CLAGE

Electronically controlled instantaneous water heaters

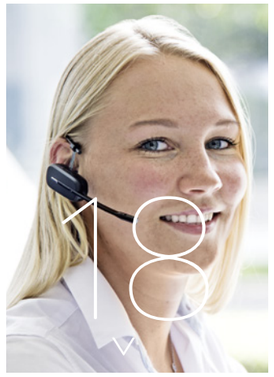
Made in Germany

Simply efficient.

Energy efficiency
is our motto.

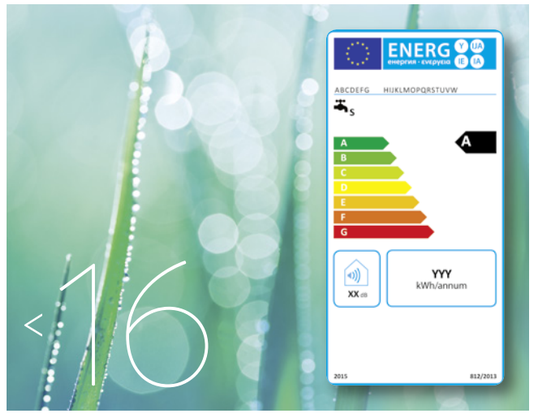
E-mini instant water heaters
provide the most efficient
method for handwashing.

E-comfort instant water heaters
turn your shower and bathroom
into a real yet efficient spa area.



For us, good service means to
be flexible and close to the
customer.

E-compact instant water heat-
ers provide more efficiency and
convenience in the kitchen.



The new European energy
efficiency label. Class A for our
instant water heaters!

Control your warm water supply
with the iPad or connect the units
via modern KNX® technology.

Contents

“Energy efficiency is our motto.”

Made in Germany

In 1951, Claus-Holmer Gerdes started selling mini instant water heaters. Today, we are a second-generation, owner-operated mid-size company in the northern German Hanseatic city of Lüneburg.
More than 200 employees are responsible for development, design, production and distribution of the energy-efficient hot water heaters with a high standard of quality. And all that under one roof!

Efficiency

The “E” in CLAGE is accentuated because it stands for efficiency. But what do we mean by that and how do you benefit? Quite a lot actually: A large product range of energy-efficient units, characterised by smart technology, space-saving and compact design as well as clearly arranged and robust construction. And this also corresponds to the way we work. This means that our customers are always “close” to our competent and well-trained employees.

Flexibility

We don’t simply want to sell you “a water heater” but we are offering energy-efficient, decentralised hot water solutions. This also requires a high degree of flexibility to be able to offer individual solutions. And we are aiming for many goals: Conserving energy and water, convenience, hygiene, durable products, simple installation and operation, fast and reliable service. Of course, smart technology is a given.

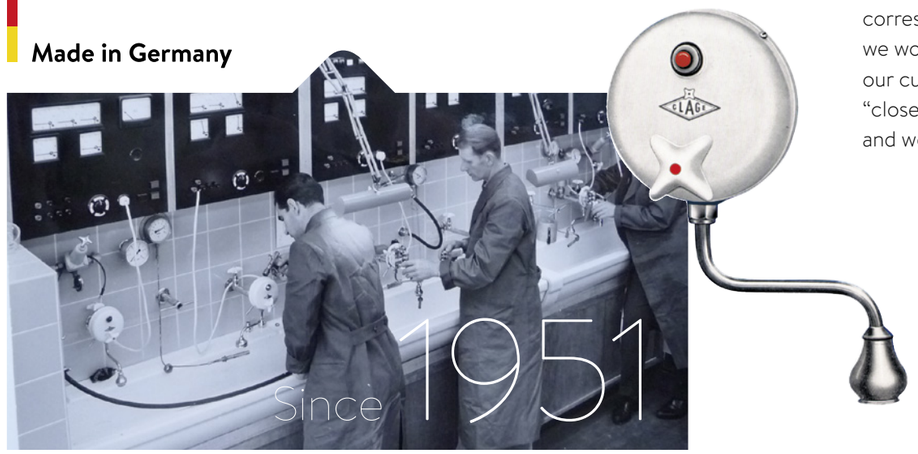
Responsibility

At CLAGE, it is easy to notice personal responsibility because of our great passion for everything we do. And it shows in our customer consultation and service as well. Of course, we fully stand by our products. Because it feels good that our energy- and water-saving products provide you with security, hygiene, convenience and reliability. “Finally and instantly hot water” is what many of our customers tell us. The process from design to the finished product is quite sustainable and is continuously put to the test. We work according to the environmental management standard ISO 14001. And we even take it one step further because we aim to maintain the highest efficiency for our materials. The units are designed in such a way that many parts, e.g. heating cartridges, are exchangeable. The reduces waste and increases the product lifetime. Whenever we collaborate with service providers, we prefer local partners. This also benefits the environment.

Specialist

As a specialist for decentralised warm water supply we offer a large product range with many individual solutions. As market leader in the mini instant water heater sector, we are committed to the constant search for new solutions and innovation in all areas of decentralised hot water preparation.
That’s why we were named Innovation Ambassador by the Chamber of Commerce and Industry.

Made in Germany



“Electric instant water heaters are the future!”

So why without electricity?!

Electricity makes it efficient!

1

Electricity is getting “greener”

Renewable energy is steadily gaining importance, and e-mobility is making strides. Why not use regenerative energy for the hot water supply instead of limited fossil fuel sources?

2

Separating heating and hot water

The heating requirements of buildings are steadily decreasing. And providing 60 degrees Celsius only for hot water is a waste of energy. So it seems to make sense to separate the two systems.

3

Electric instant water heaters are the future

If the heating system is kept separate from the hot water supply, it’s a big step towards decentralised systems. Electric instant water heaters are energy-efficient and feature forward-looking technology.

4

Sustainable, efficient and economical

But electric instant water heaters have many more advantages. They are convenient, space-saving and offer plenty of hygiene and security. They only heat the water to the desired temperature by demand. Hot water tanks with their unavoidable loss of heat energy are completely eliminated.

5

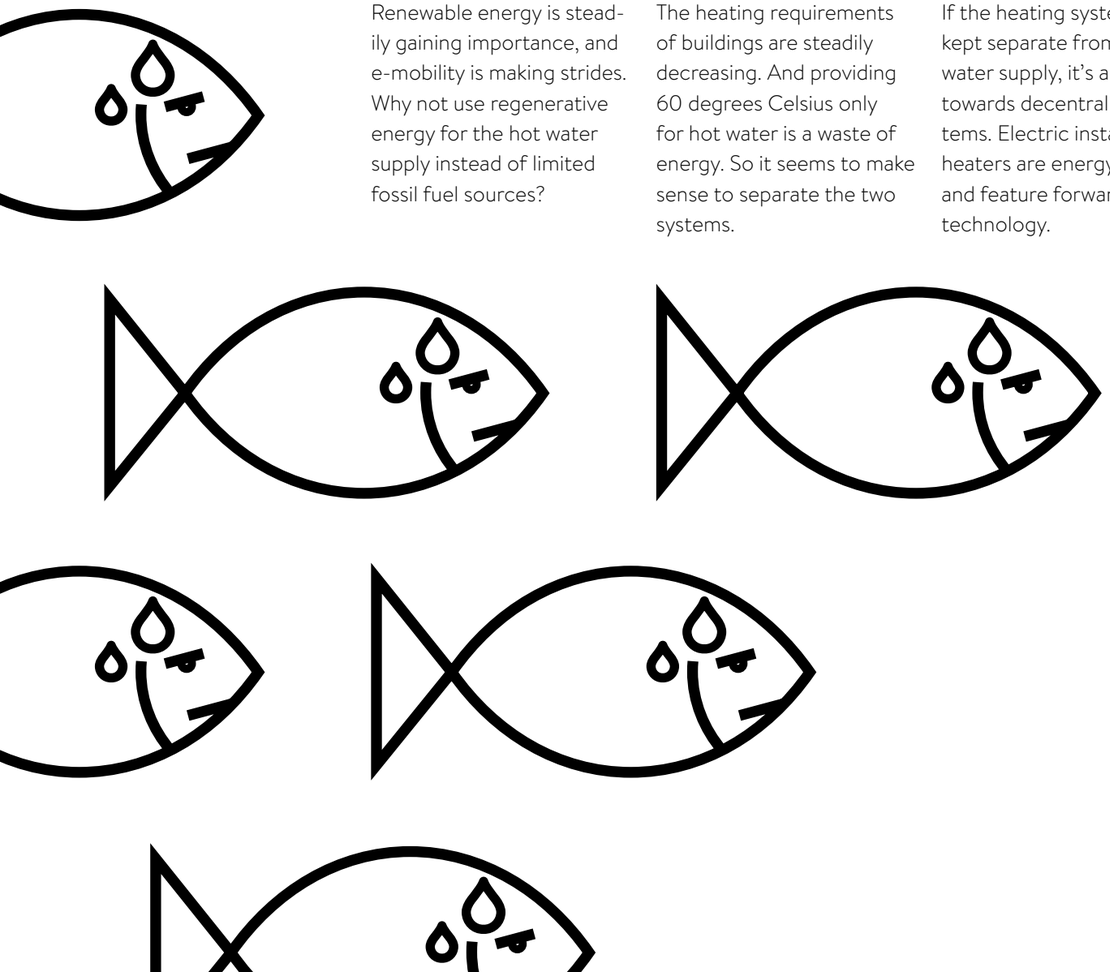
Replace old devices and plan for new ones

So what are you waiting for? Become an energy saver and update your outdated technology. Include electric instant water heaters when you start planning your next bathroom remodelling project.

6

CLAGE is the specialist

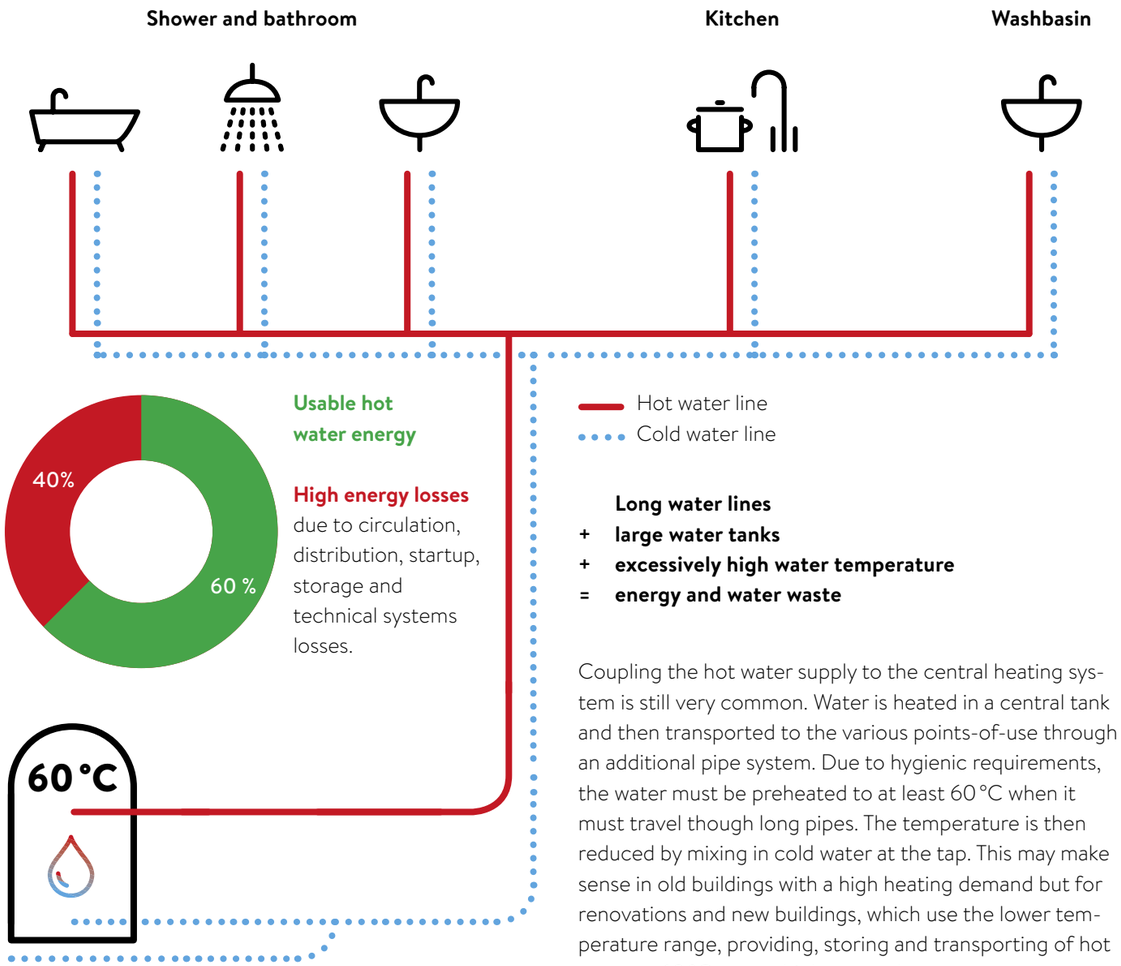
When you choose electric instant water heaters, you’ll soon encounter CLAGE, because we are pioneers in the area of hot water systems and also provide excellent customer service.



