



McDonald
Water Storage

Calorifier

Commercial Hot Water Cylinders Installation & Technical Manual



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Commissioning Checklist Inside

Manual must be completed by Installer and left with Calorifier or Customer

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Introduction

McDonald Water Storage offer an extensive range of calorifiers to suit vented and unvented installations for commercial and industrial use. Manufactured in strict accordance to the requirements of British Standard 853 and quality plan ISO 9001, we have the ability to manufacture calorifiers to a capacity of over 3000 Litres and have a long history of manufacturing copper calorifiers tailored to the exact requirements of the project. From schools, universities, football clubs, hotels, hospitals, factories, swimming pools to offshore platforms McDonald Water Storage calorifiers and expertise have been used to meet a variety of demands in differing environments.

Our commitment to providing a knowledgeable, friendly service from conception to post-installation support, alongside our unrivalled ability to provide a bespoke calorifier package designed to your exact requirements will minimize the time and costs involved during installation.

Handling & Storage

The Calorifier should be handled with care in order to avoid any damage to valves, fittings or external pipework, and mounted on level and prepared foundations.

DO NOT LIFT BY ANY FITTINGS OR EXTERNAL PIPEWORK, as this can result in loosening of connections and risking possible leaks. Any Calorifiers with a capacity of 500L or over include Lifting Lugs to assist with lifting and positioning. It is good practice to check the joints before filling with water in case anything has been loosened in transit.

Vertical Calorifiers can be floor mounted, provided the floor is strong enough to support the **full weight** of the unit.

Horizontal Calorifiers are supported by cradles, positioned clear of the drain connection.

The Environment

This product has been manufactured using many recyclable materials, including copper and the approved HCFC/CFC free polyurethane foam insulation. At the end of its useful life, it should be disposed of at a Local Authority Recycling Centre, to maximise the products full environmental benefits.

Design

The copper Calorifiers are bespoke primary stores that are manufactured strictly in accordance with the requirements of BS 853, which ensure they meet all current Health and Safety Legislation.

Our calorifiers are subject to a hydraulic test at 1.5 times the maximum working pressure of the calorifier, with a minimum of 6 hours of testing our calorifiers are tested 12 times longer than the BS 853 requirements for the highest reliability.

All calorifiers are manufactured with full traceability of material and assembly with each material and item used in manufacturing our calorifiers individually recorded alongside the date of manufacture. Each stage of assembly and the individual operator who completes each process is recorded to provide a full manufacturing record.

All work and input into a calorifier is checked at all stages from its design, costing, issuing and manufacture to ensure the highest product quality is provided. During manufacture a 3 stage inspection process is in place at assembly, testing and final inspection once insulated to ensure the calorifier accurately reflects the requirements.

Immersion Heaters

- The Immersion Heater thermostats are preset with the control setting at **67°C** and the high limit setting at **85°C**. The control setting can be lowered or increased as required for the installation requirements
- If in any doubt of how to set the Immersion or what temperature we would advise for specific installations, please contact us on **01592 611123**.
- All Immersion Heaters should be wired by a qualified electrician, as shown in the literature provided with the Immersion

Pipework

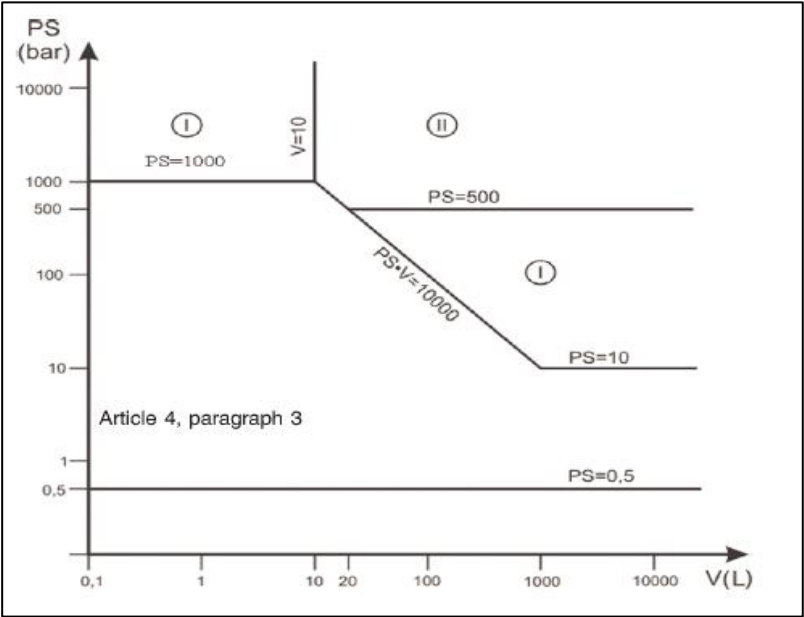
All pipework should be secured with external supports and not by the Calorifier unit itself.

