



## Installation & Operating Manual

UKV 20-220

UKV 20-300

UKV 20-500

UKV 20-750

UKV 20-1000

Buffer Tank

All installation diagrams in this manual do not replace the system design; they can only be used for illustrative purposes. The product is not intended for use by persons with reduced physical fitness/mental efficiency or without sufficient experience and knowledge, if they are not supervised or instructed by a person responsible for their safety. Operation of the product by children is strictly prohibited.

We reserve the right to make the product design changes and changes in the manual.

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# 1 General

## Introduction

Thank you for your confidence and choice of equipment by NIBE. To fully benefit from the advantages of this product, you should read this Manual before using it, and in particular chapters relating to the application, installation and maintenance, and warranty. Please keep this Manual in a safe place for future reference.

### CAUTION

*Sections of the Manual relating to the installation, inspection and maintenance are intended for the qualified installer.*

### CAUTION

*The manufacturer shall not be held liable for any damages caused by failure to comply with the recommendations and observations contained in this Manual.*

## Intended Use

Buffer tanks are used for storage and transfer of energy contained in the heating medium. The accumulated energy is transferred to the heating system. Buffer tanks can operate with a variety of heat sources in central heating systems such as heat pumps, solid fuel boilers, solar heating systems, etc.

When used in the system containing a solid fuel-fired boiler, the low capacity tank improves the uniform heat removal. It reduces the amount of fire ups and additionally enables the boiler operation at the design power rating. This also enhances the efficiency and life of the boiler. NIBE buffer tanks enable operation with virtually any type of central heating system. During the installation and operation, always follow the instructions in this Manual.

### CAUTION

*Buffer tanks are designed for heating up and supplying the heating medium. Any inappropriate use, not in compliance with its intended use is not permitted. Neither manufacturer nor supplier shall be responsible for damages resulting from this.*

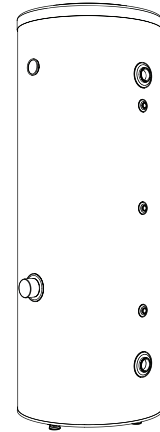


Fig. 1 UKV 20-220 buffer tank.

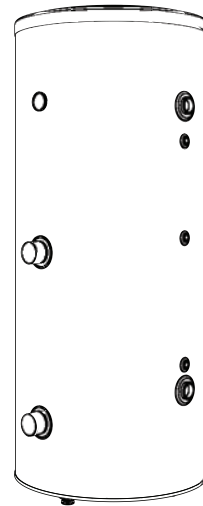


Fig. 2 UKV 20-500 buffer tank.

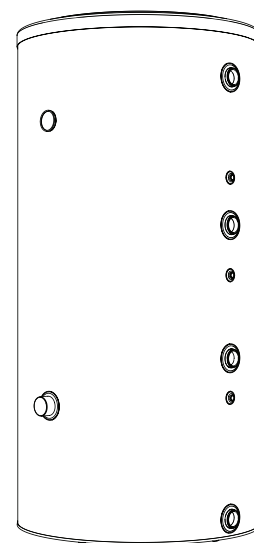


Fig. 3 UKV 20-750 buffer tank.

# 2 Construction

UKV Buffer tanks by NIBE are made of high quality steel sheet, coated on the outside with anti-corrosion paint. Specially selected tank insulation provides excellent thermal insulation properties of these devices. All devices in the Series are in aesthetic plastic body and are equipped with a Temperature gauge. Tanks have connector pipes and temperature sensor covers for mounting the sensor and temperature measurement at different levels in the tank, as well as connectors for mounting an electrical heating unit.

Buffer tanks with a capacity of 750 and 1000 litres are equipped with a special bar (gate) located on the left side of the tank, whose task is to provide layered arrangement of the heating medium in the tank.

### INFORMATION

**All products are ready for the installation of a heating unit containing an electric heater with thermostat and thermal switch.**

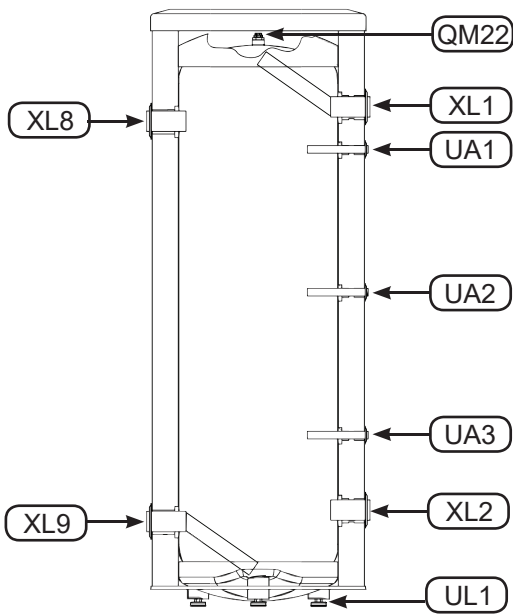


Fig. 4 Section of the UKV 20-220 buffer tank.

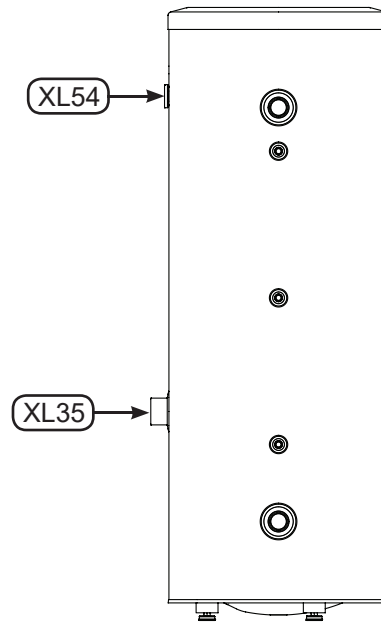


Fig. 6 Side view of the UKV 20-220 buffer tank.

