



The Oventrop Quality Management System is certified to DIN-EN-ISO 9001

Technical information

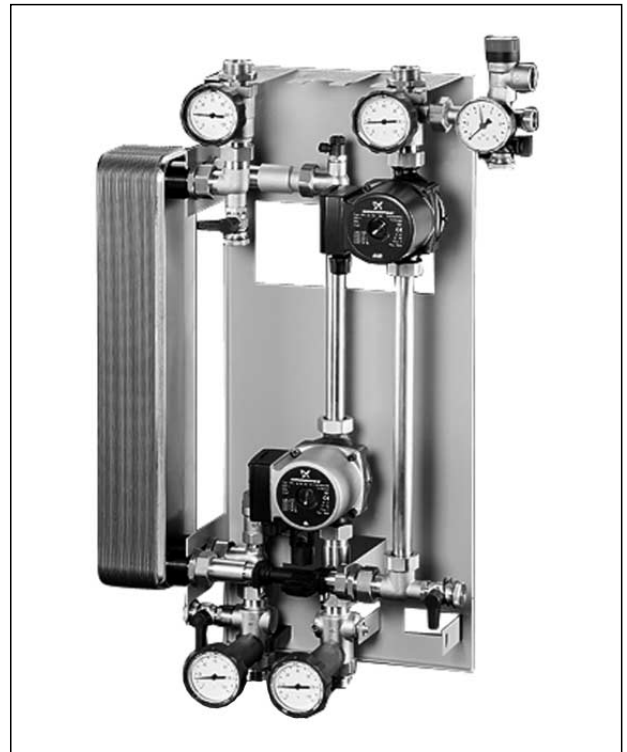
Application:

The Oventrop stations "Regusol X" with heat exchangers are used for the controlled transmission of heat from a solar circuit (primary circuit) to a storage cylinder circuit (secondary circuit). Oventrop offers two capacities: 15 KW and 25 KW. The product assembly "Regusol X-Duo" is equipped with a diverting valve for the transmission of the solar heat to an additional storage cylinder circuit (storage cylinder for loading section by section/second storage cylinder).

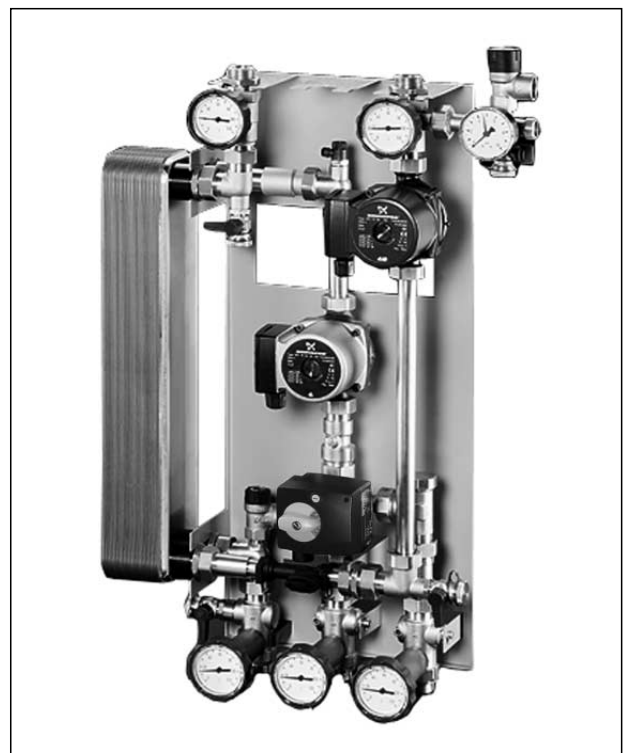
To avoid excess pressure, the primary and secondary circuit are equipped with safety valves. The primary circuit features a connection for an expansion tank. The product assemblies "Regusol X" are suitable for standard solar liquids basing on glycol (Tyfocor HTL for instance).

Advantages:

- high functional efficiency
- all components from one supplier
- high quality materials
- during starting phase temperature resistant up to a maximum of 160°C
- max. constant temperature 120°C
- insulation made of expanded polypropylene (EPP) supplied with each "Regusol X"
- time-saving installation
- efficient microprocessor based control with simple menu command via multifunctional combined display of the system status



"Regusol X-Uno 15/25"



"Regusol X-Duo 15/25"

Tender specification/Technical data:

Station "Regusol X-Uno 15"/"Regusol X-Uno 25"

Connection to solar circuit by use of compression fittings "Regusol".
 Connection to storage cylinder circuit 1" flat sealing. (Connection sets to be ordered separately.)

Complete pre-assembled and leak tested unit with wall mounting device and insulation.

Distance between supply and return:	100 mm
Continuous working temperature:	120°C
Short-term starting temperature:	160°C
Opening pressure of the check valves:	20 mbar
Controller:	Oventrop "Regtronic PX"

Primary circuit (solar circuit) consisting of:

- a filling and flushing connection
- b electronic flow and temperature sensor
- c pump (solar circuit)
- d ball valve with check valve, temperature sensor connection and thermometer inside the handle, with connection for safety group
- e safety group with safety valve (6 bar), pressure gauge, fill and drain ball valve and connection for expansion tank
- f ball valve with check valve, temperature sensor connection and thermometer inside the handle, with additional fill and drain valve in the elbow
- g plate heat exchanger
- p solar controller

Max. excess working pressure (safety valve): 6 bar

Pump type

Grundfos UPS 15-60 Solar 130

Power consumption	Speed 1	40 W
	Speed 2	60 W
	Speed 3	75 W

Max. pump head 6 m

Max. pump capacity 4.1 m³

k_V ("Regusol X-Uno 15") 2.1

k_V ("Regusol X-Uno 25") 2.4

Secondary circuit (storage cylinder circuit) consisting of:

- g plate heat exchanger
- h vent plug
- i pump (loading circuit)
- j check valve
- l ball valve with temperature sensor connection and thermometer inside the handle
- m ball valve with temperature sensor connection, thermometer inside the handle and fill and drain valve
- n safety valve (3 bar)