Pipework should also include suitable bends or flexible joints to allow for expansion.

Pressure Equipment Directive

Calorifiers are designed to meet the mandatory requirements of the Pressure Equipment Directive 2014/68/EU (PED). The majority of fluids used within our designed calorifiers (i.e. water, steam etc.) are classified as Group 2 Fluids, and thus follow the rules below:

1. Where the maximum design pressure (Bar) multiplied by the calorifier volume (Litres) is less than 10,000, or the design pressure is less than 10 bar, the calorifier must comply with the SEP (Sound Engineering Practice) and not carry the CE/UKCA mark.
2. Calorifiers which fall outside the previous parameters must carry the CE/UKCA mark.



The above graph (taken from Annex II Table 4 of the PED) demonstrates the previous rules for Vessels for Group 2 liquids. “Article 4, Paragraph 3” refers to design compliance with the SEP (Sound Engineering Practice).

Water Treatment

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 i.e. 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.

The Primary system (**Indirect** Calorifiers only) will require the application of a protective scale and corrosion inhibitor such as Fernox to ensure adequate protection. This should avoid having corrosive material in the primary system and remove any build-up of sludge which can reduce the performance of the primary system. The volumes and concentration of inhibitor required should be calculated in accordance with the manufacturer's instructions.

If an inhibitor is installed, please follow the inhibitors maintenance instructions and replace when required. When replacing the inhibitor, please ensure to fully flush the water system before installing the new inhibitor.

Discharge Requirements

The Discharge pipework from all Safety Valves must be run to a suitable drain point where it is visible with no risk/danger to people.

The pipework should be metal, capable to withstand the hot temperatures of the discharged water. The diameter of the Discharge pipework should be no less than the nominal outlet size of the Safety Valves.

The Discharge pipework should also be installed so that any discharge will be directed away from electrical components if the discharge outlet should become blocked.

Capacity

When sizing hot water storage calorifiers, it is important to determine not only the correct size but also the correct relationship between storage and recovery to enable the most efficient usage from your hot water system. Oversizing the calorifier can lead to unnecessary costs both in your calorifier cost and running of your system, while inadequate storage can lead to the system not meeting the users requirements.

For most commercial situations a storage capacity sufficient for one hour with a corresponding heater output is considered adequate for the majority of calorifier applications. However, a pattern of hot water usage can be projected based on the function of building, the activity that takes place and its population. For example, environments such as offices and schools usually operate on a 12 hour period and other buildings such as hospitals and hotels may operate over 24 hour. Where the shower demand takes up the majority of the hourly consumption efforts should be made to obtain an accurate estimate of the total usage and the timespan involved.

Where installation space permits additional storage volume can provide a useful reserve of hot water. If space for one hour storage volume is not available then increasing the output of the heat source could allow for the storage capacity to be reduced accordingly.

Additionally, dividing the total storage demand between multiple calorifiers can also safeguard the supply and would also allow part of the system to be shut down during off peak periods or seasons. The following guide, showing the maximum hourly demand in different commercial environments, should be utilised:

Installation	Shower	Bath	WHB		Sink		Load Factor
			Dom.	Com.	Dom.	Com.	
Factory	120	-	5	20	50	80	1.0
Hospital	70	60	10	20	50	80	0.7
Hotel (Average)	50	50	10	15	50	100	0.5
Hotel (Upper Class)	60	60	15	20	60	120	0.5
Offices	-	-	5	10	40	40	1.0
Restaurant	-	-	-	25	100	140	1.0
School	180	-	5	20	40	80	0.8
Sports Centre	220	-	5	15	40	100	1.0
University	220	-	5	20	40	80	0.8

Capacity (Examples)

Example 1	50 Hotel (High End)					
Background	Sizing for a 50 Bedroom Hotel with public bathrooms, cleaning, washing, cooking and bar facilities would give the following sizing:					
Shower & Bath Demand	50	x	60	=	3000	Litres
Domestic WHBs Demand	50	x	15	=	750	Litres
Commercial WHBs Demand	4	x	25	=	100	Litres
Washing Machine Demand	3	x	50	=	150	Litres
Load Factor					0.5	
Calculation	$(3000 + 750 + 100 + 150) \times 0.5$					
Maximum Hourly Demand					2240	Litres
Recovery Output (Per Hour)					2240	Litres
Calorifier Recommendation (1 Hour Recovery)					2240	Litres
Calorifier Recommendation (30 Min Recovery)					1120	Litres

Example 2	Football Changing Room					
Background	Sizing for 32 People to have a 6 minute shower with a 6 Litre Per Minute flow rate every 2 hours while running 12 WHBs and 1 Sink, would give the following sizing:					
Shower & Bath Demand	32	x 6	x 6	=	1152	Litres
Commercial WHBs Demand	10	x	15	=	150	Litres
Commercial Sink Demand	1	x	100	=	100	Litres
Load Factor					1.0	
Calculation	$(1152 + 150 + 100) \times 1.0$					
Maximum Hourly Demand					1400	Litres
Calorifier Recommendation (2 Hour Recovery)					1400	Litres

Primary Connections

The size of the primary pipework is determined by the flow rate and length of run between the boiler and calorifier. Wherever possible the connection sizes on the primary pipework should not exceed 2 or 2 ½" so that the inlet velocity does not exceed tolerances.

