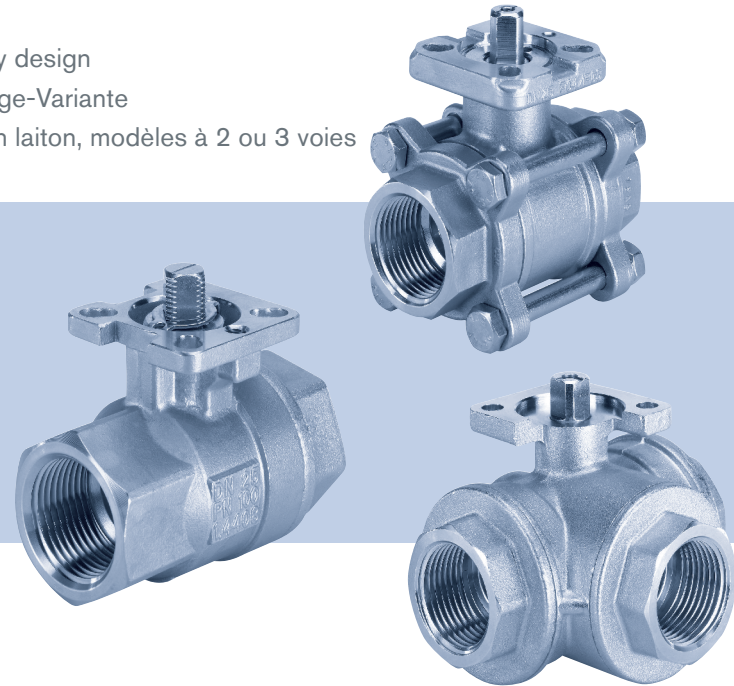


Type 2651, 2654, 2654 Hygienic, 2660, TKU001/2/3

Stainless steel and brass ball valves in 2-way and 3-way design

Kugelhähne aus Edelstahl und Messing in 2- und 3-Wege-Variante

Robinets à boisseau sphérique en acier inoxydable et en laiton, modèles à 2 ou 3 voies



Operating Instructions

Bedienungsanleitung

Manuel d'utilisation

We reserve the right to make technical changes without notice.
Technische Änderungen vorbehalten.
Sous réserve de modification techniques.

© Bürkert Werke GmbH & Co. KG, 2008 - 2019

Operating Instructions 1910/07_EU-ML_00805911 / Original DE

1	OPERATING INSTRUCTIONS.....	3
1.1	Symbols.....	3
2	INTENDED USE	4
3	BASIC SAFETY INSTRUCTIONS.....	5
4	GENERAL INFORMATION	6
4.1	Contact addresses	6
4.2	Warranty	6
4.3	Information on the Internet.....	6
5	SYSTEM DESCRIPTION	6
6	TECHNICAL DATA.....	7
7	INSTALLATION	9
7.1	Ball valve with screw thread.....	9
7.2	Ball valve with welded connection	9
8	OPERATION AND FUNCTIONS	10
8.1	Operation.....	10
8.2	Switch positions.....	11
9	SPARE PARTS.....	11
10	MAINTENANCE.....	12
10.1	Replacing the wearing part sets for ball valves Type 2654 and TKU001	12
11	TRANSPORT, STORAGE, DISPOSAL.....	14

1 OPERATING INSTRUCTIONS

The operating instructions describe the entire life cycle of the device. Keep these instructions in a location which is easily accessible to every user and make these instructions available to every new owner of the device.

The operating instructions contain important safety information.
Failure to observe these instructions may result in hazardous situations.
▶ The operating instructions must be read and understood.

1.1 Symbols



DANGER!

Warns of an immediate danger.

- ▶ Failure to observe the warning may result in a fatal or serious injury.



WARNING!

Warns of a potentially dangerous situation.

- ▶ Failure to observe the warning may result in serious injuries or death.



CAUTION!

Warns of a possible danger.

- ▶ Failure to observe this warning may result in a medium or minor injury.

NOTE!

Warns of damage to property.

- ▶ Failure to observe the warning may result in damage to the device or the equipment.



Indicates important additional information, tips and recommendations.