Max. excess working pressure (safety valve): 3 bar

Pump type

Grundfos UPS 15-60 130

Power consumption	Speed 1	60 W
	Speed 2	80 W
	Speed 3	100 W

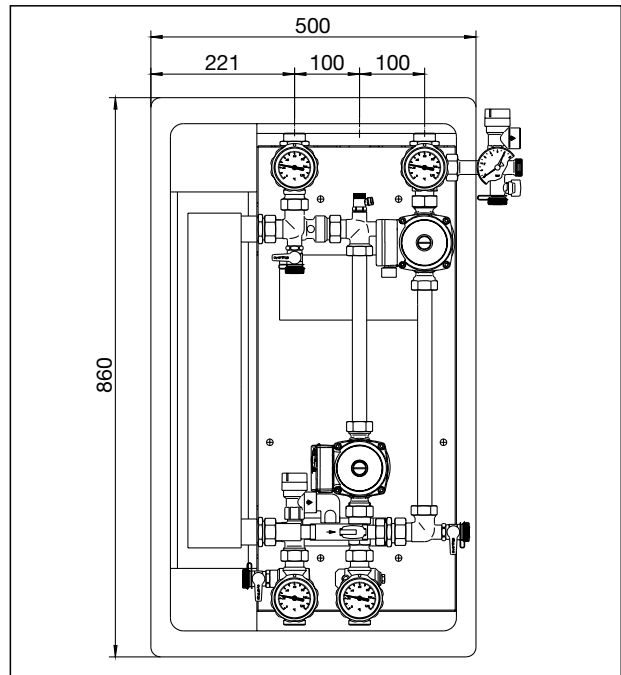
Max. pump head 6 m

Max. pump capacity 3.9 m³

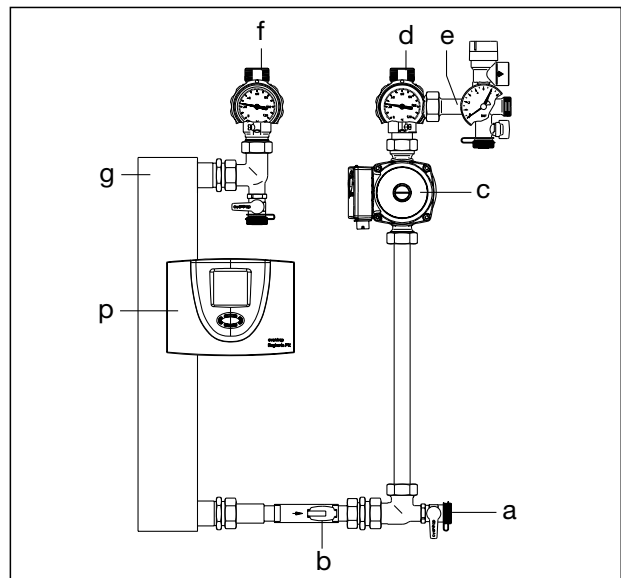
k_V ("Regusol X-Uno 15") 2.6

k_V ("Regusol X-Uno 25") 3.6

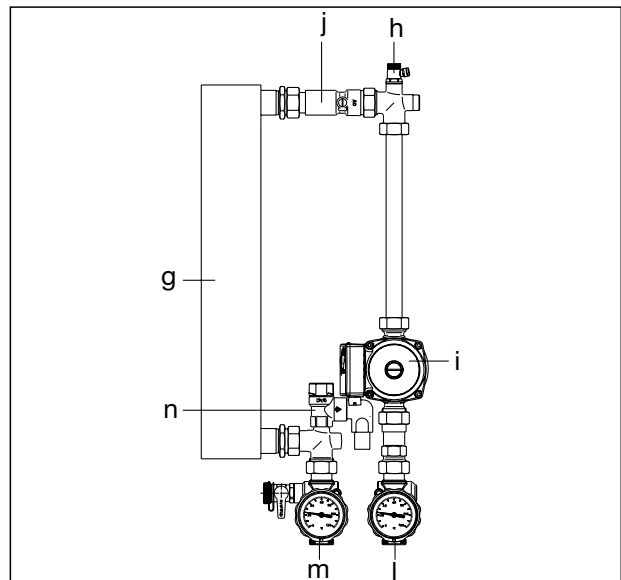
Dimensions:



"Regusol X-Uno"



Primary circuit "Regusol X-Uno" (front level)



Secondary circuit "Regusol X-Uno" (back level)

Station "Regusol X-Duo 15"/"Regusol X-Duo 25"

Connection to solar circuit by use of compression fittings "Regusol".
 Connection to storage cylinder circuit 1" flat sealing. (Connection sets to be ordered separately.)
 Complete pre-assembled and leak tested unit with wall mounting device and insulation.

Distance between supply and return: 100 mm
 Continuous working temperature: 120°C
 Short-term starting temperature: 160°C
 Opening pressure of the check valves: 20 mbar
 Controller: Oventrop
 "Regtronic PX"

Primary circuit (solar circuit) consisting of:

- a filling and flushing connection
- b electronic flow and temperature sensor
- c pump (solar circuit)
- d ball valve with check valve, temperature sensor connection and thermometer inside the handle, with connection for safety group
- f ball valve with check valve, temperature sensor connection and thermometer inside the handle, with additional fill and drain valve in the elbow
- g plate heat exchanger
- p solar controller

Max. excess working pressure (safety valve): 6 bar

Pump type

Grundfos UPS 15-60 Solar 130

Power consumption	Speed 1	40 W
	Speed 2	60 W
	Speed 3	75 W

Max. pump head: 6 m

Max. pump capacity: 4.1 m³

k_v ("Regusol X-Duo 15"): 2.1

k_v ("Regusol X-Duo 25"): 2.4

Secondary circuit (storage cylinder circuit) consisting of:

- g plate heat exchanger
- h vent plug
- i pump (loading circuit)
- j check valve
- k three-way diverting valve with actuator
- l ball valve with temperature sensor connection and thermometer inside the handle
- m ball valve with temperature sensor connection, thermometer inside the handle and fill and drain valve
- n safety valve (3 bar)

