

cobra solar heating solutions introduction

Designed to save water and energy

Cobra is committed to implementing strategic water and energy-saving initiatives to reduce the ecological impact of its operations. Our high-level team of experts continually monitor and develop cleaner, more efficient manufacturing methods. They research and develop state-of-the-art water systems, products and accessories designed to offer economical water usage and maximum energy-saving benefits.

Cobra offers a comprehensive range of SABS approved heating systems designed to provide solutions for all applications. Options range from new solar heating systems through to solar heating conversions to your existing geysers. These highly efficient solutions may be installed in all domestic situations including flat or pitched roofs. Cobra solar products are fully guaranteed.



energy saving

 **COBRA**

Why Cobra solar water heating systems?

Cobra solar water heating systems are made from the best quality SABS certified materials and components and have high efficiency ratings. Solar water heating systems have been used around the world for more than 80 years and in several countries it is required by law to have a solar water system in every home. The benefits are considerable and include:

Free hot water: An average sunny day in Africa generates enough solar energy to provide all your hot water requirements without using electricity.

- **Savings:** A solar system is the only home appliance that actually saves money.
- **Good investment:** Installing a solar water heating system increases the value of your property.
- **Environmentally friendly:** Solar energy is clean energy – it has a very low carbon footprint and does not exploit our limited natural resources.
- **Self-sufficient:** With a solar water heating system you are not dependent on electricity and will have hot water when electrical supplies fail.
- **Responsible:** Make the decision to reduce your own carbon footprint – it's the right thing to do.
- **Water Saving:** A coal fired power station uses 1,3 to 1,5 litres of water to generate 1kWh of electricity. Every kWh saved through using solar energy is a saving of water. Considerable further water and energy can be saved by fitting Cobra pressure compensating flow regulators to showers (9 l/ min max) and to basin tap aerators (6 l/ min max).

Cobra solar heating systems

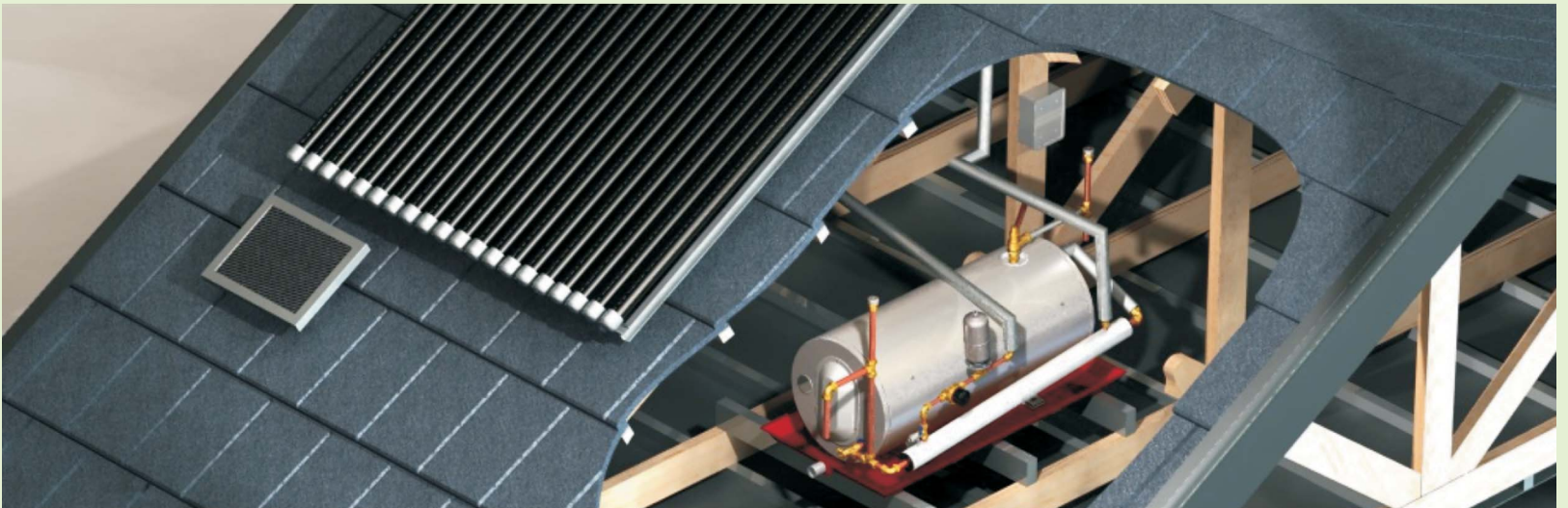
There are a number of things to consider when you decide to go solar, such as the water hardness in the area and whether it is a frost or frost-free zone, which will dictate whether the system should be direct or indirect. In addition, the height of the installed geyser from the location of the solar collector will determine if the system requires a pump or a thermosyphon system. Your Cobra approved installer will advise on the best system to suit your needs.

