TANKS

08:008-1902

ELECTRICAL WATER HEATERS






Manual

Models 15, 30 and 35

Type 611, 905, 906, 907, 909 and 910

METRO THERM



Type 905, 907



Type 906, 910



Type 611



Type 909

Model 15 pipe downwards
Type 905
METRO number: 119051004
Plumbing number: 345166200

Model 15 pipe upwards
Type 906
METRO number: 119061004
Plumbing number: 345167200

Model 30 pipe downwards
Type 907
METRO number: 119071004
Plumbing number: 345166400

Model 30 pipe upwards
Type 910
METRO number: 119101004
Plumbing number: 345167400

Model 35 pipe upwards
Type 909
METRO number: 119091001
Plumbing number: 345161034

Model 35 pipe downwards
Type 611
METRO number: 116111004
Plumbing number: 345121100

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Transport

Inspect the water heater for damage and missing parts immediately upon receipt. Report any damage or missing parts to the carrier immediately. All carriage is the responsibility of the recipient unless otherwise agreed.

Position

Installation can only be performed by an authorised plumbing installer, and in accordance with the Danish Building Code.
Tank and pipes cannot be exposed to freezing. Position the tank close to its water supply and a floor drain. Ensure that there is sufficient room for service and maintenance.

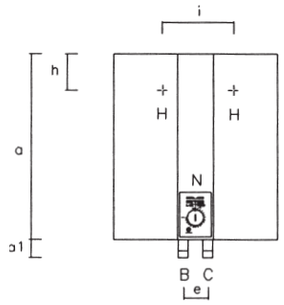
Important!

Check that the wall can bear the weight of the tank when full of water.
Type 906, 909 and 910 (pipe upwards) must stand on a firm, level surface.

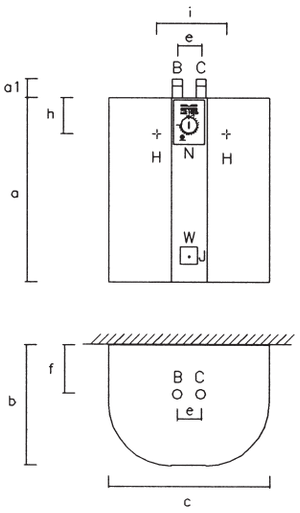
Diagram

B Hot water outlet
C Cold water inlet
H Holes in mounting plate
J Drain spout
N Control box
O Indicator light
Q Electrical connection
W Removable plate
I CC measurements for mounting plate

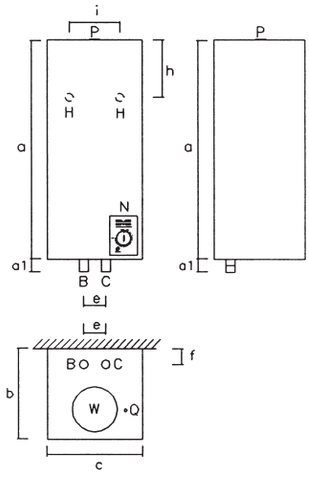
Models 15-30 (type 905, 907)



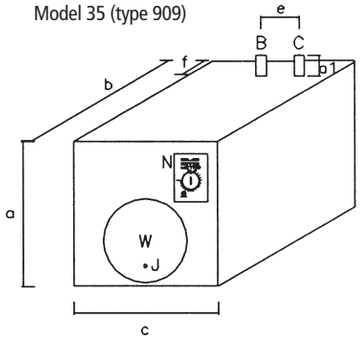
Models 15-30 (type 906, 910)



Model 35 (type 611)



Model 35 (type 909)



Dimensioned diagram

All dimensions are in mm.

Type no.	Pipe connection	Model	Volume (litres)	Net weight	a	a1	b	c	e	f	h	i
905	↓	15	14	16	450	35	300	390	70	110	103	255
906	↑	15	14	16	450	35	300	390	70	110	103	255
907	↓	30	26	22	525	65	345	460	70	138	103	255
909	↑	35	33	25	380	25	540	380	100	105	-	-
910	↑	30	26	22	525	65	345	460	70	138	103	255
611	↓	35	33	23	700	30	300	300	70	50	183	160

Plumbing installation

Note following for installation

Installation can only be performed by an authorised plumbing/electrical installer, and in accordance with the Danish Building Code.

