assembly to the fixing surface using the screws provided.

15 Construct a suitable 15mm outlet supply to a suitable point for the wall outlet. Using a silicone based lubricant, lubricate the 15mm outlet pipe and push into the outlet assembly fully home (outlet pipe insertion depth is 24mm).

16 Using a suitable tool tighten the elbow nuts until water tight.

17 The installation may now be checked for leaks. Push the on/off knob onto the front of the valve fully home and turn the knob fully clockwise to ensure the valve is fully turned off.

18 Turn on the supplies and check for any leaks upstream of the valve. Slowly open the control and check for leaks downstream of the valve. If all is sound, turn off the on/off knob fully and turn off the supplies.

19 If the product is built in to a wall of solid construction, place the mortar guard around the valve and fill in the chase. Once the in-filling material has set, carefully remove the mortar guard to expose the valve body.

! **THE MORTAR GUARD MUST BE USED.**

20 Replace the shroud, ensuring the shroud seal is in position.

21 Using a silicone based lubricant or liquid soap, lubricate the wall plate seal. Apply a thin bead of silicone mastic into the groove on the rear of the wall plate and carefully push the wall plate into position flush with the finished wall surface, ensuring the Aqualisa logo is positioned at the bottom of the wall plate.

22 Place the lever onto the valve assembly in the mid-blend (12 o'clock) position. Using the four M4 screws provided secure the temperature lever to the valve hand tight only.

23 The on/off knob and cartridge shaft are manufactured with a flat face to ensure correct orientation when fitting the knob to the valve. Ensuring the on/off graphics are positioned at the top of the knob and the flat faces on the knob and cartridge shaft are correctly aligned, push the knob onto the valve fully home.

Opto valve installation - Exposed shower valve

! **In addition to the guide below it is essential that the written instructions overleaf are read and understood and that you have all the necessary components (shown below) before commencing installation. Failure to install the product in accordance with these instructions may adversely affect the warranty terms and conditions. Do not undertake any part of this installation unless you are competent to do so. Prior to starting, ensure that you are familiar with the necessary plumbing regulations required to install the product correctly and safely.**

Opto shower valves are supplied with universal fittings.

Components

1 In most cases for hollow wall fixing it will be necessary to first install a suitable sound fixing surface within the cavity area before fixing the valve. Mark out the position of the pipe work entry points using the template provided. The 15mm supplies must emerge from the wall at right angles at 150mm pipe centres. The template may also be temporarily secured to the wall to ensure correct orientation of the pipe work during making good if required.

2 After making good, using the template, mark and prepare the four fixing points as outlined above.

! **IT IS ESSENTIAL THAT THE WALL SURFACE IS FLAT AND EVEN TO AVOID DISTORTION OF THE SHOWER BACK PLATE.**

3 Remove the fixing screw from the centre of the valve fascia and carefully lift the upper shroud assembly clear from the back plate.

4 Remove the two fixing screws to release the lower shroud assembly from the back plate. Carefully remove and set aside.

5 Remove the gripper ring assembly from the rear of the back plate and ensuring correct alignment of the gripper rings, slide over the projecting pipes flush to the wall face. Cut the supply pipes to their finished length (18mm – 21mm) using a rotary type cutter.

6 Briefly run the hot and cold supplies to flush out any debris that may be present in the system.

! **IF FITTING AN OPG4111 GRAVITY OPTO, OR AN OPH4111 HIGH PRESSURE OPTO, PLEASE PROCEED TO STEP 10.**

If the valve is being installed for use with a gas fired instantaneous (multipoint) heater or a combination boiler, an OPC4100 system should be fitted. The PINK cartridge is factory fitted with a YELLOW flow regulator in the hot inlet port, suitable for use with an 80,000 Btu rated combi boiler. If fitting to a system supplied by a 100,000 Btu combi boiler, the regulator should be replaced by a OLIVE regulator. If fitting to a system supplied by a 120,000 Btu combi boiler, the regulator should be replaced by a BLUE regulator. The replacement regulators are supplied as part of the system components.

7 If the removal and replacement of the factory fitted regulator is necessary, remove the flow cartridge fixing screws and carefully detach the cartridge assembly from the backplate. Remove the hot water inlet connector from the rear of the back plate assembly.

