

Drinking water supply systems

Operation

(DVGW Code of practice)

DIN
1988
Part 8

Technische Regeln für Trinkwasser-Installationen (TRWI);
Betrieb der Anlagen (Technische Regel des DVGW)

This standard, together
with DIN 1988 Parts 1 to 7,
December 1988 editions,
supersedes DIN 1988,
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This standard has been prepared in agreement with *DVGW Deutscher Verein des Gas- und Wasserfaches e. V.* (German Society of Gas and Water Engineers). It has been included in the body of *DVGW Codes of practice for water*.

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1 Field of application

This standard specifies requirements for and gives recommendations on the operation and maintenance of drinking water supply systems ('supply systems', for short). Compliance with these requirements will enable the operator to meet his contractual obligations as stipulated in the *Verordnung über Allgemeine Bedingungen für die Versorgung mit Wasser* (German Regulation on general conditions for water supply) and to fulfil his legal duties with respect to the safety of his premises and operation.

2 General

The *Verordnung über Allgemeine Bedingungen für die Versorgung mit Wasser* states that pipework systems and appliances in drinking water supply systems are to be operated so as not to adversely affect supply to other consumers, operation of the equipment of the water supplier and the quality of water.

To this end, the system(s) shall be checked at regular intervals for safety and quality and appropriate procedures adopted to maintain the performance of the system at the level specified in this standard.

The system can only be expected to operate reliably if the operating conditions on which design and installation of the system was based are complied with.

3 Commissioning of supply systems and instruction of operator

The installer shall instruct the operator and provide him with all other information which will enable the latter to exercise proper care in the operation of the system and fulfil the other duties incumbent on him. Particular attention is to be given to the function and servicing of the safety devices installed and to the location of stopvalves.

Continued on pages 2 to 11

Where provided, the manufacturer's documentation relating to the operation and maintenance of connected appliances shall be made available to the operator.

It is recommended that a report for the commissioning of the system and the instruction of its operator be prepared (see specimen form in appendix C).

Where water treatment equipment is installed, particular attention shall be drawn to the relevant water protection requirements.

4 Principles of operation

Systems and appliances shall be properly operated so as to ensure their reliable function and compliance with the requirements of article 15 of the *Verordnung über Allgemeine Bedingungen für die Versorgung mit Wasser*. Unless otherwise specified in the relevant operating instructions, the following shall apply.

- a) In-line stopvalves (e.g. downstream of water meters, in main branch pipes) and angle pattern valves shall always be in their fully open position and checked at regular intervals for reliable operation by actuating them (cf. appendix A).
- b) Only spare parts marked as being compatible shall be used for maintenance work on valves subject to noise control requirements (e.g. spray outlets, bonnets, shower heads).
- c) Valves subject to noise control requirements shall only be replaced by equivalent valves bearing the same marking (e.g. valve group I or II as in DIN 1988 Part 2).
- d) Draw-off fittings with spray outlet are not to be used to connect hoses.
- e) Since the connection of appliances to the supply system can jeopardize the water quality, their connection and any modifications to their mode of operation shall be undertaken by qualified personnel.
- f) The operator may connect washing machines and dishwashers to the draw-off points provided for these appliances, if these are adequately protected against backflow or bear the DIN-DVGW or DVGW registered test mark.
- g) Where appliances (e.g. washing machines and dishwashers) are connected to a draw-off fitting by means of a hose, this fitting shall be closed immediately after use of the appliance.
- h) Hoses (e.g. garden hoses) shall only be connected to draw-off points provided for this purpose.
- i) The air inlet openings of valves with a safety function (e.g. anti-vacuum valves, air gaps) shall not be closed.
- j) Direct connection of drinking water pipes to non-drinking water pipes or drainage systems is not permitted except for temporary operation (e.g. when equipment is connected for the cleaning and flushing of drainage appliances) provided that suitable backflow prevention devices are installed.
- k) The water contained in parts of the system that are only rarely used (e.g. pipes serving guest rooms, garages or cellar connections) shall be renewed at regular intervals, but at least once a month.
- l) It should be noted that despite good insulation water pipes can freeze if no water is drawn off at intervals.
- m) A temporary connection of hoses to hose union taps (e.g. when using garden hoses or filling heating systems) requires adequate backflow protection.
- n) Regular reading of the water meter will allow a check to be made on water consumption and leakage to be detected in good time.
- o) Water pipes shall not be loaded externally.

