SOLID FUEL KIT
SERIES SFK100

The ESBE load units' series SFK100 are the perfect choice for return temperature control applications used with solid fuel boilers. Used for automatically and efficiently load accumulation tanks and protect solid fuel boilers from tarring, reduced output and short life span of the boilers.

SFK120
Adjustable temperature

SFK130
Motorized mixing valve

SFK140
Controller motorized mixing valve

OPERATION

The ESBE series SFK100 is a load unit designed to protect the boiler from return temperatures that are too low. Maintaining a high and stable return temperature enables a higher level of boiler efficiency, reduced tarring and increased life span of the boiler.

The SFK100 is made to be installed inside and outside the boilers in applications where solid fuel boilers are used to feed storage tanks.

FUNCTION

The unit is a set of ball valves, thermometers, pump and depending from the version; a thermic load valve with adjustable temperature range, a thermic load valve with fixed temperature, a rotary mixing valve with actuator or a rotary mixing valve with temperature controller.

The SFK100 unit regulates on two ports, which makes it easy to install and doesn't require any additional control valve in the bypass.

The thermic units begins to open port A when outgoing mixed temperature is reached. Port B will be closed if the temperature on port A exceeds the nominal opening temperature with 10°C.

The SFK100 motorized version will regulate the load mixed temperature according to the settings on the boiler controller. The unit with a controller will regulate the load mixed temperature according to the settings on the ESBE controller.

VERSIONS

The SFK120 is equipped with thermostat and has an adjustable mix temperature setting in a range of 50-70°C. Version SFK130 is equipped with a rotary valve and actuator, and version SFK140 is a motorized unit with return temperature controller.

MEDIA

Maximum 50% glycol for freezing protection and oxygen absorbing compounds are allowed as additives. As both the viscosity and the thermal conduction are affected when glycol is added to the system water, this fact has to be considered when dimensioning the unit.

SERVICE AND MAINTENANCE

The load units are equipped with shutoff ball valves to facilitate future service.
The units does not require any maintenance under normal conditions. However spare parts such as thermostats, pumps etc. are available.

KEY FEATURES

- Boiler protection
- Applicable in- and outside the boiler
- Compact size
- Stable load temperature
- Secured return temperature
- Customization on request
- Constant curve, variable pressure pump working principle
- PWM pump control signal (PWM cable - see options)
- Shutoff ball valve
- Thermometer
- Insulation shell available for rotary mixing valve
- ESBE thermic load valve technology
  - Kvs value for thermic adjustable temp. units 4,5
- ESBE VRG300 series valve technology
  - 60%/100% kvs valve feature
  - Kvs value for motorized unit 8/13
- Motorized versions available
  - 3-point actuator
    - control signal 230VAC
    - Actuator running time 60s
  - Return temperature controller

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TECHNICAL DATA

The Load unit, in general:

Pressure class: PN 6
Media temperature: max. +100°C
min. 0°C
Ambient temperaure: max. +50°C
min. 0°C
Working pressure: 0,6 MPa (6 bar)
Connections: Internal thread (G), ISO 228/1
Media: Heating water (in accordance with VDI2035)
Water / Glycol mixtures, max. 50%.
(above 20% admixture, the pump data must be checked)
Water / Ethanol mixtures, max. 28%

Material, in contact with water:

Components of: Brass, Cast iron,
Sealing material of: PTFE, Aramid fibre, EPDM

EEI (Energy Efficiency Index),

WILO circulation pump: <0,20

Conformities and certificates:

LVD 2014/35/EU
EMC 2014/30/EU
RoHS3 2015/863/EU
ErP 2009/125/EU

SI 2016 No. 1101
SI 2016 No. 1091
SI 2012 No. 3032
SI 2010 No. 2617

PED 2014/68/EU, article 4.3 / SI 2016 No. 1105 (UK)

The integrated thermic load valve, SFK120:

Load valve type: VTC422
Max. differential pressure drop: 100kPa (1bar)
Temperature range: 50–70°C

