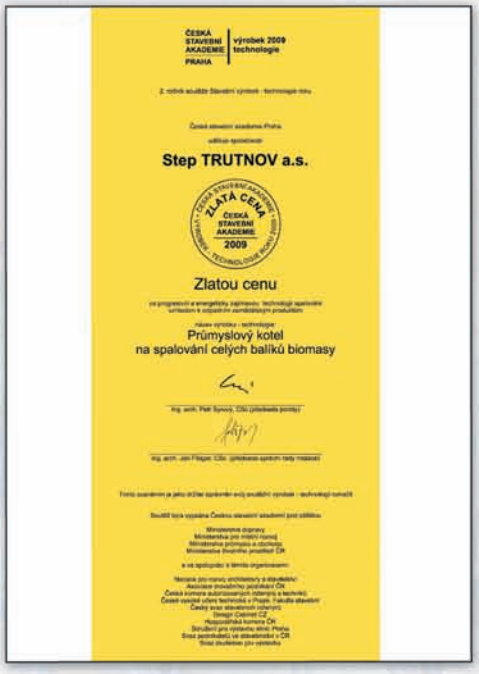
STEP TRUTNOV a.s.

CATALOGUE OF PRODUCTS



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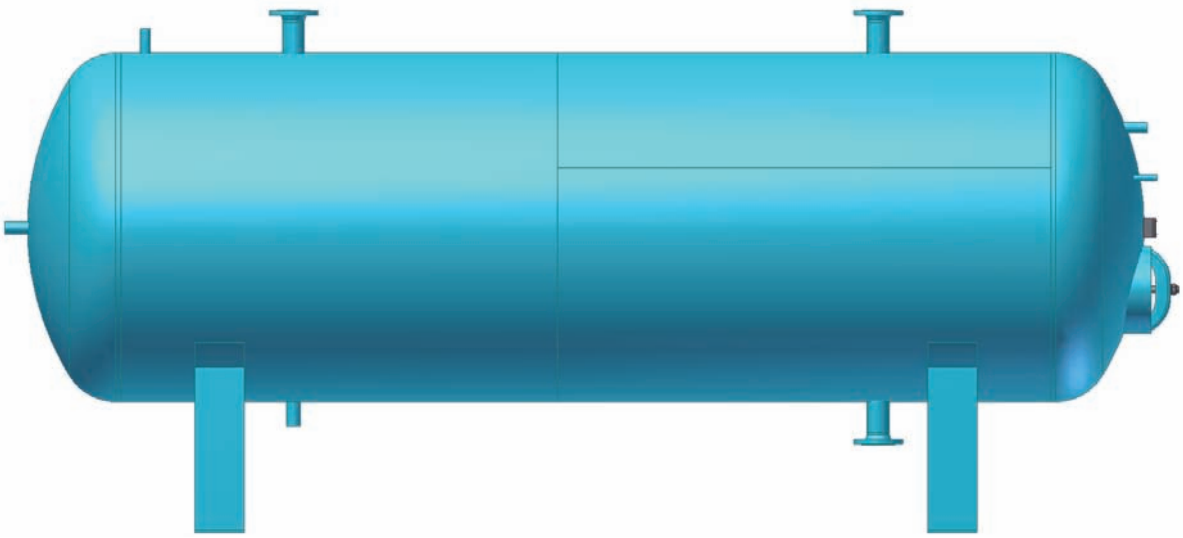
STATIONARY PRESSURE VESSELS



We make **stationary pressure vessels** for any type of working medium as well as any pressure or temperature as required by the customer. In addition to the standard products as listed in the catalogue, we can make special pressure vessels of any type in terms of volume, pressure and temperature of the working medium. In addition, producing a multi-room stationary pressure vessel is possible if requested so.

In addition to standard **vertical pressure vessels**, special versions can be produced for any pressure of up to 4.5 MPa, any temperature up to 400°C and any volume from 0.25 to 50.0 m³. For pressures exceeding 1.0 MPa, temperatures above 200°C or volumes above 10.0 m³, this type of pressure vessels can supplied only as a special version based on a specific calculation.

For diameters up to 1,200 mm, pressure vessels are placed on three stands whilst those with diameters above 1,200 mm rest on four stands. Please, be sure to indicate a catalogue number as well as type, volume, pressure and temperature of the working medium when ordering the product.

In addition to standard **horizontal pressure vessels**, special versions can be produced, designed as air tanks for any pressure of up to 4.5 MPa, any temperature up to 400 °C and any volume from 0.25 to 50.0 m^3. For pressures above 1.0 MPa, temperatures above 200°C and volumes above 10.0 m^3, this type of pressure vessels can supplied only as a special version based on a specific calculation.

The pressure vessel can be placed on a bolster if requested so, this following the “Bolsters for Horizontal Vessels” table.

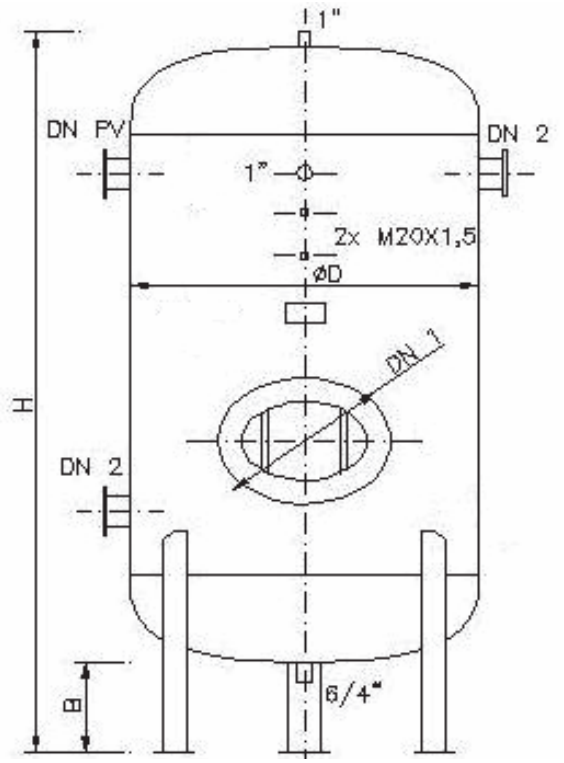
Please, be sure to indicate a catalogue number as well as type, volume, pressure and temperature of the working medium when ordering the product.

We can supply fittings according to legal requirements upon customer‘s request.
The vessels have environmentally friendly primer coating (water dilutable).
For technical and design data of standard pressure vessels, please refer to the respective catalogue table.

STANDARD PRESSURE VESSELS (TN)

Vertical air tank	TN - VS
Horizontal air tank	TN - VL
Horizontal air chamber	TN - LV
Vertical air chamber	TN - SV
Expander (releaser)	TN - SEU
Expansion vessel	TN - SE
Vertical storage tanks	AN - S
Horizontal storage tanks	AN - L
Large storage tanks	
Storage tanks VAN	VAN
Storage tanks VAN-Cu	VAN-Cu
Storage tanks with a floating boiler	AN-B

VERTICAL AIR TANK (TN - VS)



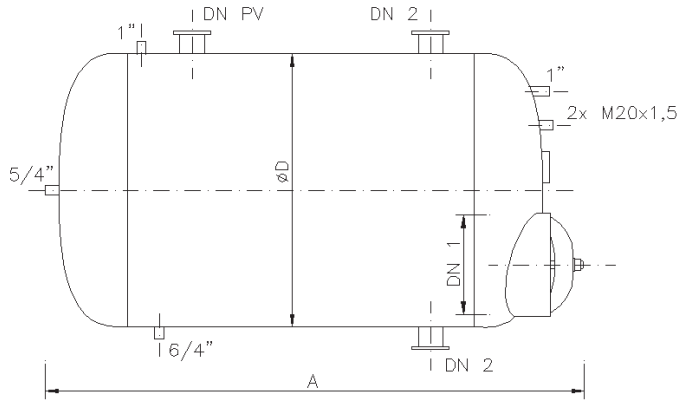
Catalogue No.	Volume l	D mm	B mm	H mm	Oval mm	Weight (kg)		
						0.6 MPa	1.0 MPa	1.6 MPa
0001	250	500	200	1630	-	80	93	107
0002	400	600	200	1720	-	140	145	180
0003	540	650	200	1960	-	160	175	220
0004	630	700	200	2120	-	180	200	270
0005	800	800	200	2050	-	220	250	315
0006	1000	800	300	2560	-	260	300	360
0007	1400	1000	300	2300	420x320	370	455	575
0008	1600	1000	300	2700	420x320	420	530	680
0009	2000	1000	300	2920	420x320	515	630	790
0010	2200	1200	300	2460	420x320	560	680	840
0011	2500	1200	300	2960	420x320	630	750	920
0012	4000	1400	300	3020	420x320	880	1030	1300
0013	5000	1400	300	3750	420x320	1080	1290	1620
0014	6300	1600	300	3650	420x320	1280	1540	1940
0015	8000	1800	300	3650	420x320	1620	1940	2540
0016	10000	2000	300	3950	420x320	1950	2330	3130

Special versions can be supplied in addition to the standard products listed in the catalogue, the range being 5 to 50,000 litres.

Referred to as **TN-VS**, vertical air tanks are used for storing compressed air. Each tank has a neck for input and output of the working medium as well as welded-on pieces to install a thermometer, pressure gauge, control sensor, desludging outlet and venting outlet. Please specify in your order the size and location of each inlet and outlet (DN 2) according to the specifications. The vessel casing has primer coating; inner finish by either galvanising or plastic coating is possible upon request.
Air tanks for working pressures above 1.0 MPa and volumes above 10.0 m^3 can be supplied as special versions based on a specific calculation.

NOTE: Step Trutnov is a manufacturer of standard air tanks designed for assembly of all types of portable compressors.

HORIZONTAL AIR TANK (TN - VL)
HORIZONTAL AIR CHAMBER (TN - LV)



Volume 30 to 200 l

Catalogue No.	Volume l	D mm	A mm	DN 1 mm	Weight (kg)		
					0.6 MPa	1.0 MPa	1.6 MPa
01M1	30	300	480	-	30	35	50
01M2	50	300	740	-	40	45	60
01M3	65	300	990	-	50	55	70
01M4	75	300	1090	-	55	60	75
01M5	90	300	1340	-	65	70	85
01M6	100	400	940	-	32	42	50
01M7	150	400	1340	-	44	57	69
01M8	200	500	1190	-	58	69	80

Volume 250 to 10 000 l

Catalogue No.	Volume l	D mm	A mm	DN 1 mm	Weight (kg)		
					0.6 MPa	1.0 MPa	1.6 MPa
0101	250	500	1440	-	67	81	95
0102	400	600	1670	-	130	135	170
0103	540	650	1910	-	140	155	200
0104	630	700	2070	-	160	180	250
0105	800	800	2000	-	190	220	285
0106	1000	800	2580	-	230	270	330
0107	1400	1000	2150	420x320	320	405	525
0108	1600	1000	2300	420x320	370	480	630
0109	2000	1000	2770	420x320	465	580	740
0110	2200	1200	2310	420x320	510	630	790
0111	2500	1200	2810	420x320	580	700	870
0112	4000	1400	2870	420x320	830	980	1250
0113	5000	1400	3600	420x320	1030	1240	1570
0114	6300	1600	3500	420x320	1230	1490	1890
0115	8000	1800	3500	420x320	1570	1890	2490
0116	10000	2000	3800	420x320	1900	2280	3080

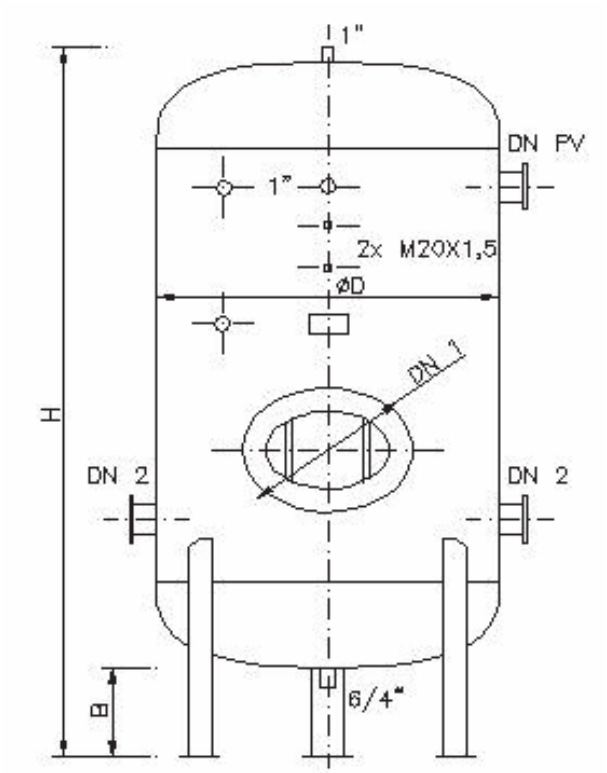
Special versions can be supplied in addition to the standard products listed in the catalogue.

Referred to as **TN-VL**, air chambers are used as equalizer tanks in water supply systems.
The air tanks are referred to as **TN-LV** and used for storing compressed air.

Each pressure vessel has a neck for input and output of the working medium as well as welded-on pieces for a pressure gauge, pressure sensor, desludging outlet and venting outlet, safety valve and level gauge.
The vessel casing is coated with an environmentally friendly primer; an inner finish by either galvanising or plastic coating is possible upon request.
When ordering the product, please, be sure to indicate a catalogue number of the air chamber, as well as volume, pressure and temperature of the working medium.

NOTE: Step Trutnov is a manufacturer of standard air tanks designed for assembly of all types of portable compressors.