5 Interruptions to operation and disconnection

Supply systems which will not be operated within four weeks of their completion or are shut down for more than six months, shall be shut off at the service stopvalve, and drained.

Service pipes that are not commissioned immediately after completion or are to be disconnected temporarily, shall be shut off at the water main and those not used for a period of one year or more, disconnected from the water main.

Water supply systems located in areas where frost damage is likely shall be drained as and when required.

To avoid damage by water and water loss in the event of absence of more than three days, for example, it is recommended that the system in family residences be shut off downstream of the water meter and in the case of flats, at the stopvalve in the pipe entering the flat.

6 Resumption of supply

After interruptions to the operation, it is normally sufficient for the individual draw-off fittings to be fully opened for a short period (approximately five minutes) to allow stagnant water to run off.

In the case of water softeners, the regeneration process shall be restarted manually.

Systems which have been temporarily shut off and drained shall be thoroughly flushed before operation is resumed, by the following procedure.

- a) The stopvalves shall be opened, starting with the service stopvalve. To prevent pressure surges and damage to the system, the pipes shall then be completely vented by slowly opening the taps, starting with the one furthest from the service stopvalve. Following this, the stopvalves shall be fully opened and the pipes flushed.
- b) Once the system has been filled, flushed and the draw-off fittings closed, all accessible pipes, connections and appliances shall be inspected for signs of leakage. This may be done by observing the water meter.

If there is any indication of leakage, an installer shall be commissioned to check the system.

Systems that have been out of service for a prolonged period and disconnected from the service pipe shall only be reconnected and operation restarted by the water supplier or an installer.

7 Damage and faults

7.1 Changes in water quality

Where damage or malfunctions involve the risk of water pollution or produce changes in odour, taste or colour of the water, it shall be the operator's responsibility to take the necessary corrective action without delay. In urgent cases, where action is to be taken immediately to prevent serious damage, the system shall be shut off at the service stopvalve and an installer or the water supplier notified.

7.2 Insufficient water supply

Insufficient supply of water may be due to the following causes:

- a) stopvalves are not fully opened;
- b) blocked filters;
- c) blocked spray outlets (e.g. by dirt or scale);
- d) defective pressure reducing valves;
- e) too much water being drawn off at the same time;
- f) use of unsuitable valves;
- g) scaling of system components, in particular of those carrying hot water;
- h) a change in supply pressure;
- i) burst pipe(s).

7.3 Flow noise

Flow noise may be due to the following:

- a) fittings without sound insulation;
- b) stopvalves that are defective or not fully opened;
- c) water hammer, caused by rapid-closing or defective draw-off fittings, unsuitable valves, incorrect operation or installation.

8 Alterations and extensions

Major alterations to and extensions of the supply system, in particular extensions of the pipework servicing appliances, connection of systems and appliances which are potential causes of drinking water pollution and maintenance and replacement of safety devices and backflow prevention devices, may only be carried out by the water supplier or registered installer.

9 Modernization

Maintenance of a supply system does not generally require existing services that comply with the specifications applicable at the time of their installation to be modernized to reflect the latest state of the art.

Alterations to systems to comply with the requirements specified in DIN 1988 Parts 1 to 8 are only obligatory on the operator in so far as maintaining the system in the previous condition is likely to represent a health hazard. Existing systems not yet provided with a backflow prevention device immediately downstream of the water meter shall be equipped with such a device within three years of the publication of this standard (cf. DIN 1988 Part 4).

10 Accessibility of fittings and appliances

Fittings and appliances which require regular inspection and servicing (e.g. water meters, check valves, filters, anti-vacuum valves, air gaps) or are installed for inspection and servicing purposes (e.g. pressure gauges), and all controls (e.g. on stopvalves) shall be readily accessible for inspection, maintenance and operation, i.e. access to these components shall not be obstructed by stored goods, furniture, cladding, etc.