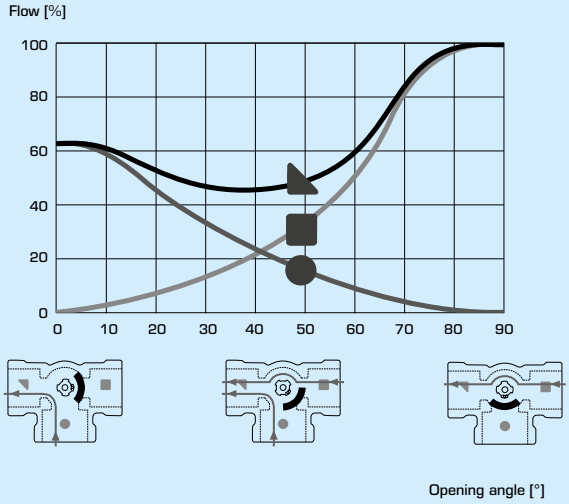
Leakrate A - AB: Tight sealing
Leakrate B - AB: Tight sealing
Rangeability Kv/Kv^{min}: 100

The integrated mixing valve, SFK130/SFK140:

Mixing valve type: VRG332
Max. differential pressure drop: 100 kPa (1 bar)
Close off pressure: 200 kPa (2 bar)
Rangeability Kv/Kv^{min}: 100
Leakrate in % of flow*: < 0,05%

* Differential pressure 100kPa (1 bar)

VALVE CHARACTERISTICS



The integrated actuator, SFK130:

Actuator type: ARA651
Control signal: 3-point
Power supply: 230 ± 10% V AC, 50 Hz
Power consumption: 5 VA
Running time 90°: 60s
Enclosure rating: IP41
Protection class: II

ACTUATOR WIRING

Please see the Installation Instruction

The integrated controller, SFK140:

Controller type: CRA211
Temperature range: +5 to +95°C
Power supply: 230 ± 10% V AC, 50 Hz
Power consumption: 10 VA
Running time at max. speed: max. 30s
Enclosure rating: IP41
Protection class: II

CONTROLLER WIRING

Please see the Installation Instruction

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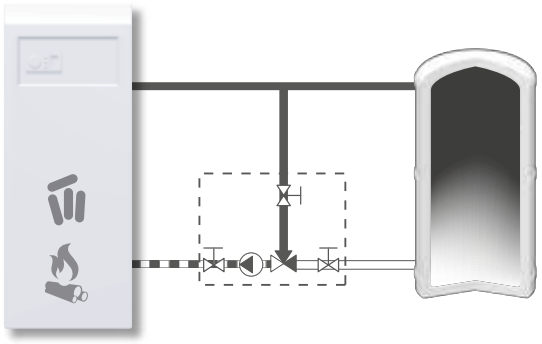
The integrated circulation pump:
Pump type: _____ Wilo PARA STG 15-130/8-60/O
Power supply: _____ 230 ± 10% V AC, 50/60 Hz
Power consumption: _____ 2-60 W
Enclosure rating: _____ IP X4D
Insulation class: _____ F
EEI (Energy Efficiency Index): _____ <0,20

PUMP WIRING
Please see the Installation Instruction

OPTIONS

Art. No.	
57080600	Thermostat 50 – 70°C
12101200	Actuator ARA651
12721100	Controller CRA211
67003900	PWM cable Wilo, 3m

