WATERWARE

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INDIRECT HOT WATER CYLINDER INSTALLATION MANUAL

PT250i, PT300i, PT350i, PT500i and CYSS500T

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INTRODUCTION TO PROTANK CYLINDERS

Protank indirect hot water cylinders are designed for high capacity, mains pressure, domestic hot water systems using an indirect heat source such as a gas, diesel or wood fired boilers and or solar energy.

Protanks internal tank and fittings are crafted from the highest possible spec 'Duplex' 2304 stainless steel and performance matched to Caleffi's latest high flow valve set.

MODEL RANGE

Single Coil with Solar
For an indirect heat source and direct solar

PT250I 250L, 22kW coil, 3kW element

PTC250I 250L(incl valve set), 22kW coil, 3kW element

Dual Coil
For an indirect heat source and indirect solar

PT300I 300L, 22+22kW coils, 3kW element

PTC300I 300L (incl valve set), 22+22kW coils, 3kW element

PT350I 350L, 22+22kW coils, 3kW element

PTC350I 350L (incl valve set), 22+22kW coils, 3kW element

PT500I 500L, 22+22kW coils, 3kW element

PTC500I 500L (incl valve set), 22+22kW coils, 3kW element

Quad Coil Thermal Store
For thermal buffering of a semi controlled heat source with up to 60kW of instantaneous domestic hot water production using the top three coils and a lower coil for indirect solar

CYSS500T 500L, 1x16kW, 3x20kW coils

General Specification

Manufactured by	RM Cylinders
Country of origin	UK
Pressure Ratings	
TPR Setting	700 kPa
Cold water expansion setting	600 kPa
Maximum supply setting	500 kPa
Factory supply set point	300 kPa
Electrical	
Cable / Sheath size	3x1.5mm / 8mm
Terminals	Screw type, 4 mm
Thermostat supplier	Thermowatt
Thermostat model	RTS 3 20A 70/95
Thermostat approval number	EQ739-DAT9900155
Thermostat set point range	30 °C-70 °C
Thermostat factory set point	62 °C
Thermal cutout set point	90 °C
Thermal cutout reset	Manual
Heating element supplier	Thermowatt
Heating element mount	1&1/4" Female threaded
Heating element sheath material	Incoloy
Heating element resistance	19.2 ohm
Heating element power density	9.6 w/cm^2
Shell Construction	
Shell type	Single skin
Shell material	2304 Duplex SS
Thickness	1 mm
Circumferential joint	Tig butt weld
Longitudinal joint	Tig butt weld
Case Construction	
End material	Polypropylene
End thickness	2 mm
Wall material	Painted Galvanized steel
Wall thickness	0.45 mm
End joint	Press fit
Wall joint	Lock form joint
Thermal Insulation	
Insulation specification	EPC/IsoPMDI
Wall thickness	50 mm
Base thickness	10 mm
Top thickness	50 mm

ESSENTIAL INFORMATION

- The cylinder must be correctly installed as per the instructions contained within this document and any relevant local standards, regulations and codes of practice in force at the time.
- The cylinder must be installed in an accessible location with sufficient clearances to remove and replace the unit without remedial building work.
- The cylinder must not be modified in any way.
- The cylinder must not be misused, tampered with or subjected to neglect.
- The cylinder must be only be used for the storage of potable water.
- The cylinder must be connected to water supplies meeting or exceeding guidance values from New Zealand Drinking Water Standards 2008.
- The cylinder must not have been subjected to frost damage.
- The cylinder must be has been serviced annually (See service requirements, invoice evidence required).

Storage Prior to Installation
PROTANK cylinders should be stored upright in a dry area and kept in its original packaging until immediately prior to installation.

Siting the Unit
PROTANK cylinders can be positioned more or less anywhere in the dwelling but it should be remembered that for every 1 metre that an outlet is above the cylinder outlet, the pressure will be reduced by 0.1 bar. If siting outside the heated envelope of the dwelling such as in a garage or outbuilding then frost protection should be provided and exposed pipework should be insulated. PROTANK cylinders must be supported on a flat base capable of supporting the weight of the cylinder when full. It's important that consideration is given to access for maintenance of the valves.

