

Series NKS/F, NKSP/F,
NKL/F, NKLP/F

Richter Shut-off and Control Butterfly Valve

Wafer-style body:

Series NKS/F

Lug-style body:

Series NKL/F



Keep for future use!

This operating manual must be strictly observed before transport, installation, operation and maintenance

Subject to change without notice.

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Relevant documents

- ◆ Declaration of conformity acc. to the EC Pressure Equipment Directive 2014/68/EU
- ◆ Manufacturer's Declaration German Clean Air Act (TA-Luft)
- ◆ Manufacturer's Declaration SIL
- ◆ Form for Safety Information Concerning the Contamination QM 0912-16-2001_en
- ◆ For NKSP/F or NKLP/F operating manual for actuator

On request :

- ◆ Installation and inspection regulations for centric shut-off valves of the series NKL/NKLP, NKS/NKSP, QM No. 0910-08-1005
- ◆ Change from manual operation to power operation Dimen. **9520-00-4212**

1 Technical data

Manufacturer:

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 D-47906 Kempen
 Telephone: +49 (0) 2152 146-0
 Fax: +49 (0) 2152 146-190
 E-Mail : richter-info@idexcorp.com
 Internet: <http://www.richter-ct.com>

Designation:

Shut-off and control butterfly valve
2 body designs: lug-style and wafer-style.
Disc/stem unit plastic-lined,

Certified to Clean Air Act (TA Luft)

Strength and tightness (P10, P11) of the pressure-bearing body tested to DIN EN 12266-1.

Gas-tight (P12) in the seat to DIN EN 12266-1, leak rate A

Flange connecting dimensions:

DIN EN 1092-2, shape B, (ISO 7005-2 type B) PN 10 or ASME B16.5 class 150

Face to face:

DIN EN 558-1, basic series 20 (ISO 5752 series 20) or API 609 table 2 or MSS SP-67 table 3

Weights: See table in Section 1.6

Dimensions and individual parts:

See dimensional and sectional drawing in Section 10

Materials:

Body material: Ductile cast iron EN-JS 1049 / ASTM A395

Lining material: PFA/PTFE .../F

On request: antistatic .../F-L
 highly permeation-resistant .../F-P
 modified TFM-PTFE

Disc/stem unit: PFA-lined ...-F

Temperature range: -60 °C to +200 °C
 (-80 °F to +400 °F)
 accord. to operating pressure
 See pressure-temperature diagram in Section 1.7.

Operating pressure: from vacuum to 10 bar
 (145 psig)
 accord. to operating pressure in Section 1.7.

Activation:

- ◆ Hand lever, lockable
- ◆ Worm gear with handwheel
- ◆ Pneumatic or electric
 (connection to DIN EN ISO 5211)

Options:

- ◆ Safety stuffing box
- ◆ Monitoring connection
- ◆ Proximity initiator
- ◆ Manually operated with limit switch

1.1 Overview of sizes

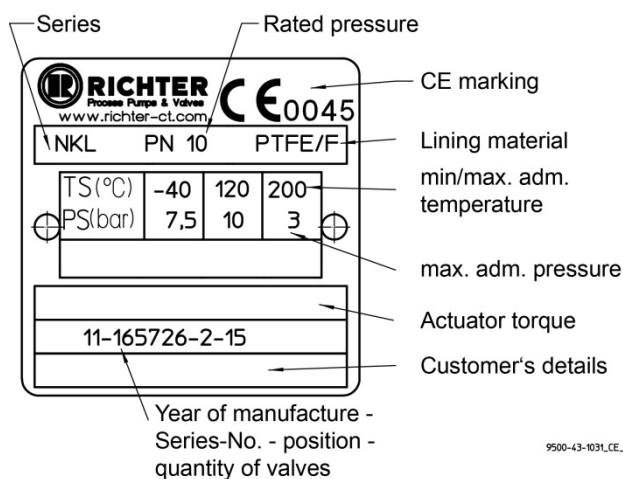
Series	Actuation	/F		/F-L	Body design
NKS/F	Lever	DN 50, 80, 100, 150, 200 2", 3", 4" 6, 8"	DN 50, 80, 100, 150, 200 2", 3", 4" 6, 8"		
	Gear	DN 50, 80, 100, 150-400 2", 3", 4" 6-16"	DN 50, 80, 100, 150-250, 2", 3", 4" 6-10"		
NKSP/F	Actuator connection to ISO 5211				
NKL/F	Lever	DN 50, 80, 100, 150, 200 2", 3", 4" 6, 8"	DN 50, 80, 100, 150, 200 2", 3", 4" 6, 8"		
	Gear	DN 50, 80, 100, 150-400 2", 3", 4" 6-16"	DN 50, 80, 100, 150-250 2", 3", 4" 6-10"		
NKLP/F	Actuator connection to ISO 5211				

1.2 Name plate, CE and body markings

The stainless steel name plate is undetachably riveted to the body.

If the operator attaches his identification, it must be ensured that the valve matches the application in question.

Example of name plate with CE marking:



Body identification:

The following are visible on the body according to DIN EN 19 and AD 2000 A4:

- ◆ Nominal size
- ◆ Rated pressure
- ◆ Body material
- ◆ Manufacturer's identification
- ◆ Melt number/Foundry identification
- ◆ Cast date

Sign for transport securing device for actuator



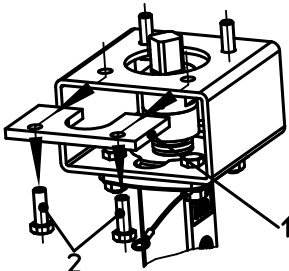
Normklappen mit Antrieb
Butterfly valves with actuator
Vannes papillon avec motorisation



Einfachwirkenden Antrieb mit regulierbarem
Luftdruck beaufschlagen, dann vor Inbetriebnahme
die Wellenblockierung (Pos.1) entfernen

Charge single-acting actuator with adjustable
air pressure, then remove the shaft locking
device (Pos.1) prior to operation!

Avant la mise en service, pressuriser les
actionneurs simple effet avec de l'air regulée
et ensuite démonter le blocage de l'arbre (Pos.1) !



1.3 Tightening torques

All screws greased, tighten in diametrically opposite sequence!

After the plant has been started up (especially with the first temperature load) the tightening torques must be checked and the correct value set again.

The tightening torques for pipe screws and body screws mentioned must not be exceeded. For an exception, see **Section 8**, flange connection valve/pipe is leaking.

The following tightening torques are recommended:

Packing screws

Screws [ISO/DIN]	Tightening torque	
	[Nm]	[in-lbs]
2 x M8	3	27

Pipe screws, flanges to ISO/DIN

Flange nom. size [mm]	Screws [ISO/DIN]	Tightening torque [Nm]
50	4 x M16	30
80	8 x M16	25
100	8 x M16	30
150	8 x M20	55
200	8 x M20	75
250	12 x M20	65
300	12 x M20	75
350	16 x M20	75
400	16 x M24	85

Pipe screws flanges ISO/DIN drilled to ASME Class 150

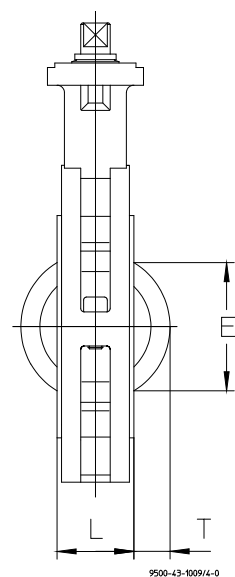
Flange nom. size		Screws [ASME]	Tightening torque	
[mm]	[inch]		[Nm]	[in-lbs]
50	2"	4 x 5/8"	30	266
80	3"	4 x 5/8"	50	442
100	4"	8 x 5/8"	30	266
150	6"	8 x 3/4"	55	487
200	8"	8 x 3/4"	75	664
250	10"	12 x 7/8"	65	575
300	12"	12 x 7/8"	75	664
350	14"	12 x 1"	75	664
400	16"	16 x 1"	85	752

Body screws**Hex. Nut 920/2 for lug-style body**

Nom. size		Hex. nuts [ISO/DIN]	Tightening torque	
[mm]	[inch]		[mm]	[inch]
50	2"	4 x M10	30	266
80	3"	4x M12	50	442
100	4"	4 x M12	50	442
150	6"	4 x M16	100	885
200	8"	4 x M16	100	885
250	10"	4 x M16	100	885
300	12"	4 x M20	200	1770
350	14"	8 x M16	100	885
400	16"	8 x M20	200	1170

Hex. socket screw 914/1 for sandwich body

Nom. size		Hex. socket screw [ISO/DIN]	Tightening torque	
[mm]	[inch]		[mm]	[inch]
50	2"	2 x M10	30	266
80	3"	2 x M12	50	442
100	4"	2 x M12	50	442
150	6"	2 x M16	100	885
200	8"	2 x M16	100	885
250	10"	2 x M16	100	885
300	12"	2 x M20	200	1770
350	14"	4 x M16	100	885
400	16"	4 x M16	100	885

1.4 Dimensions - Installation

Nom. size		E ¹ [mm]	T ¹ [mm]	L ² [mm]	Connection ³
[mm]	[inch]				
50	2"	28	4	43	F07
80	3"	67	17,5	46	F07
100	4"	87	24,5	52	F07
150	6"	142	48	56	F10
200	8"	193	71	60	F10
250	10"	243	92	68	F12
300	12"	292	112	78	F12
350	14"	343	137	78	F14
400	16"	389	150	102	F14

- 1 See also [Section 6.4, paragraph 1](#)
- 2 Face to face to DIN EN 558-1, series 20 (ISO 5752, series 20)
- 3 Connections for worm gears and brackets as per DIN ISO 5211

The inside diameter of the mounted pipe flanges must always be greater than the dimension E in the table!

For more dimensions, see drawings in [Section 10](#).

1.5 Flow rate value kv [m³/h]

Nom. Size		Angel of opening							
[mm]	[inch]	20°	30°	40°	50°	60°	70°	80°	90°
50	2"	1	6	13	24	41	67	104	120
80	3"	5	22	47	82	126	197	264	282
100	4"	11	27	52	93	155	247	412	456
150	6"	37	84	164	276	431	702	1126	1254
200	8"	62	170	354	532	912	1371	2212	2503
250	10"	85	285	512	882	1451	2256	3692	4083
300	12"	159	421	835	1378	2282	3633	5735	6512
350	14"	230	610	1210	2000	3300	5270	8320	9450
400	16"	295	780	1550	2560	4240	6750	10650	12100

1.6 Weights (ca. kg)

Nom. size		Lug style body	Sandwich-body		
[mm]	[inch]	open staff end	open staff end	Lever	Gear
50	2"	4,5	3,5	0,7	4,0
80	3"	7,5	4,5	0,7	4,0
100	4"	9,5	6,0	0,7	4,0
150	6"	16,0	11,0	3,7	4,5
200	8"	23,0	15,0	3,7	4,5
250	10"	35,0	25,0	--	9,5
300	12"	54,0	33,0	--	9,5
350	14"	68,0	47,0	--	15,0
400	16"	97,0	69,0	--	15,0

Actuator see data of the manufacturer

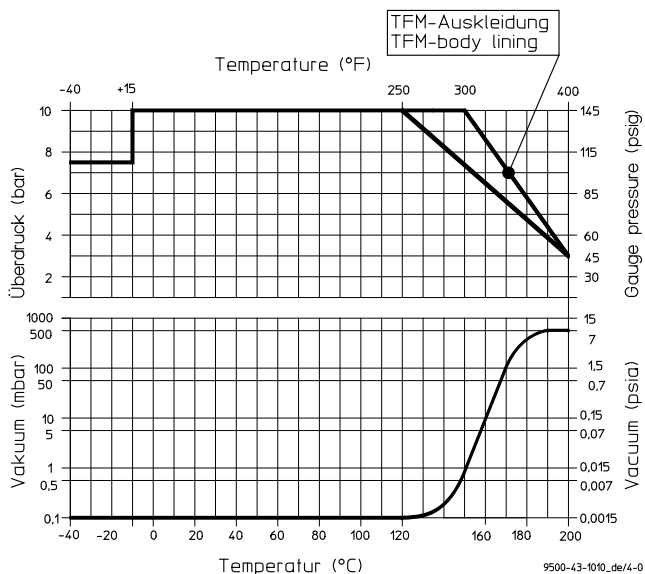
1.7 Pressure-temperature-diagram

When used in the area of application of ASME, the low temperature of ASTM A395 is limited to $-20\text{ }^{\circ}\text{F}$ ($-29\text{ }^{\circ}\text{C}$).

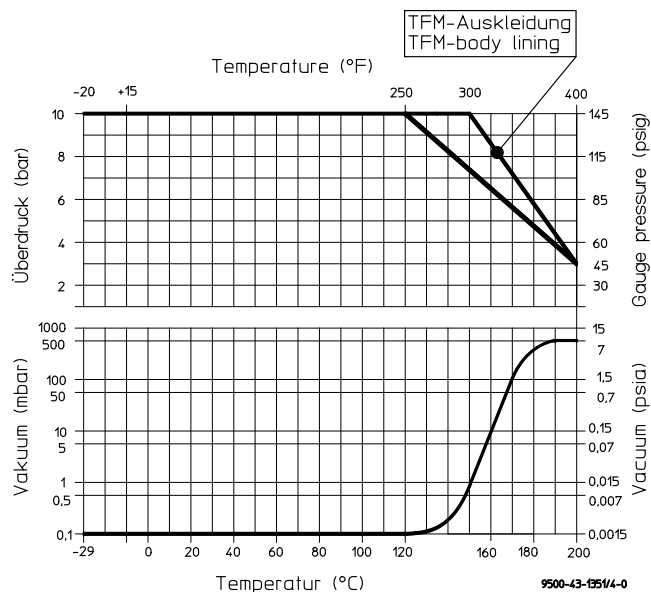


When used in the minus temperature range, the regulations applicable in the country in question must be observed.

