

**GMS** 

**Thermal Products Ltd**

[www.gmsthermal.co.uk](http://www.gmsthermal.co.uk)



**INDIRECT CYLINDERS**

# GMS INDIRECT CYLINDERS



Galvanised vessels with helical coils

GMS supply indirect cylinders with two types of internal coil, helical and a fixed tube heater.

## Helical Coil Cylinders

A cylinder with a helical coil generally has a 'bolted top', which is a removable lid to enable the coil to be fitted and removed. These coils are generally suitable for pressures up to 5 BarG and primary temperatures up to 120°C. The coils are also suitable for applications with a steam primary medium, but a calorifier with a removable U-tube battery is a better option.

## Fixed Coil Cylinders

GMS supply a commercial cylinder with a fixed copper coil heater. Manufactured from copper integron tube, the heater has an inlet header and an outlet header, with the heat exchange tubes between the headers. The size of the header increases in line with the increase in size of the primary system connections. The size and quantity of exchanger tubes increases in line with the duty required. The coils are suitable for pressures up to 3 BarG and primary temperatures up to 82°C

## Materials of Construction

- ✓ **Solid Copper - type CST.** Copper is virtually impervious to attack by aggressive water. In the few areas where water is known to attack copper the cylinder can be protected by a sacrificial aluminium anode. This leaves a protective coating on the copper and does not need replacing. The copper thickness required for a calorifier increases with pressure and diameter.
- ✓ **Galvanised Steel - type GS.** Hot dip galvanising deposits a zinc layer which provides excellent protection against corrosion if the water is hard. Galvanised cylinder should not be used with copper pipe-work or soft water. The copper causes electrolytic action and releases particles of copper which deposit in the calorifier, causing localised electrolytic action and corrosion. Soft water prevents formation of a protective scale. The copper heater rapidly gets a film of scale because of its higher temperature. This prevents electrolytic action and corrosion. For added protection a magnesium sacrificial anode can be fitted. This must be replaced when exhausted. Also the heater can be electro-tinned which reduces the electrochemical potential.
- ✓ **Stainless Steel - type SS.** Stainless steel cylinders can suffer chloride attack at welds. Most water supplies contain enough chloride to cause problems. Heat treatment after all welding is completed solves the problem but is expensive. If the water supply is chloride free (e.g. de-ionised water) then stainless steel cylinders will be acceptable.

## Thermal Insulation Options

- ✓ **Type MA** Consists of 50mm mineral wool with dimpled aluminium cladding. This gives good thermal insulation and a quality finish. For some installations there will be a high risk of damage to the factory fitted insulation. In these instances it is preferable to insulate on site.
- ✓ **Type UF** For sizes up to 1000 litres or 250 kg dry weight (approximately) we can offer **Type UF** semi-rigid urethane foam insulation. This is sprayed on in a standard thickness of 25mm (up to 60mm on request). Its ozone depletion potential (ODP) is zero, it does not support combustion and it resists water penetration. Uniform thickness is not guaranteed.

**For a high quality appearance we recommend type MA insulation.**

## Some System Considerations

**Secondary Vent.** Calorifiers can be supplied for open vented or unvented (sealed) systems. In open vented systems the vent pipe allows escape of air from the calorifier, ingress of air during drain-down, thermal expansion of water and (in the event of control failure) escape of steam from the calorifier. The vent pipe should never be blocked. No valves should be fitted to it except, where more than one calorifier share a common vent, special 3-way vent/bypass valves. These ensure that the calorifier is always open to atmosphere.

**Unvented systems.** When it is not practical to fit a vent, an unvented system will be used. Certain additional precautions and equipment are necessary to ensure that an unvented system will be safe:

- ✓ The calorifier must be designed for the maximum working pressure - after thermal expansion of the water.
- ✓ A Temperature (or combined Pressure/Temperature) Relief Valve must be fitted in case of control failure.
- ✓ An automatic air vent.
- ✓ An anti-vacuum valve
- ✓ An expansion vessel.

A water booster set may be required to provide water at the required pressure and flowrates.

**Secondary Return.** Most large systems circulate DHW around a building and back to the calorifier. This ensures that all draw-off points have hot water available quickly. The pipe-work should be lagged and the re-circulation rate minimised to reduce heat loss. The heat loss should be taken into account when selecting a calorifier.

All our indirect cylinders comply fully with the European Pressure Equipment Directive 97/23/EC

# WATER HEATING MADE EASY

**Notes:**

\*1 - Immersion Heater option (14) is for back-up of primary heat source.