- Installations shall comply with the Danish Building Code and all other relevant regulations and provisions, including those for electrical and water installations.
- Check all technical data and information on the type plate.
- Check that all accessories are removed from the packaging.
- Check that there is easy access to the hot water tank.
- Flush all water pipes carefully before connection.
- Always perform pressure testing at water pressure of 10 bar when replacing a water heater or service has been performed on pressurised parts.
- Never expose the heater to water pressure exceeding 1 MPa (10 bar).
- The heater is fitted with nylon bushings for the cold water connection and PEX pipes for the hot water connection. These parts protect the enamel coating and must not be removed.

The installer shall instruct the user of the heater's function, care and disposal.

Approvals

VA no. 3.23/DK 19559
Approved by DEMKO

	Hot water tank
Test pressure	13.5 bar
Operating pressure	10 bar

Energy labels at www.METROTHERM.dk

Risk of corrosion

METRO THERM hot water tanks are made of enamelled steel, and protected by a magnesium anode. If connections and pipes are copper or stainless steel, there can be risk of galvanic corrosion at the point of connection.
The risk can be mitigated by using a PEX pipe adapter between tank and pipe installation.

Using softened water in a METRO THERM tank

Water softened using salt can be used in a METRO THERM hot water tank. Conductivity must be kept under 100 mS/m (millisimiens per m), to be able to use the anode. Water pH value must be between 6 and 9, and chloride content must be under 250mg Cl/l.
If this level of conductivity is exceeded, the anode current will be too high, degrading the anode too rapidly. That will cause the water to smell. It may be necessary to remove the anode to remedy this, which will invalidate the METRO THERM 5-year corrosion guarantee on the inner tank.
Do not use demineralised water (double ion exchange), which will rapidly corrode the tank. Demineralised water is also referred to as totally desalinated or deionised water.

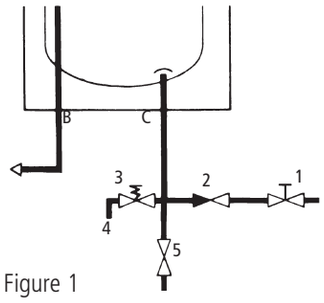


Figure 1

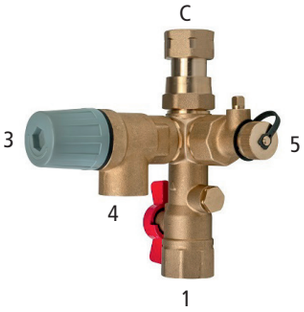


Figure 2

1. Water supply (cold) 3/4" shut-off valve
2. Non-return valve (integrated)
3. Safety valve
4. Overflow 3/4"
5. Drain tap

B Hot water out 3/4"
C Cold water in 3/4"

Installation as pressurised tank

The water heater can be installed as a pressurised tank with shut-off, non-return and safety valves. The safety valve used must comply with the Danish Working Environment Authority's specifications. Opening pressure must be 10 bar.

Safety device

The safety and non-return valves must be positioned as shown in figure 1.

- The safety valve must be mounted on the cold water supply pipe close to the tank, and easily accessible for service and testing/activation to prevent limescale accumulation.
- It must be impossible to shut-off the pipe connecting safety valve and tank and the overflow from the safety valve. The diameter must be min. $^{3}/_{4}$" (20 mm).
- The overflow outlet must be visible, and run to a drain. Do not run the overflow out into the open air to prevent the risk of freezing.
- The safety valve must be able release the rated output of the water heater at least. The use of a METRO THERM safety device (figure 2) fulfils this requirement.

Because water expands when heated (approx. 2%), the safety valve must drip during heating. When filling (or emptying) the tank, allow air to vent, e.g. by opening a hot water tap.

Non-pressurised installation

When installed non-pressurised, the heater can only supply one tap.

Mixer taps B2 and B3 are used for water heaters with pipe upwards (type 906, 909 and 910) (figure 3). When installing, the pipes from the mixer tap cannot project more than 30 mm down into the tank pipe connections. Failure to observe the above can form air pockets that can cause breakdown. The overflow mixer tap must be mounted directly connected to the water heater with 3/4" connectors (ordered separately).

Mixer tap B71 is used for water heaters with pipe downwards (type 905, 907 and 611) (figure 4).

The diameter of the overflow pipe (drain spout) cannot be reduced by aerators, water-savers or the like. Long pipe installations can mean long run-on.