VERTICAL AIR CHAMBER (TN - SV)

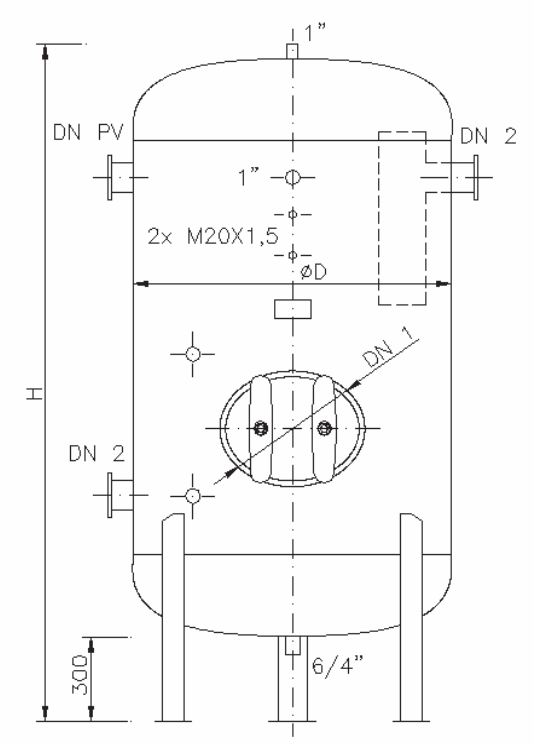


Catalogue No.	Volume l	D mm	B mm	H mm	DN 1 mm	Weight (kg)		
						0.6 MPa	1.0 MPa	1.6 MPa
0201	250	500	200	1630	-	80	93	107
0202	400	600	200	1720	-	140	145	180
0203	540	650	200	1960	-	160	175	220
0204	630	700	200	2120	-	180	200	270
0205	800	800	200	2050	-	220	250	315
0206	1000	800	300	2560	-	260	300	360
0207	1400	1000	300	2300	420x320	370	455	575
0208	1600	1000	300	2700	420x320	420	530	680
0209	2000	1000	300	2920	420x320	515	630	790
0210	2200	1200	300	2460	420x320	560	680	840
0211	2500	1200	300	2960	420x320	630	750	920
0212	4000	1400	300	3020	420x320	880	1030	1300
0213	5000	1400	300	3750	420x320	1080	1290	1620
0214	6300	1600	300	3650	420x320	1280	1540	1940
0215	8000	1800	300	3650	420x320	1620	1940	2540
0216	10000	2000	300	3950	420x320	1950	2330	3130

Special versions can be supplied in addition to the standard products listed in the catalogue, these ranging from 5 to 50,000 litres.

Referred to as **TN-SV**, the vertical air chambers are used as equalizer chambers in water supply systems.
Each chamber has a neck for input and output of the working medium as well as welded-on pieces for a thermometer, pressure gauge, control sensor, desludging outlet and venting outlet, safety valve and level gauge.
The vessel casing is coated with primer; an inner finish by either galvanising or plastic coating is possible upon request.
When ordering the product, please, be sure to indicate a catalogue number of the air chamber, as well as volume, pressure and temperature of the working medium.

EXPANDER (RELEASER) (TN - SEU)

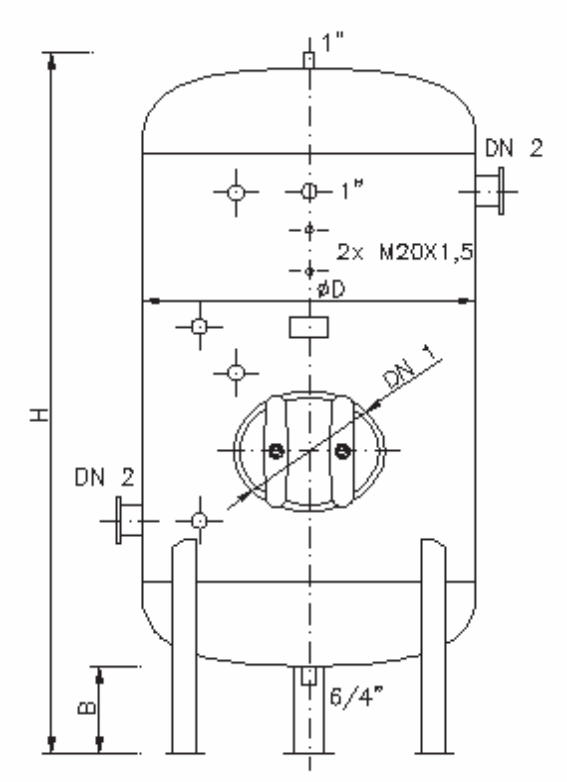


Catalogue No.	Volume l	D mm	H mm	DN 1 mm	Weight (kg)		
					0.6 MPa	1.0 MPa	1.6 MPa
0301	1000	800	2560	-	290	330	390
0302	1400	1000	2300	420x320	420	505	625
0303	1600	1000	2700	420x320	470	580	730
0304	2000	1000	2920	420x320	565	680	840
0305	2200	1200	2460	420x320	610	730	890
0306	2500	1200	2960	420x320	680	800	970
0307	4000	1400	3020	420x320	930	1080	1350
0308	5000	1400	3750	420x320	1130	1340	1670
0309	6300	1600	3650	420x320	1330	1590	1990
0310	8000	1800	3650	420x320	1670	1990	2590
0311	10000	2000	3950	420x320	2000	2380	3180

Special versions can be supplied in addition to the standard products listed in the catalogue.

Referred to as **TN-SEU**, the expanders (releasers) are used as liquid/vapour pressure-releasing devices.
Each device has a neck for input and output of the working medium and welded-on pieces for expander‘s mandatory fittings.
When ordering the product, please, be sure to indicate a catalogue number, as well as volume, pressure and temperature of the working medium or finish required (e.g. primer, galvanising, etc.) as necessary.

EXPANSION VESSEL (TN - SE)

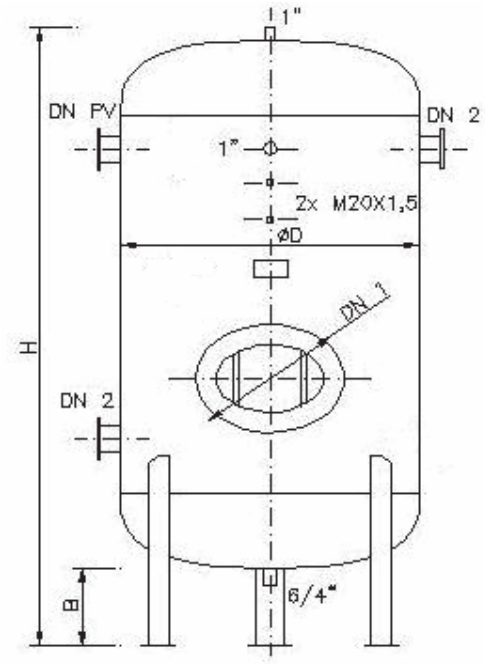


Catalogue No.	Volume l	D mm	B mm	H mm	DN 1 mm	Weight (kg)		
						0.6 MPa	1.0 MPa	1.6 MPa
0401	800	800	200	2050	-	220	250	315
0402	1000	800	300	2560	-	260	300	360
0403	1400	1000	300	2300	420x320	370	455	575
0404	1600	1000	300	2700	420x320	420	530	680
0405	2000	1000	300	2920	420x320	515	630	790
0406	2200	1200	300	2460	420x320	560	680	840
0407	2500	1200	300	2960	420x320	630	750	920
0408	4000	1400	300	3020	420x320	880	1030	1300
0409	5000	1400	300	3750	420x320	1080	1290	1620
0410	6300	1600	300	3650	420x320	1280	1540	1940
0411	8000	1800	300	3650	420x320	1620	1940	2540
0412	10000	2000	300	3950	420x320	1950	2330	3130

Special versions can be supplied in addition to the standard products listed in the catalogue.

Referred to as **TN-SE**, the expansion vessels are used as equalizers in warm-water or hot-water heating systems. They contain compressed air above the water level.
Each vessel has a neck for input and output of the working medium as well as welded-on pieces for a pressure gauge, pressure sensor, desludging outlet and venting outlet, safety valve and level gauge. When ordering the product, please, be sure to indicate a catalogue number as well as volume, pressure and temperature of the working medium or finish required (e.g. primer, galvanising, etc.) as necessary.

VERTICAL STORAGE RESERVOIRS (AN - S)



Catalogue No.	Volume l	D mm	B mm	H mm	Oval mm	Weight (kg)		
						0.6 MPa	1.0 MPa	1.6 MPa
AN01	250	500	200	1630	-	80	93	107
AN02	400	600	200	1720	-	140	145	180
AN03	540	650	200	1960	-	160	175	220
AN04	630	700	200	2120	-	180	200	270
AN05	800	800	200	2050	-	220	250	315
AN06	1000	800	300	2560	-	260	300	360
AN07	1400	1000	300	2300	420x320	370	455	575
AN08	1600	1000	300	2700	420x320	420	530	680
AN09	2000	1000	300	2920	420x320	515	630	790
AN10	2200	1200	300	2460	420x320	560	680	840
AN11	2500	1200	300	2960	420x320	630	750	920
AN12	4000	1400	300	3020	420x320	880	1030	1300
AN13	5000	1400	300	3750	420x320	1080	1290	1620
AN14	6300	1600	300	3650	420x320	1280	1540	1940
AN15	8000	1800	300	3650	420x320	1620	1940	2540
AN16	10000	2000	300	3950	420x320	1950	2330	3130

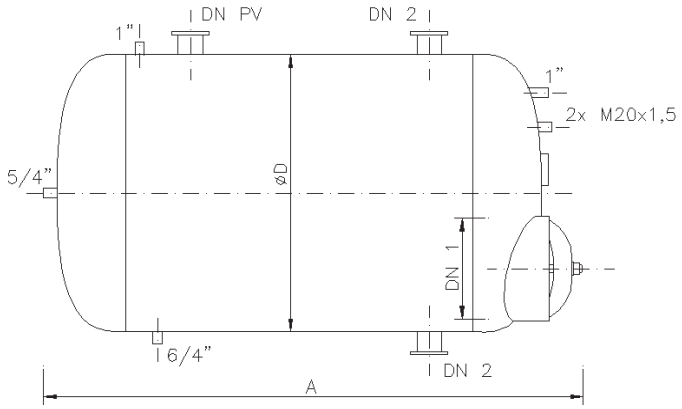
Special versions can be supplied in addition to the standard products listed in the catalogue.

The vertical storage reservoirs **(AN - S)** are used for storing heating water in heating systems.

Each device has a neck for input and output of the working medium as well as welded-on pieces for a thermometer, pressure gauge, control sensor, desludging outlet and venting outlet. Any order must clearly indicate the size and location of each inlet and outlet (DN 2) based on customer's specifications. The vessel casing is coated with primer; an inner finish by either galvanising or plastic coating is possible upon request.

What purpose the storage reservoir serves in a heating system:
- Prompt water warming in the lesser circuit of the system and keeping optimum working temperature in the boiler;
- Transmitting heat into the heating system;
- Accumulating waste heat energy produced in a VAN reservoir's water filler;
- Increasing heat energy by up to 45 %;
- Saving solid fuel by up to 35 %;
- Easy-to-add device to complement the existing solid fuel combustion system.

HORIZONTAL STORAGE RESERVOIRS (AN - L)



Volume 30 to 200 l

Catalogue No.	Volume l	D mm	A mm	DN 1 mm	Weight (kg)		
					0.6 MPa	1.0 MPa	1.6 MPa
ANM1	30	300	480	-	30	35	50
ANM2	50	300	740	-	40	45	60
ANM3	65	300	990	-	50	55	70
ANM4	75	300	1090	-	55	60	75
ANM5	90	300	1340	-	65	70	85
ANM6	100	400	940	-	32	42	50
ANM7	150	400	1340	-	44	57	69
ANM8	200	500	1190	-	58	69	80

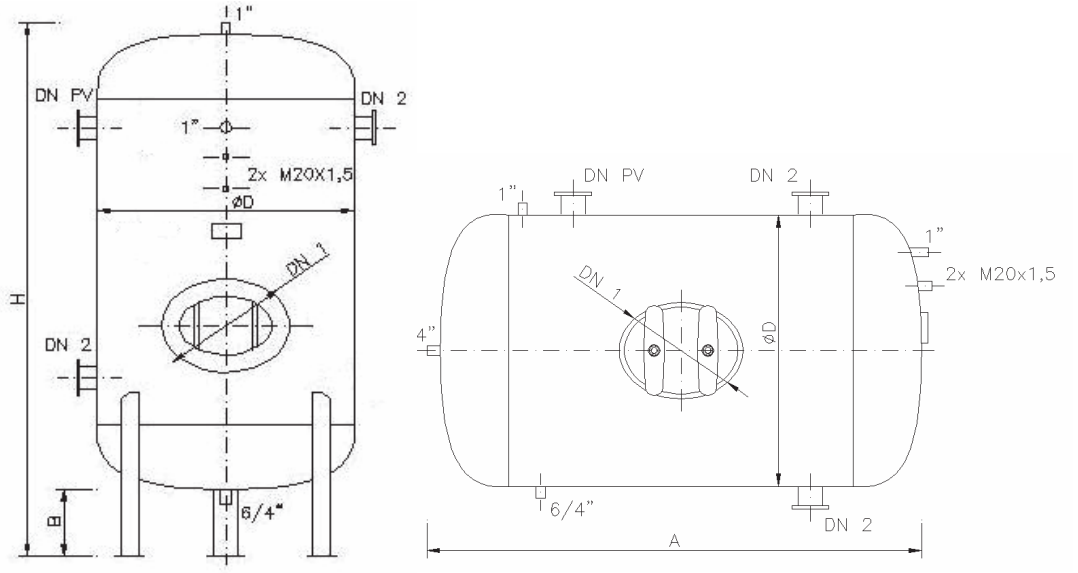
Volume 250 to 10 000 l

Catalogue No.	Volume l	D mm	A mm	DN 1 mm	Weight (kg)		
					0.6 MPa	1.0 MPa	1.6 MPa
AN101	250	500	1440	-	67	81	95
AN102	400	600	1670	-	130	135	170
AN103	540	650	1910	-	140	155	200
AN104	630	700	2070	-	160	180	250
AN105	800	800	2000	-	190	220	285
AN106	1000	800	2580	-	230	270	330
AN107	1400	1000	2150	420x320	320	405	525
AN108	1600	1000	2300	420x320	370	480	630
AN109	2000	1000	2770	420x320	465	580	740
AN110	2200	1200	2310	420x320	510	630	790
AN111	2500	1200	2810	420x320	580	700	870
AN112	4000	1400	2870	420x320	830	980	1250
AN113	5000	1400	3600	420x320	1030	1240	1570
AN114	6300	1600	3500	420x320	1230	1490	1890
AN115	8000	1800	3500	420x320	1570	1890	2490
AN116	10000	2000	3800	420x320	1900	2280	3080

Special versions can be supplied in addition to the standard products listed in the catalogue.