INSTALLATION AND USE

Water Supply
The performance of any mains pressure system is only as good as the water supply. Both hot and cold services are supplied simultaneously from the mains so the maximum possible on-site water demand must be assessed and the water supply should be tested to ensure it can meet these requirements. If necessary consult the local water supplier regarding the likely pressure and flow rate availability.

It is important that site pressure readings are taken under dynamic flow conditions, high pressures under zero flow conditions are not necessarily indicative of satisfactory performance. A minimum of 1.5 bar at 20 l/m flow should be available. Where mains inlet pressures are likely to exceed 16 bar then an additional upstream pressure reducing device should be fitted.

The cylinder must be connected to water supplies meeting or exceeding guidance values from New Zealand Drinking Water Standards 2008. Hard water treatment must be applied in areas where total hardness (as $CaCO_3$) <200ppm.

Cold Supply Connection
Run the cold main through the building to the place where the PROTANK is to be installed. Take care not to run the cold pipe near hot water or heating pipe work so that the heat pick up is minimised. Identify the cold water supply pipe and fit an isolating valve (not supplied).

Balanced Cold Connection
Modern taps and showers are designed to operate correctly with balanced pressure hot and cold supplies. Include the combined hot and cold water demands when selecting the pressure control valves. Utilise our tech teams free design service to make these calculations for you to ensure hot and cold balanced pressures are maintained.

Draining
Isolate the unit from the cold mains. Open the hot tap closest to the unit and open the draining tap while ensuring the water drained does not exceed the capacity of the tun-dish.

WARNING: WATER DRAINED OFF MAY BE VERY HOT!

COMMISSIONING

Filling
Check all connections for water tightness such of all connections. The furtherest away hot tap should be opened before filling the system to let air out. The system should be flushed before use and the remaining taps should be opened in turn to expel air.

Storage Temperature
A storage temperature of 60-65°C is typical for normal applications. The G12 building code will require storing the water at >60°C, distributing at <55°C typically using a thermostatic mixing valves to control the final temperature. Utilise our free tech team design service to select the correct valve to suit your application.

Safety Valve Checks
Ensure the recommended maximum pressure settings for the safety valves in this document are adhered to. The temperature relief and expansion relief valves should be fully opened, one at a time then both together allowing as much water as possible to flow through the tun-dish. Check that your discharge pipework is free from debris and is carrying the water away without spillage over the tun-dish and release the valves and check that they re-seat properly.

Servicing
Servicing should only be carried out by a competent installer. NEVER bypass any safety devices or operate the unit without them fully operational.

ANNUAL SERVICING

A competent installer should carry out the following checks on an annual basis, ideally at the same time as the annual boiler service.

1. The expansion relief valve on the inlet control set should be eased open allowing water to flow for 5 seconds. The valve should then be closed making sure it resets correctly. Repeat this procedure with the pressure / temperature relief valve. Always insure that the discharge pipework is allowing the water to drain away adequately. If not check for blockages etc. and clear. *WARNING: THE WATER DISCHARGED MAY BE VERY HOT!

2. Clean the mesh filter within whatever straining device is fitted to the system.

3. Update the service record supplied within this manual.

*YOUR GUARANTEE MAY BE VOID WITHOUT PROOF OF ANNUAL SERVICING.

OPTIONAL CALEFFI DIRECT MOUNT COMBO SET

Protanks (excluding CYSST500 Thermal store) are available with or without the Caleffi 'direct mount monoblock' combo set which includes every primary valve required to complete an installation;

