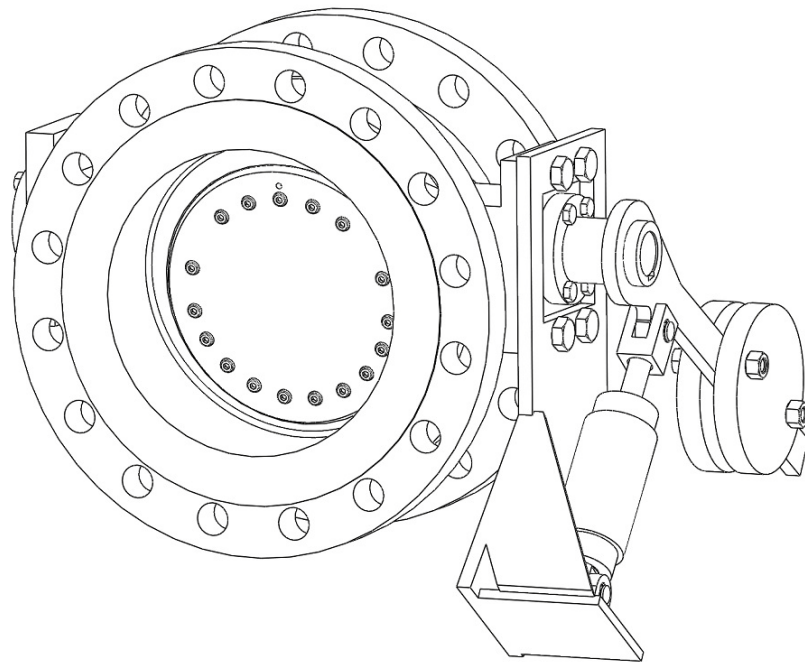


Operation Instructions


Butterfly check valve series TRI-CHECK

(with counter weight and optional hydraulic damper)



Operation instructions Butterfly Check Valve Series TRI-CHECK, with counter weight and optional hydraulic damper


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0 Introduction

These Instructions shall support the user of check valves of the Series TRI-CHECK with the installation, operation and maintenance of the valves.


 Attention	It will be dangerous for the user if the following „attention“-, „warning“- and „danger“-notices are not observed, and the liability of the manufacturer may become ineffective. In case of any question to the manufacturer, see addresses in clause 9.
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1 Intended Conditions of Use

The sole purpose of Check valves of the Series TRI-CHECK is, after assembly in a pipe system (between flanges or by welding to the pipe) to let pass or shut off media in the allowable direction, pressure and temperature range, or to control the flow. For fluids with more than very small content of solid particulates – especially hard and/or sharp ones – this series should not be used.

The ZWICK catalogue layout-sheets <Butterfly Valves TRI-CHECK> specify the admissible range of p/t-rating.

Clause 2.2 < Important information for the user> shall be observed.

 Warning	If a valve is used for permanent flow control at differential pressure more than about 0.15 bar (liquid fluids) the flow parameters shall be accepted by the manufacturer. Cavitation has to be avoided by all means.
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2 Safety Instructions



2.1 General Safety Instructions

The safety requirements apply for valve units same as for the pipe system into which the valve is installed and same as for the plant control system, to which the actuator is connected. This instruction gives such advices only, which **shall be observed additionally**.

More safety information may be included in the relevant manual of the actuator.

2.2 Safety Instructions for the Operator

It is not the valve manufacturer's liability, and therefore it shall be observed by the user, that
⇒ the valve is only used as specified in clause 1 < Intended Conditions of Use > ,







 Mortal Danger	No valve shall be used, that's certified pressure/temperature range (= "rating") is not sufficient for the operating conditions: The relevant diagrams in the ZWICK catalogue <Butterfly Valves TRI-CHECK> specify this admissible range. See clause 9 <information>. If other materials are used or at service conditions not included in the above mentioned diagrams, the manufacturer shall be asked for release. Ignoring these requirements could mean danger for the life or health of the user and/or cause damage in the piping system.
 Danger	The user shall check and ensure that the choice of the valve's materials is suitable for the fluids used. The valve manufacturer is not liable for damage resulting from corrosion. Ignoring these requirements could mean the danger of injury of the user and/or cause damage in the piping system.