Cobra solar conversion systems

Cobra solar conversion systems are used in conjunction with existing 100 to 250 litre geysers installed in the roof. They are suitable for use with most types of geysers and are manufactured from the best quality materials and SABS certified components.

Thermosyphon systems

Thermosyphon circulation systems are systems where the solar collector fluid flow to the geyser or Cobra Thermo arm occurs through natural convection. It is not pumped. These systems are possible when the geyser is installed higher than the solar collector, the distance from collector to geyser is not too far and the pipe route does not break the gentle convection flow.



Cobra solar collectors and flat plate collector panels

Cobra offers a choice of collector type: evacuated tube or flat plate panel.

Evacuated tube solar collectors

The Cobra solar vacuum tubes consist of two glass tubes manufactured from borosilicate glass.

- The outer glass tube is transparent, allowing light rays to pass through it with minimum reflection.
- The inner glass tube is coated with a solar special selective coating (Al-N/A1), which provides excellent solar radiation absorption.



Flat plate collector panels

The flat plate collector panels are manufactured with a high quality aluminum frame, 4 mm toughened prismatic, non-reflective, anti-hail tempered glass and durable copper waterway tubes.



More about solar

Why install solar water heating?

- An efficient solar water system can reduce your electricity bill. Most South African research has shown that 40% of electricity use generally is for water heating. Solar water heating can reduce this portion by 70%.

How do I know which system to use?

- If your existing hot water geysers are still in good condition and supply sufficient hot water to meet your household hot water requirements, your Cobra installer using the Cobra thermo arm heat exchanger can connect the solar panels directly to your existing geysers without interfering with your geyser installation or warranties.

What factors affect the installation cost?

- The location and capacity of your hot water geysers, whether the roof is a suitable north-facing pitch or flat roof, the type of roof covering, shade from trees or buildings from 8am and 4pm are all factors that may influence the installation costs.

I don't want an unsightly tank on my roof.

- Vacuum tube or flat plate panels are all that will be seen on your roof. The storage water heater is inside the roofspace as normal.

I've heard of steam coming out of taps when using solar systems.

- This can happen to most systems when the occupants are away for a few days and no hot water is being used. This may cause temperature build-up in the system which could eventually cause the water to reach boiling point. Our control system addresses this problem.

What about frost and hail damage to the system?

- The glass tubes on our panels can withstand hailstones of 35 mm diameter. However, hailstorms are unpredictable and in the unlikely event of shattered tubes, the Cobra clip-in panel system is designed in such a way that tubes can be replaced easily and quickly if necessary. Since the tubes do not have any water circulating in them no water is heated out, no emptying or flushing of the system is required and the new tubes are simply clipped in. The outer glass is also available as a spare part to avoid having to purchase a new tube in case of glass breakage
- Even if some tubes are damaged, the system continues to provide you with hot water, albeit at a lower efficiency.
- The effect of frost is limited by our unique control device which monitors low water temperature conditions in the system and activates the fitted electric pump to circulate hot water through the system in order to prevent pipework bursting due to freezing conditions.
- The system manifold and pipework is suitably insulated as an added protection.

More about solar

Will cloudy days stop the supply of hot water?

- It depends on how concentrated and dark the cloud coverage is. It also absorbs a large amount of the fractured solar radiation when direct sunlight doesn't shine on the collector.
- Our control system includes a timer which is preset to switch on your geyser element to boost the water temperature to ensure the supply of hot water.
- During times of irregular hot water consumption, for example due to an influx of visitors staying with you, the control panel has a special manual booster switch which enables you to switch over to geyser element heating as required.

What maintenance is required?

