Cert. No. LRQ 0963008

ISO 9001

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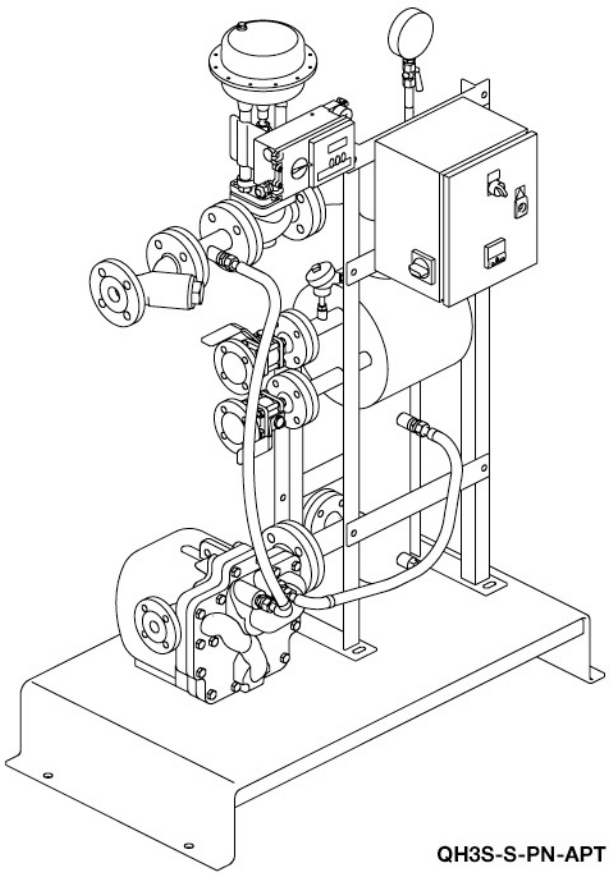
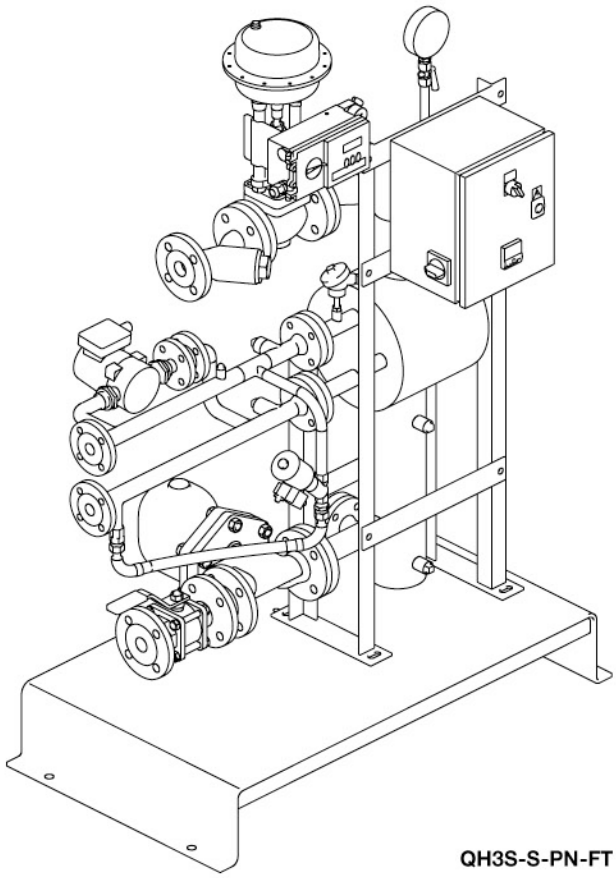
TI-P483-02
CH Issue 1

QuickHeat™ Steam Control Packaged Heat Exchanger Systems



QH3S-S-PN-APT



QH3S-S-PN-FT

QuickHeat™ system

The packaged Plate & Shell® heat exchanger system uses steam to provide accurate heating of low temperature hot water, domestic hot water or hot water for process. Systems can be provided for any heating duty from 100 kW to approximately 10 MW. Systems are supplied fully assembled and pressure tested ready for installation.

