



FK-5 BREAK TANK STATION

Standard-compliant protection against fluid category 5
according to DIN EN 1717 and DIN 1988 Part 100


KEMPER
DRIVING PROGRESS

Be prepared for everything

Option for targeted application configuration



Fig. 369 (without accessories)
Cross-section of the tank with illustration of the internal overflow



Figure 369
incl. accessories
(see page 11)

Benefits at a glance

- // High performance: flow rate up to 7 m³/h*
- // Promotes drinking water hygiene through programmable flushing cycles for the drinking water feed pipe
- // Integrated tank cleaning program
- // Controls operating time via weekly program
- // Controls an external dosing or submersible pump
- // Provides consumption and operating data through a USB port
- // Outputs fault messages to BMS



NEW!

FK-5 connection set
Figure 369 27



Maximum protection

Fluid category 5 with the strictest requirements

Drinking water must always be protected against mixing with non-potable water. Fluids are divided into categories from 1 to 5 according to the level of risk. Category-5 fluids represent a significant risk to human health. They may contain microbial or viral pathogens of infectious diseases and must therefore never come into contact with drinking water – not even in the smallest quantities.

DIN 1988-100 in conjunction with DIN EN 1717 therefore sets the highest standards for the safety equipment to be used, with the mandatory separation of these fluids from the drinking water system.

Danger due to backflow, siphon backflow or back pressures from non-potable water!

A sudden partial vacuum (pressure drop) in parts of the pipework can lead to **siphon backflow** of contaminated fluids. A vacuum may be created, for example, by closing a valve or operating booster pumps, or in the event of excessive water removal.

A temporary increase in pressure in non-potable water systems leads to counter-pressure in the direction of the drinking water installation. This can cause contaminated fluids to be **forced back** into the drinking water.

The following applications show examples of danger zones with fluid category 5 in accordance with DIN 1988 Part 100, Application Table A1.



- 01 Water playground with spring outlets
- 02 Underground irrigation
- 03 Drinking troughs

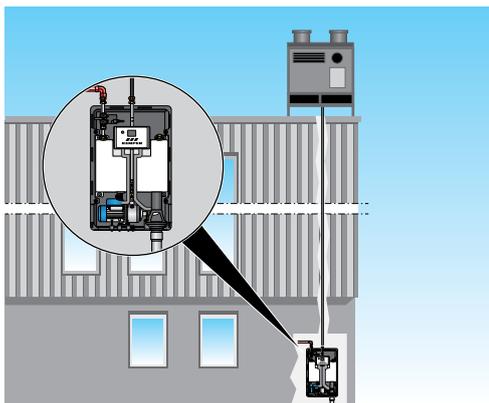
- 04 Cooling towers
- 05 Cleaning in zoological settings
- 06 Pathology

Overcome heads, supply volumes

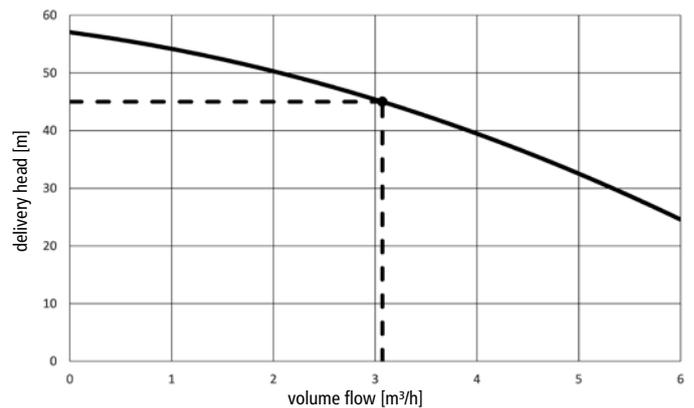
Wide range of services for many application areas

With its two pump sizes, the FK-5 break tank station covers a broad performance spectrum. No matter whether a large head has to be overcome or a high volume flow has to be provided, despite its compact dimensions, it can achieve impressive performance values.