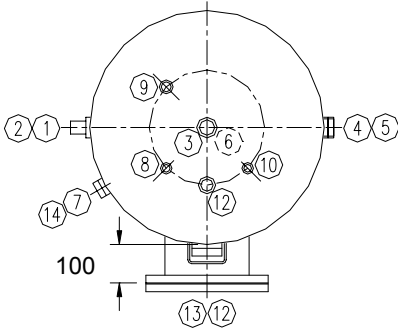
\*2 - Galvanised calorifiers are not suitable for use with soft or acidic water and is not to be used in conjunction with copper pipework

**Connections**

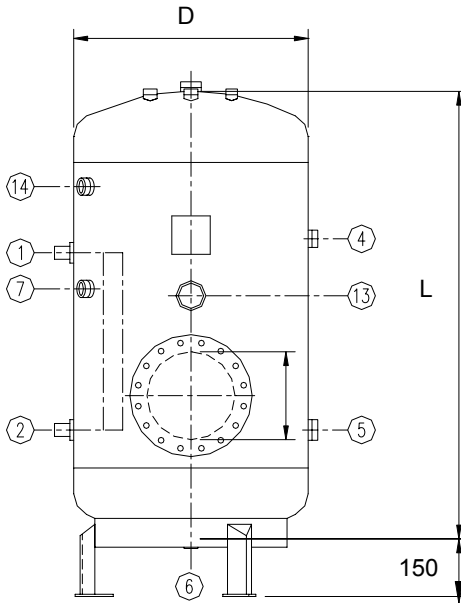
Ref	Description	Size	Ref	Description	Size
1	Primary Inlet	Varies	8	Thermometer	3/4"
2	Primary Outlet	Varies	9	Safety Valve	Varies
3	Secondary Flow	Varies	10	Pressure Gauge	3/8"
4	Secondary Return	Varies	11	Vent (Optional)	Varies
5	Cold Feed	Varies	12	Anti-Vacuum Valve (Optional)	Varies
6	Drain	Varies	13	Immersion Heater (Optional) *1	Varies
7	Control Thermostat	1"	14	High Limit Thermostat (Optional)	1"

**Materials**

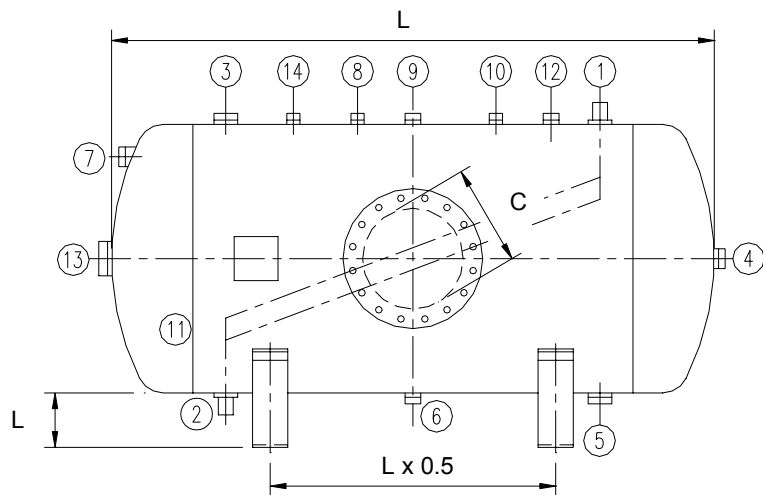
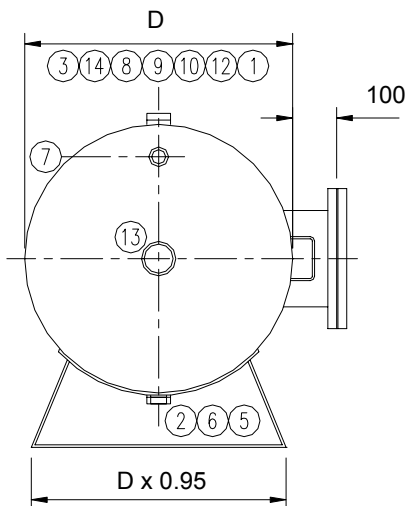
Type	CST	GST	SST
Shell	Copper	Galvanised Steel *2	Stainless Steel
Battery Tubes	Copper	Copper Tinned	Stainless or Copper
Insulation	50mm Mineral Wool Slabs & 0.9mm Stucco Aluminium Casing Or 25mm Sprayed Foam Insulation		



Size Litres	D (mm)	L (mm)	C (mm)	Main Connection Sizes					
				3	4	5	6	11	12
230	508	1270	200	1 1/4"	1"	1 1/4"	3/4"	1"	3/4"
270	508	1473	200	1 1/4"	1"	1 1/4"	3/4"	1"	3/4"
360	610	1372	200	1 1/4"	1"	1 1/4"	3/4"	1"	3/4"
450	610	1753	200	1 1/2"	1"	1 1/2"	3/4"	1"	3/4"
500	686	1473	250	1 1/2"	1"	1 1/2"	3/4"	1"	3/4"
550	686	1727	250	1 1/2"	1"	1 1/2"	3/4"	1"	3/4"
600	762	1448	300	1 1/2"	1"	1 1/2"	3/4"	1"	3/4"
700	762	1678	300	1 1/2"	1"	1 1/2"	3/4"	1"	3/4"
800	762	1930	300	1 1/2"	1"	1 1/2"	3/4"	1"	3/4"
900	813	1956	300	1 1/2"	1 1/2"	1 1/2"	3/4"	1 1/4"	3/4"
1000	915	1753	300	2"	1 1/2"	2"	1"	1 1/4"	1"
1200	915	2086	300	2"	1 1/2"	2"	1"	1 1/4"	1"
1500	1067	1956	375	2"	1 1/2"	2"	1"	1 1/4"	1"
1750	1067	2175	375	2"	1 1/2"	2"	1"	1 1/4"	1"
2000	1067	2388	375	2"	1 1/2"	2"	1"	1 1/2"	1"



**Vertical Orientation**



**Horizontal Orientation**