Principal features:

- Hot water for heating or for process.
- Stable temperature control even with wide load changes.
- Fast response option available (for fast load changes).
- Can be designed for sub-cooling condensate to provide greater efficiency.
- Spirax Sarco steam control and condensate products.
- Fully welded Vahterus heat exchanger.
- Fully assembled skid-mounted system.
- Designs tailored to suit the application.

Temperature control

The steam flow rate is modulated to exactly match the required heat demand. The control valve can be either electrically or pneumatically actuated. The system incorporates an electronic positioner and Pt100 temperature sensor to provide precise control.

Condensate control

Effective condensate removal from the heat exchanger under all operating conditions is essential to achieve a stable water temperature. At part load the pressure inside the heat exchanger may go below atmospheric so a pressure powered pump is usually used to ensure condensate removal. For suitable applications a steam trap may be used instead.

Heat exchanger

A fully welded Plate & Shell® heat exchanger with stainless steel plates, and steel shell for efficient heat transfer within a very compact size. The heat exchanger is designed to extract heat from the condensate for maximum efficiency and to avoid flash steam wastage.

Pressure / temperature limits

Pipework design condition	PN16
Maximum saturated steam supply pressure	16 bar g
Maximum secondary pressure	16 bar g
Maximum secondary temperature	110°C

Materials

Steam and condensate pipework	Standard and fast response	Carbon steel
Control valve	Standard and fast response	Cast iron
Condensate pump / trap	Standard and fast response	SG iron
Secondary isolation valves	Standard and fast response	Stainless steel
Secondary pipework	Standard	Carbon steel
	Fast response	Stainless steel
Bypass pump	Fast response only	Stainless steel
Bypass valve	Fast response only	Stainless steel

Pipework and frame

All pipework is sized correctly for the application and is fabricated using modern welding techniques with approved welders and weld procedures. Flanged products are used where possible for reliability and easy maintenance. The complete system is delivered pre-assembled on a compact frame and base plate suitable for moving into position with a forklift truck.

Electrics and pneumatics

All control equipment is pre-wired and piped ready for connection to the air supply and power source.

Electrical supply	Power supply: 230 Vac / 50 Hz
	Supply fuse: 5A (T)
Actuators	24 Vac / 50 Hz
Bypass solenoid valve (FR type only)	24 Vac / 50 Hz
Bypass pump (FR type only)	230 Vac / 50 Hz

Scale formation

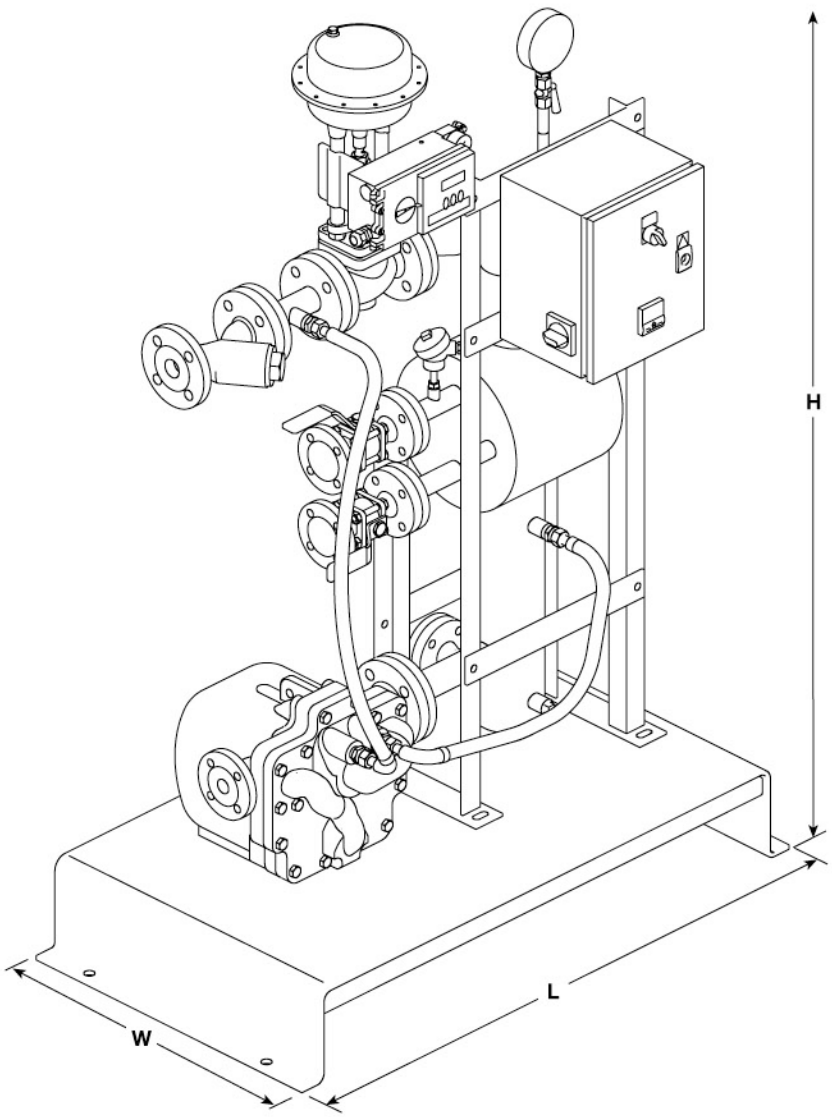
For open systems where the water is being used for washing etc. there is continuous make-up and there may be a danger of scale formation in the heat exchanger. This depends mainly on the water quality and expert advice from a water treatment specialist should be sought. By reducing the steam pressure and by careful design of the system the heat exchange surface temperature can be kept low to minimise scale formation. If the water is scale forming, regular chemical cleaning may be considered.