⇒ the addition of a damper is only allowed after proper design and proper assembly,

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- ⇒ the pipe system has been installed by experts and that these systems are regularly inspected. The stiffness of the body is designed to support the usual additional pipe forces F_z equal to $\pi/4 \cdot DN^2 \cdot PS$. Wafer type butterfly valves may support higher values of additional pipe forces F_z . Contingent lateral forces taking effects to the valve must not exceed 10% of the forces mentioned above.
(PS = design pressure at ambient temperature)
- ⇒ the valve has been connected to these systems by experts, especially a valve with butt-weld ends,
- ⇒ excessive pipe stress is to avoid in any case,
- ⇒ the operating time of the check valve has been adjusted to the pipe system characteristics,
- ⇒ the flow velocity in the pipe system is limited to usual values (e.g. 4 m/s for liquid fluids) and that abnormal conditions such as vibration, water hammer, erosion (i.e. by wet steam), cavitations and a relevant content of solid – especially abrasive – particulates in the fluid are agreed by the manufacturer,
- ⇒ at service temperature between $>+50^\circ\text{C}$ and $<-20^\circ\text{C}$ the valve and the valve connection surfaces are protected from contact by the user,
- ⇒ only experts for pressurized pipe systems operate and maintain the valve unit.

2.3 Special Dangers

 Mortal Danger	The valve shaft is tightened by a stuffing box. Before the bolting of this stuffing box is loosened, be sure, that the pipe system is completely depressurized .
 Mortal Danger	Before loosening the locking screw (or the cover plate) at the body or before removing the valve from the pipe the pipe system must be completely depressurized , so no media can leak from the pipe uncontrolled. Be sure that the valve is approx. 5°-10° opened and remains in this position to equalize the pressure at both sides. The counter weight and the damper may– if necessary – only be removed, if it is secure that a possible back swing of the valve disc can be excluded . This is especially important for valves of large diameters.
 Danger	Fittings, used as end valve: During normal operation, in particular in case of gaseous, hot and/or hazardous media a blind flange or a filler cap must be on the free inlet. The operation of such a fitting is not allowed.
 Danger	<i>If an end-of-line valve has to be opened in a pressurized line, this has to take place very carefully and in a way that keeps spurting out media from causing damage. Attention when closing such a valve: Avoid getting one's hand between body and disc!</i>
 Danger	<i>If a valve shall be disassembled from the pipe:</i> Take care, that the adjacent pipe system is completely drained , before the valve is disassembled from the pipe. Take special care to residual amounts of the fluid that remain trapped in the valve and/or in the adjacent pipe . Disconnect the drive/limit switch first (acc. to manufacturer's documentation).
 Danger	A check valve is usually operated only by the flow inside the pipe system. Especially a check valve without damper can be caused to close abruptly by a decrease in pressure or even a slight pressure against the flow direction. The occurring pressure hammers as well as the mass inertia of the swinging disc can result in forces that are so enormous that the valve and/or the pipe can be damaged or even burst! Media can possibly leak from the pipe system.