Refers to information in these operating instructions or in other documentation.

- ▶ designates instructions for risk prevention.

→ designates a procedure which you must carry out.

2 INTENDED USE

The ball valves types 2651, 2654, 2654 Hygienic, 2660 and TKU 001/2/3 (in general below as “Ball valves”) are intended for the installation to pneumatic or electric rotary actuators. They can be used indoors as well as outdoors, in compliance with the permissible operating conditions.

Non-intended use of the ball valves can be dangerous to people, nearby equipment and the environment.

- ▶ The ball valves are used for shutting off media flows in a wide range of industrial applications.
- ▶ The ball valves may be used only in conjunction with third-party devices and components recommended and authorized by Bürkert.
- ▶ During use observe the authorised data and operating conditions specified in the contract documents and operating instructions as well as the range of applications described in [„5 System Description“](#).
- ▶ Correct transportation, correct storage and installation and careful use and maintenance are essential for reliable and faultless operation.
- ▶ Operate the ball valves only with media which do not corrode the valve body or seal material.
- ▶ Use the ball valves only as intended.

3 BASIC SAFETY INSTRUCTIONS

These safety instructions do not make allowance for any:

- Contingencies and events which may arise during the installation, operation and maintenance of the devices.
- Local safety regulations; the operator is responsible for observing these regulations, also with reference to the installation personnel.



WARNING!

Unintentional activation or non-permitted impairment may cause general hazardous situations through to physical injury.

To prevent injury, ensure that:

- ▶ The system cannot be activated unintentionally.
- ▶ Installation and repair work may be carried out by authorized technicians only and with the appropriate tools.
- ▶ After an interruption in the power supply or fluid supply, ensure that the process is restarted in a defined or controlled manner.
- ▶ The device may be operated only when in perfect condition and in consideration of the operating instructions.
- ▶ Do not physically stress the valve body (e.g. by placing objects on it or standing on it).
- ▶ Do not make any external modifications to the valve body.
- ▶ The general rules of technology apply to application planning and operation of the device.



DANGER!

Danger – high pressure.

There is a serious risk of injury when reaching into the equipment.

- ▶ Turn off the pressure and release the pressure in the pipes before loosening pipes and valves!



CAUTION!

The general rules of technology apply to application planning and operation of the device.

Failure to observe these rules may result in injuries and/or damage to the device and possibly the area around it as well.

- ▶ Observe the general rules of technology!

NOTE!

- ▶ Operate the ball valves only when they are in perfect condition and in accordance with the operating instructions.

4 GENERAL INFORMATION

4.1 Contact addresses

Germany

Bürkert Fluid Control Systems
Sales Center
Christian-Bürkert-Str. 13-17
D-74653 Ingelfingen
Tel. : +49 (0) 7940 - 10 91 111
Fax: +49 (0) 7940 - 10 91 448
E-mail: info@burkert.com

International

Contact addresses can be found on the final pages of the printed operating instructions.

And also on the Internet at: www.burkert.com

4.2 Warranty

The warranty is only valid if the device is used as intended in accordance with the specified application conditions.

4.3 Information on the Internet

The operating instructions and data sheets for Type 2651, 2654, 2654 Hygienic, 2660 and TKU 001/2/3 can be found on the Internet at: www.burkert.com

5 SYSTEM DESCRIPTION

The ball valves are used for shutting off media flows in a wide range of industrial applications.

They are particularly suitable for application conditions which make high demands in the areas of thermal loads and are also suitable for applications which use aggressive media.

The ball valves are available in different sizes. They are equipped with a mechanical interface as per ISO 5211 which is used to install a pneumatic or electric rotary actuator.



On request the ball valves can be supplied complete with a pneumatic actuator (Types 2652, 2655, 8805) or an electric actuator (Type 8804).

6 TECHNICAL DATA

Allowable temperatures

- Stainless steel –10...+200 °C
valve body (see pressure/temperature diagram)
- Brass valve body –20...+150 °C
(see pressure/temperature diagram)



The temperature limit values of the actuators are usually lower. Therefore, the lowest temperature limit values of included system components (ball valve and actuator) must be observed.