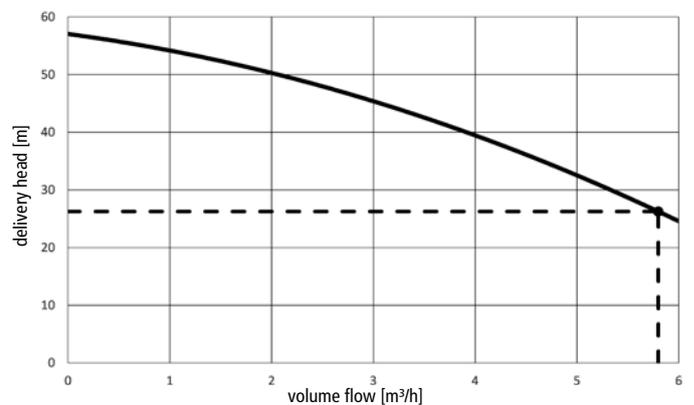
Thanks to its high pump capacity, removal quantities are comparable to those of similar pipework systems in drinking water installations. Nor are there any appreciable losses in terms of ease of removal.



Example: 30-m-high building



Example: Irrigation with high volume flow (5.8 m³/h)



Pump characteristic curves and operating points for each of the following marginal conditions:

$$p_{Fl} = 1 \text{ bar} \hat{=} 10 \text{ m and } \Delta p_{ges,v} = \sum (R \cdot l + \Delta p_E) = 0.5 \text{ bar} \hat{=} 5 \text{ m}$$

Contamination prevention

Drinking water feed pipe flushing and FK-5 tank cleaning

Flushing drinking water feed pipes

During interruptions in use, e.g. during school or company holidays, stagnation occurs in the feed pipe to the break tank station. The same is true for periods of reduced use of the break tank station. To ensure that drinking water hygiene is maintained in the installation's affected areas, the water content of the feed pipes must be exchanged through regular flushing. The FK-5 break tank station automates this essential process with programmable flushing cycles. Planned flushing cycles remain active even in **service interruption** mode.

Automatic flushing inlet 1			
Monday	off	00:00	0 min
Tuesday	off	00:00	0 min
Wednesday	off	00:00	0 min
Thursday	off	00:00	0 min
Friday	off	00:00	0 min
Saturday	off	00:00	0 min
Sunday	off	00:00	0 min

Navigation icons: Home, Up, Down, OK

Cleaning the tanks

The water in the receiver tank and the downstream network is no longer drinking water. Nevertheless, in many applications (see example on the right) high germ contamination through biofilm formation in the receiver tanks is undesirable – it is recommended that the tanks be regularly cleaned both in operation and after long standstill periods.

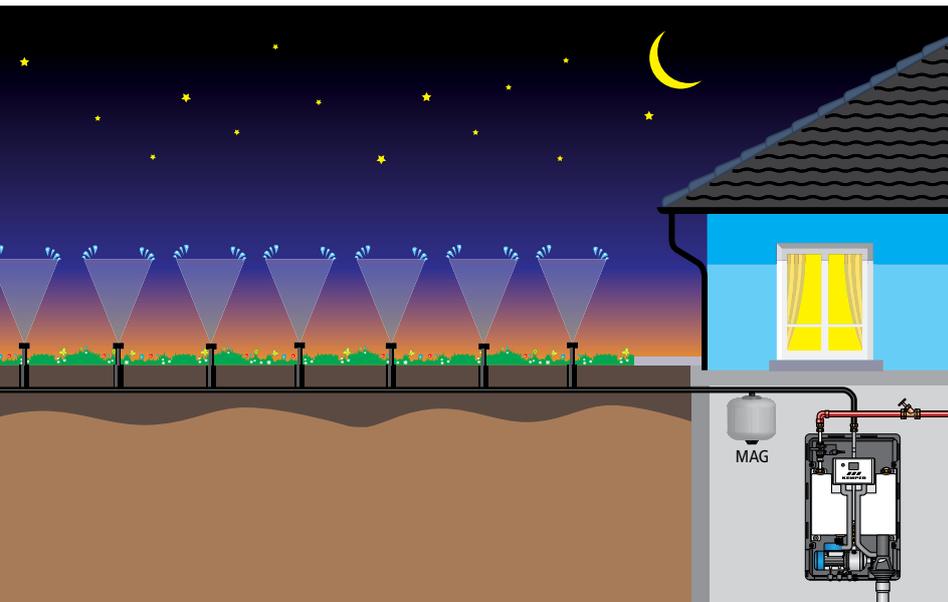
The FK-5 break tank station offers the **tank cleaning** function for this: when the program starts, a cleaning agent is added to the tank. The cleaning program cannot be interrupted once it has started; when completed, it guarantees that the tank has been fully flushed. The FK-5 break tank station cannot be used for the duration of the cleaning process. You can use any well-established product for cleaning water containers in camping vehicles as the cleaning agent.