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2.4 Marking of butterfly valve

Any butterfly valve carries a marking with following data (type plate, left column):

EC type plate:

For	Marking	Note
Manufacturer	Zwick GmbH	Address see Section 9 <Information>
Model no.	e.g.: C10125C-AA-11CP	Key no., see the ZWICK catalogue
S.-No.	e.g.: 02-03-7806	Corresponds to: year – month – serial production no.
Size	DN (and numerical value)	Numerical value in mm, e.g. DN200 or in inch, e.g. 8"
PN / class	Numerical value for PN / class	PN / class = Dimension standard for flanged butterfly valves
PS	Numerical values in bar or PSI	= maximum allowable pressure at 20°C / maximum allowable pressure at max. temperature
TS	Numerical values in °C or °F	= ambient temperature ~ 20°C / maximum allowable temperature
Date	Year / month	

ASME type plate:

For	Marking	Note
Manufacturer	Zwick GmbH	Address see Section 9 <Information>
Model no.	e.g.: C10125C-AA-11CP	Key no., see the ZWICK catalogue
S.-No.	e.g.: 02-03-7806	Corresponds to: year – month – serial production no.
Size	DN (and numerical value)	Numerical value in mm, e.g. DN200 or in inch, e.g. 8"
PN / class	Numerical value for PN / class	PN / class = Dimension standard for flanged butterfly valves
CWP / PS	Numerical value in bar or PSI	= pressure, upper limit of use at 20°C
max. T / TS	Numerical value in °C or °F	= Temperature, upper limit of use
Date	Year / month	

and marking for the material of parts that are connected to the media (type plate, right column):



for	Marking	Note
Body	Marking after material standard	Material of the housing
Disc & Cl.		Material of the valve's disc and clamp ring
Shaft		Material of the shaft
Seat		Material of the seat in the body
Lamin.		Material of the (removable) seat ring in the disc
Standards	API609B/ B16.34/ CE, etc.	Calculation and test standards

The type plate may not be damaged to identify the valve at all times.

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3 Transport and Storage

- ⇒ The valve shall be handled, shipped and stored with care.
- ⇒ The valve shall be stored in the protective packaging or caps at the flanged or butt weld ends. Store and transport it at a pallet or similar even to the place of installation.
- ⇒ If the valve shall be stored before installation, store it in a closed building and protect the valve from harsh environmental conditions, such as dirt, debris and humidity.
- ⇒ Take special care to protect the metallic seat, the flange or butt weld end faces and the damper from damage at transport.
- ⇒ Valves must be stored in the same condition as they are delivered. The counter weight and the damper (if applicable) must not be operated or removed. The counter weight / the valve disc must remain fixed. The valve may not be able to swing until it has been installed.






 Danger	<i>Valves supplied without damper:</i> The valve must be moved with special care: The unsecured disc could remove itself from the closed position without extraneous cause (e.g. concussions)
 Mortal Danger	<i>Valves of large diameters:</i> <i>The disc of large diameter valves can weight several tons. The removal of the fixation can cause the disc to swing out of the closed position. This can lead to heavy injuries and/or create forces strong enough to knock over for, for example, a fork lift. The transport of such valve is only allowed with the interlocking immovably in place and the disc in the closed position!</i>

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4 Installation


4.1. General

The requirements for the installation apply for valve units same as for the piping system into which the valve is installed and as for the plant control system, to which the actuator is connected. This instruction gives such advices only, which **shall be observed additionally**.

 Danger	<p>Check valves – especially wafer type valves – shall be transported and installed disc closed only. Otherwise the disc could be damaged and the valve will no more be tight.</p>
 Attention	<p><i>When the valve is not yet installed: Prevent to get one's hand between body and disc: The Interlocking of the disc / the damper may only be removed and carefully be operated when the check valve is installed in the pipe system.</i> <i>If a butterfly valve is used in end-of-line-service, take special care to assemble a blind flange or a cover behind the valve.</i></p>
 Attention	<p><i>The check valve is adjusted for the tight closed position by the manufacturer: In the closed position the limit stop of the unit valve / actuator must be in the seat of the check valve. The movement of the counter weight and the disc must by no means be limited. The position of the counter weight on the lever is adjusted by the manufacturer.</i> <i>This adjustment of the counter weight must not be changed.</i></p>
 Mortal Danger	<p>Make sure that the valve is installed in the orientation approved by the manufacturer. Usually the valve is installed in a horizontal pipe. The shaft of the valve usually is in a horizontal orientation. The counter weight has to be positioned in a way that it closes the disc in a clockwise direction. The mounting orientation MUST be approved by the manufacturer. Disregarding these rules can lead to damages on the valve and/or make the pipe system burst and cause danger to health and life of the user!</p>
 Attention	<p><i>Check valves with damper:</i> <i>Make sure that the damper complements the design of the installation. The damper has a direct influence on the opening and closing time of the valve. An improper adjustment can cause unregulated and/or inadmissible operating states of the installation.</i> <i>Disregarding these rules can lead to damages on the valve and/or make the pipe system burst and cause danger to health and life of the user!</i></p>