The horizontal storage reservoirs are referred to as **AN-L**. Please, be sure to indicate an AN-L catalogue number as well as type, volume, pressure and temperature of the working medium when ordering the product.
Each device has a neck for input and output of the working medium as well as welded-on pieces for a thermometer, pressure gauge, control sensor, desludging outlet and venting outlet. Any order must clearly indicate the size and location of each inlet and outlet (DN2) according to customer's specifications.
The vessel casing is coated with an environmentally friendly primer; an inner finish by either galvanising or plastic coating is possible upon request.
If required, the vessel can be placed on a bolster.

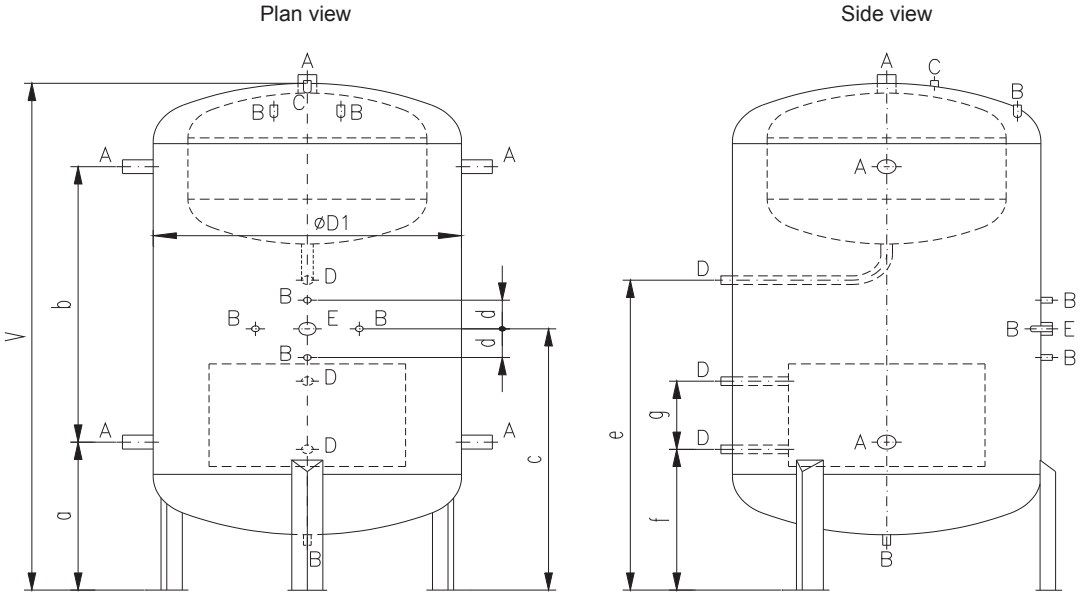
LARGE STORAGE TANKS



Catalogue No.	Volume l	D mm	H mm	A mm	DN 1 mm	Weight (kg)
.0017	20000	2000	7300	7010	420x320	3200
.0018	30000	2200	8800	8510	420x320	5050
.0019	40000	2400	12300	9910	420x320	6530
.0020	50000	2400	12400	12010	420x320	7920
.0021	60000	2400	14260	13870	420x320	8460
.0022	70000	3000	11050	10660	420x320	9950
.0023	80000	3000	12450	12060	420x320	10113
.0024	90000	3200	12060	11760	420x320	10520
.0025	100000	3400	11980	11680	420x320	11140

Special versions can be supplied in addition to the standard products listed in the catalogue, with vessel diameter and size subject to customer specifications.

STORAGE RESERVOIRS (VAN)

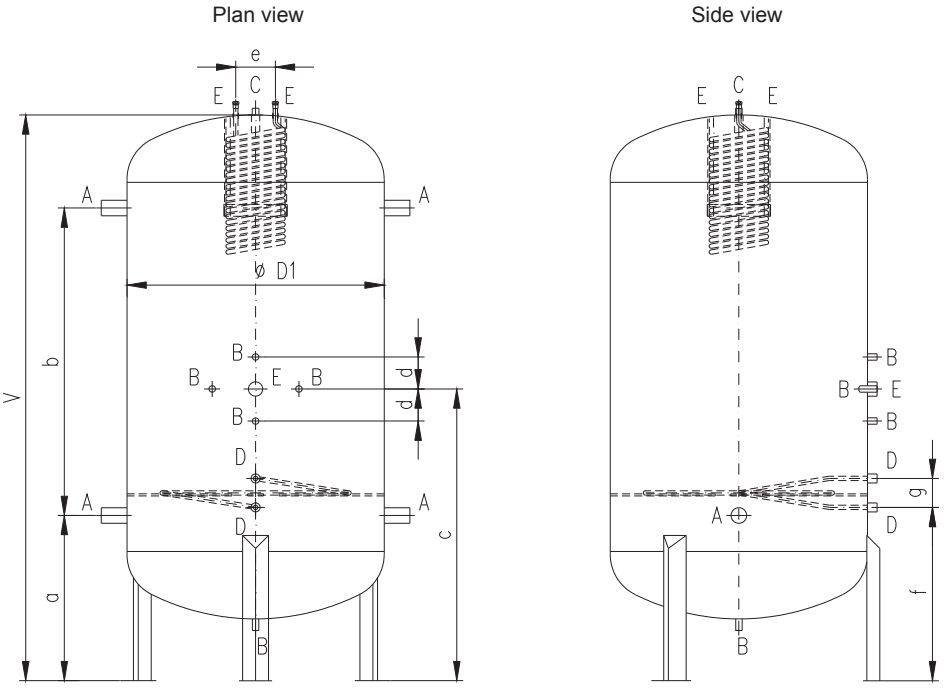


Type (Catal. No.)	Volume l	Diameter mm	Height mm	Connection sizes											
				A	B	C	D	E	a (mm)	b (mm)	c (mm)	d (mm)	e (mm)	f (mm)	g (mm)
VAN 550	550	650	1895	G2"	G1/2"	G3/4"	G1"	M48x2	450	1270	990	100	není	není	není
VAN 700	700	700	2080	G2"	G1/2"	G3/4"	G1"	M48x2	390	1400	1040	230	není	není	není
VAN 800	800	800	2080	G2"	G1/2"	G3/4"	G1"	M48x2	390	1400	1040	250	není	není	není
VAN B 550	550	650	1895	G2"	G1/2"	G3/4"	G1"	M48x2	450	1270	990	100	1090	není	není
VAN B 700	700	700	2080	G2"	G1/2"	G3/4"	G1"	M48x2	390	1400	1040	230	1270	není	není
VAN B 800	800	800	2080	G2"	G1/2"	G3/4"	G1"	M48x2	390	1400	1040	250	1290	není	není
VAN S 550	550	650	1895	G2"	G1/2"	G3/4"	G1"	M48x2	450	1270	990	100	není	360	430
VAN S 700	700	700	2080	G2"	G1/2"	G3/4"	G1"	M48x2	390	1400	1040	230	není	390	430
VAN S 800	800	800	2080	G2"	G1/2"	G3/4"	G1"	M48x2	390	1400	1040	250	není	390	430
VAN BS 550	550	650	1895	G2"	G1/2"	G3/4"	G1"	M48x2	450	1270	990	100	1090	360	430
VAN BS 700	700	700	2080	G2"	G1/2"	G3/4"	G1"	M48x2	390	1400	1040	230	1270	390	430
VAN BS 800	800	800	2080	G2"	G1/2"	G3/4"	G1"	M48x2	390	1400	1040	250	1290	390	430

ATTENTION: The overpressure in the outer tank must not exceed 0.4 MPa (applies to VAN B and VAN BS) unless the overpressure in the inner tank is at least 0.4 MPa.

The **VAN** storage reservoirs bring outstanding improvement of operation for any type of central heating system boiler firing solid fuels such as coal, coke, wood, briquettes, wood briquettes, straw etc., this especially involving wood and coal gasification boilers, with the rate of utilising the heat energy produced being nearly absolute. They can be connected to a heat pump and a solar system as an auxiliary component. The VAN storage reservoirs can be operated under working overpressure of up to 0.6 MPa and under working temperature up to 100 °C. The upper inner tank serves for storage heating of hot service water and the lower tank is used to discharge a solar source or a heat pump. The reservoirs are coated with an environmentally friendly primer and the inner tank is galvanised, standard volume being 150 l. The heat-delivery surface of the solar source is 1.4 sq m. Special storage reservoirs can be produced upon customer's request.

STORAGE RESERVOIRS (VAN - Cu)

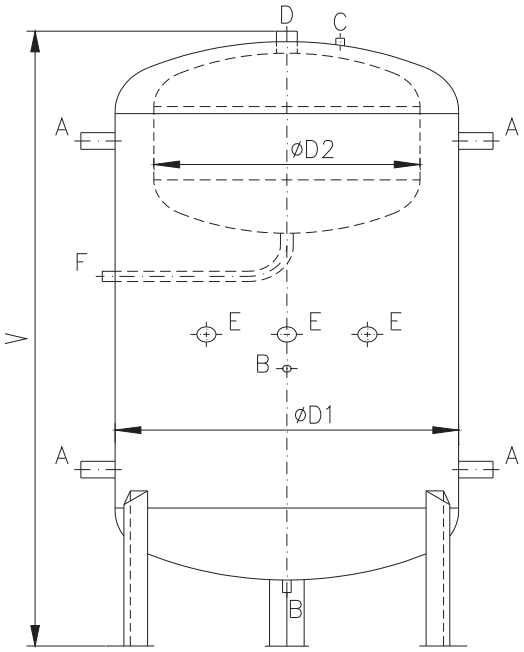


Type (Catal. No.)	Volume l	Diameter mm	Height mm	Connection sizes												
				A	B	C	D	E	F	a (mm)	b (mm)	c (mm)	d (mm)	e (mm)	f (mm)	g (mm)
VAN 550	550	650	1895	G2"	G1/2"	G3/4"	Ø22	M48x2	Ø22	450	1270	990	100	není	není	není
VAN 700	700	700	2080	G2"	G1/2"	G3/4"	Ø22	M48x2	Ø22	390	1400	1040	230	není	není	není
VAN 800	800	800	2080	G2"	G1/2"	G3/4"	Ø22	M48x2	Ø22	390	1400	1040	250	není	není	není
VAN B 550	550	650	1895	G2"	G1/2"	G3/4"	Ø22	M48x2	Ø22	450	1270	990	100	190	není	není
VAN B 700	700	700	2080	G2"	G1/2"	G3/4"	Ø22	M48x2	Ø22	390	1400	1040	230	190	není	není
VAN B 800	800	800	2080	G2"	G1/2"	G3/4"	Ø22	M48x2	Ø22	390	1400	1040	250	190	není	není
VAN S 550	550	650	1895	G2"	G1/2"	G3/4"	Ø22	M48x2	Ø22	450	1270	990	100	není	390	90
VAN S 700	700	700	2080	G2"	G1/2"	G3/4"	Ø22	M48x2	Ø22	390	1400	1040	230	není	500	90
VAN S 800	800	800	2080	G2"	G1/2"	G3/4"	Ø22	M48x2	Ø22	390	1400	1040	250	není	540	90
VAN BS 550	550	650	1895	G2"	G1/2"	G3/4"	Ø22	M48x2	Ø22	450	1270	990	100	190	390	90
VAN BS 700	700	700	2080	G2"	G1/2"	G3/4"	Ø22	M48x2	Ø22	390	1400	1040	230	190	500	90
VAN BS 800	800	800	2080	G2"	G1/2"	G3/4"	Ø22	M48x2	Ø22	390	1400	1040	250	190	540	90

The **VAN-Cu** storage reservoirs bring outstanding improvement of operation for any type of boiler firing solid fuel such as coal, coke, wood, briquettes, wood briquettes, straw, etc., this especially involving wood and coal gasification boilers, with the rate of utilising the heat energy produced being nearly absolute. They can be connected to a heat pump and a solar system as an auxiliary device. The VAN-Cu storage reservoir can be operated under working overpressure of up to 0.6 MPa and under working temperature up to 100 °C. The heat-delivery surface of the upper and lower heating coil is 3.74 m^2 and 2.37 m^2, respectively. The reservoir‘s design also allows connecting an electric heating source. Special storage reservoirs can be produced upon customer’s request.

