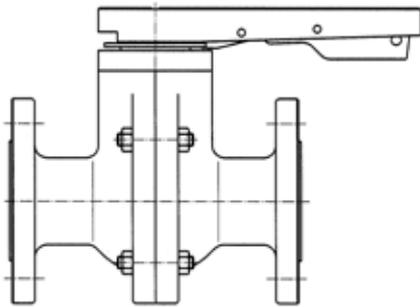




## NEOTECHA NTB-NTC BALL VALVES

### INSTALLATION AND MAINTENANCE INSTRUCTIONS

Before installation these instructions must be fully read and understood



#### 1 GENERAL INFORMATION ON THE INSTALLATION AND MAINTENANCE INSTRUCTIONS

These instructions contain information on how the valve should be safely installed and operated in the prescribed manner. If any problems are encountered during installation or operation which cannot be resolved with the aid of the installation and maintenance instructions, please contact the supplier or manufacturer for more information. These installation and maintenance instructions comply with the applicable EN safety standards. When installing the fitting, the operator or the person responsible for the design of the installation must ensure that applicable national regulations are complied with. The manufacturer reserves all rights to make technical changes and improvements at any time. The use of these installation and maintenance instructions assumes that the user is qualified to "Qualified Personnel" level. Operating staff must be given appropriate training in the operating and maintenance instructions.

#### 2 SAFETY

Please also read through these notes carefully.

##### 2.1 General potential danger due to:

- Failure to observe the instructions
- Improper use
- Insufficiently qualified personnel

##### 2.2 Correct use

###### 2.2.1 Area of application

Ball valves are bubble-tight shut-off industrial valves that can be used for the isolation, throttling and regulation of corrosive gases, liquids, pastes and powder products in pipelines, vessels, apparatus etc.

The surfaces of the of the body parts, together with the ball or C-core that are in contact with the medium are coated with PFA. Ball seats and control orifice plates are available in various material types and can be used to suit the medium.

###### 2.2.2 Performance data

Nominal diameter range:

##### DIN-PN 16 and JIS 10K

DN 15 / 20 / 25 / 40 / 50 / 65 / 80 / 100 / 150  
(ANSI 6" face-to-face with extension)

**ANSI 150 lbs** 1/2", 3/4", 1", 1 1/2", 2", 2 1/2"  
(DIN face-to-face), 3", 4", 6"

Pressure range:

16 bar (0.1 mbar vacuum)

Test pressure = 1.5 x PN = 24 bar

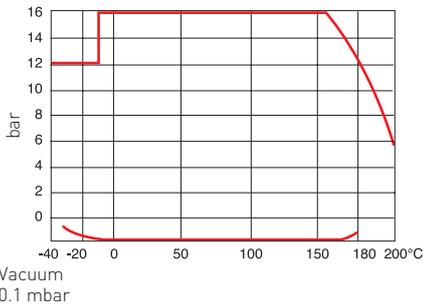
Temperature range:

-40°C to 180°C

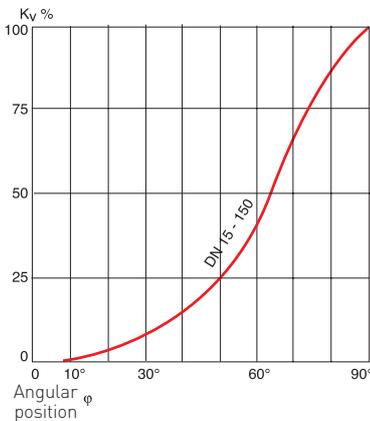
# NEOTECHA NTB-NTC BALL VALVES

## INSTALLATION AND MAINTENANCE INSTRUCTIONS

### 2.2.3 Pressure-temperature diagram for NTB-NTC ball valves



### 2.2.4 Flow characteristic for NTC control valves (without control orifice plate)



### 2.2.5 Usage restrictions

Before the valve is installed, a check should be made on the extent to which the coating of the surfaces is resistant to the intended medium. The same applies to stainless steel valves with no additional coating. Refer to appropriate literature or consult the manufacturer or distributor for advice on this.