Secondary Connections

Where a high water demand is required over a shorter period the correct sizing of the secondary connections (i.e. Cold Feed and Hot Draw) should be factored in to ensure the peak demand in litres per second is met.

Connection (inches)	Size (mm)	Peak Demand (litres per second)	Hourly Demand (litres per hour)
1"	28	0.1	150
1 ¼"	35	0.2	275
1 ½"	42	0.3	400
2"	54	0.6	850
2 ½"	68	1	1400
3"	72	1.5	2500
4"	96	2.5	5500

It is generally bad practice for the Cold Feed to be smaller than the Hot Draw due to the potential for a vacuum to be created. If this is the case, an Anti-Vacuum Valve should be supplied with the unit.

Secondary Recirculation

The secondary return sizing should be factored in to allow an efficient flow rate at all points of the property but also be sized at a level that avoids excessive secondary recirculation as this can lead to increased heat loss.

Relief Valve

On a **Vented** System the Relief Valve must be sized in conjunction with the Cold Feed size.

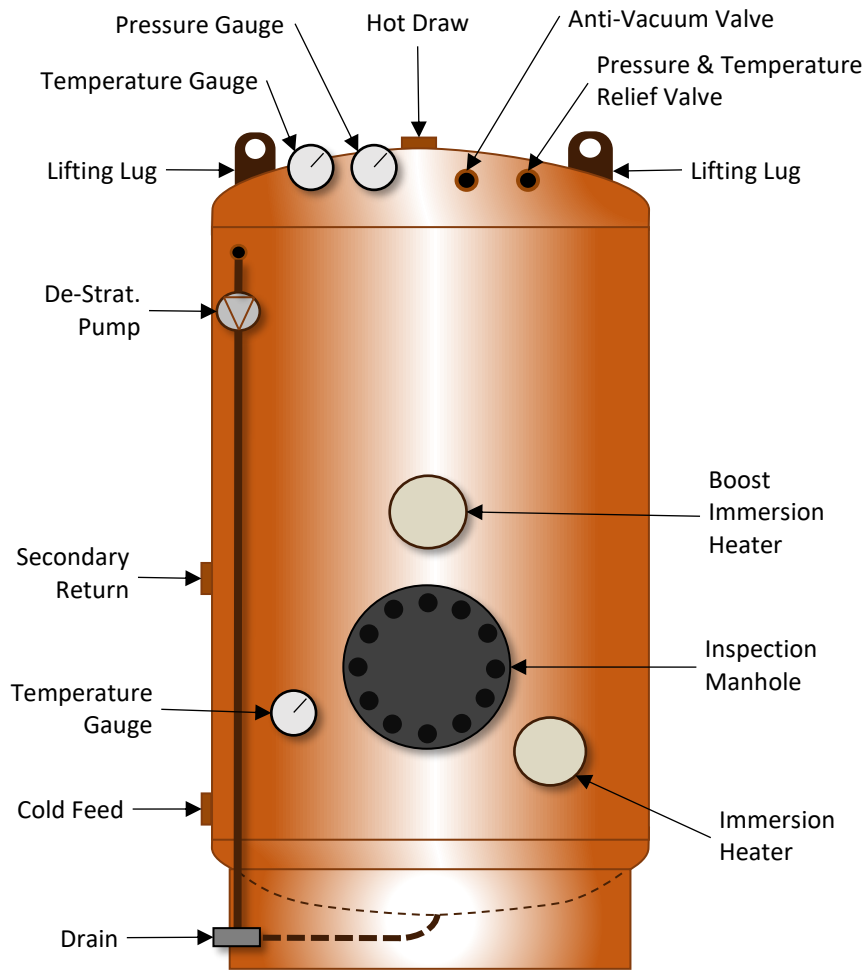
On an **Unvented** System, each unit is supplied with a DN20 Safety Valve for the Cold Feed, and an additional P & T (Pressure & Temperature) Relief Valve which must be sized to match the power input to the cylinder.