1. Water supply
2. Drain spout (overflow)
3. Handle for hot water
4. Handle for cold water
5. Tank inlet
6. Tank outlet
7. Non-return valve

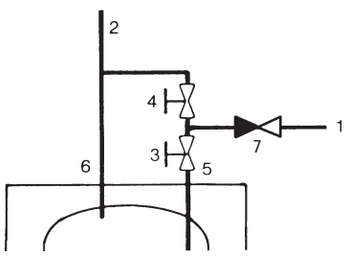


Figure 3 – with pipe upwards

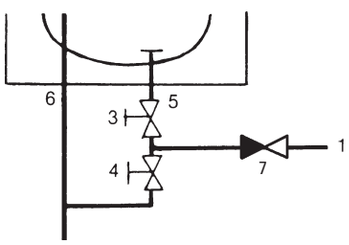


Figure 4 – with pipe downwards

Electrical installation

Electrical installation can only be performed by an authorised electrical installer.

The water heater has splashproof IP24 encapsulation and must always be extra-protected in accordance with the LVD directive.

The standard heating element can be connected to 400 V (3.6 kW) or 230 V (1.2 kW) (type 909 230V (1.5 kW) only), see wiring diagram.
The water heater is supplied from the factory with a 3-wire cable (with no plug) to be connected to mains electricity. If the cable is damaged, it must be replaced (can be purchased as a spare part).

The water heater is fitted with a thermal fuse to prevent overheating, and that can be reconnected. The fuse can only be reconnected by an authorised electrician. The fuse is located behind a black screw in the control box (figure 5). The thermostat has a working range of 5-65°C and an on/off function to replace the switch at the mains.

The thermostat and thermal fuse are combined, and mounted in the grey control box on the water heater, along with the indicator light.

Remember that the copper sensor tube from the thermostat and thermal fuse must extend as far from the spade terminal on the heating element as possible.

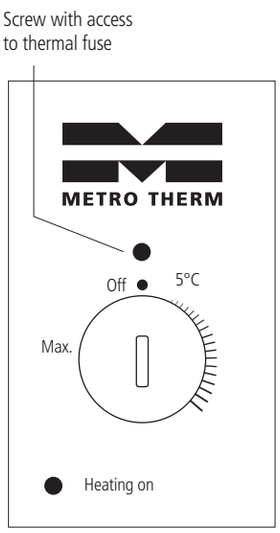


Figure 5

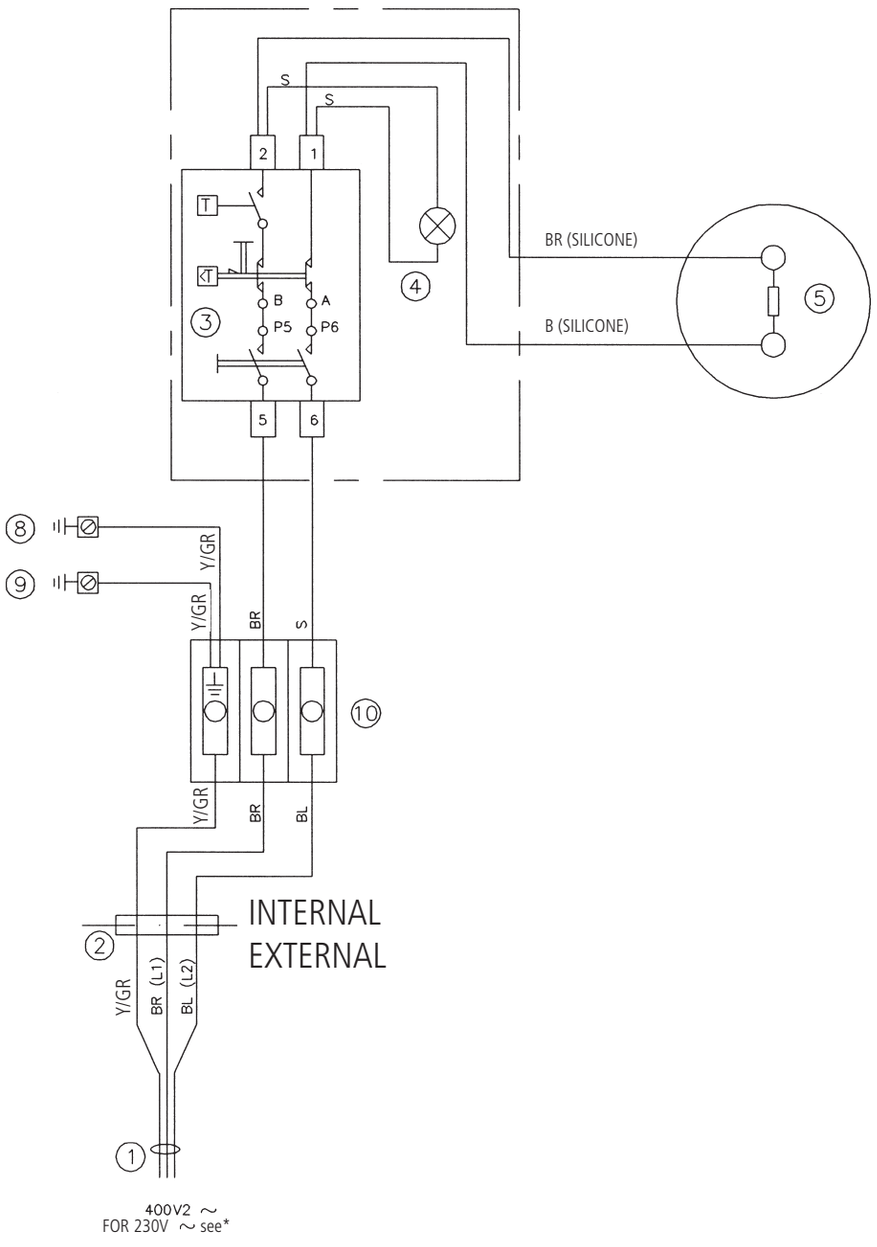
Remember!
The water heater must be filled with water before connecting electricity.