Allowable Media Aggressive, neutral, gaseous and liquid media
Allowable pressure Depending on the design between 0 and
range 16/25/40/63/100 bar (see data sheets and
pressure/temperature diagram)

Material

Type	Valve body	Ball	Sealing
2651	Stainless steel 1.4408	Stainless steel 1.4401	PTFE
2654	Stainless steel 1.4408	Stainless steel 1.4401	PTFE
2654 Hygienic	Stainless steel 1.4435	Stainless steel 1.4435	SS-PTFE (FDA) / PTFE (FDA)
2660	Brass, nickel-plated	Brass, hard chrome-plated	PTFE
TKU 001/2/3	Stainless steel 1.4408	Stainless steel 1.4401	PTFE
	Steel 1.0619		

Pressure/Temperature diagrams:

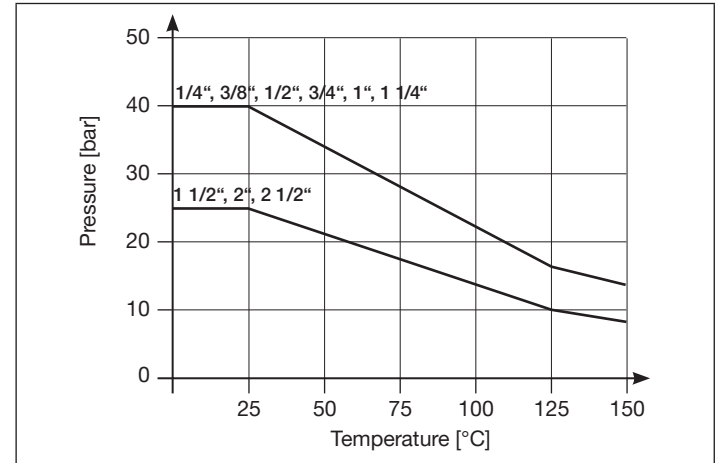


Fig. 1: Pressure/Temperature diagram brass valve body (Type 2660)

Ball valve with PTFE-valve seat seal:

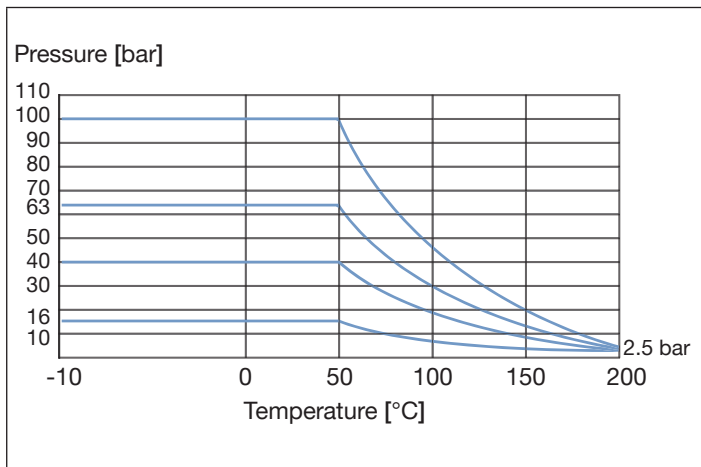


Fig. 2: Pressure/Temperature diagram stainless steel valve body (Types 2651, 2654, 2654 Hygienic, TKU 001/2/3)

Ball valve with stainless steel reinforced PTFE seat seal:

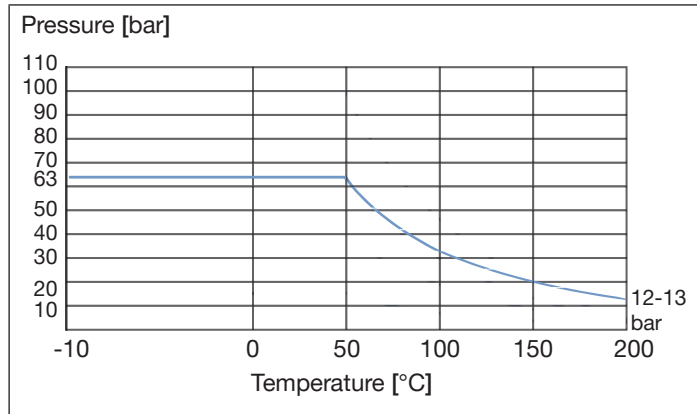


Fig. 3: Pressure/Temperature diagram stainless steel valve body (Type 2654 Hygienic)

7 INSTALLATION



DANGER!