Expansion Vessel

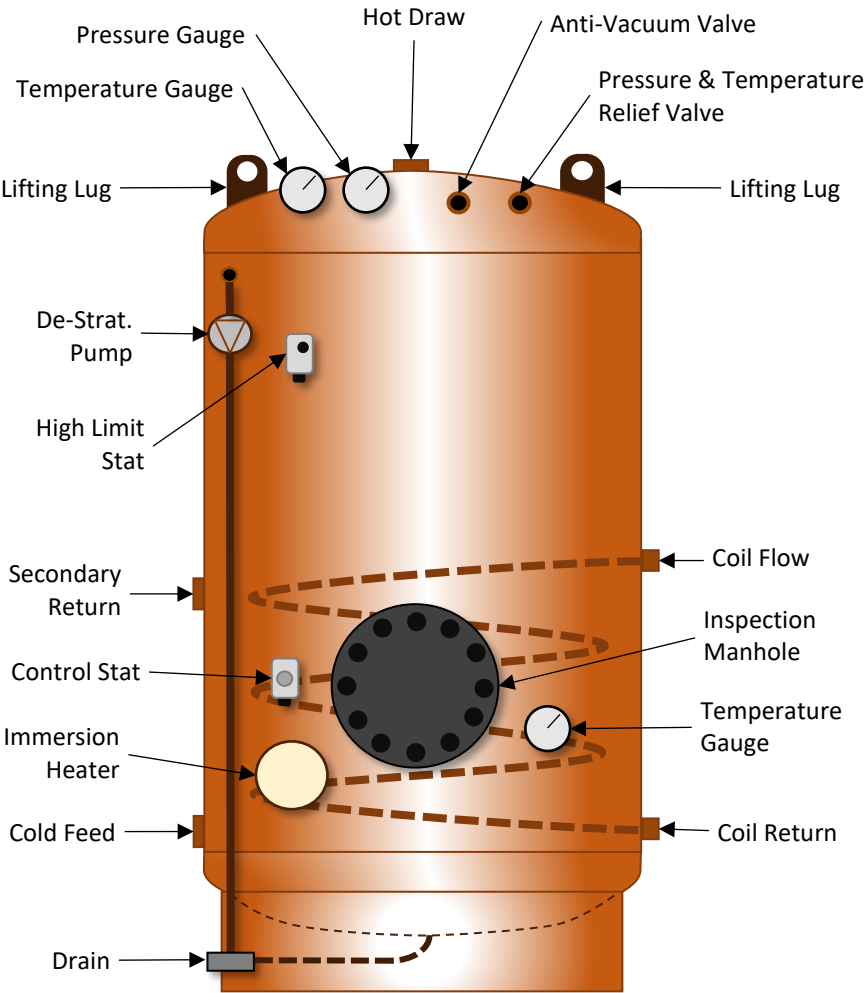
The Expansion Vessel is sized according to the capacity, cold inlet pressure and working pressure of the calorifier.

If required, Flow-Through Vessels are also available.

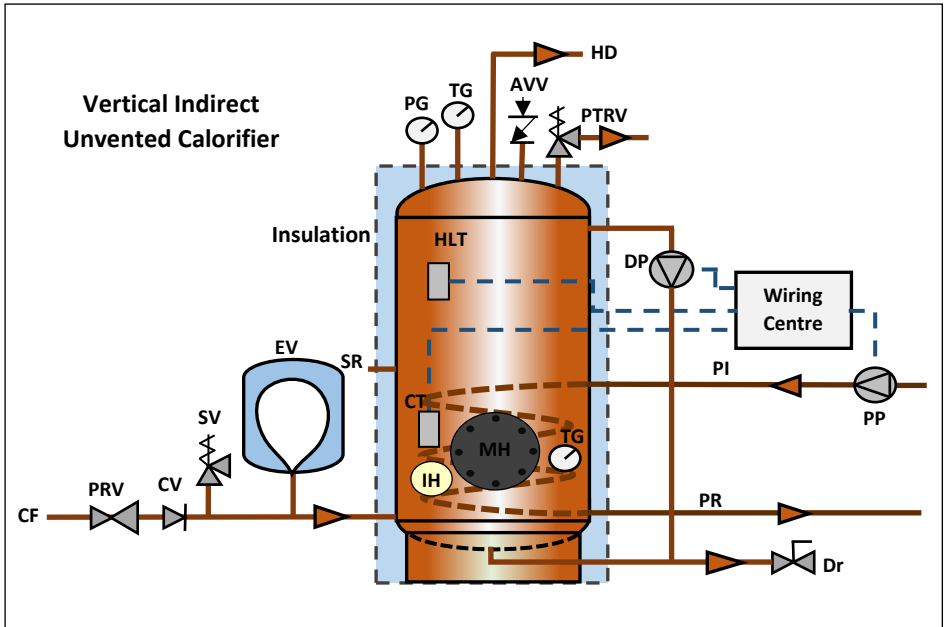
General Schematic: Direct Unvented Calorifier