- No maintenance is required other than an occasional check-up to ensure that the pump, safety valves, temperature probes and tubes are in good working order. On indirect systems the heating fluid and pressure tank charge should be checked and replaced every 2 to 4 years.

Installation and warranty

Product installation - Geyser

Where the geyser is installed in the roof, it must be installed in compliance with SANS 10254 Water Heater Specification and the solar part to SANS 1307 and SANS 10106, complete with a temperature and pressure valve (safety valve), drain cock, Cobra pressure control valve 400 kPa, drip tray and Cobra vacuum breakers on the cold water supply and hot water supply.

If the geyser is installed in the roof, the following minimum installation clearance must be allowed for on each side of the geyser in order to remove the element or thermostat and the anode/s from the opposite end:

- 150 litre - 450 mm
- 200 litre - 920 mm

Installation and warranty

Product warranty - Geyser

The period of warranty is from the date of installation, provided that the documentation of proof of installation is furnished, or alternatively from date of manufacture as determined from the serial plate on the end dome.

- One year on the spiral element, thermostat, isolator switch, flange assembly plate and gasket.
- Two years on the inner cylinder, subject to water conditions equivalent to main metropolitan supply authorities.
- This warranty is subject to only genuine Kwikot replacement parts, including spiral element and thermostat, being used whilst the inner cylinder is still under guarantee.
- The warranty on the installation is the responsibility of the installer.

Product warranties evacuated tube and flat plate collectors

Cobra solar evacuated tube and flat plate collectors have a comprehensive five-year warranty from date of installation and are subject to the following conditions:

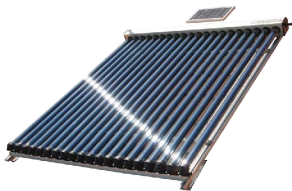
- The warranty only applies to defects which have arisen solely due to faulty materials and workmanship during the manufacturing process of the solar collectors.
- If any component fails during the warranty period, Cobra will replace or repair the failed component free of charge.
- Breakage or cracks to the evacuated tubes are not covered by the warranty.
- Any freeze damage caused as a result of the solar vacuum tubes being installed as a direct system in frost areas or areas which record temperatures below 5°C, is not covered by the warranty.
- The warranty on the installation is the responsibility of the installer.

cobra solar water heating equipment components

Description



Existing geyser or new Cobra geyser. Incorporates solar connection valves.



High quality vacuum tube solar collector with special coating for optimum solar radiation absorption.



High quality flat plate collector with copper tube, waterways, hail resistant glass and aluminum frame.



Heat exchanger solar arm for use with indirect system. Cobra unique design.



Solar management system control panel to optimise solar application in domestic installations

System Selection

- Cobra has devised a matrix of questions to simplify the selection process.
- Please contact your local Cobra representative or stockist who will help you identify the ideal system for your home.

cobra electric water heating solutions introduction

Cobra offers a comprehensive range of hot water cylinders, designed to satisfy all possible applications and requirements. The cylinders are fully guaranteed and SABS approved.



cobra electric hot water cylinders

Cobra Mega Flo Dual

Product Features

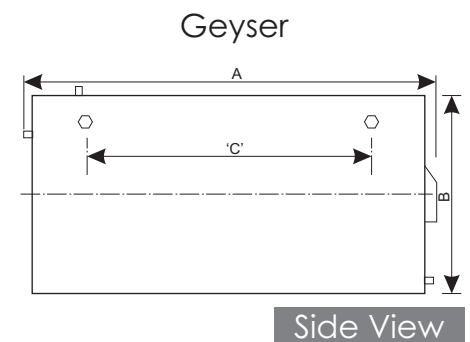
- The Cobra Megaflo Dual is a high - pressure hot water cylinder with SABS approval.
- An Isolator Switch is fitted to the end element/thermostat access cover.
- The inner cylinder is manufactured from 2mm steel and thermofused porcelain enameled for cylinder longevity and hygiene.
- Polyuethane insulation between the inner cylinder and outer casement reduces energy and heat loss.
- Double anodes for additional protection against corrosion.
- Dual in design, the units can be installed horizontally or vertically. Adjustable brackets are available on request for left or right wall mountings.
- The geyser incorporates impact resistant plastic end domes. The metal casement is finished in an aesthetically appealing appliance white.



Product Specification data.