Risk of injury from high pressure in the equipment.

There is a serious risk of injury when reaching into the equipment.

- ▶ Turn off the pressure and release the pressure in the pipes before loosening pipes and valves.



WARNING!

Risk of injury due to improper installation.

Improper installation may result in injuries as well as damage to the device and the area around it.

- ▶ This work may be carried out by authorised technicians only and with the appropriate tools.

Risk of injury due to unintentional activation.

Hazardous situations may arise due to unintentional activation of the system.

- ▶ Take appropriate measures to prevent the equipment from being unintentionally activated.

7.1 Ball valve with screw thread



Check that the pipes which are to be connected to the ball valve are on one level. This will prevent mechanical tension on the screw joint.

- Screw the ball valve to the pipe.
- Check that the ball valve is firmly attached to the pipe to ensure appropriate tightness.

7.2 Ball valve with welded connection

NOTE!

To prevent damage to the ball valve and the contained seal, disassemble the ball valve from the pipeline prior to welding.

Disassembling the ball valve:

- Undo the four body bolts and disassemble the ball valve into three parts.
- Remove the seal from the connection element.
- Weld the connection element to the pipeline.
- Assemble the ball valve and fix it into position using the four body bolts!



Make sure the seals are seated correctly!

Refer to the following table for tightening torques!



Welding of the ball valve Type 2654 Hygienic is possible under the following conditions:

- Orbital welding using orbital welding equipment.
- The heat impact on the seals must not exceed the maximum temperature. The maximum temperature for the stainless steel valve body is +200 °C.

NOTE!

If the seals are exposed to a temperature greater than the maximum temperature during the welding process, all the seals must be replaced with new ones.

Size		Tightening torques of the installation bolts		Tightening torques of the end caps	
		Type 2654 Type TKU001 (3-piece) [Nm]	Type 2651 flange [Nm]	Type TKU001 compact flange [Nm]	Type 2651 [Nm]
DN08	1/4"	8.7	-	-	163.3
DN10	3/8"	8.7	-	-	163.3
DN15	1/2"	20.4	19.6	234.7	214.3
DN20	3/4"	20.4	19.6	265.3	265.3
DN25	1"	20.4	39.2	336.7	336.7
DN32	1 1/4"	40.8	39.2	428.6	428.6
DN40	1 1/2"	40.8	65.7	530.6	530.6
DN50	2"	40.8	65.7	714.3	714.4
DN65	2 1/2"	81.6	65.7	785.7	785.7
DN80	3"	81.6	86.2	867.3	867.3
DN100	4"	81.6	86.2	1020.4	-

8 OPERATION AND FUNCTIONS



WARNING!

Danger due to improper operation.

Improper operation may result in injuries as well as damage to the device and the area around it.

- ▶ The operating personnel must know and have understood the contents of the operating instructions.
- ▶ Observe the safety instructions and intended use.
- ▶ Only adequately trained personnel may operate the equipment/the device.

8.1 Operation


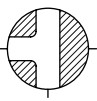
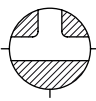
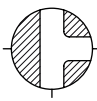
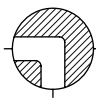
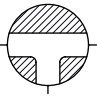

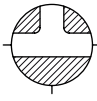
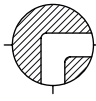
Via the mechanical interface as per ISO 5211, the ball valves can be connected to a pneumatic rotary actuator (e.g. Types 2050, 2051 or 2052) or an electric rotary actuator (e.g. Types 3003, 3004 or 3005).

The operating instructions of the actuators you can find on the Bürkert homepage: www.burkert.com

8.2 Switch positions

The ball valves are available in 2-way or 3-way design.