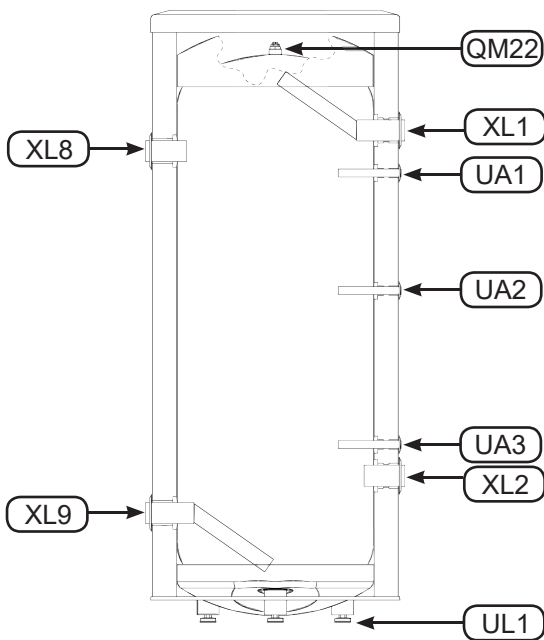


Fig. 5 Section of the UKV 20-300 / 20-500 buffer tank.

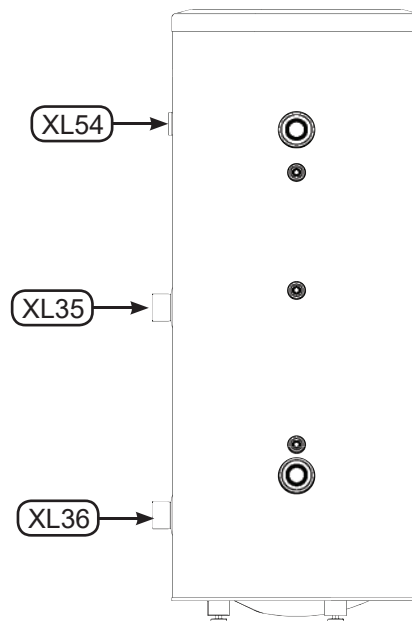
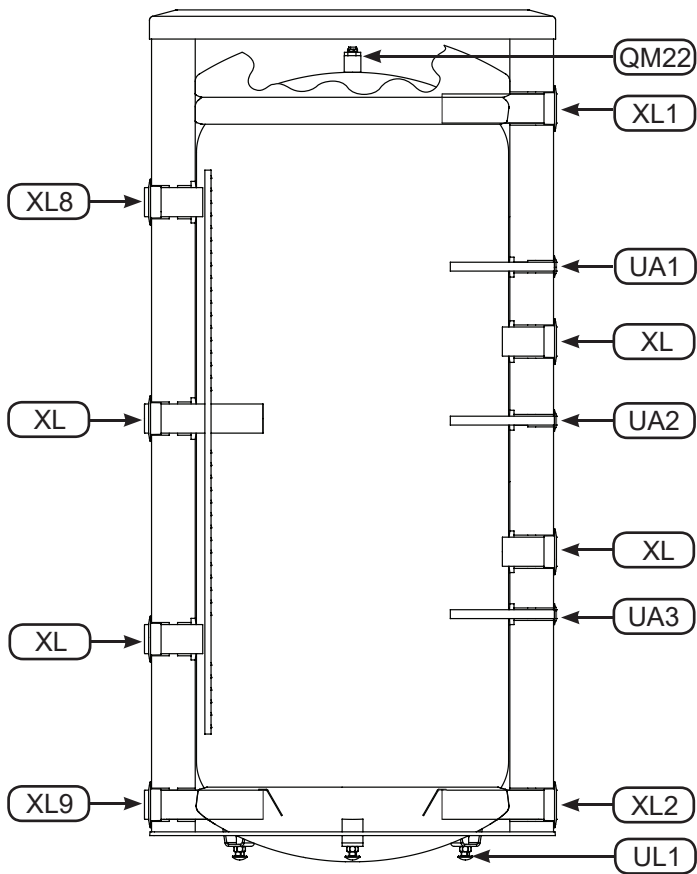
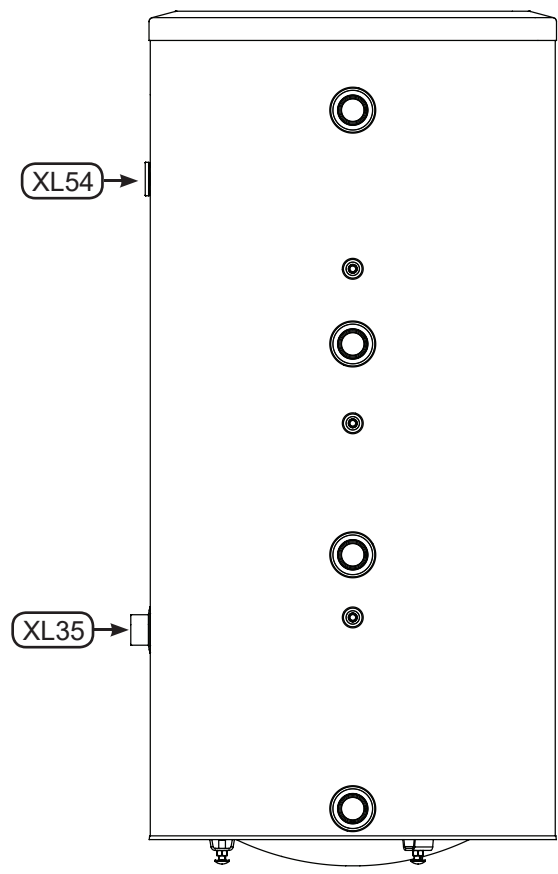


Fig. 7 Side view of the UKV 20-300 / 20-500 buffer tank.