### 2.2.6 Modification prohibition

Mechanical modifications to the valves or the use of other manufacturer's parts for repair purposes are not permissible, as otherwise safety is no longer guaranteed. Repair work must only be carried out by the manufacturer's trained personnel. The manufacturer and supplier will accept no liability in the event of misuse.

### 2.2.7 Warning about foreseeable misuse

Valves and their accessories (e.g. operating elements) must not be misused as climbing aids.

### 2.2.8 Duty to comply with the instructions

for operation, maintenance and servicing  
These instructions form part of the delivery package and must be easily accessible to the user. They should be protected from soiling and kept in a suitable place.

## 3 SOURCES OF DANGER

### 3.1 External chemical effects

The valve body is either made of stainless steel or is coated with a 2-part polyester paint. The coating can be attacked externally by strong solvents, leading to corrosion of the body. If damage of this nature occurs, the effects on the environment should be investigated and the damage to the coating made good in accordance with the manufacturer's data. Stainless steel valve bodies are not suitable for use with chlorine gas.

### 3.2 Mechanical

When using hand levers and handwheels, it should be ensured that there is sufficient clearance everywhere for the operator's hands, so that there is no risk of trapping.

### 3.3 Electrical

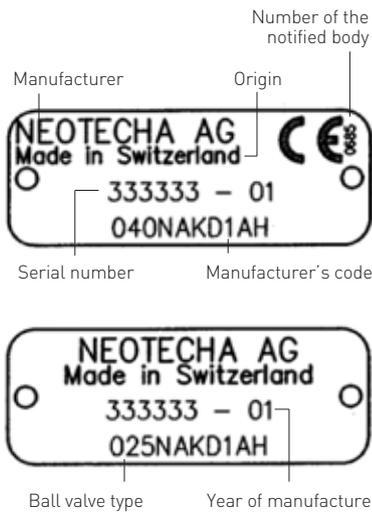
If static charges can lead to explosions, the valve must be earthed by means of the appropriate earthing accessory. As an alternative, valves with electrically conductive linings are available. For more information, please contact the supplier or manufacturer.

### 3.4 Thermal

The operating temperature of the valve can be up to a maximum of 200°C. Suitable precautions should be taken to protect against burns due to high or freezing temperatures. In particular, insulated gloves should be worn when using the hand lever, for example. In case of fire, the mechanical strength of the PTFE seals is no longer guaranteed above 200°C.

# NEOTECHA NTB-NTC BALL VALVES

## INSTALLATION AND MAINTENANCE INSTRUCTIONS



### 3.5 Requirements for the operator

This means people who are familiar with the erection, installation, commissioning, operation and maintenance of the product and have appropriate qualifications relating to their activities and functions, such as e.g.:

- Instruction in and duty to comply with all installation-related, regional and internal works regulations and requirements.
- Training or instruction in accordance with the Safety Standards for personal care and use of appropriate safety equipment and protective workgear, like e.g. personal protection equipment (insulated gloves or similar), suitable for the operating conditions.

Furthermore, these people must have read and understood these instructions.

### 3.6 Transport/storage

The valve is delivered with protective covers which should protect against soiling and mechanical effects. For this reason, the protective covers should only be removed immediately prior to installation. The ball valve is shipped in the closed position.

### 3.7 Transport and storage conditions

- Transport and storage temperature -20°C to +65°C.
- Protect against external force (impact, shock, vibration).
- Do not damage the coating.
- In damp storage areas, a drying agent or heating is required to protect against condensation.
- Store the ball valve in a slightly open position.

### 3.8 Handling prior to installation

- On versions with protective covers, only remove these immediately prior to installation!
- Protect against the effects of weather, e.g. dampness (or else use a drying agent).
- Proper treatment prevents damage.

## 4 IDENTIFICATION

Each ball valve is fitted with a rating plate giving information on valve type and origin. When ordering spare parts this information should be carefully noted down each time.

Ball valves in the size range DN 15 to DN 25 have a standard rating plate with no CE mark. Ball valves in the size range DN 40 to DN 150 are provided with a rating plate with a CE mark. Additional identification on the valve in accordance with DIN 19, such as: DN, PN, manufacturer's logos of the Neotecha AG company . The identification of the valve body material is cast onto the valve.