Heat characteristics of the heating coils:
The heating coil with the heat-delivery surface of 3.74 m^2 can transmit heat capacity of 57 kW at water flow through the coil being 1.44 m^3/h whilst outlet water temperature is 45° C and that within the storage reservoir being 70°C. Head loss at the water flow through the coil is 8.7 kPa.
The heating coil with the heat-delivery surface of 2.37 m^2 can transmit heat capacity of 48 kW at water flow through the coil being 1.2 m^3/h whilst outlet water temperature is 45° C and storage reservoir water temperature being 55 °C. Head loss at the water flow through the coil is 13.9 kPa.

STORAGE RESERVOIRS
WITH A FLOATING WATER HEATER (AN-B)

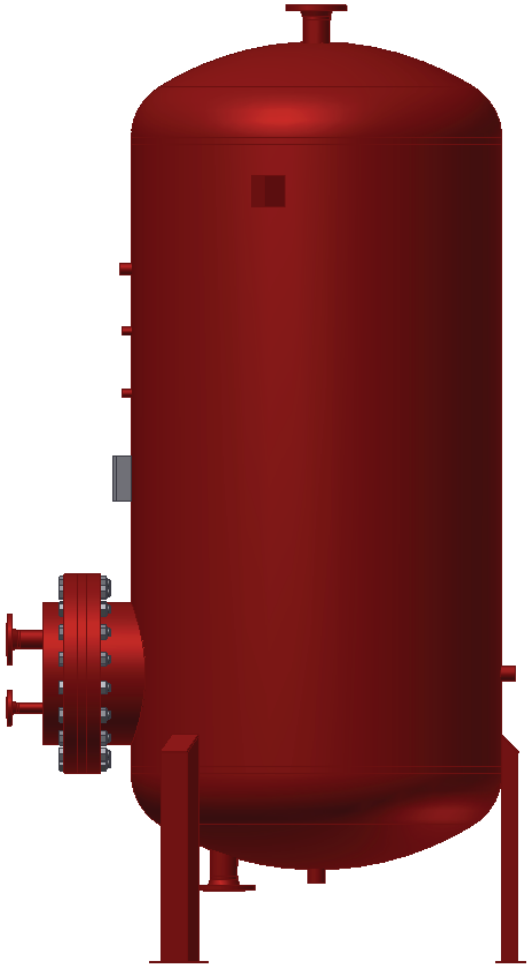


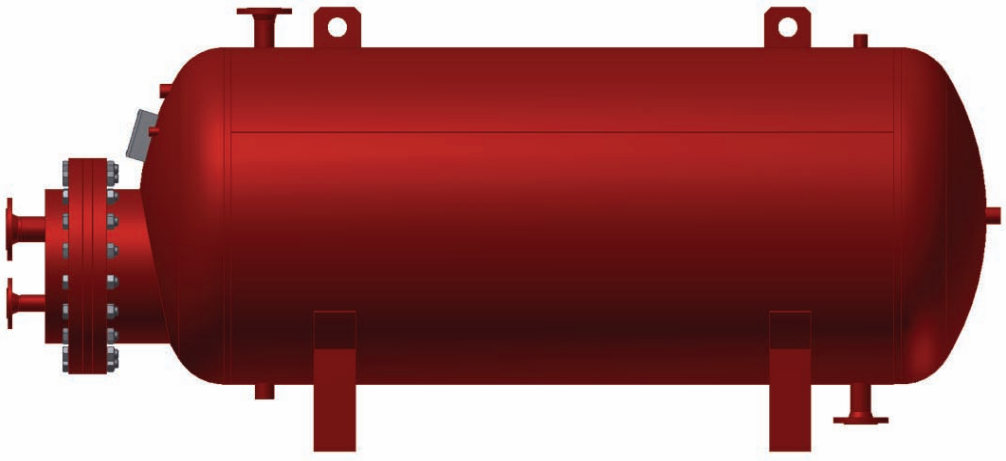
Type (Catal. No.)	Outer tank l	Diameter mm	Inner tank mm	Diameter mm	Height mm	Connection points						Weight kg
						A	B	C	D	E	F	
AN B300/150	300	650	150	550	1360	G2"	G1/2"	G3/4"	G1"	M48x2	450	1270
AN B400/200	400	650	200	550	1760	G2"	G1/2"	G3/4"	G1"	M48x2	390	1400
AN B500/250	500	650	250	550	1960	G2"	G1/2"	G3/4"	G1"	M48x2	390	1400
AN B600/300	600	650	300	550	2340	G2"	G1/2"	G3/4"	G1"	M48x2	450	1270
AN B800/400	800	800	400	700	2070	G2"	G1/2"	G3/4"	G1"	M48x2	390	1400
AN B1000/500	1000	800	500	700	2570	G2"	G1/2"	G3/4"	G1"	M48x2	390	1400

ATTENTION: The overpressure in the outer tank must not exceed 0.4 MPa unless the overpressure in the inner tank reaches at least 0.4 MPa.

Storage reservoirs containing a floating water heater are referred to as **AN-B**. This involves a cylindrical vertical pressure vessel equipped with a device for heating service water. The design of the reservoirs facilitates connection to an electric heating system. The storage reservoirs containing a floating water heater can be operated under working overpressure of up to 0.8 MPa for the inner tank and up to 0.6 MPa for the outer tank; working temperature being up to 100 °C. Special storage reservoirs can be manufactured upon request. The reservoirs are coated with an environmentally sound primer; the inner tank is galvanised.

WATER HEATERS





In addition to the standard types, the water heaters can be customised for casing/insert pressure of up to 4.0 MPa, temperature of up to 150 °C and the volume range being 0.25 to 10.0 m^3. Special water heater versions can be supplied for pressure exceeding 1.6 MPa and volume over 10.0 m^3 based on a specific calculation.

STANDARD WATER HEATERS

Vertical water heater	OVS - PV (steam - water)
Vertical water heater	OVS - VV (water - water)
Horizontal water heater	OVL - PV (steam - water)
Horizontal water heater	OVL - VV (water - water)

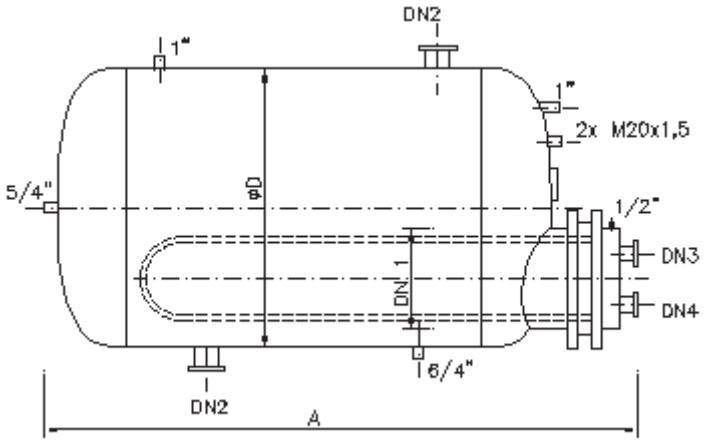
The heating medium flows within a heating insert, which is a two-way insert made of Cu/Fe piping. The vertical water heaters with a diameter of up to 1,200 mm are placed on three stands, those with a diameter above 1,200 mm resting on four stands. If required, the horizontal heater can be placed on a bolster according to customer's specifications.
The heater has a neck for input and output of water or steam and welded-on pieces for circulation, thermometer, pressure gauge, control sensor, desludging outlet and venting outlet. Any order must clearly indicate the size and location of each inlet and outlet (DN 2) according to customer's specifications.
Please, be sure to indicate a catalogue number of the water heater, designation according to the heating medium, casing and insert pressures and temperatures and the size of the heat-delivery surface. The heater casing is coated with a primer; an inner finish by either galvanising or plastic coating is possible upon request. The heater has coating from an environmentally friendly material (water dilutable).
For technical and design data of the standard water heaters, please see the catalogue tables.

Heat energy savings in hot service water production

In storage water heaters, heat energy can be saved through increasing the temperature of the water being warmed to 80+ °C, thus the heating capacity of the device. To ensure that the temperature of the outgoing water is 35 to 55 °C, a thermostatic mixing valve can be installed between inlet and outlet pipe.
Even though this modification converts the HSW water heater into a device for technology use, so it becomes dedicated equipment with necessary certification, the product still maintains its cost-effectiveness. We supply water heaters of all sizes and parameters.
Benefits of producing HSW under increased parameters:

- Decreased heater volume by increasing its heat capacity;
- Reduced heat loss in the distribution system;
- Reduced the occurrence of Legionella that are present when the temperature is below 55°C;
- Constant temperature can be set as desired whilst reducing scale separation and sedimentation inside the piping.

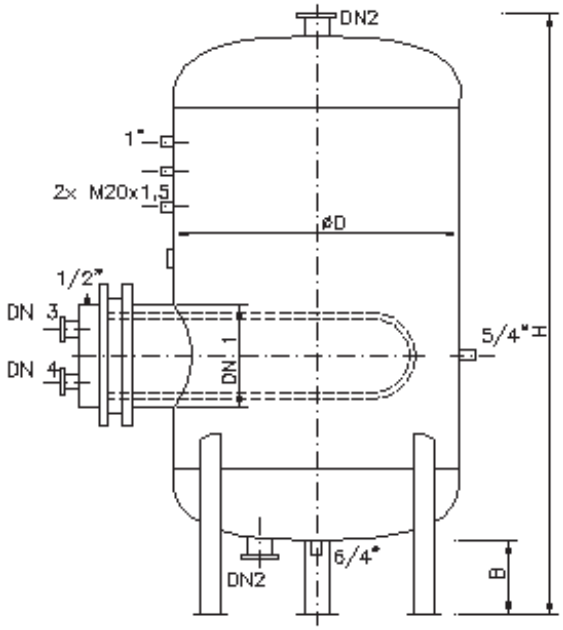
HORIZONTAL WATER HEATERS OVL-PV OVL-VV



Catalogue No.	Volume l	D mm	A mm	DN 1 mm	DN 2 mm	Weight (kg)			Heat-delivery surface Cu per m²							
						0.6 MPa	1.0 MPa	1.6 MPa	0,5	1	2	3	5	8	10	12
0601	250	550	1570	250	25	130	135	145	X	X						
0602	400	600	1820	250	25	155	160	195	X	X						
0603	540	650	2060	300	40	190	205	250	X	X	X					
0604	630	700	2220	350	40	210	230	300		X	X	X				
0605	800	800	2150	350	40	250	280	335		X	X	X				
0606	1000	800	2730	350	50	305	345	405		X	X	X				
0607	1400	1000	2300	450	50	415	500	620		X	X	X	X	X		
0608	1600	1000	2450	450	50	465	575	725		X	X	X	X	X		
0609	2000	1000	2920	450	50	590	705	865		X	X	X	X	X		
0610	2200	1200	2460	450	50	635	755	915		X	X	X	X	X		
0611	2500	1200	2960	450	80	705	825	995			X	X	X	X	X	
0612	4000	1400	3020	450	80	955	1105	1375				X	X	X	X	X
0613	5000	1400	3750	450	80	1155	1365	1695				X	X	X	X	X
0614	6300	1600	3650	450	80	1355	1315	2015					X	X	X	X
0615	8000	1800	3650	450	100	1695	2015	2615						X	X	X
0616	10000	2000	3950	450	100	2025	2405	3205						X	X	X
						OVS VV	**DN 3 = DN 4**		25	32	50	50	65	65	80	80
						OVS PV	**DN 3**		25	32	40	50	65	65	80	80
							DN 4		15	20	25	25	40	40	40	40

Special versions can be supplied in addition to the standard products listed in the catalogue.

