



Water Heater

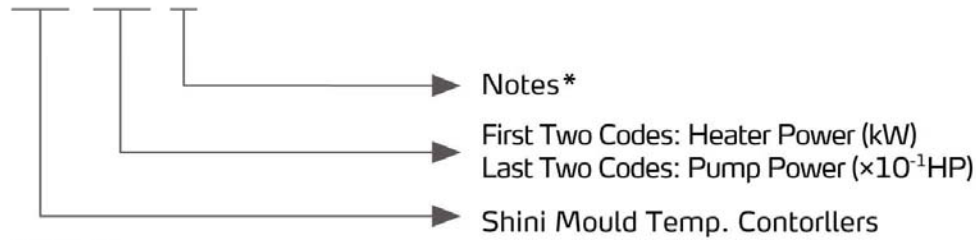
STM-607-W



Refer carefully to this manual before operation.

■ Coding Principle

STM- xxxx -xx



Notes*:

D=Dual-heating Zones

PW=Medium is Water with High Temperature

CE= CE Conformity



STM-607-PW

■ Features

Standard configuration

- Controller adopts 3.2" LCD for easy operation.
- Equipped with the design of 7-day automatic start/stop timer. LCD screen can be converted between Chinese and English. The unit of temperature can be converted between °F and °C.
- P.I.D. multi-stage temperature control system can maintain a mould temperature with an accuracy of $\pm 0.5^{\circ}\text{C}$.
- Adopts high efficiency water cycle pump, which can meet the demands of temperature control for precise moulds and mould loop with minor diameter to achieve precise temperature control and high efficiency heat exchange. Pump inside adopts stainless steel to avoid explosion.
- Multiple safety devices including power reverse phase protection, pump overload protection, overheat protection and low level protection that can automatically detect abnormal performance and indicate this via visible alarm.
- For standard STM-W, the heating temperature can reach 120°C , while for STM-PW, it can reach 160°C . Equipped with high pressure protection, safety pressure relieving, automatic water supplying and air exhausting.
- STM-PW adopts indirect cooling, which makes temperature control more precise. The low viscosity of water realizes fast heat exchange.
- STM-PW series adopts magnetic pump with stable performance and no leakage, suitable for applications which need long time heating and temperature maintaining.

Accessory option

- Water manifolds and Teflon hose are optional.
- STM-W can opt for function of pump reversion evacuation.
- All models can opt for magnetic pump except for STM-3650W series.
- RS485 communication function is optional. Display of mould temperature and mould return water temperature is optional.



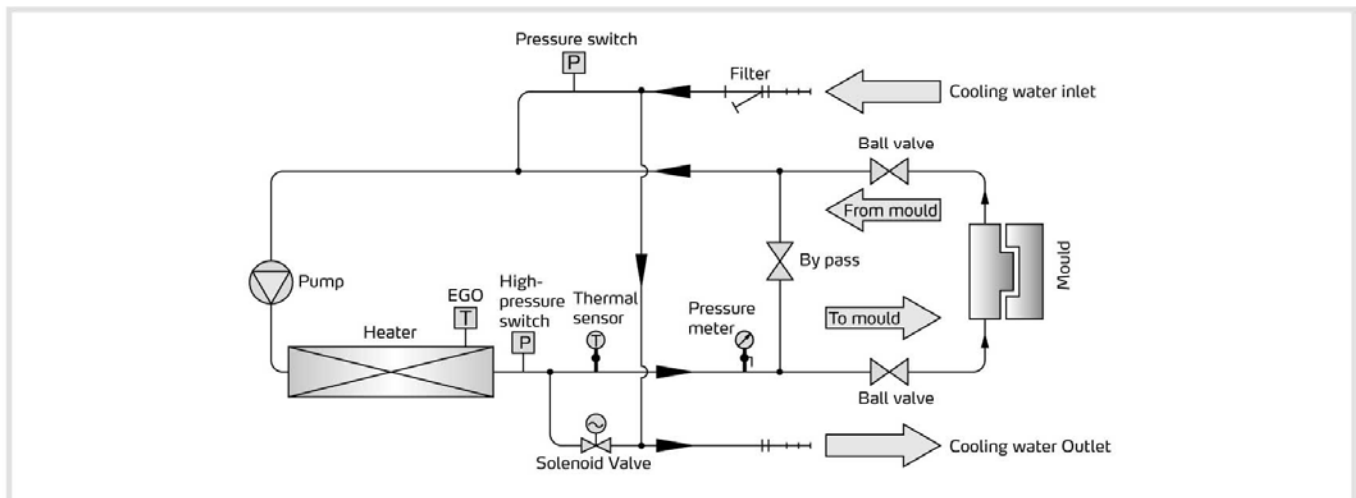
Control Panel

■ Application

STM-W series water heaters have both standard and high temperature models, which are used to heat up the mould and maintain temperature, also they can be used in other similar applications. High temperature water from the mould is returned to the cooling tank and cooled by either indirect cooling (For high temperature and high temperature plus pressure models) or direct cooling (For standard models). It is then pressurised by the high-pressure pump, sent to the heating tank and finally to the mould with a constant temperature. The newly applied temperature controller can maintain an accuracy of $\pm 0.5^{\circ}\text{C}$.