According to AD 2000



According to ASME B16.42



1.8 Breakaway torques

Nom. size		Md _{erf} [Nm]	Md _{max} [Nm]
[mm]	[inch]		
50	2"	20	100
80	3"	46	180
100	4"	63	360
150	6"	128	725
200	8"	185	775
250	10"	287	1435
300	12"	410	1775
350	14"	550	3000
400	16"	650	3500

1.9 Cavitation coefficient z for 75% duty

Nom. size		(bei kv/kvs = 75 %) z
[mm]	[inch]	
50	2"	0,32
80	3"	0,30
100	4"	0,29
150	6"	0,26
200	8"	0,23
250	10"	0,19
300	12"	0,16
350	14"	0,14
400	16"	0,12

2 Notes on safety

This operating manual contains fundamental information which is to be observed during installation, operation and maintenance.

It must therefore be read before installation and commissioning!

For valves which are used in potentially explosive areas, see **Section 3**.

Installation, operation and maintenance are to be performed by qualified staff.

The area of responsibility, authority and supervision of the staff must be regulated by the customer.



General hazard symbol!

People may be put at risk.



Safety symbol! The valve and its function may be put at risk if this safety symbol is not observed.

It is imperative to observe warnings and signs attached directly to the valve and they are to be kept fully legible.

Non-observance of the notes on safety may result in the loss of any and all claims for damages.

For example, non-observance may involve the following hazards:

- ♦ Failure of important functions of the valve/plant.
- ♦ Risk to people from electric, mechanical and chemical effects.
- ♦ Risk to the environment through leaks of hazardous substances.

2.1 Intended use

Richter shut-off and control butterfly valves are pressure-maintaining components in accordance with the German Pressure Equipment Directive (DGRL) for the passage and shut-off of fluids. The valves are suitable for vapours, gases and liquids of group 1 according to the DGRL and have a corrosion-resistant plastic lining.

The field of application for the shut-off and control butterfly valves include:

- ♦ Light and medium corrosive, pure and slightly solids-laden liquids, vapours and gases
- ♦ Materials in contact with the medium which are FDA-compliant can be used for food and pharmaceutical feedstock as well as in biochemistry.
- ♦ Powdered and granulated non or low abrasive solids

Shut-off and control butterfly valves with a plastic-lined disc/stem unit are used for highly aggressive, corrosive media.

Shut-off and control butterfly valves with a stainless steel disc/stem unit are suitable for less aggressive media, are cheaper and beneficial for thorough valve cleaning.

With all 3 body versions the valves can be installed as a wafer-style valve (intermediate flange valve), with lug-style and double-flange body as a flange or dead-end valve.

Product features:

- ♦ Wide sealing surfaces of the body lining
- ♦ Long valve neck for optimum heat insulation
- ♦ Maintenance-free, self-adjusting stem seal
- ♦ Leak-proof to the atmosphere in accordance with the German Clean Air Code

Solids can lead to increased wear, leaks, damage to sealing surfaces or to a reduction in the service life of the valve.

In case of the valve is intended for operating data other than those intended, the customer must carefully examine whether the design of the valve, accessories and materials are suitable for the new application (consult the manufacturer).

2.2 For the customer / operator

If a valve is used, the operator must ensure that

- ♦ actuators which are retrofitted are adapted to suit the valve
- ♦ hot or cold valve parts are protected by the customer against being touched

- ♦ the valve has been properly installed in the pipe system
- ♦ the usual flow rates are not exceeded in continuous operation.

This is not the manufacturer's responsibility.



Butterfly valves which are used as end valves must be sealed with a blind flange at the free connection end and appropriately secured against unauthorised activation.

Loads caused by earthquakes were not allowed for in the design.

Fire protection to DIN EN ISO 10497 is not possible (plastic lining and plastic components).

2.3 Improper operation

The operational reliability of the valve supplied is only guaranteed if it is used properly in accordance with **Section 2.1** of this operating manual.



The operation limits specified on the identification plate and in the pressure-temperature diagram must under no circumstances be exceeded.

3 Safety notes for applications in potentially explosive areas based on the Directive 2014/34/EU (ATEX)

The valves are intended for use in a potentially explosive area and are therefore subject to the conformity assessment procedure of the directive 2014/34/EU (ATEX).

As part of this conformity assessment, an ignition hazard analysis to EN 13463-1 to satisfy the fundamental safety and health requirements was conducted with the following result:

- ♦ **The valves do not have any ignition source of their own and can be operated both manually as well as mechanically/electrically.**
- ♦ **The valves are not covered by the scope of application of the ATEX directive and therefore do not need to be identified accordingly.**
- ♦ **The valves may be used in a potentially explosive area.**

Supplementary notes:

- ♦ **Electric/mechanical actuators must be subjected to their own conformity assessment to ATEX.**

It is imperative to observe the individual points of intended use for application in a potentially explosive area.

3.1 Intended use

Improper operation, even for brief periods, may result in serious damage to the unit.

In connection with explosion protection, potential sources of ignition (overheating, electrostatic and induced charges, mechanical and electric sparks) may result from these improper operation; their occurrence can only be prevented by adhering to the intended use.

Furthermore, reference is made in this connection to the Directive 95/C332/06 (ATEX 118a) which contains the minimum regulations for improving the occupational health and safety of the workers who may be at risk from an explosive atmosphere.

A difference is made between two cases for the use of chargeable liquids (conductivity $<10^{-8}$ S/m):

1. Chargeable liquid and non-conductive lining

Charges can occur on the lining surface. As a result, this can produce discharges inside the valve. However, these discharges cannot cause ignitions if the valve is completely filled with medium.

If the valve is not completely filled with medium, e.g. during evacuation and filling, the formation of an explosive atmosphere must be prevented, e.g. by superimposing a layer of nitrogen.

It is recommended to wait 1 hour before removing the valve from the plant in order to permit the elimination of static peak charges.

This means that, to safely prevent ignitions, the valve must be completely filled with medium at all times or else a potentially explosive atmosphere must be excluded by superimposing a layer of inert gas.

2. Chargeable liquid and conductive lining

No hazardous charges can occur as charges are discharged direct via the lining and shell (surface resistance $<10^9$ Ohm, leakage resistance $<10^6$ Ohm).

Static discharges of non-conductive linings are only produced through the interaction with a non-conductive medium and are therefore the responsibility of the plant operator.

Static discharges are not sources of ignition which stem from the valves themselves!

- The temperature of the medium must not exceed the temperature of the corresponding temperature class or the maximum admissible medium temperature as per the operating manual.

- If the valve is heated (e.g. heating jacket), it must be ensured that the temperature classes prescribed in the Annex are observed.
- To achieve safe and reliable operation, it must be ensured in inspections at regular intervals that the valve is properly serviced and kept in technically perfect order.
- Increased wear to the valve can be expected with the conveyance of liquids containing abrasive constituents. The inspection intervals are to be reduced compared with the usual times.
- Actuators and electric peripherals, such as temperature, pressure and flow sensors etc., must comply with the valid safety requirements and explosion protection provisions.
- The valve must be grounded.
This can be achieved in the simplest way via the pipe screws using tooth lock washers.

Otherwise grounding must be ensured by other action, e.g. cable bridges.

- Attachments such as actuators, position controllers, limit switches etc. must satisfy the relevant safety regulations as regards explosion protection and, if required, be designed in compliance with ATEX.
- Special attention must be paid to the appropriate safety and explosion protection notes in the respective operating manuals.
- Plastic-lined valves must not be operated with carbon disulphide.

4 Safety note for valves, certified to German Clean Air Act (TA Luft)

Certificate / Manufacturer Declaration Validity is dependent on the operating instructions being read and observed.

- Perform maintenance at regular intervals and check the screw connections relevant to leak-tightness and, if necessary, retighten them.

5 Transport, storage and disposal



It is imperative, for all transport work, to observe generally accepted engineering practice and the accident prevention regulations.



The valve is supplied with flange caps. Do not remove them until just before installation. They protect the plastic surfaces against dirt and mechanical damage.

Handle the goods being transported with care. During transport the valve must be protected against impacts and collisions.

Directly after receipt of the goods, the consignment must be checked for completeness and any in-transit damage.

Do not damage the external epoxy coating.

5.1 Storage

If the valve is not installed immediately after delivery, it must be put into proper storage.

It should be stored in a dry, vibration-free and well-ventilated room at as constant a temperature as possible.

Elastomers are to be protected against UV light.

In general, a storage period of 10 years should not be exceeded.

It is not permitted to put the valve into store with the disc completely closed or with an opening angle greater than 15°.

5.2 Transport preparations

During transport the disc/stem unit must not project beyond the body dimensions.

Hand lever:

When the valve is in the closed position, the lever is to lock in the first lever catch. This results in the disc/stem unit being slightly opened.

Worm gear

When the valve is in the closed position, **the disc/stem unit is to be 10-15° open.**

Actuator

When the valve is in the closed position, **the disc/stem unit is to be 10-15° open.**

Bare shaft

When the valve is in the closed position, **the disc/stem unit is to be 10-15° open.**

Attach a locking plate on shut-off and control butterfly valves with a single-acting actuator. See also [Section 6.4.1](#) and the drawing in [Section 5.4](#).

Mount flange caps.

5.3 Return consignments



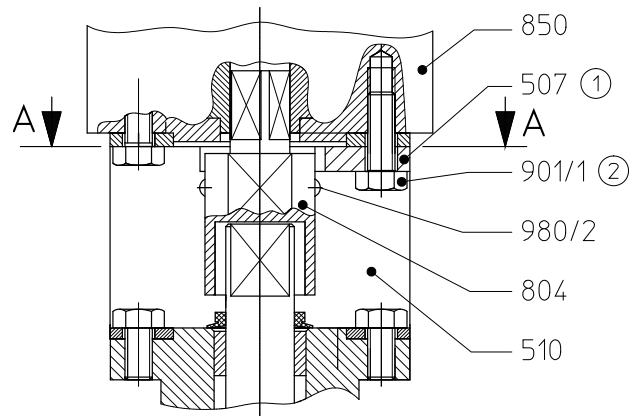
Valves which have conveyed aggressive or toxic media must be well rinsed and cleaned before being returned to the manufacturer's works.

It is **imperative** to enclose a **safety information sheet / general safety certificate** on the field of application with the return consignment.

Pre-printed forms are enclosed with the installation and operating manual.

Safety precautions and decontamination measures are to be mentioned.

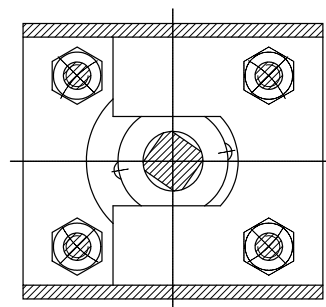
5.4 Transport securing device



① Only with single acting actuator. Remove it at installation. See also [Section 6.4.1](#).

② Screw in again the hex. nuts after removing the locking plate.

A-A



9500-43-1137_en/4-0

Drawing is also valid for NKL, NKS und NK with a commercial worm gear.

5.5 Disposal

Parts of the valve may be contaminated with medium which is detrimental to health and the environment and therefore cleaning is not sufficient.



Risk of personal injury or damage to the environment due to the medium!

- ♦ Wear protective clothing when work is performed on the valve.
- ♦ Prior to the disposal of the valve:
 - Collect any medium, etc. which has escaped and dispose of it in accordance with the local regulations.
 - Neutralise any medium residues in the valve.
- ♦ Separate valve materials (plastics, metals, etc.) and dispose of them in accordance with the local regulations.

6 Installation

- ◆ Examine valve for in-transit damage, damaged ball valves must not be installed.
- ◆ Before installation the valve and the connecting pipe must be carefully cleaned to remove any dirt, especially hard foreign matter.
- ◆ During installation, pay attention to the correct tightening torque, aligned pipes and tension-free assembly.



Ensure that a remotely actuated actuator cannot be accidentally switched on.

6.1 Installation possibilities

Series NKS/F - sandwich body

They are used for sandwich installation. The valve is clamped between the two pipes.

Series NKL/F - lug-style body

They are suitable as an intermediate flange and dead-end valve. They have flange bores to ISO 7005-2 PN 10 (DIN 2501 PN 10) to ASME/ANSI B 16.5 Class 150; they permit independent bolting from each other.

On request, through holes can also be provided instead of the tapped bores.

6.2 Flange caps and gaskets

Leave protective caps on the flanges until just prior to installation.

Where there is a particularly high risk of damage to the plastic sealing surfaces, e.g. if the mating flanges are made of metal or enamel, PTFE-lined gaskets with a metal inlay should be used. These gaskets are available as special accessories in the Richter range.