TV520150 20mm *(250 and 300L)*
TV520160 25mm *(350 and 400L)*

PR533056 20mm *(250 and 300L)*
PR533565 25mm *(350 and 500L)*

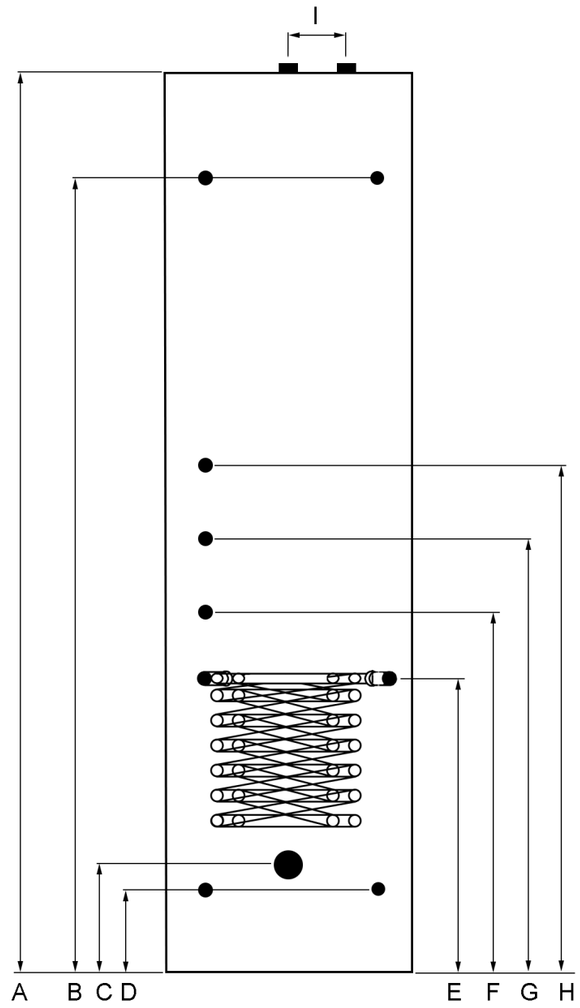
BV20M 20mm *(250 and 300L)*
BV25 25mm *(350 and 500L)*

TPR309570 20mm
(supplied with every Protank)

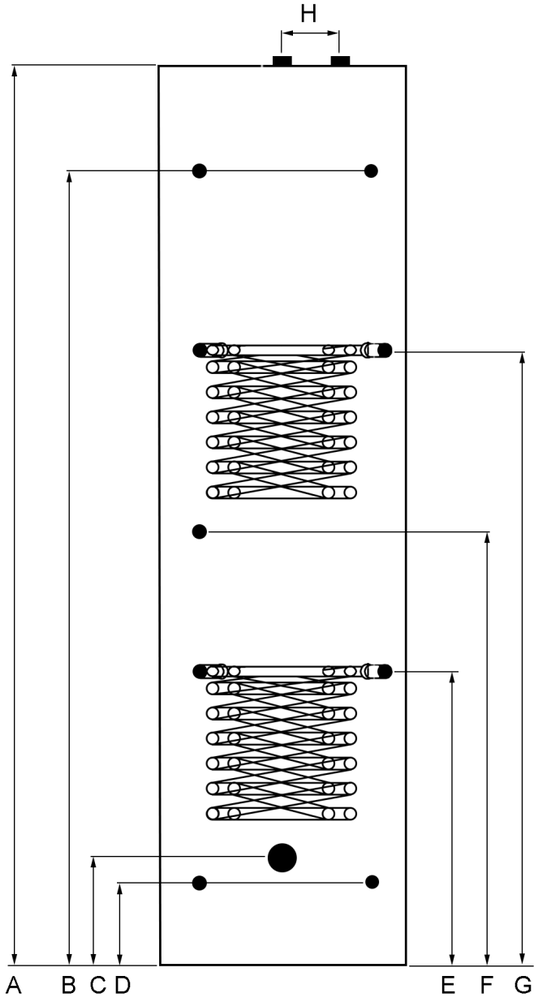
DSV311560 20mm *(250, 300, 350 and 500L)*