Max. excess working pressure (safety valve): 3 bar

Pump type

Grundfos UPS 15-60 130

Power consumption	Speed 1	60 W
	Speed 2	80 W
	Speed 3	100 W

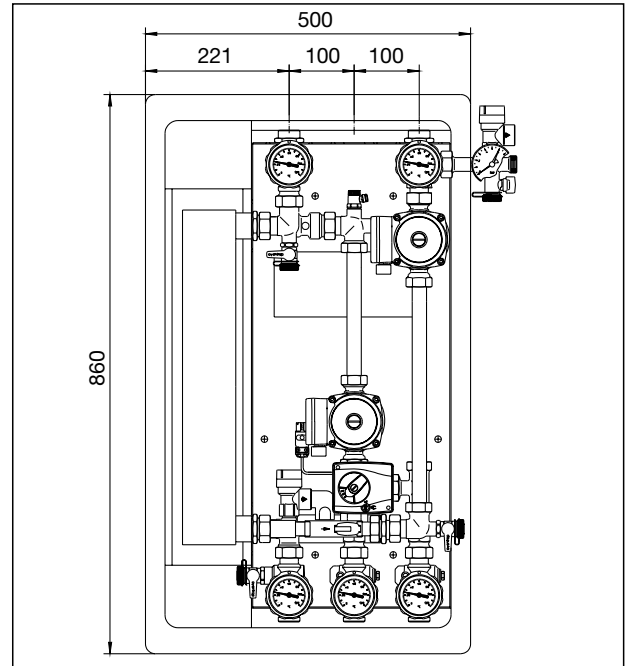
Max. pump head: 6 m

Max. pump capacity: 3.9 m³

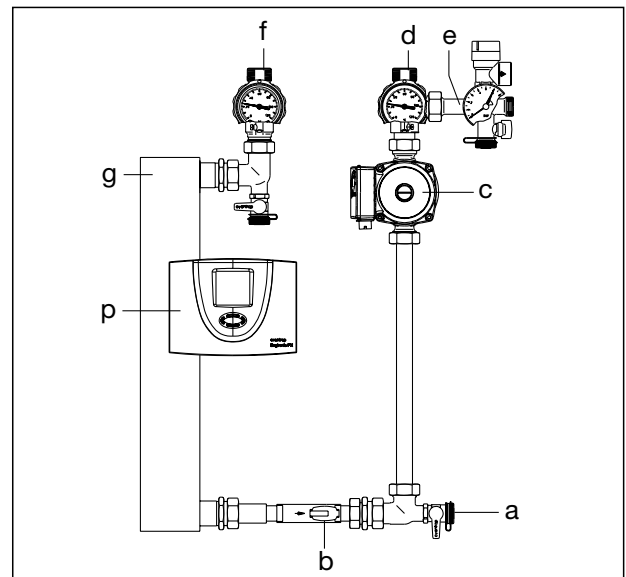
k_v ("Regusol X-Uuo 15"): 2.4

k_v ("Regusol X-Uuo 25"): 3.2

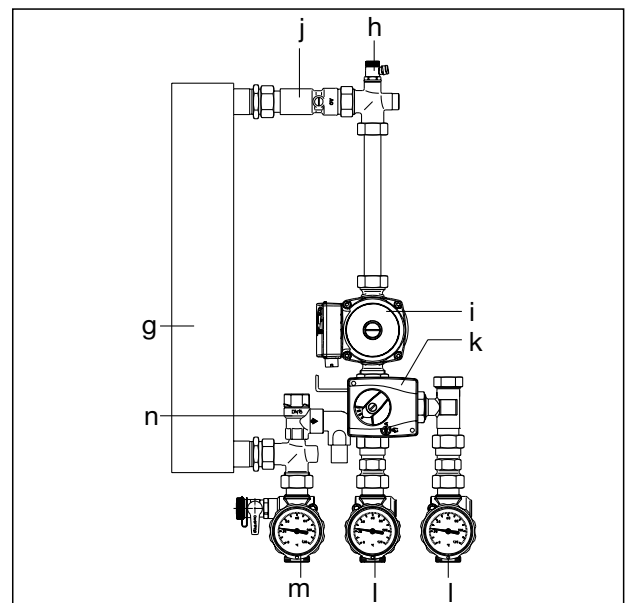
Dimensions:



"Regusol X-Duo"



Primary circuit "Regusol X-Duo" (front level)



Secondary circuit "Regusol X-Duo" (back level)

Function “Regusol X-Uno”/”Regusol X-Duo”:

The heat is transmitted to the plate heat exchanger via the primary circuit. The secondary circuit (storage cylinder circuit) flows through the heat exchanger in reverse direction and absorbs the heat. Depending on the application, the corresponding section of the storage cylinder is loaded.

On the supply side of the primary circuit, the stations are equipped with a ball valve with check valve to avoid self-circulation in the solar circuit. The return is provided with a flow and temperature sensor for energy measurement. The circulation pump is especially suitable for use in solar circuits. The safety group with connection for an expansion tank, a pressure gauge and a safety valve 6 bar is connected to the return ball valve. Fill and drain cocks at the entry and exit point of the heat exchanger and at the safety group allow an easy filling and flushing of the primary circuit. The supply of the secondary circuit is equipped with a ball valve, a circulation pump for the storage cylinder circuit and a vent plug. Self-circulation is avoided by a check valve at the heat exchanger exit point. The return features a safety valve 3 bar and a ball valve with filling and flushing connection.

The station “Regusol X-Duo” is also equipped with a diverting valve and a second supply with ball valve for the connection of another secondary circuit.

The leak tested components are pre-assembled on a mounting board for wall attachment.

Function electronic controller “Regtronic PX”:

The stations “Regusol X” are additionally equipped with an electronic controller “Regtronic PX”.

The controller is cabled with the internal electric components and has the following connections:

- Output for solar circuit pump
- Output for storage cylinder pump
- Output for diverting valve
- Free assignable outputs

Temperature sensor connections:

- Temperature sensor inputs
- Free assignable temperature sensor inputs
- Connection for Grundfos flow and temperature sensor

The adjustable parameters allow an adaptation of the preinstalled schemes to individual requirements.