Wiring diagram 3.6 kW – 400V/1.2 kW – 230 V/1.5 kW – 230 V (type 909)
Type 611, 905, 906, 907, 909 and 910

1. Connection to mains electricity
2. Cable penetration with strain relief
3. On/off switch, thermal fuse (110°C) and thermostat (65°C)
4. Indicator light – comes on when the thermostat opens up for heat
5. Tubular heating element, type 909 steatite heating element
8. Terminal, earth wire (tank)
9. Terminal, earth wire (cabinet)
10. Terminal block on baseplate

* When connected to 230V~ blue wire must be connected to neutral (230V on type 909 only).

Y/GR = yellow/green
BR = brown
BL = blue
B = black



User Guide

Read this manual carefully before installation and using the water heater.

Safety regulations

Installation, first activation and maintenance of this product can only be performed by an authorised plumber/electrician, who will be responsible for observance of the relevant standards and installation regulations. We cannot be held liable for damage or injury caused by failing to observe the safety regulations.

Risk of flooding and freezing

If the water heater is mounted in a holiday home, or a house which is uninhabited for long periods, we recommend draining the entire water installation to damage caused by freezing. If there is no risk of freezing, shutting-off the water supply at the mains cock will be sufficient.

Setting temperature

The water heater is fitted with a grey control box. Set the desired water temperature using the thermostat dial. The thermostat will then control heating of the water to the desired temperature. See figure 7 for thermostat scale markings. The indicator light (Heating on, figure 6) comes on when electricity is connected and the heating element is activated.

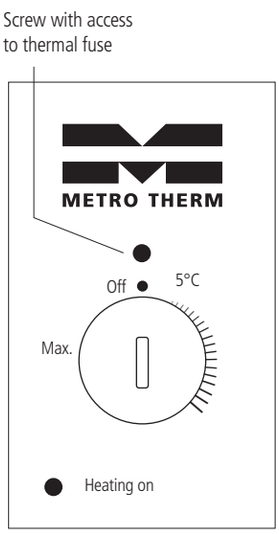


Figure 6

Heating times 10-50°C (minutes)

Type	1.2kW	3.6kW	1.5 kW
611	81	27	
905	35	11	
906	35	11	
907	70	23	
909			65
910	70	23	

Setting the thermostat
Relationship between thermostat scale and desired tank temperature.
Set as a time on a clock face. All values are indicative.

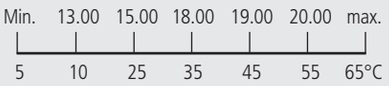


Figure 7

NB:

Pipes and fittings near the water heater can reach temperatures over 60˚C.
The water heater is fitted with a thermal fuse that will cut-out in the event of overheating.
The fuse can only be reconnected by an authorised electrician.