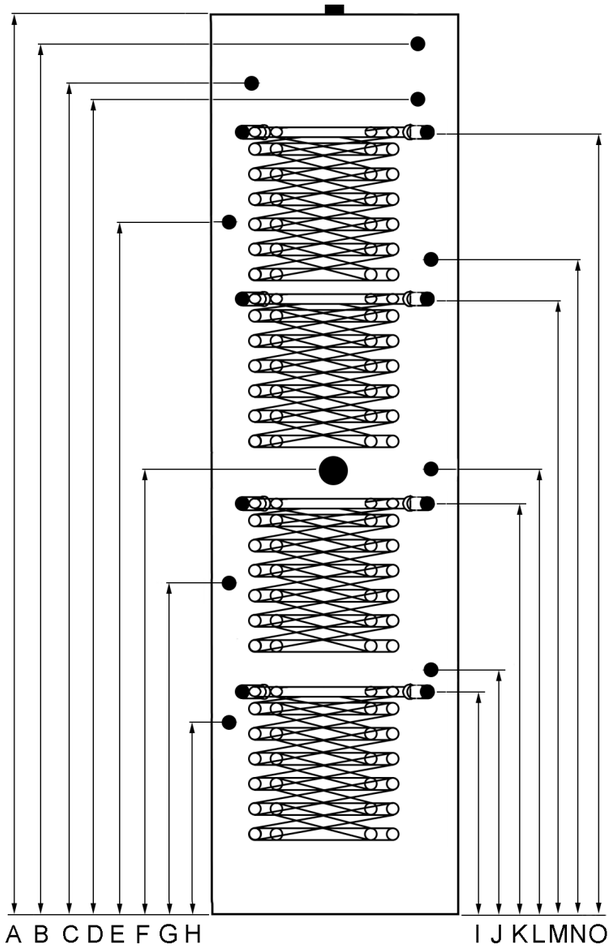
Recirculating Systems
The mono-block manifold has a blanking cap which when removed acts as a return port for a recirculating ring main. Contact us for ring main set up or design advice.

Direct Mounting of the Tempering Valve
Not withstanding acceptable methods detailed in G12, the manufacturer Caleffi have specifically engineered this tempering control valve to directly mount onto the hot water cylinder with no minimum pipe length isolation requirement as an 'acceptable solution' and alternative method of achieving compliance.



Single Coil	250litre Dimension(Ø)
A. Inlet/Outlet	1690mm(20mm)
B. Upper Stat/TPR	1490mm(22mm/20mm)
C. Element	175mm(22mm/20mm)
D. Lower Stat/CWE	225mm(32mm)
E. Coil	575mm(20mm)
F. Lower Solar	725mm(20mm)
G. Middle Stat	825mm(22mm)
H. Upper Solar	925mm(20mm)
I. Inlet/Outlet centers	110mm(20mm)
Weight empty	37kg
Weight full	287kg
Insulation quantity	139cm²
Standing heat loss @45°C △ t	1.76kW/day
Reheat time	131mins





Dual Coil	300L Dimension(Ø)	350L Dimension(Ø)	500L Dimension(Ø)
Overall height (Ø)	1940mm(545mm)	1350mm(720mm)	1830mm(720mm)
A. Inlet/Outlet height	1940mm(20mm)	1350mm(25mm)	1830mm
B. Upper Stat / TPR	1715mm(22/20mm)	1080mm(22/20mm)	1580mm
C. Element	230mm(32mm)	230mm(32mm)	230mm
D. Lower Stat / CWE	190mm(22/20mm)	180mm(22mm/20mm)	180mm
E. Lower Coil	575mm(20mm)	580mm(20mm)	580mm
F. Middle Stat	825mm(22mm)	630mm(22mm)	630mm
G. Upper Coil	1150mm(20mm)	955mm(20mm)	1000mm
H. Inlet / Outlet centers	110mm	135mm	135mm
Weight empty	44kg	59kg	90kg
Weight full	341kg	408kg	590kg
Insulation quantity	159cm²	145cm²	211cm²
Standing heat loss @45°C △ t	2.03kW/day	1.71kW/day	2.05kW/day
Reheat time	158mins	184min	263min

Quad Coil Thermal Store	500litre Dimension(Ø)
Overall height (Ø)	1830mm(720mm)
A. Outlet height	1830mm(25mm)
B. TPR	1600mm(20mm)
C. Boiler flow	1380mm(20mm)
D. Radiator flow	1360mm (20mm)
E. Upper Stat	1180mm(22mm)
F. Element	670mm(32mm)
G. Lower Stat	580mm(22mm)
H. Boiler Return	250mm (20mm)
I. Solar Coil	290mm (20mm)
J. U/Floor Return	370mm (20mm)
K. DHW Coil #1	585mm (20mm)
L. U/Floor Flow	670mm (20mm)
M. DHW Coil #2	985mm (20mm)

	Dimension(Ø)
N. Radiator Return	1070mm (20mm)
O. DHW Coil #3	1320mm (20mm)
Weight empty	90kg
Weight full	590kg
Insulation quantity	211cm²
Standing heat loss @45°C △ t	2.05kW/day
Reheat time	263mins

PROTANK LIMITED WARRANTY

All terms of the warranty, subject to the conditions below, are effective from the date of installation if proof of installation date can be provided. Where the date of installation is not known or cannot be proven, the warranty will commence one month after proof of purchase date.