Scheme 1010 – “Regusol X-Uno”:

This type of control serves to quickly reach the adjustable target temperature.

For an even distribution of the heat in the solar circuit, the primary circuit is started during bypass operation whilst the pump is at minimum speed.

Having exceeded the starting threshold, the secondary circuit starts and the heat is transmitted to the storage cylinder.

Scheme X1020 – “Regusol X-Duo” – Loading section by section:

This type of control serves to quickly reach the adjustable target temperature in the upper section of the storage cylinder.

For an even distribution of the heat in the solar circuit, the primary circuit is started during bypass operation whilst the pump is at minimum speed.

If the temperature of the solar circuit exceeds the starting threshold within an adjustable time frame, the secondary circuit starts and the heat is transmitted to the upper section of the storage cylinder. If the temperature threshold is not reached, the secondary circuit transmits the heat to the lower section of the storage cylinder instead.

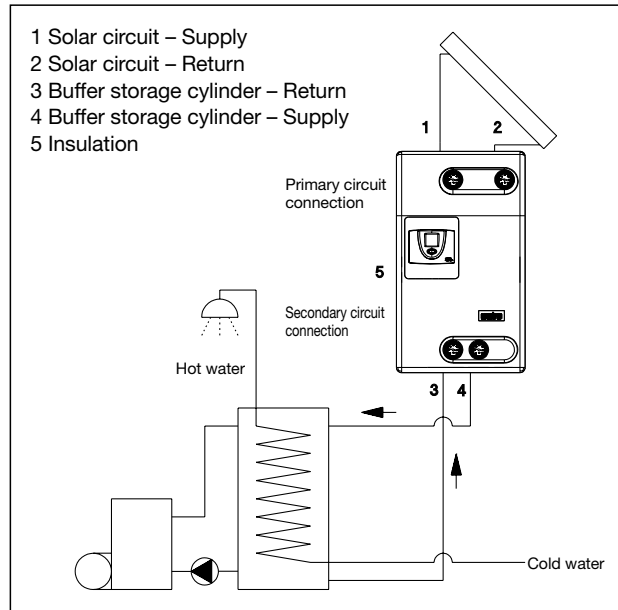
Scheme X1030 – “Regusol X-Duo” – Loading of two storage cylinders:

This type of control serves to quickly reach the adjustable target temperature in the priority storage cylinder.

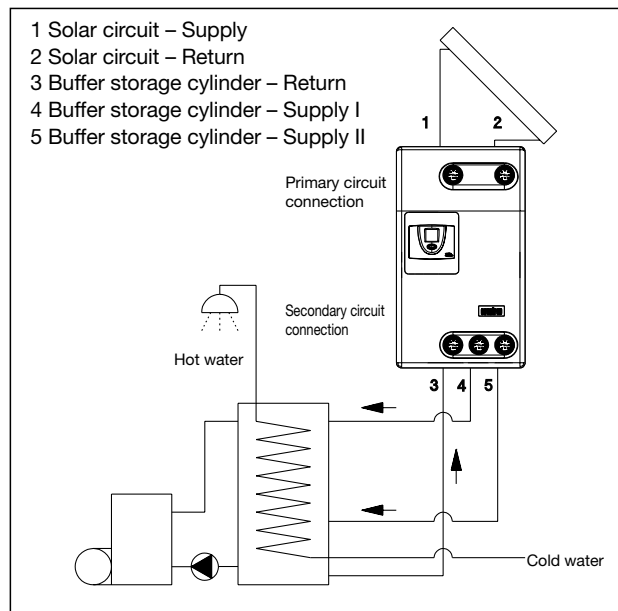
For an even distribution of the heat in the solar circuit, the primary circuit is started during bypass operation whilst the pump is at minimum speed.

If the temperature of the solar circuit exceeds the starting threshold within an adjustable time frame, the secondary circuit starts and the heat is transmitted to the priority storage cylinder. If the temperature threshold is not reached, the secondary circuit transmits the heat to the secondary storage cylinder instead.

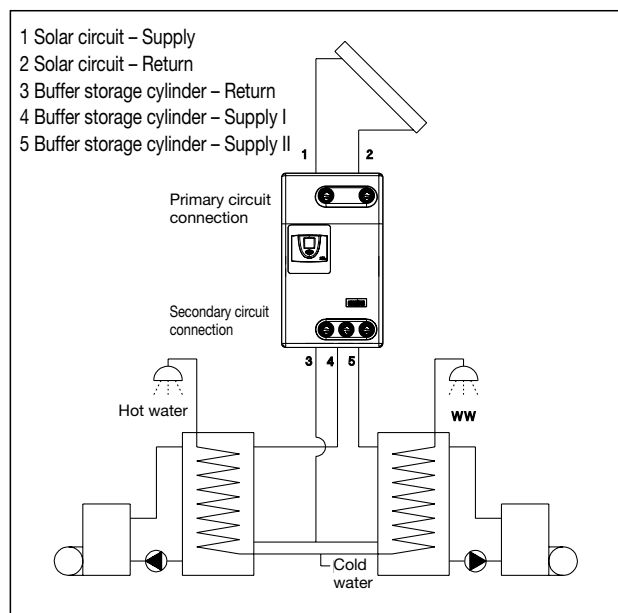
Loading concepts:



Loading concept: Storage cylinder loading



Loading concept: Loading section by section

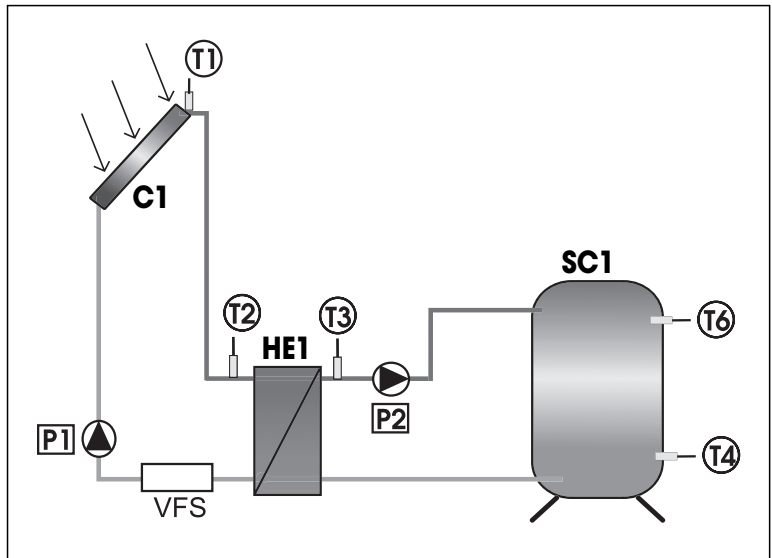


Loading concept: Loading of 2 storage cylinders

Hydronic schemes/system examples:

"Regusol X-Uno 15/25"

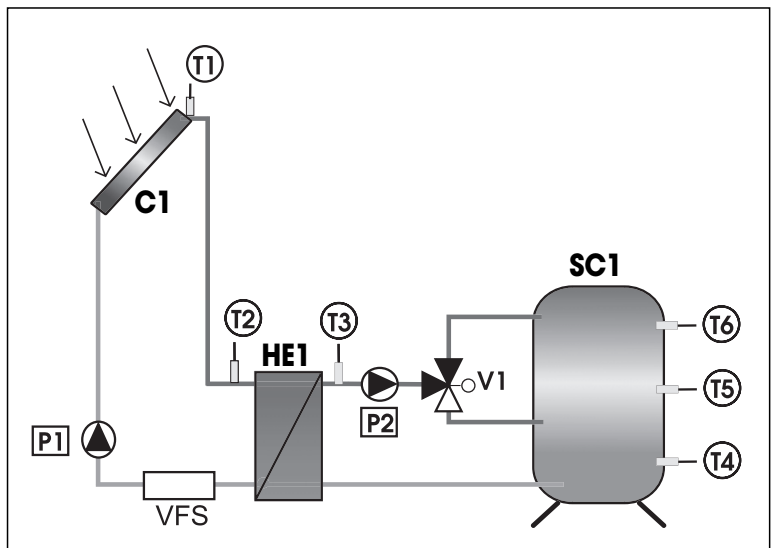
- HE1 Heat exchanger
- P1 Pump solar circuit
- P2 Pump storage cylinder circuit
- VFS Flow and temperature sensor
- SC1 Storage cylinder
- T1 Collector temperature
- T2 Heat exchanger entry point from collector
- T3 Heat exchanger exit point towards storage cylinder
- T4 Lower storage cylinder temperature
- T6 Upper storage cylinder temperature



"Regusol X-Uno"

"Regusol X-Duo 15/25" – Loading section by section

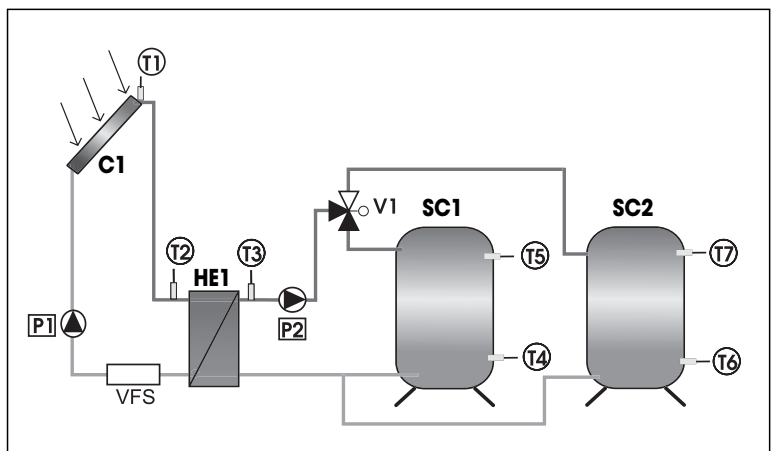
- HE1 Heat exchanger
- SC1 Storage cylinder
- P1 Pump solar circuit
- P2 Pump storage cylinder circuit
- VFS Flow and temperature sensor
- V1 Diverting valve
- T1 Collector temperature
- T2 Heat exchanger entry point from collector
- T3 Heat exchanger exit point towards storage cylinder
- T4 Lower storage cylinder temperature
- T5 Medium storage cylinder temperature
- T6 Upper storage cylinder temperature



"Regusol X-Duo"

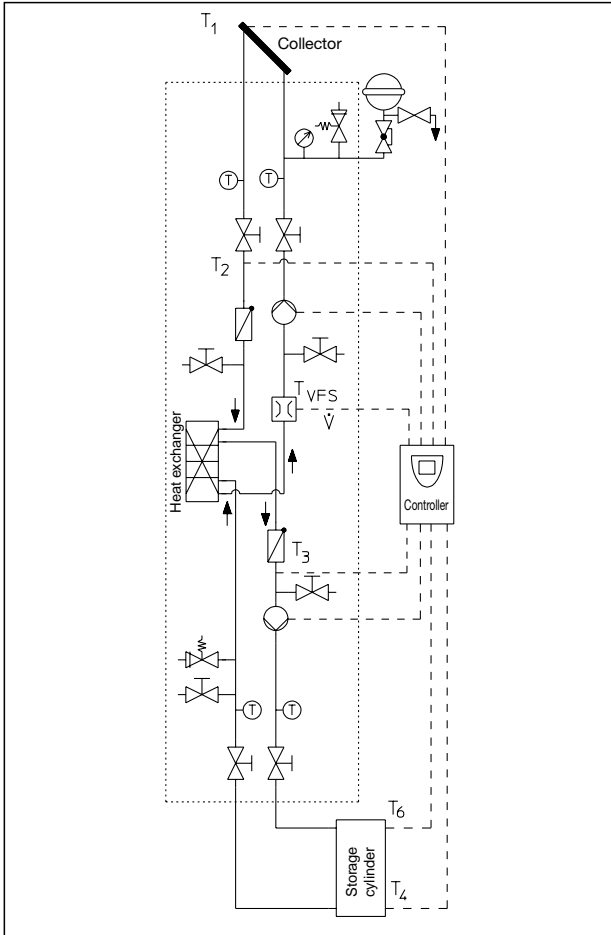
"Regusol X-Duo 15/25" – Loading of two storage cylinders