Capacity (Litres)	Element Rating (Kw)	Operating Pressure (kPa)	Mass Empty (kg)	Connections (mm, male iron)
100	2	400kPa	32	20
150	3	400kPa	41	20
200	4	400kPa	52	20

Product Code	Capacity (Litres)	Dimension A (mm)	Dimension B (mm)	Dimension C (mm)
GMF-100/4	100	782	533	345
GMF-150/4	150	1087	533	640
GMF-200/4	200	1392	533	930



Complies to SANS 151

cobra electric hot water cylinders

Cobra Mega Flo Dual

Product installation data

The Cobra Megaflo Dual must be installed in compliance with SANS 10254 Electric Hot Water Storage Heaters and electrical installations with SANS 10142-1 wiring of premises. Electric Hot Water Storage Heaters with a Temperature & Pressure Valve (Safety Valve), Drain Cock (both supplied with the water heater). Cobra Pressure Control Valve. Cobra Drip Tray & Cobra Vacuum Breakers are ordered separately (see back of brochure for typical installation diagram).

The water heater must be installed under cover (inside or outside) and not exposed directly to weather.

The following clearances must be maintaining at both ends of the cylinder in order to change elements, thermostats and anodes.

- 100lt/ 150lt - 450mm
- 200lt - 920mm

The 200lt capacity unit must not be wall mounted.

Product Warranty & Anode Servicing

- The period of guarantee is from the date of installation providing that the documentation of proof of installation is furnished, or alternatively from date of manufacture as determined from the serial plate on the end dome.
- One year on the spiral element, thermostat, isolator switch, flange assembly plate and gasket.
- Two years on the Cobra pressure control valve, vacuum breakers, safety valve and drain cock.
- Six years on the inner cylinder, subject to water conditions equivalent to main Metropolitan supply authorities.
- This guarantee is subject to only genuine Kwikot replacement parts (spiral element and thermostat etc) been used whilst the inner cylinder is still under guarantee.
- The guarantee on the installation is the responsibility of the installer.

Total Dissolved Solids (Parts per Million)	Recommended Anode Replacement
100 - 600	3 Years
601 - 1000	2 Years
Over 1000	1 Year

cobra electric hot water cylinders

Cobra 400 Dual Slimline & Cobra 400 Dual Standard



Product Features

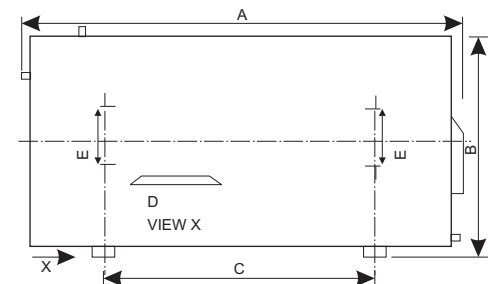
- The Cobra 400 Dual is a high - pressure hot water cylinder.
- SABS approved and available in Slimline and Standard formats.
- The inner cylinder is manufactured from 1.6mm steel and thermofused porcelain enameled for cylinder longevity and hygiene.
- Polyurethane insulation between the inner cylinder and outer casement reduces energy and heat loss.
- Double anodes for additional protection against harsh water conditions for the 250l standard.
- Dual in design, the units can be installed horizontally or vertically. Adjustable brackets are available on request for left or right wall mountings.
- Plastic end domes and the metal casement is aesthetically appealing in appliance white.

Product Specification data.

Capacity (Litres)	Element Rating (Kw)	Operating Pressure (kPa)	Mass Empty (kg)	Connections (mm) (male iron)
SLIMLINE				
100	2	Up to 400	30	20
150	3	Up to 400	39	20

Capacity (Litres)	Element Rating (Kw)	Operating Pressure (kPa)	Mass Empty (kg)	Connections (mm) (male iron)
STANDARD				
200	4	Up to 400	47	20
250	4	Up to 400	64	20

Product Code	Capacity (Litres)	Dimension A (mm)	Dimension B (mm)	Dimension C (mm)	Dimension D (mm)	Dimension E (mm)
SLIMLINE						
GSL-100/4	100	990	480	570	355	225
GSL-150/4	150	1360	480	945	355	225
STANDARD						
GST-200/4	200	1380	535	995	365	225
GST-250/4	250	1650	535	1280	365	225



Side View

Complies to SABS 1151 - 2002 Specification

cobra electric hot water cylinders

Cobra 400 Dual Slimline & Cobra 400 Dual Standard

Product installation data

The Cobra Dual must be installed in compliance with SANS 10254 Electric Hot Water Storage Heaters and electrical installations with SANS 10142-1 with a Temperature & Pressure Valve (Safety Valve), Drain Cock (both supplied with the water heater). Cobra Pressure Control Valve, Cobra Drip Tray & Cobra Vacuum Breakers are ordered separately (see back of brochure for typical installation diagram)

The water heater must be installed under cover (inside or outside) and not exposed directly to climatic weather conditions.