Tank cleaning unit

Automated operation, vandalism prevention

Usage optimisation with time control and operating time selection



Operating times		
Monday	off	00:00 - 00:00
Tuesday	off	00:00 - 00:00
Wednesday	off	00:00 - 00:00
Thursday	off	00:00 - 00:00
Friday	off	00:00 - 00:00
Saturday	off	00:00 - 00:00
Sunday	off	00:00 - 00:00

Navigation icons: Home, Up, Down, OK

Time control

With the FK-5 break tank station, you can control switch-on and switch-off times to the minute. In summer, for example, irrigation can be carried out fully automatically, e.g. during the night. This removes irrigation from the peak times, while also being easy on the plants. This automation helps to save human resources, especially in public areas.

Define operating times – prevent vandalism

Unauthorised water tapping point operation can have costly consequences. This is particularly true for periods when the staff or the operator is absent. Tapping points that are fed from the FK-5 break tank station can thus be secured against unauthorised use by defining operating times.

This can be useful, for example, in nurseries that are not open at weekends. No water can be tapped outside the defined days of the week and times of day, thus preventing damage caused by vandalism.

Overriding operating times

The programmed operating times can be temporarily overridden by the operator without the programming being lost:

// When the FK-5 break tank station is set to **automatic**, it can also be used outside the regular operating times, for example for weekend events.

// In the event of interruption of business in the building (e.g. during the school holidays), the FK-5 break tank station can be switched to **service interruption** mode. Regular operation of the plant is thus interrupted, and all predefined operating times are overridden. Only the programmed PWC feed pipe flushing cycles are run (see page 5).

Practical application solutions

Pump control and Water supply set plus

Individualised admixtures

The FK-5 break tank station offers the option of controlling an external pump. This means it is possible to dose fertilisers, plant protection products, colouring or aromatic substances, and so on, directly into the pressure line. Standard commercial dosing pumps can be controlled using a dry contact.

Overflow monitoring

To prevent damage caused by drain blockages, or in the event of backflow from the sewer, the FK-5 break tank station can be equipped with an overflow monitoring unit. Faults detected here automatically cause the inlet valves to be shut off, and a message to this effect is sent to the BMS.

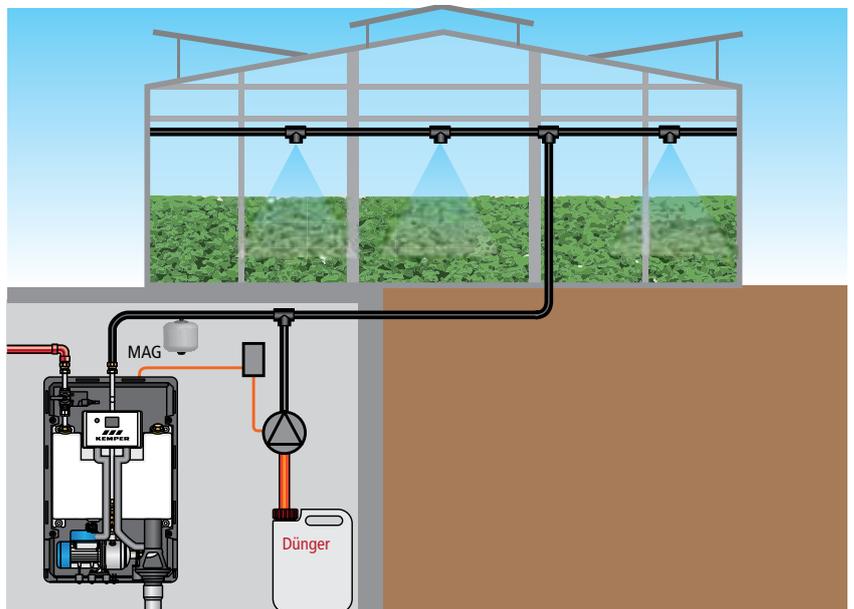
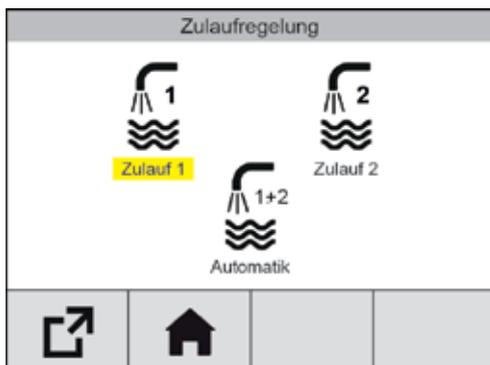
Second inlet