General Schematic: Indirect Unvented Calorifier



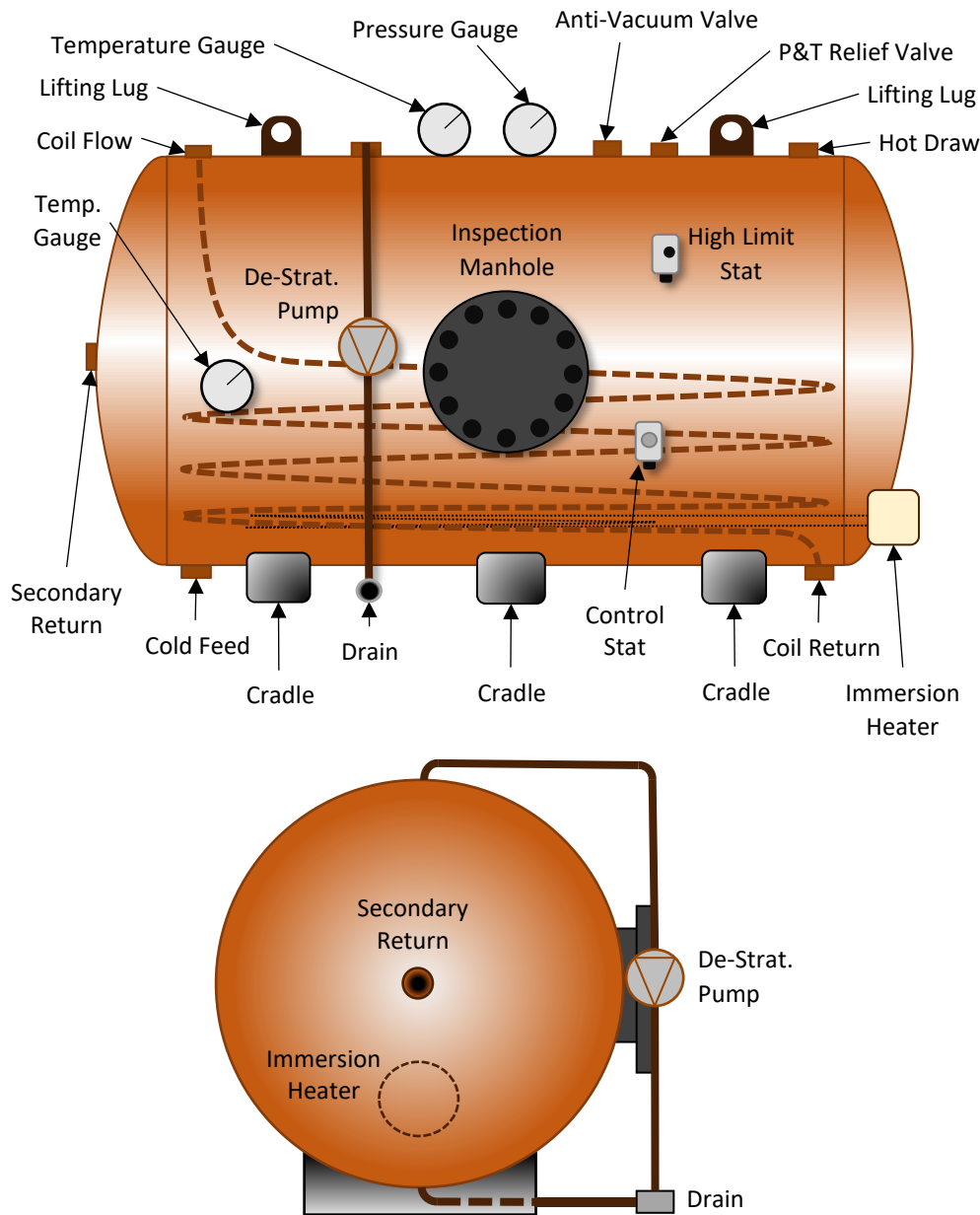
Installation Schematic: Indirect Unvented Calorifier