- HE1 Heat exchanger
- SC1 Storage cylinder 1
- SC2 Storage cylinder 2
- P1 Pump solar circuit
- P2 Pump storage cylinder circuit
- VFS Flow and temperature sensor
- V1 Diverting valve
- T1 Collector temperature
- T2 Heat exchanger entry point from collector
- T3 Heat exchanger exit point towards storage cylinder
- T4 Lower temperature storage cylinder 1
- T5 Upper temperature storage cylinder 1
- T6 Lower temperature storage cylinder 2
- T7 Upper temperature storage cylinder 2

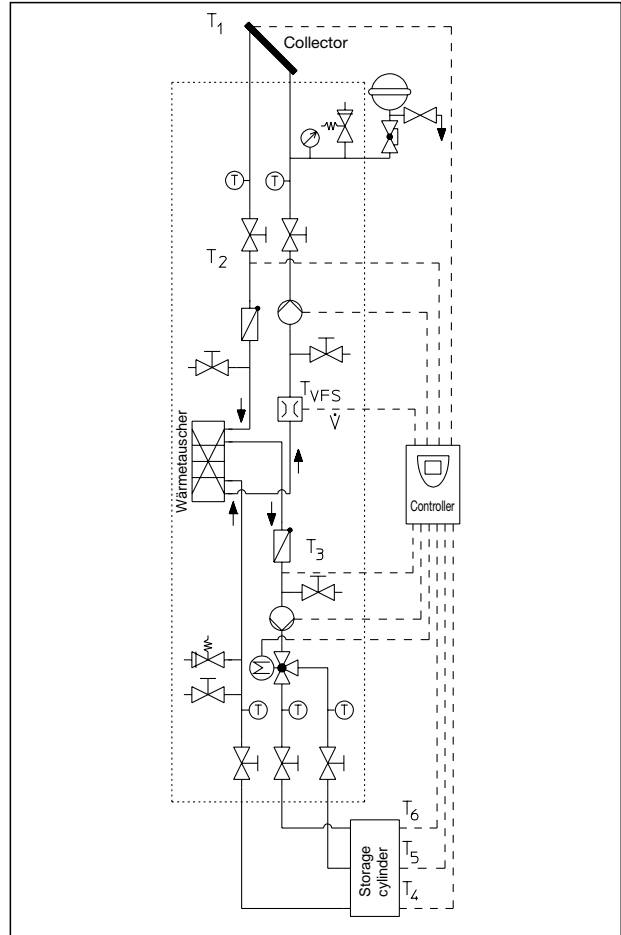


"Regusol X-Duo" – Loading of 2 storage cylinders

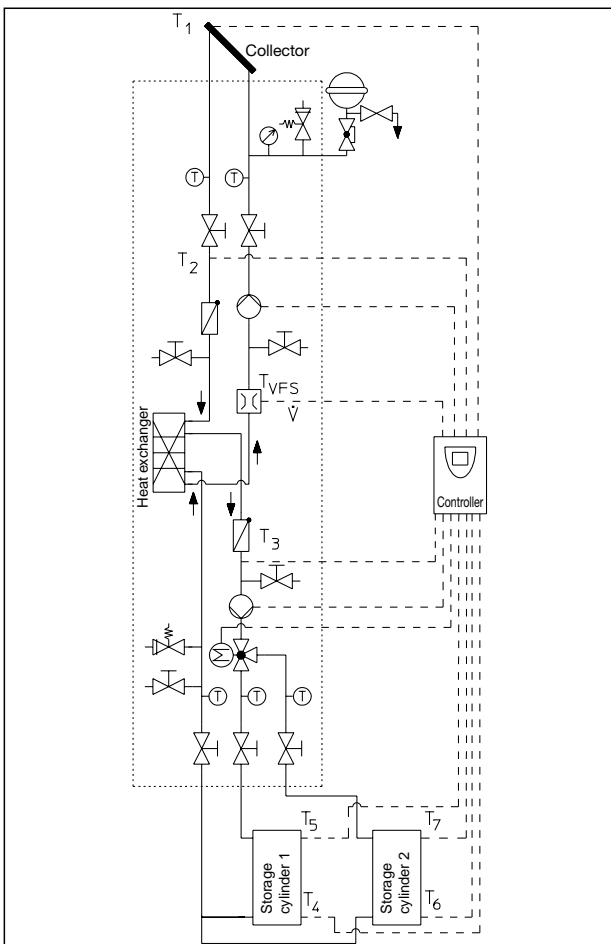
Basic circuit diagrams:



"Regusol X-Uno"

