

POWERFLOW

BESPOKE RANGE OF
UNVENTED HOT WATER CYLINDERS

Installation & Service Instructions



McDonald
Water Storage

Hot Water Storage Solutions

Issue 02: October 2020

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INTRODUCTION

The POWERflow unvented domestic hot water cylinder range have been specifically designed to fully optimise the performance of the heat source it is connected to whether that is a conventional boiler, electric immersion heater or solar thermal.

The range has been rigorously tested and developed to ensure the best efficiencies and heat up performances possible along with unrivalled thermal loss protection from the high density foam insulation.

All unvented cylinders come with all necessary safety and control devices required to connect to the cold water mains and are compliant with G3 building regulations.

All McDonald Water Storage products are manufactured under a ISO9001:2015 Quality Management System.

The POWERflow unvented cylinder must be installed by a competent person as defined by the relevant regulations.

IMPORTANT

Please ensure that these instructions are left with the householder.

Failure to install and maintain this system in accordance with these instructions will invalidate the manufacturers warranty. Extended warranty card to be completed and returned.



Installers are required to carry out installation, commissioning and servicing work in accordance with the Benchmark Code of Practice which is available from the Heating and Hot Water Industry Council who manage and promote the Scheme. Visit www.centralheating.co.uk for more information.

For further information on the HWA Charter Statement, please refer to the HWA website hotwater.org.uk.

MANUFACTURER: MCDONALD WATER STORAGE

Maximum inlet pressure to ressure reducing valve	12 bar
Operating pressure (PRV setting)	2.1 bar
Expansion vessel charge pressure	2.1 bar
Expansion relief valve setting	3.5 bar
Opening pressure of P & T Relief Valve	4.5 bar
Opening temperature of P & T Relief Valve	90°C
Energy cut-out thermostat setting	80°C
Max. working pressure - Primary heat exchanger (Indirect models)	3.5 bar
Max. working pressure - Solar heat exchanger (Solar models)	6 bar
Immersion heater rating	3kW, 240V AC

The table above and throughout this manual, we refer to the settings associated with the standard 2.1 bar operating pressure unit. For other operating pressures supplied, please see below.

Operating pressure of the cylinder	1.5 bar	3 bar
Max inlet pressure to pressure reducing valve	12 bar	12 bar
Operating pressure (PRV setting)	1.5 bar	3 bar
Expansion vessel charge pressure	1.5 bar	3 bar
Expansion relief valve setting	3 bar	5 bar
Opening pressure of P & T Relief Valve	4.5 bar	7 bar

All cylinders are manufactured in accordance with the requirements of BS EN 12897
The tundish must be positioned so that it is visible to the occupant and is away from electrical devices.

STORAGE & HANDLING

McDonald Water Storage must be stored in an upright orientation and should be stored in a dry environment.

When lifting or carrying the cylinder, please handle with care. Do not use any factory fitted pipe work or connections as these can be damaged.

Safe manual handling and lifting procedures must be used when carrying any cylinder.

EQUIPMENT SUPPLIED

The POWERflow range comes with all the necessary equipment required to install the cylinders safely to the cold mains. G3 building regulation should always be considered when installing unvented systems.

See the table below for components are supplied with the unvented cylinder.

COMPONENT	Direct	Indirect	Direct Solar	Indirect Solar
Pressure Reducing Valve	●	●	●	●
Temperature and Pressure Relief Valve (Fitted)	●	●	●	●
Expansion Relief Valve (Fitted)	●	●	●	●
Tundish (Fitted)	●	●	●	●
Check Valve	●	●	●	●
3kW Immersion Heater - Primary Heat Source (Fitted)	●		●	
3kW Immersion Heater - Back Up Heat Source (Fitted)	●	●	●	●
Expansion Vessel	●	●	●	●
Dual Control and Overheat Thermostat		●		●
Overheat Thermostat			●	
Two Port Motorised Zone Valve		●		●
Flexible Hose For Connection to Expansion Vessel	●	●	●	●

MAINS COLD WATER SUPPLY

The POWERflow range operates at 2.1 bar (see page 4 for other model settings), which is controlled by the pressure reducing valve.

The water demand requirements of a property need to be assessed and care should be made to take into account that hot and cold services are supplied simultaneously from the mains cold water feed.

The flow rate and pressure should be checked to confirm it can meet the demand of the property. Installers should ensure that the incoming mains pressure is less than 12 bar and that local authority approval for Installation of Unvented Systems is granted.

When measuring the water pressure please be aware that a static pressure (no flow) is no guarantee of good flow availability. On a domestic installation the minimum pressure and flow rate should be no less than 1.5 bar and 25 l/m respectively.

If the recommended minimum pressure or flow rate is not being achieved any existing ½”(15mm) cold mains pipe work may need to be increased in size.

POSITIONING THE CYLINDER

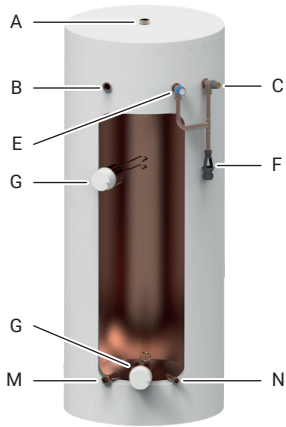
The POWERflow range must be installed vertically on a stable base which must be capable of supporting the weight when the cylinder is full of water.