6.3 Direction of flow and installation position

Installation is independent of the direction of flow.

Any fitting position can be chosen.

Except solids-containing liquids:

With solid containing media butterfly valves are preferably installed with horizontally positioned stem and bottom half of disc opening into flow direction.

6.4 Installation

- Can the disc open in the pipeline?
For dimensions see **Section 1.4**.
- Is the disc open 10 – 15°?
- Mount butterfly valve and gaskets centrically.
- Tighten the piping bolts crosswise and hand-tight.
- By means of a test actuation ensure that the disc is able to freely rotate.
- With the disc slightly opened, tighten the piping bolts crosswise. For the torques see **Section 1.3**.



Butterfly valves which are used as end valves must be sealed with a blind flange at the free connection end and appropriately secured against unauthorised activation.

6.4.1 Additional advice for shut-off and control butterfly valve with actuator

- For single-acting actuators a locking plate has been fitted into the bracket, blocking the stem at a disc opening of 10 – 15°.
- Remove the locking plate before the first test actuation, screw in again hex. screw **901/1**. Slightly actuate the actuator.
Please pay attention to the drawing in **Section 5.4**.

6.5 Earthing

One end of the grounding rope **532** is attached with a hex. nut **920/1** and a tooth lock washer **936/1** to the underside of the head flange.

The other end is metallically secured in the plant.

7 Operation

7.1 Initial commissioning

Normally, the valves have been tested for leaks with air or water. Prior to initial operation check body bolting. For torques see [Section 1.3](#).



Unless otherwise agreed, there could be residual amounts of water in the flow section of the valve; this could result in a possible reaction with the medium.

To prevent leaks, all connection screws should be retightened after the initial loading of the valve with operating pressure and operating temperature.

For torques see [Section 1.3](#).

7.2 Improper operation and their consequences

- ◆ Do not operate the butterfly valve without valve actuation. Otherwise the disc will be uncontrollably set in motion by the medium flow.
- ◆ Butterfly valves with a hand lever should never be abruptly opened or closed. This can lead to water hammer effects.
- ◆ Dissipate thermal expansion volumes in shut-off pipes.
- ◆ If the plastic swells up due to the effect of the medium, this can result in the functional parts jamming.
- ◆ Operation with solids leads to increased wear.
- ◆ There must be no foreign matter on the sealing surfaces.

- ◆ Operation during cavitation leads to increased wear.
- ◆ Non-observance of the pressure-temperature diagram can lead to damage of the plastic lining.
- ◆ If no monitoring is provided by the warning connection, do not tighten safety stuffing box. Otherwise any leak cannot be seen.
- ◆ Do not apply heavy loads to the lever; the lever or butterfly valves may be damaged.
- ◆ Do not use a lever extension as this could cause damage.

7.3 Shutdown

Before loosening the flange bolts:



- ◆ ensure plant to be free of pressure
- ◆ flush out medium
- ◆ observe safety regulations

Prior to starting any repair work, the valve is to be thoroughly cleaned. Even if the valve has been properly emptied and rinsed, residual medium may still be found in the valve,

After dismantling, immediately protect the valve flanges against mechanical damage with flange caps. See also [Section 6.2](#).

7.3.1 Additional advice for shut-off and control butterfly valve with actuator



Ensure that a remotely actuated quarter-turn actuator cannot be accidentally switched on.

- Having dismantled the valve, mount the locking plate **507** and screw in with hex. screw. **901/1**.

See also [Section 6.4.1](#) and drawing in [Section 5.4](#).

8 Malfunctions

- ◆ Flange connection valve/pipe is leaking
Retighten the flange screws to a tightening torque according to **Section 1.2**. If this does not remedy the leak, the recommended torques may be exceeded by 10%.
If this also fails to stop the leak, dismantle and inspect the valve.
- ◆ Flange connection main body/body end piece is leaking
Retighten body screws. See paragraph "Flange connection valve/pipe is leaking".
- ◆ Packing is leaking
Retighten packing nuts according to the details in **Section 1.2**.
- ◆ Ball valve does not operate
Is the actuator being supplied with power?
Is any directional control valve connected correctly?
Is there any foreign matter in the valve?

- ◆ The ball no longer closes completely
Is the stem deformed?
Is the coupling worn?
With a worm gear or actuator, check whether the end stops can be re-adjusted. The operating manuals of the gear and actuator manufacturers contain accurate instructions.



Never apply force to the lever or use an extension.

1. Try to get the ball valve working again by moving the lever to and from.
2. Remove the lever stop and try to switch against the normal direction of rotation.
3. If actuation is not possible with the max. admissible breakaway torque as per **Section 1.3**, dismantle ball valve and inspect individual components.

9 Maintenance

- ◆ All repair work is to be performed by qualified personnel using the appropriate tools.
- ◆ For the arrangement, designation and item numbers of all parts of the valve, see **Section 10**.
- ◆ Spare parts are to be ordered with all the details in acc. with the valve identification.
- ◆ Only original spare parts may be installed.
- ◆ To prevent leaks, a regular check of the connection screws should be made in line with the operating requirements.
For torques see **Section 1.3**.
- ◆ When disassembling and assembling the valve, attention is to be paid to the tables and drawings in **Section 1 and 10**.
- ◆ As the body lining **409** is drawn over the disc/stem unit **221** while warm, this work should only be carried out by the manufacturer.
- ◆ Has the pump been shut down, drained and flushed according to the regulations?
See also **Section 7.3**.



If assembled incorrectly, individual components of the valve may be damaged and this can result in malfunctions during operation.

9.1 Notes for assembly

- The flexible inlay **521** expands during assembly. Do not cut off the overhang, but push back into the lower and upper part of the shell **120**.
- Before tightening the body screws **914/1** (on NKL/NKLP threaded rod **918/1** and hex. nut **920/2**), align the disc/stem unit **221** centrally in the closed position.
- Mark the position of the disc/stem unit **221** against body lining **409** at the hub, so permitting switching only to this point during later test switching.
- With disc/stem unit in closed position, tighten the body screws (**914/1**, as well **918/1** and **929/2**) until the gap between the upper and lower part of the shell **120** is ca. 5 mm.
- Open the valve several times counterclockwise (when viewing the stem unit) and close again in the opposite direction. A sealing edge can form in this way.



Never switch in the other direction of rotation over the sealing edge!

- Tighten the body bolts 1-2 mm when disc in closed position.
- Repeat the previously described process once or twice.
- When finally tightening the body bolts, pay attention to the torques provided in **Section 1.3**.

9.1.1 Safety stuffing box

- Insert sealing foil **413** between the upper and lower half of the shell **120**.
- Displace packing rings **402/1** by 90° against each other
- Screw in stuffing box screws **901/3**. Only tighten in the event of a leak.
- Safety stuffing box with monitor using warning connection
Tighten stuffing box bolts **901/3** with torque in accordance with **Section 1.3**.
See also **Section 10.10**.

For detailed installation and inspection regulations see QM No. 0910-08-1005, available from Richter on request.

9.2 Valve actuation

The valve stem has a pivot to attach a hand lever respectively a coupling.

Hand lever respectively pivot parallel to the axis of the pipeline: → **Valve open**

Hand lever respectively pivot at right angles to the axis of the pipeline: → **Valve closed**

In the case of a coupling, 2 red marks indicate the position of the disc on them.

Marks parallel to the axis of the pipeline:

→ **Valve open**

Marks at right angles to the axis of the pipeline:

→ **Valve closed**

9.2.1 Actuated with lever

The throttling plate **519** permits a fixing of the lever at 15° intervals. It is lockable with a commercially available padlock.

9.2.2 Actuated by means of worm gear

In the standard version, the manufacturer normally provides worm gears with a special pick-up for the stem pivot.

The bracket and the coupling are thereby not required.

Commercially available worm gears equipped with a connection as per ISO 5211 can also be connected.

These require a bracket and a coupling however.

This version is also necessary for butterfly valves with a safety stuffing box.

Couplings and brackets are available as accessories in the Richter range of products.

9.2.3 Remotely actuated

Richter butterfly valves can be remotely actuated by means of pneumatic, hydraulic or electric quarter-turn actuators equipped with a connection as per ISO 5211.

Couplings and brackets are available as accessories in the Richter range of products.

9.2.4 Required breakaway torque



The breakaway torque of the actuator must be at least as high as the breakaway torque of the butterfly valve, about 20% higher being better however.

Media of higher viscosity and/or those with solids may require an increased factor of safety when calculating the size of the actuator. This is particularly true for non-Newtonian fluids such as high polymer substances, suspensions, pastes, lubricants, resins, lacquers etc.

Admissible factors of safety lie in the range of 20 - 50% of the breakaway torque.

To prevent damage to the valve, particular attention must be paid to the torque M_{dmax} in **Section 1.8**.

9.3 Options

9.3.1 Safety stuffing box

The safety stuffing box acts independently from the standard shaft gasket and can be re-adjusted by hand.

Only with the option safety stuffing box: A sealing foil **413** is inserted between the upper section and the lower section of shell.

If the shaft gasket is damaged, the valve can thus continue to be operated for a short time.

See drawing **Section 10.10**.

In order to ensure leak monitoring, Richter recommends the combination of the safety stuffing box with a warning connection.

If only the safety stuffing box is present, do not tighten it so that any leak becomes visible.

Otherwise the valve may be destroyed by an unnoticed internal leak.

9.3.2 Monitoring connection

The monitoring connection, between the standard shaft gasket and the safety stuffing box, can be fitted with attachments for monitoring pressure.

It can indicate leaks or build up a protective nitrogen layer. See drawing **Section 10.10**.

9.3.3 Proximity switch

The proximity switch reliably indicates the closed position of the valve disc. The signal penetrates the thick-walled lining.

9.4 Tests

Following tests would be done after the assembly.

Measurement of the breakaway torque

The breakaway torque required for opening and closing the valve is to be ascertained. The maximum torque should not exceed the values given in Section 1.8.

Tightness of valve opening and shaft bushing

The completed valves have to undergo a „leak test of the closure with air“.

The tightness of the shaft bushing (stuffing box) of each valve is tested. The holding time begins once the residual air has escaped from the stuffing box chamber.

Tightness is verified according to DIN EN 12266-1 respectively MSS SP-67.

For detailed installation and inspection regulations see QM No. 0910-08-1005, available from Richter on request.

10 Drawings

10.1 Legend

120	shell
221	disc/stem unit
229	guide pin (up to DN 150 / 6" inclusive)
300	plain bearing
400/1	o-ring
405	thrust ring
409	body lining
412	pressure gasket
507	support (see drawing in <u>section 5.4</u>)
518	cup spring assembly
521	flexible inlay
532	grounding rope
901/x	hex. screw
914/1	hex. socket screw
918/1	threaded rod
920/2	hex. nut (series NKL)
920/1	hex. nut
936/1	toothed lock washer
938/1	hex. head screw plug

Lever assembly

235	lever assembly
517	scraper ring
519	throttling plate
901/2	hex. screw
920/1	hex. nut

Worm gear

857	worm gear
------------	-----------

Actuator

510	bracket
517	scraper ring

804	coupling
850	actuator
980/2	round head grooved pin

Option safety stuffing box lever assembly

402/1	packing ring
413	sealing foil
503	spring gland follower
550	disc
901/3	hex. screw

Option safety stuffing box worm gear

402/1	packing ring
413	sealing foil
503	spring gland follower
510	lantern
550	disc
804	coupling
850	actuator
901/3	hex. screw
980/2	round head grooved pin