Care shall be taken to ensure free access to fire-fighting equipment

11 Maintenance

Besides routine maintenance work on pipes and connected draw-off fittings, stopvalves and appliances, in line with the manufacturer's instructions, particular care shall be taken to ensure reliable operation of safety devices and backflow prevention devices installed in the pipework and appliances.

11.1 Safety devices and backflow prevention devices

Safety devices are valves or components designed to protect the system or system components in hazardous situations, such as may occur as a result of an unacceptable increase in pressure or temperature (e.g. pressure-relief valves, temperature-relief valves).

Backflow prevention devices are valves installed to prevent backflow of contaminated water into the water main or connected appliances and systems (e.g. air gaps, check valves, anti-vacuum valves, pipe interrupters, free outlets).

To ensure reliable operation, safety devices and backflow prevention devices shall be checked at regular intervals and maintained in perfect condition by replacing, where necessary, parts subject to wear (e.g. seals, valve seats, springs, diaphragms), taking into account the requirements and recommendations given in appendix A.

11.2 Pipes

If inspection sections are installed in pipes, these shall be checked for corrosion or scale formation by a qualified person.

11.3 Water meters

Under the *Verordnung über die Gültigkeitsdauer der Eichung* (German Regulation relating to the validity of verification) verification of cold water meters shall be deemed to hold good for a period of eight years and that of heated water meters for five years.

Maintenance of the water meter operation as verified is generally the water supplier's responsibility, or the building owner's or operator's responsibility in the case of private water meters.

The validity of verification shall lapse if, during a given period,

- a) the water meter no longer complies with the permissible error limits as established by verification;
- b) an alteration of or extension to the system or any maintenance work is likely to influence the performance of the water meter or extends or restricts its field of use;
- c) the prescribed designation of the water meter has been modified or an impermissible designation, nominal size, new or modified scale design or other inscriptions have been applied;
- d) the stamp or a lead seal has become illegible, has been removed from the water meter or invalidated;
- e) an accessory, the installation of which is not approved, has been connected to the water meter;
- f) supply or commissioning of this type of water meter has been prohibited until further notice.

Water meters shall be recalibrated at the end of the period of validity or in the case of its premature elapse.

Prior to recalibration, water meters shall be cleaned and restored in accordance with the *Verordnung über die Pflichten der Besitzer von Meßgeräten* (German Regulation relating to the obligations of owners of measuring and metering devices).

11.4 Other installations and system components

These include equipment installed in or connected to the system to protect it against undue pressure increase, corrosion and scale formation, to ensure steady supply or for general safety purposes (fire protection, thermal insulation), such as filters, dosing apparatus, softeners, pressure reducing valves and boosters, fire-fighting installations, water heaters, control devices (e.g. for wet or dry fire-fighting supply pipes) as well as connections of appliances or system components which may cause a loss in drinking water quality (cf. DIN 1988 Part 4). All such equipment also requires regular inspection and maintenance, the procedures adopted being based on the recommendations given in appendices A to C, unless otherwise specified by the manufacturer.

11.5 Maintenance contract

The operator of a supply system is recommended to conclude a maintenance contract with an installer.

12 Inspection and maintenance

Appendix A describes the required inspection, maintenance and repair work to be carried out for the common types of valves, appliances and system components and gives recommendations for the frequency of such work, which should be observed by the operator, together with the manufacturer's instructions for operation and maintenance.

Appendix A¹⁾

Inspection and maintenance procedures

A.1 Free outlets

Procedure: Check of spill-over level (distance H as specified in subclause 4.21 of DIN 1988 Part 4), with inlet fully open; inspection of air inlet and outlet apertures, where required.

Responsible: Operator or installer.

Frequency: Once a year.

A.2 Pipe interrupters

Procedure: Inspection to make sure that no water escapes through the air inlet apertures when water flows through the valve.

Responsible: Operator or installer.

Frequency: Once a year.

A.3 Types 2 and 3 air gaps

Procedure:

- Check with an upstream stopvalve closed, whether the air gap disconnects.
- Inspection for tightness with the air gap in normal-flow position.

Responsible: Operator or installer.

Frequency: Twice a year.