The minimum recommended installation space is dependant on the specification of the cylinder. Additional considerations should be made to allow space to mount the primary and secondary expansion vessels. Full specifications, weights and dimensions of the product range are provided in this booklet.

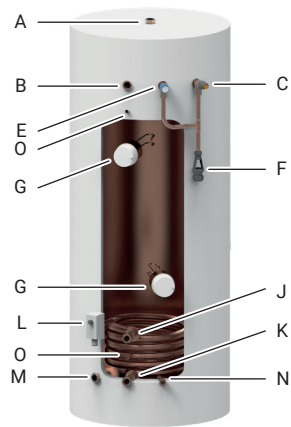
Access for maintenance of all equipment should be considered when positioning the unvented cylinder. Care should be taken that the immersion heater can be withdrawn for servicing if required these are 375mm long. Building regulation G3 should always be followed when installing discharge pipe work from the safety valves.

Any hot outlets which are higher than the cylinder will reduce in pressure by 0.1 bar for every 1m of height difference.

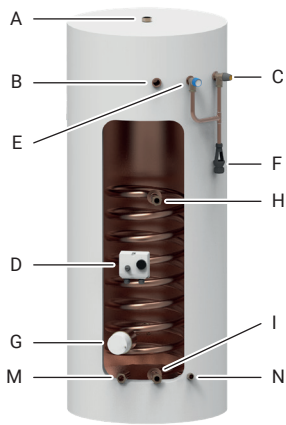
All exposed pipe work should be insulated and additional considerations should be taken to protect the unit from frost damage. Particular care is needed if the cylinder is to be installed in an exposed location such as an outhouse or garage.



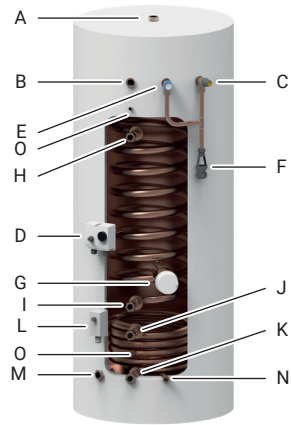
DIRECT



DIRECT SOLAR



INDIRECT



INDIRECT SOLAR

A	Hot Water Draw Off
B	Secondary Return *
C	T&P Valve
D	Dual Thermostat Control
E	Expansion Relief Valve
F	Tundish
G	Immersion Heater
H	Boiler Coil Flow

I	Boiler Coil Return
J	Solar Coil Flow
K	Solar Coil Return
L	Solar High Limit Thermostat
M	Cold Feed
N	Drain
O	Solar Probe Pocket

* Selected models only

POWERFLOW DIRECT AND DIRECT SOLAR



DIRECT



DIRECT SOLAR

TECHNICAL DATA

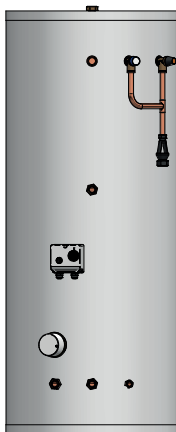
Direct / Direct Solar Model Size		75	120	150	180	210	250	300
Capacity (Litres)		75	120	150	180	210	250	300
Height (mm)		950	950	1150	1350	1550	1550	1850
Diameter (mm)		450	550	550	550	550	600	600
Approximate Weight (KG)	Empty	24	33	39	49	55	64	80
	Full	99	153	189	229	265	314	380
Approximate Weight (KG)	Empty	29	38	44	54	60	69	85
	Full	104	158	194	234	270	319	385
Surface Area Of Solar Coil (m ²)		1.0	1.2	1.2	1.2	1.2	1.5	1.5
Pressure Loss Across Solar Coil (kPa)		0.15	0.15	0.15	0.15	0.15	0.2	0.2
Dedicated Solar Volume		31	50	62	75	87	104	125
Heat Up Time 15-60°C (mins) (Primary heat source only)		79	126	157	189	220	262	314
Immersion Heater	3KW Single Phase - 230V - 50hz							
Cylinder Material	Copper							
Insulation Type	White Cased Polyurethane (PU) insulation with CO ₂ Blowing Agent							
Insulation Thickness (mm)		50	50	50	50	50	50	50

ERP DATA

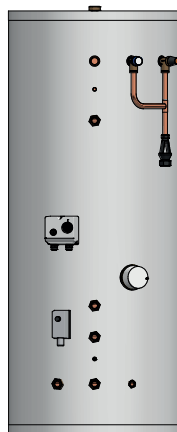
Direct Model Size		75	120	150	180	210	250	300
Load Profile		M	M	M	L	L	L	L
Standing Heat Loss	Watts	45	52	56	59	63	68	75
Annual Elec. Cons.	kWh/ann	1490	1450	2101	2779	2814	2908	3145
Sound Level	dB	15	15	15	15	15	15	15
ErP Rating		C	C	C	C	C	C	C
Direct Solar Model Size		75	120	150	180	210	250	300
Standing Heat Loss	Watts	45	52	56	59	63	68	75
ErP Rating		B	B	B	C	C	C	C

Please note all data shown above is based on the white cased models with 50mm insulation.