Option safety stuffing box actuator

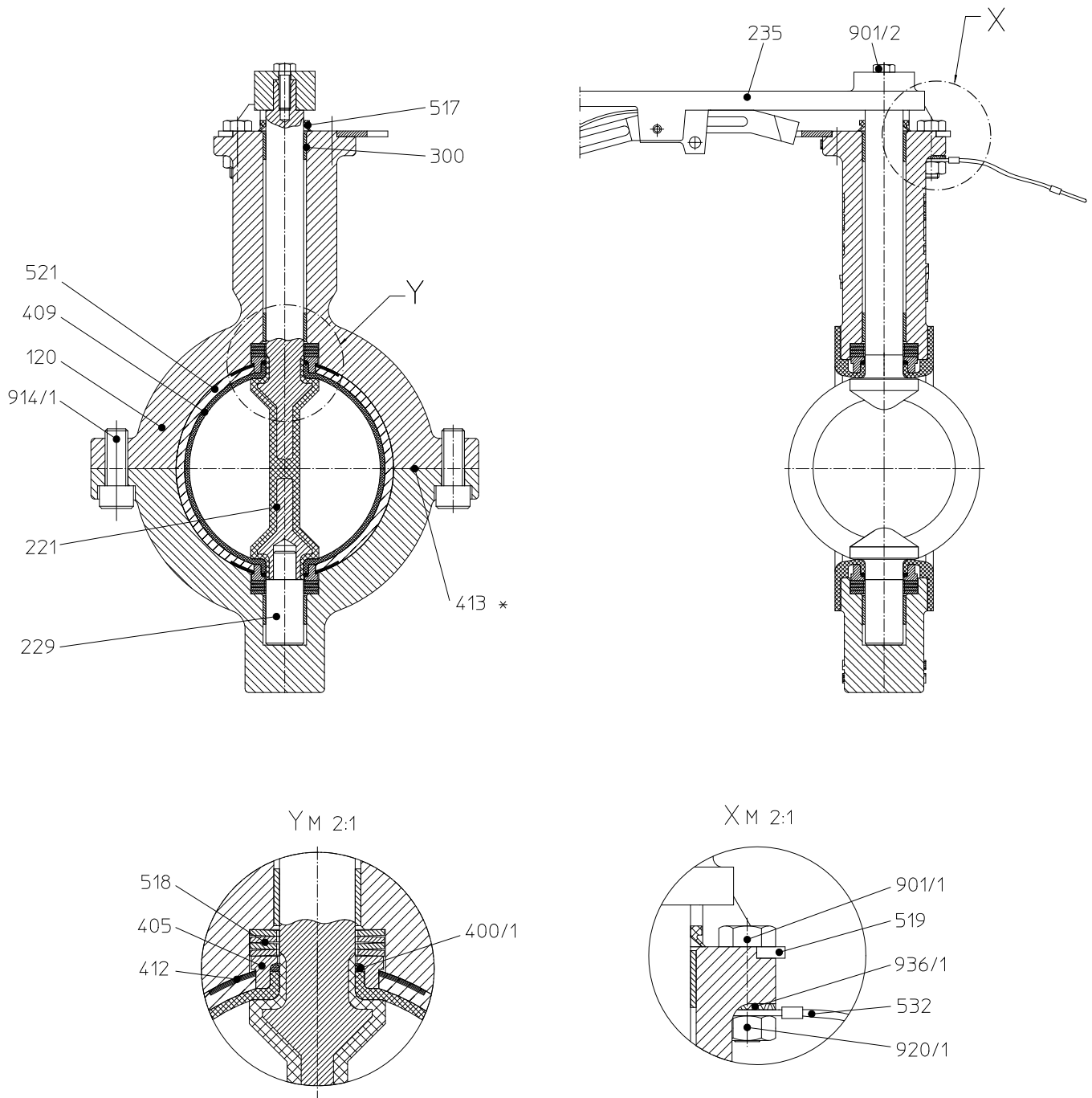
402/1	packing ring
413	sealing foil
503	spring gland follower
550	disc
901/3	hex. screw

Option monitoring connection

407/1	seal ring
938/1	hex. head screw plug

10.2 Sectional drawing NKS/F, DN 50 – 150, 2" – 6"

Wafer-style body, with lever assembly, disc/stem unit PFA-lined

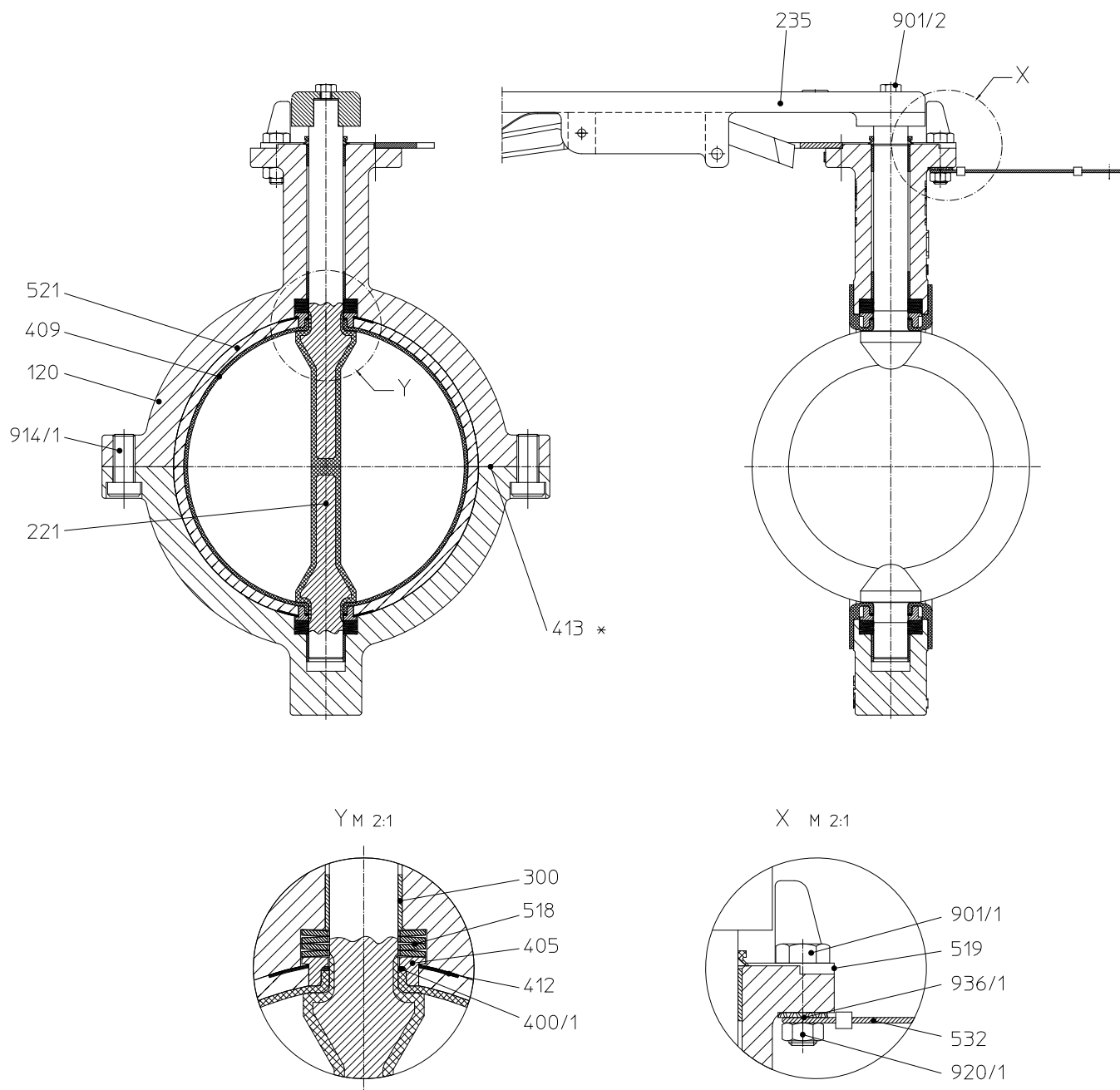


9500-43-1388/4-0

* Only with option safety stuffing box.

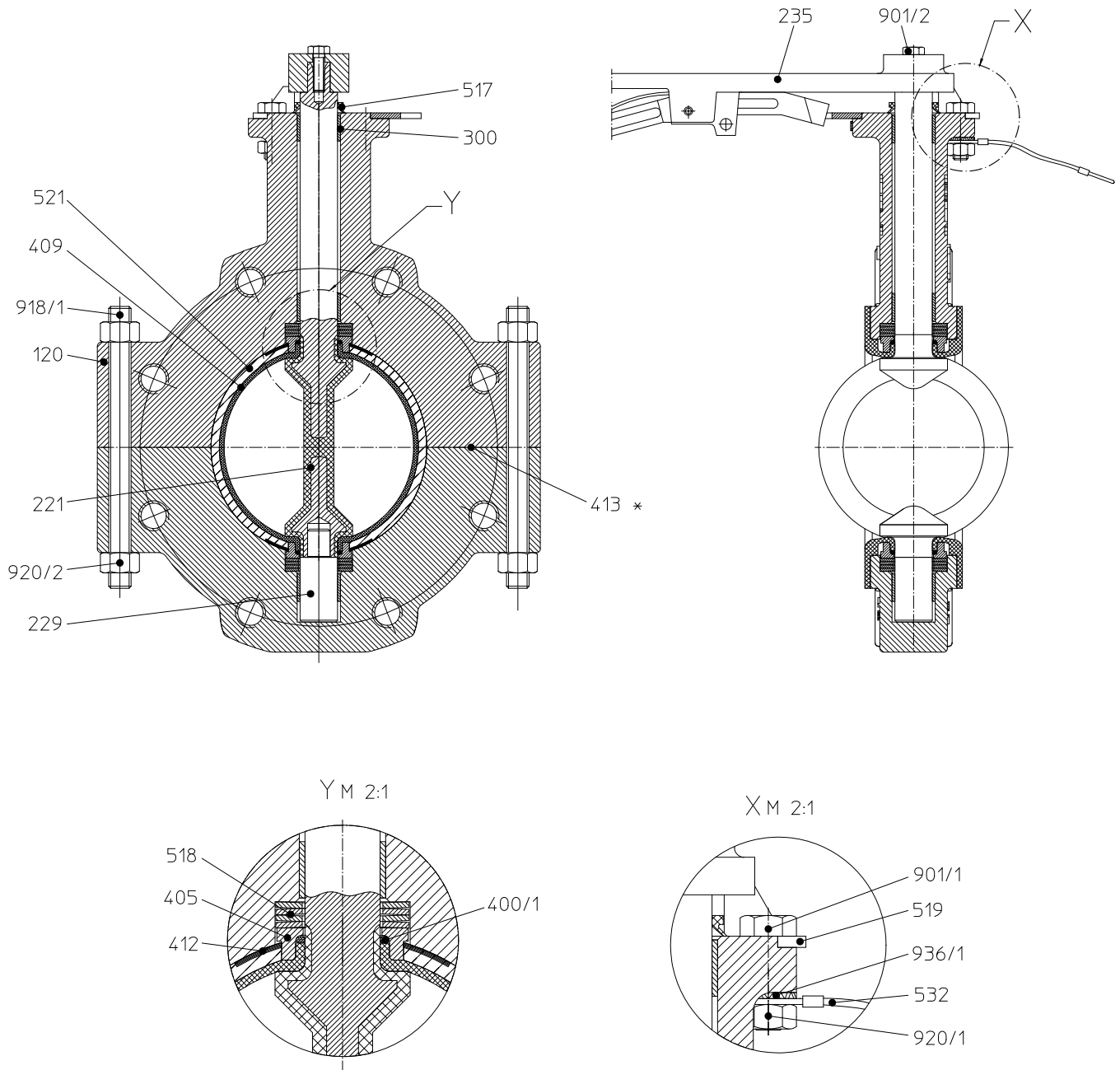
10.3 Sectional drawing NKS/F, DN 200-400, 8"-14"

Wafer-style body, with lever assembly, disc/stem unit PFA-lined
DN 250-400, 10"-14" standard with worm gear



9500-43-089/4-0

* Only with option safety stuffing box.

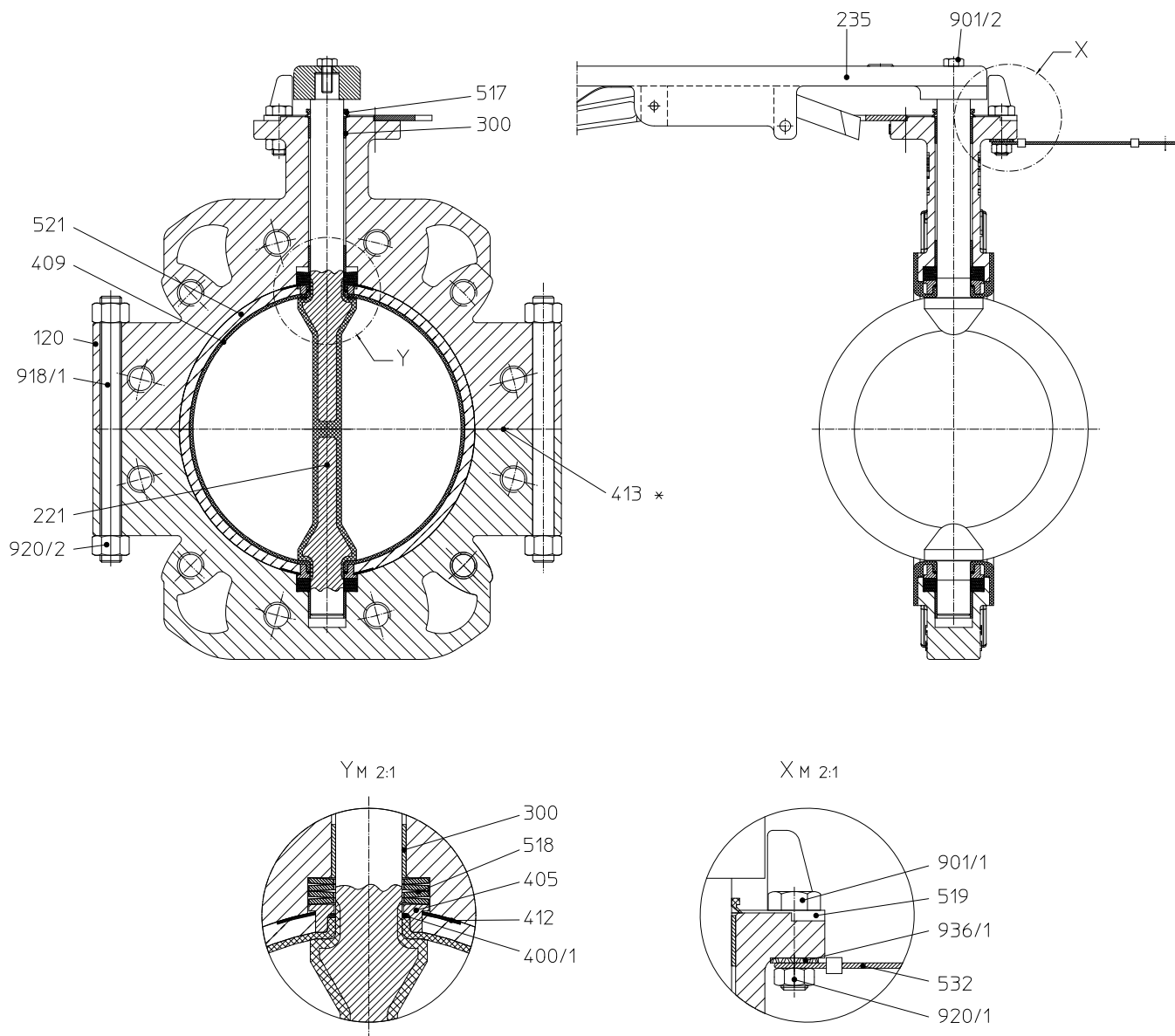
10.4 Sectional drawing NKL/F, DN 50 – 150, 2" – 6"**Lug-style body. with lever assembly, disc/stem unit PFA-lined**

9500-43-1386/4-0

* Only with option safety stuffing box.

