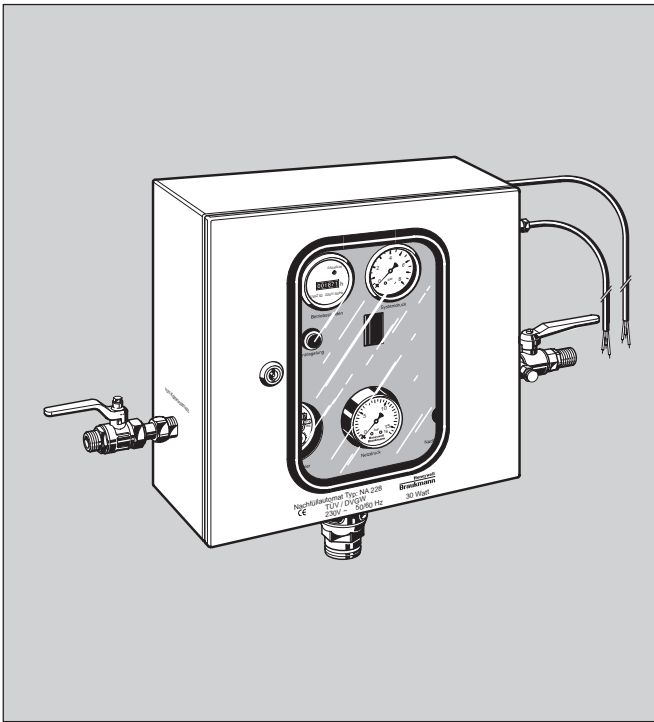


NA 228 S-A Automatic Refilling Unit for closed heating or cooling systems

Product specification sheet



Construction

The automatic refilling unit comprises:

- Powder coated pressed steel housing
- Drinking water and system connection with shutoff ball valve
- Pressure switch for cut-in and cut-out pressures
- Electronic time relay
- Fault indicator lamp and cut-out button
- Pressure gauges for inlet and system pressures
- Discharge tundish
- Electrical plug for remote connection
- ON/OFF switch
- One metre connection cable without plug
- Water meter
- Bush for cable connection to a building management system
- Operating-time meter

* For temperatures above 100°C, the pressure at the highest point in the system when the system is cold must be at least 1.0 bar above the operating pressure (static height plus 1.0 bar).

**A pressure reducing valve must be fitted before the refilling unit for pressures above 6.0 bar

Application

The NA 228 S-A automatic refilling unit with DVGW-tested backflow preventer permits the fixed connection of closed heating or cooling systems to the drinking water supply network.

It integrates a backflow preventer, a check valve and a water meter in a single unit. The automatic refilling unit maintains pressure between prescribed upper and lower limits in closed heating and cooling systems. It prevents back flow, back syphonage or back pressure of the heating or cooling water into the potable water network. Limitation of the refilling time is also provided as well as the facility for fast and automatic refilling of the system. In addition, build up of steam in the system caused by loss of pressure is prevented.

Special Features

- Components DVGW approved
- Electrical changeover valve for control of the backflow preventer
- Supplementary hot-water-resistant check valve for increased protection of the drinking water network
- Setting facility for fast filling or refilling of the system
- Pressure switch with separately adjustable cut-in and cut-out pressures
- Time relay, for limitation of the refilling period
- Standardised discharge connection
- Remote volt-free connection
- Bush for cable connection to a building management system
- Circuit protection for volt-free connection
- Operating-time meter, measures the refilling time
- Water meter, measures the refills

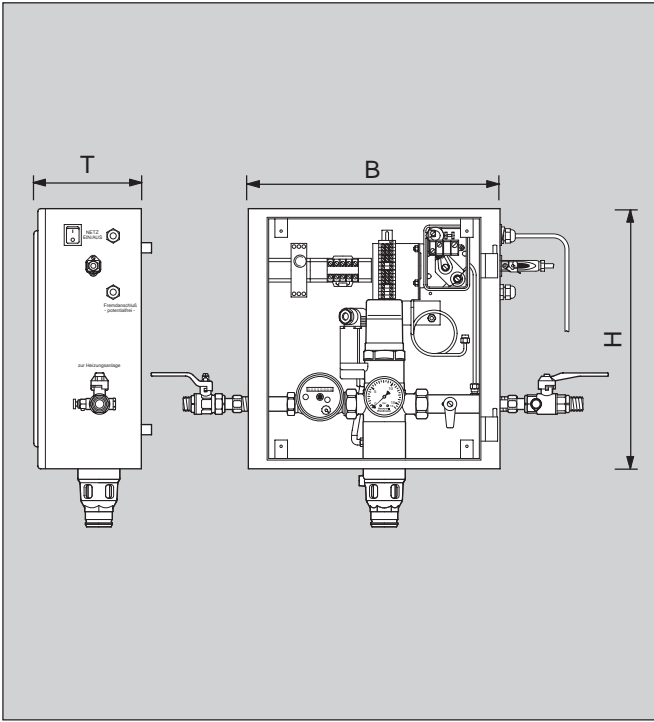
Range of Application

The following operating data applies for the downstream system:

System pressure:	Maximum 6.0 bar
Temperature:	Maximum 120 °C

Technical Data

Refilling:	Flow rate 110 litres/h at $\Delta p = 2.0$ bar
Fast filling:	Flow rate finely adjustable between 110 litres/h and 1100 litres/h at $\Delta p = 2.0$ bar
Duration of fill:	Adjustable between 5 and 100 minutes
Cut-in pressure:	Adjustable between 0.2 and 7.5 bar
Cut-out pressure:	Adjustable between 0.5 and 8.0 bar
Pressure switching differential:	0.3 to 0.5 bar (depending on pressure range)
Water inlet pressure:	Minimum 3.0 bar, maximum 6.0 bar**
Remote connection:	Volt-free contact
Supply voltage:	230V, 50/60 Hz
Power consumption:	30W
Connection size:	R ¹ / ₂ " and Ø15



Method of Operation

If the system pressure falls to below the lower set value, for example through leakage losses, then the changeover valve is opened by electrical impulse via the pressure switch and thereby permits supply to the backflow preventer. The inlet pressure moves the backflow preventer to the flow position and the system is refilled until the pressure rises to the upper set limit. The time period of the refill is monitored by the time relay and the operating time counter. Once the upper limit value has been reached, the pressure switch closes the changeover valve and the backflow preventer goes to the shutoff position (open to atmosphere). The time relay then returns to the initial position.

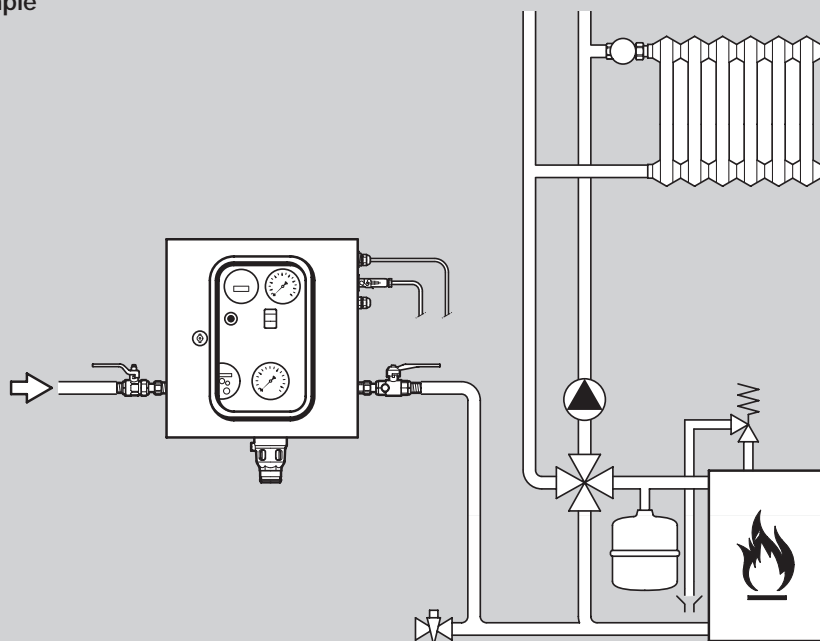
If the inlet pressure falls to the operating pressure of the backflow preventer (2 bar) during the automatic refilling operation, then the backflow preventer automatically goes to the shutoff position (open to atmosphere). The shutoff position of the backflow preventer is indicated in the viewing window (green visible = shutoff position)

Option

NA 228 S-A

Connection size	R	1/2"
Soldered connection size (mm)		Ø15
Weight (approx. kg)		16
Dimensions (mm)		
H		380
B		370
T		160
Test Certificate Number		101/87/147

Installation example



Installation Guidelines

- Fix appliance to wall
- Fit shutoff valves
 - With shutoff valves **inService** is possible - maintenance and service without removal from the system
- Ensure good access
 - Simplifies maintenance and inspection
- For supply pressures over 6.0 bar fit a pressure reducing valve on the inlet
- Make hydraulic connections and check for leaks
- Check time setting on time relay