The following clearances must be maintaining at both ends of the cylinder in order to change elements, thermostats and anodes.

- 100lt/ 150lt - 450mm
- 200lt/ 250lt - 920mm






The 200lt and 250lt capacity unit must not be wall mounted.

Product Warranty & Anode Servicing





- The period of guarantee is from the date of installation providing that the documentation of proof of installation is furnished, or alternatively from date of manufacture as determined from the serial plate on the end dome.
- One year on the spiral element, thermostat, isolator switch, flange assembly plate and gasket.
- Two years on the Safety Valve & Drain Cock.
- Five years on the inner cylinder, subject to water conditions equivalent to main Metropolitan supply authorities.
- This guarantee is subject to only genuine Kwikot replacement parts (spiral element and thermostat etc) been used whilst the inner cylinder is still under guarantee.
- The guarantee on the installation is the responsibility of the installer.

Total Dissolved Solids (Parts per Million)	Recommended Anode Replacement
100 - 600	3 Years
601 - 1000	2 Years
Over 1000	1 Year






pressure control valves

Image	Description	Code
	<p>Kwikflo 400kPa system pressure with integral expansion relief valve</p>	<p>PA1.1</p>
	<p>Closy 100kPa system pressure + integral expansion relief valve + vacuum breaker.</p>	<p>PA1.1L</p>
	<p>Closy 200kPa system pressure + integral expansion relief valve + vacuum breaker.</p>	<p>PA1.1L+</p>
	<p>Masterflo I 400kPa system pressure + integral expansion relief valve.</p>	<p>PA3.132</p>
	<p>Geyser valve pack Consisting of 1 x PA3.132, 2 x PB6.302 and 1 x 3/4" female valvecock</p>	<p>PA3.132PK</p>


pressure control valves

Image	Description	Code
	<p>Masterflo I 400 kPa system pressure + integral expansion relief valve. 22mm copper</p>	<p>PA3.332</p>
	<p>Geyser valve pack Consisting of 1 x PA3.332, 2 x PB6.303 and 1 x 22mm copper x copper valvecock</p>	<p>PA3.332PK</p>
	<p>Master box With 1 x PA3.132, ballcock, funnel, box with lid, strainer, 2 x PB6.303 vacuum breakers</p>	<p>PA5.1</p>
	<p>Master Meter Box With 1 x PA3.132, ballcock, funnel, box with lid, water meter, 2 x PB6.303 vacuum breakers</p>	<p>PA5.1M</p>

temperature & pressure valves (safety valves)

Image	Description	Code
	Masterflo II 100kPa system pressure + integral expansion relief valve. 15mm copper	PA4.331
	Masterflo II 400kPa system pressure + integral expansion relief valve. 22mm copper	PA4.332
	Geyser valve pack 400kPa Consisting of 1 x PA4.332, 2 x PB6.303 and 1 x 22mm copper x copper valvecock	PA4.332PK
	Masterflo II 100kPa system pressure + integral expansion relief valve. 22mm copper	PA4.712
	Geyser valve pack Consisting of 1 x PA4.712, 2 x PB6.303 and 1 x 22mm copper x copper valvecock	PA4.712PK

temperature & pressure valves (safety valves)

Image	Description	Code
	<p>TP Master Temperature and pressure safety relief valve. 100kPa 22mm copper outlet</p>	PB1.13
	<p>TP Master Temperature and pressure safety relief valve. 200kPa 22mm copper outlet SANS 198</p>	PB1.23
	<p>TP Master Temperature and pressure safety relief valve. 300kPa 22mm copper outlet</p>	PB1.33
	<p>TP Master Temperature and pressure safety relief valve. 400kPa 22mm copper outlet</p>	PB1.43
	<p>TP Master Banjo type. 400kPa for 3/4" male & female connections</p>	PB1.43BA
	<p>TP Master Banjo type. 400kPa with extended probe. For 3/4" male & female connections</p>	PB1.43BA-LP
	<p>TP Master Temperature and pressure safety relief valve. 400kPa 22mm copper outlet</p>	PB1.46