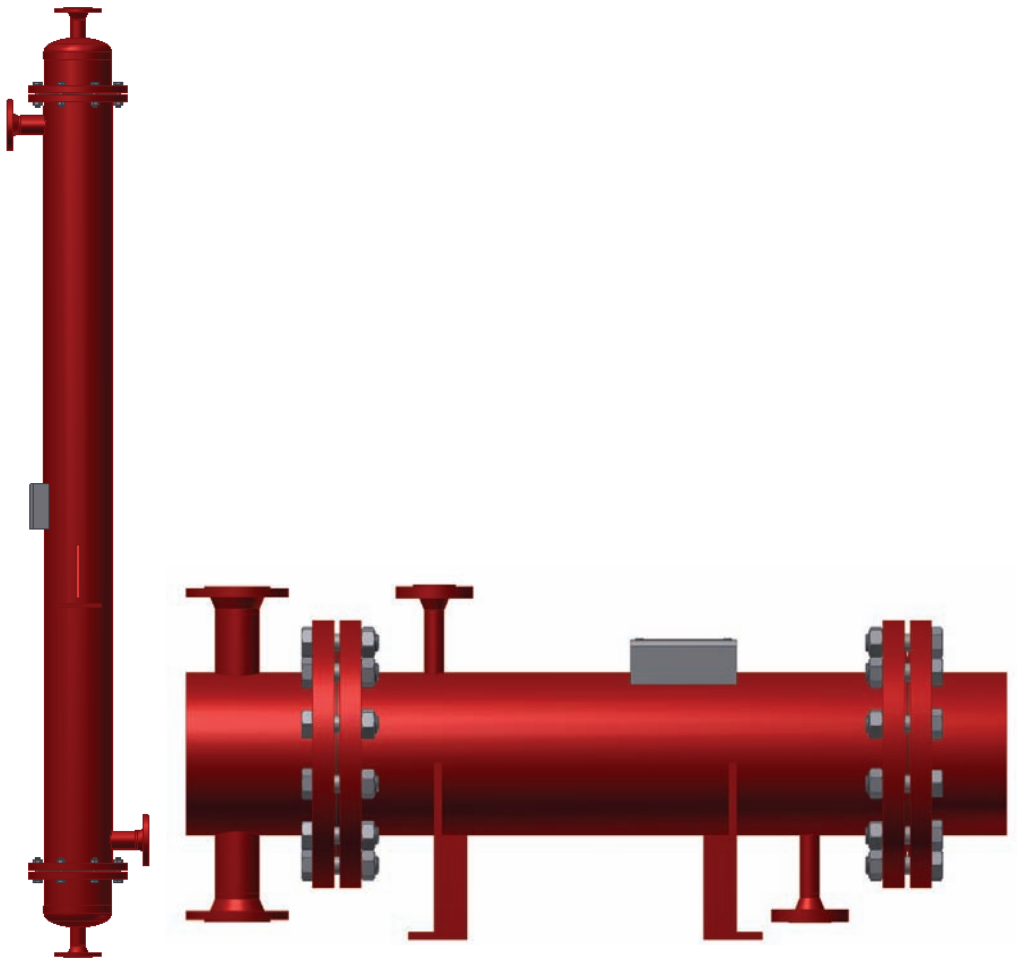
VERTICAL WATER HEATERS OVS-PV OVS-VV



Catalogue No.	Volume l	D mm	B mm	H mm	DN 1 mm	DN 2 mm	Weight (kg)			Heat-delivery surface Cu per m²							
							0.6 MPa	1.0 MPa	1.6 MPa	0,5	1	2	3	5	8	10	12
0501	250	550	200	1470	250	25	125	130	140	X	X						
0502	400	600	200	1720	250	25	150	155	190	X	X						
0503	540	650	200	1960	300	40	180	195	240	X	X	X					
0504	630	700	200	2120	350	40	200	220	290		X	X	X				
0505	800	800	200	2050	400	40	240	270	325		X	X	X				
0506	1000	800	300	2730	450	50	290	330	390		X	X	X				
0507	1400	1000	300	2300	450	50	400	485	605		X	X	X	X	X		
0508	1600	1000	300	2700	450	50	450	560	710		X	X	X	X	X		
0509	2000	1000	300	2920	450	50	565	680	840		X	X	X	X	X		
0510	2200	1200	300	2460	450	50	610	730	890		X	X	X	X	X		
0511	2500	1200	300	2960	450	80	680	800	970			X	X	X	X	X	
0512	4000	1400	300	3020	450	80	930	1080	1350				X	X	X	X	X
0513	5000	1400	300	3750	450	80	1130	1340	1670				X	X	X	X	X
0514	6300	1600	300	3650	450	80	1330	1590	1990					X	X	X	X
0515	8000	1800	300	3650	450	100	1670	1990	2590						X	X	X
0516	10000	2000	300	3950	450	100	2000	2380	3180						X	X	X
							OVS VV	**DN 3 = DN 4**		25	32	50	50	65	65	80	80
							OVS PV	**DN 3**		25	32	40	50	65	65	80	80
								DN 4		15	20	25	25	40	40	40	40

Special versions can be supplied in addition to the standard products listed in the catalogue.

HEAT EXCHANGERS



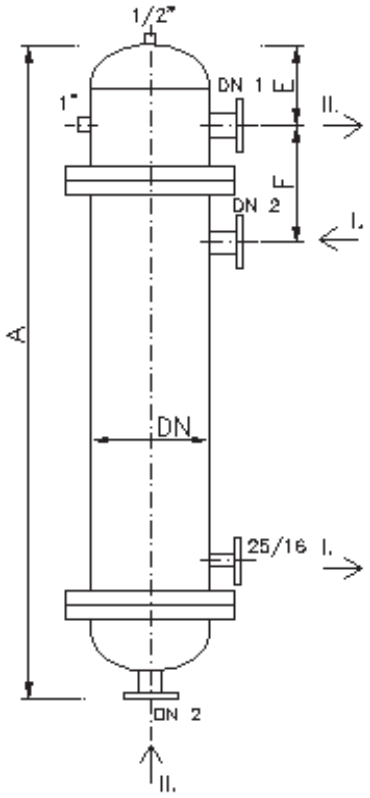
We make and supply heat exchangers for all types of working media. The design can be tailored to any pressure, temperature and output as specified. Special exchangers/ condensers can be supplied in addition to the standard products listed in the catalogue if requested.

STANDARD EXCHANGERS

Exchanger VT 1 - PVS	(steam - water, vertical)
Exchanger VT 2 - PVL	(steam - water, horizontal)
Exchanger VT 2 - VVL	(water - water, horizontal)
Exchanger VT 3 - PVL	(steam - water, horizontal)
Exchanger VT 4 - VVL	(water - water, horizontal)
Exchanger VT 4 - VVS	(water - water, vertical)

For technical data of the standard exchangers, please see the catalogue tables. We can supply exchangers of any desired output based on primary/secondary circuit parameters following customer's specifications. We make environmentally friendly primer coating (water dilutable).
Special versions can be supplied in addition to the standard products listed in the catalogue.

EXCHANGER VT1 – PVS (steam - water,vertical)

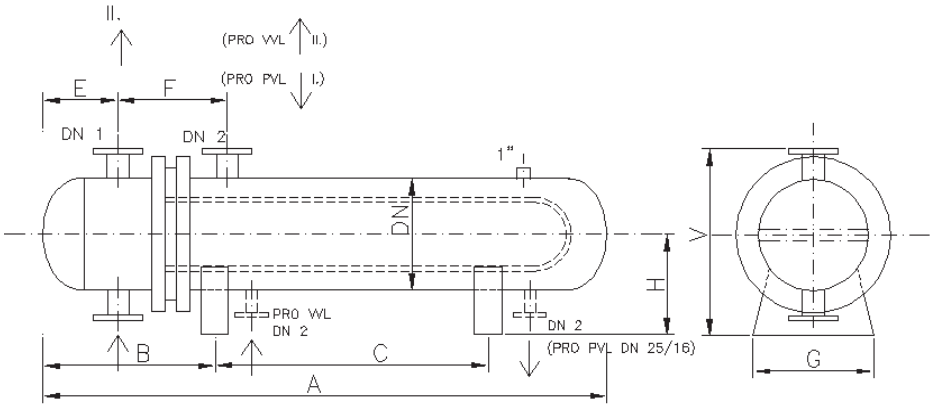


Catalogue No.	DN	A mm	E mm	F mm	DN1 mm	DN2 mm	Fe m²	Cu m²	m (kg)	
									Fe	Cu
0701	150	1770	126	277	25	40	27,0	1,4	135	115
0702	200	1800	151	294	25	40	5,3	2,6	218	177
0703	250	1870	190	280	50	50	9,2	4,5	295	259
0704	300	1920	188	300	50	65	13,6	7,0	415	366
0705	350	1970	235	330	65	80	20,5	10,0	496	415
0706	400	2020	260	360	80	100	24,9	12,0	640	541

Special versions can be supplied in addition to the standard products listed in the catalogue.

Exchanger versions referred to as VT1 - PVS are produced for casing/insert pressure of 1.6/1.6 MPa and maximum casing/insert working temperature being 200/200°C. Concerning a heating medium, the exchanger is particularly designed for low-pressure steam. The steam warms up the water via straight Cu/Fe tubes running within two fixed tube-plates, the water flowing in a single direction. The exchanger has a neck for input and output of water and steam and welded-on pieces for a thermometer, desludging outlet and venting outlet. The exchanger has a primer coating.

EXCHANGER VT2 - PVL (steam - water, horizontal)
VVL (water - water, horizontal)



VT2-VVL

Catalogue No.	DN	A mm	B mm	C mm	E mm	F mm	G mm	H mm	V mm	DN1	DN2	pl.Fe m²	pl.Cu m²	m (kg) Fe	m (kg) Cu
0701	150	1575	550	650	126	277	200	200	398	40	40	0,6	0,8	14	106
0702	200	1585	550	650	151	294	260	220	518	40	40	1,5	1,6	161	161
0703	250	1610	550	650	190	280	360	250	578	50	50	4,0	2,6	229	221
0704	300	1665	550	650	188	300	400	280	638	65	65	7,4	4,0	379	355
0705	350	1665	550	650	235	330	420	300	578	80	80	11,0	6,6	375	358
0706	400	1690	550	700	260	360	450	320	798	100	100	15,8	9,6	512	473

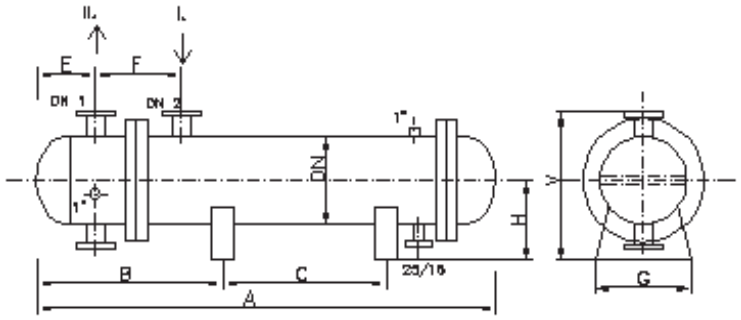
VT2-PVL

Catalogue No.	DN	A mm	B mm	C mm	E mm	F mm	G mm	H mm	V mm	DN1	DN2	pl.Fe m²	pl.Cu m²	m (kg) Fe	m (kg) Cu
1001	150	1700	550	650	126	277	200	200	398	40	25	0,6	0,8	102	104
1002	200	1735	550	650	151	294	260	220	518	40	25	1,5	1,6	160	160
1003	250	1800	550	650	190	280	360	250	578	50	32	2,9	2,6	226	219
1004	300	1850	550	650	188	300	400	280	638	65	40	5,4	4,0	376	351
1005	350	1900	550	650	235	330	420	300	578	80	50	8,0	6,6	371	354
1006	400	1950	550	700	260	360	450	400	798	100	65	11,5	9,6	506	468
1007	450	2200	600	800	300	400	450	425	820	100	80	20,1	12,5	741	628
1008	500	2350	600	800	340	450	500	450	870	125	100	26,7	15,1	940	765
1009	600	2350	650	1000	380	520	600	500	970	150	100	38,0	18,9	1311	1038
1010	700	2600	650	1000	420	600	700	550	1070	200	125	58,9	29,0	1702	1309

Special versions can be supplied in addition to the standard products listed in the catalogue.

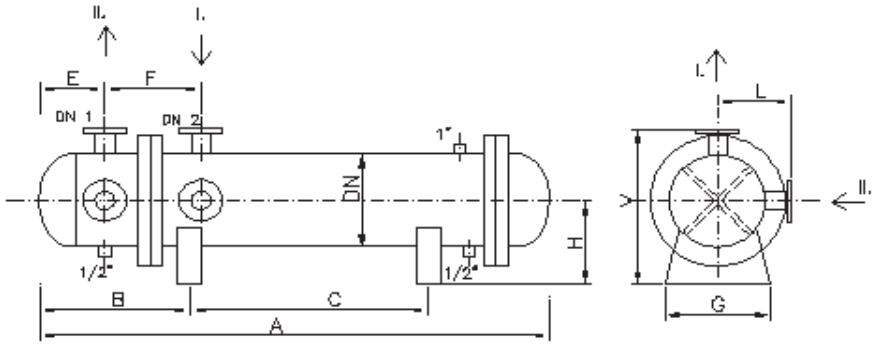
The exchanger versions referred to as VT2 - PVL and VVL are produced for casing/insert pressure of 1.6/1.6 MPa and maximum casing/insert working temperature being 200/200°C. The heating medium (i.e. steam or water) enters the exchanger's casing and transfers the heat to the heated water via an insert consisting of U-shaped Cu/Fe tubes. A reverse connection is applied for HSW production to prevent clogging due to scales. The exchangers are placed on mounting foots. Each exchanger can be dismounted and the insert replaced. The exchanger has a neck for input and output of water and steam and welded-on pieces for a thermometer, desludging outlet and venting outlet. The exchangers are coated with a primer.

EXCHANGER VT3 - PVL (steam - water, horizontal)



Catalogue No.	DN	A mm	B mm	C mm	E mm	F mm	G mm	H mm	V mm	DN1	DN2	pl.Fe m²	pl.Cu m²	m (kg) Fe	m (kg) Cu
1101	150	1700	550	650	126	277	200	200	398	25	40	2,5	1,3	152	135
1102	200	1735	550	650	151	294	260	220	518	25	40	4,6	2,5	229	197
1103	250	1800	550	650	190	280	360	250	578	50	50	8,4	4,6	316	289
1104	300	1850	550	650	188	300	400	280	638	50	65	12,6	7,3	438	403
1105	350	1900	550	650	235	330	420	300	578	65	80	19,2	9,4	520	445
1106	400	1950	550	700	260	360	450	320	798	80	100	23,5	12,0	670	585

EXCHANGER VT4 - VVL (water - water, horizontal)

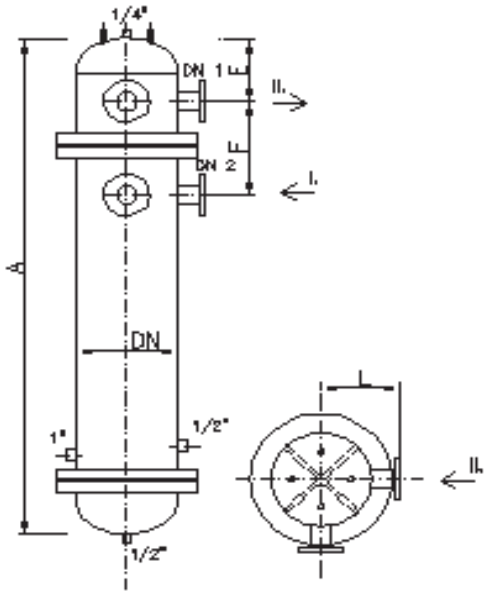


Catalogue No.	DN	A mm	B mm	C mm	E mm	F mm	G mm	H mm	L mm	V mm	DN1	DN2	pl.Fe m²	pl.Cu m²	m (kg) Fe	m (kg) Cu
1201	150	1700	550	650	126	277	200	200	200	398	40	40	1,9	0,9	12	147
1202	200	1735	550	650	151	294	260	220	260	518	40	40	3,6	1,8	237	209
1203	250	1800	550	650	190	280	360	250	290	578	50	50	7,0	3,5	328	301
1204	300	1850	550	650	188	300	400	280	320	638	65	65	10,9	5,5	453	412
1205	350	1900	550	650	235	330	420	300	340	578	80	80	17,0	8,5	535	471
1206	400	1950	550	700	260	360	450	320	400	798	100	100	21,2	10,5	694	612

Special versions can be supplied in addition to the standard products listed in the catalogue.