For non-pressurised water heaters only

If the water heater is installed as non-pressurised, remember that the water will not be under the same pressure as a pressurised tank with a safety valve.
Please also remember that the water heater must be fitted with an original, non-pressurised mixer tap, and that the original aerator cannot be replaced by any other type, or a water-saver.
If the water heater is installed non-pressurised, water will drip from the mixer tap while it is heating up.

Disposal

Ensure disposal of the product in the most eco-friendly manner. Private owners must comply with local municipal rules for disposal of domestic waste.

Maintenance

External cleaning

The tank can only be cleaned with a damp cloth. Window or glass cleaner can be used, but not scouring cream/powder or solvents. Always read the instructions on the cleaning product.

Safety valve

Check that the safety valve works at least once annually. When testing, water should flow out of the valve.

Limescale

Limescale can accumulate in areas with hard water. The limescale will normally accumulate on the heating element. Limescale on the heating element will not affect heating efficiency, but can cause the element to burn out in time.
Limescale accumulation increases rapidly at temperatures over 55°C, which can also make servicing difficult, when the heating element has to be removed to remove limescale in the tank. Limescale accumulation can be limited by keeping the temperature at max. 55°C. In areas with very hard water, we recommend removing the limescale in the tank regularly to prevent breakdowns. Your installer can advise you on how often this may be necessary.

Guide to limescale removal (type 611, 905, 906, 907 and 910)

Limescale removal can only be performed by an authorised installer. Always replace the gasket. Never re-use the old gasket.

- Drain the tank.
- Remove the centre panel to access the heating element.
- Disconnect the wire and carefully pull the sensor tubes out of the heating element immersion pipe.
- Remove the flange. The gasket may need to be cut free from the tank. Use a thin-bladed knife. The heating element can be difficult to get through the opening if heavily scaled with lime. Ease it carefully out, as aggressive handling of the enamelled parts can cause damage, which can later lead to corrosion.
- Remove loose limescale.
- Rinse out remaining limescale from tank.
- Replace the heating element with a new gasket and flange ring (figure 8). Tighten the bolts in diagonal cross-sequence to 11 to 14 Nm.
- Fill with water and check for leaks by pressure-testing at water pressure of 10 bar.
- Reconnect wires and capillary tube, place sensor for overheating thermostat in the upper immersion pipe.



Figure 8 – Pipe heating element

IMPORTANT! Check that the capillary pipes fit before touching conductive parts.

Limescale removal guide (type 909)

Limescale removal can only be performed by an authorised installer. Always replace the gasket. Never re-use the old gasket.

- Drain the tank.
- Disconnect electricity supply at the mains, and shut off water supply at the shut-off valve.
- Drain the tank.
- Remove bottom cover to access the heating element. This is a ceramic heating element placed in an immersion pipe in the bottom flange (flange pipe).
- Disconnect wires on the heating element, carefully extract the capillary pipes from the small immersion cover.
- Remove the flange. The gasket may need to be cut free from the tank. Use a thin-bladed knife. The flange pipe can be difficult to get through the opening if heavily scaled with lime or other deposits. Ease it carefully out, as aggressive handling of the enamelled parts can cause damage, which can later lead to corrosion.
- Remove loose limescale. Loosen limescale caked on the element by tapping gently, e.g. with a piece of wood.
- Rinse out remaining limescale from tank.
- Replace the flange with a new gasket and spacer ring on the outside of the bolts (figure 9). Tighten the bolts in diagonal cross-sequence to 11 to 14 Nm.
- Fill with water and check for leaks by pressure-testing at water pressure of 10 bar.
- Replace the capillary pipes and wires Regardless of model, the capillary pipes to the thermostat and thermal fuse respectively must always be fitted with the sensor for the fuse the furthest in the immersion cover.

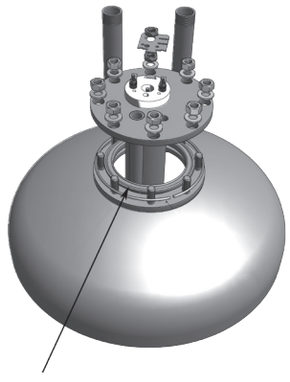


Figure 9

IMPORTANT! Check that the capillary pipes fit before touching conductive parts.

Troubleshooting

The table below can help to identify and remedy any problems. If the problem cannot be resolved, contact an authorised plumbing/electrical installer.