POWERFLOW INDIRECT AND INDIRECT SOLAR



INDIRECT



INDIRECT SOLAR

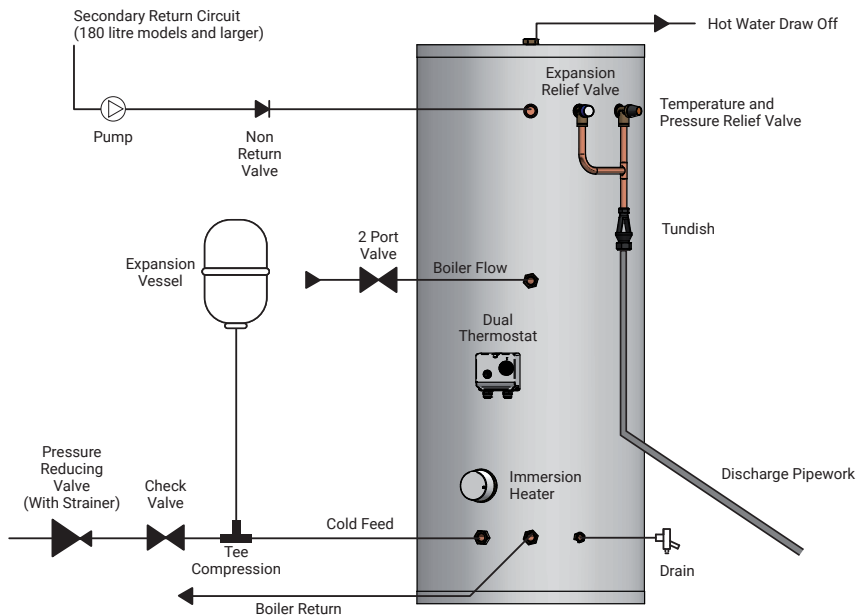
TECHNICAL DATA

Indirect / Indirect Solar Model Size		75	120	150	180	210	250	300
Capacity (Litres)		75	120	150	180	210	250	300
Height (mm)		950	950	1150	1350	1550	1550	1850
Diameter (mm)		450	550	550	550	550	600	600
Approximate Weight (KG)	Empty	26	37	44	55	61	70	86
	Full	101	157	194	235	271	320	386
Approximate Weight (KG)	Empty	31	42	49	60	66	75	91
	Full	106	162	199	240	276	325	391
Surface Area Of Boiler Coil (m ²)		1.2	0.62	0.7	0.88	0.97	1.06	1.23
Pressure Loss Across Boiler Coil (kPa)		0.1	0.3	0.4	0.4	0.5	0.5	0.6
kW Rating Of Boiler Coil (kW)		12	19	24	28	33	39	47
Surface Area Of Solar Coil (m ²)		1.0	1.2	1.2	1.2	1.2	1.5	1.5
Pressure Loss Across Solar Coil (kPa)		0.15	0.15	0.15	0.15	0.15	0.2	0.2
Dedicated Solar Volume		31	50	62	75	87	104	125
Heat Up Time 15-60°C (mins) (Primary heat source only)		20	20	20	20	20	20	20
Immersion Heater		3KW Single Phase - 230V - 50hz						
Cylinder Material		Copper						
Insulation Type		White Cased Polyurethane (PU) insulation with CO ² Blowing Agent						
Insulation Thickness (mm)		50	50	50	50	50	50	50

ERP DATA

Direct Model Size		75	120	150	180	210	250	300
Standing Heat Loss	Watts	45	52	56	59	63	68	75
	ErP Rating	B	B	B	C	C	C	C

Please note all data shown above is based on the white cased models with 50mm insulation.



INSTALLATION

Please note, excessive use of flux can potentially damage the unit and especially the valves and expansion vessel. Avoid over use and ensure the system is fully flushed of any debris or flux before connection.

COLD MAINS PIPEWORK

Fit to the pressure reducing valve set at 2.1 bar (see page 4 for other model settings), which includes a serviceable strainer. We would strongly recommend this valve is fitted where the mains enters the property, but it can go wherever is most suitable for the installation, between the stopcock and the cylinder.

We recommend fitting a tee between the pressure reducing valve/check valve and cylinder to provide a balanced cold outlet for all cold taps, preventing cross flow and also providing potable water throughout the property. Outdoor taps for hoses should be taken before the pressure reducing valve.

The check valve is supplied loose, to be fitted between the pressure reducing valve and before the expansion vessel on the cold feed. Any balanced cold draw off should be fitted between the pressure reducing valve and the check valve.

TEMPERATURE AND PRESSURE RELIEF VALVE

The temperature and pressure relief valve is set at 90°C and 4.5 bar, and the expansion relief valve set at 3.5 bar, should be fitted and connected to the tundish (as shown opposite). Note, the relief valves are only used for relief discharge purposes.

No valves should be fitted between the relief valves and the cylinder.

EXPANSION VESSEL

The expansion vessel should be set the same as the pressure reducing valve.

It is recommended that the expansion vessel be installed in the vertical orientation so that the expansion vessel is:-

- bottom fed and upright; and
- the connecting pipework to the fitting:-
 - rises continuously
 - is kept to a minimum

The vessel should be fixed to a solid wall, within 2m of the cylinder, using the brackets provided. Please remember that the vessel will get much heavier once it is full of water. Access must be available to the bottom of the vessel.

The expansion vessel should be connected to the tee. No isolating valve is permitted between the expansion vessel and cold feed.

SECONDARY RETURN CIRCULATION

All models 180 litres and above are fitted with a secondary return tapping as standard. Where a secondary circulation loop is greater than 15% of the unit capacity, an extra expansion vessel may be required to ensure expansion of the additional volume is absorbed.