The water supply set plus can be used to add a second inlet to the FK-5 break tank station. This ensures continuous operation with up to 7.2 m³/h (DN 25). The unit can be used to integrate a second drinking water connection as well as a non-potable water connection from external sources such as rainwater or well water. The submersible pump required for this is connected to the system and controlled by it.

The type of replenishment is defined in the **inlet control** menu item on the touchscreen. The user can define whether the receiver tank is to be filled through the PWC pipe, the cistern line or automatically. In automatic mode, the cistern inlet has priority. Only if needed does the system automatically switch to the PWC inlet.

It is possible to control external pumps with the following specifications:

Nominal voltage	250V AC
Max. continuous current	4A
Max. switching capacity	AC1 1000VA



Know what's happening

Data storage for building management

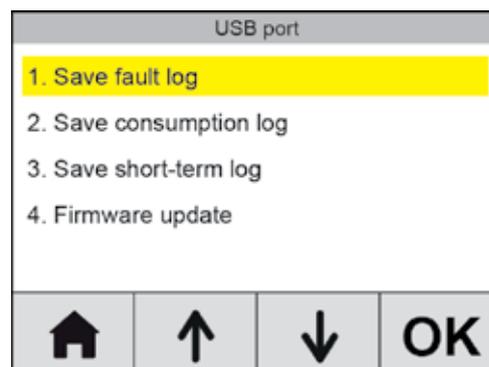
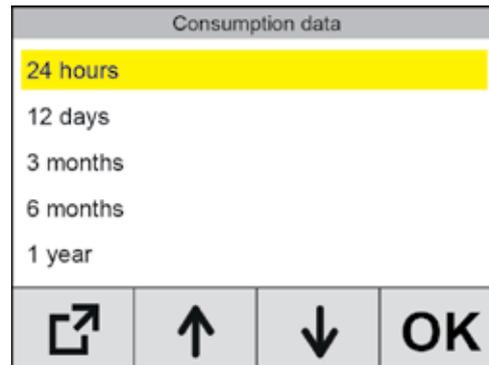
It is becoming increasingly important to be able to optimise building management functions. With the help of detailed information on all water consumption, building management can detect and handle consumption peaks, analyse abnormalities and take the necessary measures to resolve them.

The FK-5 break tank station controller supports building management by storing and displaying the following parameters:

- // Date
- // Time
- // Consumption in l
- // Pressure in bar
- // Fill level in %
- // Valve position
- // Pump position
- // Operating mode
- // Fault

The data are stored in both a 48h short-term memory and a long-term memory. Both memories work according to the first in / first out principle: when the memory is full, the oldest entry is overwritten with new data.

Output is conveniently effected using a **USB interface** (port on the operator panel of the controller). After a USB flash drive has been plugged in, the USB interface menu appears on the touchscreen. The data to be read out can be targeted and selected based on the intended use. The logs are saved on the drive as CSV files. The data can then be easily processed further using Excel, for example to create irrigation profiles. Your own configurations or firmware updates can also be loaded into the controller using the same interface.



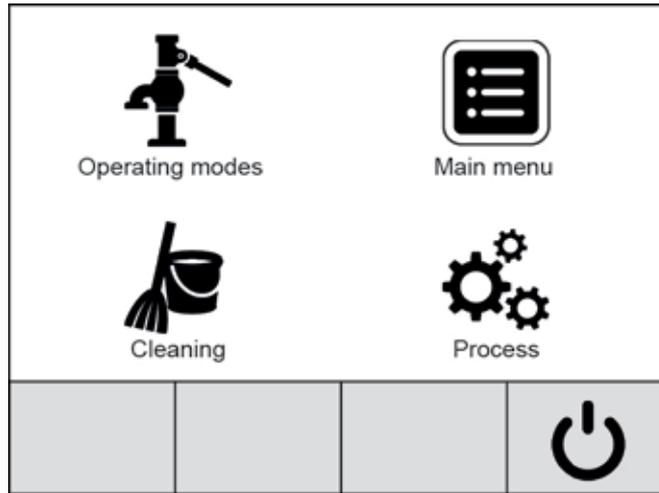
Convenient use of a wide range of functions

Operating advantage thanks to touchscreen control

The FK-5 break tank station controller has a touchscreen for easy and convenient operation. Practical icons guide the user intuitively through the menu and allow simple execution of all functions.