Fault (non-electrical)	Cause	Action
No water flow	Water supply cut off at cold or hot water pipe	Check ballcock is open. Check if ballcock on safety device is open
Reduced hot water	Limescale in tank	Remove limescale in tank
	Water capacity in tank used up	Wait 30 mins before trying again
Fault (electrical)	**Cause**	**Action**
No hot water	Thermostat set too low	Switch to higher setting
	No current to heating element	Check group relays and fuses
	Thermal fuse cut-out	Reconnect (call electrical installer)
No current to tank	Disconnected relay board	Switch on relay board
	Fuse blown	Change fuse
	Thermal fuse cut-out	Reconnect (call electrical installer)
	Thermostat set too high	Switch to lower setting
	Thermostat defective	Replace control box (call electrical installer)
Water too cold	Thermostat set too low	Switch to higher setting

Guarantee terms

Dear customer
METRO THERM manufacture and supply carefully-checked quality products that require authorisation to install and service. As such, all liability for dimensioning, delivery, installation and commissioning lies with the installer, and you should therefore contact authorised plumbing and electrical installers for installation, use and warranty claims.

In the event of material or manufacturing faults, a number of provisions apply to guarantee and repair, which are specified below:

Guarantee
METRO THERM provides a 2-year guarantee on all products from documented delivery date.

For tanks: METRO THERM provides a 5-year guarantee against corrosion penetration of the internal tank. In the event of corrosion from the inside, METRO THERM will undertake repair or replacement at no charge and at METRO THERM's discretion.

For heat pumps: METRO THERM provides a 5-year guarantee against internal functional faults. In the event of internal functional faults, METRO THERM will undertake repair or replacement at no charge and at METRO THERM's discretion.

The above provisions apply ONLY if the following are fulfilled:
- The installer has contacted METRO THERM before commencing repair or replacement, and written agreement has been reached on the extent of repair.
- The installer has stated manufacturing number when contacting METRO THERM.
- The installer has sent a copy of the invoice for purchase or installation and the faulty product item to METRO THERM within 10 days of replacement/repair.
- The installer has sent a copy of the invoice for purchase or installation and the faulty product item to METRO THERM after replacement/repair.

What the guarantee does NOT cover:
- General service and maintenance work.
- Replacement or the cost of anything other than the above, or compensation for personal injury caused by any faults regarding the product.
- Replacement of ordinary wear parts as a result of natural wear and tear.
- If the product has been connected at any temperature, Voltage or pressure other than specified on the type plate.
- If damage is caused by freezing, lightning or dry-boiling, or as a result of limescale or excess pressure.
- If repair or other physical intervention has been made on the product other than specified, and repair is the cause of the damage.
- Limescale deposits on the heat exchanger and high-output tank, as limescale is often due to incorrect settings or use.
- Damage caused by leaking water and hidden water installations.
- Damage caused during transport. The latter shall be reported to the carrier.
- Higher or extra costs for repair or replacement performed at weekends, on public holidays or outside normal working hours.
- Damage caused by lack of maintenance or servicing/inspection. The guarantee will not cover geothermal pumps or air/water heat pumps if the annual mandatory service has not been performed. Documentary proof of the mandatory service must always be available.
- If the product is positioned where service cannot be performed without difficulty. If the product is very difficult to access, METRO THERM cannot be held liable for any extra expense incurred.
- If the product is not installed according to relevant regulations (see instructions for installation and use for the product in question).

All relevant guarantee provisions are provided at www.metrotherm.dk. Our management system certificates according to DS/EN ISO 9001, DS/EN ISO 14001 and DS/OHSAS 18001 are also available for inspection here.

Manufacturing number:
Set-up and instruction given by installer: (name)

Signature: **Date:**

Updated June 2017

Declaration of compliance

The declaration of compliance is available on our website at: www.METROTHERM.dk
This product is VA-approved.

Get a 1-year extended guarantee on your METRO product

We offer a one-year extended guarantee on your METRO product when you register the product, entering where and when it was installed and by which company.

1. Go to http://FQR.dk or scan the QR code
2. Enter product and installation details
3. You will receive a mail confirming the extended guarantee.

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Hot water for washing up and wash basins

METRO Electrical Hot Water Heater, Models 15, 30 and 35



METRO Electrical Hot Water Heater, Models 15, 30 and 35 supply hot water to the kitchen, washbasins and for short showers. The tank only needs electricity and water, and can either be installed as a pressurised tank with a safety valve for several taps, or non-pressurised without safety valve supplying a single tap using METRO's non-pressurised fitting.