4.2 Installation

- ⇒ Bring the valve in its protective packaging to the place of installation and do not unpack it earlier.
- ⇒ Check and be sure, that the valve and the actuator are free from damage. Valves or actuators with visible damage must not be installed.
- ⇒ Check and be sure, that the valve pressure class and the connecting type and dimensions and the actuator data correspond to the plant data. See markings in the valve's label.


 Mortal Danger	<p>No valve shall be installed, that's certified pressure/temperature range (= "rating") is not sufficient for the operating conditions: This range is defined in the catalogue <butterfly valves TRI-CHECK>. See section 9 <information >. If other materials are used or at service conditions not included in the above mentioned diagrams, the manufacturer shall be asked for release. Ignoring these requirements could mean danger for the life or health of the user and/or cause damage in the piping system. At any doubt, contact the manufacturer.</p>
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⇒ *Wafer type Butterfly valves:*

To protect damage of the valve disc at operation, be sure, that the clearance of the adjacent pipe flanges is sufficient for the disc in full open position.

⇒ Inspect and be sure, that the valve waterway and both adjacent pipe insides are free from dirt, rust, pipe scale, welding slag and any other foreign material.

 <p>Mortal Danger</p>	<p><i>Check valves with weight: Make sure before assembly that</i></p> <ul style="list-style-type: none">⇒ the valve is installed in a way that keeps the disc from opening during assembly⇒ <i>the weight has to be blocked accordingly</i>⇒ <i>it is by no means possible to reach between the body and the disc</i>⇒ <i>after assembly there is a sufficient lever arm for the weight to put the valve in the closed position without working pressure</i>⇒ <i>the valve is smooth running</i>⇒ <i>the weight and the lever arm are not restricted in their movement</i>⇒ <i>the movement of the lever arm during operation cannot hurt a person or lead to damages of the facility. Pay attention to the security clearance</i>⇒ <i>the fastening torques of the shaft packing are checked</i>⇒ <i>the transport lock is removed,</i>⇒ <i>the closed valve detains with full tax pressure in the position "CLOSE" until it is inserted and securely fastened into the pipe,</i>⇒ <i>the stop is in the seat of the valve and not in the damper or any other part attached to the valve</i> <p><i>Disregarding these rules can lead to damages on the valve and/or make the pipe system burst and cause danger to health and life of the user!</i></p>
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 <p>Mortal Danger</p>	<p><i>Check valves with weight and damper: Make sure before assembly that</i></p> <ul style="list-style-type: none">⇒ the valve is installed in a way that keeps the disc from opening during assembly⇒ <i>the weight has to be blocked accordingly</i>⇒ <i>it is by no means possible to reach between the body and the disc</i>⇒ <i>after assembly there is a sufficient lever arm for the weight to put the valve in the closed position without working pressure</i>⇒ <i>should the valve be rough running, check the fastening torques of the shaft packing</i>⇒ <i>the valve is smooth running</i>⇒ <i>the weight and the lever arm are not restricted in their movement</i>⇒ <i>the movement of the lever arm during operation cannot hurt a person or lead to damages of the facility. Pay attention to the security clearance</i>⇒ <i>the fastening torques of the shaft packing are checked</i>⇒ <i>the damper is effective especially short before the seat</i>⇒ <i>the stop is in the seat of the valve and not in the damper or any other part attached to the valve</i> <p><i>Disregarding these rules can lead to damages on the valve and/or make the pipe system burst and cause danger to health and life of the user!</i></p>
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⇒ *Check valves of the Series TRI-CHECK can only be operated in accordance to the assigned flow direction. The valve has to be installed in a way that the **direction of the arrow** on the body is the same direction from which **pressure is put on the closed disc**. This direction must comply with the flow direction when the check valve is open!*



⇒ The preferred orientation of the valve puts the shaft in an exact horizontal position. Slight deviations have to be approved by the manufacturer.