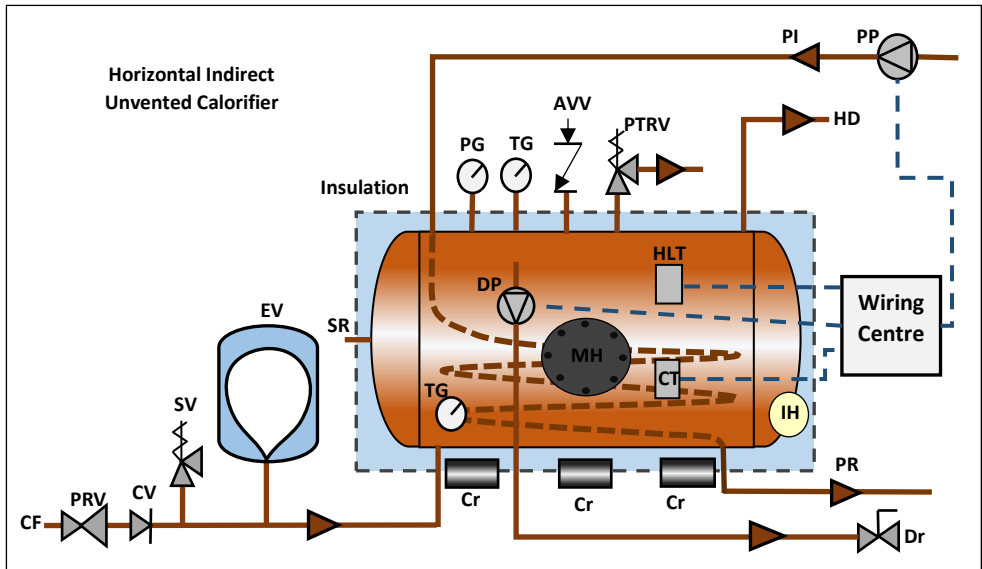
LEGEND

AVV	Anti-Vacuum Valve	MH	Inspection Manhole
CF	Cold Feed	PG	Pressure Gauge
CT	Control Thermostat	PI	Primary Flow Inlet
CV	Check Valve	PP	Primary Pump
DP	De-Stratification Pump	PR	Primary Flow Return
Dr	Drain	PRV	Pressure Reducing Valve
EV	Expansion Vessel	PTRV	Pressure & Temperature Relief Valve
HD	Hot Draw	SR	Secondary Return
HLT	High-Limit Thermostat	SV	Safety Valve
IH	Immersion Heater	TG	Temperature Gauge

General Schematic: Horizontal Indirect Calorifier



Installation Schematic: Horizontal Indirect Calorifier



LEGEND			
AVV	Anti-Vacuum Valve	MH	Inspection Manhole
CF	Cold Feed	PG	Pressure Gauge
Cr	Cradle	PI	Primary Flow Inlet
CT	Control Thermostat	PP	Primary Pump
CV	Check Valve	PR	Primary Flow Return
DP	De-Stratification Pump	PRV	Pressure Reducing Valve
Dr	Drain	PTRV	Pressure & Temperature Relief Valve
EV	Expansion Vessel	SR	Secondary Return
HD	Hot Draw	SV	Safety Valve
HLT	High-Limit Thermostat	TG	Temperature Gauge
IH	Immersion Heater		

Commissioning

The below is a recommended guide of actions and checks that should be undertaken during commissioning:-

DO

- ✓ **During commissioning, complete all relevant sections of the Commissioning Checklist (Page 16 - 18). This must be completed during commissioning and left with product to meet the Warranty conditions.**
- ✓ Check and tighten pipework where applicable.
- ✓ Fit the Pressure Reducing Valve to the Incoming Mains and check it has been set to the correct Pressure.
- ✓ Ensure all Cold Feed Components (Pressure Reducing Valve, Check Valve, Safety Valve & Expansion Vessel) have been installed in the correct order as shown on schematics (**Page 11 & 13**) and in flow direction towards the Calorifier.
- ✓ Ensure that connections are fitted in accordance with the sketch supplied.
- ✓ Ensure the drain is connected to allow draining of the unit if required.
- ✓ Ensure all pipework is secured with external supports and not by the Calorifier itself.
- ✓ Allow 100mm clearance on any face of the unit with pipework / connections and allow minimum 200mm between the top of the tank and ceiling to allow access for top pipework / connections
- ✓ Check all connections including factory made, prior to and after installation, including pipework, immersion heaters, components etc.
- ✓ Check all Calorifier controls (e.g. Thermostats, Immersion Heaters, Safety Valve etc.) and inspection points (e.g. Manhole, Gauges etc.) have suitable access for inspection, servicing and maintenance.
- ✓ Check the Drain valve is closed before filling.
- ✓ Open the furthest tap from the Calorifier and fill the Calorifier
- ✓ Run all taps and other hot outlets to remove all air from the system.
- ✓ Check for leaks throughout the system.
- ✓ Manually open the Pressure & Temperature Relief Valve (fitted on top of the Calorifier) for a few seconds, and check the discharged water runs freely through the discharge pipework.
- ✓ Manually open the Safety Valve (fitted onto the Cold Water Supply) for a few seconds, and check the discharged water runs freely through the discharge pipework.
- ✓ Ensure the store temperature is set to circa 60 - 65°C on the store temperature gauge. This can be increased but consideration should be made for the temperature and pressure rise, caused by “creeping”, where small draw offs are present.
- ✓ Direct only - Immersion Heaters should be set at 67°C to meet users’ hot water requirements, and temperature confirmed on the Temperature Gauge 60 - 65°C. (**See Page 3**)

- ✓ Indirect only - Fill the indirect (primary) circuit in accordance with the boiler manufacturers commissioning instructions. Once filled, switch on the boiler and allow the Calorifier to heat up.
- ✓ Indirect only - Check the Control Stat and High Limit Stat operate correctly during the heating cycle.
- ✓ Check that no water is discharged from either the Safety Valve or Pressure & Temperature Relief Valve during the heating cycle.
- ✓ Ensure that all exposed pipework on the Calorifier is insulated to minimise any heat losses.

DON'T

- ✗ Use a combined feed and vent.
- ✗ Place any clothing or other combustible materials against or on the Calorifier.