INSTALLATION EXAMPLE



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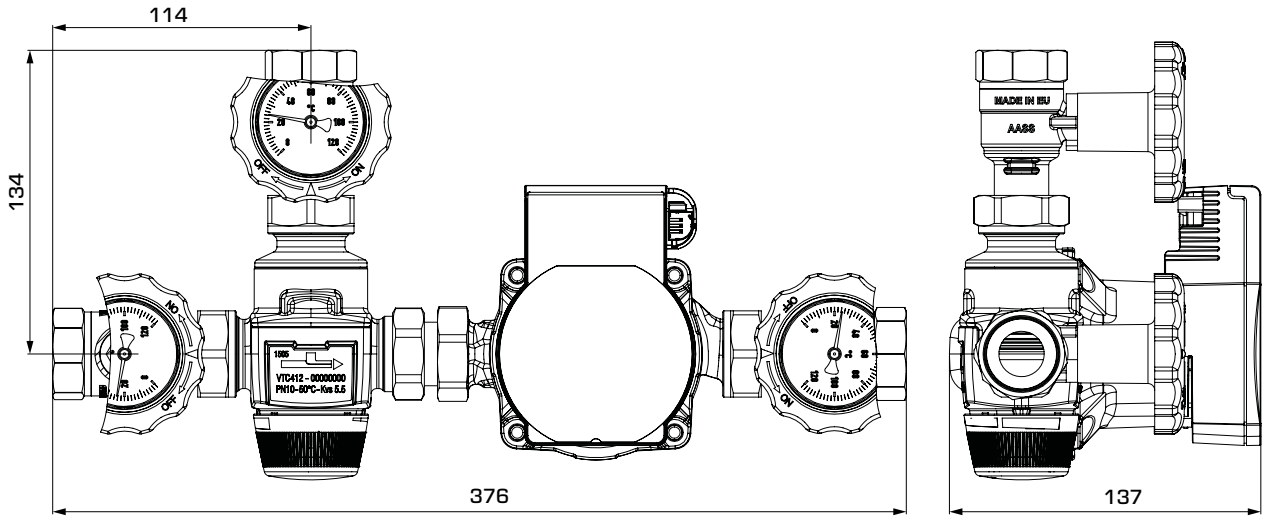
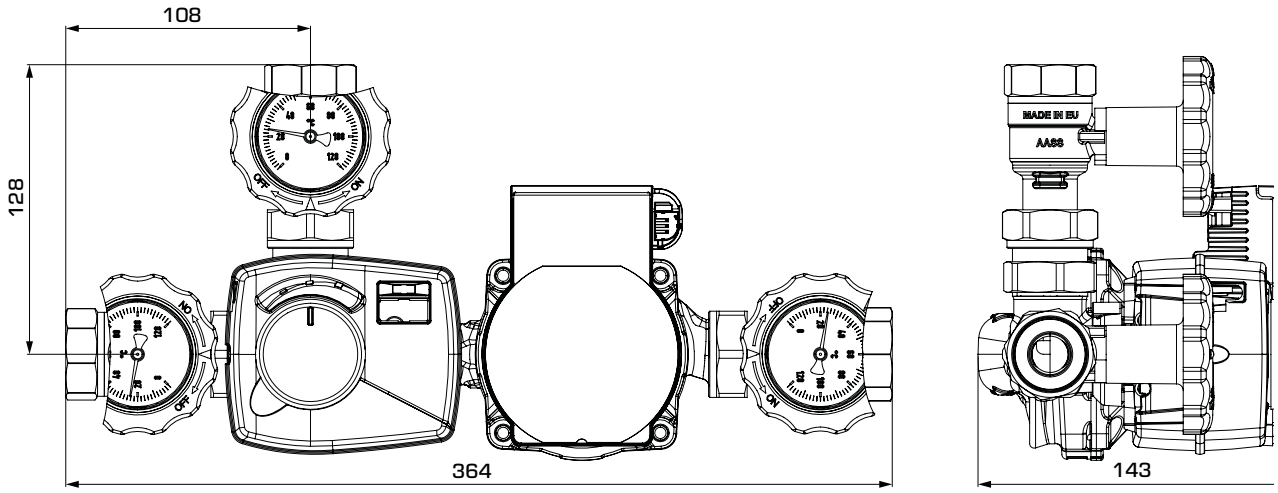


SERIES SFK120 Adjustable temperature

Art. No.	Reference	DN	Kvs	Connection Adapter	Temperature		Weight [kg]	Note
					Opening	Mixed (AB)		
55021100	SFK121	25	4,5	G 1"	50 – 70°C	52 - 72°C ± 3°C	4,01	



SERIES SFK130/SFK140 Motorized

Art. No.	Reference	DN	Kvs* ■ - ▲	Kvs* ■ - ●	Connection Adapter	Weight [kg]	Note
55021300	SFK131	25	13	8	G 1"	4,22	Actuator ARA651, 3-point 230 V AC
55021600	SFK141	25	13	8	G 1"	4,67	Controller CRA211