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- ⇒ For installation into an existing pipe system be sure, that the gap between the pipe ends has sufficient clearance to protect all connecting surfaces (and gaskets) from damage. But the gap shall not be larger than necessary to limit additional pipe load.
- ⇒ It is recommended that the warming of the valve during start-up does not exceed 80 ° C / h. In any case of doubt please consult the manufacturer.
- ⇒ At temperatures exceeding 350 ° C the drive must be protected by suitable measures (here the manufacturer is necessarily to consult).

Flanged check valves only:

- ⇒ The flanged pipe ends shall be installed in line with the faces being parallel.


 Attention	<p><i>Check valves with flanged ends:</i></p> <p>The sealing surfaces of check valves with flanged ends require the use of sealings per EN1514-1 or ANSI B16.21. The mating flange surfaces shall be conform to EN 1092-1 or "stock-finish" conform to ANSI B16.5, with flat mating faces (i.e. form C or form D or form E). The manufacturer ZWICK shall release flanges of other standards or other kinds of mating faces.</p>
 Attention	<p>Check valves with short face to face dimensions have to be inserted between the pipe flanges with the disc in the closed position; otherwise the disc can be damaged and the valve will not be tight anymore.</p>

- ⇒ When fastening the flange bolting, be sure, that the bolts centre the valve body correctly.

 Attention	<p>Wafer type butterfly valves series TRI-CHECK may need flange bolts and studs with different length for connection to the pipe flanges.</p> <p>For bolting dimensions refer to ZWICK-document < Zw-Tri-Check-2010-A0>.</p>
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Butt-weld check valves only:

- ⇒ The weld ends of the valve must be aligned and coplanar. The material of the valve and the material of the pipe end must match – see material information on the name plate of the valve. Opposing weld ends on the valve and the pipe must have matching diameters and edge forms.
- ⇒ Connect the welding cable not at the valve body, but at the pipe only.
- ⇒ The seam shall be welded by experts to reduce stresses produced by the welding process in the valve body and in the adjacent pipe. The body wall temperature shall be limited to <300°C.
- ⇒ Check Valves >DN 400:

 Attention	<p>Be careful at the welding process: The temperature in the valve body shall be restricted to protect it from local deformation. The seam shall be welded with interruption, alternating crossover, to limit the temperature in the seam area.</p> <p>Ignoring these requirements could mean a permanent deformation in the valve body. Even by 1/10 mm permanent deformation of the body seat (around the body necks) the valve may become useless.</p>
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All Check valves:

- ⇒ The signals of the limit switch (if applicable) must indicate the correct position of the valve.
- ⇒ Recognizable malfunctions are to be remedied without fail before start of operation. See clause 7 <Trouble shooting guide>

 Danger	<p>Defaults of signals and signalization could mean danger of injury of the user and/or cause damage in the piping system.</p>
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5 Pressure test and activation

The pressure tests of the valves have already been carried out by the manufacturer. For the pressure test of a pipe section with built-in valves, the following should be noted:

- ⇒ Rinse newly installed pipe systems carefully to remove all contaminant.
- ⇒ **Valve opened:** the test pressure may not exceed **value 1.5 x PS** (according to the type plate). (*PS = maximum allowable operating pressure at 20°C*).
- ⇒ **Valve closed:** the test pressure may not exceed **value 1.1 x ΔP** (according to the type plate).