## 5 DIMENSIONS AND WEIGHTS

Please refer to the product documentation for any dimensions that are not contained in the installation and maintenance instructions and for ball valve weights.

## 6 INSTALLATION

### 6.1 Installation in the pipeline

Fit the ball valve in the pipeline, ensuring that the sealing surfaces on the faces of the flanges are not damaged. The NTB ball valve can be installed independently of the direction of flow. On the other hand, the NTC can only be installed in one direction, i.e. the arrow on the side of the valve must point in the direction of flow. Adequate clearance should be ensured around the ball valve, so that it can be operated and maintained easily.

The mounting flanges of the pipeline in which the valve is to be installed must be aligned axially and laterally, in order to prevent the valve body being subjected to additional stresses. Fit suitable flange packings, provided that they are called for: then the fixing bolts are inserted. Tightening the bolts in stages is essential for an equal distribution of the of the initial stress force of the clamping bolts.

The specified tightening torques must not be exceeded.

The flanges must meet the following requirements: cleaned and undamaged mating surface.

Flange packings are not required with flanges with flat sealing surfaces. Additional packings may possibly be required with rubberized flanges.

# NEOTECHA NTB-NTC BALL VALVES

## INSTALLATION AND MAINTENANCE INSTRUCTIONS

### 6.2 Dimensions of the mounting flanges for NTB-NTC ball and C valves DIN-PN 16

#### DIMENSIONS

DN		D	Tk	n x d
mm	inches	mm	mm	mm
15	1/2"	95	65	4 x 14
20	3/4"	105	75	4 x 14
25	1"	115	85	4 x 14
40	1 1/2"	150	110	4 x 18
50	2"	165	125	4 x 18
65	2 1/2"	185	145	4 x 18
80	3"	200	160	8 x 18
100	4"	220	180	8 x 18
150*	6"	279	241	8 x 22

\* DN 150 ball valve only as ANSI 6" version available

### 6.3 Dimensions of the mounting flanges for NTB-NTC valves ANSI B 16.10 class 150 (lbs)

#### DIMENSIONS

DN		D	Tk	n x d
mm	inches	mm	mm	mm
15	1/2"	89	60.3	4 x 16
20	3/4"	98	70.0	4 x 16
25	1"	108	79.5	4 x 16
40	1 1/2"	127	98.5	4 x 16
50	2"	152	120.5	4 x 19
65	2 1/2"	185	145.0	4 x 19
80	3"	190	152.5	4 x 19
100	4"	229	190.5	8 x 19
-	6"	279	241.0	8 x 22

### 6.4 Dimensions of the mounting flanges for NTB-NTC ball and C valves JIS-10K

#### DIMENSIONS

DN		D	Tk	n x d
mm	inches	mm	mm	mm
15	1/2"	95	70	4 x 15
20	3/4"	100	75	4 x 15
25	1"	125	90	4 x 19
40	1 1/2"	140	105	4 x 19
50	2"	155	120	4 x 19
65	2 1/2"	175	140	4 x 19
80	3"	185	150	8 x 19
100	4"	210	175	8 x 19
-	6"	279	241	8 x 22

\* Ball valves DN 150 only as ANSI 6" version available

### 6.5 Installation options

Ball valves can be equipped with various means of operation e.g. with hand lever, handwheel, electrical, pneumatic or hydraulic drive, or with a drive linked to a position controller for NTC control valves. The hand levers are supplied complete with a notched plate which allows the lever to be latched either in the end positions only (version ZE) or in the end positions and additionally in various intermediate positions (version Z). In addition, the hand lever can be provided with limit switches which indicate "open" or "closed".

For installation in exposed places, shaft extensions in various lengths are available for all sizes.

### 6.6 Bolted joints in the pipeline

All flange bolts must be used, even on low-pressure systems. The specified tightening torques for the bolts must always be adhered to.