A.4 Type 1 air gaps

Procedure:

- Check with an upstream stopvalve closed, whether the air gap disconnects, the pressure in the section thus closed being reduced by opening a draw-off fitting.
- Check for tightness with the air gap in normal-flow position.
- Check whether the air gap disconnects at the pressure indicated on the label (set pressure), with a downstream draw-off fitting opened and the upstream pressure being reduced by slowly closing an upstream stopvalve. The set pressure shall be checked for compliance with the specification using a pressure gauge mounted between stopvalve and air gap.

Responsible: Operator or installer.

Frequency: Once a year.

A.5 Check valves

Procedure: Check for tightness, with the pipe upstream of the valve shut off. By operating a test facility mounted on the inlet side of the valve it shall be established whether water escapes. If this is not the case, the valve shall be deemed tight.

Responsible: Operator or installer.

Frequency: Once a year.

A.6 Anti-vacuum valves

In-line anti-vacuum valves (type C)

Procedure: A hose approximately 1 m in length shall be connected to the downstream outlet

and the upstream stopvalve opened to allow a small amount of water to escape from the hose. The hose end shall then be raised above the anti-vacuum valve, the stopvalve closed and the hose lowered again. The water in the hose shall flow out and there shall be an intake of air through the air inlet apertures.

Anti-vacuum valves with or without dripping water conduit (types D and E)

Procedure:

- The valve immediately upstream of the anti-vacuum valve to be checked shall be closed and a downstream outlet valve without check valve opened (with spray outlet removed, if any). As a result, air shall be taken in through the air inlet apertures, the water escaping rapidly from the draw-off point.
- Make sure that no water escapes through the air inlet openings when water flows through the valve.
- Alternatively, correct functioning of the valve may be checked by immersing the outlet end of the overflow in a glass filled with water. When testing as described under item a), the water shall be taken in.

Responsible: Operator or installer.

Frequency: Every five years.

A.7 Pressure-relief valves

Procedure:

- Functional check by lifting the excess pressure device of the valve from time to time whilst the system is in operation. A check shall be made whether the valve closes automatically when the excess pressure device is released and the water is completely discharged through the discharge funnel or the relief pipe.
- Pressure-relief valves installed upstream of water heaters shall be inspected for response with the water heater in operation. Correct functioning is indicated by water escaping from the relief pipe.

Responsible: Operator or installer.

Frequency: Twice a year

c) If no water escapes when the water heater is heated or if the valve leaks permanently, attempts shall be made to release the valve by lifting the excess pressure device several times or flush out any foreign matter on the seal. If this is not successful, the repair shall be carried out by an installer.

In the case of damage to the valve seat or sealing disk, the valve shall be replaced.

Responsible: Installer.

Frequency: Once a year.

¹⁾ The note in the margin on page 1 prohibiting reproduction of any part of the standard does not apply to this appendix.

A.8 Pressure reducing valves

Procedure: a) Check the outlet pressure setting on the pressure gauge at zero flow and peak flow.

Responsible: Operator or installer.

Frequency: Once a year.

b) Pressure reducing valves are control devices which have a low adjustment load and are thus extremely sensitive to soiling.

The strainer shall be cleaned (and replaced if necessary) and the internals removed, inspected for perfect condition, and replaced if necessary.

Responsible: Installer.

Frequency: Every one to three years, depending on local operating conditions.

A.9 Pressure boosters

Procedure: Inspection, servicing and repair shall be in accordance with the manufacturer's instructions.

Responsible: Installer.

Frequency: Once a year, unless otherwise specified by the manufacturer.

A.10 Filters**A.10.1 Backwashing filters**

Procedure: Backwashing in accordance with the manufacturer's instructions in the case of a reduction in water flow rate as a consequence of an increased pressure loss.

Responsible: Backwashing shall be carried out by the operator, other work by an installer or by the filter manufacturer.

Frequency: To suit operating conditions, but at least every two months.

A.10.2 Non-backwashing filters

Procedure: a) Inspection of filter fabric for contamination in the case of filters with transparent filter carriage and check of flow resistance in the case of filters with non-transparent filter carriage.

Responsible: Operator or installer.