Typical Applications

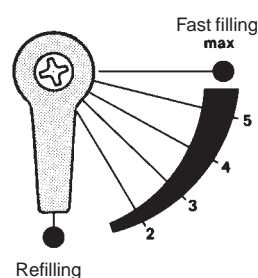
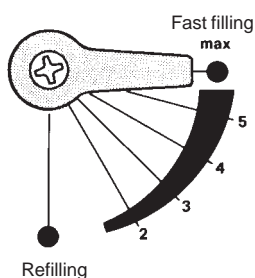
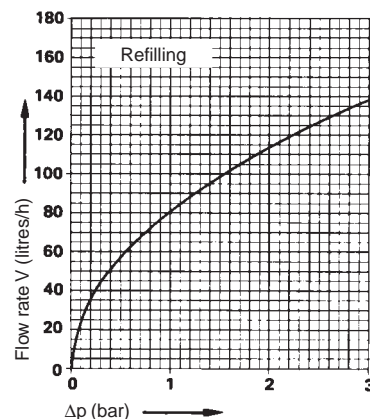
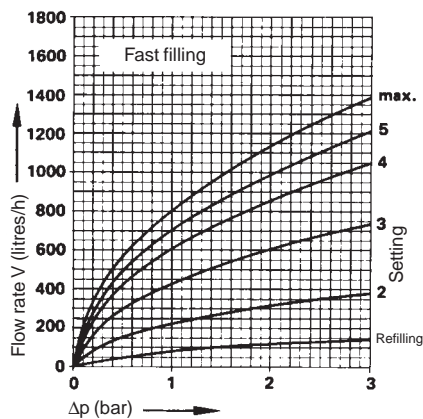
NA 228 S-A automatic refilling units permit a fixed connection of closed heating and cooling systems to the drinking water network.

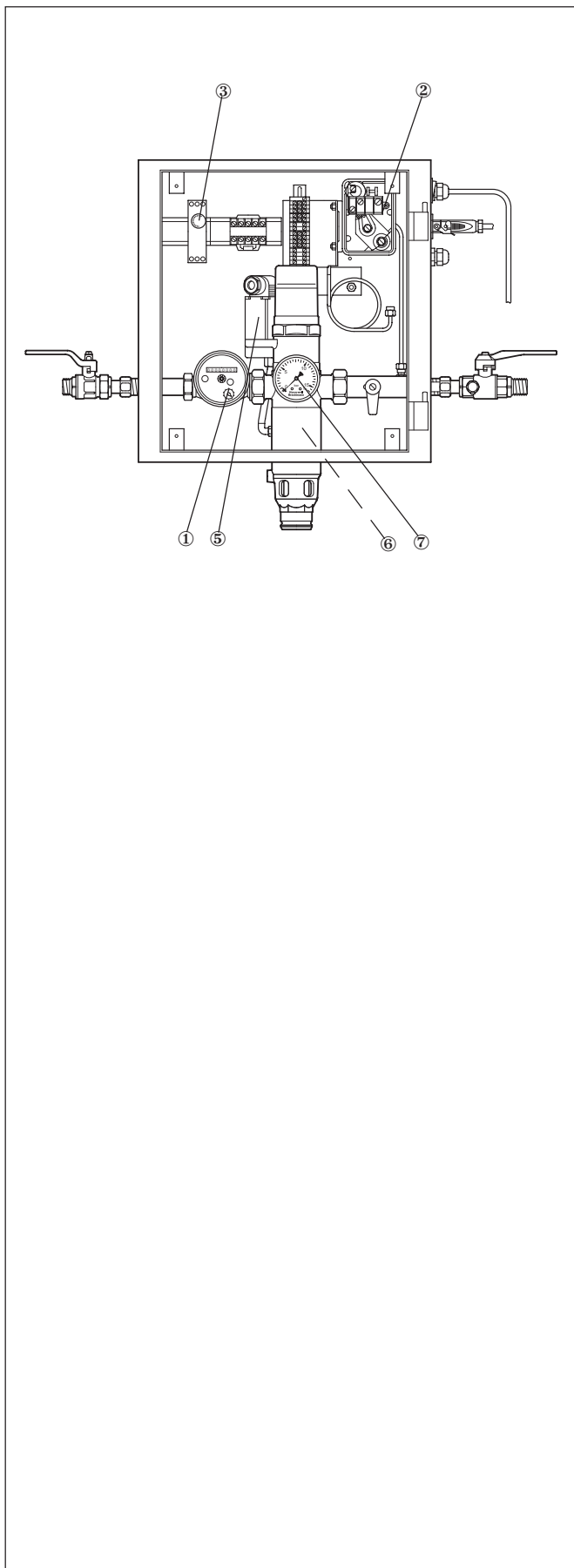
Automatic refilling units are used:

- If the system pressure has to be maintained constant
- For fast and automatic refilling of the installation
- If build up of steam in the system caused by loss of pressure must be prevented
- To limit the refilling time

Flow Diagrams

Filling curves





**Spare Parts - NA 228 S-A automatic refilling unit
(1997 and onwards)**

Description	Part No.
① Water meter	0903110
② Pressure switch	0903111
③ Time relay	0903112
④ Operating time meter*	0903113
⑤ Changeover valve	0901407
⑥ Discharge tundish*	0901340
⑦ Pressure gauge	M 07 K - A16
⑧ Pressure gauge for system pressure*	M 228 S - A8

* Not visible in illustration

Subject to change 03/99

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