10.5 Sectional drawing NKL/F, DN 200-400, 8"-14"

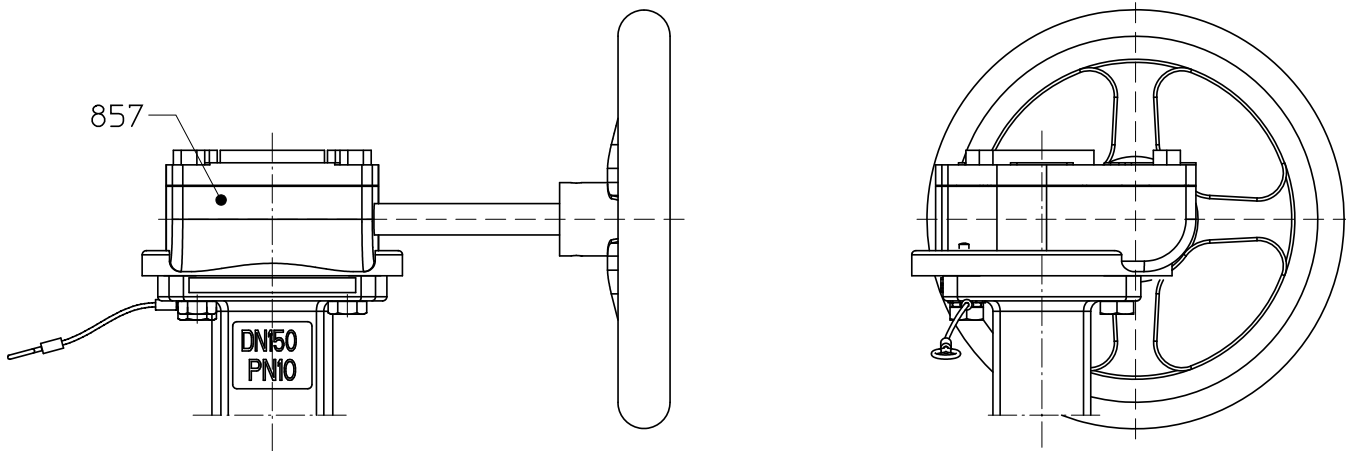
Lug-style body. with lever assembly, disc/stem unit PFA-lined
DN 250-400, 10"-14" standard with worm gear



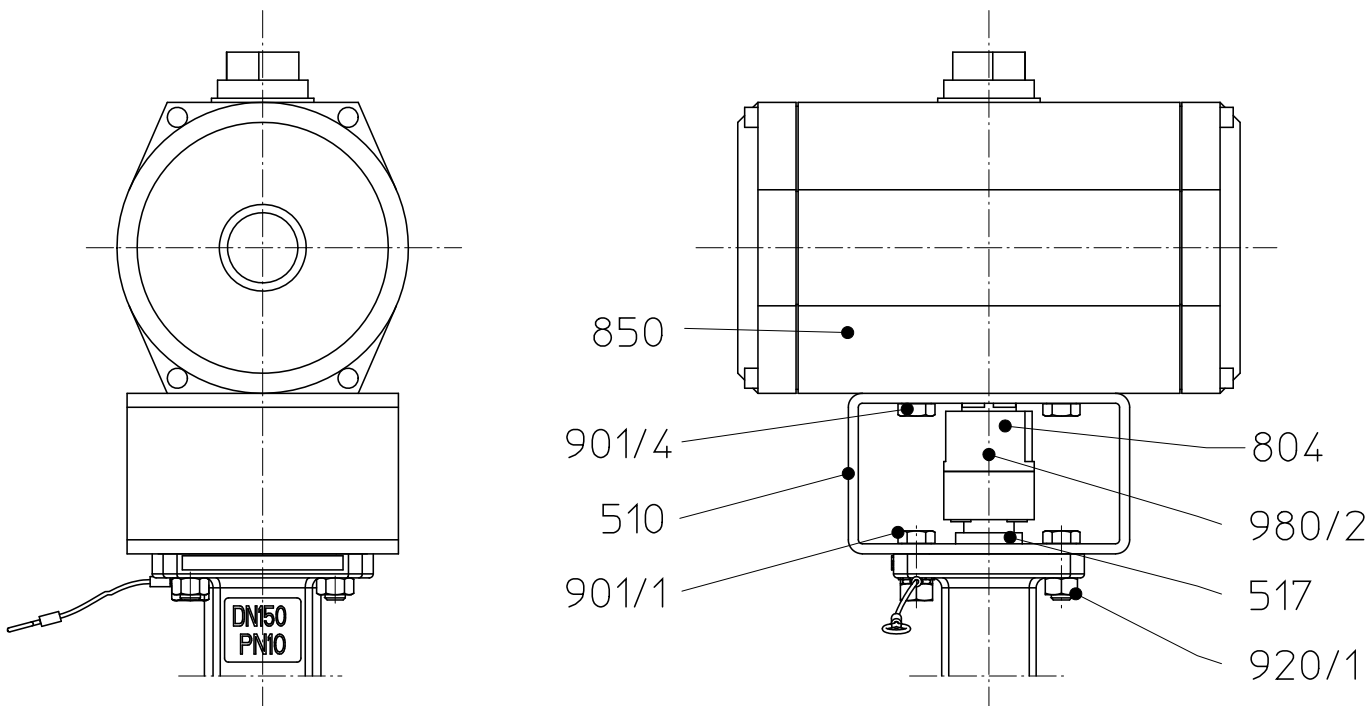
9500-43-1887/L-0

* Only with option safety stuffing box.