The benefits of METRO Electrical Hot Water Heater, Models 15, 30 and 35

- Coated in a special enamel against corrosion, limescale and bacteria deposits.
- Low heat loss, as the tanks are fully insulated with PUR insulation foam.
- Frontal control panel, easy to install and service.
- 5-year guarantee against corrosion penetration.
- Can be connected to 230 V and 400 V
- Rapid heating, using 3.6 kW at 400 V.
- Fast, stable hot water heating.

EXPERTS IN HEATING AND HOT WATER

METRO THERM

Performance

The heaters are fitted with a 3.6 kW (400 V) electric heating element, which can also be connected to 230 V mains supply without modification.
Output then becomes 1.2 kW.
The water is heated by an electric heating element. Temperature is controlled using a dial between 5° C and 65° C.
An indicator light on the front shows when the water is heating. The heater is fitted with a thermal fuse, which can be reconnected. The tank is protected from freezing at its minimum setting (5° C).

Construction

The tanks are coated internally with special enamel to protect against rust, limescale and bacteria. They are fitted with replaceable magnesium anodes, and are VA-approved (a voluntary Danish approval scheme for water and drain products).
The cabinet is powder-coated with a strong, matt silk paint, which is easy to keep clean.

Pipe running down- or upwards

Water heater types 905 (14 litre), 907 (26 litre) and 611 (29 litre) have downward pipe connections. Type 907 is designed to fit in most wall cabinets.
Water heater types 906 (14 litre), 910 (29 litre) and 909 (34 litre) have upward pipe connections and drain cocks at the base.
All models are supplied with mounting plates.
Encapsulation class is IP24, fulfilling the Low Voltage Directive, and the heaters are CE-marked.

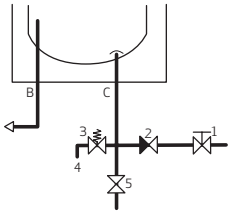


Type 905/907



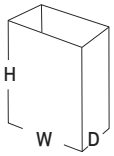
Type 906/910

Pressurised



1. Water supply (cold) 3/4" shut-off valve
2. Non-return valve (integrated)
3. Safety valve
4. Overflow 3/4"
5. Drain tap

B Hot water out 3/4"
C Cold water in 3/4"



TYPE 905/906: **H** 450 **W** 390 **D** 300
TYPE 907/910: **H** 525 **W** 460 **D** 345
TYPE 611: **H** 700 **W** 300 **D** 300
TYPE 909: **H** 380 **W** 380 **D** 540

Dimensions in mm

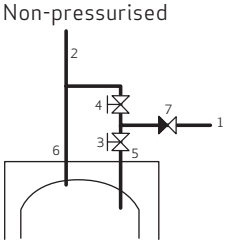


Type 611



Type 909

Non-pressurised



1. Water supply
2. Drain spout (overflow)
3. Handle for hot water
4. Handle for cold water
5. Tank inlet
6. Tank outlet
7. Non-return valve

Distance between connection pipes:

TYPE 905/906: 70 mm
TYPE 907/910: 70 mm
TYPE 611: 70 mm
TYPE 909: 70 mm

NB: The safety device protects this form of installation on the cold tap water side.

Technical data

Type	Litres	kW	Volt	Fuse rating (A)	Weight, kg	Test pressure, bar	Max. operating pressure, bar	Energy class	Plumbing no.	METRO no.
905 pipe downwards	14	1.2	230/400	1 x 10/2 x 10	16	13.5	10	B	345166200	119051004
906 pipe upwards	14	1.2	230/400	1 x 10/2 x 10	16	13.5	10	C	345167200	11906100
907 pipe downwards	26	1.2	230/400	1 x 10/2 x 10	22	13.5	10	C	345166400	119071004
910 pipe upwards	26	1.2	230/400	1 x 10/2 x 10	22	13.5	10	C	345167400	119101004
611 pipe downwards	29	1.2	230/400	1 x 10/2 x 10	23	13.5	10	D	345121100	116111004
909 pipe upwards	34	1.5	230	1 x 10	25	13.5	10	C	345161034	119091001

Heating times

	Volt	Heating time from 10-55 °C, minutes			
		905/906	907/910	611	909
Output 1.2 kW	230	39	78	91	-
Output 1.5 kW	230	-	-	-	65
Output 3.6 kW	400	13	26	30	-

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