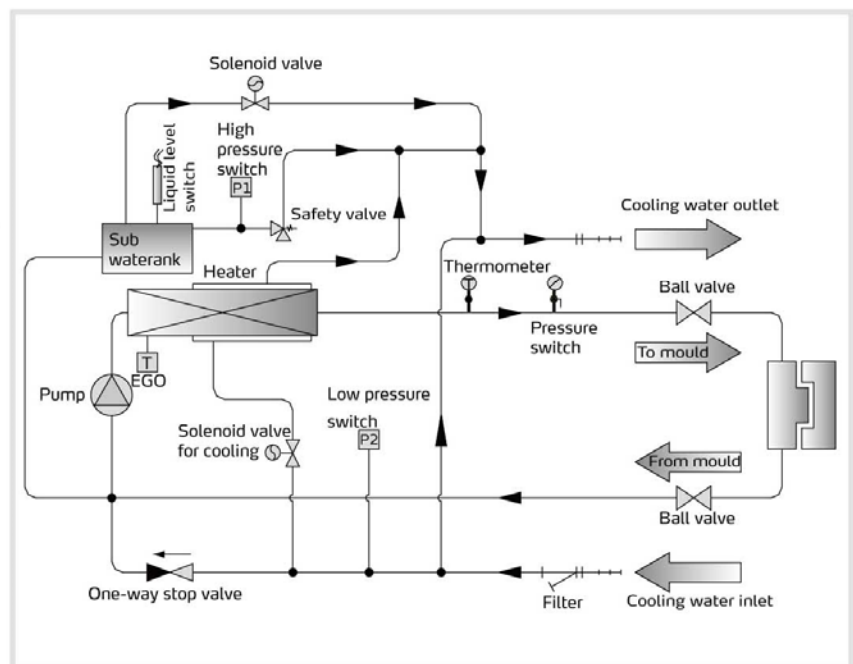
Working Principle

High temperature water returns to the machine and then be pressured by pump to the heaters. After being heated, water will be forced to mould and continue the circle. In the process, if the water temperature is too high, the system will activate the solenoid valve to let cooling water cool down the temperature directly until the water is down to the system requirement. If the temperature keeps increasing and reach to the set point of EGO, system will sound high pressure alarm and stop operation; when system pressure is too high (reach set value of high pressure switch), alarm would sounds and machine halts; if high pressure switch fails to function and system pressure continues to rise to reach set value of safety valve, safety valve would start up to release pressure; when cooling water pressure fails to reach the set value, pressure switch will send a signal of water storage to launch low pressure alarm and machine halts.



System flow for STM-W (Direct Cooling)

The high temperature water from the mold returns to the pump inlet from the pipeline, then be pressurized by the pump and conveyed to the heater and again be heated and returns to the mold. The loop repeats. In this process, when liquid level switch detects the liquid level lowers to the set value and the machine will sound an alarm and halt. If the temperature of the water exceeds the set value, the system will automatically start the solenoid valve to let the cooling water come into the double pipes structure of the heating tank and cool down the water, then a constant temperature can be maintained. If the temperature still maintains high to the EGO set value, the system will sound an alarm and halt; when system pressure exceeds set value of high pressure switch, machine halts and sound an alarm. If the pressure continues rising to the set value of the safety valve, the safety valve starts to decompress the system.



STM-PW(160°C) System Flow Chart

Specifications

STM-W

Model	Max. Temp.	Pipe Heater (kW)	Pump Power (kW) (50/60Hz)	Max. pump Flow (L/min) (50/60Hz)	Max. pump Pressure (bar) (50/60Hz)	Heating Tank Number	Heating Tank Capacity (L)	Cooling Method	Mould Coupling* (inch)	Inlet/Outlet (inch)	Dimensions (mm) (H×W×D)	Weight (kg)
STM-607-W	120°C (140°C)**	6	0.55/0.63	27/30	3.8/5	1	3.0	Direct	3/8 (2×2)	3/4 / 3/4	635×320×740	55
STM-607-W-D		6×2	2×0.55 2×0.63	2×27 2×30	3.8/5	2	2×3.0		3/8 (4×2)	3/4 / 3/4	655×510×740	95
STM-910-W		9	0.75/0.92	42/50	5.0/6.4	1	3.0		3/8 (2×2)	3/4 / 3/4	635×320×740	60
STM-910-W-D		9×2	2×0.75 2×0.92	2×42 2×50	5.0/6.4	2	2×3.0		3/8 (4×2)	3/4 / 3/4	655×510×740	105
STM-1220-W		12	1.5/1.9	74/84	6.2/7.2	1	3.0		3/8 (4×2)	1 / 1	695×340×815	120
STM-2440-W		24	2.8/3.4	90/90	8.0/10.2	2	7.4		1 (1×2)	1 / 1	870×360×930	140
STM-3650-W		36	4	100/100	8.0/8.0	4	17.7		1 (1×2)	1 / 1	980×415×930	150