Single Residential Domestic Warranty

A single residential domestic installation is defined as an installation where the hot water cylinder with a factory set thermostat delivers hot water to a privately owned single family residential dwelling which is not used for commercial purposes.

Protank Excluding Valves

5 YEARS FREE PARTS and LABOUR costs to replace or repair the cylinder if it fails due to manufacturing defect followed by; 5 YEARS FREE PARTS ONLY costs (excluding labour) to replace or repair the cylinder if it fails due to manufacturing defect followed by;
10 YEARS *PRO-RATA PARTS ONLY reducing costs (excluding labour) according to the below formula, to replace or repair the cylinder if it fails due to manufacturing defect.

*Pro-Rata Formula = Original purchase price x remaining warranty in years ÷ total warranty period of the cylinder.

Caleffi Valves (excluding any 3rd party valves)

5 YEARS FREE PARTS and LABOUR costs to replace or repair any valve that fails due to manufacturing defect.

Commercial Applications Warranty

Any installation not considered to be a single residential domestic type.

Protank and Caleffi Valves

5 YEARS FREE PARTS and LABOUR costs to replace or repair the cylinder or valves if failure is due to a manufacturing defect.

The above terms apply subject to and providing that;

- Any claim follows the process defined in this document below.
- Any labour charges must be pre approved in writing before any work commences and are subject to limitations described within this document.
- The cylinder has been correctly installed as per this document and any relevant local standards, regulations and codes of practice in force at the time.
- The cylinder is installed in an accessible location with sufficient clearances to remove and replace the unit without remedial building work.
- It has not been modified in any way.
- It has not been misused, tampered with or subjected to neglect.
- It has only been used for the storage of potable water.
- The cylinder must be connected to water supplies meeting or exceeding guidance values from New Zealand Drinking Water Standards 2008.
- The cylinder is filled with water before turning the electricity supply on to the heater element.
- It has not been subjected to frost damage.
- The unit has been serviced annually (invoice evidence required).

Limitations and Conditions

This limited warranty;

- Is not transferable, and rests with the original householder.
- Does not cover the effects of scale build up and or corrosion.
- Waterware Services Ltd. shall in no way be liable for any loss, damage (direct, indirect or consequential), cost or expense suffered or incurred by the purchaser.

Obligations accepted by Waterware Services Ltd. are.....
..... in addition to all other rights and remedies had by the Purchaser in law in respect of the valve and does not limit the right the Consumer may have under the Consumers Guarantee Act 1993.

..... subject to the exceptions and conditions previously listed. All expressed or implied conditions, statements or warranties as to the quality or fitness on any purpose of a tap or valve or otherwise are hereby expressly excluded to the fullest extent permitted by law except under conditions and warrants which cannot be legally excluded by law and which are intended in the contract for the supply of the valve by the Trade Practises and any other Act of Law.

We reserve the right to change and alter any specification and / or parts without notice. Any parts changed will perform similar or better functions to the ones they have replaced and we are not liable for any claims made by anyone because of this substitution.

GUIDANCE IN THE EVENT OF A PROBLEM

In the event of a problem, in the first instance contact the original installing plumber, or the plumber who carries out the annual servicing to determine the fault. If a manufacturing fault is suspected, contact Waterware Sales immediately for advice on how to proceed. Under no circumstances will liability be accepted for any costs associated with a suspected fault without prior consent or instruction. Upon inspection of the original unit by either a Waterware employee or an appointed service agent and a manufacturing fault is deemed to be at fault and provided all the terms and conditions within this document have been adhered to then the above warranty terms will be applied