Dimensions / weights (approximate) in mm and kg

The information is given here as a guide only. Every packaged heat exchanger system is designed to suit the application. Therefore dimensions, weights and pipe connections are subject to change.

Heat Load (kW)		Type	Piping configuration Standard (S) Fast (FR)	Valve actuation	Condensate removal	Maximum dimensions			Piping connections (DN)			Weight (kg)	
Min.	Max.					H	L	W	Steam	Condensate	Water	Min.	Max.
100	400	QH2S	S / FR	EL	APT / FT	1770	1220	620	32	25	25	220	243
				PN		1700	1220	620					
400	1000	QH3S		EL		1770	1160	630	40	40	50	310	400
				PN		1685	1160	630					
1000	4000	QH4S		EL	FT	2035	1860	845	80	80	80	710	1060
				PN		1925	1860	845					
4000	10000	QH5S		EL		2240	2200	840	100/ 150	100	100	1133	4100
				PN		2205	2200	840					

The table above has been based upon a steam pressure upstream of the control valve of 5 bar g.



Designation with selection example:

QuickHeat™	QH = Packaged heat exchanger system	**QH**
Heat load	2S = 100 to 400 kW 3S = 400 to 1000 kW 4S = 1000 to 4000 kW 5S = 4000 to 10000 kW	**3S**
Piping configuration	S = Standard FR = Fast response	**FR**
Valve actuation	PN = Pneumatic EL = Electric	**PN**
Condensate removal	APT = Automatic pump trap FT = Float and thermostatic steam trap	**APT**

QuickHeat selection example using the following known data:
- Heat load of 450 kW.
- Fast response piping configuration (for rapidly changing load).
- Pneumatic control valve.
- Automatic trap.

The nomenclature for the above selection **QH** **3S** - **FR** - **PN** - **APT** would be displayed as follows:

QH3S - FR - PN - APT

Typical specification

The standard and fast response heating system shall be a Spirax Sarco QuickHeat™ packaged heat exchanger system with fully welded Plate & Shell® heat exchanger. The system shall come complete with pneumatic or electric controls, heat exchanger and condensate removal equipment. All items shall be pre-assembled and mounted on a compact frame.

How to order

All systems are designed for the required heat load with control systems to suit the application. The best way of ensuring that we have all the necessary information for quotation and manufacture is to complete our enquiry data sheet. Copies can be supplied on request. Any special requirements or access limitations should be detailed.