**Fig. 8** Section of the UKV 20-750 and UKV 20-1000 buffer tank.



**Fig. 9** Side view of the UKV 20-750 and UKV 20-1000 buffer tank.

**Description:**

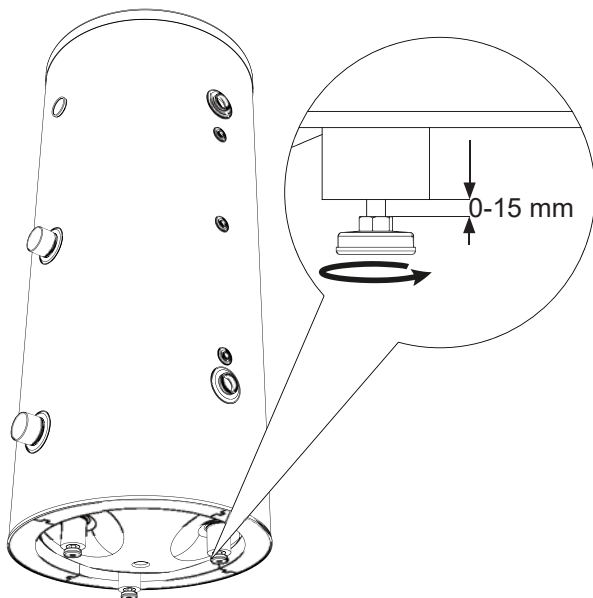
QM22	Vent
UA1-UA3	Temperature sensor cover
UL1	Adjustable foot
XL	Connector pipe
XL1	Connector pipe (heating system supply)
XL2	Connector pipe (return from the heating system)
XL8	Connector pipe (supplying from the heat source)
XL9	Connector pipe (return to the heat source)
XL35-XL36	Connector pipe for mounting electric heating unit
XL54	Thermometer.

# 3 Installation

## Location of the Tank

UKV buffer tanks can be installed in any room protected against temperature drop below 0°C, which will prevent freezing of water in the tanks. It should be installed in a convenient place for the user (eg basement, boiler room, etc.), in a way that will enable easy maintenance or servicing in the future.

Select the device location in a way allowing the rational routing of the central heating system. We recommend installation of the buffer tanks in the immediate vicinity of the main heat source in order to avoid unnecessary heat losses. Consider the filled tank weight when selecting its location as well as free space above and on the sides of the buffer tank required to perform maintenance and inspections of the unit.



**Fig. 10** Levelling the unit.

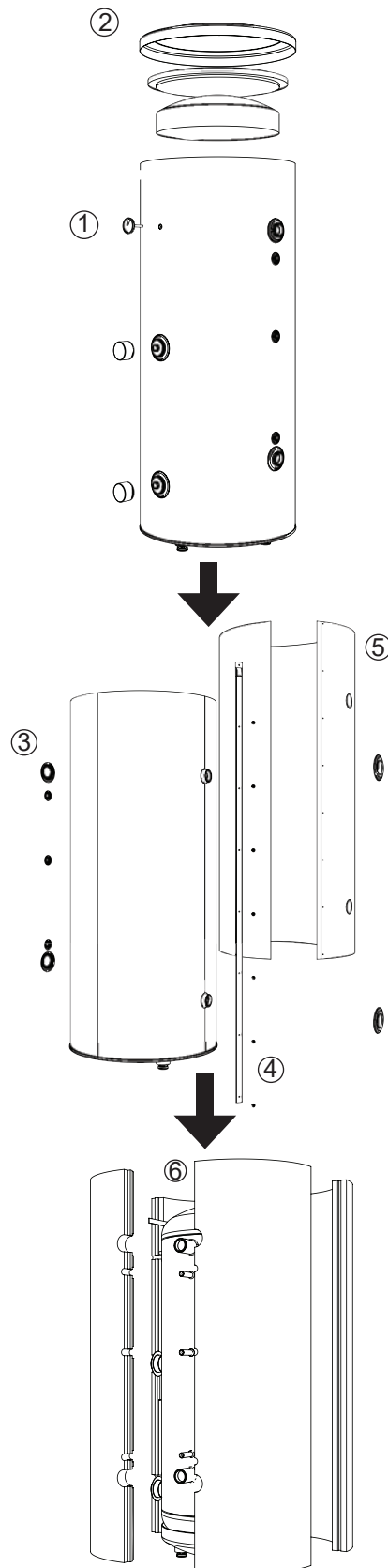
The tank stands on three adjustable feet that can be adjusted within the range from 0 to 15 mm to level the tank.

## Housing Disassembly

Removable housing with thermal insulation facilitate transport and installation of the tank. Disassembly the housing in the following order (see Fig. 11):

1. Remove the Temperature gauge and plugs of the heating element connector pipes.
2. Remove the upper cover of the housing together with thermal insulation.
3. Remove the plugs from the connector pipes and black bushings.
4. Remove the fixing screws and the strip connecting the housing jacket.
5. Remove the jacket surrounding the tank (housing jacket.)
6. Remove the four-piece thermal insulation.