Frequency: To suit operating conditions, but at least every two months.

b) Replacement of filter element in accordance with the manufacturer's instructions. The first water passing through the filter on resumption of supply shall be drained off by briefly opening an adjacent draw-off fitting.

Responsible: Operator, installer or manufacturer.

Frequency: To suit operating conditions, however, for reasons of hygiene, at intervals of less than six months.

A.11 Dosing apparatus

Procedure: a) Inspection, checking quantity of dosing agent and replacement of container when empty, in accordance with the manufacturer's instructions relating to the useful life and storage of dosing agents.

Responsible: Operator or installer.

Frequency: To suit operating conditions, but at intervals of less than six months.

b) Maintenance work shall be carried out in accordance with the manufacturer's instructions.

Responsible: Installer or manufacturer.

Frequency: Once a year, unless otherwise specified by the manufacturer.

A.12 Water softeners

Procedure: a) Regular check of regenerating salt consumption as a function of the volume of water consumed, and topping up where necessary, using only salt of DIN 19 604 quality. The package containing the salt shall be thoroughly cleaned before use to avoid any contamination of the brine container. The regenerating salt shall then be poured directly into the container, taking care to ensure that this is not overfilled and is carefully closed again. Use of salt from open packages is deprecated. Regenerating salt shall only be kept in clean, dry rooms.

Synchronizing of time with actual time where necessary, check of hardness of blended water and refilling of disinfectant.

Responsible: Operator or installer.

Frequency: To suit operating conditions, but at least every two months.

b) Maintenance work shall be carried out in accordance with the manufacturer's instructions and include at least the following:

- Check of initiation of regeneration process, cleaning of injector and sieve, inspection of control valve for tightness, replacement of seal if necessary, functional check of control valve actuator.

- Check of brine concentration control and adjustment to changed water consumption levels, if necessary.

- Check of quantity and condition of regenerating salt and brine level.

- Check of seals and hose connections, replacement where necessary.

- Check of hardness of treated, untreated and blended water and, if necessary, re-adjustment of blended water hardness. Any alterations shall be recorded in the operating log.

- Reading of water meters and recording of readings in the operation log.

- Check of equipment used for the disinfection of fittings and appliances and refilling of disinfectants, if necessary.

- Functional check of any backflow prevention devices.
 - Handover of installation and operating log to operator.
- Any maintenance and repair work shall be recorded in the operating log.

Responsible: Installer or manufacturer.
 Frequency: Once a year, and twice a year for communal appliances.

A.13 Water heaters

Procedure: a) Check of set temperature and comparison with the actual temperature of heated water.
 Functional check of pressure-relief valve (cf. A.7).

Responsibility and frequency: Inspection to be coordinated with the other checks.

b) Check of temperature control device for systems as specified in DIN 4751 Part 2.

Responsible: Installer or manufacturer.

Frequency: Once a year.

c) For heating media of classes 1 and 2 and for a working pressure exceeding 3 bar, and for heating media of class 3, the heat exchanger shall be checked for tightness using one of the following methods.

- Application of pressure on drinking water or heating medium side equal to the allowable working pressure of the system, with simultaneous pressure release to atmospheric pressure on the other side.
- Shutting off the flow and return pipes of the heating medium and simultaneous drawing off of heated water, and a pressure check made with a pressure gauge. Cooling of the heating surface must cause the pressure in the pipework of the heating medium to drop to zero. Otherwise, check performing a pressure test (cf. above).

A.13.1 Type D water heaters

Procedure: a) Functional check of safety system in accordance with the manufacturer's instructions.
 b) Refilling of transfer medium if necessary, using only substances specified for this purpose by the manufacturer.

Responsible: Qualified personnel.

Frequency: At least every two years, and at least once a year for heating media of classes 4 and 5.

c) Maintenance in accordance with manufacturer's instructions and to suit operating conditions.

Responsible: Installer or manufacturer.

Frequency: In accordance with manufacturer's instructions and to suit operating conditions.

A.13.2 Cleaning and descaling

To ensure proper function of the system, all deposits (anode sludge, scale) shall be removed. Any cleaning or descaling agents used for this purpose shall be carefully selected, especially with regard to their composition, so as not to present a health hazard when used in the manner intended or to be anticipated²⁾.