10.6 Worm gear



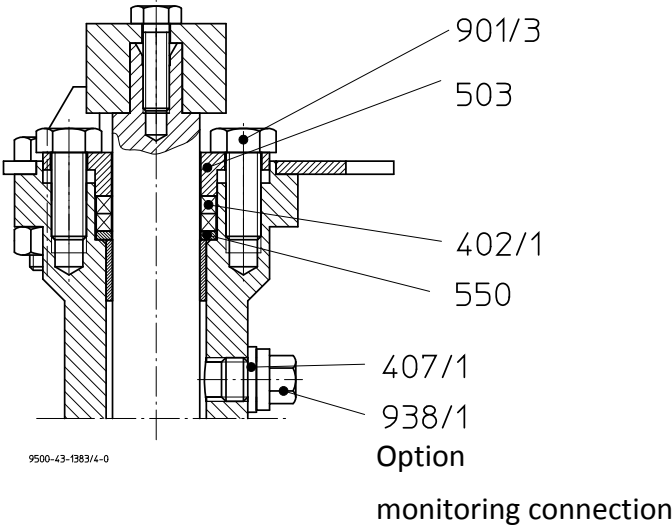
10.7 Actuator



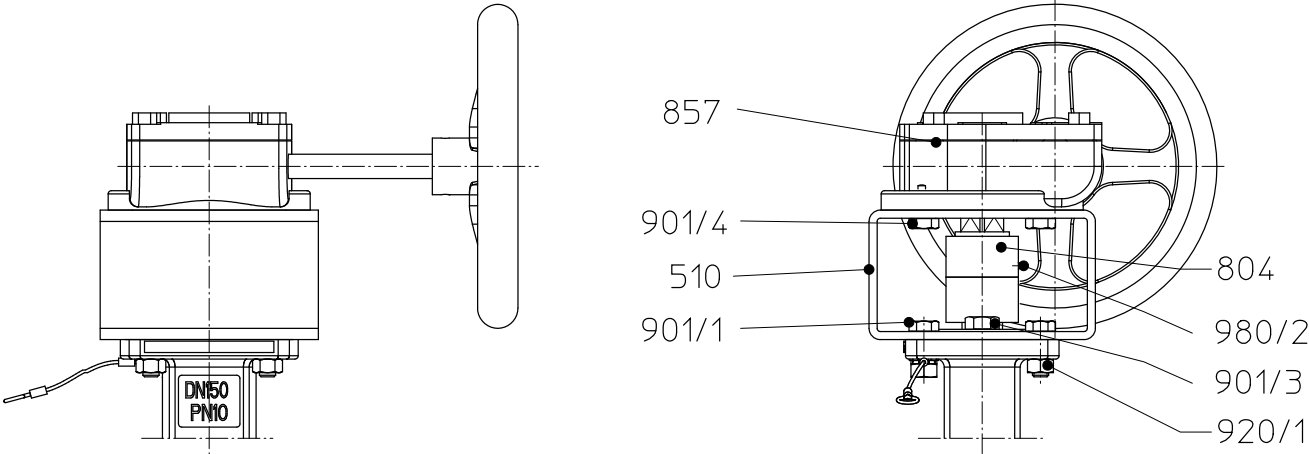
9520-00-3200/4-0

10.8 Option safety stuffing box

Lever unit

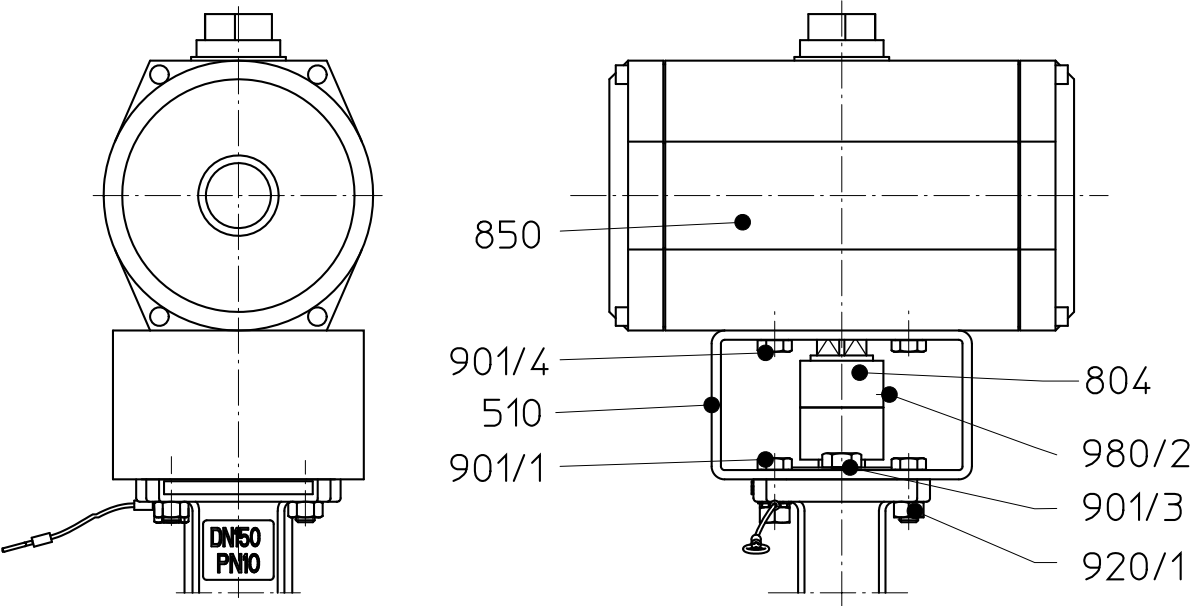


Worm gear



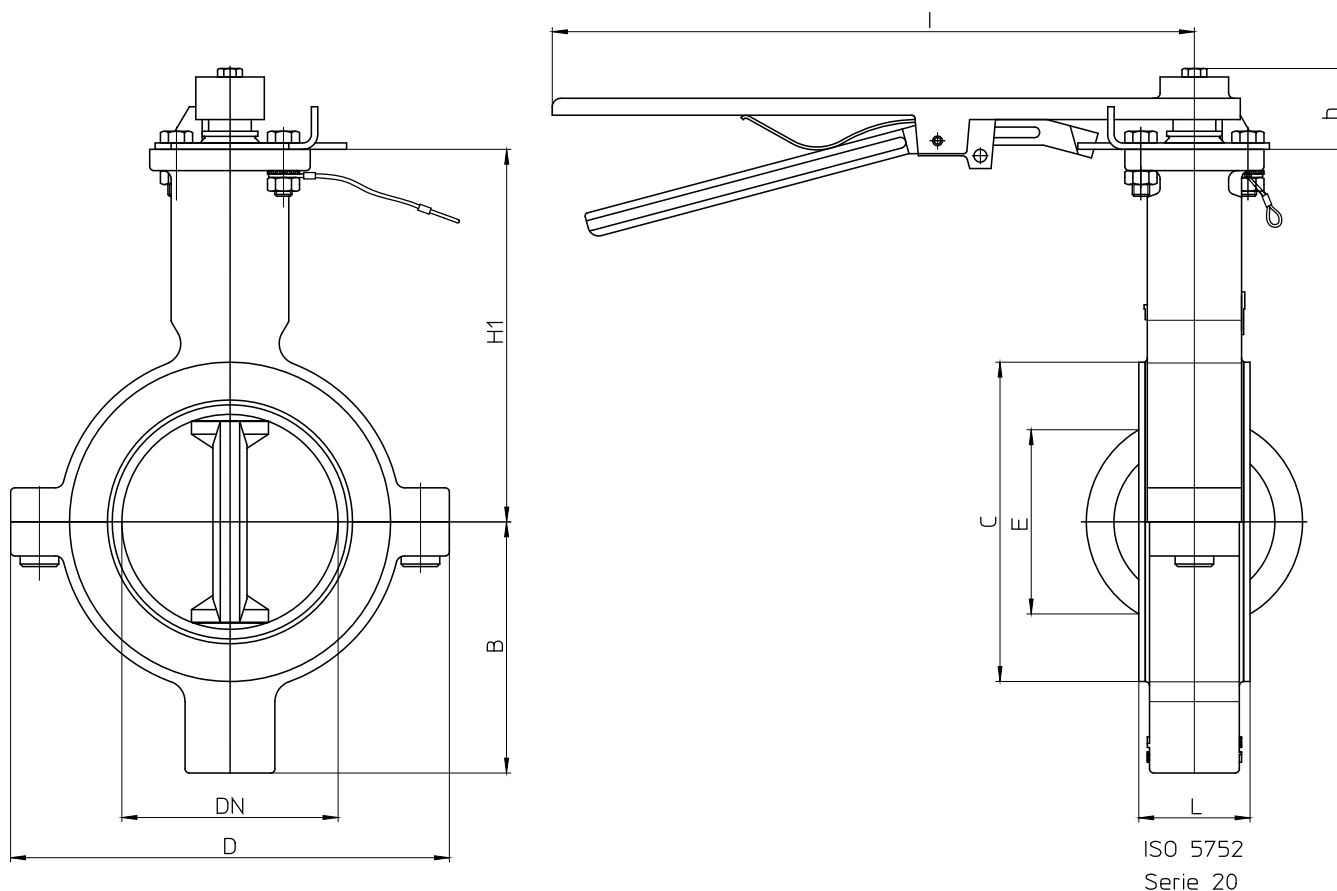
Option monitoring connection see lever unit

Actuator



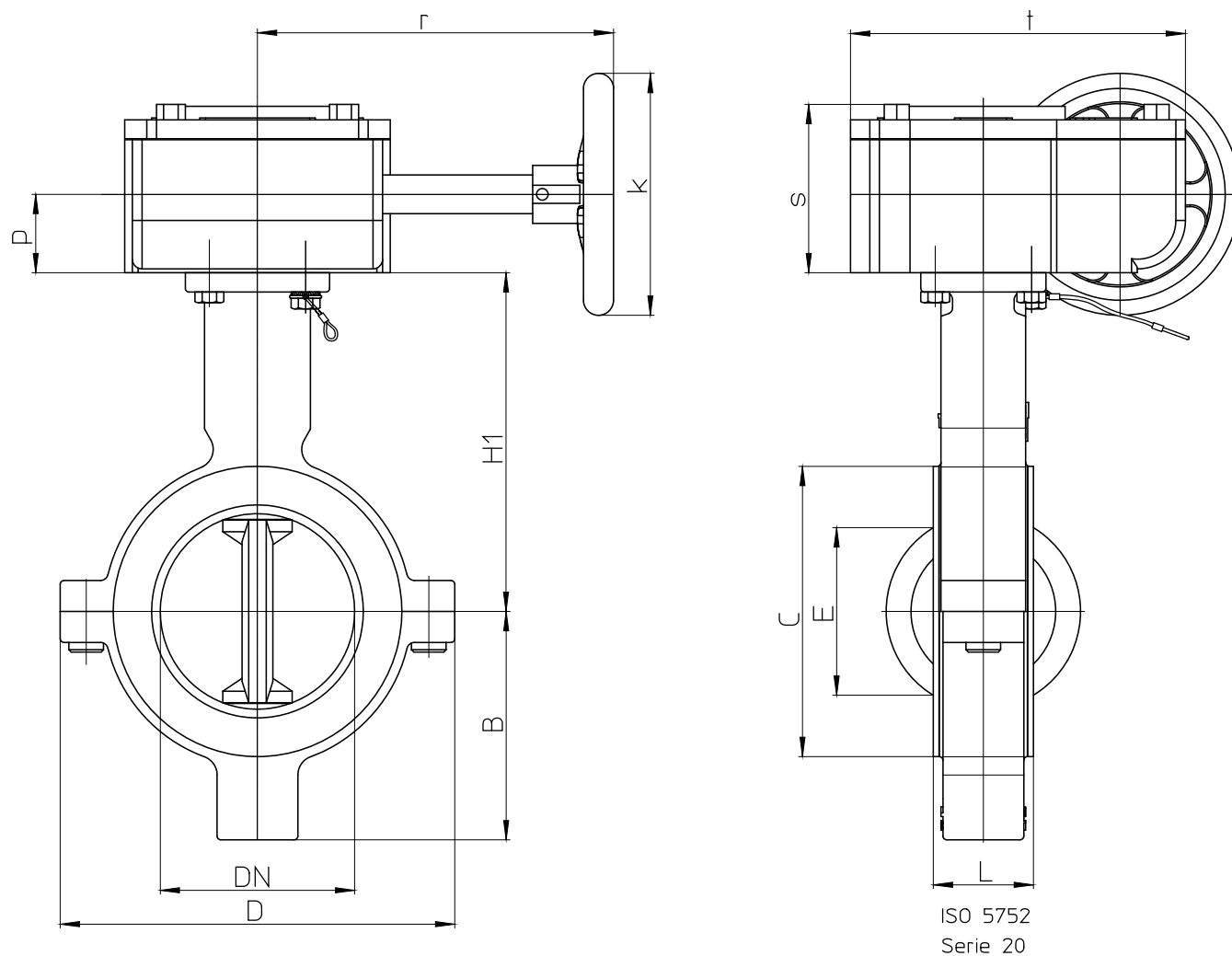
Option monitoring connection see lever unit

10.9 Dimensional drawing NKS/F with lever assembly



DN		50 (2“)	80 (3“)	100 (4“)	150 (6“)	200 (8“)	250 (10“)	300 (12“)	350 (14“)	400 (16“)
H1	mm (inch)	135 (5.31)	160 (6.30)	175 (6.89)	212 (8.35)	232 (9.13)	Standard with worm gear			
h	mm (inch)	40 (1.57)			48 (1.89)					
B	mm (inch)	72 (2.84)	89 (3.50)	100 (3.94)	128 (5.04)	165 (6.50)				
I	mm (inch)	300 (11.81)			500 (19.68)					
L	mm (inch)	43 (1.69)	46 (1.81)	52 (2.05)	56 (2.20)	60 (2.36)				
D	mm (inch)	135 (5.31)	178 (7.01)	205 (8.07)	268 (10.55)	326 (9.29)				
øC	mm (inch)	90 (3.54)	128 (5.04)	150 (5.91)	212 (8.35)	265 (10.43)				
øE	mm (inch)	28 (1.10)	67 (2.64)	87 (3.43)	142 (5.59)	193 (7.60)				

10.10 Dimensional drawing NKS/F with worm gear



DN		50 (2")	80 (3")	100 (4")	150 (6")	200 (8")	250 (10")	300 (12")	350 (14")	400 (16")
H1	mm (inch)	135 (5.31)	160 (6.30)	175 (6.89)	212 (8.35)	232 (9.13)	272 (10.71)	297 (11.69)	335 (13.19)	360 (14.17)
P	mm (inch)	27 (1.06)					40 (1.57)		42 (1.65)	
B	mm (inch)	72 (2.84)	89 (3.50)	100 (3.94)	128 (5.04)	165 (6.50)	195 (7.68)	225 (8.86)	258 (10.16)	282 (11.10)
L	mm (inch)	43 (1.69)	46 (1.81)	52 (2.05)	56 (2.20)	60 (2.36)	68 (2.68)	78 (3.07)		102 (4.02)
D	mm (inch)	135 (5.31)	178 (7.01)	205 (8.07)	268 (10.55)	326 (12.83)	380 (14.96)	452 (17.79)	500 (19.68)	565 (22.24)
øC	mm (inch)	90 (3.54)	128 (5.04)	150 (5.91)	212 (8.35)	265 (10.43)	315 (12.40)	365 (14.37)	430 (16.93)	480 (18.90)
øE	mm (inch)	28 (1.10)	67 (2.64)	87 (3.43)	142 (5.59)	193 (7.60)	243 (9.57)	292 (11.50)	343 (13.50)	389 (15.31)
k	mm (inch)	100 (3.94)	150 (5.90)					250 (9.84)		
r	mm (inch)	181 (7.13)					206 (8.11)		226 (8.90)	
s	mm (inch)	62 (2.44)					89 (3.50)		92 (3.62)	
t	mm (inch)	102 (4.02)			125 (4.92)		174 (6.85)		214 (8.43)	