After the installation of the tank in its final location, re-install the removed components in the reverse order.



**Fig. 11** Housing disassembly

## Installation Requirements

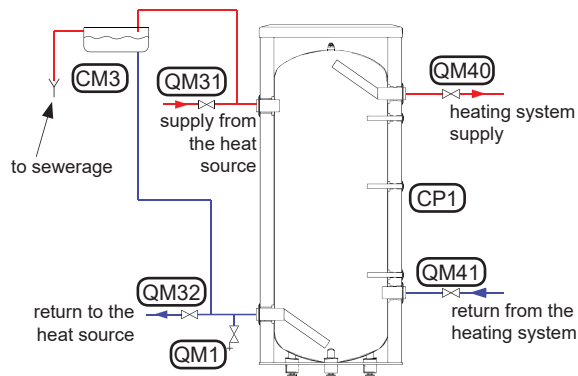
### CAUTION

**Installation and commissioning of the buffer tank shall only be done by appropriately qualified installer. The installer should inform the user of the functions of the product and provide the necessary information on its safe use.**

Buffer tanks Series UKV can be connected to open or closed central heating systems. Pressure in the C/H system may not exceed the max operating temperature of the unit (for the allowable operating parameters of the units, see Table 1 Technical data.) Connect the buffer tank in accordance with the installation diagram. Remember to install the appropriate safety valves.

### Open System

UKV buffer tanks can be included in an open C/H system protected in accordance with actual norms or standards of protection.



**Fig. 12** Diagram of the UKV 20-220 buffer tank installation in an open system.

Description:

- CP1 Buffer tank.
- QM31 Cut-off valve- supply from the heat source
- QM32 Cut-off valve - return to the heat source
- QM40 Cut-off valve- heating system supply
- QM41 Cut-off valve- return from the heating system
- QM1 Drain valve.
- CM3 Open expansion tank.

### Closed System

Buffer tanks Series UKV can be connected to a closed C/H system in accordance with relevant regulations and standards.

Buffer tank operating in a closed circuit must be equipped with correctly dimensioned safety valve (preferably in the heating medium return line to the heating source), with blow-off pressure not exceeding the max operating pressure of the unit (for the max operating pressures of the units, see Table 1 Technical data.) Some amount of the heating medium can leak from the safety valve during normal operation, therefore, you should install a drain line in the safety valve, allowing safe drain of the heating medium to the sewerage or drain grate.

The safety valve outflow line should be installed with a slope and be protected against water freeze, and it should remain open to the atmosphere. The manufacturer is not responsible for flooding the room as a result of the valve operation.

### INFORMATION

**When connecting the buffer tank to a closed C/H system, you have to install an additional or increase capacity of the existing expansion vessel.**

### CAUTION

**In closed systems, use of a safety with blow-off pressure not exceeding the max operating pressure of the unit is mandatory (for the max operating pressures of the units, see Table 1 Technical data.)**

### CAUTION

**Water can drip from the safety valve, which is normal and you should never prevent it, since blocking of the safety valve can cause a threat to the user's safety.**

### CAUTION

**Installation of necking of any kind (such as reducers, dirt pockets, cut-off valves, etc.) between the safety valve or open expansion tank and the buffer is not allowed. Only a T-pipe with a drain valve and a T-pipe with an expansion vessel may be installed in these line sections.**

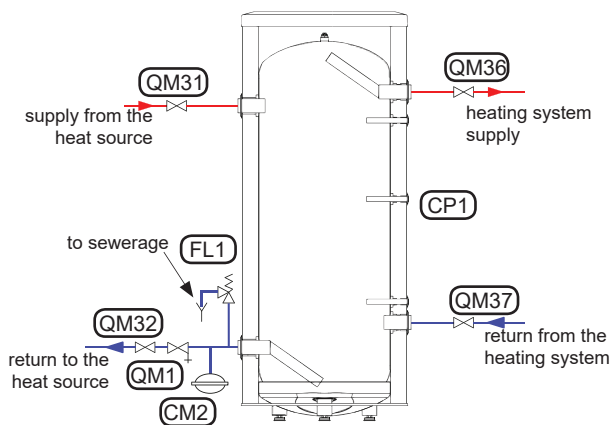
### CAUTION

**Never use the equipment with clogged safety valves.**

### CAUTION

**Check the operation of the safety valve periodically as described by the manufacturer of the valve.**





**Fig. 13** Diagram of the UKV 20-220 buffer tank installation in a closed system.

Description:

CP1	Buffer tank
QM31	Cut-off valve- supply from the heat source
QM32	Cut-off valve - return to the heat source
QM36	ZCut-off valve- heating system supply
QM37	Cut-off valve- return from the heating system
QM1	Drain valve
CM2	Expansion vessel
FL1	Safety valve

#### INFORMATION

*The lower return connections to the heating source and from the heating system can be connected in opposite configuration.*

## 4 Connection and start-up

### Connection

#### CAUTION

*The storage tank connections may not be made of materials more precious than carbon steel due to the increased electrochemical corrosion. This applies to connector pipes (fittings) contacting the tank connector pipe thread. Preferably, use galvanized connector pipes (fittings.)*

#### INFORMATION

*We recommend connecting the tank connector pipes with the system lines by means of unions to allow disconnection of the tank, if required.*

After the installation and levelling the tank, follow the procedure below (for the connector pipe numbers, refer to Fig. 4, 5, 6, 7, 8, 9 ):

1. Remove protecting plugs from the connector pipes.
2. Connect the supply line from the heat source (XL8).
3. Connect the return line to the heat source (XL9).
4. Connect the heating system supply line (XL1).
5. Connect the return line from the heating system (XL2).
6. Install the required temperature sensors (UA).
7. If necessary, connect the electric heating unit to the connector pipe (XL35, XL36) in UKV 20-300, UKV 20-500 or (XL35) in UKV 20-220, UKV 20-750, UKV 20-1000.