Centralised? Decentralised?

It matters!

Central hot water supply with high energy losses



Long water lines
+ large water tanks
+ excessively high water temperature
= energy and water waste

Coupling the hot water supply to the central heating system is still very common. Water is heated in a central tank and then transported to the various points-of-use through an additional pipe system. Due to hygienic requirements, the water must be preheated to at least 60 °C when it must travel though long pipes. The temperature is then reduced by mixing in cold water at the tap. This may make sense in old buildings with a high heating demand but for renovations and new buildings, which use the lower temperature range, providing, storing and transporting of hot water at 60 °C means high energy losses.

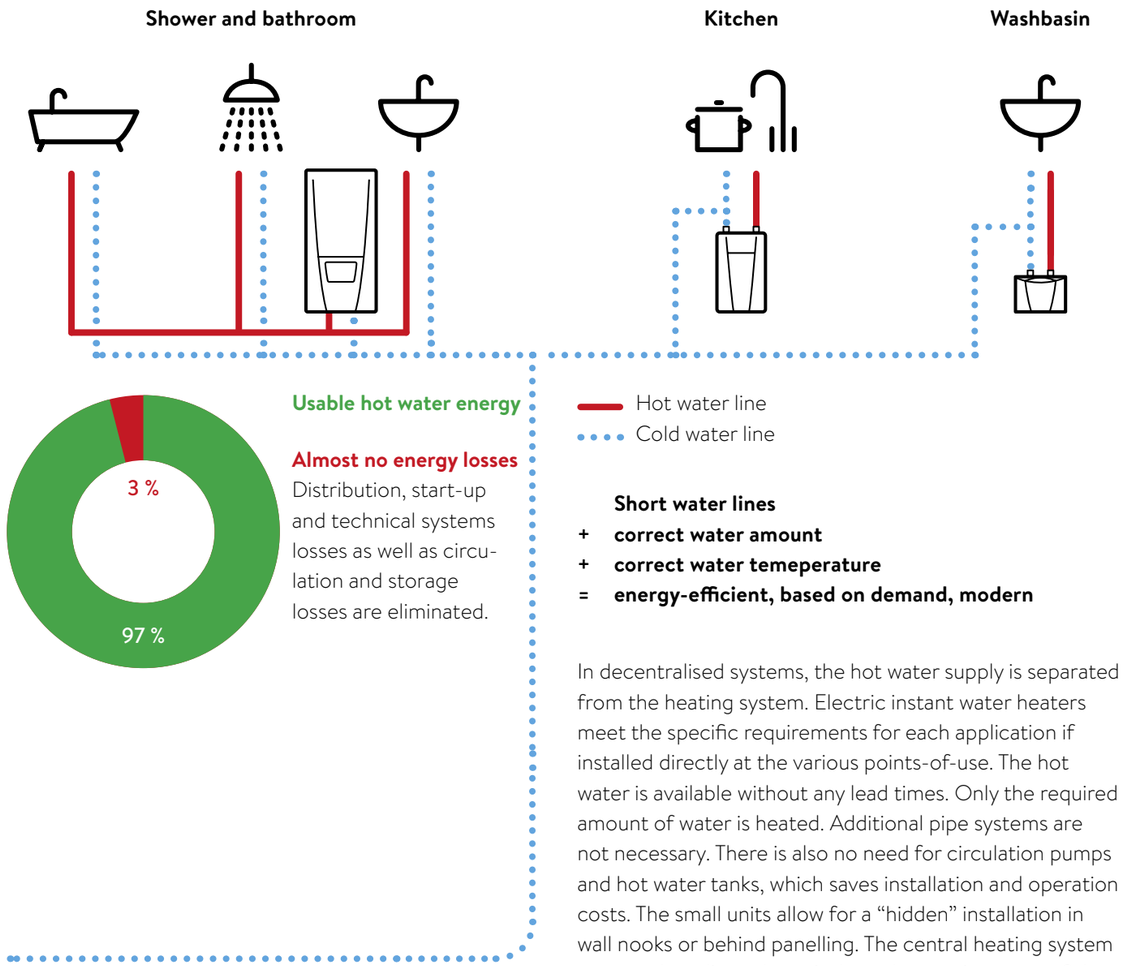
The “Energy Industry Research Association” divides energy losses in centralised hot water preparation into circulation, distribution, start-up and storage losses. In a one-family home, these losses add up to at least 40 % of the entire energy requirements. Add to that the higher investment costs compared to the decentralised solution.

Energy quantities for centralised hot water preparation with intelligent circulation on work days (example).

	1-family home	3-family home	12-family home
Useful hot water energy [Wh/d]:	4,280	8,500	34,000
Circulation losses [Wh/d]:	570	3,000	12,000
Distribution losses [Wh/d]:	27	50	180
Start-up losses [Wh/d]:	110	160	730
Storage losses [Wh/d]:	1,300	2,100	4,000
Technical systems losses [Wh/d]:	890	2,200	10,500
Total hot water requirements [Wh/d]:	**7,177**	**16,010**	**61,410**

Source: Final report of the Energy Industry Research Association mbH in collaboration with TU Munich, FfE no. ZVEI-01, 2011.

Decentralised hot water supply is energy-efficient



Short water lines
+ correct water amount
+ correct water temeperature
= energy-efficient, based on demand, modern

In decentralised systems, the hot water supply is separated from the heating system. Electric instant water heaters meet the specific requirements for each application if installed directly at the various points-of-use. The hot water is available without any lead times. Only the required amount of water is heated. Additional pipe systems are not necessary. There is also no need for circulation pumps and hot water tanks, which saves installation and operation costs. The small units allow for a “hidden” installation in wall nooks or behind panelling. The central heating system can now be adjusted precisely to the requirements of the building and be turned off completely during the summer.

Circulation and storage losses are eliminated, since water is not preheated and stored in large quantities. The distribution, start-up and systems losses only amount to 3 % of the energy requirements. According to the latest findings of the “Energy Industry Research Association”, decentralised hot water supply with electric instant water heaters is a highly efficient energy-saving system.

Energy quantities for decentralised hot water preparation on work days (example).

	1-family home	3-family home	12-family home
Useful hot water energy [Wh/d]:	4,280	8,500	34,000
Distribution losses [Wh/d]:	20	45	170
Start-up losses [Wh/d]:	35	70	380
Technical systems losses [Wh/d]:	70	210	580
Total hot water requirements [Wh/d]:	**4,405**	**8,825**	**35,130**
Savings vs. centralised hot water preparation [Wh/d]:	2,772	7,185	26,280

Source: Final report of the Energy Industry Research Association mbH in collaboration with TU Munich, FfE no. ZVEI-01, 2011.

What is my own hot water requirement actually?

	10 sec	2 L/min	35 °C

Washbasin

How long do you wash your hands? Rarely longer than 10 seconds! Did you know that? For such short duration, it makes sense to obtain the water at the desired temperature as quickly as possible. What else do you expect at the hand wash basin? Comfortably warm water, no mixing with cold water to obtain the desired temperature and no long wait times. No problem with E-mini instant water heaters. Our units are also elegant and small and thus almost unnoticeable under the hand wash basin or they can be installed “hidden” behind panels or in nooks.

Our solution:
E-mini instant water heater

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	2 min	5 L/min	48 °C

Kitchen

What are the uses for warm or hot water in the kitchen? Dishwashers are becoming more and more efficient and, if used appropriately, are often more economical than doing the dishes by hand. But especially when it comes to cleaning individual items, manual dish washing is required. Quickly washing a pot, filling a glass of water, washing one’s hands before preparing food or rinsing fruit and vegetables. These are water uses in the kitchen that require very different temperatures. E-compact instant water heaters provide your desired temperature with the push of a button, without adding cold water to the mix or scalding yourself with hot water. Compact instant water heaters also save space and can be installed easily under the sink.

Our solution:
E-compact instant water heater

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	1 min	4 L/min	40 °C
	5 min	8 L/min	38 °C
	12 min	10 l/min	40 °C

Shower and bathroom

On average, taking a shower lasts 3 to 5 minutes, even if the process seems much longer to us. We also would like to obtain our personal “comfortable temperature” quickly: simply open the tap, without long adjustments and mixing. With E-comfort instant water heaters, those unpleasant cold or hot bursts under the shower have become a thing of the past. And don’t forget the safety aspect, because any scalding has now become impossible with the appropriate setting. These units provide exactly the convenience we expect from a modern wellness area.

Our solution:
E-comfort instant water heater

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That's how you make **friends!**

GO!

Instantly hot water

As soon as you open the tap, the water flows with your desired temperature. The water is only heated in the amount and for the time you actually need it. Due to short water lines and modern technology.

Efficien

Saving energy

No more long water lines and circulation losses because the units are installed directly at the point of use. The water is no longer preheated and stored in large amounts. That saves energy. And it saves investment costs: Long waterlines, circulation pumps and hot water tanks are no longer necessary.

EN VIRON MENT

Protecting the environment

The process from design to the finished product is very sustainable and is continuously put to the test. We work according to the environmental management standard ISO 14001. Users conserve water and energy with electric instant water heaters.

SHORT &SWEET

Short water lines

Electric instant water heaters are installed directly at the point of use. Long water lines are avoided. Water is heated more quickly and there is barely any heat loss.

85%

Lowering costs

Electronic instant water heaters use up to 85 % less energy than conventional storage heaters.

CLEAN

More hygiene

Electric instant water heaters heat up the cold water to the perfect temperature within seconds, directly at the tap, as it flows through the unit. The heated water is used immediately and unused water is avoided in the water line systems. That's why testing for Legionella bacteria becomes unnecessary. This is what makes decentralised water heating more hygienic and efficient.

Precise

Ideal temperature

On many units, each user can set his or her individual temperature preference precisely. Directly at the unit, by remote control or via app. This also provides more security by avoiding scalding accidents

COOL!

Conserving water

That's pretty cool, right? No wasted water. Hot water is immediately available with electric instant water heaters. It is not necessary to run water for a long time to obtain the desired temperature. In centralised systems with 15 metres long water lines, for example, about 4.8 litres of water are wasted.

CO_2

CO_2 down

The amount of renewable energy in the electricity mix is growing as CO_2 emissions which are generated by burning fossil fuels are reduced. Compared to centralised gas or oil heating systems, decentralised hot water supply can lower CO_2 emission up to 35 %.

Electric instant water heaters **are used all over the world.**

Our electric instant water heaters are utilised in private, business and public buildings all over the world. Owners, contractors, architects, developers and investors rely on our expertise and our special service in the area of energy-efficient hot water preparation. Our large range of products nearly always provides a fitting and smart solution for their hot water supply needs. You can find CLAGE products in renowned hotels, in office buildings, in modern architectural houses and all other places where one would not want to do without the convenience of an efficient hot water supply.

References are available at clage.com

Private households

Electric instant water heaters are in use in nearly all residential properties: in one- and multi-family homes and, of course, in apartments as well. It makes a lot of sense to invest in decentralised warm water technology with modern electric instant water heaters, both in existing and in new buildings. At the washbasin, in the kitchen or in the bathroom: Electric instant water heaters provide more energy efficiency and convenience at home.

Housing construction

For renovation projects in buildings with outdated technology, one of the main issues is modern and energy-efficient heating and hot water technology. In new construction projects, the demand for general heating is constantly reduced due to technical advancements. For the highest savings potential, central heating and the hot water supply should be completely separated. Electric instant water heaters are an energy-efficient and hygienic solution.

Commercial buildings

E-mini instant water heaters at washbasins for employees, customers and visitors make each bathroom facility more comfortable. Our energy-efficient units directly at the point of use are the optimal solution in large buildings with long water lines.

Hospitality

Electric instant water heaters are utilised in hotels, resorts and restaurants. You'll even find our Zip drinking water systems on cruise ships.