### 6.7 Body variants

NTB and NTC ball valves have the same body dimensions. The face-to-face and mounting flange dimensions of the ball valve bodies vary according to the various standards. When used as an end of the line valve, it must be secured in such a way that access to the isolating valve is restricted when in service. It should also be noted that when a valve is used as the end valve of a pressurized system, a dummy flange must be assembled.

# NEOTECHA NTB-NTC BALL VALVES

## INSTALLATION AND MAINTENANCE INSTRUCTIONS

### 6.7.1 Face-to-face body dimensions for NTB-NTC ball valves

#### FACE-TO-FACE BODY DIMENSIONS

DN		DIN-PN 16	ANSI-150 lbs	JIS-10K
mm	inches	mm	mm	mm
15	1/2"	130	108	130
20	3/4"	150	117	150
25	1"	160	127	160
40	1 1/2"	200	165	200
50	2"	230	178	230
65	2 1/2"	290	290 (DIN dimension)	290
80	3"	310	203	310
100	4"	350	229	350
150	6"	480	267	480
		ANSI-dim. 229 with extension		ANSI-dim. 229 with extension

#### 6.8 Step-by-step valve installation

1. Check that the distance between flanges matches the face-to-face dimension of the ball valve. Before installing the valve, spread the mounting flanges apart sufficiently using a suitable tool.
2. Remove the protective caps and position the ball valve in the pipeline. When installing a C valve, check that the arrow points in the direction of flow.
3. Insert the fixing bolts.
4. Tighten the flange bolts hand-tight as the tool holding the flanges apart is gradually removed. Make sure that the flanges remain correctly aligned.
5. Tighten all flange bolts in opposite pair sequence. Refer to following table for tightening torques.

#### 6.9 Recommended tightening torques for mounting flange bolts

##### 6.9.1 Recommended tightening torques for NTB-NTC ball valves DIN-PN 16 and JIS-10K

#### RECOMMENDED TORQUES

DN		Bolts		Torque
mm	inches	metric	Class	Nm
15	1/2"	4 x M12	A2-70	10
20	3/4"	4 x M12	A2-70	15
25	1"	4 x M12	A2-70	20
40	1 1/2"	4 x M16	A2-70	27
50	2"	4 x M16	A2-70	45
65	-	4 x M16	A2-70	60
80	3"	8 x M16	A2-70	60
100	4"	8 x M16	A2-70	45
-	6"	8 x M20	A2-70	85

##### 6.9.2 Recommended tightening torques for NTB-NTC ball valves ANSI B 16.10 class 150 (lbs)

#### RECOMMENDED TORQUES

DN		Bolts		Torque
mm	inches	UNC	Class	lbf-ft
15	1/2"	1/2"	B7	9
20	3/4"	1/2"	B7	13
25	1"	1/2"	B7	18
40	1 1/2"	1/2"	B7	21
50	2"	5/8"	B7	41
65	-	5/8"	B7	52
80	3"	5/8"	B7	52
100	4"	5/8"	B7	38
-	6"	3/4"	B7	68

# NEOTECHA NTB-NTC BALL VALVES

## INSTALLATION AND MAINTENANCE INSTRUCTIONS

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### 6.10 Final checks

- Checking the ball position as far as the fully open position.
- Cleaning and flushing the pipeline before the first closure.
- Repeated opening and closing of the ball valve, to ensure unrestricted movement of ball and control shaft.

### 7 NOTES ON DANGERS DURING INSTALLATION, OPERATION AND MAINTENANCE

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Safe operation of the valve is only guaranteed if it has been correctly installed, commissioned and maintained by qualified personnel (see "Qualified Personnel"), taking into account the warning information of these installation and maintenance instructions.

In addition, compliance with the general installation and safety regulations for the pipeline or plant construction, together with the correct use of tools and protective equipment, must be ensured. The installation and maintenance instructions must be strictly followed when any work is carried out on the valve or when handling the valve. Non-observance can result in injuries or damage to property. When the valve is used as a final termination, a safety measure e.g. a blank or dummy flange is recommended when carrying out maintenance work. When the valve is installed as an end of line valve, the information given in DIN EN 294 point 5 must be observed.

### 8 COMMISSIONING

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#### 8.1 General commissioning

Before commissioning, the information relating to material, pressure and temperature should be compared with the installation diagram of the pipeline system.