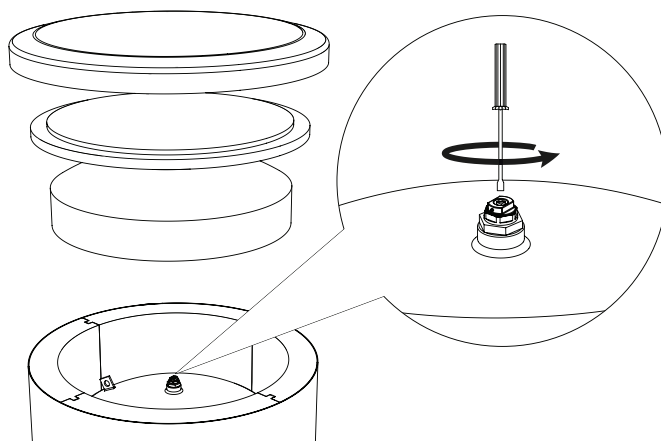
### Start-Up

After connecting all components of the C/H system, do the following:

1. Fill up the C/H system with the heating medium.
2. Check tightness of all connections.
3. After checking for tightness, insulate the pipelines together with the tank fittings thoroughly.
4. Fill up the C/H system with the heating medium and vent the system.

Filling and venting the buffer tank:

You can fill the buffer tank directly from the C/H system or through the tank drain valve. Vent the tank and the C/H system after filling them. Vent the unit through the vent installed in the top head of the tank (see Fig. 14).



**Fig. 14** Venting the buffer tank

After completion of the above steps, the system is ready for operation. You can use the facility heating system after starting up the heat source and reaching the required temperature of the heating medium.

### CAUTION

**Switch OFF the heating units and wait until the heating medium cools down completely in the C/H system before venting the buffer tank.**

### CAUTION

**Ensure that the entire C/H system is filled with the heating medium before heating the system up for the first time or after a longer break in its operation.**

## Thermal Insulation of the System

In order to minimize thermal energy losses, insulate all connector pipes, pipelines and temperature sensor covers thoroughly after the installation of the unit and performance of the leak proof test. For this purpose, use thermal insulation of correctly selected thickness and thermal insulation parameters.

### INFORMATION

**Lack of thermal insulation, its incorrect thickness or insulation made of inadequate materials will cause decrease of thermal insulation properties of the system.**

## Frost Protection

If you plan to interrupt operation of the unit and there is a risk of freezing the heating medium in the tank, drain the tank and the entire heating system associated with it completely.

## Warnings and Practical Recommendations

### Practical Recommendations

- Limit the setpoints of the heating medium temperature controllers in the buffer tank supply lines to 85°C.
- Check the operation of the safety valve periodically as described by the manufacturer of the valve.
- Report any malfunctions in the buffer tank operation to the authorized service centres. You can find the complete list of our authorized service centres on our website.
- Open the vent to vent the buffer tank before the heating season start.
- Check filling of the C/H system from time to time.

### Warnings

- Never activate circulation of the heating medium unless the buffer tank is filled with the heating medium.
- Never operate the buffer tank if you find any malfunction in the safety valve operation.

- Never install any device (such as cut-off and/or check valves, etc.) between the tank and the safety valve or open expansion tank (except T-pipes.)
- Any repairs of the buffer tank by the user are forbidden.
- Stopping water leaks from the safety valve is not allowed.

## 5 Service

Report any malfunctions in the buffer tank operation to the authorized service centres.

### CAUTION

**The tank may only be repaired / serviced by an authorized service since improper repair can cause safety risks, and the loss of product warranty.**

## 6 Recycling and disposal

According to the NIBE-BIAWAR rules, the products have been manufactured of high quality materials using the latest technologies and solutions that do not endanger the environment.

When selecting materials, we took into account both the possibility of reuse of materials (recycling) that can be disassembled and separated from materials unsuitable for recycling, as well as risks arising from the processing of materials not intended to reuse.

The purchased device consists in more than 90% of parts that can be recycled and reused, so they are safe for the environment and human health.

### CAUTION

**In order to prevent damage to piping systems and environmental pollution, the product should only be disassembled and taken out of service by appropriately qualified specialists.**

### CAUTION

**At end-of-life, take care that the product and all the equipment were disposed of in accordance with applicable regulations.**

### INFORMATION

**The packaging, in which the product is delivered, is made mainly of materials suitable for recycling and utilization. After installation, you should ensure the proper disposal of packaging in accordance with applicable regulations.**