10.11 Dimensional drawing NKSP/F

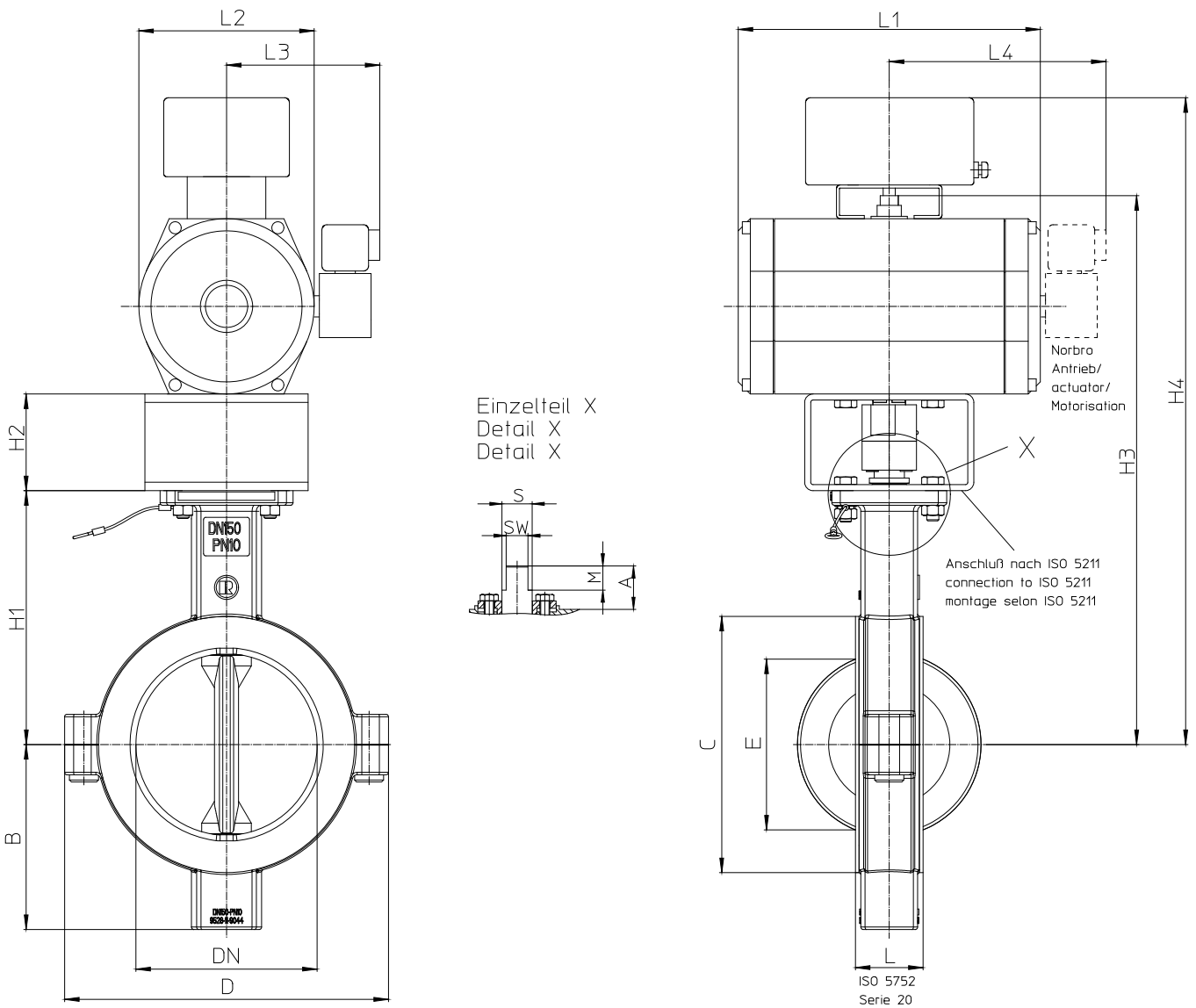


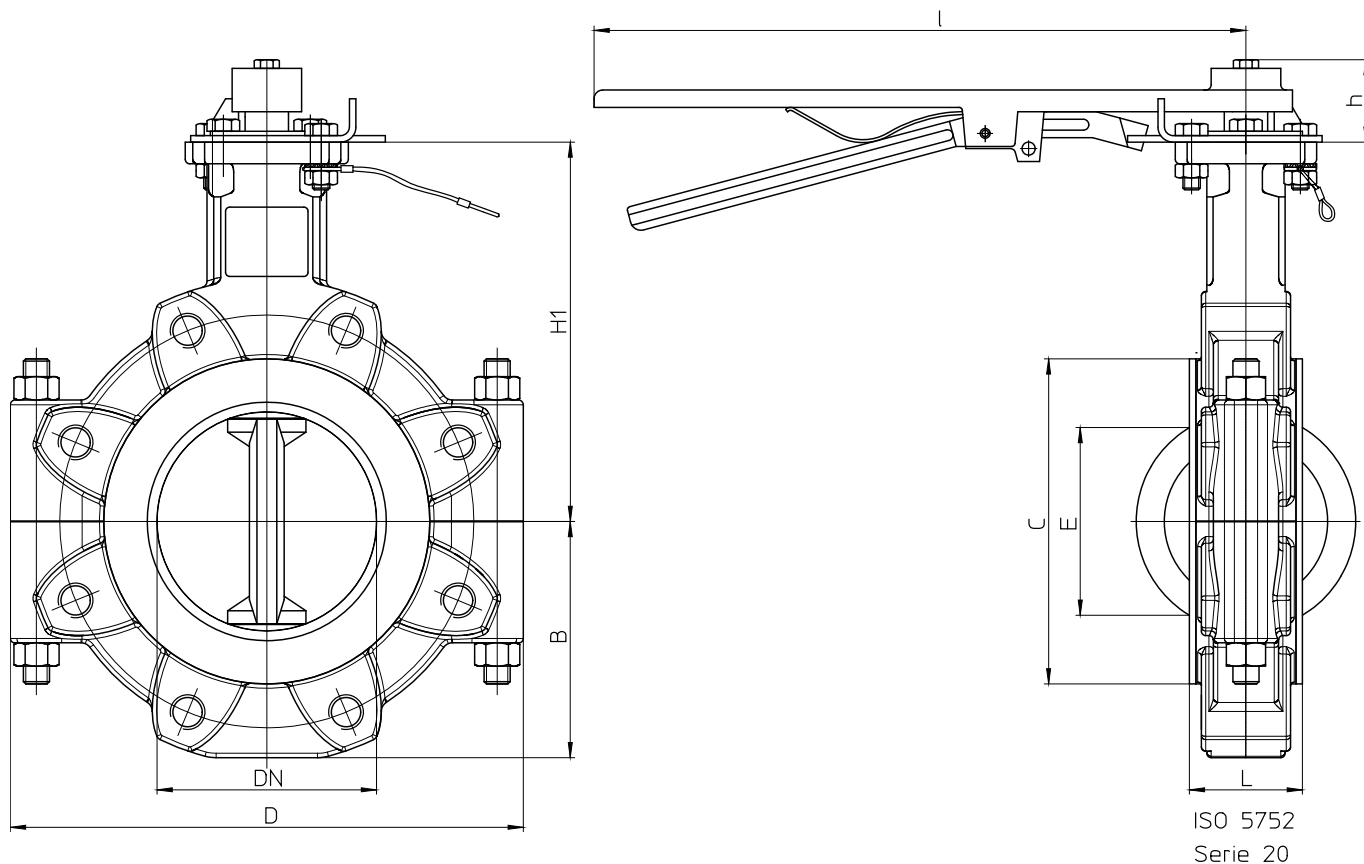
Table NKSP/F

DN	50 (2")	80 (3")	100 (4")	150 (6")	200 (8")	250 (10")	300 (12")	350 (14")	400 (16")
ISO 5211	F07			F10		F12		F14	
H1 mm (inch)	135 (5.31)	160 (6.30)	175 (6.89)	212 (8.35)	232 (9.13)	272 (10.71)	297 (11.69)	335 (13.19)	360 (14.17)
H2 mm (inch)	60** (2.36)			80 (3.15)				100 (3.94)	
B mm (inch)	72 (2.84)	89 (3.50)	100 (3.94)	128 (5.04)	165 (6.50)	195 (7.68)	225 (8.86)	258 (10.16)	282 (11.10)
L mm (inch)	43 (1.69)	46 (1.81)	52 (2.05)	56 (2.20)	60 (2.36)	68 (2.68)	78 (3.07)		102 (4.02)
D mm (inch)	152 (5.98)	207 (8.15)	236 (9.29)	300 (11.81)	352 (13.86)	434 (17.09)	520 (20.47)	558 (21.97)	630 (24.80)
øC mm (inch)	90 (3.54)	128 (5.04)	150 (5.91)	212 (8.35)	265 (10.43)	315 (12.40)	365 (14.37)	430 (16.93)	480 (18.90)
øE mm (inch)	28 (1.10)	67 (2.64)	87 (3.43)	142 (5.59)	193 (7.60)	243 (9.57)	292 (11.50)	343 (13.50)	389 (15.31)
A mm (inch)	30 (1.18)			36 (1.42)		42 (1.65)	43 (1.69)	50 (1.97)	
M mm (inch)	15 (0.59)		16 (0.63)	20 (0.79)		25 (0.98)		35 (1.38)	
SW mm (inch)	10 (0.39)	11 (0.43)	12 (0.47)	18 (0.71)		22 (0.87)		25 (0.98)	30 (1.18)
øS mm (inch)	14 (0.55)	16 (0.63)	20 (0.79)	25 (0.98)		30 (1.18)	32 (1.26)	35 (1.38)	40 (1.57)
H3 mm (inch)									
H4 mm (inch)									
L1 mm (inch)									
L2 mm (inch)									
L3 mm (inch)									
L4 mm (inch)									

* Only Norbro actuator

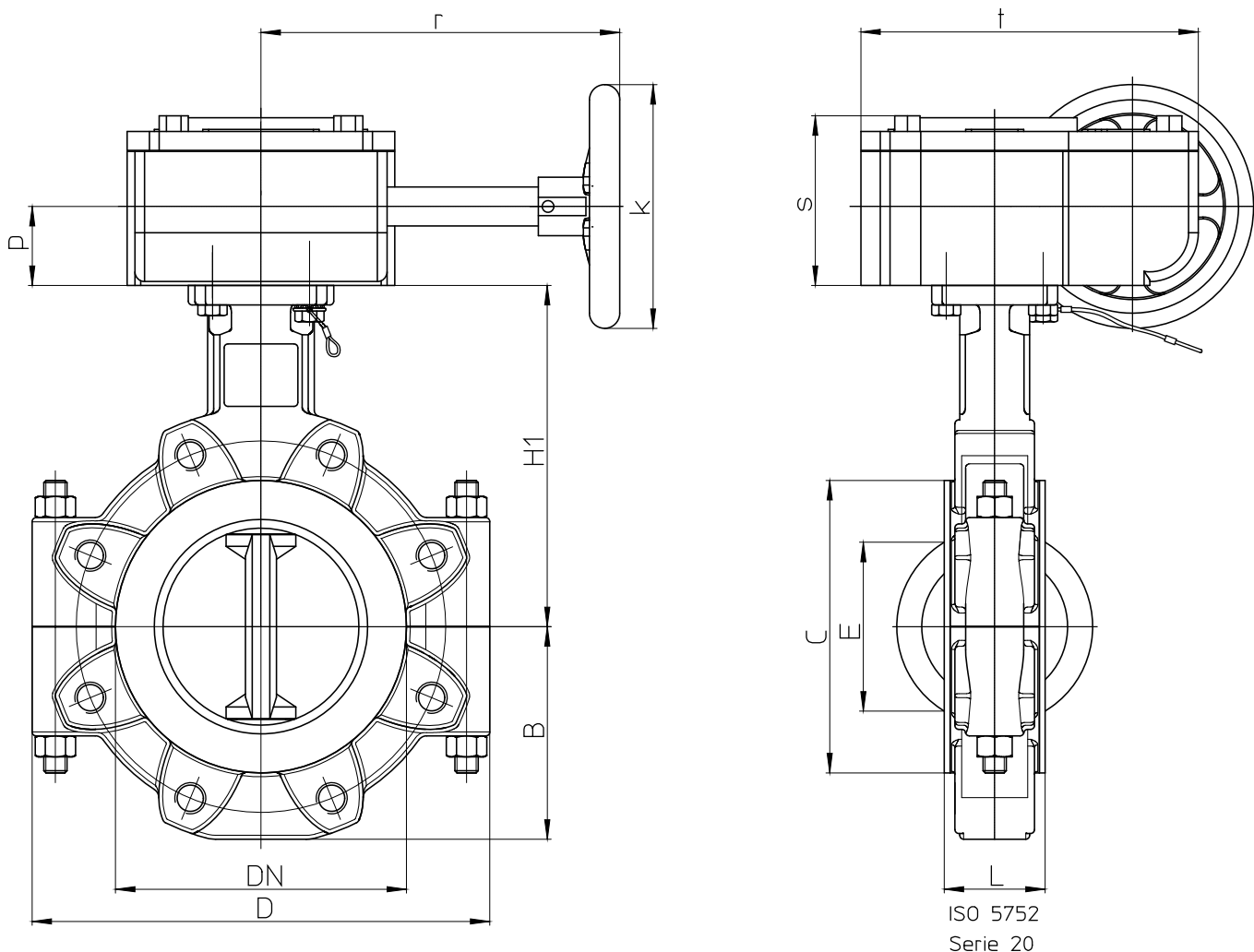
** H2 = 80mm if F10 or F12 on the actuator side

10.12 Dimensional drawing NKL/F with lever assembly



DN		50 (2“)	80 (3“)	100 (4“)	150 (6“)	200 (8“)	250 (10“)	300 (12“)	350 (14“)	400 (16“)
H1	mm (inch)	135 (5.31)	160 (6.30)	175 (6.89)	212 (8.35)	232 (9.13)	Standard with worm gear			
h	mm (inch)	40 (1.57)			48 (1.89)					
l	mm (inch)	300 (11.81)			500 (19.68)					
B	mm (inch)	72 (2.84)	89 (3.50)	100 (3.94)	128 (5.04)	165 (6.50)				
L	mm (inch)	43 (1.69)	46 (1.81)	52 (2.05)	56 (2.20)	60 (2.36)				
D	mm (inch)	152 (5.98)	207 (8.15)	236 (9.29)	300 (11.81)	352 (13.86)				
øC	mm (inch)	90 (3.54)	128 (5.04)	150 (5.91)	212 (8.35)	265 (10.43)				
øE	mm (inch)	28 (1.10)	67 (2.64)	87 (3.43)	142 (5.59)	193 (7.60)				

10.13 Dimensional drawing NKL/F with worm gear



N		50 (2")	80 (3")	100 (4")	150 (6")	200 (8")	250 (10")	300 (12")	350 (14")	400 (16")
H1	mm (inch)	135 (5.31)	160 (6.30)	175 (6.89)	212 (8.35)	232 (9.13)	272 (10.71)	297 (11.69)	335 (13.98)	360 (14.17)
p	mm (inch)	27 (1.06)					40 (1.57)		42 (1.65)	
B	mm (inch)	72 (2.83)	89 (3.50)	100 (3.94)	128 (5.04)	165 (6.50)	195 (7.68)	225 (8.86)	258 (10.16)	282 (11.10)
L	mm (inch)	43 (1.69)	46 (1.81)	52 (2.05)	56 (2.20)	60 (2.36)	68 (2.68)	78 (3.07)		102 (4.02)
D	mm (inch)	152 (5.98)	207 (8.15)	236 (9.29)	300 (11.81)	352 (13.86)	434 (17.09)	520 (20.47)	558 (21.97)	630 (24.80)
øC	mm (inch)	90 (3.54)	128 (5.04)	150 (5.91)	212 (8.35)	265 (10.43)	315 (12.40)	365 (14.37)	430 (16.93)	480 (18.90)
øE	mm (inch)	28 (1.10)	67 (2.64)	87 (3.43)	142 (5.59)	193 (7.60)	243 (9.57)	292 (11.50)	343 (13.50)	389 (15.31)
k	mm (inch)	100 (3.94)	150 (5.90)					250 (9.84)		
r	mm (inch)	181 (7.13)					206 (8.11)		226 (8.90)	
s	mm (inch)	62 (2.44)					89 (3.50)		92 (3.62)	
t	mm (inch)	102 (4.02)			125 (4.92)		174 (6.85)		214 (8.43)	