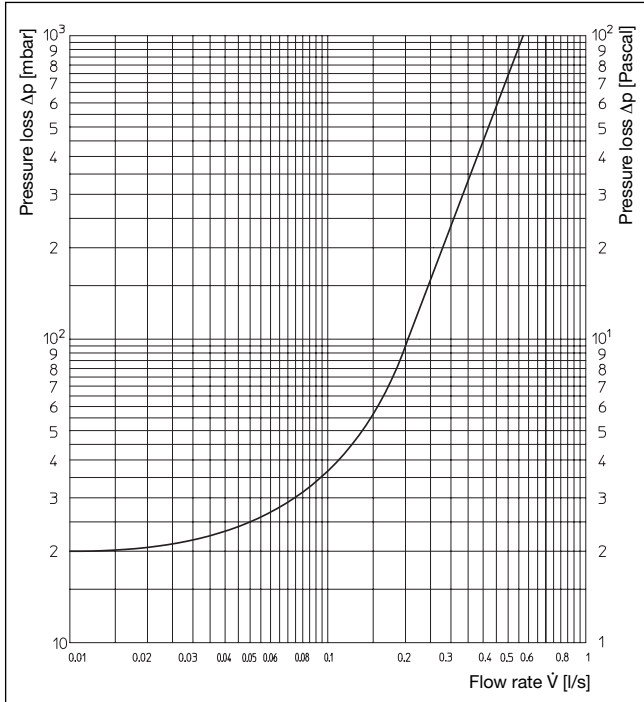


"Regusol X-Duo" – Loading section by section

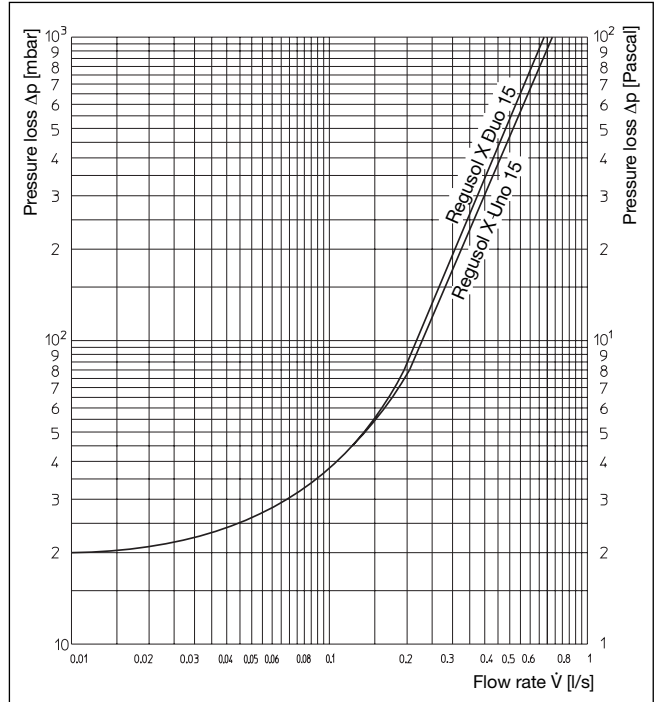


"Regusol X-Duo" – Loading of 2 storage cylinders

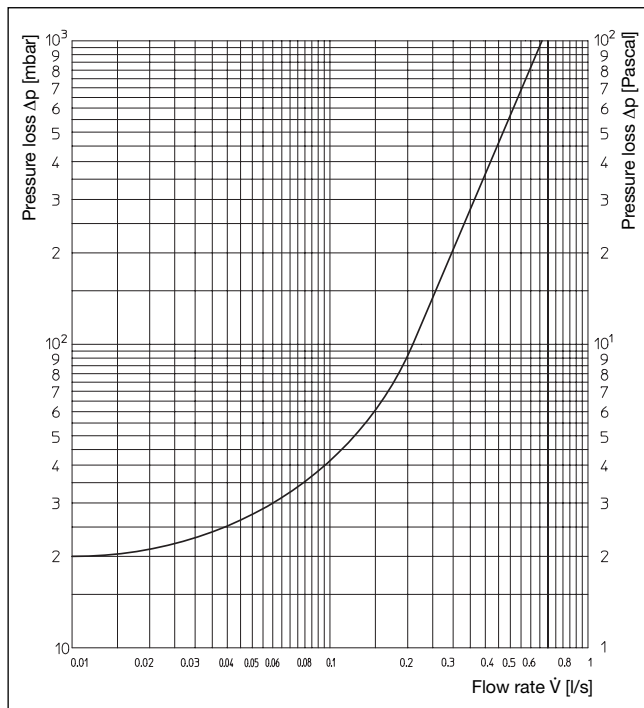
Flow charts:



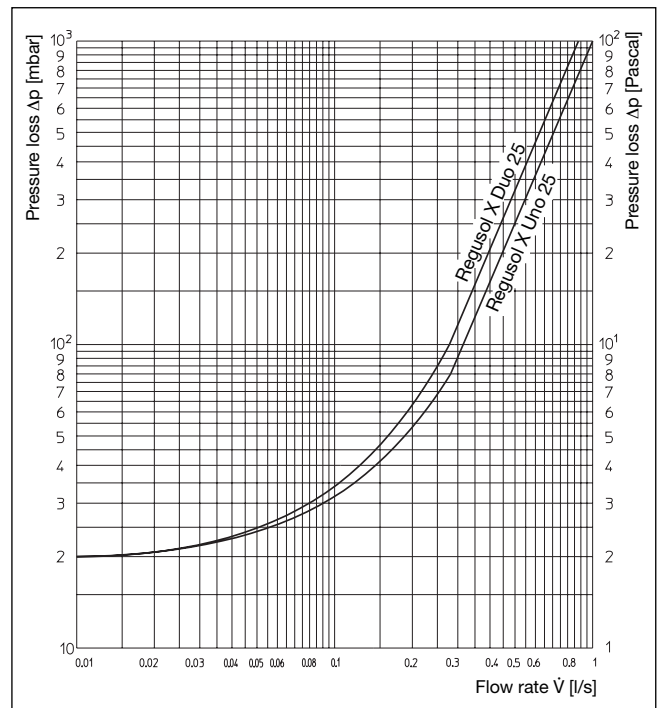
"Regisol X-Uno/Duo 15" – Primary circuit