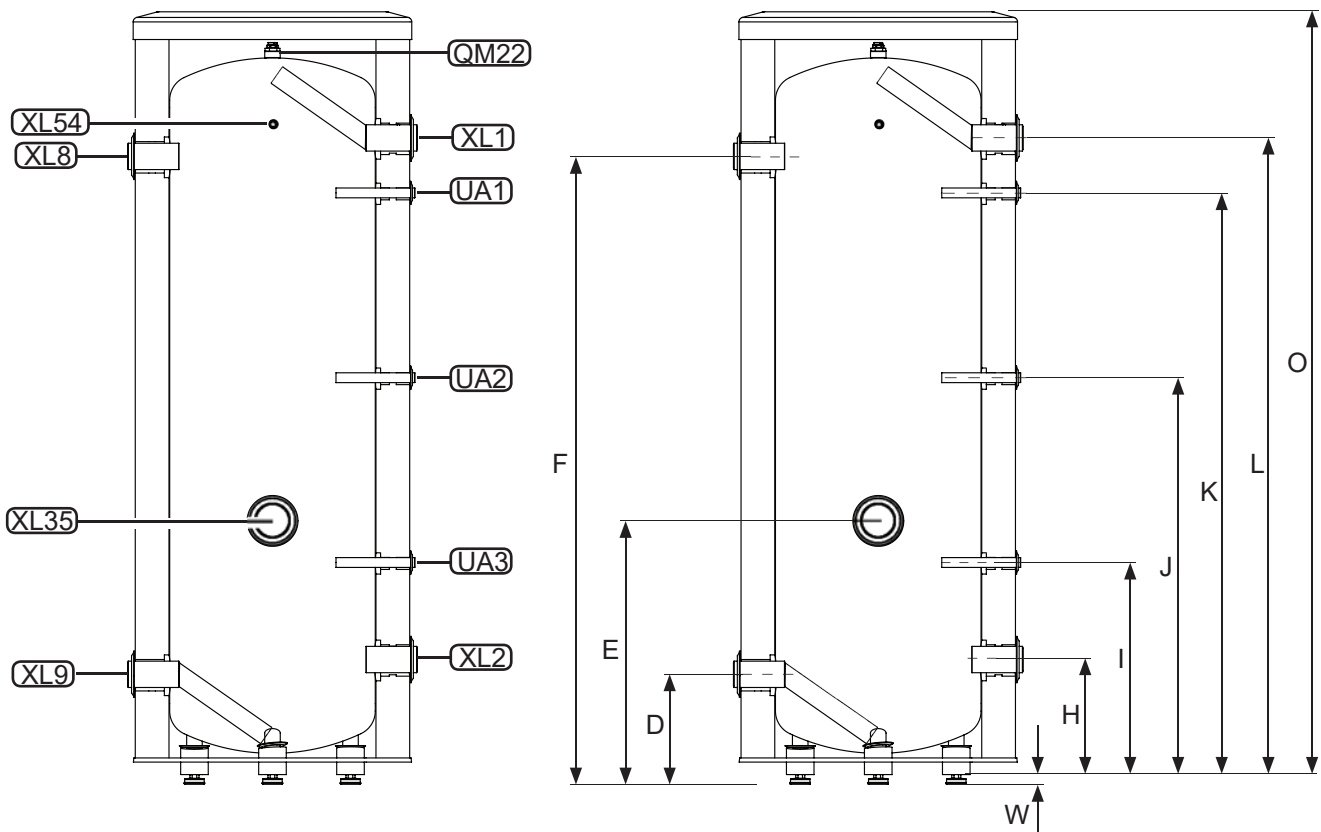
# 7 Technical data

**Table 1.** Technical data.

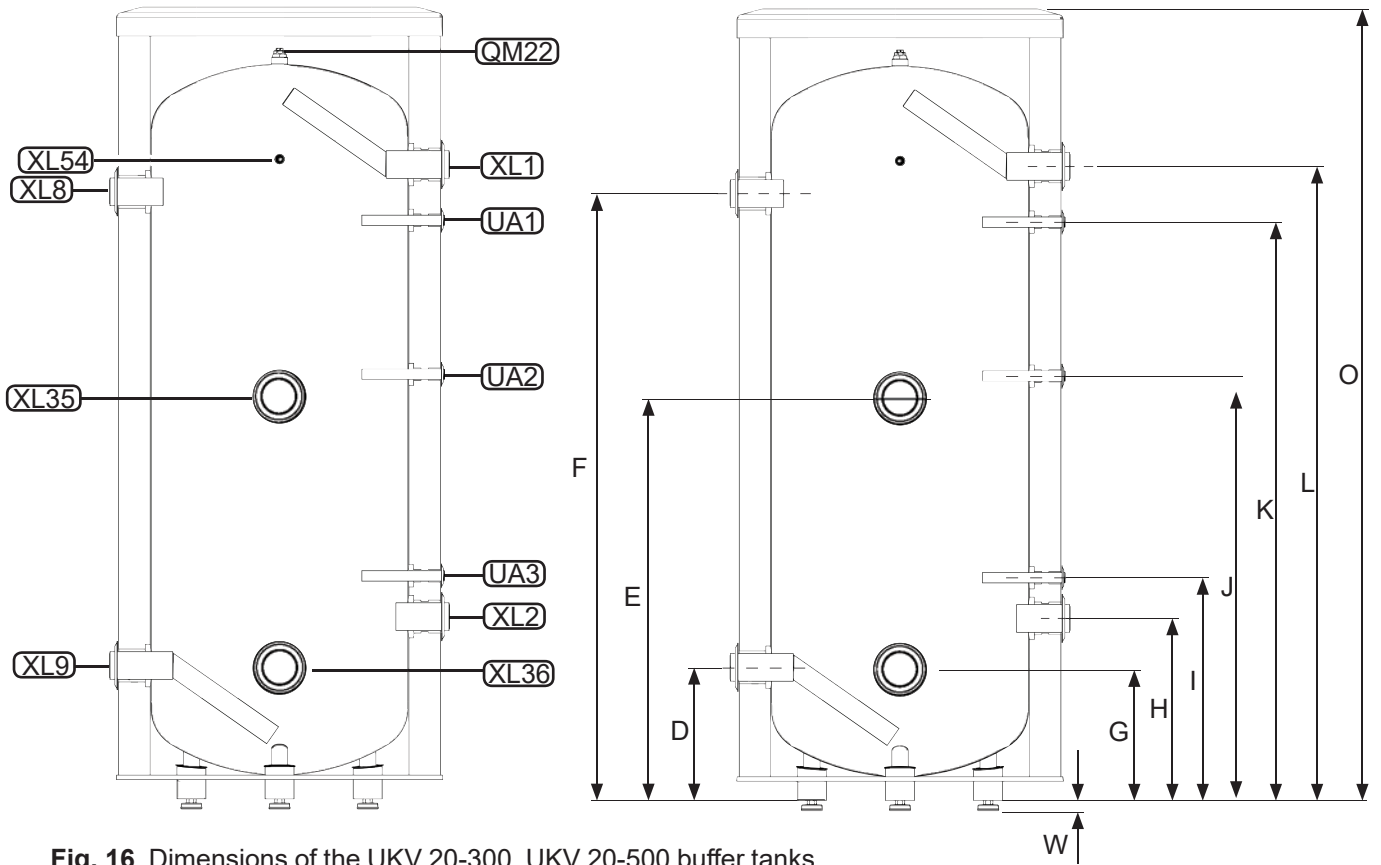
Parameter	U/m	Tank model				
		UKV 20-220	UKV 20-300	UKV 20-500	UKV 20-750	UKV 20-1000
Energy efficiency class	-	C	C	C	C	C
Storage volume (V)*	l	218,3	296,0	495,6	740,7	991,0
Standing loss (S)*	W	77,1	94,6	97,5	122,5	140,4
Max tank operating temp.	°C	85				
Max tank operating pressure	bar	6	10		3	
Electric heating module connection	inch	2" female	2 x 2" female	2 x 2" female	2" female	2" female
Weight	kg	61	83	111	170	200