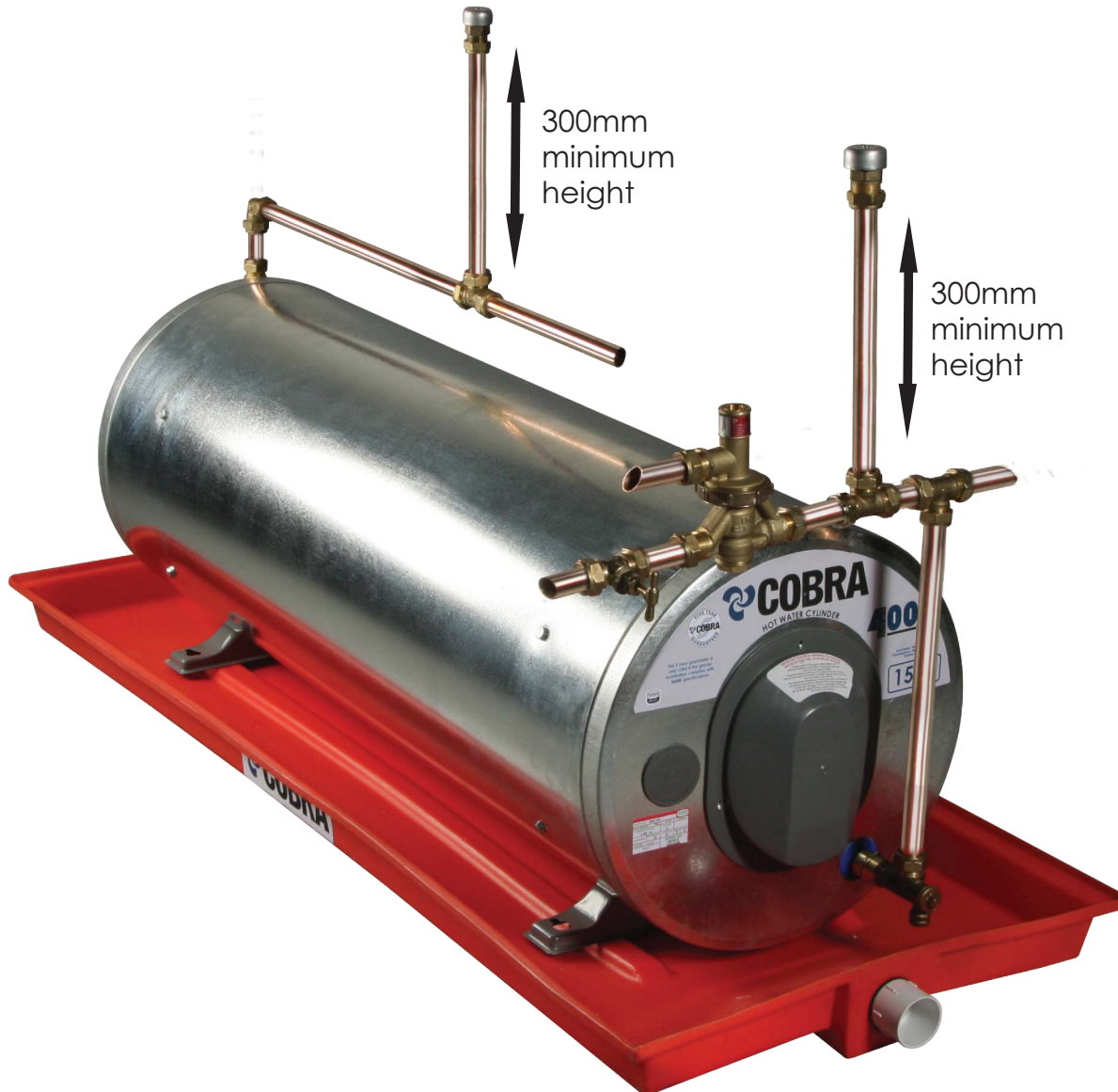
cobra drain cock and vacuum breakers

Image	Description	Code
	<p>Draincock For hot water cylinder. 3/4" female inlet x 22mm compression outlet</p>	558-22
	<p>Vacuum Breaker Vacubreak I. Double jumper with 3/4" male inlet</p>	PB1.10
	<p>Vacuum Breaker Vacubreak I. Double jumper with 22mm copper connection</p>	PB1.10CX
	<p>Vacuum Breaker Vacubreak III. Single jumper with 15mm copper connection</p>	PB6.301
	<p>Vacuum Breaker Vacubreak III. Single jumper with 3/4" male inlet</p>	PB6.302
	<p>Vacuum Breaker Vacubreak III. Single jumper with 22mm copper connection</p>	PB6.303

cobra electric hot water cylinders

Installation Diagrams

Horizontal Installation

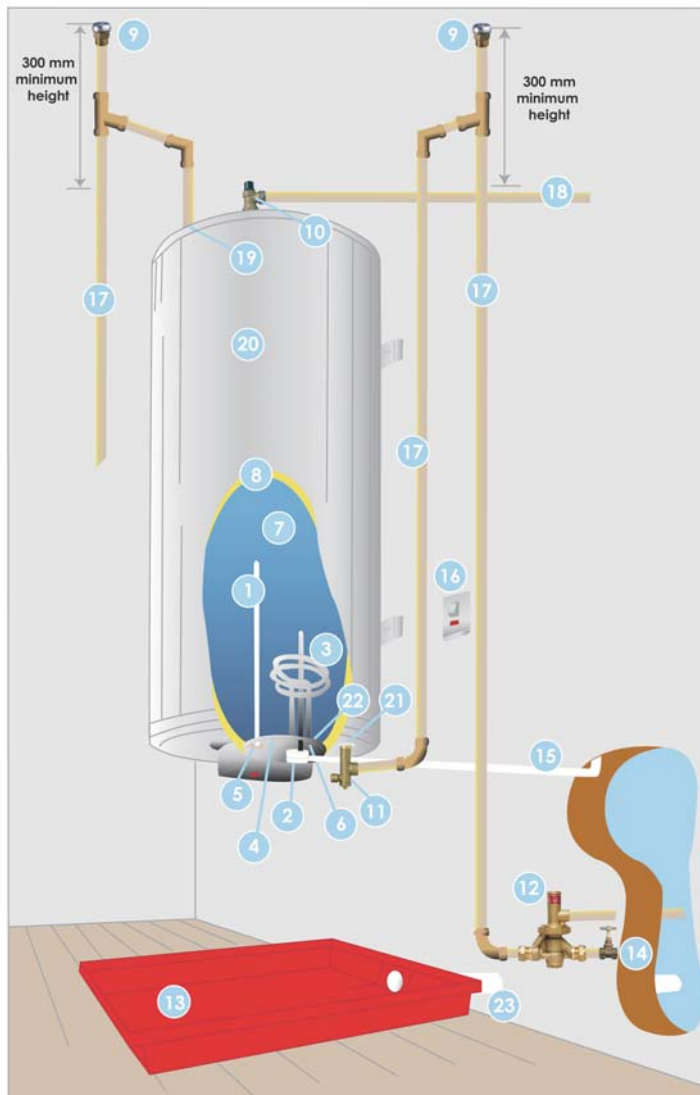


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cobra hot water cylinder

Installation Diagrams

Vertical installation



Vertical Geyser Installation

1. Anode
2. Thermostat
3. Spiral Element
4. Flange Gasket
5. Flange
6. Earth Stud
7. Thermofused Porcelain Enamel Lining
8. Urethane Insulation
9. Cobra Vacuum Breaker
10. Cobra Safety Valve, 400 kPa
11. Cobra Draincock
12. Cobra 400 kPa PRV
13. Geyser Tray
14. Stop Tap
15. Cable Size, minimum of 2,5 mm²
16. Isolating Switch 1 m away from Electrical Connection on Geyser
17. Copper Pipe
18. Overflow Pipe to Exterior of Building, 20 mm Metallic
19. Hot Water Outlet
20. Cobra Dual Geyser, 400 kPa SABS Approved
21. Cold Water Inlet
22. Casement / Flange Earth Strap
23. Geyser Tray Overflow Pipe, 40 mm