8 Remove the flow regulator assembly using a small flat bladed screwdriver if necessary.

9 Fit the relevant flow regulator into the hot port fully home, with the central O ring facing into the filter. Refit the hot water connector to the back plate assembly. Refit the cartridge to the back plate using the four fixing screws ensuring the hot and cold markings on the cartridge are uppermost.

10 Run a thin bead of silicone sealant in the mastic groove of the back plate. Using a silicone based lubricant, lubricate the projecting pipe ends before carefully pushing the shower valve into position fully home. Secure using the screws provided.

11 Refit the lower shroud by locating the lugs into the back plate and moving the shroud into position. Align the fixing screws with the screw holes, and fix into place ensuring not to over-tighten the fixing screws.

12 The installation may now be checked for leaks. Turn the on/off knob (left hand knob) fully forwards to ensure the valve is fully turned off. Ensuring the hose washer is in place, attach the shower hose to the ½" BSP outlet on the underside of the valve to allow the water to discharge safely to waste.

13 Turn on the supplies and check for any leaks upstream of the valve. Slowly open the on/off control and check for leaks downstream of the valve. If all is sound, turn off the on/off knob fully and turn off the supplies.

14 Refit the upper shroud assembly by locating the lugs into the back plate and moving the shroud down into position. Fix using the centrally located locking screw taking care not to over-tighten.

15 Remove the paper backing from the badge and push firmly into position in the recess in the shroud assembly.

Shower head installation - Adjustable height head

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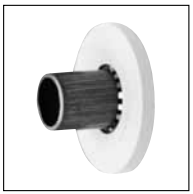
Opto shower heads are supplied with universal fittings.

A wall outlet assembly is supplied with concealed flexible systems OP_3111. However, if installing an exposed system OP_4111, please proceed to step 7.

1 Prepare the pipe work from the shower valve to the required position for the hose outlet using a ø15mm copper pipe. Slide the 15mm gripper ring down the projecting pipe up to the wall face



2 Trim the projecting pipe to a length of 15-22mm using a rotary type cutter. If a hacksaw is used, the pipe end must be carefully de-burred and chamfered.

3 Clean and lubricate the pipe using a suitable (silicone based) lubricant.

4 Remove the wall outlet cover plate and carefully slide the wall outlet onto the projecting pipe. Turn to the required position and mark the screw holes on the wall face.

5 Remove the wall outlet and drill and prepare the wall fixings. Ensure the projecting pipe is clean and lubricate again if necessary. Refit the wall outlet and secure it to the wall using the screws provided.

6 Refit the wall outlet cover plate

7 Drill and plug two holes 642mm-655mm vertically apart using a spirit level if necessary. Fit the rail end clip into position and loosely fit the lower bracket into position

8 Pass the rail through the handset holder whilst keeping the slider levers depressed with the handset holder pointing in a downward direction

9 Carefully slide the gel hook onto the rail under the handset holder.

10 Current water supply regulations state the handset should not be allowed to pass a point 25mm above the spill over level of the bath or shower tray. If this cannot be achieved, the hose must be passed through the gel hook which has also been designed to be utilised as a hose restraint.

11 Fit the rail into the rail end bodies taking care to engage the location slot onto the lugs.

12 Fit the rail end clip fitting into position into the top rail end body. Secure the rail assembly to wall using the screws provided ensuring the rail and rail end bodies remain firmly engaged.

13 Place the rail end covers into position and push firmly into place.

14 Connect the hose to the wall outlet or valve outlet, ensuring the hose washer is correctly fitted, to allow the water to discharge safely to waste and run the shower for a few seconds to clear any debris in the outlet assembly.

15 Turn off the shower and pass the hose through the gel hook/hose restraint (if required).

16 Disengage the pivot clip and remove the pivot from the bottom of the handset.

17 Ensure the hose washer is in the correct position and screw the pivot into the hose, using a suitable hexagonal key to tighten, taking care not to over-tighten.

18 Reinsert the pivot into the handset and engage the pivot clip prior to placing the handset into the handset holder.

User guide - Shower valve operation

Your Opto shower system has been designed to provide many years of trouble-free use when installed and operated correctly.