\* Acc. to EU regulations No. 812/2013 & 814/2013.

## Dimensions



**Fig. 15** Dimensions of the UKV 20-220 buffer tanks.



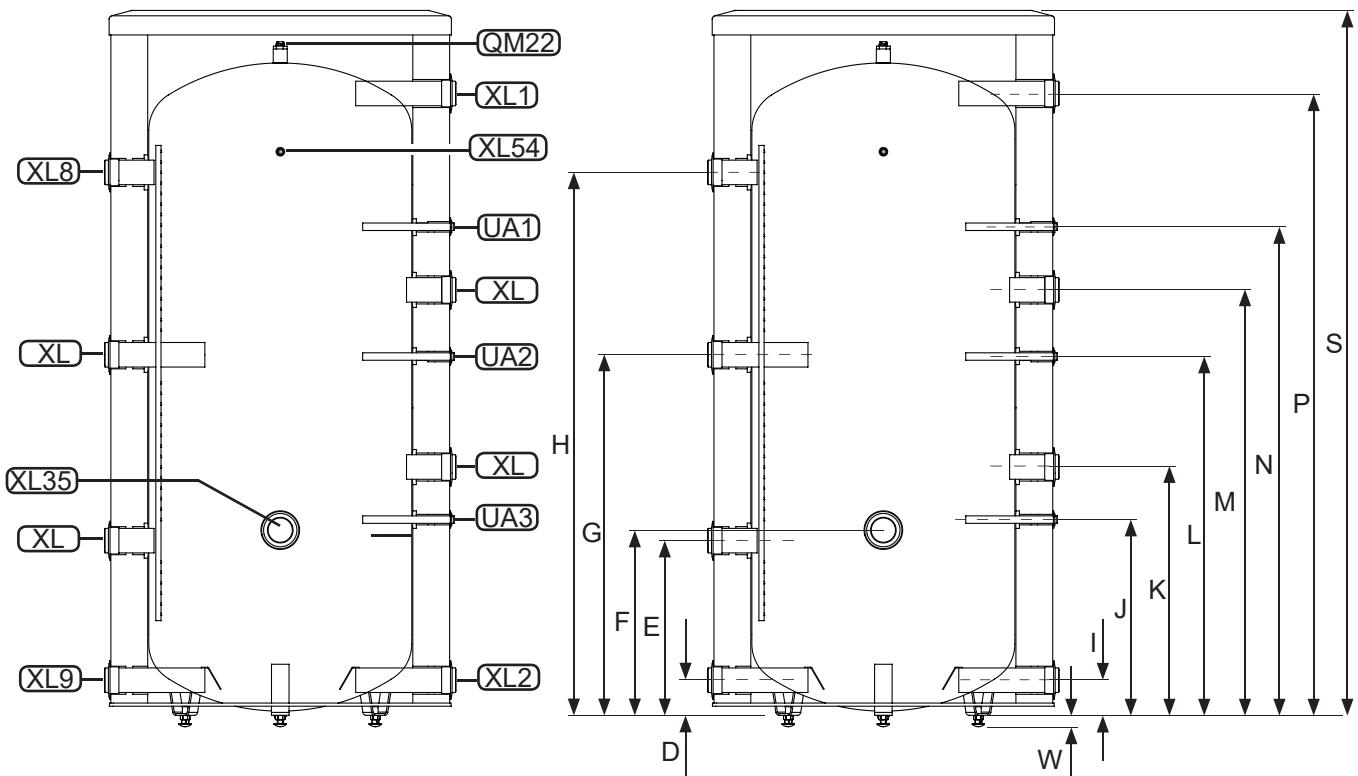
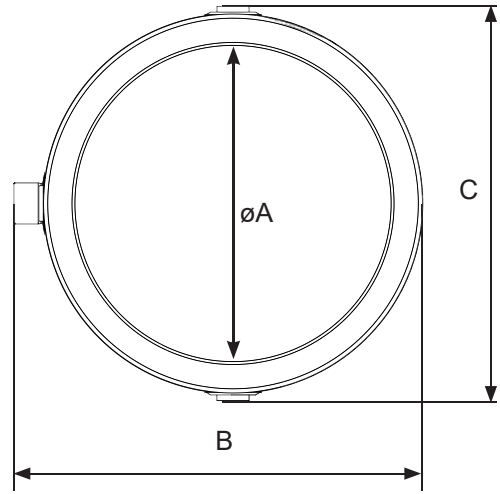
**Fig. 16** Dimensions of the UKV 20-300, UKV 20-500 buffer tanks.

