

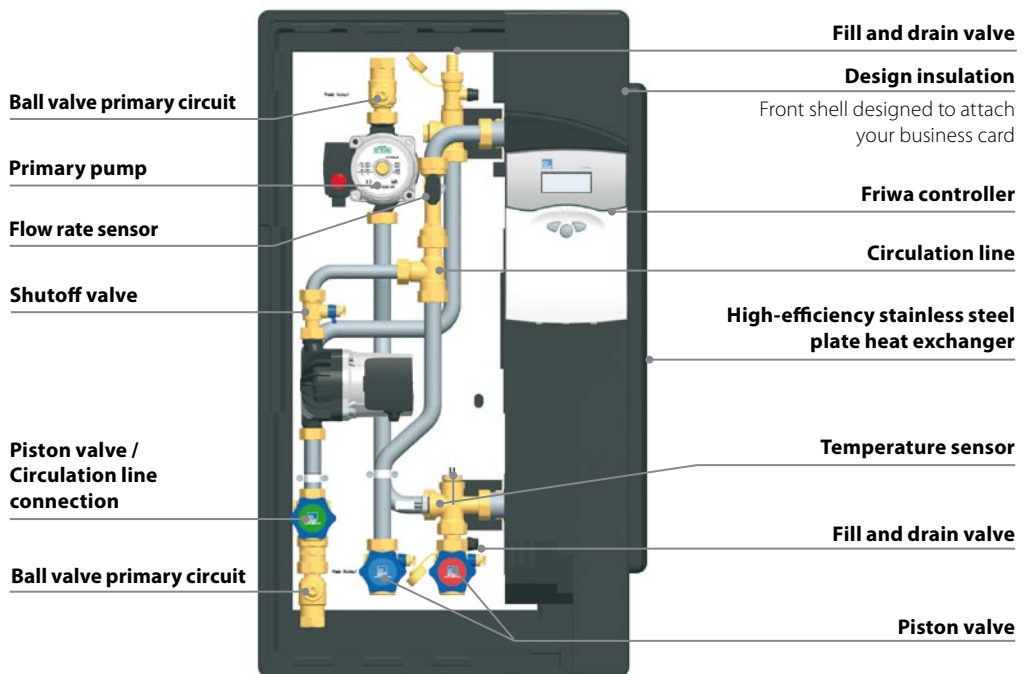
Friwa | Friwa-Kaskade

Innovative system technology for modern heating
and solar thermal systems



Domestic hot water module for hygienic domestic hot water preparation

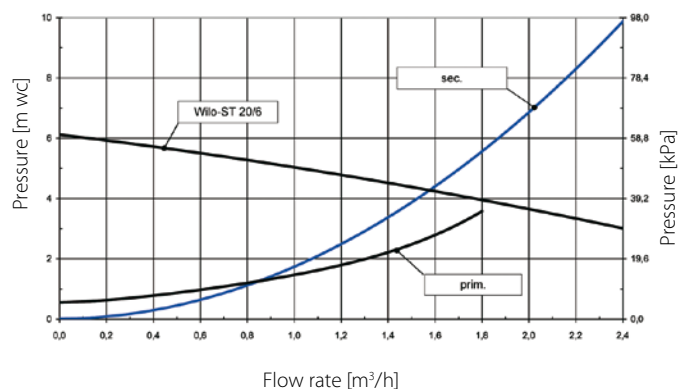
The compact and completely premounted station for hygienic domestic hot water preparation only when it is needed. The water is heated up only at the moment when it is needed - a quick, safe and clean solution! Fresh hot and hygienically clean water is always available at any time without the need for a domestic hot water storage tank. The energy necessary for heating the domestic water comes from a buffer storage tank which can be heated by various systems: solar installations as well as solid combustibles, traditional oil or gas boilers or other systems. Friwa offers you the following features:



Friwa DN 20 - 3/4" - per module

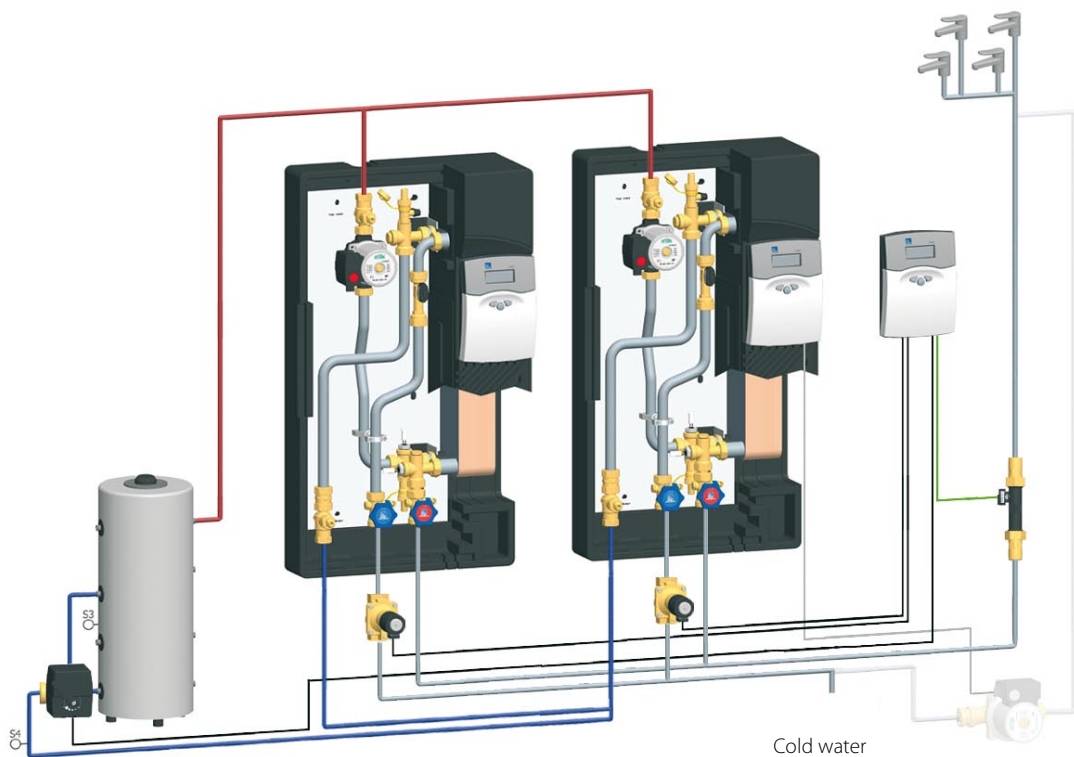
Materials	
Valves and fittings	Brass/Bronze
Gaskets	Klingersil/EPDM
Insulation	EPP
Check valves	modified PPS
Heat exchanger	Plates + connecting pieces: 1.4400 Solder: 99.99 % copper
Technical data	
Max. pressure	6 bars
Max. operating temperature	95 °C
Equipment	
Heat exchanger	30 plates, type 1P
Dimensions	
Connections	Primary circuit: 3/4" internal thread Domestic hot water circuit 1" external thread, flat sealing Circulation line 3/4" external thread, flat sealing
optional	
Width	560 mm
Height	880 mm

Pressure drop Friwa - DN 20



Friwa domestic hot water module as cascade solution








The Friwa cascade contains compact and completely premounted modules for hot water preparation. Special feature of this cascade: FriwaMaster to control the temperature stratification of the return. The Friwa cascade not only combines the advantages of the Friwa modules but it also meets the higher demand for domestic hot water. The application range is from 2 up to max. 120 l/min.



Performance characteristics for the operation of the cascade	
Flow temperature	75 °C
Return temperature (at full load)	21 °C
Domestic hot water temperature	60 °C
Domestic cold water temperature	10 °C
Minimum flow rate	2 l/min
Maximum flow rate (depends on flow and domestic hot water temperature)	40 l/min
Withdrawal performance	100 kW per module (= 29 l/min tap performance)
Minimum circulation flow rate	4 l/min
Domestic hot water tap performance for 1,000 l buffer capacity	1,075 l

The cascade offers you the following features:

- ✓ Parallel connection of up to 4 standard Friwa modules - Tap performance of 2 up to 120 l/min
- ✓ FriwaMaster connects or disconnects each module according to the demand
- ✓ The Friwa modules are controlled by Friwa controllers which are integrated in the modules
- ✓ Various applications: one- and two-family houses, sports facilities, residential homes etc.
- ✓ Flexible extension of the system
- ✓ High system stability for the hot water supply
- ✓ Easy storage as the Friwa module can be used as individual station or as part of a cascade
- ✓ It enables four operation modes of the Friwa-Kaskade:
 - Full load
 - Part load
 - Priority switching
 - Circulation mode

Illustration	Item	Item no.
	Friwa - DN 20 Pump primary: Wilo Star-ST 20/6	6404631WI
	Optional Friwa with circulation pump Pump primary: Wilo Star-ST 20/6 Pump secondary: Wilo ZRS 12/4-3 Ku , with circulation connection	6404631WIZ
	Friwa Equipment	
	Circulation set for Friwa DN 20 for Friwa domestic hot water modules DN 20 without circulation pump, with Wilo ZRS 12/4-3 Ku	640414
	Friwa-Kaskade	
	FriwaMaster FriwaMaster control, flow rate sensor VFS 10-200, 2 x emergency supply cable	
	FriwaMaster	640420
	2-way electro valve DN 25 Kvs value = 10.9, 1 x required for each cascade module	
	2-way electro valve DN 25	563410
	Return distribution set Friwa, 1 1/4" internal thread, Kvs value = 10.9 with 1 tube contact sensor PT1000 and 1 immersion sensor PT1000	
	Return distribution set Friwa	640415
	Return distribution set Friwa, 1 1/4" internal thread, Kvs value = 16 with 1 tube contact sensor PT1000 and 1 immersion sensor PT1000	
	Return distribution set Friwa	640416
	Return distribution set Friwa, 1 1/2" internal thread, Kvs value = 25 with 1 tube contact sensor PT1000 and 1 immersion sensor PT1000	
	Return distribution set Friwa	640417

Summary Friwa-Kaskade items				
Item	100 kW	200 kW	300 kW	400 kW
Friwa modules	6404631WI	2 x 6404631WI	3 x 6404631WI	4 x 6404631WI
Circulation	6404631WIZ	Circulation pump provided by the customer	Circulation pump provided by the customer	Circulation pump provided by the customer
Return distribution set	640415	640416	640416	640417
FriwaMaster	-	1 x 640420	1 x 640420	1 x 640420
Electro valve	-	2 x 563410	3 x 563410	4 x 563410