Concealed valve operation

1 Turn the front on/off knob FULLY anticlockwise into the open position to turn the shower on. Turn the on/off knob fully clockwise into the closed position after use.

Please note the on/off control knob MUST NOT be used as a method of flow control .

2 When the temperature lever is in the vertical position the valve is in the mid-blend position. The mid-blend temperature is dictated by the temperature of the incoming supplies. To select a comfortable showering temperature, slowly rotate the temperature control lever clockwise to increase the temperature and anti-clockwise to reduce the temperature, using the temperature markings as a guide.

Exposed valve operation

1 Turn the shower on by turning the on/off knob on the LEFT of the valve when viewed from the front FULLY on into the open position by rotating the knob in an upwards and over direction until a stop is reached. Turn the on/off knob fully off into the closed position after use, again in an up and over direction until a stop is reached.

Please note the on/off control knob MUST NOT be used as a method of flow control .

2 When the temperature lever knob on the RIGHT of the valve, when viewed from the front, is in the forward facing position the valve is in the mid-blend position. The mid-blend temperature is dictated by the temperature of the incoming supplies. To select a comfortable showering temperature, slowly rotate the temperature control lever upwards to increase the temperature and downwards to reduce the temperature, using the temperature markings as a guide.

Shower valve cleaning and maintenance

Your Opto shower valve should be cleaned using only a soft cloth and washing up liquid.

DO NOT USE ABRASIVE CLEANERS.

This Opto shower valve requires minimum maintenance, even in hard water areas. In order to ensure the internal working parts are unaffected by any water borne deposits, the following procedure should be adopted regardless of whether the shower is in regular use.

Once a week with the shower fully running, rotate the temperature control lever from full hot through to full cold 5 or 6 times to activate the internal cleaning mechanisms.

User guide - Shower head operation

NEVER ATTEMPT TO MAKE ANY ADJUSTMENT TO THE SHOWER HEAD BY PULLING ON THE SHOWER HOSE.

1 To select the preferred height for the shower head, depress the handset holder levers fully to enable the slider to be moved up or down the rail.

2 Angular adjustment is made by carefully but firmly pulling forwards or pushing back the shower head against the knuckle in the holder.

3 To select the desired spray pattern rotate the shower spray plate clockwise or anti-clockwise.

Shower head cleaning and maintenance

Your Opto shower head system should be cleaned using only a soft cloth and washing up liquid.

DO NOT USE ABRASIVE CLEANERS.

To reduce the requirement for chemical descaling in hard water areas, the shower heads incorporate rub clean teats.
Any scale build up that may occur in any of the holes can be broken down by gently rubbing the flexible tips of the jets during use.

Should chemical descaling of the head become necessary, remove the shower head and fully immerse in a mild proprietary descalent.

IT IS IMPERATIVE THAT DESCALING IS CARRIED OUT STRICTLY IN ACCORDANCE WITH THE MANUFACTURERS INSTRUCTIONS. SUBSTANCES THAT ARE NOT SUITABLE FOR PLASTICS AND ELECTROPLATED SURFACES MUST NOT BE USED.

Reversed supplies

Concealed valve

The concealed Opto valve is designed for conventional supplies with HOT on the Left and COLD on the Right as viewed from the front. However, the concealed valve can be adapted for use with reversed supplies, by adopting the following procedure.

NB The on/off knob will be upside down.

1 Ensure the temperature lever is set to the vertical position.

2 Remove the on/off knob (if fitted). Remove the four temperature control lever fixing screws and detach the lever.

3 Rotate the valve body by 180°. Remove and reposition the outlet cap as required. The valve will now be in the 'upside down' position.

4 Ensuring the temperature lever is in the vertical position, replace the lever and secure using the temperature screws hand tight only.

5 Ensuring the on/off graphics are positioned at the bottom of the knob and the fin is in the vertical position when the valve is in the off position, push the on/off knob onto the valve fully home.

Exposed valve

The exposed Opto valve is designed for conventional supplies with HOT on the Left and COLD on the Right as viewed from the front. However, the exposed valve can be adapted for use with reversed supplies, but it will be necessary to contact Aqualisa customer services on 01959 560010 to purchase reversed graphics to enable this operation.