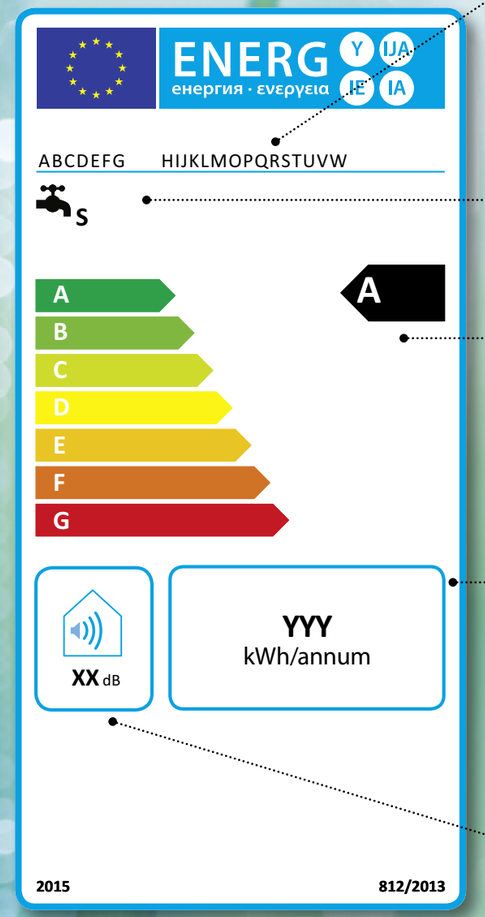
Industry

Workplaces and employee showers can be equipped with our units. Our product line also features special units for particular requirements.

Public buildings

Frequently used bathrooms in public areas should be equipped with efficient electric instant water heaters. In combination with the appropriate taps and faucets, they can provide optimum hygiene and corresponding savings.

Aaaahhhh.
Energy efficiency label Class A for our instant water heaters.



Manufacturer and product

Dispensing profile
The efficiency of a unit depends on its intended use. At the washbasin, for instance, a water flow of approx. 2 litres per minute is sufficient (tap profile XXS), a kitchen sink needs about 5 l/min (tap profile XS), while supplying several points-of-use in a bathroom or in an apartment requires a water flow of approx. 10 l/min (tap profile S).

Energy efficiency class
The seven energy efficiency classes for household appliances corresponds to the traffic light system: a green bar represents the best efficiency class (A) and a red bar stands for the worst efficiency class (G). In a comparison of the various hot water systems, demand-based instant water heaters were awarded the best energy efficiency class (A).

Annual energy consumption
However, the energy efficiency class is not the only deciding factor but the detailed information on the label matters as well. Within each efficiency class, there are significant differences in energy use. The hot water unit should initially be selected according to its intended use – its tap profile. An important factor is the comparison of the annual energy consumption!

Noise level during use
The noise level for all CLAGE instant water heaters is at a low 15 dB and thus hardly noticeable.

By the way:
The energy advantage of electronically controlled instant water heaters is not listed on the energy label. The actual use of demand-based water heating can provide energy savings of up to 30 % compared to hydraulically controlled instant water heaters within efficiency class A. The reason is the demand-based heating of the water to the desired temperature. The electronic controls automatically adjust the power consumption – and thus the energy use – to the actual water amount.

Yes to renewable energy, No to less convenience.
Simply abandoning energy production from fossil energy sources is not enough, since the demand for technology and new household appliances is increasing constantly.

We all must contribute our share to make this a reality. And it is only possible with energy-efficient technology and corresponding appliances.

Conclusion

The new energy labels for hot water units confirm that decentralised hot water supply with electronically controlled instant water heaters is one of the most energy-efficient technologies.

“Our experts
ensure quality.”

Technology & Production

Over 200 elite researchers and experienced production staff members are employed at the CLAGE R&D and production base, ensuring that each and every water heater that comes off the assembly lines is of unparalleled, unmatched quality. The world-class researchers there are tasked with the creation and manufacture of cutting-edge user- and environmentally-friendly products. They’re constantly innovating and pushing technological boundaries, whether it’s from use of the IES® bare wire heating system in mini instantaneous water heaters or incorporation of proprietary electronic touch control panels on full-sized instantaneous water heaters. Professional training is provided constantly to keep the staff up-to-date in their specific areas of expertise and new developing technologies.

Quality assurance

Quality assurance is the most crucial part in the production process, as the quality of raw materials, components and products have to be assessed long before assembly is complete. When it comes to safety and quality control, German tests have long been recognized worldwide as the gold standard. Our Instantaneous Electric Water Heater series has passed both German and international tests – including the certification DIN EN ISO 14001:2008 and the international standard ISO 14001:2009 – a qualification granted for meeting many of the world’s top standards.

Consultation by experts

You will receive a comprehensive consultation, even on-site, by our in-house and field representatives.

> Phone: +49 4131 8901-38
> E-mail: export@clage.de

Special CLAGE Service

Unit registration
We will have easy access to all unit information for registered products. This includes information for maintenance purposes, supplemental products or software updates.

Training and seminars
There is an increasing demand by customers to receive comprehensive information from their installer about energy efficiency. That’s why we are offering our training course “Energy-efficient hot water supply” at our CLAGE Academy.

Marketing support
In order to make the world more and more energy-efficient, we need our partners and expert installers. We will be glad to provide support for company representation and external advertising and will also link our partners online.

Customer satisfaction
In order to constantly optimize our products and service, we need you opinion. That is why we regularly conduct customer satisfaction analyses.

An E-mini instant water heater is the most efficient hot water supply solution at the washbasin. The water is not preheated but is heated directly at the sink as it flows through the unit. This consistently avoids water line and heat losses.

Mmmhhh... The M-Series.

Saves space and energy at the washbasin!

E-mini instant water heater

Energy savers at the wash-basin.

For hygienic reasons, we wash our hands several times a day, but each washing only takes approx. 10 seconds. That's why this activity should be efficient, effective and comfortable, for example, water-saving convenience without adding cold water to the mix.

Advantages

Lowers operating costs
Energy savings at the washbasin

Saves space
Can hide away under every sink: 19 × 14 × 9 cm

Instantly at the right temperature
On demand and without waiting

No dripping taps
There is no expansion water

More hygiene
due to short water lines

Environmentally friendly
Less water usage, less energy demand, less CO_2

At home, at the office, in public areas.
Simply everywhere!

The range of uses for E-mini instant water heaters is very diverse: from commercial, industrial, office and administrative buildings to public wash-room facilities, doctor's offices, hotels and domestic guest bathrooms.

E-mini instant water heaters are perfectly suited for use at sophisticated washbasins.

I spy with my little eye.
Something that is energy-efficient!

E-mini instant water heaters are an energy-saving solution. The water is not preheated and stored but only gets heated when it is needed.

You are not only saving water and energy but you are also saving space. Due to their small dimensions, the heaters are ideally suited for each room design and can also be used for small washbasins.

Nearly invisible >
E-mini instant water heaters are installed directly under the sink and are not visible at eye level, for example MCX with tap BLUE.

Perfect for the pantry >
E-mini instant water heaters are also suitable for staff kitchens, for example, MCX 7 with tap EAK.

The “old one” has to go!
Mini instant water heaters belong under the washbasin!

Before >
A 5-litre storage tank is installed under the washbasin. It causes heat losses. It can easily be replaced by a ready-to-use E-mini instant water heater.

After >
The energy-efficient E-mini instant water heater requires significantly less space, avoids heat losses, saves energy and provides more convenience.

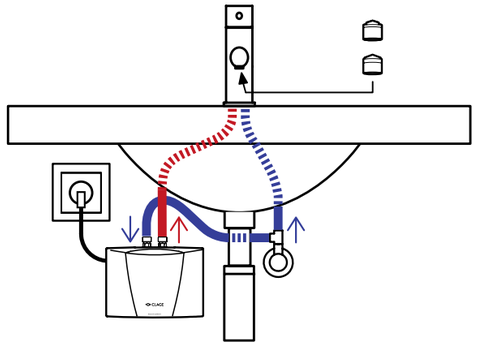
All-round carefree sets!
Complete solutions with taps.

e.g. MBX Lumino >
E-mini instant water heater with Lumino sensor tap> *page 32*

e.g. MCX BLUE >
E-mini instant water heater with special tap > *page 31*

Please M_ake a note.

Our M-Series.

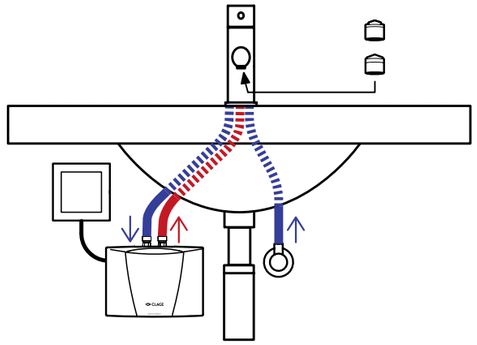


Simple and fast installation

MBH and MCX (unvented)

These E-mini instant water heaters are approved for open- and unvented installation.

The included connection kit (T-piece with pressure hose) simplifies upgrades of conventional fittings.



M (vented)

The vented M-Series E-mini instant water heaters are easy and simple to install and particularly cost-effective.

Due to their design they are installed with special open-outlet fittings. Warm water can be available with very little installation work.

Simple unit exchange

The wall mount provides a very simple slide-on installation without having to open the unit. It can be easily fitted to the connection openings of many existing older units during upgrade installations.

Quick connections

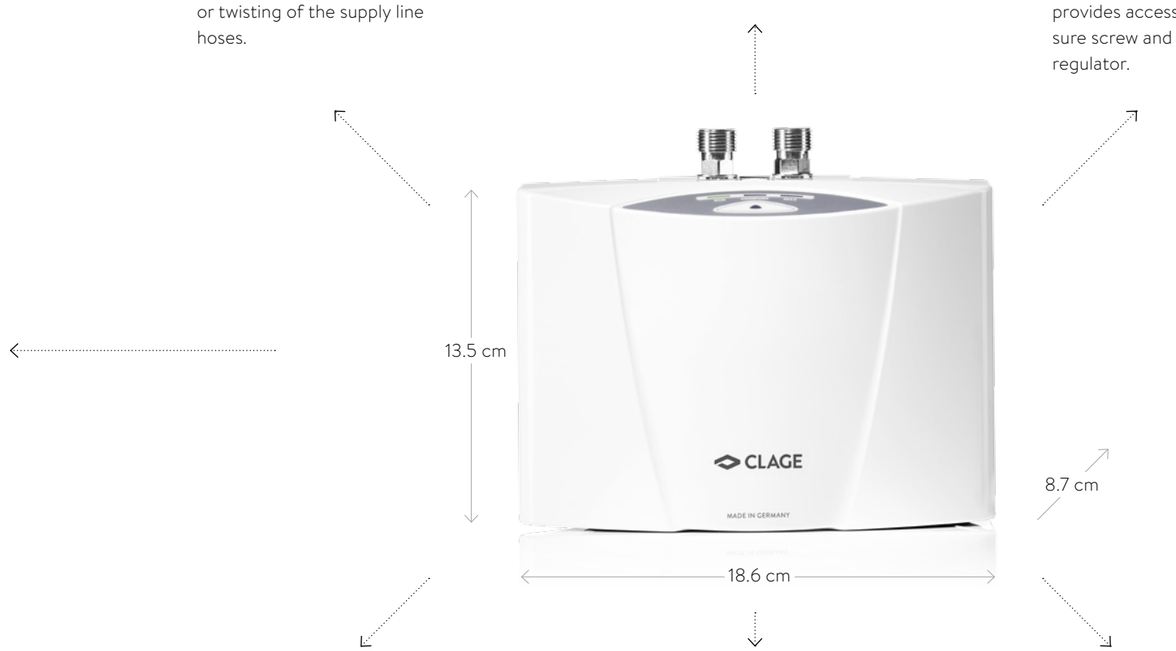
The high-grade materials of our lead-free and flexible water connections allow for simple installation and prevent linking or twisting of the supply line hoses.

New flow technology with special aerator

The water stream is optimally formed while using low flow amounts. The special flow regulator for use in tap threads M 22 / 24 is included.

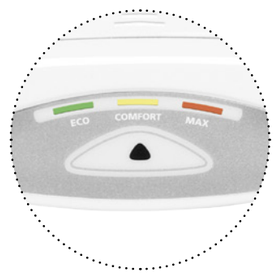
Convenient and practical

All technical details are conveniently listed on the back of the removable rating plate cover. Removing the plate also provides access to the enclosure screw and the water flow regulator.



Technology “Made in Lüneburg”

High-quality electronic sensors and heating technology as well as adjustable controls and patented technology are the reason why E-mini instant water heaters are so efficient.



Convenient operation with sensor button and colour LEDs

Pressing the sensor button sets the preferred temperature, which will then be indicated by discreetly glowing LEDs: ECO 35 °C, COMFORT 38 °C or MAX 45 °C. The LEDs double as function and diagnosis indicators. The temperature can be limited with a safety feature for scalding protection.