Tools for increasing the lever or handwheel torque are not allowed.

Any debris left in the pipeline and valves (dirt, welding beads, etc.) will inevitably lead to leakage.

Before each commissioning of a new system or re-commissioning of a system after repair or modification, it must be ensured that:

- All installation and assembly work has been completed in accordance with the regulations.
- Commissioning is only undertaken by "Qualified Personnel".
- The valve is in the correct operating position.
- New protective equipment is installed or existing protective equipment repaired.

### 9 USE

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#### 9.1 Operation - general

NTB series ball valves should only be used in the fully open or fully closed position, as they are not designed for flow regulation. Intermediate settings can result in turbulence, leading to vibrations in the pipeline system which then generates noise. If the flow has to be regulated, an NTC series C valve should be used. This type can also be fitted with various control orifice plates. Refer to the flow characteristic diagram for NTC control valves.

Operating:

Clockwise to close.

Counter clockwise to open.

#### 9.2 Operation with hand lever

Neotecha ball valves and C valves are supplied with a hand lever as standard, unless anything different has been provided (except DN 150-6" - too high a torque). The hand lever should always be fitted on the ball valve and only removed when necessary for maintenance purposes. When the hand lever points in the direction of the pipeline, the ball valve is fully open; when the hand lever is at right angles to the pipeline, the valve is fully closed. The hand lever should be turned clockwise to close the valve.

Nominal diameters 15 to 100 (1/2" to 4")

Hand lever with notched plate with 10° divisions, range 90°

Operating element: detent lever

*The hand lever and detent lever must not be modified. The locking function is otherwise adversely affected. Damaged hand levers should be exchanged.*

#### 9.3 Operation with drive

Thanks to its modular method of construction, the NTB-NTC ball valve can be converted to an automatic drive at any time. In this case it may be necessary to remove the ball valve from the pipeline.

When drives or gear units are used, the instructions of the particular manufacturer are applicable.

# NEOTECHA NTB-NTC BALL VALVES

## INSTALLATION AND MAINTENANCE INSTRUCTIONS

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### 10 SERVICING AND MAINTENANCE

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No routine maintenance or lubrication is required. However, for systems with high temperatures, an inspection for leakage at the flanges should be carried out shortly after installation. The large difference between the temperature related expansions of PTFE and some metals can result in cold flow. Tightening the bolts once again will eliminate this problem. This process may possibly have to be repeated several times. We recommend that the valve is operated at least once a month.

### 11 CAUSE AND REMEDY OF OPERATING FAULTS

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If the valve function or operating action is faulty, a check should be made to ensure that the assembly and installation work has been carried out and completed in accordance with the installation and maintenance instructions. The information relating to material, pressure, temperature and direction of flow should be compared with the installation diagram of the pipeline system. Furthermore, a check should be made on whether the installation conditions correspond to the technical data given in the data sheet or on the rating plate.

*The safety regulations must always be observed when troubleshooting.  
Repair work must only be carried out by the manufacturer's trained personnel.*

### 12 DECOMMISSIONING

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Removal of the valve for repair or servicing is often carried out carelessly, as the valve has to be repaired or replaced in any case. However, it is recommended that the valve is removed with care, without damaging the PTFE, so that the possible cause of damage can be determined after removal.

### ATTENTION!

*Check that the pipe is depressurized and drained.  
With corrosive, inflammable, aggressive or toxic media, ventilate the pipeline system.*

- Only allow assembly work to be carried out by qualified personnel.
- Almost fully close the valve (note position of the flat sections of the control shaft).
- Loosen all flange bolts and withdraw them until the valve can be removed.
- Spread the flanges apart using a suitable tool and withdraw the valve.

### 13 SPARE PARTS

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Always provide the information in accordance with the rating plate fitted on the mounting flange when ordering seals and other spare parts.

### 14 DISPOSAL

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Hand in the correctly cleaned valve to the scrap material recycling plant.

*Badly cleaned valves can cause severe burning of the hands and other parts of the body.*

*If the valve is passed on to a third party, the manufacturer no longer guarantees the valve.*

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