1 Remove the shrouds and cartridge assembly from the backplate as detailed on pages 11 & 12.

2 Make a note of the orientation of the settings and the position of the on/off knob before removing the fixing screw and pulling the knob clear.

3 Rotate the cartridge assembly 180° so the H & C temperature markings on the top of the cartridge assembly are now positioned on the bottom of the cartridge.

4 Replace the existing conventional on/off control graphic ring with the new one purchased separately.

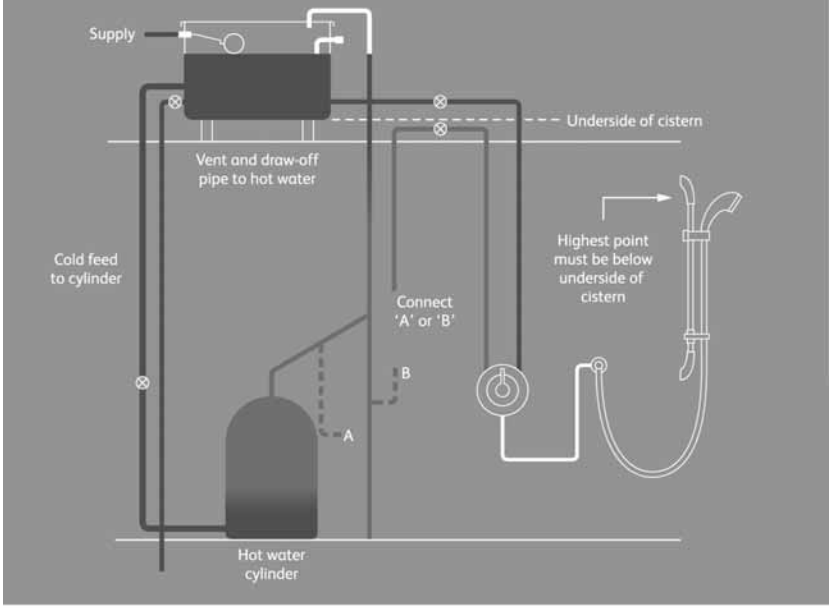
5 Replace the control knob ensuring it is in the same position as prior to being removed.

6 Remove and rotate the outlet connection 180° to ensure it is positioned at the bottom of the valve.

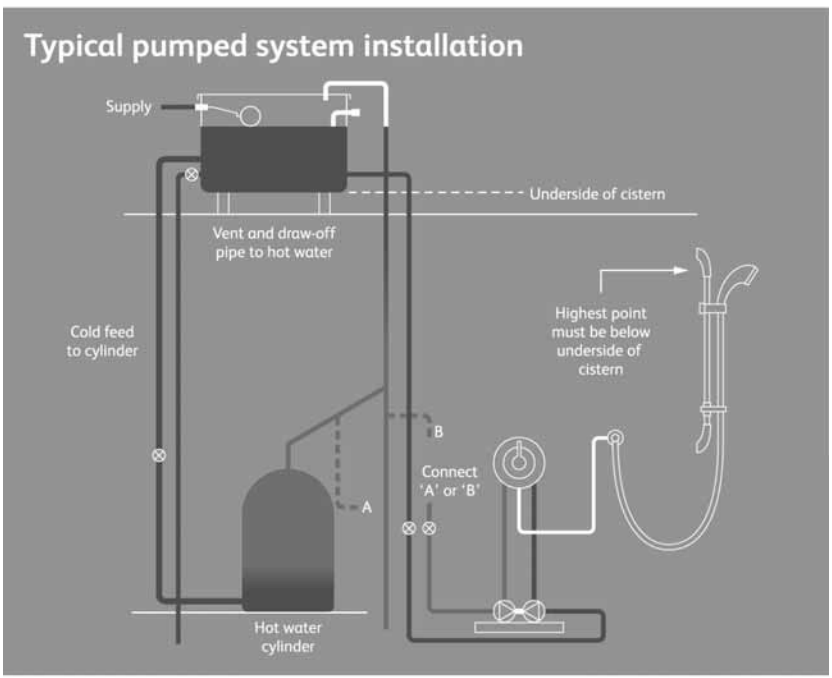
7 Refit the adapted cartridge assembly to the backplate and refit the shrouds as previously instructed.