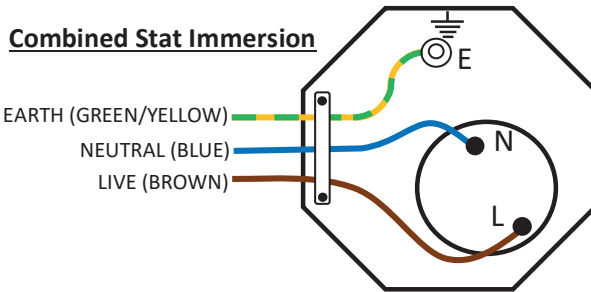
A non-return valve **MUST** be **FITTED** near the return connection. No valve or terminal fitting should be installed between the non return valve and the cylinder.

BOILER AND SOLAR CONNECTION

On indirect units, the two port motorised zone valve and dual thermostat controller must be fitted in accordance with the instructions supplied with the boiler. Indirect units are suitable for oil, gas or electric boilers on a pumped, gravity or sealed system. (We would recommend 28mm coil connections and zone valve on gravity systems.)

The solar controller should be wired using the high limit thermostat to ensure power is cut to the solar pump in the event of an overheat situation. Please refer to the solar equipment instructions for further details.

ELECTRIC IMMERSION HEATERS AND CONNECTIONS



Connect the 3kW 11" 240v immersion heaters BSEN 60225/2/73 (with manual reset cut out at 80°C) to the power supply and earth them in accordance with the current



IEE wiring regulations. The fuse rating should be 13 Amps.

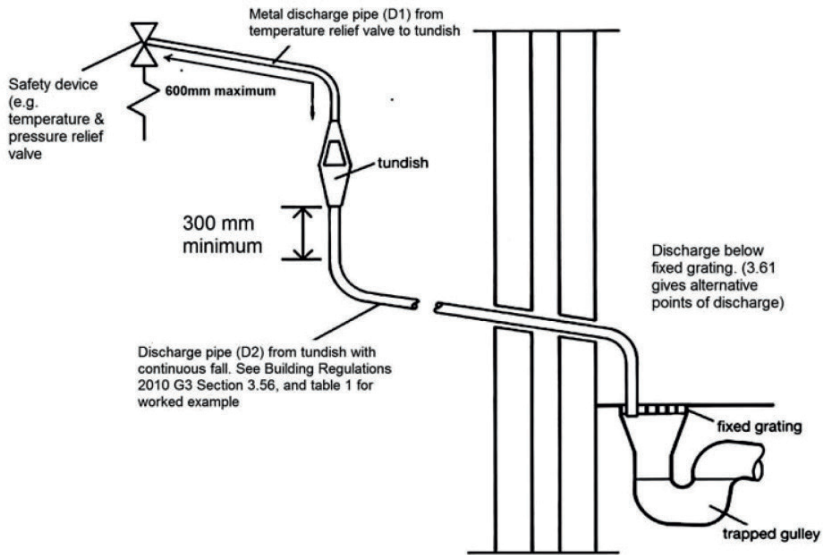
Do not at any time fit immersion heaters without a thermal cutout.

Immersion heaters and the dual thermostat controller supplied with the indirect units should be set to no greater than 60°C and the internal high limit thermostats are factory set no higher than 80°C.

All electrical wiring to thermostats, zone valves and immersion heaters must be earthed and to current IEE Wiring Regulations. The fuse should generally be 3 Amps but refer to component instructions to confirm this.

DISCHARGE PIPE ARRANGEMENT

Position the inlet control group so that the discharge from both safety valves can be joined together via a 15mm end feed Tee. Connect the tundish and route the discharge pipe. The discharge pipe work must be routed in accordance with Part G3 of schedule 1 of the Building Regulations. The information that follows is not exhaustive and if you are in doubt you should seek advice. The two safety valves will only discharge water under fault conditions. When operating normally water will not be discharged. The tundish should be vertical, located in the same space as the unvented hot water storage system and be fitted as close as possible to, and lower than, the safety device, with no more than 600mm of pipe between the valve outlet and the tundish. Any Discharge should be visible at the tundish. The tundish should be located such that any discharge is visible. In addition, where discharges from safety devices may not be apparent, e.g. people with impaired vision or mobility, consideration should be given to the installation of a suitable safety device to warn when discharge takes place, e.g. electronically operated.



The discharge pipe (D2) from the tundish should:

- A) Have a vertical section of pipe at least 300mm long, below the tundish before any elbows or bends in the pipe work.
- B) Be installed with a continuous fall of at least 1 in 200 thereafter.

Note: The discharge will consist of scalding water and steam. Asphalt, roofing felt and non-metallic rainwater goods may be damaged by such discharges

Note: D2 pipe from tundish is now allowed to be installed in soil stacks within premises. This activity is not recommended as discharge from T&P may continue for long periods of time. It is the installer's responsibility to ensure the discharge pipe work can support the discharge for prolonged periods. If used follow guidance on mechanical seal without water trap given in G3 Building Regulations. As discharge can be in excess of 90°C discharge into plastic pipe work is also not recommended.