As an option, the heater can be operated by the FX wireless remote control or via the »Smart Control« app.

Bare wire technology

The innovative IES® bare wire heating system transmits heat directly to the water, giving significantly greater efficiency and a very fast heat-up time of just two seconds after opening the tap.

Smart energy efficiency.

E-mini instant water heater MCX

product design award 2012

Our top-of-the-line E-mini instant water heater combines great functionality with sophisticated design. Its compact design allows for installation under any sink.

- **Electronically controlled instant water heater** with a compact design for energy-efficient hot water supply of a sink or a staff kitchen
- **The heating output is electronically controlled.** This provides an ideal hot water temperature without the need to add cold water at the tap.
- **Touch button controls** with colour LEDs to set the outlet temperature to 35 °C, 38 °C or max. 45 °C.
- Connection kit (T-piece and flexible pressure hose) for an angle valve is included

Smart Control -ready

solar-ready, suitable for reheating *)

Optional wireless remote control

Energy efficiency class A	MCX 3	MCX 4	MCX 6	MCX 7
Part number:	1500-15003	1500-15004	1500-15006	1500-15007
Maximum operating pressure [MPa (bar)]:	1 (10)			
Water connections (thread connections):	G ⅜"			
Hot water output at Δt = 25 K [1] [l/min]:	2.0	2.5	3.3	3.7
Switch-on flow rate / max. flow rate [2] [l/min]:	1.2 / 2.0	1.5 / 2.5	1.5 / 3.3	1.5 / 3.7
Nominal power rating [kW]:	3.5	4.4	5.7	6.5
Voltage [1~ / N / PE 220 – 240 V AC]:	with plug [3]	permanent connection	permanent connection	
Voltage [2~ / PE 400 V AC]:				permanent connection
Nominal current [A]:	15	19	25	16
Required cable diameter [mm²]:	1.5	2.5	4.0	2.5
Protection class:	IP 25			
Specific water resistance at 15 °C [Ωcm] ≥ :	1100	800	800	1100
Weight filled with water [kg]:	approx. 1.5			

*) Inlet temperature ≤ 70 °C 1)Temperature increase e.g. from 15 °C to 40 °C 2) Limited flow amount for optimal temperature increase by water flow adjustment. 3) Also available as type MCX 3 (E) (part number 1500-15013) with power supply cable for permanent connection

The system solution for washbasins.

E-mini instant water heater MCX BLUE with tap EWT

“MCX BLUE”, the combination of an E-mini instant water heater and a special tap, is the ideal system solution for the energy-efficient hot water supply of a washbasins.

- **Electronically controlled instant water heater with innovative single-lever mixing tap** for energy-efficient hand-washing
- Intuitive operation with perfect water temperature at the middle position of the control lever.
- Saves water because of intelligent flow technology and very short water supply lines
- **Meets the highest requirements for drinking water hygiene** by separating water lines from the tap body as well as nickel- and lead-free materials
- **Touch button sensor controls** at the instant water heater to set the outlet temperature to 35 °C, 38 °C or max. 45 °C
- Very fast and simple system installation
- Low pressure tap with **EASY FIX mounting system** and pull-up drain stopper

Perfect hand-wash temperature in the middle

The optimal lever position for energy-efficient warm water is in the middle (ideal temperature at 35 °C, 38 °C or max. 45 °C).

Smart Control -ready

Optional wireless remote control

Energy efficiency class A	MCX BLUE
Part number:	1500-15133
Maximum operating pressure [MPa (bar)]:	1 (10)
Water connections (thread connections):	G ⅜"
Hot water output at Δt = 25 K [1] [l/min]:	2.0
Switch-on flow rate / max. flow rate [2] [l/min]:	1.2 / 2.0
Nominal power rating [kW]:	3.5
Voltage [1~ / N / PE 220 – 240 V AC]:	with plug
Nominal current [A]:	15
Required cable diameter [mm²]:	1.5
Protection class:	IP 25
Specific water resistance at 15 °C [Ωcm] ≥ :	1100
Weight filled with water [kg]:	approx. 1.5

1) Temperature increase for example from 15 °C to 40 °C 2) Limited flow amount for optimal temperature increase. Can be adjusted via water amount adjustment.

Efficient hygiene with sensor tap.

E-mini instant water heater MBX Lumino

Hot setting
Red
LED ring

Medium setting
White
LED ring

Cold setting
Blue
LED ring

The optimal solution to supply wash-room facilities in public commercial buildings with hygienic and energy-efficient warm water.

> **Electronically controlled instant water heater with sensor tap** for hygienic and efficient hand-washing

> An infrared touch-free sensor at the tap turns the water on and off. **The water temperature can be continuously adjusted with a lever at the tap.**

> The temperature is controlled electronically by the instant water heater without having to add cold water

> A **colour LED ring** visualises the chosen temperature from red = warm to blue = cold

> **Optional hygiene flush** (automatic flush every 12 or 24 hours)

> The integrated electronic controls of the instant water heater ensure ideal temperatures and **economical energy use**

Smart Control -ready

Optional wireless remote control

Energy efficiency class A	MBX 3 Lumino	MBX 7 Lumino
Part number:	1500-15113	1500-15117
Maximum operating pressure [MPa (bar)]:	1 (10)	
Water connections (thread connections):	G ⅜"	
Hot water output at Δt = 25 K [1)] [l/min]:	2.0	3.7
Switch-on flow rate / max. flow rate [2)] [l/min]:	1.2 / 2.0	1.5 / 3.7
Nominal power rating [kW]:	3.5	6.5
Voltage [1~ / N / PE 220 – 240 V AC]:	with plug	
Voltage [2~ / PE 400 V AC]:		Permanent connection
Nominal current [A]:	15	16
Required cable diameter [mm²]:	1.5	2.5
Protection class:	IP 25	
Specific water resistance at 15 °C [Ωcm] ≥ :	1100	1100
Weight filled with water [kg]:	approx. 1.5	

1) Temperature increase e.g. from 15 °C to 40 °C 2) Limited flow amount for optimal temperature increase by water flow adjustment

Efficient, attractive and economical.

E-mini instant water heater MBH

The unvented E-mini instant water heater MBH is the energy-saving standard solution for installation with all conventional taps. The connecting kit is included for easy installation directly at the tap. And you'll have warm water right away when you need it.

> **Hydraulically controlled instant water heater** (undersink model) with compact design for the energy-efficient hot water supply for a sink

> **The full heating capacity turns on automatically** as soon as water flows through the unit

> Connection kit (T-piece and flexible pressure hose) for an angle valve is included

Energy efficiency class A	MBH 3	MBH 4	MBH 6	MBH 7
Part number:	1500-16003	1500-16004	1500-16006	1500-16007
Maximum operating pressure [MPa (bar)]:	1 (10)			
Water connections (thread connections):	G ⅜"			
Hot water output at Δt = 25 K [1)] [l/min]:	2.0	2.5	3.3	3.7
Switch-on flow rate / max. flow rate [l/min]:	1.3 / 2.0	1.8 / 2.5	2.2 / 3.3	2.4 / 3.7
Nominal power rating [kW]:	3.5	4.4	5.7	6.5
Voltage [1~ / N / PE 230 V AC]:	with plug [2)]	permanent connection	permanent connection	
Voltage [2~ / PE 400 V AC]:				permanent connection
Nominal current [A]:	15	19	25	16
Required cable diameter [mm²]:	1.5	2.5	4.0	2.5
Protection class:	IP 25			
Specific water resistance at 15 °C [Ωcm] ≥ :	1100			
Weight filled with water [kg]:	approx. 1.5			

1) Temperature increase e.g. from 15 °C to 40 °C 2) Also available as type MBH 3 (E) (part number 1500-160032) with power supply cable for permanent connection

Quick and safe installation.

E-mini instant water heater, vented M

The vented E-mini instant water heater M is a pretty low-cost solution for having warm water at single points of use. It must be installed with an open-outlet tap. Cost-effective and easy to install, the unit is a real energy-saver at each sink.

- > **Hydraulically controlled instant water heater** (under-sink model) with compact design for the energy-efficient hot water supply of a washbasin
- > **Cost-efficient and quick installation**, ideally suited for replacing conventional storage heaters
- > The full heating capacity turns on automatically as soon as water flows through the unit
- > Vented design, **only suitable for open-outlet pressure taps**
- > Also available as complete kits with tap, M / END, M / SNM and M / SMB > *page 35*
- > Also available as oversink models, with water connections at the bottom:
  M 3-O: 3.5 kW / 230 V, Part no. 1500-17113
  M 4-O: 4.4 kW / 230 V, Part no. 1500-17113
  M 6-O: 5.7 kW / 230 V, Part no. 1500-17113
  M 7-O: 6.5 kW / 400 V, Part no. 1500-17113

Energy efficiency class A	M 3	M 4	M 6	M 7
Part number:	1500-17003	1500-17004	1500-17006	1500-17007
Maximum operating pressure [MPa (bar)]:	0 (0)			
Water connections (thread connections):	G ⅜"			
Hot water output at Δt = 25 K [1] [l/min]:	2.0	2.5	3.3	3.7
Switch-on flow rate / max. flow rate [l/min]:	1.3 / 2.0	1.8 / 2.5	2.2 / 3.3	2.4 / 3.7
Nominal power rating [kW]:	3.5	4.4	5.7	6.5
Voltage [1~ / N / PE 230 V AC]:	with plug [2]	permanent connection	permanent connection	
Voltage [2~ / PE 400 V AC]:				permanent connection
Nominal current [A]:	15	19	25	16
Required cable diameter [mm²]:	1.5	2.5	4.0	2.5
Protection class:	IP 25			
Specific water resistance at 15 °C [Ωcm] ≥ :	1100			
Weight filled with water [kg]:	approx. 1.5			

1) Temperature increase e.g. from 15 °C to 40 °C 2) Also available as type M 3 (E) (part number 1500-170032) with power supply cable for permanent connection

Kits for below and above.

Mini instant water heater kits with matching tap

M / END

Undersink model with single-lever mixer tap, with Easy-Fix mounting system and and pull-up drain stopper

M 3 /END: Part no. 1500-17243
M 3 /END (E): Part no. 1500-172432

M / SNM

Undersink model with two-handle mixer tap, with spout and eyelet chain

M 3 /SNM: Part no. 1500-17203
M 3 /SNM (E): Part no. 1500-172032

M / BGS

Shower system with wall rail and shower set

M 4 / BGS: Part no. 1500-17304
M 6 / BGS: Part no. 1500-17306
M 7 / BGS: Part no. 1500-17307

M / SMB

Oversink model with two-handle mixer tap and 16 cm swivel spout

M 3 / SMB: Part no. 1500-17103
M 3 / SMB (E): Part no. 1500-171032
M 4 / SMB: Part no. 1500-17104
M 7 / SMB: Part no. 1500-17107

The special mixer tap is also available individually as an addition for all over-sink mini instant water heaters:

SMB / LS: Part no. 1100-04100

SME

Single-lever mixer tap as addition for all oversink mini instant water heaters

SME: Part no. 1100-04150

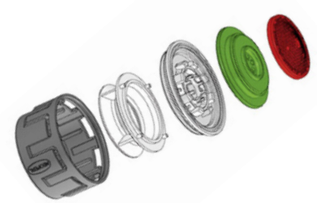
And after washing your hands: Hygienic hand drying.

Hot air hand dryer WHT

The hot air hand dryer will turn on and off automatically via an electronic infrared sensor when you approach it with your hands. The optimised air outlet with a strong hot air flow allows for fast and comfortable hand drying. It also features a very low noise level and energy-saving operation.

- > **Comfort hot air hand dryer** for wash-room facilities
- > Touchless on/off function
- > Safety shut-off after approx. 4 minutes continuous use (e.g. in the event of chewing gum vandalism)
- > Low noise level: max. 69 dB (A)
- > The impact-resistant ABS case and the quiet, no-maintenance motor ensure a long service life
- > Easy, maintenance-friendly wall installation with integrated mounting plate (without having to open the unit)
- > Rating 1.8 kW 230 V (air flow: 38 l / s)
- > Dimensions (H × W × D): 33 × 27 × 16.1 cm

	WHT
Part number:	7000-7020
Colour:	pure white RAL 9010
Nominal power rating at 230 V ~ [kW]:	1.8
Nominal current [A]:	8
Heating capacity [Watt]:	1700
Motor output [Watt]:	100
Noise level [dB]:	69
Air flow [l/sec]:	38
relative drying time [sec]:	approx. 23
Protection class:	IP 23
Weight with wall mount [kg]:	approx. 3.5



Perfectly shapes the water stream.