Commissioning Checklist

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:	
Calorifier Make & Model:	
Production Number:	
Commissioned by (PRINT NAME):	
Company Name:	
Telephone Number:	
Company Address:	
Commissioning Date:	

ALL SYSTEMS

What is the incoming static cold water pressure at the inlet to the system?				Bar
Has cold mains strainer been cleaned of installation debris?	Yes		No	
What is the maximum 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?	Yes			
Type of control system (if applicable)	Y Plan		S Plan	
			Other	
What temperature is the Boiler Thermostat set to?				°C
If fitted, what is the Immersion Heater thermostat temperature?				°C
What is the hot water temperature at the nearest outlet?				°C
What is the maximum hot water temperature at the nearest outlet?				°C
Is the cylinder solar (or other renewables) compatible?	Yes		No	
All appropriate pipes have been insulated up to 1 metre or the point where they become concealed?	Yes			

ALL SYSTEMS PRIMARY SETTINGS (Indirect Heating Only)

Is the primary circuit a sealed or open vented system?	Sealed		Open	
What is the maximum primary flow temperature?				°C
Is the installation in a hard water area (above 200ppm)?	Yes		No	
If yes, has a water scale conditioner/inhibitor been fitted?	Yes		No	
What type of scale conditioner/inhibitor has been fitted?				

UNVENTED SYSTEMS ONLY				
Where is the pressure reducing valve situated (if fitted)?				
What is the pressure reducing valve setting?				Bar
Has a combined temperature and pressure relief valve and expansion valve been fitted and discharge tested?	Yes		No	
The Tundish and Discharge pipework has 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 been checked?	Yes		No	

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 and understood by the customer.	Yes	
The manufacturer's literature, including this Checklist, has been explained and left with customer.	Yes	

Commissioning Engineer's Signature:
Customer's Signature:
(To confirm satisfactory demonstration and receipt of manufacturer's literature)

Troubleshooting

Below contains a troubleshooting and solution guide to the Calorifier. If this table does not resolve your problem, please contact either your installer or phone McDonald Water Storage Technical Team for further advice.

SYMPTOM	SOLUTION
The water at the tap is lukewarm or cold.	The Calorifier unit is designed to work best when the store temperature is at or approaching 60 - 65°C. Check the thermometer is showing the store temperature is at or approaching 60 - 65°C. If this is not the case; 1) On the Indirect model, ensure that the all indirect sources (e.g. Boiler) are working, that the control thermostat is set at 65°C and allow sufficient time for the store to reach working temperature. 2) On a Direct model, a qualified electrician should check that the immersion heaters are working, the control thermostat is set at 67°C, the safety cut-out has not tripped, and receiving the correct supply at the correct time (off-peak).
Water discharges whilst Cylinder is heating	1) If water is occasionally discharging as the water is heated, this would indicate the Expansion Vessel needs recharging. Switch off all power to the cylinder and recharge the vessel (as below). 2) If water is continually being discharged, firstly check with a gauge that the pressure allowed through the pressure reducing valve does not exceed the set pressure. If it does, remove filter and clean. For both instances, check the charge in the Expansion Vessel. If recharge is required, close the mains stopcock and open a hot outlet. Connect the pump with gauge to the air inlet on the Vessel and charge to the same as the pressure reducing valve. If after recharging the Expansion Vessel the cylinder is still discharging, this may be a result of cross flow. Ensure appropriate check valves are fitted.
Not enough hot water and less than 65°C on the temperature gauge.	Check the heat sources and their input in (kW) to the store as this will be lower than the kW output which will result in the store not producing enough heat for the exchanger to provide heated mains pressure water.

Flow rate from taps has dropped	This could be debris blocking the water flow. Check any installed Strainers have been cleaned of debris.
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 qualified engineer must be contacted. Ensure that the discharge of hot water or steam at the final discharge point causes no danger and is not likely to injure anyone. DO NOT SHUT OFF THE COLD WATER SUPPLY TO THE UNIT. DO NOT RE-USE UNTIL CHECKED AND REPAIRED. ENSURE COMPONENTS ARE ISOLATED FROM ELECTRICITY BEFORE INVESTIGATION. Once cold water has entered the unit and displaced the overheated water thus cooling it, check the thermostat and energy cutout in the following: 1) Immersion Heater(s) 2) Thermostat(s) 3) 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 CUTOUT.

Warranty

McDonald Water Storage guarantee the Calorifier shell against material defect or manufacturing fault for a period of 5 years from the date of delivery. Components are guaranteed for 2 years.

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.
- All parts supplied loose with the unit must be fitted unless agreed in writing 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”.
- Where appropriate 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 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.

Please see our full Terms & Conditions on our website:

<https://www.mcdonaldwaterstorage.com/>

Ancillary Descriptions

The following spare parts are available to purchase from the Website, with additional information provided.