**Table 2.** Connector pipe diameters in the UKV 20-220, UKV 20-300, UKV 20-500 buffer tanks.

Connection		U/m	Buffer tanks		
			UKV 20-220	UKV 20-300	UKV 20-500
XL9	Return to heat source	inch	1 ½" female		
XL35	Heating unit connection		2" female		
XL8	Supply from heat source		1 ½" female		
XL36	Heating unit connection		-	2" female	
XL2	Return from heating system	mm	1 ½" female		
UA3	Temperature sensor cover		ø16 female		
UA2	Temperature sensor cover		ø16 female		
UA1	Temperature sensor cover	inch	ø16 female		
XL1	Supply of the heating system		1 ½" female		
QM22	Vent	mm	¾" female		
XL54	Thermometer enclosure		ø10 female		

**Table 3.** Dimensions of the UKV 20-220, UKV 20-300, UKV 20-500 buffer tanks.

Dimensions				
		UKV 20-220	UKV 20-300	UKV 20-500
$\phi A$	mm	445	530	650
B	mm	650	725	852
C	mm	625	702	856
D	mm	215	275	350
E	mm	547	830	967
F	mm	1336	1253	1400
G	mm	-	270	357
H	mm	247	376	387
I	mm	457	460	547
J	mm	857	876	897
K	mm	1257	1194	1277
L	mm	1376	1309	1437
O	mm	1650	1634	1834
W	mm	21 -0/+15		



**Fig. 17** Dimensions of the UKV 20-750, UKV 20-1000 buffer tanks.

**Table 4.** Connector pipe diameters in the UKV 20-750, UKV 20-1000 buffer tanks.

Connection		U/m	Buffer tank	
			UKV 20-750	UKV 20-1000
XL9	Return to heat source	inch	2" female	
XL	Connector pipe		2" female	
XL35	Heating unit connection		2" female	
XL	Connector pipe		2" female	
XL8	Supply from heat source		2" female	
XL2	Return from heating system		2" female	
UA3	Temp. sensor enclosure	mm	ø16 female	
XL	Connector pipe	inch	2" female	
UA2	Temp. sensor enclosure	mm	ø16 female	
XL	Connector pipe	inch	2" female	
UA1	Temp. sensor enclosure	mm	ø16 female	
XL1	Heating system supply	inch	2" female	
QM22	Vent		¾" female	
XL54	Thermometer enclosure	mm	ø10 female	

**Table 5.** Dimensions of the UKV 20-750, UKV 20-1000 buffer tanks.

Dimensions	U/m	Buffer tank	
		UKV 20-750	UKV 20-1000
øA	mm	750	850
B		1020	1130
C		1000	1110
D		113	128
E		511	546
F		541	576
G		1041	1076
H		1561	1596
I		113	128
J		571	606
K		721	756
L		1036	1071
M		1226	1261
N		1406	1441
P		1786	1841
S		2023	2091
W		21 -0/+15	

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## Declaration of conformity

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declare under our sole responsibility that the product

- 
- |                                 |                                  |
|---------------------------------|----------------------------------|
| • <b>UKV 20-40</b> Buffer tank  | • <b>UKV 20-500</b> Buffer tank  |
| • <b>UKV 20-100</b> Buffer tank | • <b>UKV 20-750</b> Buffer tank  |
| • <b>UKV 20-220</b> Buffer tank | • <b>UKV 20-1000</b> Buffer tank |
| • <b>UKV 20-300</b> Buffer tank |                                  |
- 

To which this declaration relates is in conformity with requirements of following directives

EC directive on:

Pressure Equipment (PED): **2014/68/EC**

Ecodesign Directive (ErP): **2009/125/EC**

Commission Regulation (EU) No. 814/2013

Energy Labelling Directive: **2010/30/UE**

Commission Regulation (EU) No. 812/2013

Restriction of Hazardous Substances (RoHS): **2011/65/EU**

Commission Regulation (EU) No. 2015/863 (RoHS III)

Regulation on Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH): **1907/2006/EC**

This pressure equipment is covered by Article 4 in EU Directive 2014/68/UE. As prescribed in item 3 of this article, the equipment is designed and manufactured in accordance with the sound engineering practice of a member state in order to ensure safe use. Such pressure equipment must not bear the CE marking referred to in Article 18 in EU Directive 2014/68/UE.

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The conformity was checked in accordance with the following EN-standards


\*DIN 4753-3:2016-10 Water heaters, water heating installations and storage water heaters for drinking....

\*PN-EN 12897:2016-07 Water supply - Specification for indirectly heated, not vented (closed)...

Markaryd 2019.07.05



Kenneth Magnusson  
Quality and Environmental Manager



Peter Jovic'  
Business Area Product Manager