Typical system diagrams

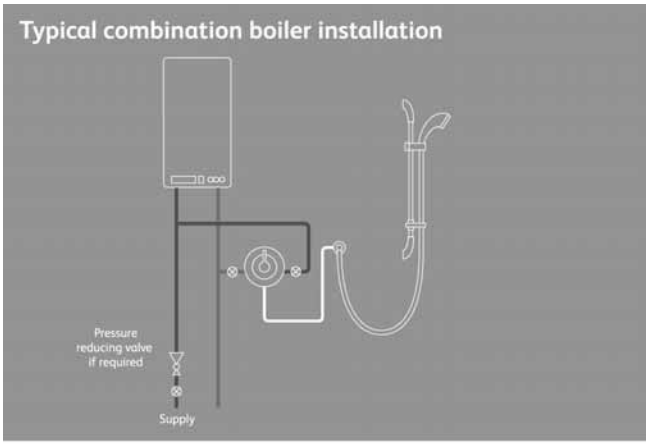
Typical gravity system installation

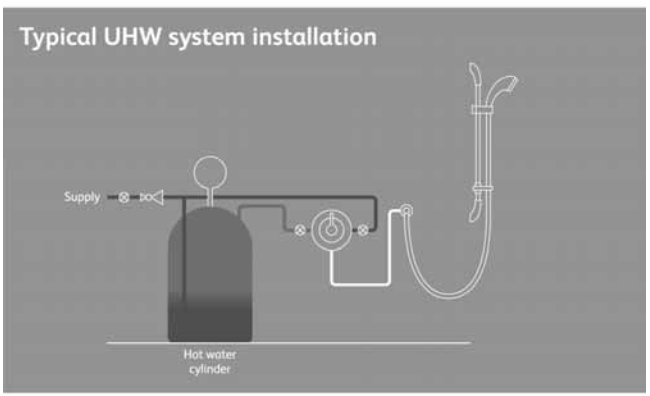


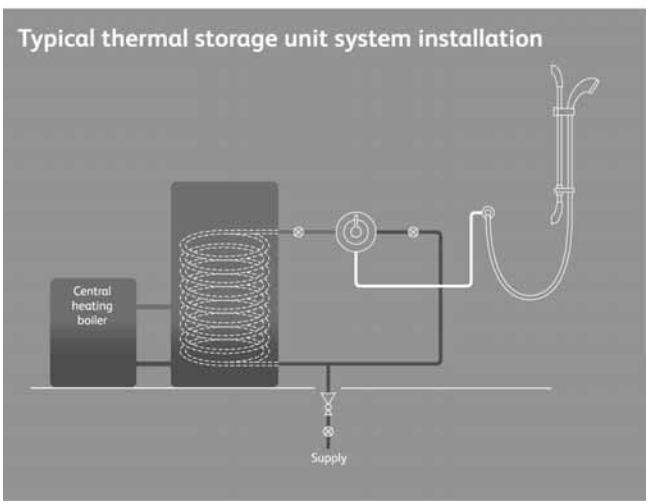
Typical pumped system installation



Typical system diagrams continued







Trouble shooting guide

Symptom	Possible cause	Action
Water output is either all hot or all cold, or cold only	Reversed inlet supplies	Check that the supplies correspond with the inlet markings
Water output is not hot enough	The temperature of the hot water cylinder is too low	The cylinder temperature should be at least 15˚c hotter than the blend
	Water flow through the hot water appliance is too fast	Check the flow rate recommendations with the heater manufacturer
Flow rate is poor and water temperature is low	Airlock in the hot water supply	Check that the pipe work is laid out in accordance with correct practices, paying particular attention to potential air-traps
Water temperature swings regularly between hot and cold	Cold water pressure is too high	If the static water pressure exceeds 10 bar, install a pressure reducing valve (PRV) in accordance with the installation guide
	The flow regulator has not been fitted	Fit the flow regulator
Poor flow rate	Twisted hose Debris in shower head Debris in filters Debris in cold inlet flow regulator	Check for debris and clear as necessary

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