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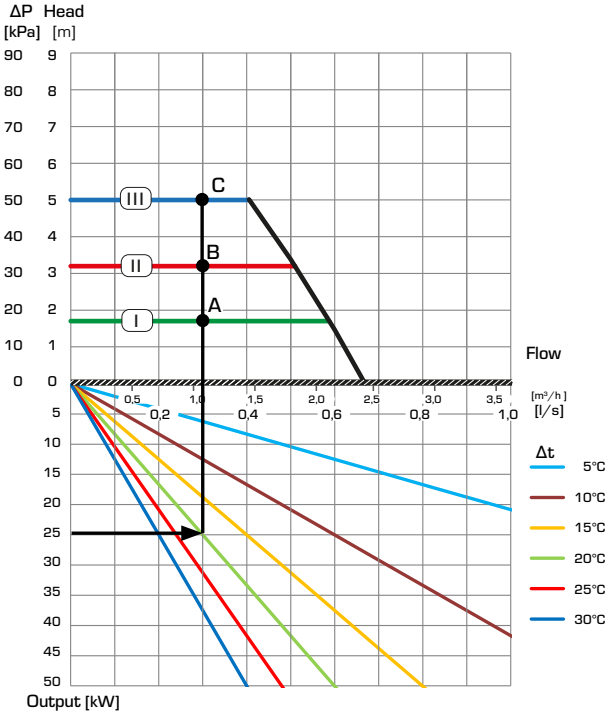
DIMENSIONING

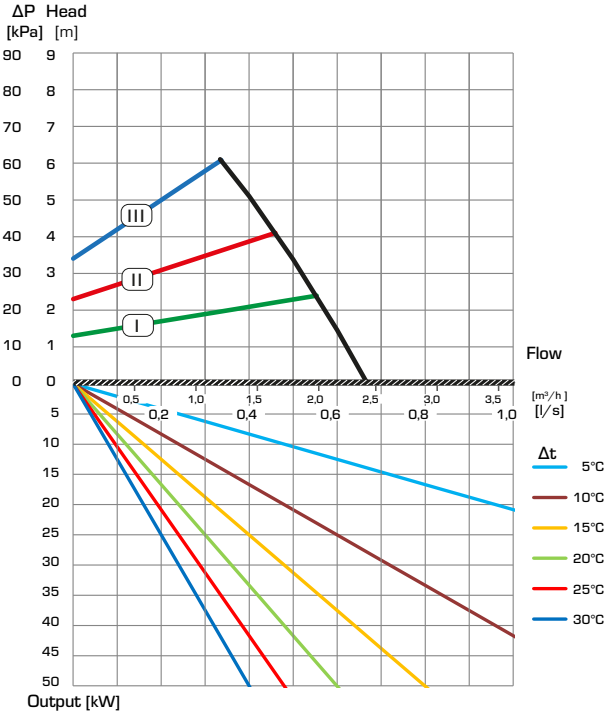
Example: Start with the heat demand of the heating circuit (e.g. 25 kW) and move horizontally to the right in the diagram to the choosen Δt, which is the temperature difference between flow and return of the heating circuit (e.g. 20°C). Next go up and find the possible duty points.

Setting I gives duty point A with a residual head of 18 kPa. Setting II gives duty point B with a residual head of 32 kPA and III gives duty point C with a residual head of 50 kPa.