Aerators for tap adapters, female and male threads

Using the correct aerator at the tap is particularly important for electric hot water heaters. The new special CSP aerators mix air into the water and thus create a uniform water stream that does not splatter but softly cascades down. The aerated water stream supports the energy- and water-saving operation of the mini instant water heater. The aerators are manufactured with high-precision plastics technology and are available as inserts or complete with a fitting tap adapter.

Aerators are available in three versions:

Aerator insert for tap adapter M 22/24 at the tap

CSP 3 (< 2 l / min): Part no. 0010-00421
CSP 6 (< 3.5 l / min): Part no. 0010-00461

Aerator with chrome tap adapter M 24a (suitable for taps with female threads at the outlet)

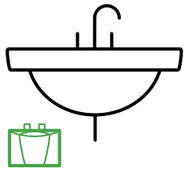
CSP 3a (< 2 l / min): Part no. 0010-0043
CSP 6a (< 3,5 l / min): Part no. 0010-0047

Aerator with chrome tap adapter M 22i (suitable for taps with male threads at the outlet)

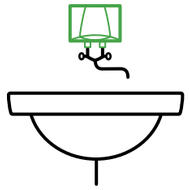
CSP 3i (< 2 l / min): Part no. 0010-0042
CSP 6i (< 3,5 l / min): Part no. 0010-0046

		Instantaneous water heater			
		MCX 3 / MCX 4 MBH 3 / MBH 4 M 3 / M 4	MBH 6 / 7 M6 / M7	MCX 6 / 7	C-Series
Aerator Guide					
CSP 3		✓		✓	
CSP 6			✓	✓	✓

M-Series
at a glance



Undersink units



Oversink units

→ **Premium** → **Standard**

Electronic Heating output controlled automatically

Hydraulic Heating output set permanently

Unvented

Vented installation with open-outlet taps

MCX

MCX 3: 3.5 kW / 230 V
MCX 4: 4.4 kW / 230 V
MCX 6: 5.7 kW / 230 V
MCX 7: 6.5 kW / 400 V

MBH

MBH 3: 3.5 kW / 230 V
MBH 4: 4.4 kW / 230 V
MBH 6: 5.7 kW / 230 V
MBH 7: 6.5 kW / 400 V

M

M 3: 3.5 kW / 230 V
M 4: 4.4 kW / 230 V
M 6: 5.7 kW / 230 V
M 7: 6.5 kW / 400 V

M-O

M 3-O: 3.5 kW / 230 V
M 4-O: 4.4 kW / 230 V
M 6-O: 5.7 kW / 230 V
M 7-O: 6.5 kW / 400 V

Single units

MBX Lumino with sensor tap

MBX 3 Lumino: 3.5 kW / 230 V
MBX 7 Lumino: 6.5 kW / 400 V

System solution:
E-mini instant water heater with touchless tap

MCX BLUE with special tap

MCX BLUE: 3.5 kW / 230 V

System solution:
E-mini instant water heater mit special tap EWT

M / END with single-lever mixer tap

M 3 / END: 3.5 kW / 230 V

M / SNM with two-handle tap

M 3 / SNM: 3.5 kW / 230 V

M / SMB with wall fixture

M 3 / SMB: 3.5 kW / 230 V
M 7 / SMB: 6.5 kW / 400 V

M / BGS with shower fixture

M 4 / BGS: 4.4 kW / 230 V
M 6 / BGS: 5.7 kW / 230 V
M 7 / BGS: 6.5 kW / 400 V

Complete sets with tap
for ease of plumbing and perfect function

The original! We have been offering E-compact instant water heaters as the ideal solution for kitchen sinks for more than ten years. Their intelligent and compact design allows for installation directly at the fixture. The heating capacity of the compact units ensures ideal hot water convenience for use at the sink.

Kitchen helpers. The C-Series.

Saves space,
time and money!

E-compact instant water heater

Convenience and efficiency in one sweep.

Remote control FX for E-compact instant water heater CFX-U wit tap EAK

E-compact instant water heaters are the smart solution for energy-efficient hot water supply at the kitchen sink. The units heat the water only when it is needed – directly at the tap.

The compact unit allows for space-saving installation under the sink, with wireless remote control for convenient temperature adjustment. This avoids water line and heat losses. The desired temperature can be pre-set efficiently and precisely. You shouldn't be without this convenience anymore!

Advantages

Lowers operating costs
Saves energy at the kitchen sink

Saves space
Fits under any sink: 29 × 18 × 11 cm

Instantly at the right temperature
On demand and without waiting

Adjustable ideal temperature
No addition of cold water

More hygiene
due to short water lines

Environmentally friendly
Less water usage, less energy demand, less CO_2

The perfect solution
for every use.

Our E-compact instant water heaters provide the right choice for every need. No matter if you have drawers or hinged doors – the unit can be installed almost anywhere, due to its compact dimensions and low-profile design. Depending on the instant water heater model, the temperature can be set directly at the unit or via wireless remote control.
Simple dish-washing, comfortable hand-washing, cleaning of fruits and vegetables and even taking showers at the perfect temperature – that's what sets our E-compact instant water heaters apart from the rest.

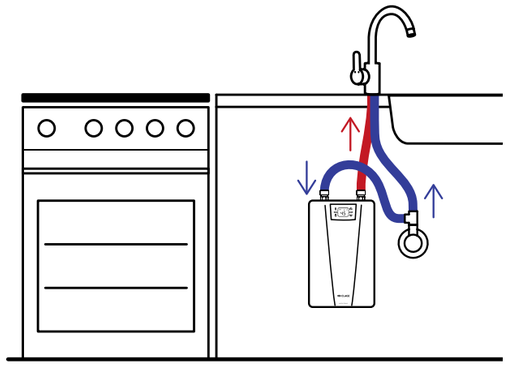
Saving space >
The E-compact instant water heater CFX-U is installed under the sink and operated by remote control (FX).

Convenience for two >
The E-compact instant water heater is a convenient solution for a handwash-basin, or even two.

Universally usable >
The E-compact instant water heater CEX is easy to install and provides a constant supply of warm water for a basin and shower.

C_ool features.

Our C-Series.

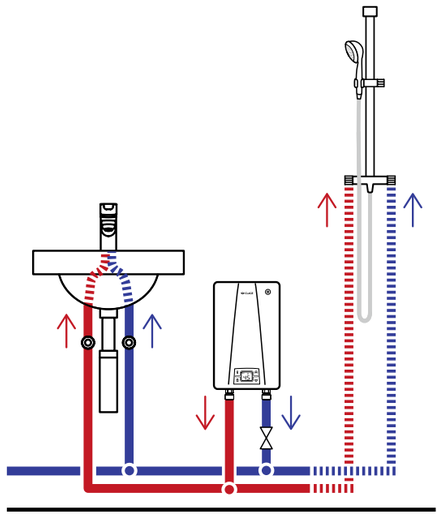


Simple and fast installation

Water connections upwards

The models CDX-U, CEX-U and CFX-U have their ⅜" water connections upwards. They are designed for undersink installation direct to the pipes or connection hoses of the tap. By this, the distance to the tap is as short as possible for best efficiency.

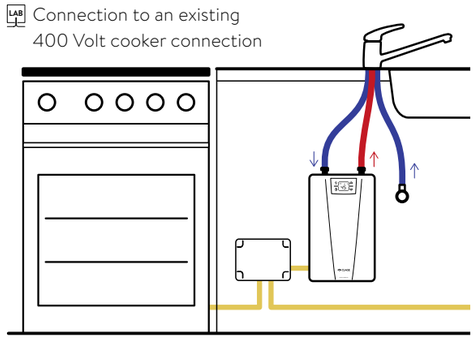
You have the choice: The C-Series compact instant water heaters are approved for unvented or vented installation. A selection of open-outlet taps and an installation kit for standard taps are shown on > *pages 52 and 53.*



Water connections downwards

The model CEX with its ½" water connections downwards, can be used versatile.

LAB Connection to an existing 400 Volt cooker connection



The solution for upgrades: the load shedding module

The load shedding switch (also known as priority switching) allows for the joint use of an electrical connection by two 400 Volt units. For example, an instant water heater can be operated with the existing electrical connection of a cooker. When dispensing hot water, the instant water heater temporarily turns off the cooker. This is hardly noticeable, since the cooker maintains the required heat for cooking or baking during the short time when water is dispensed.
> *page 52*

More space

The unit's small dimensions leave plenty of space, i.e. for a waste separation system and cleaning supplies.

Precise temperature settings with modern technology

it is no longer necessary to add cold water. Powerful electronics "Made in Lüneburg": The two sensors of TWIN TEMPERATURE Control TTC® ensure precise temperature control, even with varying water pressures. No long water lines to the kitchen, that saves water and time.

Safe and long-lasting

The electronic safety system with air bubble detection increases the safety and service life of the units.

Flexible power rating

With the Multiple Power System MPS®, the maximum power rating is set at the time of installation: 6.6 or 8.8 kW 230 V, 11 or 13.5 kW 400 V.

Convenient operation

The wireless remote control provides convenient operation, even if the unit is installed under the kitchen sink. The desired temperature for washing dishes or washing hands can be selected accordingly by the simple touch of a button without having to mix hot and cold water at the tap. The remote control is attached to the wall with the flexible magnet holder.

As an option, the unit can also be operated via the "Smart Control" app. > *page 76*

Fewer limescale deposits

The efficient IES® bare wire heating system reduces limescale deposits and provides an extended service life and easy maintenance. The water is heated just a few seconds after opening the tap.

Efficiency and convenience in one sweep.

E-compact instant water heater CFX-U

PLUS X AWARD®
ausgezeichnet als:
BESTES PRODUKT DES JAHRES 2011

An especially smart solution for energy-efficient hot water supply at the kitchen sink is the E-compact instant water heater CFX-U. While the compact and space-saving unit is installed under the kitchen sink, the temperature of the instant water heater can be conveniently controlled via remote control. You can preselect the perfect temperature and avoid heat losses due to mixed water.

- **Electronically controlled undersink instant water heater** with compact design and wireless remote control
- **Temperature setting from 20 °C to 60 °C via bidirectional wireless remote control**
- **Adding cold water is no longer necessary**
- Easy installation under the kitchen sink facilitated by **small dimensions** and external ⅜" water connectors for unvented or vented installation
- With power cable for permanent electrical connection

Smart Control -ready | solar-ready, suitable for reheating *) | Wireless remote control included

Energy efficiency class A	**CFX-U** (with Multiple Power System: 11 or 13.5 kW adjustable)	
Part number:	2400-26313	
Maximum operating pressure [MPa (bar)]:	1 (10)	
Water connections (thread connections):	G ⅜"	
Hot water output at Δt = 33 K [1) 2)] [l/min]:	4.8	5.8 [3)]
Switch-on flow rate / max. Flow rate [4)] [l/min]:	2 / 5	
Nominal power rating [kW]:	11.0	13.5
Voltage [3~ / PE 400 V AC]:	Permanent connection	
Nominal current [2)] [A]:	16	20
Required cable diameter [2)] [mm²]:	1.5	2.5
Protection class:	IP 24	
Specific water resistance at 15 °C [Ωcm] ≥ :	1000	
Weight filled with water [kg]:	approx. 2.7	

*) Inlet temperature ≤ 70 °C 1) Temperature increase e.g. from 12 °C to 45 °C 2) Depending on the selected power rating 3) Mixed water 4) Restricted flow for optimal temperature increase

Precise hot water convenience.

E-compact instant water heater CEX-U

The CEX-U's electronic controls ensure an energy-efficient hot water supply. The water is heated directly to the preset temperature while flowing though the unit. The temperature is selected by pushing one of the buttons on the LCD panel, with factory settings programmed at 35 °C and 48 °C.