The exchanger types referred to as VT3 - PVL and VT4 - VVL are produced for casing/insert pressure of 1.6/1.6 MPa and maximum casing/insert working temperature being 200/200°C. They are a good option for central heating systems. The heating medium (i.e. steam or water) enters the exchanger's casing. The Cu/Fe tubes are rolled or welded into two fixed tube-plates. The water flows in either four (VV) or two directions (PV). The exchanger has a neck for input and output of water and steam and welded-on pieces for a thermometer, desludging outlet and venting outlet and comes with a primer coating.

EXCHANGER VT4 - VVS (water - water, vertical)

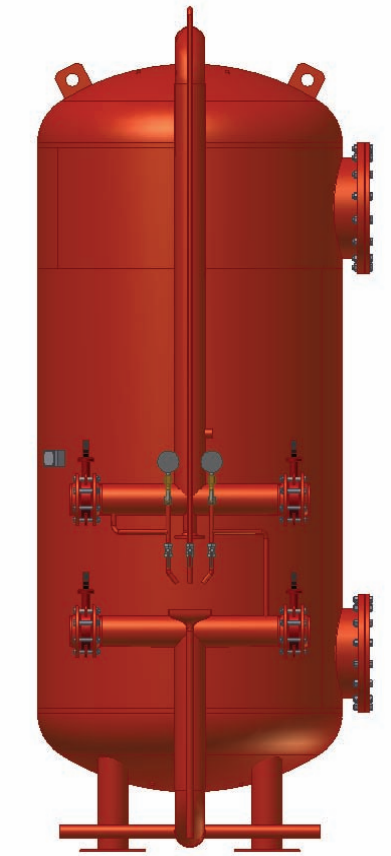


Catalogue No.	DN	A mm	E mm	F mm	I mm	DN1	DN2	Fe m²	Cu m²	m (kg) Fe	m (kg) Cu
1301	150	1700	126	277	200	40	40	1,9	0,9	142	127
1302	200	1735	151	294	260	40	40	3,6	1,8	217	189
1303	250	1800	190	280	290	50	50	7,0	3,5	303	276
1304	300	1850	188	300	320	65	65	10,9	5,5	423	382
1305	350	1900	235	330	340	80	80	17,0	8,5	500	436
1306	400	1950	260	360	400	100	100	21,2	10,5	654	573

Special versions can be supplied in addition to the standard products listed in the catalogue.

The exchanger types referred to as VT4 - VVS are produced for casing/insert pressure of 1.6/1.6 MPa and maximum casing/insert working temperature being 200/200°C.
The heating medium enters the exchanger's casing/ insert and transmits the heat by means of straight Cu/Fe tubes that are placed within two fixed tube-plates. The exchanger has a neck for input and output of water and welded-on pieces for a thermometer, desludging outlet and venting outlet. The device comes with a primer coating.

WATER TREATMENT EQUIPMENT



Commercial filters

Filters for family houses
or small boiler-rooms

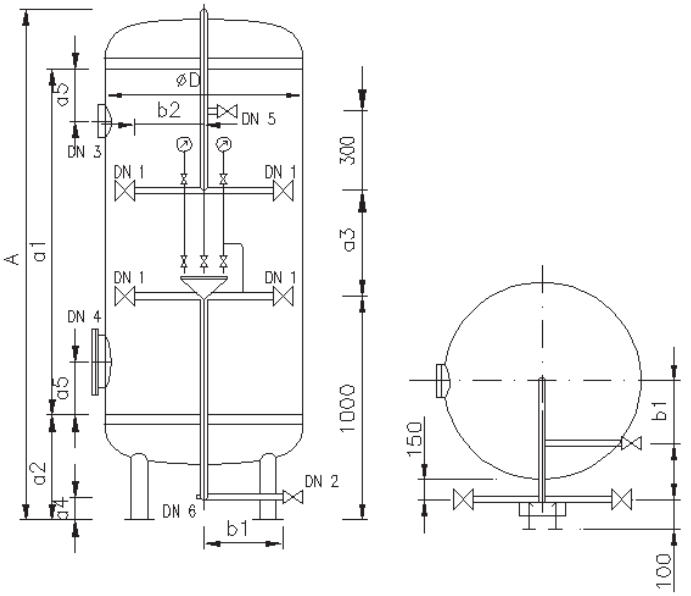
We make and supply chemical water treatment equipment, which involves either complete units or single components as desired, all coming with environmentally friendly primer coating (water dilutable).

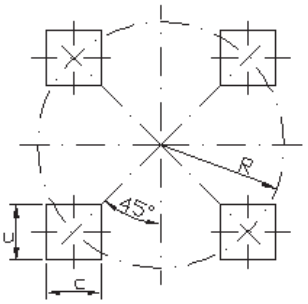
PRODUCT TYPES:
Sample coolers
Softening filters (conventional)

Cartridge softening and demineralising filters
Sand filters

Salt brine solution tanks
Rinsing dispensers for hot-water systems
Equipment for thermal degassing of feeding water in steam boiler rooms

SOFTENING FILTERS



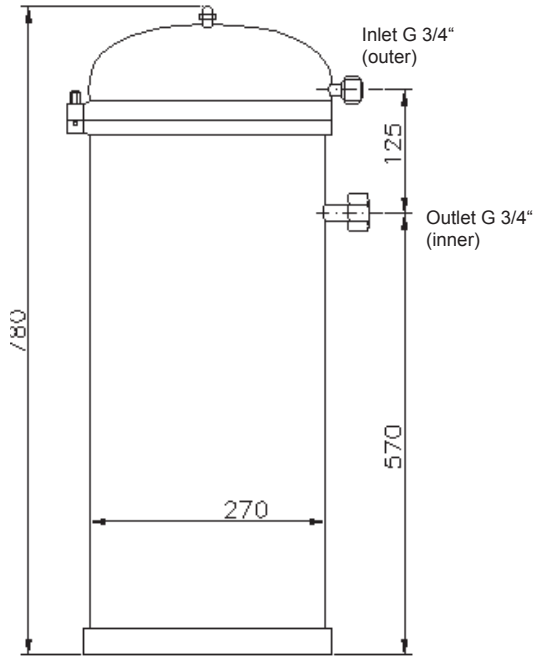


Building dimensions of foundations

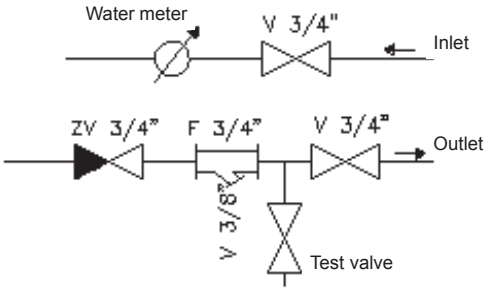
Applied in chemical water treatment, softening filters are designed for softening water using a Na+ cation exchanger or for neutral decarbonisation. The water being treated flows through the filter either from top to bottom or vice versa, the latter recommended for the cation exchanger softening application, whilst the recovery makes use of the top-bottom direction at all times. The filter is a vertical vessel welded from a steel sheet metal and vaulted bottoms and placed on four legs made of tubes. Inside the vessel, there is an upper and lower jet bottom. The vessel comes complete with fittings, inlet, outlet, connecting and delivery piping and pressure gauges. The outer surface of the filter is primer-coated. The softening filters bear ZF lettering and indication of filter diameter (D) in mm.
For basic design, connecting and construction dimensions, please refer to the table. Maximum working overpressure is 0.6 MPa. Maximum working temperature is 90°C based on the filler applied. Clean compressed air must be supplied for washing, the overpressure being 60 - 100 kPa. A bottom layer of washed silicate sand, grading 1.8 to 4 mm, is recommended in filters. The inert filler layer thickness should be 100 mm for the 600-1,000 mm filter size and 200 mm for the 1,400-3,000 mm filter sizes.

FILTERS						
Type	**FILTER**	**F 600**	**F 800**	**F 1000**	**F 1400**	**F 2000**
Volume	l	600	1000	2000	4200	9000
D	mm	600	800	1000	1400	2000
A	mm	2750	2800	3500	3850	4200
a1	mm	2000	2000	2500	2500	2500
a2	mm	350	400	450	650	800
a3	mm	500	500	600	600	750
a4	mm	100	100	150	150	350
a5	mm	200	200	350	350	350
b1	mm	200	200	400	600	800
b2	mm	250	300	400	450	550
DN 1	mm	50	65	80	125	150
DN 2	mm	25	25	40	50	65
DN 3	mm	200	200	-	-	-
DN 4	mm	-	-	450	450	450
DN 5	mm	15	15	20	25	25
DN 6	mm	15	15	120	15	12
Weight	kg	500	800	1150	2100	3800

WATER-SOFTENING CARTRIDGE FILTER PZF 200

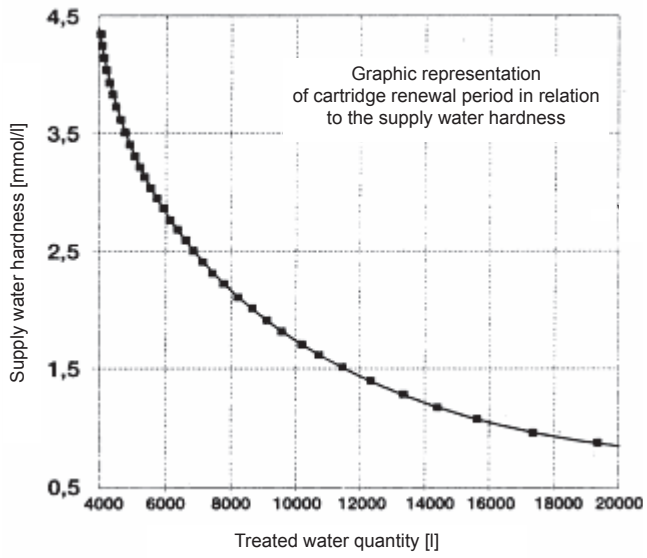


Recommended connection diagram



Once installed within a water supply system, the softening cartridge filter is used for producing softened water, total hardness being below 0.1mmol/l.The devices are used in filling smaller and medium hot water central heating systems with softened water. They can be applied in households as well for softening water used in automatic washing machines.Once the specified quantity of water (see the diagram) has been treated, or if the conductivity limit has been reached, the filter cartridge containing the depleted ion exchanger can be easily replaced with a new cartridge. To detect the period of renewal, chemical analysis of water is essential. The professional recovery of the cartridge takes place as part of manufacturer‘s renewal programme.

Example: If total hardness of your supply water is 1.5 mmol per litre. You are recommended to renew your cartridge once it has reached the limit of 11,000 litres of water (based on the reading on your water meter).

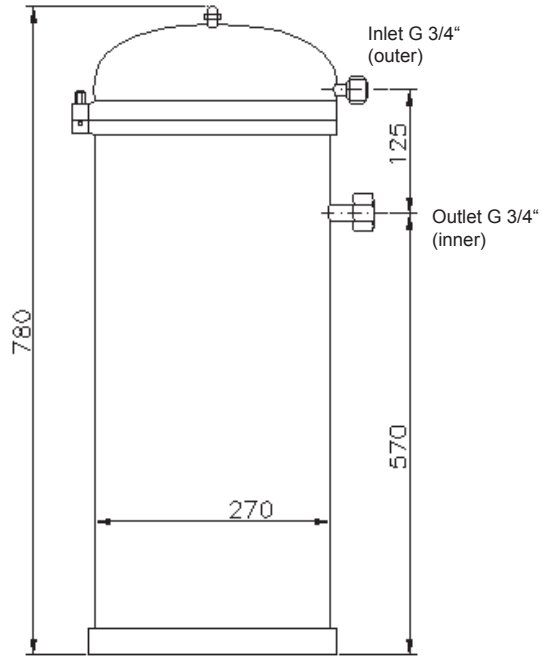


Permanent flow 300 l/h, immediate flow 1,800 l/h.
Maximum pressure: 0.6 MPa.