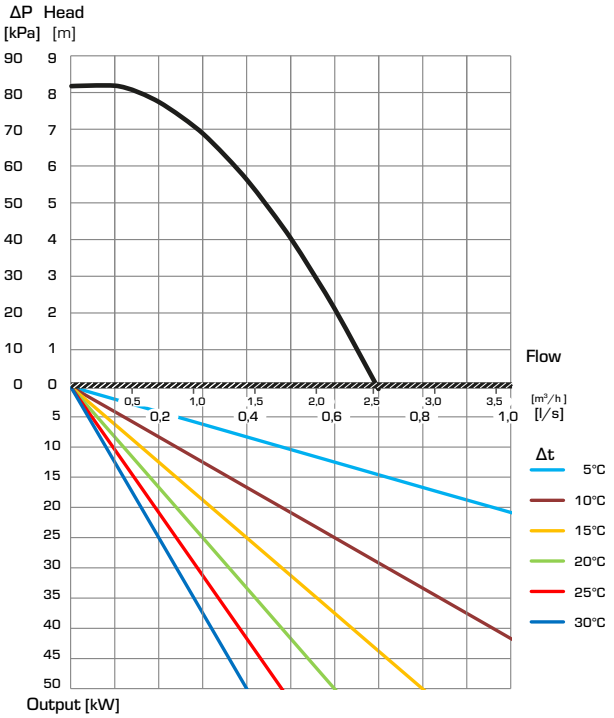
SFK120 – Constant differential pressure



SFK120 – Variable differential pressure



SFK120 – PWM



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DIMENSIONING

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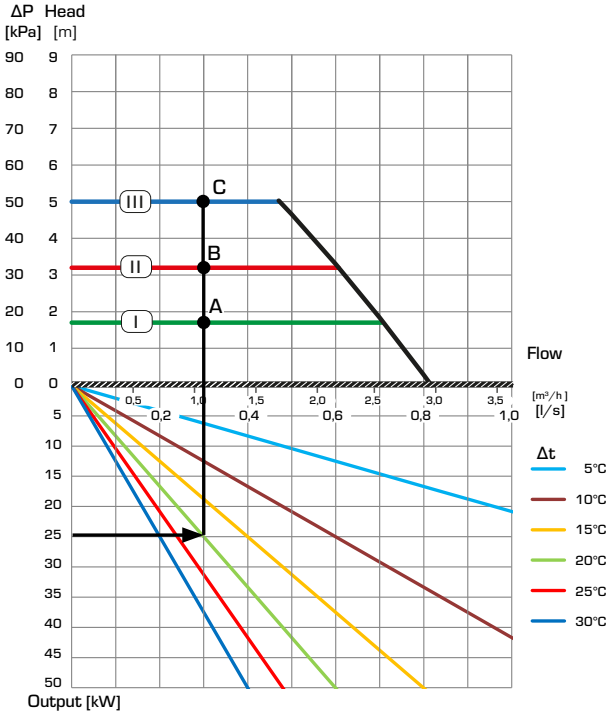
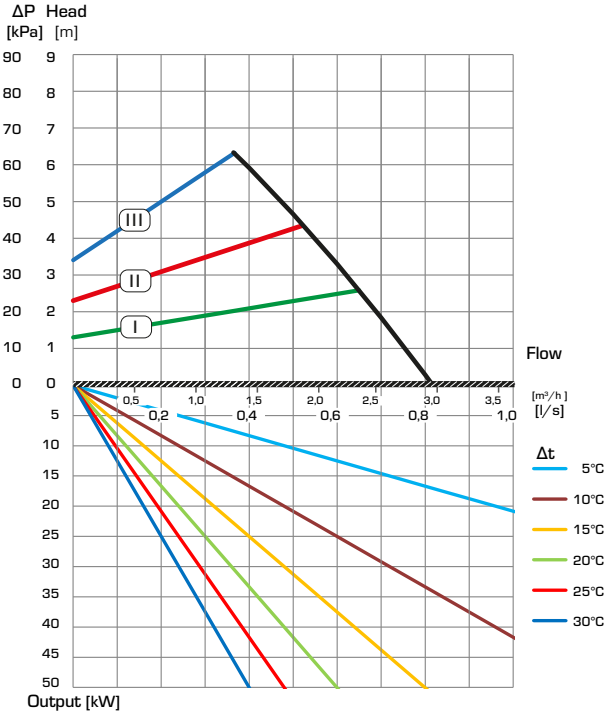
Setting I gives duty point A with a residual head of 18 kPa. Setting II gives duty point B with a residual head of 32 kPA and III gives duty point C with a residual head of 50 kPa.

SFK130/SFK140 – Constant differential pressure



SFK130/SFK140 – Variable differential pressure



SFK130/SFK140 – PWM