- **Electronically controlled undersink instant water heater** with compact design
- **Push-button operation with LCD indicator** for precise temperature setting between 20 °C and 60 °C
- Two programming buttons for individual pre-set temperatures, optional temperature limitation as well as function indicators
- **Adding cold water is no longer necessary**
- Easy installation under the kitchen sink facilitated by **small dimensions** and external ⅜" water connectors for unvented or vented installation
- With power cable for permanent electrical connection
- With the Multiple Power System MPS®, the maximum power rating is set at the time of installation

Smart Control -ready | solar-ready, suitable for reheating *) | Optional wireless remote control

Energy efficiency class A	**CEX9-U** (MPS®: 6.6 or 8.8 kW)		**CEX-U** (MPS®: 11 or 13.5 kW)	
Part number:	2400-26249		2400-26213	
Maximum operating pressure [MPa (bar)]:	1 (10)			
Water connections (thread connections):	G ½"		G ⅜"	
Hot water output at Δt = 33 K [1) 2)] [l/min]:	2.9	3.8	4.8	5.8 [3)]
Switch-on flow rate / max. Flow rate [4)] [l/min]:	2 / 5			
Nominal power rating [kW]:	6.6	8.8	11.0	13.5
Voltage:	1~ / N / PE 220 – 240 V AC		3~ / PE 400 V AC	
Nominal current [2)] [A]:	29	38	16	20
Required cable diameter [2)] [mm²]:	4–6	6	1.5	2.5
Protection class:	IP 24			
Specific water resistance at 15 °C [Ωcm] ≥ :	1000		1100	
Weight filled with water [kg]:	approx. 2.7			

*) Inlet temperature ≤ 70 °C 1) Temperature increase e.g. from 12 °C to 45 °C 2) Depending on the selected power rating 3) Mixed water 4) Restricted flow for optimal temperature increase

Convenient under the kitchen sink.

E-compact instant water heater CDX-U

Although this E-compact instant water heater has no user controls, it operates with reliable electronics. The heating power is controlled automatically depending on flow rate and inlet temperature. During daily use, the temperature is set at the tap.

- **Electronically controlled undersink instant water heater** with compact design and without user controls
- Automatic heating adjustment based on flow rate and inlet temperature
- The maximum outlet temperature is factory-set to 50 °C, **temperature setting as usual by mixing cold water at the tap**
- Easy installation under the sink facilitated by **small dimensions** and external ⅜" water connectors for unvented and vented installation
- With power cable for permanent electrical connection
- With the load shedding module (available as an accessory), the instant water heater can be operated long with the electric cooker at the cooker terminal outlet box. > *page 52*

Energy efficiency class A	CDX 7-U	CDX 11-U
Part number:	2400-26107	2400-26113
Maximum operating pressure [MPa (bar)]:	1 (10)	
Water connections (thread connections):	G ⅜"	
Hot water output at Δt = 33 K [1) 2)] [l/min]:	3.0	4.8
Switch-on flow rate / max. flow rate [3)] [l/min]:	2 / 5	
Nominal power rating [kW]:	6.9	11.0
Voltage [3~ / PE 400 V AC]:	Permanent connection	
Nominal current [A]:	10	16
Required cable diameter [mm²]:	1.5	
Protection class:	IP 24	
Specific water resistance at 15 °C [Ωcm] ≥ :	1000	
Weight filled with water [kg]:	approx. 2.7	

1) Temperature increase for example from 12 °C to 45 °C 2) Mixed water 3) Limited flow amount for optimal temperature increase.

Compact power, versatile use.

E-Compact instant water heater CEX

Versatile E-compact instant water heater with medium power rating for a bathroom sink, a disposal sink or a single shower.

- **Electronically controlled instant water heater** with compact design
- **Push-button operation with LCD indicator** for precise temperature setting between 20 °C and 60 °C
- Two programming buttons for individual pre-set temperatures, optional temperature limits as well as function indicators
- **Adding cold water is no longer necessary**
- Easy installation facilitated by **small dimensions** and external ½" water connectors for unvented or vented installation
- With power cable for permanent electrical connection
- With the Multiple Power System MPS®, the maximum power rating is set at the time of installation
- **Accessory recommendation for shower use:** Adjustable shower set CXH
  CXH: Part no. 0300-0086

Smart Control -ready

solar-ready, suitable for reheating *)

Optional wireless remote control

Energy efficiency class A	CEX 9 (MPS®: 6.6 or 8.8 kW)		CEX (MPS®: 11 or 13.5 kW)	
Part number:	2400-26239		2400-26233	
Maximum operating pressure [MPa (bar)]:	1 (10)			
Water connections (thread connections):	G ½"		G ½"	
Hot water output at Δt = 28 K [1) 2)] [l/min]:	3.4	4.5	5.6	6.9 [3)]
Switch-on flow rate / max. Flow rate [4)] [l/min]:	2 / 5			
Nominal power rating [kW]:	6.6	8.8	11.0	13.5
Voltage:	1~ / N / PE 220 – 240 V AC		3~ / PE 400 V AC	
Nominal current [2)] [A]:	29	38	16	20
Required cable diameter [2)] [mm²]:	4–6	6	1.5	2.5
Protection class:	IP 24			
Specific water resistance at 15 °C [Ωcm] ≥ :	1100		1100	
Weight filled with water [kg]:	approx. 2.7			

*) Inlet temperature ≤ 70 °C 1) Temperature increase e.g. from 12 °C to 40 °C 2) Depending on the selected power rating 3) Mixed water 4) Restricted flow for optimal temperature increase

Various accessories

FX

Wireless remote control for instant water heater MCX, MBX, CEX, CEX-U and DEX, with wireless adapter for installation in the instant water heater. In addition to user controls directly at the unit, the remote control allows for convenient temperature adjustment of the instant water heater at interior distances of up to 10 meters. Secure, bidirectional wireless transfer, two-button temperature selection between 20 °C and 60 °C plus two pre-set buttons and LCD display, magnetic wall holder and batteries included. IP 20. Dimensions (H × W × D): 6 × 12.5 × 2 cm
FX: Part no. 2400-26050

LAB

Load shedding module (electrical installation kit) with pre-installed cables, contactor and load shedding relay, for joint connection of an 11 kW instant water heater and an electromechanical cooker at a cooker terminal outlet box, if no separate outlet is available for the instant water heater. IP 55. Dimensions (H × W × D): 17 × 13 × 8 cm
LAB: Part no. 82260

Accessories for undersink installation

FVS

Flexible connecting hose, 50 cm long
FVS: Part no. 89620

T-connector

⅜ inch, with cap nut for an angle valve
T-connector: Part no. 89610

Open-outlet taps for kitchen sinks and disposal sinks

EKM

Single-lever mixer tap with swivel spout
EKM: Part no. 1100-04220

EKA

Single-lever mixer tap with pull-out rinse sprayer
EKA: Part no. 1100-04230

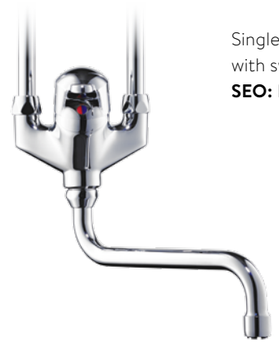
EAK

Single-lever mixer tap with side lever and swivel spout
EAK: Part no. 1100-04430

SNO

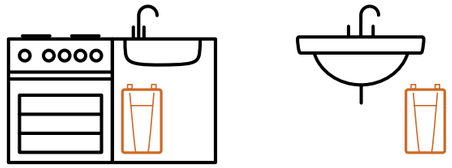
Wall-mounted mixer tap with swivel spout
SNO: Part no. 4100-0110

SEO



Single-lever wall mixer tap with swivel spout
SEO: Part no. 4100-0115

C-Series
at a glance



Undersink units

Premium → Standard

MPS® (Multiple Power System) Power rating adjustable at installation

Precise ideal temperature

Preset temperature

CFX-U

CFX-U: 11 or 13.5 kW / 400 V

CEX-U

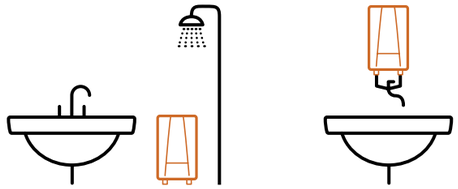
CEX-U: 11 or 13.5 kW / 400 V

CDX-U

CDX 7-U: 6.9 kW / 230 V
CDX 11-U: 11 kW / 400 V

CEX 9-U

CEX 9-U: 6.6 or 8.8 kW / 230 V



Oversink units

Premium →

MPS® Power rating adjustable at installation

Precise ideal temperature

CEX

CEX: 11 or 13.5 kW / 400 V

CEX 9

CEX 9: 6.6 or 8.8 kW / 230 V

Three-phase 400 V

Single-phase 230 V

Fully electronic instant water heaters combine comfortable hot water convenience with energy efficiency. These units only heat the water that is actually used for a bath or a shower. And because it is heated to the desired temperature within seconds, there are no long wait times and no need to mix with cold water. These features conserve valuable energy and precious drinking water.

Award winner: The DSX Touch received the Plus X Award as the best product of 2015 / 2016.

Spa experience at a bargain. The D-Series.

Cost-effective yet extremely comfortable!

E-comfort instant water heater

Your new Economy Spa area!

E-comfort instant water heaters are the perfect hot water solution for shower and bath. The units can be installed on a wall, inside bathroom furniture or concealed behind a panel. E-comfort instant water heaters provide comfortable convenience with low energy and water use.

Advantages

Lowers operating costs
Saving energy in shower and bath

Instantly at the right temperature
On demand and without waiting

Adjustable ideal temperature
No addition of cold water

More hygiene
due to short water lines

Environmentally friendly
Lower water demand, lower energy demand, less CO_2

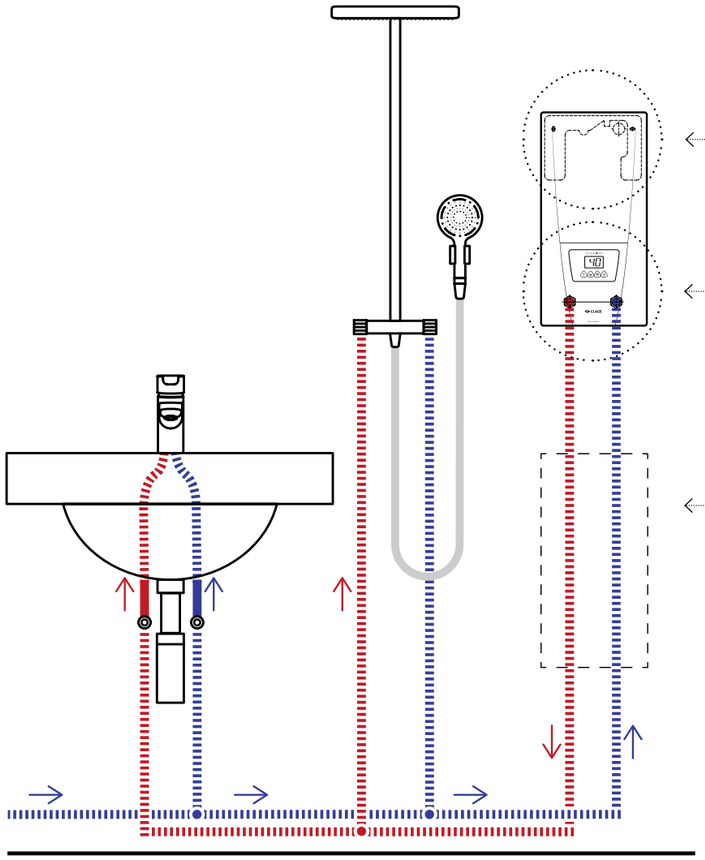
The perfect unit
for every bathroom.

E-comfort instant water heaters are suitable for every kind of bathroom. Whether on the wall at eye level, unobtrusive at the lower wall level for even shorter water lines, concealed in bathroom furniture or behind an access panel – the units provide hot water convenience for washbasins, showers and even bathtubs.

Concealed >
Thanks to the wireless remote control the units can be installed in bathroom furniture and behind access panels!

At eye level >
Wall units make it easy to set the desired temperature.

D_igital convenience.
Our D-Series.



Easy mounting and simple installation

Top area installation (alternative)

Simple mounting wall bracket and enclosure screw behind the front cover. Allows for easy electrical installation in the upper area as well.

Bottom area installation (standard)

Spacious electrical connection area at the bottom with detachable bottom enclosure and spacer sleeves to compensate for uneven tiles and wall irregularities.

Alternative installation for short water lines

If no user control of the E-comfort instant water heater is required at eye level, the unit can also be installed at a lower level. This shortens the water lines.

Easy replacement of old units

When replacing older units (also of other manufacturers) it is usually not necessary to drill new holes. The supplied wall bracket allows for flexible mounting.

Mounting frame RDX for more mounting options

The universal mounting frame RDX, which allows for an electrical connection at any position behind the unit, is available as an accessory.

RDX: Part no. 3200-34100

Attractive design

The touch display makes this unit a must for every modern bathroom. Its low-profile design also allows for easy concealed installation.

Instantly at the desired temperature, thanks to modern technology

Powerful electronics “Made in Lüneburg”. The two sensors of TWIN TEMPERATURE Control TTC® ensure precise temperature control, even with varying water pressures. SERVOTRONIC® for dynamic flow rate control reduces the water flow when the unit’s power limit is reached.

Safe and long-lasting

The electronic safety system with air bubble detection increases the safety and service life of the units.