If a valve should leak, pay attention to Section 7 <Help with malfunctions>.


6 Normal Operation and Maintenance

The valves are controlled by the flow inside the pipe systems. An intervention from the outside is not permitted.

Regular maintenance is not required for valves. When at examination of the line section a leakage is detected at a valve section 7 <troubleshooting> shall be observed.

For valves remaining permanently in the same position, it is recommended, to operate it 1x to 2x each year to check their function.

Moreover it was recommended to provide free inlet and outlet distances of 5 x DN before and behind the valve. The manufacturer has to be consulted in any doubt

 Danger	<p><i>A check valve is not self-locking: A movement of the check valve is always to be expected as long as there is media and/or pressure in the pipe system.</i></p>
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7 Help with malfunctions

When troubleshooting, strictly adhere to Section 2 <Notes on safety>.

Note 1:


Order spare parts by using all specification on the type plate. Only ZWICK Armaturen GmbH original spare parts may be installed.

Note 2:

If it is determined after disassembly that housing and/or internal parts are not sufficiently resistant against the medium, please inform the manufacturer and mention all specification on the type plate

Possible defect	Remedy	Remarks
Leakage at the pipe flange or at a cover flange connection	Tighten the flange bolting. <i>If this does not eliminate the leakage:</i> Replace the flange or cover gasket. Observe clause 2.3 <Special Dangers> and order cover gaskets and repair instruction from ZWICK.	<p><u>Note 1:</u></p> <p><i>To order spare parts, transmit all markings from the valve tag. Only original ZWICK-parts shall be used</i></p>

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Seat Leakage	<p>Check if the valve is 100 % closed.</p> <p><i>If the valve is in the closed position:</i> check if the actuator closes with full torque.</p> <p><i>If drive closes with full torque:</i> valve under pressure repeatedly open / close.</p> <p><i>Is the faucet still leaking:</i> torque of the actuator in position "CLOSE" increase up to maximum of 1.1 x rated torque.</p> <p><i>If the faucet still leaks:</i> repair needed: replace seat seal. Observe clause 2.3 <Special Dangers> and order repair instruction from ZWICK</p>	<p>Note 2:</p> <p><i>If a disassembled valve is corroded at body or trim surfaces, choose wear and spare parts of a more resistant material quality</i></p>
Leakage at the stuffing box	<p>Tighten the stuffing box bolting in steps of ¼ turns clockwise alternating at both nuts.</p> <p><i>If the stuffing box continues to leak:</i> The shaft seal shall be replaced. Observe clause 2.3 <Special Dangers> and order spare parts and repair instruction from ZWICK.</p> <p><i>If the nuts at the stuffing box should be loosened or disassembled (anti-clockwise):</i></p> <div style="text-align: center;">  <p><u>Mortal Danger</u></p> </div> <p>To prevent an exposure of the operational staff to danger make sure that the pipe system on both sides of the valve is completely depressurized. Observe clause 2.3 <Special Dangers></p>	
Malfunction	<p>Disassemble the valve from the pipe system and inspect it. Observe clause 2.3 <Special Dangers></p> <p><i>If the valve is damaged:</i> The valve shall be repaired: Order spare parts and repair instruction from ZWICK and replace it.</p>	

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8 Caution with use of the butterfly valves in -hazardous environments


8.1 Caution for the valve (without the electro-/hydraulic-/pneumatic actuator):

Below is a summary of the results of the ZWICK ignition analysis, carried out in accordance with EN 13463-1:

Source of hazard	Measure
Valve (without actuator/accessories)	The valve has no own source of ignition, if the user pays attention to below measures.
Sparks when installing a butterfly valve in the pipe section	Mounting / dismounting / service is only allowed in non-ignitable environmental atmosphere.
Heating of the valve's housing wall to unacceptably high temperature	<i>The manufacturer of the valve is not liable for damage resulting from this hazard.</i> Is the responsibility of the operator to ensure that the operating medium remains within permissible limits of the environment that contains  -hazards.
Charging of individual valve components from the function (OPEN-CLOSE)	<i>All outside parts of the valve are made of metal and are conductive connected with each other.</i> It is necessary to ensure that the TRI-CHECK valve is properly, grounded and remains this way.