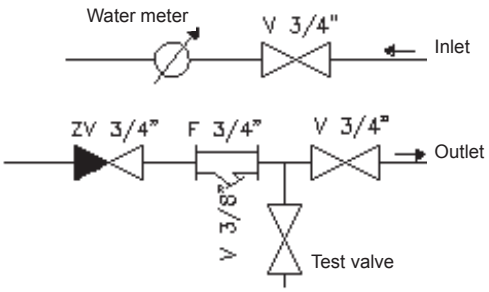
SUPPLY:
- artridge filter with a cartridge and a filler
- Water meter

SPECIAL ACCESSORIES:
- Conductivity metering device
- Spare cartridge

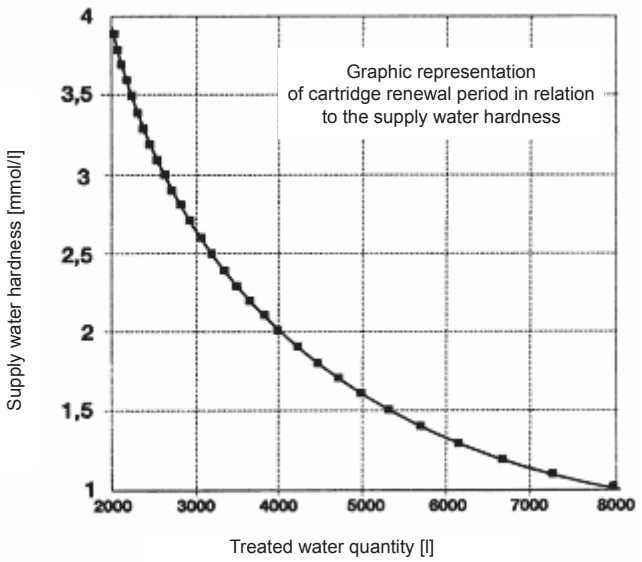
DEMINERALISED WATER CARTRIDGE FILTER PDF 200



Recommended connection diagram



When connected to the water supply system, the demineralised water cartridge filters are used to produce demineralised water for health industry, clinical medicine, laboratories and elsewhere.Conductivity limits required can be assessed based on metering the volume of the treated water or determined exactly by means of an integrated conductivity-metering instrument that can be supplied upon order as a filter accessory. Once the specified quantity of water (see the diagram) has been treated, or if the conductivity limit has been reached, the filter cartridge containing the depleted ion exchanger can be easily replaced with a new cartridge. To detect the period of renewal, chemical analysis of water is essential. The analysis must be ensured by the operator; alternatively, it can be ordered from the manufacturer. The professional recovery of the cartridge takes place as part of manufacturer‘s renewal programme.

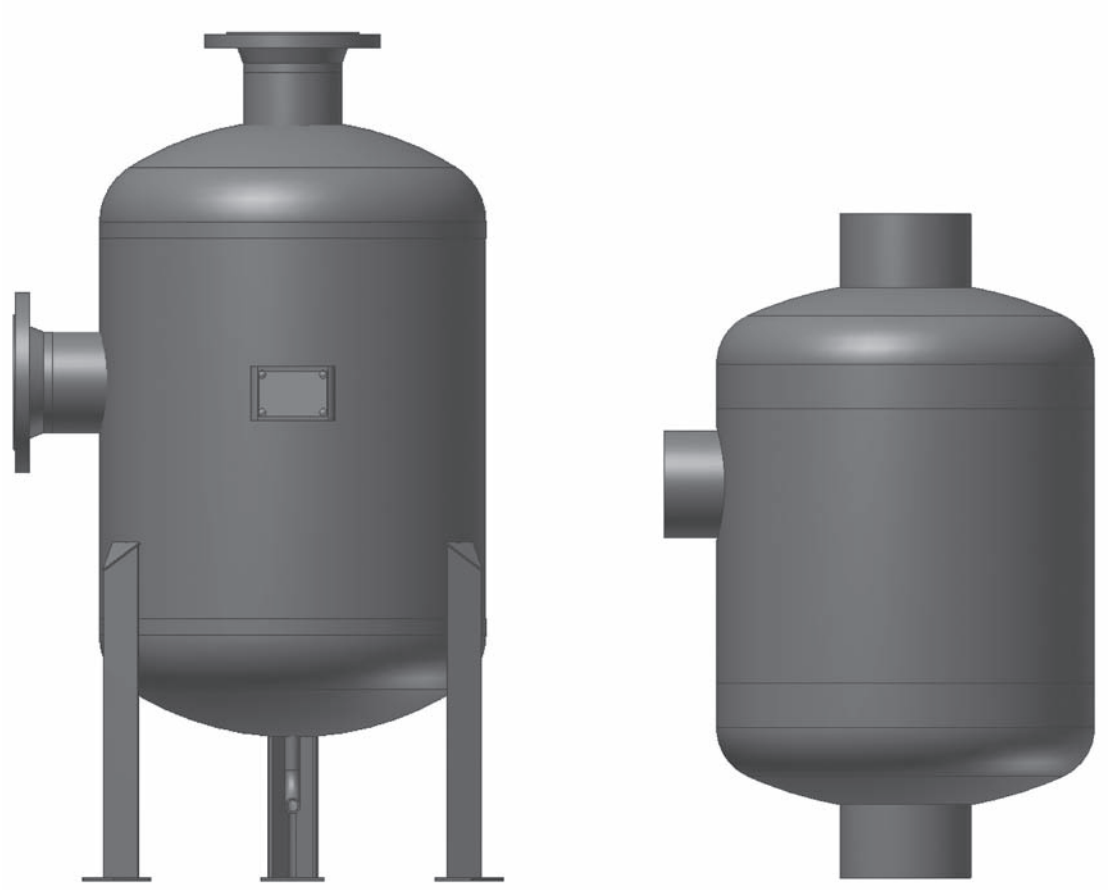


Permanent flow 150 l/h, immediate flow 1,000 l/h.
Maximum pressure: 0.6 MPa.

SUPPLY:
- Cartridge filter with a cartridge and a filler
- Water meter

SPECIAL ACCESSORIES:
- Conductivity metering device
- Spare cartridge

DESLUDGING AND VENTING VESSELS

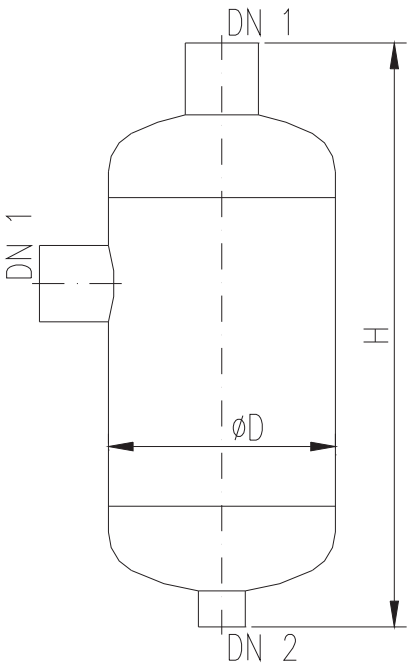


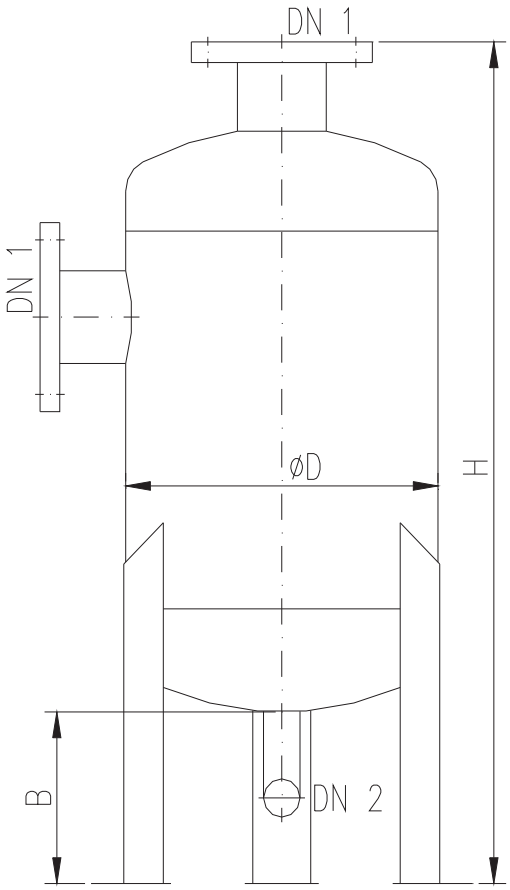
Desludging vessels serve to protect hot-water heating systems from corrosion by collection of sludges and dirt. They are designed for max. working overpressure of 1.0 MPa and max. temperature of 120 °C.

The venting vessels are used to remove air from heating systems. They are designed for max. working overpressure of 1.0 MPa and max. temperature of 120 °C.

The vessels come with an environmentally friendly primer coating. Galvanising is possible upon request.

DESLUDGING VESSELS

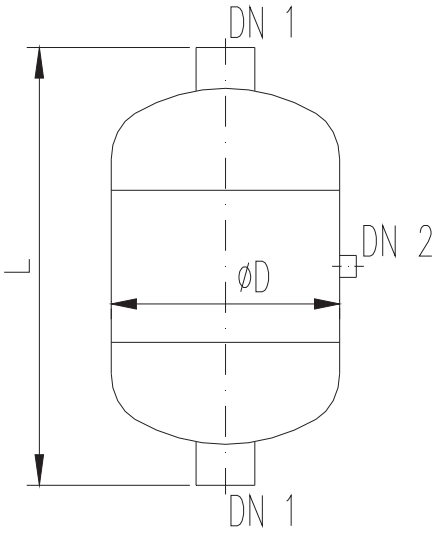




Catalogue No.	TYPE	Diameter D mm	Neck DN1 mm	Neck DN2 mm	Length B mm	Height H mm
3101	200	206	65	6/4"	-	560
3102	300	300	80	6/4"	-	680
3103	400	400	100	40	200	980
3104	500	500	125	40	200	1180
3105	600	600	150	40	200	1120

Desludging vessels (sludge boxes) are stable pressure vessels used for protecting hot-water heating systems, such as hot-water boilers, heat exchangers, heating units and piping, from corrosion by collection of sludges and dirt, which increases the working reliability of the fittings. The desludging vessels are designed for max. working overpressure of 1.0 MPa and max. temperature of 120 °C. The desludging vessel is installed before the source of heat (boiler, exchanger etc.) and as part of the supply piping (return pipe).

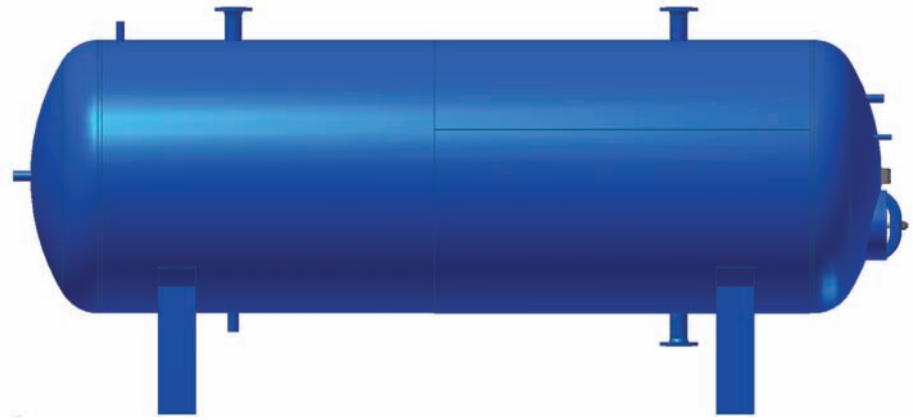
VENTING VESSELS



Catalogue No.	Diameter D mm	Neck DN1 mm	Neck DN2 mm	Length L mm	Weight kg
3201	114,3	1"	3/8"	240	2,6
3202	219,1	1"	3/8"	360	9,8
3203	273	1"	3/8"	430	13,8
3204	273	5/4"	3/8"	560	18,3
3205	273	6/4"	3/8"	560	18,4
3206	273	2"	3/8"	560	17,9
3207	380	2 1/2"	3/8"	790	27,0
3208	380	3"	3/8"	790	27,1

Venting vessels are pressure vessels serving to remove air from the heating medium within a closed-circuit heating system. Designed for max. working overpressure of 1.0 MPa and max. temperature of 120 °C, they can be supplied including automatic bleeding valves. The venting vessels come complete with an environmentally friendly primer coating. Galvanised or stainless version upon request.

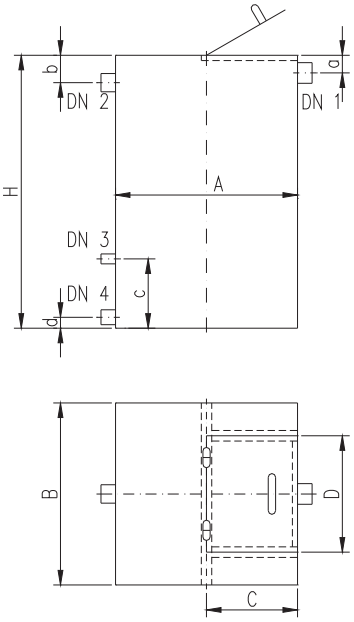
NON-PRESSURE VESSELS



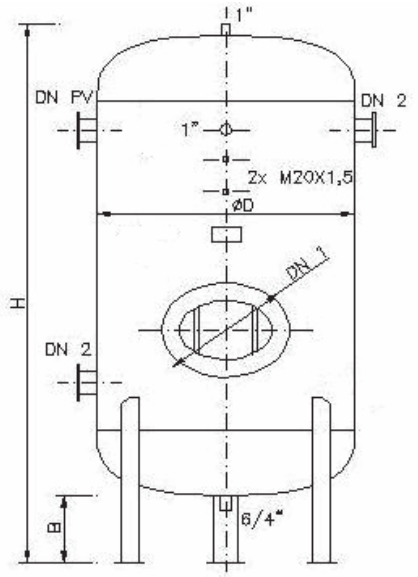
Non-pressure vessels are produced to facilitate storage of materials and media with maximum overpressure of being up to 0.05 MPa. The product range is not limited just to cylinder-type tanks; in fact, all types of block, cube or cylinder-shaped vessels with flat or vaulted bottom as well as flat-wall or reinforced-wall vessels can be produced.

Please, be sure to indicate the type of application, outline of shape and dimensions as well as the number and gauge of necks and welded-on pieces when ordering your product. We can make a strength analysis based on the data and parameters supplied. The vessels are generally supplied with an environmentally friendly primer coating (water dilutable) and can have plastic or galvanised finish as requested.