- Notes: 1) "D" stands for dual-heating zones, "*" stands for options.
 2) Automatic drain facility can be added for all models as optional feature. (Model denotes "R")
 3) In order to maintain stable temp. of heat transfer media(120°C), cooling water pressure should be no less than 2kgf/cm², but also no more than 5kgf/cm².
 4) Pump testing standard: Power of 50/60Hz, purified water at 20°C. (There is ±10% tolerance for either max. flowrate or max. pressure).
 5) Power supply: 3Φ, 230/400/460/575VAC, 50/60Hz.
 6) "***" stands for heating the machine to 140°C, cooling water pressure should not be lower than 4kgf/cm².

We reserve the right to change specifications without prior notice.

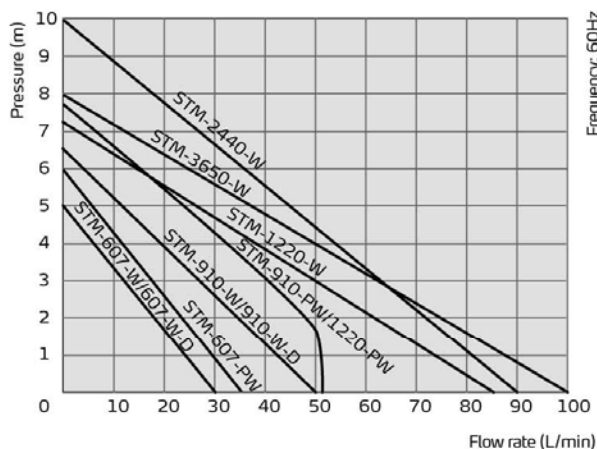
STM-PW

Model	Max. Temp.	Heater (kW)	Pump (kW) (50/60Hz)	Max. pump Flow (L/min) (50/60Hz)	Max. pump Pressure (bar) (50/60Hz)	Heating Chamber Number	Tank (L)		Cooling Method	Mould Coupling* (inch)	Inlet/Outlet (inch)	Dimensions (mm) (H × W × D)	Weight (kg)
							Heating	Cooling					
STM-607-PW	160°C	6	0.55/0.63	27/30	4.25/5.9	1	3.0	3	Indirect	3/8 (2×2)	3/4 / 3/4	655×320×740	75
STM-910-PW		9	1.0/1.0	50/50.8	5.8/7.77	1	3.0	3		3/8 (2×2)	3/4 / 3/4	655×320×740	80
STM-1220-PW		12	1.0/1.0	50/50.8	5.8/7.77	1	3.2	3.2		3/8 (2×2)	3/4 / 3/4	655×320×920	80

- Notes: 1) "PW" stands for high temp. "*" stands for options.
 2) To ensure stable water temperature, cooling water pressure should not be less than 2kgf/cm², but also no more than 5kgf/cm².
 3) Pump testing standard: Power of 50/60Hz, purified water at 20°C. (There is ±10% tolerance for either max. flowrate or max. pressure).
 4) Power supply: 3Φ, 230/400/460/575VAC, 50/60HZ.

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Pump Performance



Reference formula of Mould Controllers model selection

$$\text{Heater Power (kW)} = \text{mould weight (kg)} \times \text{mould specific heat (kcal/kg}^\circ\text{C)} \times \text{temperature difference between mould and environment (}^\circ\text{C)} \times \text{safety coefficient} / \text{heating duration} / 860$$

Notes: safety coefficient range 1.3-1.5.

$$\text{Flow Rate (L/min)} = \text{heater power (kW)} \times 860 / [\text{heating medium specific (kcal/kg}^\circ\text{C)} \times \text{heating medium density (kg/L)} \times \text{in/outlet temperature difference (}^\circ\text{C)} \times \text{time (60)}]$$

- Notes: Water specific heat =1kcal/kg°C
 Heating medium oil specific heat =0.49kcal/kg°C
 Water density =1kg/L
 Heating medium oil density =0.842kg/L