The 3-way designs are available with the following switching positions:

Ball bore		T			L
Position 	0°				
	90°				
Switching position		T1	T2	T3	L4

9 SPARE PARTS



CAUTION!

Risk of injury and / or damage by the use of incorrect parts.

Incorrect accessories and unsuitable spare parts may cause injuries and damage the device and the surrounding area.

► Use original accessories and original spare parts from Bürkert only.

Wearing part sets for type 2654 and 2654 Hygienic

Contents:

- 4 chevron seals
- O-ring
- thrust collar
- 2 ball seats
- 2 body seals

Wearing part sets for Type TKU001 - 3-piece

Contents:

- 3 chevron seals
- thrust collar
- 2 ball seats
- 2 body seals

Size	Type 2654 PTFE seal FKM o-ring	Type 2654 Hygienic PTFE-FDA seal (stainless steel reinforced) silicone o-ring	Type 2654 Hygienic PTFE-FDA seal silicone o-ring	Type TKU001 3-pieces PTFE seal
DN08	-	773821	-	772840
DN10	773127	773822	773013	772841
DN12	770180	-	-	-
DN15	789821	773823	773014	772842
DN20	789822	773824	773015	772843
DN25	789823	773825	773016	772844
DN32	789824	773826	773017	772845
DN40	789825	773827	773018	772846
DN50	789826	773828	773019	770494
DN65	789827	773829	773020	772847
DN80	789828	773830	773021	772686
DN100	789829	773831	773022	772848

10 MAINTENANCE

The ball valves are maintenance friendly when operated according to the instructions indicated in this manual.

10.1 Replacing the wearing part sets for ball valves Type 2654 and TKU001



DANGER!

Risk of injury from high pressure in the system.

Acute risk of injury when intervening in the system.

- ▶ Always switch off the pressure and bleed the lines before undoing the lines and valves!



WARNING!

Risk of injury through improper maintenance.

Improper maintenance may result in injuries as well as damage to the device and its surroundings.

- ▶ Maintenance may only be carried out by authorised technicians using the appropriate tools!

Risks due to unintentional activation of the system!

Unintentional start-up of the system during maintenance and repair work may lead to injuries and damage.

- ▶ Secure the system against unintentional activation.

10.1.1 Replacing the ball seal and/or body seal

- Move the ball valve to the open position.
- Undo the body bolts.
- Swivel out the centre part.
- Move the ball valve to the closed position.
- Remove the ball.
- Replace the ball seal and body seal.
- Insert the ball.
- Move the ball valve to the open position.
- Tighten the body bolts to the respective tightening torque (see section „7.2“).
- Check the ball valve for leak-tightness.

10.1.2 Replacing the ball stem seal and/or the o-ring

- Move the ball valve to the open position.
- Undo the body part.
- Swivel out the centre part.
- Move the ball valve to the closed position.
- Remove the ball.
- Undo and remove the nut from the ISO flange.
- Remove the disc spring.
- Slide the ball stem inwards and remove it.

- Remove and replace the ball stem seal and package.
- Cut the o-ring off the stem seal and replace it.
- Replace the thrust collar.
- Insert the stem seal from the inside.
- Insert the disc spring in the correct position.



Fig. 4: Installation position of the disc spring

- Insert the ball.
- Move the ball valve to the open position.
- Tighten the body bolts to the respective tightening torque (see section „7.2“).
- Check the ball valve for leak-tightness.

11 TRANSPORT, STORAGE, DISPOSAL

NOTE!

Transport damages.

Inadequately protected equipment may be damaged during transport.

- ▶ During transportation protect the device against wet and dirt in shock-resistant packaging.
- ▶ Avoid exceeding or dropping below the allowable storage temperature.
- ▶ Protect the pneumatic connections from damage by placing caps on them.

Incorrect storage may damage the device.

- ▶ Store the device in a dry and dust-free location!
- ▶ Storage temperature $-40\dots+55\text{ °C}$.

Damage to the environment caused by device components contaminated with media.

- ▶ Dispose of the device and packaging in an environmentally friendly manner.
- ▶ Observe applicable regulations on disposal and the environment.
- ▶ Observe national waste disposal regulations.

www.burkert.com