The discharge pipe (D2) from the tundish should be of metal or other material that has been demonstrated to be capable of withstanding temperatures of the water discharged. The discharge pipe (D2) should be at least one pipe size larger than the nominal outlet size of the safety device unless its total equivalent hydraulic resistance exceeds that of a straight pipe 9m long i.e. discharge pipes between 9m and 18m equivalent resistance length should be at least two sizes larger than the nominal outlet size of the safety device, between 18 and 27m at least 3 sizes larger, and so on. Bends must be taken into account in calculating the flow resistance. Refer to diagram 1, Table 1 and the worked example. An alternative approach for sizing discharge pipes would be to follow BS6700 Specification for design installation, testing and maintenance of services supplying water for domestic use within Buildings.

The discharge pipe (D2) should terminate in a safe place where there is no risk to persons in the vicinity of the discharge. Examples of acceptable discharge arrangements are:

- To a trapped gully with the end of the pipe below the fixed grating and above the water seal.
- Downward discharges at a low level; i.e. up to 100mm above external surfaces such as car parks, hard standings, grassed areas etc. are acceptable providing that where children play or otherwise come into contact with discharges, a wire cage or similar guard is positioned to prevent contact whilst maintaining visibility.
- Discharges at a high level; e.g. in to metal hopper and metal down pipe with the end of the discharge pipe clearly visible or onto a roof capable of withstanding high temperature discharges of water and 3m from any plastic guttering systems that would collect such discharges.
- Device to warn when discharge takes place.

Worked Example

The example below is for a G1/2 temperature relief valve with a discharge pipe (D2) having 4 No. elbows and length of 7m from the tundish to the point of discharge.

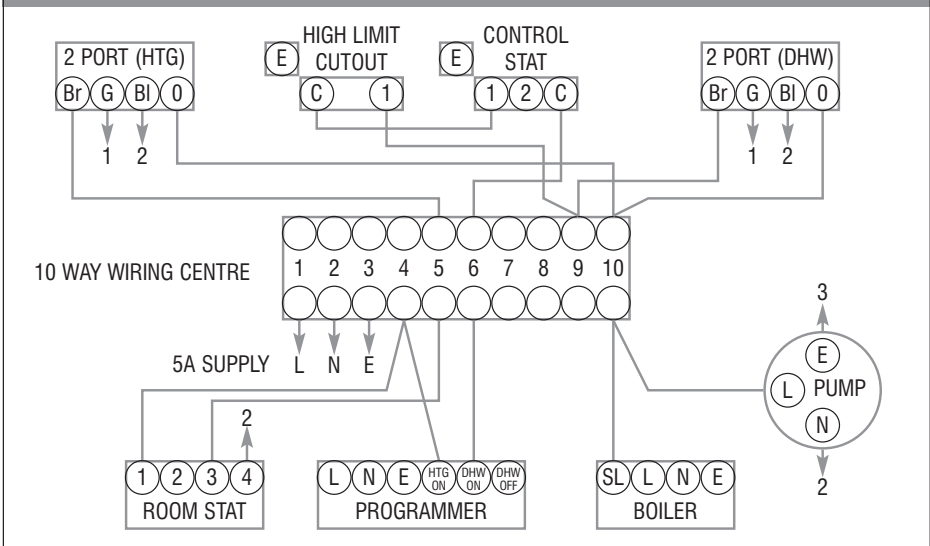
Maximum resistance allowed for a straight length of 22mm copper discharge pipe (D2) from a G1/2 temperature relief valve is: 9.0m. Subtract the resistance for 4 No. 22mm elbows at 0.8m each = 3.2m.

Therefore the maximum permitted length equates to: 5.8m. 5.8m is less than the actual length of 7m therefore calculate the next largest size.

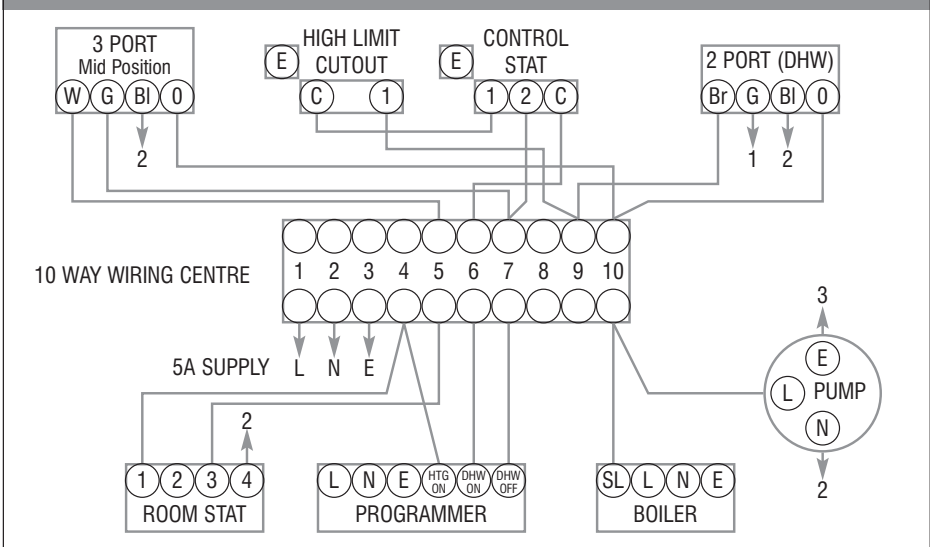
Maximum resistance allowed for a straight length of 28mm pipe (D2) from a G1/2 temperature relief valve equates to: 14m. As the actual length is 7m, a 28mm (D2) copper pipe will be satisfactory.