"Regisol X-Uno/Duo 15" – Secondary circuit

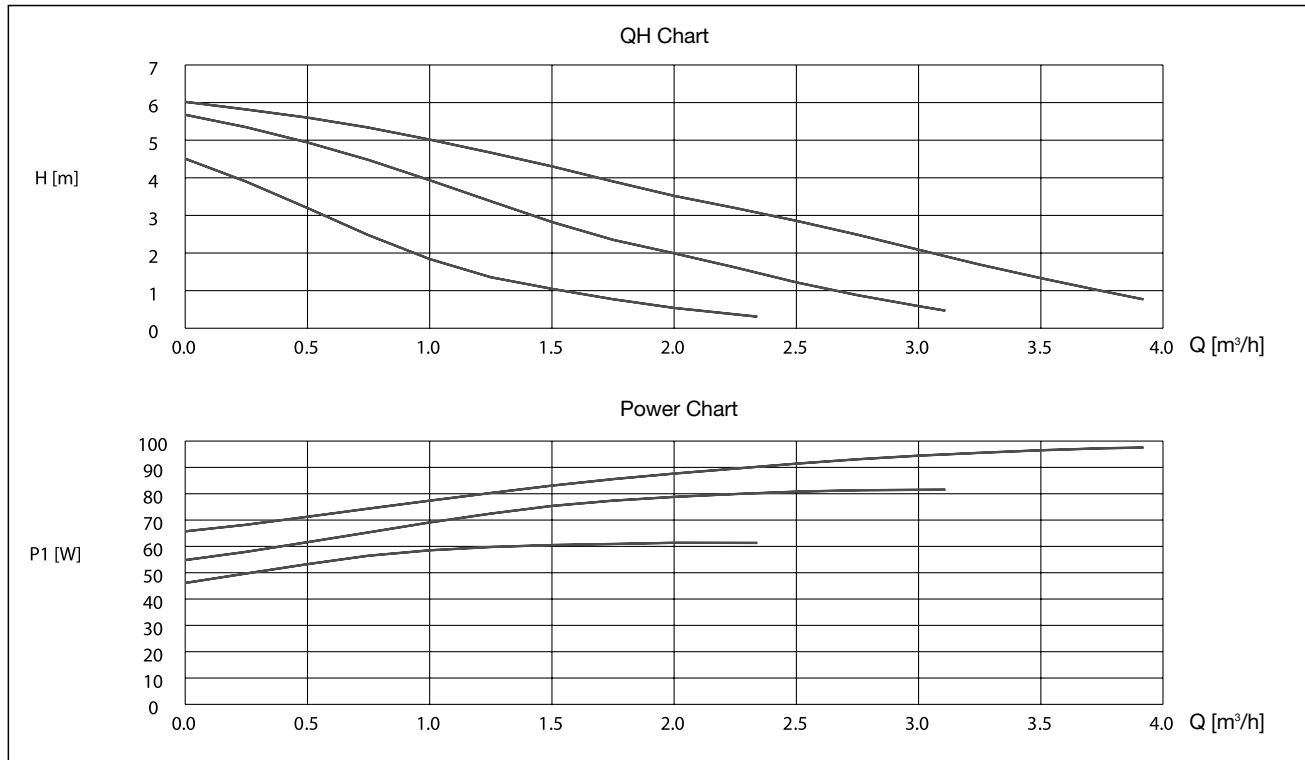


"Regisol X-Uno/Duo 25" – Primary circuit

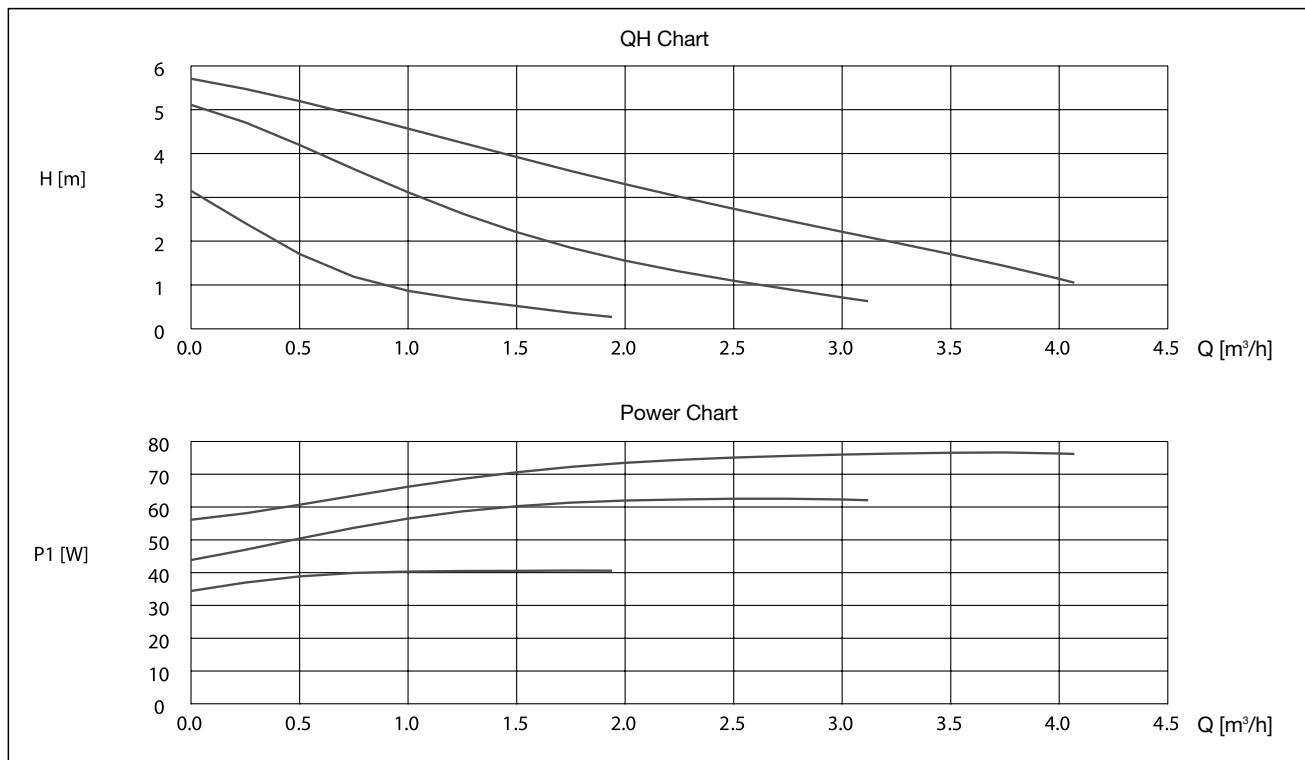


"Regisol X-Uno/Duo 25" – Secondary circuit

Pump characteristic lines:



Grundfos UPS 15-60 130



Grundfos Solar 15-60 130

F. W. OVENTROP GmbH & Co. KG
 Paul-Oventrop-Straße 1
 D-59939 Olsberg
 Germany
 Telephone +49(0) 2962 82-0
 Telefax +49(0) 2962 82-450
 E-Mail mail@oventrop.de
 Internet www.oventrop.de

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