Flexible power rating

With the Multiple Power System MPS®, the maximum power rating is set at the time of installation: 18, 21, 24 or 27 kW.

Attractive touch display for more transparency

Personal temperature preferences that save water and energy can be set in a breeze. At the flush, integrated touch display, you can create individual user profiles, define savings goals, set personal requirements and retrieve overall usage for cost transparency.

As an option, the unit can be operated with up to three wireless FX remote controls or via the “Smart Control” app.

Fewer limescale deposits

The efficient IES® bare wire heating system reduces limescale deposits and provides an extended service life and easy maintenance. The water is heated just a few seconds after opening the tap.

For your new wellness oasis.

E-comfort instant water heater DSX Touch

FX wireless remote control is included

PLUS X AWARD®
ausgezeichnet als:
BESTES PRODUKT
2015/2016

The top model among the E-comfort instant water heaters turns your bathroom into your personal wellness oasis, with an energy-efficient hot water supply that also provides cost transparency. Above all, the unit meets the highest demands for convenience.

- **Fully electronically controlled instant water heater with touch display** for convenient and economical hot water supply for one or multiple point(s)-of-use
- **Always precise temperatures** between 20 °C and 60 °C due to TWIN TEMPERATURE Control TTC® and SERVOTRONIC® **dynamic flow rate control**
- Electronic safety system with air bubble detection
- **Remote control module included**

Smart Control -ready

solar-ready, suitable for reheating *)

Wireless remote control included

Energy efficiency class A	**DSX Touch** (Multiple Power System: 18, 21, 24 or 27 kW adjustable)			
Part number:	3200-34427			
Maximum operating pressure [MPa (bar)]:	1 (10)			
Water connections (thread connections):	G ½"			
Hot water output at Δt = 28 K [1) 2) 3)] [l/min]:	9.2	10.7	12.3	13.8
Switch-on flow rate / max. flow rate [l/min]:	2.5 / automatic			
Nominal power rating [kW]:	18	21	24	27
Voltage [3~ / PE 400 V AC]:	Permanent connection			
Nominal current [3)] [A]:	26	30	35	39
Required cable diameter [3)] [mm²]:	4	4	6 [4)]	6
Protection class:	IP 24			
Specific water resistance at 15 °C [Ωcm] ≥ :	1100			
Weight filled with water [kg]:	approx. 4.2			

*) Inlet temperature ≤ 70 °C 1) Temperature increase e.g. from 12 °C to 40 °C 2) Mixed water 3) Depending on the selected power rating 4) Replacement of a 21 kW / 380 V unit: wire diameter 4 mm² can be used

User mode
In normal mode, the user profile icon, the application (e.g. shower) and the pre-set temperature are displayed. Directly below, the ECO icon indicates that this mode is activated.

Dispensing mode
The touch display shows the selected temperature in continuous colours from blue (cool) to purple and red (hot).

Main menu
The main menu is the main navigating control of the DSX Touch. This is where the user switches between the various menu options.

12 month savings goal
This display shows the extent of the user's savings over the last 12 months and how approaching this self-defined goal is reflected in lower energy costs.

Intuitive touch display for optimal operation

This is an innovation with a special “touch”! CLAGE introduces a new feature for its top-of-the-line model, the E-instant water heater DSX – an attractive touch display. The new DSX Touch no longer has to hide behind doors or panels but it becomes the central high-end component of your wellness oasis in the shower and bathroom. With this unit, CLAGE continues to improve its proven, attractive user-friendly design features. Of course, convenience and efficiency are the main features of this unit as well. At the flush, integrated touch display, you can easily create multiple users with individual user profiles, define savings goals and set personal requirements. The touch display allows users of any age to set personal, water- and energy-saving temperature preferences in a breeze, without missing out on convenience and wellness features. The DSX Touch can of course also be installed in a concealed location and controlled via the Smart Control app with an iPad or the proven convenience of the wireless remote control. Smart Control provides convenient adjustment of the hot water supply for the whole house, while the DSX Touch is the state-of-the-art model among E-comfort instant water heaters.

CLAGE would like to provide useful information about the most comfortable way to save water and energy, since these topics are increasingly important in the future. Saving water and energy does not only make sense but it can also be a lot of fun.

High-tech for more hot water convenience.

E-comfort instant water heater DSX

Smart Control -ready

solar-ready, suitable for reheating *)

Wireless remote control included

This top model of the electronic E-comfort instant water heaters offers high-end technology with an aesthetically pleasing design. One touch of a button and your water has the correct temperature. The multi-function display is colour-backlit depending on the temperature and offers comprehensive features such as an energy monitor.

- > **Fully electronically controlled high-tech instant water heater**
- > **Innovative multi-function colour display**
- > Energy efficiency monitor with plain text display
- > Four temperature memory buttons
- > **Always precise temperatures** between 20 °C and 60 °C with TWIN TEMPERATURE Control TTC® and SERVOTRONIC® **dynamic flow rate control**
- > **Remote control module included**

DESIGNPREIS 2008 NOMINIERT

Focus Energy Silber 2006

Benutzerfreundlich GUT

Energy efficiency class A	**DSX** (with Multiple Power System: 18, 21, 24 or 27 kW adjustable)			
Part number:	3200-34327			
Maximum operating pressure [MPa (bar)]:	1 (10)			
Water connections (thread connections):	G ½"			
Hot water output at Δt = 28 K [1) 2) 3)] [l/min]:	9.2	10.7	12.3	13.8
Switch-on flow rate / max. flow rate [l/min]:	2.5 / automatic			
Nominal power rating [kW]:	18	21	24	27
Voltage [3~ / PE 400 V AC]:	Permanent connection			
Nominal current [3)] [A]:	26	30	35	39
Required cable diameter [3)] [mm²]:	4	4	6 [4)]	6
Protection class:	IP 25			
Specific water resistance at 15 °C [Ωcm] ≥ :	1100			
Weight filled with water [kg]:	approx. 4.2			

*) Inlet temperature ≤ 70 °C 1) Temperature increase e.g. from 12 °C to 40 °C 2) Mixed water 3) Depending on the selected power rating 4) Replacement of a 21 kW / 380 V unit: wire diameter 4 mm² can be used

Convenient, economical and reliable.

E-comfort instant water heater DEX

The DEX has everything that makes an excellent electronic E-comfort instant water heater. The desired temperature can be selected directly and is easy to read on the large, back-lit LCD display.

- > **Electronically controlled E-comfort instant water heater**
- > **Large backlit LCD display** for temperature display
- > Two temperature memory buttons
- > **Precise temperatures** between 20 °C and 60 °C with TWIN TEMPERATURE Control TTC® up to the full rated power output (DEX 12 ≤ 55 °C)
- > With the Multiple Power System MPS®, the maximum power rating is set at the time of installation:
  DEX 12: 8.8 or 11.5 kW 230 V
  DEX: 18, 21, 24 or 27 kW 400 V
- > Remote control module available as accessory

Smart Control -ready

solar-ready, suitable for reheating *)

Optional wireless remote control

Energy efficiency class A	**DEX 12** (8.8 or 12 kW)		**DEX** (18, 21, 24 or 27 kW)			
Part number:	3200-34212		3200-34227			
Maximum operating pressure [MPa (bar)]:	1 (10)					
Water connections (thread connections):	G ½"					
Hot water output at Δt = 28 K [1) 2) 3)] [l/min]:	4.5	5.9	9.2	10.7	12.3	13.8
Switch-on flow rate / max. flow rate [l/min]:	2.5 / 5.0 [4)]		2.5 / 8.0 [4)]			
Nominal power rating [kW]:	8.8	11.5	18	21	24	27
Voltage:	1~ / N / PE 220 – 240 V AC		3~ / PE 400 V AC			
Nominal current [3)] [A]:	38	50	26	30	35	39
Required cable diameter [3)] [mm²]:	10		4	4	6 [5)]	6
Protection class:	IP 25					
Specific water resistance at 15 °C [Ωcm] ≥ :	1300		1100			
Weight filled with water [kg]:	approx. 3.7					

*) Inlet temperature ≤ 70 °C 1) Temperature increase e.g. from 12 °C to 40 °C 2) Mixed water 3) Depending on the selected power rating 4) Restricted flow for optimal temperature increase 5) Replacement of a 21 kW / 380 V unit: wire diameter 4 mm² can be used

Saving energy in the bathroom is that simple!

E-comfort instant water heater DCX

The electronic E-comfort instant water heater DCX is designed for easy operation. With the touch of a button, one of five typical water temperatures can be selected. Each temperature is indicated by an easily understandable colour display.

- **Electronically controlled instant water heater** with simple operation
- One-button operation for fast and easy **five-level temperature selection**: 35 °C, 38 °C, 42 °C, 48 °C and 55 °C
- Electronic safety system with air bubble detection, temperature and pressure shut-off
- With the Multiple Power System MPS®, the maximum power rating is set at the time of installation:
  DCX 13: 11 or 13.5 kW 400 V
  DCX: 18, 21, 24 or 27 kW 400 V

Energy efficiency class A	**DCX 13** (11 or 13.5 kW)		**DCX** (18, 21, 24 or 27 kW adjustable)			
Part number:	3200-34233		3200-34217			
Maximum operating pressure [MPa (bar)]:	1 (10)					
Water connections (thread connections):	G ½"					
Hot water output at Δt = 28 K [1) 2) 3)] [l/min]:	5.6	6.9	9.2	10.7	12.3	13.8
Switch-on flow rate / max. flow rate [l/min]:	2.0 / 5.0 [4)]		2.5 / 8.0 [4)]			
Nominal power rating [kW]:	11	13.5	18	21	24	27
Voltage [3~ / PE 400 V AC]:	Permanent connection					
Nominal current [3)] [A]:	16	20	26	30	35	39
Required cable diameter [3)] [mm²]:	1.5	2.5	4	4	6 [5)]	6
Protection class:	IP 25					
Specific water resistance at 15 °C [Ωcm] ≥ :	1100					
Weight filled with water [kg]:	approx. 3.7					

1) Temperature increase e.g. from 12 °C to 40 °C 2) Mixed water 3) Depending on the selected power rating 4) Restricted flow for optimal temperature increase 5) Replacement of a 21 kW / 380 V unit: wire diameter 4 mm² can be used

Simply choose: 35, 45 or 55 °C!

E-comfort instant water heater DLX

Whenever simple operation at a reasonable price is important, the DLX presents an interesting alternative. The user can select one of three hot water temperatures with the touch of a button.

- **Electronically controlled instant water heater** with simple operation
- One-button operation for fast and easy **three-level temperature selection**: 35 °C, 45 °C and 55 °C
- Stable temperature up to the unit's power limit
- Electronic safety system with air bubble detection, temperature and pressure shut-off

Energy efficiency class A	**DLX 18**	**DLX 21**	**DLX 24**
Part number:	3200-34185	3200-34186	3200-34187
Maximum operating pressure [MPa (bar)]:	1 (10)		
Water connections (thread connections):	G ½"		
Hot water output at Δt = 28 K [1) 2)] [l/min]:	9.2	10.7	12.2
Switch-on flow rate / max. flow rate [l/min]:	2.5 / 7.0 [3)]	2.5 / 8.0 [3)]	
Nominal power rating [kW]:	18	21	24
Voltage [3~ / PE 400 V AC]:	Permanent connection		
Nominal current [A]:	26	30	35
Required cable diameter [mm²]:	4	4	6 [4)]
Protection class:	IP 25		
Specific water resistance at 15 °C [Ωcm] ≥ :	1100		
Weight filled with water [kg]:	approx. 3.7		

1) Temperature increase e.g. from 12 °C to 40 °C 2) Mixed water 3) Limited flow for optimal temperature increase
4) Replacement of a 21 kW / 380 V unit: wire diameter 4 mm² can be used

The cost-effective alternative.

Electronic instant water heater DBX

The basic unit of our series of electronic instant water heaters comes without any user controls. That's why the DBX is surprisingly inexpensive.

- **Electronically controlled basic instant water heater without user controls**
- Automatic heating adjustment based on flow rate and inlet temperature, outlet temperature is factory-set to 50 °C (adjustable internally)
- Electronic safety system with temperature and pressure shut-off

Energy efficiency class A	DBX 18	DBX 21	DBX 24	DBX 27
Part number:	3200-34118	3200-34121	3200-34124	3200-34127
Maximum operating pressure [MPa (bar)]:	1 (10)			
Water connections (thread connections):	G ½"			
Hot water output at Δt = 28 K [1) 2)] [l/min]:	9.2	10.7	12.3	13.8
Switch-on flow rate / max. flow rate [l/min]:	2.5 / 7.0 [3)]	2.5 / 8.0 [3)]		2.5 / 9.0 [3)]
Nominal power rating [kW]:	18	21	24	27
Voltage [3~ / PE 400 V AC]:	Permanent connection			
Nominal current [A]:	26	30	35	39
Required cable diameter [mm²]:	4	4	4 / 6	6
Protection class:	IP 25			
Specific water resistance at 15 °C [Ωcm] ≥ :	1300			
Weight filled with water [kg]:	approx. 3.7			

1) Temperature increase for example from 12 °C to 40 °C 2) Mixed water 3) Limited flow for optimal temperature increase

For maximum shower convenience.