Sizing of copper discharge pipe 'D2' for a temperature relief valve with a G1/2 outlet size (as supplied)		
Size of discharge pipework	Maximum length of straight pipe (no bends or elbows)	Deduct the figure below from the maximum length for each bend or elbow in the discharge pipe
22mm	Up to 9m	0.8m
28mm	Up to 18m	1m
35mm	Up to 27m	1.4m

**WIRING DIAGRAM TWO 2 PORT ZONE VALVE (S-PLAN)
DUAL THERMOSTAT WIRING**



**WIRING DIAGRAM 3 PORT MID POSITION VALVE (Y-PLAN) + 2 PORT VALVE
DUAL THERMOSTAT WIRING**



KEY: Bl=Blue, Br=Brown, C=Common Terminal, E=Earth, G=Grey, G/Y=Green/Yellow, L=Live, N=Neutral, O=Orange, SL=Switched Live, W=White
 Note: The programmer and boiler power can be taken either from the Wiring Centre or from elsewhere as appropriate.

FILLING THE CYLINDER

Before filling please ensure the pressure in the expansion vessel is 2.1 bar, this is the same as the setting of the pressure reducing valve (see page 4 for other model settings).

Please check all connections including any which are factory made for tightness such as the immersion heater, temperature and pressure relief valve before filling.

Firstly ensure the drain at the base of the cylinder is closed. The hot tap furthest away from the Cylinder should be opened to allow the air in the pipe work to be forced out.

Gradually open the main cold isolation valve, the cylinder will begin to fill. When the cylinder is filled and water flows from the tap allow it to run for a short while to flush through any dirt or pipe jointing residue. Once this is completed close the furthest tap and open all others to remove all remaining air.

Check the control thermostats on the immersion heater(s) and the dual thermostat are set at no higher than 60°C and that the high limit thermostats are set no higher than 85°C.

The use of excessive flux should be avoided. When soldering above the cylinder, ensure flux/solder does not contaminate the cylinder below, since this can cause corrosion.

STORAGE TEMPERATURE

The recommended storage temperature for a POWERflow cylinder is 60-65°C.

Considerations should be made for the prevention of legionella control - For details please consult the HSE legionella approved code of conduct and guidance document.

SAFETY VALVE CHECKS

The safety valve correct operation should be checked prior to cylinder heat up.

To do this turn the tops of both valves independently and ensure water passes through the tundish from each valve. Once this is confirmed open both valves together allowing as much water as possible to flow through the tundish as possible. At this point make sure that your discharge pipe work is free from debris and is transporting the water away to waste effectively.

The valves can then be released and a check should be made to ensure they have re-seated correctly.

If water begins to discharge from either of the pressure relief valves during heat up there is a problem and heat up should be stopped immediately.

SERVICING THE POWERflow RANGE

You must be a G3 qualified engineer to service and maintain an unvented domestic hot water cylinder, any spare parts required must be purchased from McDonald Water Storage. Safety devices should not be bypassed under any circumstances.

Please note, the warranty on the cylinder is void if the service is not completed by a G3 qualified engineer.

HOW TO DRAIN THE CYLINDER

Before draining the cylinder the immersion heater should be isolated to prevent the element from burning out. Shut the cold feed ball valve to isolate the cylinder from the mains cold feed. Securely connect a hose pipe to the drain connection on the cylinder and take the other end to a nearby waste or soak-away. The drain point should be below the level of the cylinder to ensure that the maximum amount of water is drained from the cylinder. The nearest hot tap should be opened to allow air back into the system and prevent a vacuum being pulled in the cylinder. Care must be taken as the draining water may be hot.

ANNUAL INSPECTION & MAINTENANCE

The POWERflow range requires an annual service to ensure continued safe operation and optimum efficiencies. It is essential that the following tasks are carried out by a qualified engineer on an annual basis.

- Turn the cap of the expansion relief valve. Water should be allowed to flow for at least 5 seconds. Upon release make sure it re-seats fully. Carry out the same procedure with the pressure / temperature relief valve. In both cases check that the discharge pipe work is carrying the water away adequately. If not check for any potential blockages and clear them where necessary.

WARNING: THE DISCHARGING WATER MAY BE HOT!

- Check that the factory installed immersion heater is working and the internal thermostat is controlling the water at the required temperature.
- Test the air pressure in the expansion vessel with the pressure in the Cylinder dropped, this should be at 2.1 bar (see page 4 for other model settings). If this is low the pressure can be topped up with a standard bicycle pump.
- Clean the mesh filter in the pressure reducing valve. To do this, turn off the mains at the stopcock, remove cartridge, clean and replace.
- The POWERflow log book supplied with this unit must be completed on every service visit.

TROUBLESHOOTING

Discharge from either of the relief valves is an indication of a malfunction in the system and must be investigated immediately.

OVERHEATED HOT WATER DISCHARGE

In the unlikely event of overheated (90°C) water being discharged, the heat source i.e. immersion heaters or boiler should be switched off immediately and a competent operative called out. Ensure that the discharge of hot water or steam at the tundish or final discharge point causes no danger and is not likely to injure anyone.

Do not shut off the cold water supply to the unit or re-use until checked and repaired.