This requirement shall be deemed to be satisfied if the manufacturer of the cleaning or descaling agent declares his product suitable as defined in the *Lebensmittel- und Bedarfsgegenständegesetz* (German Food Act) and specifies the cleaning and flushing method to be used.

It shall be the heater manufacturer's responsibility to specify suitable cleaning and descaling agents as well as adequate cleaning and flushing techniques to be adopted.

Responsible: Qualified personnel.

Frequency: First maintenance two years after commissioning, then as and when required, depending on water quality and operating conditions.

A.13.3 Corrosion protection

Lining materials used for the corrosion protection of surfaces in contact with drinking water shall be carefully selected, especially with regard to their composition, so as not to present a hazard when used in the manner intended or to be anticipated²⁾.

No substances are to be released from the lining material to the drinking water except those which are irreplaceable for technical reasons and which present no health hazard, and which do not unacceptably impair the quality of water in terms of smell and taste.

Responsible: Installer or manufacturer.

Frequency: As and when required.

A.14 Fire-fighting installations

Procedure: a) Acceptance inspection and routine inspections shall be undertaken in accordance with the instructions issued by the competent authorities or insurance companies.

The date of testing, name of inspector, all tests carried out and defects revealed shall be recorded in the inspection log (cf. clause 4 of DIN 1988 Part 6, December 1988 edition).

Defects shall be remedied without delay and the date of repair and the contractor's name stated in the inspection log.

On starting a new inspection log, the previous log shall be kept for at least one year.

b) Once a month inspections are to be made that include at least the following³⁾:

- check of filling valve to make sure that it is closed and tight;
- check of drain valves for cleanliness and proper functioning;

²⁾ See *Lebensmittel- und Bedarfsgegenständegesetz*.

³⁾ Where inspections prescribed by the authorities are to be undertaken by accredited experts, such inspections may comprise these checks.

- checking seals or integrity of devices preventing unauthorized operation;
- check of control voltage;
- functional check of pump controlling the pressure of fluid power system;
- check for adequate control pressure and tightness of control pressure system;
- check of batteries (charge and filling level);
- functional check of acoustic and optical alarm devices;
- check of water pressure;
- functional check of pumps in boosters, where fitted, including inspection of direction of rotation.

Responsible: Operator or installer.

- c) Twice a year the following checks are to be made:
- functional check of actuator for filling valve and drain valve;
 - check of filling valve to make sure that it opens automatically when

control fails and of operation of acoustic and optical alarm devices;

- check of all draw-off fittings (wall hydrants) for damage and ease of operation of movable parts, checking in the dry condition being permitted;
- check of nozzles of the sprinkler system to make sure that they are open and unblocked, checking in the dry condition being permitted;
- check of installation for corrosion;
- check and cleaning of sieves fitted at the filling and drainage points;
- functional check of bypass valve with actuator and reinstallation of device preventing unauthorized operation;
- check of water supply to filling and drainage points.

Responsible: Operator or installer.

Frequency: Twice a year.

A.15 Pipes

Procedure: Removal of inspection sections and check of their internal surfaces.

Responsible: Installer.

Frequency: First inspection one year after commissioning, then in cases of a change in water quality, depending on local conditions.

Appendix B¹⁾**Inspection and maintenance schedule**

Item No.	Fitting or appliance	Check or inspection intervals			Intervals for maintenance work		
		Month	Year	Responsible	Month	Year	Responsible
1	Free outlets		1	○ x			
2	Pipe interrupters		1	○ x			
3	Types 2 and 3 air gaps	6		○ x			
4	Type 1 air gaps		1	○ x			
5	Check valves		1	○ x			
6	Anti-vacuum valves		5	○ x			
7	Pressure-relief valves	6		○ x		1	x
8	Pressure reducing valves		1	○ x		1 to 3	x
9	Pressure boosters		1	x		1	x
10	Backwashing filters	2		○ x	2		○ x
	Non-backwashing filters	2		○ x	6		○ x
11	Dosing apparatus	6		○ x		1	x
12	Water softeners	2		○ x	6 ⁴⁾	1	x
13	Water heaters		1	x			x
14	Fire-fighting installations	1		○ x			
		6		○ x			
15	Pipes		1	x			
16	Cold water meters	1		○		8	x
17	Heated water meters	1		○		5	x

⁴⁾ For communal systems.
 Responsibility: ○: Operator.
 x: Installer, manufacturer or public water supplier.