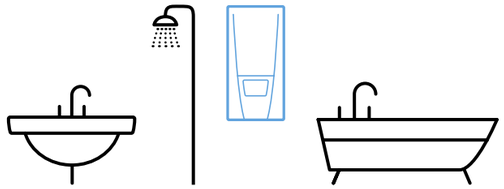
Installation kit DSX Twin

Two DSX comfort instant water heaters and a mounting kit with special frame for in-wall installation to accommodate two units for increased hot water amounts in high-demand applications (e. g. for a wellness shower setup).

- **DSX Twin mounting kit to accommodate two DSX E-comfort instant water heaters**
- The flow rate amount can be doubled, depending on the pre-set power rating (kW) of the DSX units
- Special pipe connection kit and mounting hardware included

	DSX Twin (adjustable to 2×18, 2×21, 2×24 or 2×27 kW)			
Part number:	3200-34130			
Hot water output at Δt = 28 K [1) 2) 3)] [l/min]:	18.4	21.4	24.6	27.6
Nominal power rating [kW]:	2 × 18	2 × 21	2 × 24	2 × 27

*) Inlet temperature ≤ 70 °C 1) Temperature increase e.g. from 12 °C to 40 °C 2) Mixed water 3) Depending on the selected power rating



Wall-mounted units

D-Series
at a glance

Premium → Standard

Fully electronically controlled with actuator | Electronically controlled

MPS® (Multiple Power System) Power rating adjustable at installation

Precise temperature selection | Stepwise temperature selection | Preset temperature

DSX Touch

DSX Touch:
18, 21, 24, 27 kW / 400 V

DSX

DSX:
18, 21, 24, 27 kW / 400 V

DEX

DEX:
18, 21, 24, 27 kW / 400 V

DEX 12

DEX 12: 8.8, 12 kW / 230 V

DCX

DCX: 18, 21, 24, 27 kW / 400 V
DCX 13: 11 or 13.5 kW / 400 V

DLX

DLX 18: 18 kW / 400 V
DLX 21: 21 kW / 400 V
DLX 24: 24 kW / 400 V

DBX

DBX 18: 18 kW / 400 V
DBX 21: 21 kW / 400 V
DBX 24: 24 kW / 400 V
DBX 27: 27 kW / 400 V

Three-phase 400 V

Single-phase 230 V

Always one step ahead!

The E-instant water heaters can of course also be installed in a concealed location and controlled via the proven convenience of the wireless remote control or the Smart Control app with an iPad. The central interface for the E-instant water heaters is a CLAGE Home Server that sets up an individual Wi-Fi network to provide its features independently from the existing infrastructure.

The CLAGE E-instant water heaters can also connect to the KNX® bus system and become thus compatible with the established building automation bus system. The new KNX® gateway also communicates via the central interface of the CLAGE Home Server.

Smart Control thus becomes the ideal network for all E-instant water heaters in your house or apartment and allows for the sensible separation of the hot water supply from central heating. Energy efficiency made transparent.

Smart Control via iPad!

Our innovation for modern hot water control: Energy-saving E-comfort instant water heaters are installed in concealed locations and the temperature can conveniently be adjusted via your iPad. Each point-of-use is provided with its own, demand-based E-instant water heater for perfectly heated water. The system is controlled by the CLAGE Home Server that provides the connection between the units and the touchpad via a Wi-Fi network. The entire hot water supply in your house or apartment can thus be digitally controlled via CLAGE's "Smart Control" app.

One glance at the display will show usage time, water and energy use as well as the costs for the selected time frame. Users can adjust their consumption habits and thus lower costs and protect the environment.

Smart Control clearly shows: E-instant water heater technology is extremely energy-efficient and sustainable. It allows for the sensible separation of the hot water supply from central heating.

Smart Control: Intelligent hot water control via iPad

HSX Home Server for Smart Control

CLAGE is setting a new standard for convenient hot water control and transparent usage tracking. While instant water heaters can be concealed behind walls or panels, settings and usage data are handled by the iPad as the central control unit.

> Integrated Server with WiFi Controller and wireless adapter as interface between the control app (for Apple iPads) and instant water heaters
> The server software provides all services required for the app to control the outlet water temperature of the instant water heaters and to display the usage data
> Direct coupling with the iPad or integration into an existing WiFi infrastructure
> Intuitive temperature setting with visual temperature selection disk
> Up to ten CLAGE E-instant water heaters can be registered with a Home Server. The E-instant water heaters can be controlled via a Home Server as well as wireless remote controls.

Extension for Smart Control:
Bidirectional gateway for integration of a CLAGE Home Server into the KNX® bus system for building automation.

HS-K KNX® Gateway
Part no. 3200-34034

	HSX
Part number:	3200-34030
Voltage [100 – 240 V (50 / 60 Hz)]:	with plug
Wi-Fi [GHz]:	2.4 (802.11b/g/n)
Wi-Fi range [m]:	specific to building
Wi-Fi antenna connection:	MMCX
Wireless frequency [MHz]:	868.3
Wireless range [1] [m]:	10
Environmental temperature [°C]	0 to 50
Humidity [%]:	< 70 (non-condensing)
Dimensions (H × W × D) [cm]:	13.7 × 14.2 × 3.8
Weight [kg]:	approx. 0.3

1) with consideration of a wall

The energy-saving E-instant water heaters can be concealed behind wall or panels and the temperature can be conveniently controlled and digitally adjusted with the “Smart Control” app at the iPad. Each point-of-use is provided with its own, demand-based E-instant water heater for perfectly heated water.

Users

Settings that can be adjusted by five different users and quickly accessed via their icons.

Timer

With a manual timer or a smart timer, the water temperature can conveniently be adjusted to your daily routine.

Statistics

One glance at your iPad will show usage time as well as water and energy use. This provides cost transparency.

Savings goals

User-defined savings goals are playfully displayed. This is what makes saving fun.

Everything at a glance!

In addition to convenience, tracking usage data is essential. Usage time, water and energy use and of course the costs for the selected timeframe can be displayed quickly. Users can adjust their consumption habits and thus lower costs and protect the environment.

Smart Control: Makes saving fun

Apple iPad for control

Home Server as interface (Wireless and Wi-Fi)

Concealed installation of **CLAGE E-instant water heaters**

Requirements for iPad control:

> Apple iPad with iOS 5 or later *
> Home Server with “Smart Control” app
> Compatible CLAGE E-instant water heaters: DSX Touch, DSX, DEX, CFX, CEX, MCX or MBX Lumino

*Apple, the Apple-Logo, iPad and iOS are registered trademarks of Apple Inc.

E-instant water heaters for the home,
E-mobility for travel.
Electricity is the energy source of the future.

Since the founding of our company, we have investigated future technologies and are paying close attention to market developments. Current topics for the entire industry are e.g. building automation technology and of course networking of household appliances. With Smart Control, we have been trend-setters since 2013 and confirmed our position as specialists and pioneers in the E-instant water heater market segment. The Home Server links all E-instant water heaters in your house and collects data for usage analysis. This also allows for integration with other systems, not just reading data on the iPad. Because Smart Home apps and applications are entering many other areas.

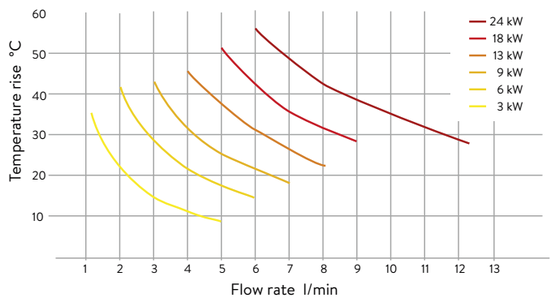
We continuously develop and optimise our hot water technology and aim to be one step ahead in the future. Because the future will arrive sooner than expected and has become reality in many places. This makes CLAGE products a great choice for today and for the future.

General data for water heating

POWER CONVERSION TABLE

220 V	230 V	240 V	380 V	400 V	415 V
3.2 kW	3.5 kW	3.8 kW	12.2 kW	13.5 kW	14.5 kW
4.0 kW	4.4 kW	4.8 kW	16.2 kW	18.0 kW	19.4 kW
5.2 kW	5.7 kW	6.2 kW	19.0 kW	21.0 kW	22.6 kW
6.0 kW	6.6 kW	7.2 kW	21.6 kW	24.0 kW	25.8 kW
8.0 kW	8.8 kW	9.6 kW	24.4 kW	27.0 kW	29.0 kW

INSTANTANEOUS PERFORMANCE CHART



INSTANTANEOUS PERFORMANCE CALCULATIONS

$$\text{Temperature rise [°C]} = \frac{\text{Nominal power rating [kW]} \times 14.3}{\text{Flow per minute [litres]}}$$

$$\text{Flow per minute [litres]} = \frac{\text{Nominal power rating [kW]} \times 14.3}{\text{Temperature rise [°C]}}$$

$$\text{Temperature rise [°F]} = \frac{\text{Nominal power rating [kW]} \times 5.7}{\text{Flow per minute [gallons]}}$$

$$\text{Flow per minute [gallons]} = \frac{\text{Nominal power rating [kW]} \times 5.7}{\text{Temperature rise [°F]}}$$

USEFUL FORMULAE

Time and rating calculations (excluding heat losses)

$$\text{Time to heat water [minutes]} = \frac{\text{Litres} \times \text{Temperature rise [°C]}}{\text{Nominal power rating [kW]} \times 14.3}$$

$$= \frac{\text{Gallons} \times \text{Temperature rise [°F]}}{\text{Nominal power rating [kW]} \times 5.7}$$

$$\text{Nominal power rating required to heat water [kW]} = \frac{\text{Litres} \times \text{Temperature rise [°C]}}{\text{Time [minutes]} \times 14.3}$$

$$= \frac{\text{Gallons} \times \text{Temperature rise [°F]}}{\text{Time [minutes]} \times 5.7}$$

MEAN TEMPERATURE OF MIXED WATER

$$\text{Mean temperature [°C]} = \frac{(\text{Hot water [litres]} \times \text{Hot water temperature [°C]}) + (\text{Cold water [litres]} \times \text{Cold water temperature [°C]})}{\text{Hot water [litres]} + \text{Cold water [litres]}}$$

$$\text{Mean temperature [°F]} = \frac{(\text{Hot water [gallons]} \times \text{Hot water temperature [°F]}) + (\text{Cold water [gallons]} \times \text{Cold water temperature [°F]})}{\text{Hot water [gallons]} + \text{Cold water [gallons]}}$$

PHYSICAL CONSTANTS

Temperature conversion:

Temperature [°C] =	(Temperature [°F] – 32) ÷ 1.8
Temperature [°F] =	Temperature [°C] × 1.8 + 32

Volume conversion:

1 litre =	0.22 Gallon (GB)
	0.27 Gallon (US)
1 gallon (GB) =	4.54 Litres
1 gallon (US) =	3.78 litres

Pressure conversion:

1 bar =	0.1 MPa
=	14.5 psi
=	100 kN / m^2
1 ft head of water =	0,434 psi
1 m head of water =	9.8 kN / m^2

SITE REQUIREMENTS

> Electric instantaneous water heaters may only be installed **by a plumber and/or electrician**.
> The installation must comply with current **IEC and national local regulations** or any particular regulations, specified by the local electricity supply company.
> The installation site must be **free from frost** at all times.
> In order to avoid thermal losses, **the distance** between the instantaneous water heater and the tap connection **should be as small as possible**.
> Material of water pipes must be **stainless steel or copper**. Plastic pipes may only be used if they conform to the relevant standard.
> Best performance is guaranteed at a **flow pressure between 2 and 4 bar** (30–60 psi), avoiding the maximum pressure stated on the appliance rating plate.
> Electrical water heaters **must be connected to the protective earth conductor**!
> An all-pole disconnecting device (e.g. via fuses) with a contact opening width of at least 3 mm per pole should be provided at the installation end.
> To protect the appliance, **a fuse element must be fitted** with a tripping current commensurate with the nominal current of the appliance.
> For maintenance work, **a shut-off valve** should be installed in the supply line. The appliance must be accessible for maintenance work.

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