Once cold water has entered the unit and displaced the overheated water, check the thermostats and energy cut out in the immersion heater, thermostat and boiler. Identify the faulty component and replace with the correct component as supplied by the manufacturer, and ensure that it works before re-commissioning the system. **Do not, for any reason, bypass an energy cut-out.**

WATER DISCHARGE

If water is occasionally being discharged as the water is heated, this would indicate that the expansion vessel needs recharging. Switch off all power to the cylinder and recharge vessel as below.

If water is continually being discharged, firstly check with a gauge that the pressure allowed through the pressure reducing valve does not exceed 2.1 bar (see page 4 for other model settings). If it does, remove filter and clean.

Next check the charge in the expansion vessel. If recharge is required, close the mains stopcock and open a tap. Connect the pump with gauge to the air inlet on top of the vessel and charge to the same as the pressure reducing valve. If after recharging the expansion vessel the cylinder is still discharging, it may be cross flow, ensure appropriate check valves are fitted.

If any component has failed, it should only be substituted with a replacement part from McDonald water Storage.

IMMERSION HEATER FAILURE

If the immersion heater is not heating the water, there may be an issue with the control thermostat or immersion element itself. Once these have been checked and/or replaced, the immersion heater can be re-set by taking off the cap and depressing the button on the high limit thermostat.

SCALE PROTECTION

The Building Regulations L1A: New dwellings/L1B: Existing dwellings and the requirements set out in the Domestic Heating Compliance Guide specify that “where the mains water hardness exceeds 200ppm provision should be made to treat the feed water to water heaters and the hot water circuit of combination boilers to reduce the rate of accumulation of lime scale”.

To comply with this requirement the hardness of the mains water should be checked by the installer and if necessary the optional factory fitted in-line scale inhibitor should be specified at the time of order for hardness levels between 200 and 300 ppm (mg/l).

Where the water is very hard ie 300ppm (mg/l) and above the optional polyphosphate type, inhibitor should be specified at the time of order. However, this will need to be fitted by the installer at a suitable point in the cold water supply to the appliance

SPARE PARTS LIST		
	Description	Stock Code No.
1	3kW immersion element	WUEIH
2	Pressure Reducing Valve (2.1 bar)	WUVPR
3	Pressure Reducing Valve (3.0 bar)	WUVPR3
4	Pressure Reducing Valve (1.5 bar)	WUVPRC
5	22mm Check Valve	WUVC
6	15mm Expansion Relief Valve (3.5 bar)	WUVER
7	15mm Expansion Relief Valve (4.5 bar)	WUVER
8	15mm T&P Valve	WUVTP
9	12 litre expansion vessel	WU12EV
10	18 litre expansion vessel	WU18EV
11	25 litre expansion vessel	WU25EV
12	35 litre expansion vessel	WU35EV
13	22mm Motorised Zone Valve	WUEMZV22
14	Dual Thermostat	WUEDAC
15	15mm x 22mm tundish	WUTUND

The full range of spare parts are available to order online at mcdonaldwaterstorage.com/spares.

PRODUCT WARRANTY

McDonald Water Storage guarantee the POWERflow shell against material defect or manufacturing fault for a period of 5 years from the date of delivery. This is extended to 25 years once the unit registration document is completed and returned.

The above product guarantee is valid provided:

- It has been installed by a competent installer in accordance with the instructions detailed in our installation manual and all relevant Codes of Practice and Regulations in force at the time of installation.
- No factory fitted parts have been removed for unauthorised repair or replacement and the product has not been modified – other than by McDonald Water Storage.
- Any replacement parts should be purchased from McDonald Water Storage.
- The hot water store has only been used for the storage of potable water supplied from the public mains (Max – 200mg/litre chloride). And treated as detailed in the installation instructions.
- The water quality shall be in accordance with European Council Directive 98/93 EC, or revised version at the date of installation, and is not fed with water from a private supply. Particular:


Chloride content:	Max. 200mg/l
Sulphate content:	Max. 200mg/l
Combination chloride/sulphate:	Max. 300mg/l (in total)
- It has not been subject to wrong or improper use, left uncared for, or subjected to scale or frost damage.
- In accordance with the Building Regulations L1A: New Dwellings/ L1B: Existing Dwellings, the requirements set out in the Domestic Building Services Compliance Guide specify that “where the mains water hardness exceeds 200ppm provision should be made to treat the feed water to water heaters and the hot water circuit of combination boilers to reduce the rate of accumulation of lime scale”.
- The unit has been serviced annually by a competent, licenced engineer in accordance with the requirement set out in the installation manual.
- The Commission Checklist and Service Record included in our manual has been completed and updated after each annual service where required.
- Any disinfection has been carried out strictly in accordance with BS 6700.
- For heavy use installation where constant usage / reheat is required titanium immersion heaters should be fitted.
- Please note, defects caused by corrosion or scale deposits are not covered by any guarantee.

- Without prejudice to any other term, we shall not be liable for any water damage caused directly or indirectly as a result of any leak or other defect in the goods. We cannot control the conditions of use of the goods or the time or manner or location in which they will be installed and the purchaser agrees to be fully responsible for testing and checking all works which include the goods at all relevant times (up to, including and after commissioning) and for taking all necessary steps to identify any leaks and prevent any damage being caused thereby.

All components fitted to or supplied with the unvented range carry a 12 month guarantee.

Please see our full Terms & Conditions on our website:
<https://www.mcdonaldwaterstorage.com/>

As a HWA Charter Member we endeavour to provide consumers quality assurance, product satisfaction, and confidence in McDonald Water Storage, that we will deliver a service beyond just supplying the product.