For ¹⁾, see page 4.

Appendix C¹⁾**Specimen report for the commissioning of a drinking water supply system and instruction of its operator**

Construction project:

Client represented by:

Installer represented by:

The following components of the system have been commissioned in the presence of the persons named above.

Item No.	Fitting or appliance ⁵⁾	Remarks
1	Service connection (point of entry)	
2	Service stopvalve	
3	Check valve	
4	Air gap	
5	Filter	
6	Pressure reducing valve	
7	Distributing pipes	
8	Stopvalves in risers	
9	Stopvalves in main branch pipes	
10	Riser anti-vacuum valves with dripping water conduit	
11	Multiple unit backflow prevention devices	
12	Draw-off points with backflow prevention device	
13	Water heaters	
14	Pressure-relief valves/relief pipes	
15	Circulating pipe and pump	
16	Dosing apparatus	
17	Water softener	
18	Pressure booster	
19	Fire-fighting installations	
20	Swimming pool inlet	
21	Draw-off fittings	
22	Appliances	
23	Storage cistern	
24	Other system components	
⁵⁾ Delete as applicable; add items not listed.		

For ¹⁾, see page 4.

Comments of client:

Comments of installer:

The operation of the system has been explained, the required documentation and available operating and maintenance instructions as shown in the attached list have been handed over.

.....
(Place)

.....
(Date)

.....
(Client, or representative)

.....
(Installer, or representative)

Standards and other documents referred to

- DIN 1988 Part 1 Drinking water supply systems; general (DVGW Code of practice)
- DIN 1988 Part 2 Drinking water supply systems; materials, components, appliances, design and installation (DVGW Code of practice)
- Supplement 1 to
DIN 1988 Part 2 Drinking water supply systems; summary of standards and other technical rules relating to materials, components and appliances (DVGW Code of practice)
- DIN 1988 Part 3 Drinking water supply systems; pipe sizing (DVGW Code of practice)
- Supplement 1 to
DIN 1988 Part 3 Drinking water supply systems; examples of calculation (DVGW Code of practice)
- DIN 1988 Part 4 Drinking water supply systems; protection of drinking water and drinking water quality control (DVGW Code of practice)
- DIN 1988 Part 5 Drinking water supply systems; pressure boosting and reduction (DVGW Code of practice)
- DIN 1988 Part 6 Drinking water supply systems; fire-fighting and fire protection installations (DVGW Code of practice)
- DIN 1988 Part 7 Drinking water supply systems; measures to prevent corrosion and scale formation (DVGW Code of practice)
- DIN 4751 Part 2 Safety equipment for heating installations with flow temperatures up to 110 °C; vented and unvented hot water systems with an output up to 300 000 kcal/h and thermostatic control
- DIN 19604 Sodium chloride for use in water treatment; technical delivery conditions
- Verordnung über Allgemeine Bedingungen für die Versorgung mit Wasser*)*
Lebensmittel- und Bedarfsgegenstandegesetz)*
Verordnung über die Gültigkeitsdauer der Eichung)*
Verordnung über die Pflichten der Besitzer von Meßgeräten)*

Previous editions

DIN 1988: 08.30, 09.40, 03.55, 01.62.

Amendments

In comparison with the January 1962 edition of DIN 1988, the content of the standard has been expanded, completely revised and split up into DIN 1988 Parts 1 to 8.

Explanatory notes

This standard has been prepared jointly by Technical Committee IV 7 of the *Normenausschuß Wasserwesen* (Water Practice Standards Committee) and the *DVGW Deutscher Verein des Gas- und Wasserfaches e.V.* and the *Zentralverband Sanitär Heizung Klima* (German Association of Sanitary, Heating and Air-conditioning Equipment Suppliers).

DIN 1988 now covers comprehensively the field of water supply systems by including the relevant DVGW Codes of practice in its specifications.

International Patent Classification

E 03 B 1/00
F 17 D 3/00
F 17 D 5/00

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