8.2 Warning for the accessories:

The (electric) accessories of the valve have its own source of ignition.

No additional ignition danger results from the combination of the TRI-CHECK valve and the actuator/the (electric) accessories in an environment with -hazards if the warnings of the table in Section 8.1 above are adhered to.

Source of hazard	Measure
Accessories	The supplied documentation of the accessories manufacturer (see the declarations by manufacturer ZWICK that were delivered as part of the shipping) must be strictly and completely adhered to and must be considered in the risk analysis of the pipe section.

9 Further Information

You will receive these instructions, the named ZWICK brochures and further information and advice – also in other languages – from:

ZWICK Armaturen GmbH, Egerstraße 1

D-58526 Ennepetal,

Tel: +49 (0) 2333 98565

E-Mail: info@zwick-gmbh.de

www.zwick-gmbh.de

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10 EU directives

Declaration of conformity acc. to: till 2016/07/18 Directive 97/23 EC (Article 13, Directive 2014/68/EU)

Declaration of conformity acc. to: from 2016/07/19 Directive 2014/68/EU

Manufacturer's declaration acc. to: Directive 06/42 EC

Manufacturer's declaration acc. to: till 2016/04/19 Directive 94/9 EC

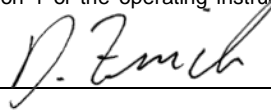
Manufacturer's declaration acc. to: from 2016/04/20 Directive 2014/34/EU

The Manufacturer	ZWICK GmbH, D-58256 Ennepetal	
explains that the valve	Butterfly valve Series TRI-CHECK <ul style="list-style-type: none"> • with counter weight • with optional hydraulic damper 	
EC Directives		
Directive 97/23 EC or Directive 2014/68/EU	Directive 06/42 EC	Directive 94/9 EC or Directive 2014/34/EU
<ol style="list-style-type: none"> 1. is a pressurized equipment within the meaning of the EC pressure equipment directive 97/23 EC or directive 2014/68/EU and complies with the requirements of this directive 2. may be only operated under consideration of the supplied operating instruction no. Zw-TriBlock-2016. 3. is in conformance with article 13 of the EU directive 2014/68/EU and that this article has been considered 	<ol style="list-style-type: none"> 4. is a partly completed machinery (applies only to model that has an actuator) within the meaning of art. 2 g of the directive 06/42 EC (machine directive) and is only intended to be installed in a completed machinery 5. must not be put into service unless it is incorporated in a completed machinery which has been declared in conformity with this directive 6. fulfills the declared requirements of this directive 7. may be only operated under consideration of the supplied operating instruction no. Zw-Tri-Check-2016. 	<p>(without actuator/accessories)</p> <ol style="list-style-type: none"> 8. has been submitted to a hazard analysis according to directive 94/9 EC 9. has no own source of ignition and can therefore be used in an explosive atmosphere 10. cannot comply with the directive 94/9/EC or directive 2014/34/EU 11. may be only operated under consideration of the supplied operating instruction no. Zw-Tri-Check-2016, especially chap. 8 <p>Note: Electrical/pneumatic/hydraulic actuators and accessories have to be submitted to a separate assessment of conformity according to directive 94/9 EC.</p>
The activation of this valve is only allowed if the valve is attached on both sides to the pipe, which excludes danger of injury.		
<i>Applied EU directives and standards:</i>		
97/23 EC 2014/68/EU EN 593 EN 12516 94/9 EC 2014/34/EU EN 1127-1 EN 13463-1 06/42 EC	EC Pressure Equipment Directive EU Pressure Equipment Directive 2014 Industrial valves – Metallic butterfly valves Industrial valves – Shell design strength European explosion-protection directive European explosion-protection directive 2014 Explosive Atmospheres – Explosion prevention and protection Non-electrical equipment for potentially explosive atmospheres EC Machine Directive	
<i>Type description and technical characteristics:</i>		
ZWICK Catalogue <Butterfly valves Series TRI-CHECK>		
<i>Authorized person to compile technical documentation:</i>		
Daniel Zwick, D-58256 Ennepetal		
<i>Applied conformity assessment procedure:</i>		
for Directive 97/23 EC on pressure equipment or from 2016/07/19 Directive 2014/68/EU, category: acc. table 1, module H		
<i>Name of the notified body:</i>	<i>Identification no. of the notified body:</i>	
LRQA GmbH Hamburg	0525	