 The logo is circular with a black border. Inside the circle, the text "hot water association" is written in a curved path at the top, and "CHARTER MEMBER" is written at the bottom. In the center of the circle, there are stylized wavy lines representing water, with three vertical wavy lines above three horizontal wavy lines.	<p>The HWA Charter Statement requires that all members adhere to the following:</p> <ul style="list-style-type: none">• To supply fit for purpose products clearly and honestly described• To supply products that meet or exceed appropriate standards and building and water regulations• To provide pre and post technical support• To provide clear and concise warranty details to customers
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MAINS PRESSURE HOT WATER STORAGE SYSTEM COMMISSIONING CHECKLIST

This Commissioning Checklist is to be completed in full by the competent person who commissioned the storage system as a means of demonstrating compliance with the appropriate Building Regulations and then handed to the customer to keep for future reference.

Failure to install and commission this equipment to the manufacturer's instructions may invalidate the warranty but does not affect statutory rights.

Customer name:	Telephone number:				
Address:					
Cylinder Make and Model					
Cylinder Serial Number					
Commissioned by (PRINT NAME):	Registered Operative ID Number				
Company name:	Telephone number:				
Company address:	Commissioning date:				
To be completed by the customer on receipt of a Building Regulations Compliance Certificate*:					
Building Regulations Notification Number (if applicable)					
ALL SYSTEMS PRIMARY SETTINGS (indirect heating only)					
Is the primary circuit a sealed or open vented system?	Sealed		Open	°C	
What is the maximum primary flow temperature?					
ALL SYSTEMS					
What is the incoming static cold water pressure at the inlet to the system?					bar
Has a strainer been cleaned of installation debris (if fitted)?	Yes		No		
Is the installation in a hard water area (above 200ppm)?	Yes		No		
If yes, has a water scale reducer been fitted?	Yes		No		
What type of scale reducer has been fitted?					
What is the hot water thermostat set temperature?					°C
What is the maximum hot water flow rate at set thermostat temperature (measured at high flow outlet)?					l/min
Time and temperature controls have been fitted in compliance with Part L of the Building Regulations?	Y	Plan	S	Plan	Other
Type of control system (if applicable)					
Is the cylinder solar (or other renewable) compatible?	Yes		No		
What is the hot water temperature at the nearest outlet?					°C
All appropriate pipes have been insulated up to 1 metre or the point where they become concealed					Yes

UNVENTED SYSTEMS ONLY			
Where is the pressure reducing valve situated (if fitted)?			bar
What is the pressure reducing valve setting?			
Has a combined temperature and pressure relief valve and expansion valve been fitted and discharge tested?	Yes	No	
The tundish and discharge pipework have been connected and terminated to Part G of the Building Regulations			Yes
Are all energy sources fitted with a cut out device?	Yes	No	
Has the expansion vessel or internal air space been checked?	Yes	No	
THERMAL STORES ONLY			
What store temperature is achievable?			°C
What is the maximum hot water temperature?			°C
ALL INSTALLATIONS			
The hot water system complies with the appropriate Building Regulations			Yes
The system has been installed and commissioned in accordance with the manufacturer's instructions			Yes
The system controls have been demonstrated to and understood by the customer			Yes
The manufacturer's literature, including Benchmark Checklist and Service Record, has been explained and left with the customer			Yes
Commissioning Engineer's Signature			
Customer's Signature			
(To confirm satisfactory demonstration and receipt of manufacturer's literature)			

*All installations in England and Wales must be notified to Local Authority Building Control (LABC) either directly or through a Competent Persons Scheme. A Building Regulations Compliance Certificate will then be issued to the customer.

© Heating and Hotwater Industry Council (HHIC)

This Checklist can be used for any installation covered by its description.

SERVICE RECORD

It is recommended that your hot water system is serviced regularly and that the appropriate Service Record is completed.

Service Provider

Before completing the appropriate Service Record below, please ensure you have carried out the service as described in the manufacturer's instructions.

SERVICE 01	Date:	SERVICE 02	Date:
Engineer name:		Engineer name:	
Company name:		Company name:	
Telephone No:		Telephone No:	
Comments:		Comments:	
Signature		Signature	
SERVICE 03	Date:	SERVICE 04	Date:
Engineer name:		Engineer name:	
Company name:		Company name:	
Telephone No:		Telephone No:	
Comments:		Comments:	
Signature		Signature	

SERVICE 05	Date:
Engineer name:	
Company name:	
Telephone No:	
Comments:	
.....	
.....	
.....	
.....	
Signature	

SERVICE 06	Date:
Engineer name:	
Company name:	
Telephone No:	
Comments:	
.....	
.....	
.....	
.....	
Signature	

SERVICE 07	Date:
Engineer name:	
Company name:	
Telephone No:	
Comments:	
.....	
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.....	
Signature	

SERVICE 08	Date:
Engineer name:	
Company name:	
Telephone No:	
Comments:	
.....	
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Signature	

SERVICE 09	Date:
Engineer name:	
Company name:	
Telephone No:	
Comments:	
.....	
.....	
.....	
.....	
Signature	

SERVICE 10	Date:
Engineer name:	
Company name:	
Telephone No:	
Comments:	
.....	
.....	
.....	
.....	
Signature	

Attach additional paperwork for all subsequent services.



McDonald
Water Storage

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