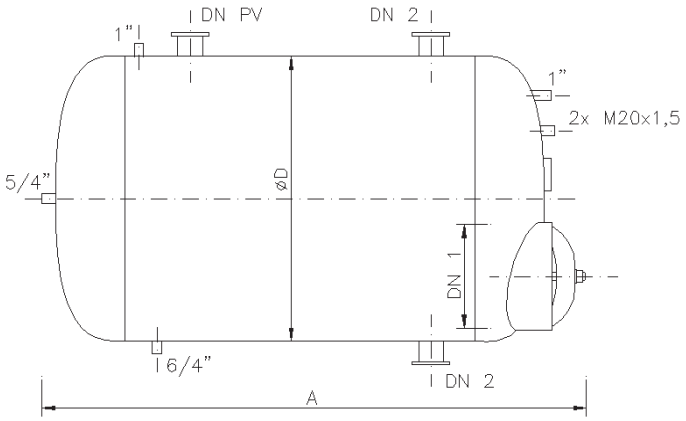
NON-PRESSURE EXPANSION TANK



Catalogue No.	Volume	Basic sizes			Vover		Connection sizes								Weight
	l	A (mm)	B (mm)	H (mm)	C (mm)	D (mm)	DN1	DN2	DN3	DN4	a (mm)	b (mm)	c (mm)	d (mm)	kg
3001	60	500	250	500	250	250	1"	1"	není	není	30	55	není	není	24
3002	125	500	500	500	250	500	6/4"	5/4"	1/2"	1"	35	70	125	30	36
3003	190	500	500	750	250	500	6/4"	5/4"	1/2"	1"	40	75	190	30	48
3004	250	500	500	1000	250	500	6/4"	5/4"	1/2"	5/4"	50	100	250	35	60
3005	420	750	750	750	400	400	2"	6/4"	1/2"	5/4"	45	90	190	35	108
3006	550	750	750	1000	400	400	2"	6/4"	1/2"	5/4"	50	100	250	30	132
3007	700	750	750	1250	400	400	70	50	1/2"	40	65	125	310	35	156
3008	850	850	1000	1000	500	500	70	50	1/2"	40	50	110	250	35	173
3009	1000	1000	1000	1000	500	500	70	50	1/2"	40	50	110	250	35	192
3010	1250	1000	1000	1250	500	500	80	50	1/2"	50	65	125	310	40	224
3011	1500	1000	1000	1500	500	500	80	50	1/2"	50	75	150	375	40	320
3012	1800	1000	1000	1800	500	500	Upon specific demand								368
3013	2000	1000	1000	2000	500	500	Upon specific demand								400
3014	2500	1000	1250	2000	500	500	Upon specific demand								460
3015	3000	1000	1500	2000	500	500	Upon specific demand								520



Catalogue No.	Volume l	D mm	B mm	H mm	DN 1 mm	Weight kg
BN01	250	500	200	1630	-	80
BN02	400	600	200	1720	-	140
BN03	540	650	200	1960	-	160
BN04	630	700	200	2120	-	180
BN05	800	800	200	2050	-	220
BN06	1000	800	300	2560	-	260
BN07	1400	1000	300	2300	420x320	370
BN08	1600	1000	300	2700	420x320	420
BN09	2000	1000	300	2920	420x320	515
BN10	2200	1200	300	2460	420x320	560
BN11	2500	1200	300	2960	420x320	630
BN12	4000	1400	300	3020	420x320	880
BN13	5000	1400	300	3750	420x320	1080
BN14	6300	1600	300	3650	420x320	1280
BN15	8000	1800	300	3650	420x320	1620
BN16	10000	2000	300	3950	420x320	1950



Volume 30 to 200 l

Catalogue No.	Volume l	D mm	A mm	DN 1 mm	Weight kg
BNM1	30	300	480	-	30
BNM2	50	300	740	-	40
BNM3	65	300	990	-	50
BNM4	75	300	1090	-	55
BNM5	90	300	1340	-	65
BNM6	100	400	940	-	32
BNM7	150	400	1340	-	44
BNM8	200	500	1190	-	58

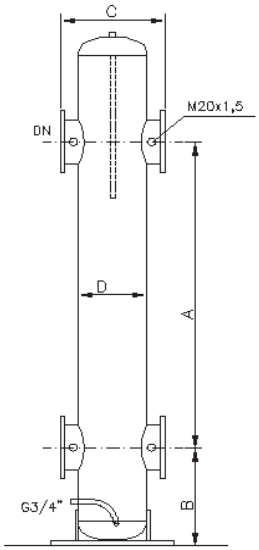
Volume 250 to 10 000 l

Catalogue No.	Volume l	D mm	A mm	DN 1 mm	Weight kg
BN101	250	500	1440	-	67
BN102	400	600	1670	-	130
BN103	540	650	1910	-	140
BN104	630	700	2070	-	160
BN105	800	800	2000	-	190
BN106	1000	800	2580	-	230
BN107	1400	1000	2150	420x320	320
BN108	1600	1000	2300	420x320	370
BN109	2000	1000	2770	420x320	465
BN110	2200	1200	2310	420x320	510
BN111	2500	1200	2810	420x320	580
BN112	4000	1400	2870	420x320	830
BN113	5000	1400	3600	420x320	1030
BN114	6300	1600	3500	420x320	1230
BN115	8000	1800	3500	420x320	1570
BN116	10000	2000	3800	420x320	1900

The non-pressure expansion tanks are designed as part of either water supply systems containing rather large quantity of water in the heating system or cooling water systems. The purpose of the non-pressure expansion tank is to compensate the degree of water expansion in the system preventing any loss of water. Generally, the vessels come complete with an environmentally friendly primer coating. Plastic or galvanised finish upon request.

OTHER HP COMPONENTS:

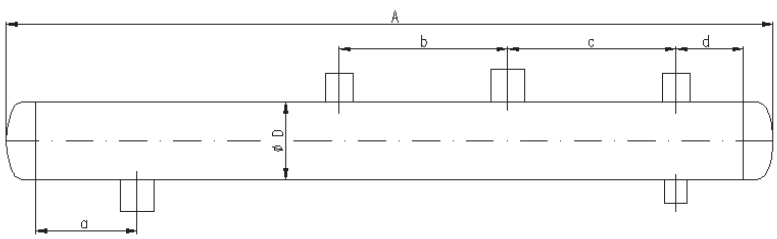
HYDRAULIC BYPASS



Catalogue No.	Flow m^3/h	Source output kW at t2-t105°C	D mm	DN P10	A mm	B mm	C mm	Weight kg
1401	4	70	100	50	550	100	200	20
1402	8	140	150	65	750	150	300	35
1403	12	210	200	80	850	200	400	75
1404	20	350	200	100	900	200	450	85
1405	30	525	250	125	1000	250	500	110
1406	50	875	300	150	1200	300	600	175
1407	100	1750	400	200	1500	400	800	250

Hydraulic bypasses are produced as heating circuit components to eliminate water shocks within the system. They are produced based on the source of heat for overpressures of 0.6 to 1.0 MPa and temperatures of up to 105 °C. The parameters can be increased if requested so.
Any hydraulic bypass not listed in the table can be supplied if desired based on special calculations.

SPLITTERS / COLLECTORS



Splitters and collectors are produced as heating system components. They serve for splitting or combining multiple heating branches. The devices are produced up to the source of heat for overpressures of 0.6 to 1.0 MPa and temperatures of up to 105°C. The parameters can be increased upon customer's request.
Splitters and collectors can be supplied based on customer's specifications and special calculations.

STEP-TV: AN AUTOMATIC EXPANSION, FILLING AND DEGASSING SYSTEM

STEP-TV is an automatic system providing for maintaining pressure in heating systems, including degassing and filling actions and assuring the operation of heating systems, heat-delivery plants, cooling and air-conditioning systems is fully automated. The STEP-TV function is eliminating the negative effects of air and gases within the heating system.

Keeping the pressure in the system at the pre-set levels, STEP-TV safely prevents low pressure, thus the evaporation or cavitation in each part of the system. The pressure-free container serves for balancing any changes in the system volume by regulating changes in temperature. STEP-TV checks parameters of the system, removing from the system any free and dissolved gases. During the operation, it prevents gas bubbles to release as well as noise in radiators and circulation dysfunctions to occur. Any water lost from the system is automatically refilled.

When the separate security of the sources of heat is not ensured by the pressure expansion tank, a process of „cycling“ may occur. Whenever it takes place, attaching a pressure expansion tank to STEP-TV.

BASIC FUNCTIONING:

Maintaining constant pressure in the heating system automatically through self-controlled water-filling
When necessary, the heating system is filled automatically with water from a pressure-free tank by means of a pump. Once the pressure in the system has exceeded the controller pre-set value, the electromagnetic valve lets the water flow into the pressure-free tank. This function enables safe, trouble-free and remote operation. In case of any system leakage, the flow of water into the system is automatically blocked by STEP-TV after a specified period of time and the equipment returns an error message, which can be transmitted to the control system of the source of heat.

Venting and degassing during operation
The process takes place within STEP-TV based on desorption which means that air and gases are eliminated from the hot-water system.
Once STEP-TV has been installed within the system, heating water starts to flow through the equipment, whilst that contained in the pressure tank or in the piping by the pressure sensor and of the same pressure as that in the system is closed by a valve and a backflow valve. Opening the valve releases the pressure from the water. Connecting with the pressure-free tank reduces operating pressure to equal the atmospherical pressure, thus achieving the maximum elimination of the air and gases from the heating water. The water so treated is pumped back into the system under appropriate pressure, where the remainder of air and gases is absorbed from the problematic parts of the pipeline. The process of degassing is automatically adjusted to the conditions inside the system and controlled by a scheme selected automatically.

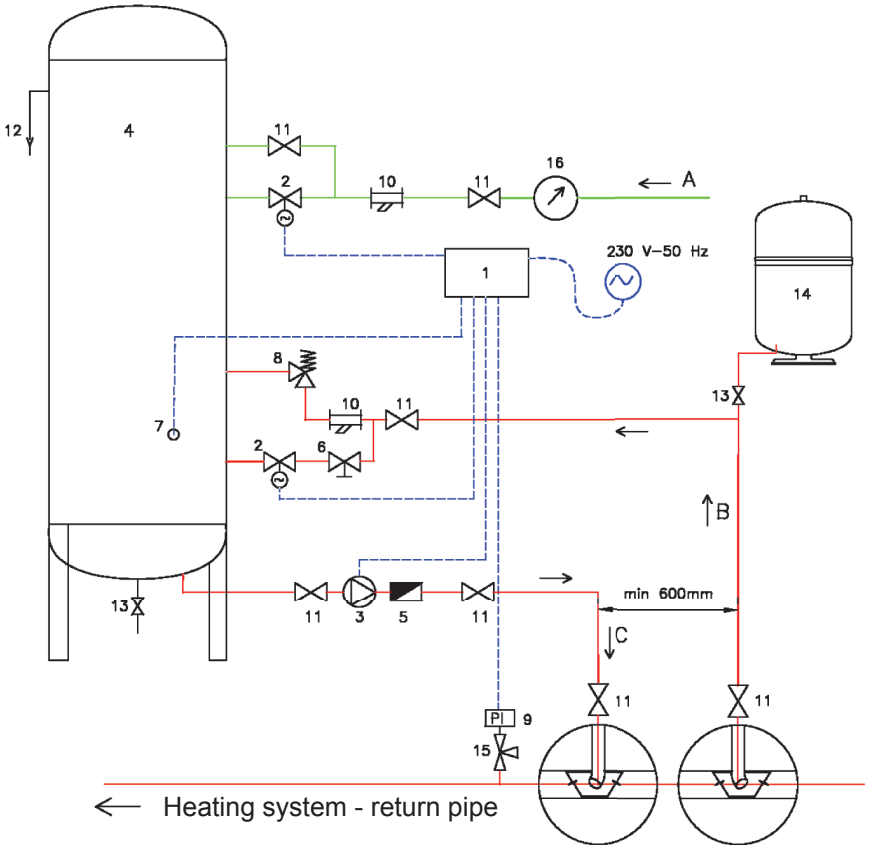
Physical treatment of water
Oxygen and other gases causing not only the air-lock of the system but also the oxygen corrosion of materials and successive damage of boilers, pumps and heat exchangers are removed from the circulating water. Adding STEP-TV a continuous-flow water softening filter produced by STEP TRUTNOV is possible by installing the device before the cold water supply /see A/ .

Safeguarding the heating system
STEP-TV is protected against excessive working overpressure in accordance with ČSN 06 0830.

DIMENSIONAL TABLE:

Type TV	Output power kW	System volume L	Tank capacity l	Input DN	Output DN	Water filling DN	Diameter mm
TV 01	Up to 100	Up to 1500	80	25	dle ČSN 06 0830 čl. 6.5.3	15 až 25	550
TV 02	Up to 200	Up to 2500	110	25			550
TV 03	Up to 300	Up to 4000	200	25			550
TV 06	Up to 600	Up to 5000	300	25			550
TV 08	Up to 800	Up to 10000	400	25			600
TV 18	Up to 1850	Up to 14000	540	25			650
TV 45	Up to 4500	Up to 25000	1000	25			800

Recommended hydraulic diagram



CAPTIONS:

1 - Programmable controller
2 - Electromagnetic valve
3 - Pump refill
4 - Storage tank
5 - Backflow valve
6 - Control valve
7 - Level sensor
8 - Mechanical pressure relief valve
9 - Pressure sensor
10 - Filter
11 - Ball shut-off valve
12 - Overflow
13 - Ball discharge valve
14 - Expansion tank - optional accessories
15 - Intercepting manometric valve
16 - Make-up water meter

A - Recharge of treated water
B - Supply pipe from the heating system
C - Return pipe into the heating system

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