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Modifications to valves and/or assemblies will render these declarations invalid if these changes have an impact on the technical data of the valve and the <Appropriate use> pursuant to Section 1 of the operating instructions and when they substantially alter the valve and/or a supplied assembly.

Ennepetal, 02 nd of June 2016



Daniel Zwick, CEO

11 Conformity Assessment Procedure acc. to PED 97/23/EC or 2014/68/EU

Table 1: Category Fluid group 1, diagram 6, module H

DN	PN							
	6	10	16	25	40	63	100	160
50	I	I	I	II	II	II	III	III
65	I	I	II	II	II	III	III	III
80	I	I	II	II	II	III	III	III
100	I	I	II	II	III	III	III	III
125	I	II	II	II	III	III	III	III
150	I	II	II	III	III	III	III	III
200	II	II	II	III	III	III	III	III
250	II	II	III	III	III	III	III	III
300	II	II	III	III	III	III	III	III
350	II	III	III	III	III	III	III	III
400	II	III	III	III	III	III	III	III
450	II	III	III	III	III	III	III	III
500	II	III	III	III	III	III	III	III
600	III	III	III	III	III	III	III	III
650	III	III	III	III	III	III	III	III
700	III	III	III	III	III	III	III	III
750	III	III	III	III	III	III	III	III
800	III	III	III	III	III	III	III	III
850	III	III	III	III	III	III	III	III
900	III	III	III	III	III	III	III	III
950	III	III	III	III	III	III	III	III
1000	III	III	III	III	III	III	III	III
1050	III	III	III	III	III	III	III	III
1100	III	III	III	III	III	III	III	III
1200	III	III	III	III	III	III	III	III
1300	III	III	III	III	III	III	III	III
1350	III	III	III	III	III	III	III	III
1400	III	III	III	III	III	III	III	III
1600	III	III	III	III	III	III	III	III
1800	III	III	III	III	III	III	III	III
2000	III	III	III	III	III	III	III	III
2200	III	III	III	III	III	III	III	III

DN	ANSI CLASS				
	150	300	600	900	1500
50	I	II	III	III	III
65	II	II	III	III	III
80	II	III	III	III	III
100	II	III	III	III	III
125	II	III	III	III	III
150	II	III	III	III	III
200	III	III	III	III	III
250	III	III	III	III	III
300	III	III	III	III	III
350	III	III	III	III	III
400	III	III	III	III	III
450	III	III	III	III	III
500	III	III	III	III	III
600	III	III	III	III	III
650	III	III	III	III	III
700	III	III	III	III	III
750	III	III	III	III	III
800	III	III	III	III	III
850	III	III	III	III	III
900	III	III	III	III	III
950	III	III	III	III	III
1000	III	III	III	III	III
1050	III	III	III	III	III
1100	III	III	III	III	III
1200	III	III	III	III	III
1300	III	III	III	III	III
1350	III	III	III	III	III
1400	III	III	III	III	III
1600	III	III	III	III	III
1800	III	III	III	III	III
2000	III	III	III	III	III
2200	III	III	III	III	III

Note: PS depends on the maximum pressure of the pressure rating (for Class valves the Ceiling Pressure acc. to ASME B16.34)