Equipment protection at below-zero temperatures

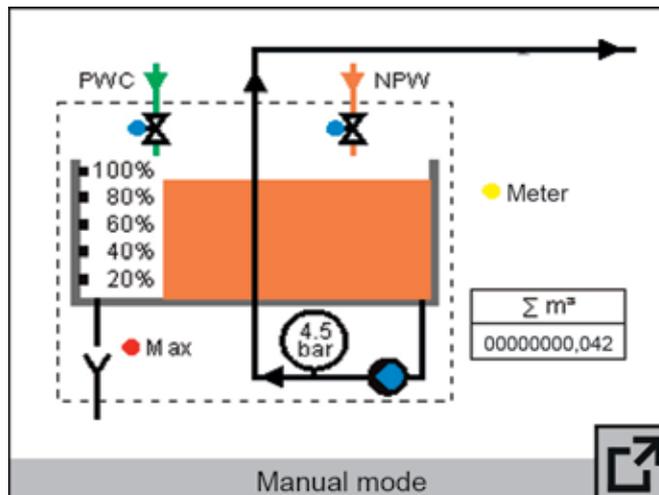
The FK-5 break tank station has a frost-protection monitor. When a temperature of approx. 5°C is reached, a warning message appears on the touchscreen, and at approx. 2°C, the device shuts down completely. Start-up is then only possible after the device has been specifically enabled again.



Information for building management

The **Process** button leads to a schematic representation of the FK-5 break tank station with all available functions. The current operating status is clearly shown here.

During operation, the consumption data can be displayed as a bar chart. The consumption is shown by clicking on the Σm^3 box in the plant schematic.



Fault message!

There is a dry contact for outputting a fault message to the BMS.

Optimising plant operation

Preventing faults and interruptions in operation



Temperature changes in the system lead to pressure fluctuations that can cause faults or interruptions in operation.

The expansion vessel in the FK-5 connection set absorbs these pressure fluctuations and thus eliminates a potential source of interference. At the same time, it reduces the number of cycles through tiny draw-offs of water on the pressure side. A high-quality dirt trap made of gunmetal completes the set.

KEMPER recommendation:

The expansion vessel pressure should be 0.5 bar below the set supply pressure.

NEW!

FK-5 connection set
Figure 369 27



Accessories

Enhancement options
and optional accessories

FK-5 Water supply set plus, Figure 369 01



Part no.	Scope of delivery
3690102000	quarter turn stop valve with actuator and connection accessories; DN 20
3690102500	quarter turn stop valve with actuator and connection accessories; DN 25

FK-5 tank cleaning unit, Figure 369 02



Part no.	Scope of delivery
3690200100	Solenoid valve with connection accessories

FK-5 racks, Figure 369 03



Part no.	Scope of delivery
3690300100	2 x FK-5 racks with fastening parts

FK-5 overflow monitoring, Figure 369 04



Part no.	Scope of delivery
3690400100	Overflow sensor with connection cable

FK-5 connection set, Figure 369 27

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Part no.	Scope of delivery
3692700100	Flow-through expansion vessel, 33 litres, with 1" dirt trap and 1" transition nipple made of gunmetal

Part no.	DN	Max. head [m]	Max. flow rate* [m ³ /h]	PWC connection	Pressure connection	Waste water connection [DN]	Dimensions (H x W x D) [mm]	Net weight [kg]
3690002000	20	43.2	4	G 1	G 1	75	930 x 600 x 330	36
3690002500	25	57.9	7	G 1¼	G 1¼	75	930 x 600 x 330	38

* in combination with the FK-5 water supply set plus, Figure 369 01

You can get an overview of the various fluid categories and KEMPER's relevant safety valves in our guide to safety devices