Follow the link below;

<https://www.mcdonaldwaterstorage.com/store/spares>

or phone the office on **(01592) 611123**.

Note that all listed Ancillaries are Standard Stock Spares. If the Calorifier requires a bespoke Ancillary, phone the office for further details.

Cold Water Control Packs	1 ¼" Cold Water Control Pack Includes Pressure Reducing Valve & Check Valve (WUCWP3)	
	1 ½" Cold Water Control Pack Includes Pressure Reducing Valve, Gauge & Check Valve (WUCWP4)	
	2" Cold Water Control Pack Includes Pressure Reducing Valve & Check Valve (WUCWP5)	
Thermostats	Control Thermostat Range 30 – 90°C (WNCT)	
	High Limit Thermostat Pre-set 80°C (WNHLT)	
Gauges	Pressure Gauge (WCPG)	
	Temperature Gauge (WCTG) (Vertical Probe)	
	Temperature Gauge (WCTGS) (Horizontal Probe)	

Expansion Vessels	50 Litre Expansion Vessel (WU50EV)	
	100 Litre Expansion Vessel (WU100EV)	
	200 Litre Expansion Vessel (WU200EV)	
	300 Litre Expansion Vessel (WU300EV)	
	80 Litre Flow Through Expansion Vessel (WU80FEV)	
	170 Litre Flow Through Expansion Vessel (WU170FEV)	
Safety Valves	¾" (DN20) Safety Valve (3.5 Bar) (WCSV35)	
	¾" (DN20) Safety Valve (4.5 Bar) (WCSV45)	
	¾" (DN20) Safety Valve (6.5 Bar) (WCSV65)	
Pressure & Temperature Relief Valves	¾" (DN20) PTRV (4.5 Bar) (WUVTP20-45)	
	¾" (DN20) PTRV (6.5 Bar) (WUVTP20-65)	
	1" (DN25) PTRV (3.4 Bar) (WUVTP1)	
Anti-Vacuum Valves	22mm Anti-Vacuum Valve (WUAVV)	
	1" Anti-Vacuum Valve (WUAVV1)	
De-Stratification Pump	½" De-Stratification Pump (WCDP)	
Immersion Heaters	Standard RX Immersion Heater 6kW (WIH6) 9kW (WIH9)	
	Heavy Duty WR Immersion Heater 6kW (WIH6WR) 9kW (WIH9WR) 12kW (WIH12WR)	
	Titanium Immersion Heater 6kW (WIH6T) 9kW (WIH9T)	

Service Record

It is recommended that the Hot Water system is serviced regularly and that the appropriate Service Record is completed. In the case of an Unvented model, the Calorifier should be serviced at least once a year by an appropriately **Qualified Engineer**.

Failure to maintain this system in accordance with these instructions will invalidate the manufacturer's warranty.

Before completing the appropriate Service Record below, please ensure the service has been carried out as described in the manufacturer's instructions, and the following service checks have been performed.

Pressure Reducing Valve:- Clean the mesh filter in the Pressure Reducing Valve. To do this, close the mains stopcock, remove the cartridge, clean and replace.

Immersion Heaters:- Check that the installed Immersion Heaters are working and the internal thermostat is controlling the water at the required temperature.

Safety Valve:- Manually open the by the lever (or twist cap) and check the water is discharged and runs clearly through the discharge pipework and out at the final discharge point. Ensure that the valve reseats/reseals itself.

Pressure & Temperature Relief Valve:- Repeat the previous procedure. Ensure that the valve reseats/reseals itself.

Expansion Vessel:- Check the Pressure via the Air Inlet (under the black cap) of the Vessel, whilst a hot tap is running. Ensure the pressure is as per product specification.

If recharge required, close the mains stopcock and open a hot outlet. Connect a pump with gauge to the Air Inlet and charge to the same as the Pressure Reducing Valve.

Maintenance of other ancillaries (e.g. pumps, inhibitors etc.) must be carried out in accordance with the instructions supplied for these items by their respective manufacturers.

SERVICE 01	Date:
Engineer Name:	
Company Name:	
Telephone No:	
Comments:	
Signature	

SERVICE 02	Date:
Engineer Name:	
Company Name:	
Telephone No:	
Comments:	
Signature	

SERVICE 03	Date:
Engineer Name:	
Company Name:	
Telephone No:	
Comments:	
Signature	

SERVICE 04	Date:
Engineer Name:	
Company Name:	
Telephone No:	
Comments:	
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:	
Signature	

SERVICE 08	Date:
Engineer Name:	
Company Name:	
Telephone No:	
Comments:	
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.

Notes



McDonald Water Storage

Hot Water Storage Solutions

**Queensway Industrial Estate
Glenrothes
Fife
KY7 5QF**

Tel: (01592) 611123

Fax: (0.1592) 611166

Email: sales@mcdonaldwaterstorage.com



The HWA Charter Statement requires that all members adhere to the following:

- 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