10.14 Dimensional drawing NKLP/F

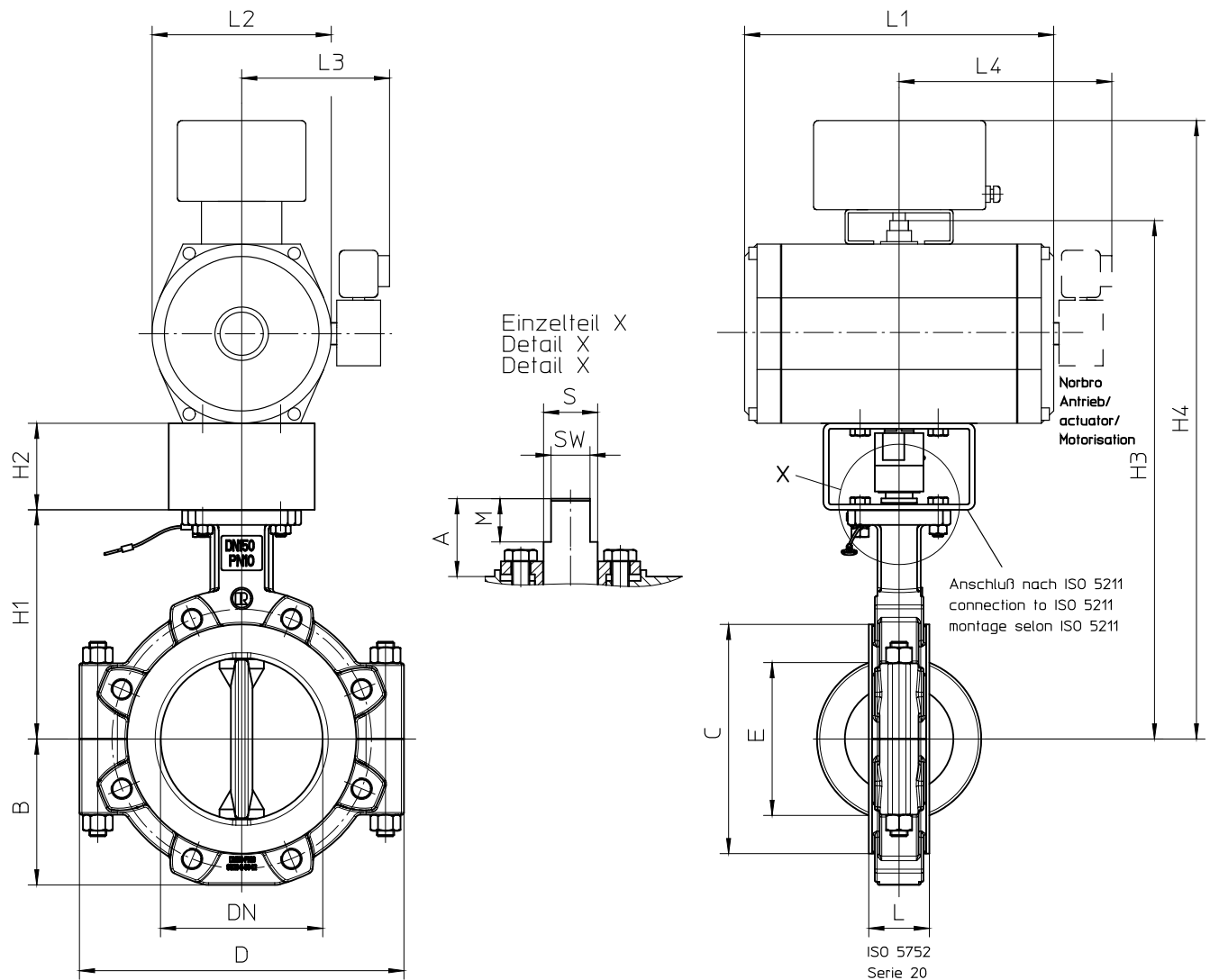


Table NKLP/F

DN	50 (2")	80 (3")	100 (4")	150 (6")	200 (8")	250 (10")	300 (12")	350 (14")	400 (16")
ISO 5211	F07			F10		F12		F14	
H1 mm (inch)	135 (5.31)	160 (6.30)	175 (6.89)	212 (8.35)	232 (9.13)	272 (10.71)	297 (11.69)	335 (13.19)	360 (14.17)
H2 mm (inch)	60** (2.36)			80 (3.15)				100 (3.94)	
B mm (inch)	72 (2.84)	89 (3.50)	100 (3.94)	128 (5.04)	165 (6.50)	195 (7.68)	225 (8.86)	258 (10.16)	282 (11.10)
L mm (inch)	43 (1.69)	46 (1.81)	52 (2.05)	56 (2.20)	60 (2.36)	68 (2.68)	78 (3.07)		102 (4.02)
D mm (inch)	152 (5.98)	207 (8.15)	236 (9.29)	300 (11.81)	352 (13.86)	434 (17.09)	520 (20.47)	558 (21.97)	630 (24.80)
øC mm (inch)	90 (3.54)	128 (5.04)	150 (5.91)	212 (8.35)	265 (10.43)	315 (12.40)	365 (14.37)	430 (16.93)	480 (18.90)
øE mm (inch)	28 (1.10)	67 (2.64)	87 (3.43)	142 (5.59)	193 (7.60)	243 (9.57)	292 (11.50)	343 (13.50)	389 (15.31)
A mm (inch)	30 (1.18)			36 (1.42)		42 (1.65)	43 (1.69)	50 (1.97)	
M mm (inch)	15 (0.59)		16 (0.63)	20 (0.79)		25 (0.98)		35 (1.38)	
SW mm (inch)	10 (0.39)	11 (0.43)	12 (0.47)	18 (0.71)		22 (0.87)		25 (0.98)	30 (1.18)
øS mm (inch)	14 (0.55)	16 (0.63)	20 (0.79)	25 (0.98)		30 (1.18)	32 (1.26)	35 (1.38)	40 (1.57)
H3 mm (inch)									
H4 mm (inch)									
L1 mm (inch)									
L2 mm (inch)									
L3 mm (inch)									
L4 mm (inch)									

* Only Norbro actuator

** H2 = 80mm if F10 or F12 on the actuator side

CE Konformitätserklärung nach EN ISO//IEC 17050
Declaration of Conformity according to EN ISO//IEC 17050

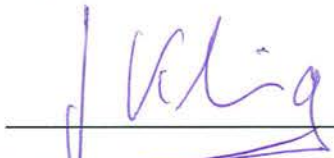
Produkt <i>Product</i>	Kunststoffausgekleidete Dreharmaturen <i>Plastic lined quarter turn valves</i>		
Bauart <i>Design</i>	Kugelhahn, Regel-Kugelhahn, Kompakt-Kugelhahn, Bodenablass-Kugelhahn, Absperr- und Regelklappe <i>Ball valve, control ball valve, sandwich ball valve, bottom drain ball valve, shut-off and control butterfly valve</i>		
Baureihe <i>Serie</i>	KN..., KNA..., BVA..., KNR..., KNAR..., KH..., KK..., KK-FU..., KA-N..., NKL..., NKS...		
Nennweite <i>Size</i>	DN 15 bis DN 400, ½" bis 16" <i>DN 15 to DN 400, ½" to 16"</i>		
Seriennummer <i>Series number</i>	ab/from 19.07.2016		
EU-Richtlinie <i>EU-Directive</i>	2014/68/EU Druckgeräterichtlinie <i>2014/68/EU Pressure Equipment</i>	2006/42/EG ²⁾ <i>2006/42/EC ²⁾</i>	Maschinenrichtlinie <i>Directive Machinery</i>
Angewandte Technische Spezifikation <i>Applied Technical Specification</i>	DIN EN ISO 12100 AD 2000		
Überwachungsverfahren <i>Surveillance Procedure</i>	2014/68/EU Zertifizierungsstelle für Druckgeräte der TÜV Nord Systems GmbH & Co. KG Große Bahnstraße 31 D-22525 Hamburg Notified Body 0045		
Konformitätsbewertungsverfahren 2014/68/EU <i>Conformity assessment procedure 2014/68/EU</i>	Modul H Zertifikats Nr. 07/202/1411/Z/0091/16/D		
Kennzeichnung <i>Marking</i>	2014/68/EU ¹⁾ ≥ DN 32, ≥ 1"	CE 0045	
	2006/42/EG ²⁾ 2006/42/EC ²⁾	CE	

Das Unternehmen Richter Chemie-Technik GmbH bescheinigt hiermit, dass die o.a. Baureihen die grundsätzlichen Anforderungen der aufgeführten Richtlinien und Normen erfüllen.
Richter Chemie-Technik GmbH confirms that the basic requirements of the above specified directives and standards have been fulfilled.

¹⁾ Für nicht aufgeführte Nennweiten ist eine Kennzeichnung nicht zulässig.
For sizes not listed a marking is not permitted.

²⁾ Alle Armaturen, mit Ausnahme der Armaturen mit Handbetätigung.
For all valves, with exceptions to valves with hand operation

Kempen, 04.07.2017


G. Kleining
Leiter Forschung & Entwicklung
Manager Research & Development


M. Pohlmann
Leiter Qualitätsmanagement
Quality Manager

Herstellererklärung ATEX
Richtlinie 2014/34/EU
Manufacturer's Declaration ATEX
Directive 2014/34/EU

Alle Richter Armaturen inkl. Absperr-, Regel- und Sicherheitsventile
All Richter Valves incl. Shut-off, Control and Safety Valves

Die oben bezeichneten Armaturen wurden einer Risikoanalyse nach der Richtlinie 2014/34/EU mit folgendem Ergebnis unterzogen:

The valves specified above underwent a risk analysis according to Directive 2014/34/EU with the following result:

- **Richter Armaturen besitzen keine eigenen potentiellen Zündquellen. Die Armaturen können sowohl manuell als auch mechanisch/elektrisch angetrieben werden.**
Die Armaturen fallen nicht in den Anwendungsbereich der ATEX-Richtlinie 2014/34/EU und dürfen deshalb auch nicht danach gekennzeichnet werden.
Richter valves do not have their own potential sources of ignition. The valves can be actuated manually as well as mechanically/electrically.
ATEX Directive 2014/34/EU is not applicable to these valves. Therefore, it is not allowed to mark the valves according to that Directive.
- **Die Armaturen dürfen in explosionsgefährdeten Bereichen eingesetzt werden.**
The valves can be used in potentially explosive atmospheres.
- **Dennoch müssen für den Armatureneinsatz in explosionsgefährdeten Bereichen Sicherheitshinweise bzgl. des Explosionsschutzes beachtet werden. Richter hat hierzu die Betriebsanleitungen um den Zusatz „Sicherheitshinweise für den Einsatz in explosionsgefährdeten Bereichen in Anlehnung an die Richtlinie 2014/34/EU“ erweitert.**
However, when using the valves in potentially explosive atmospheres, specific safety notes on explosion protection must be observed. Here, Richter has extended their operating manuals to include the supplement „Safety notes for applications in potentially explosive atmospheres based on Directive 2014/34/EU“.

Ergänzender Hinweis: *Supplementary note:*

- **Elektrische/mechanische Antriebe müssen einer eigenen Konformitätsbewertung nach ATEX unterzogen werden.**
Electric/mechanical actuators must undergo a separate conformity assessment.

Kempen, 20.04.2016

Richter Chemie-Technik GmbH



M. Böhm

Leiter Qualitätsmanagement
Quality Manager

Herstellererklärung / *Manufacturer's Declaration*

TA-Luft / *German Clean Air Act (TA-Luft)*

Richter Klappe / *Richter Butterfly Valve*

Hiermit erklären wir, dass die Klappen der Baureihen
Hereby we declare, that the Butterfly Valves of the series

NKL, NKS

die Anforderung bezüglich der Gleichwertigkeit gemäß Ziffer 5.2.6.4 der Technischen Anleitung-Luft (TA-Luft vom 01.10.2002 / VDI 2440 Ziffer 3.3.1.3) erfüllen.

Grundlage sind die "Prüfgrundsätze für den Eignungsnachweis von Spindelabdichtungen in Armaturen als gleichwertig nach TA-Luft" des TÜV Süddeutschland Bau und Betrieb GmbH vom 22.09.1992.

Zusätzlich beinhaltet die Herstellererklärung den Eignungsnachweis einer Spindelabdichtung und einer inneren Flanschverbindung gemäß VDI 2440 hinsichtlich Dichtheit bzw. der Einhaltung der spezifischen Leckagerate nach TA-Luft $\lambda \leq 10^{-4} \frac{\text{mbar} \cdot \text{l}}{\text{s} \cdot \text{m}}$ und einer erweiterten Prüfung unter Betriebsbedingungen.

Voraussetzung für die Gültigkeit der Herstellererklärung ist das Beachten und Einhalten der Betriebsanleitung.

meets the requirement relating to the equivalence according to Section 5.2.6.4 of the German Clean Air Act (Clean Air Act dated 01.10.2002 / VDI 2440 Section 3.3.1.3).

The basics are the "Testing principles for the suitability verification of stem seals in valves as being equivalent in accordance to the German Clean Air Act of the TÜV Süddeutschland Bau und Betrieb GmbH dated 22 September 1992.

Additionally, the manufacture's declaration contains the suitability verification of a stem seal and internal flange connection in accordance to VDI 2440 with regard to tightness and the observance of the specific leakage rate according to the German Clean Air Act $\lambda \leq 10^{-4} \frac{\text{mbar} \cdot \text{l}}{\text{s} \cdot \text{m}}$ and an extended test under the above-mentioned operating conditions.

Manufacturer's declaration validity is dependent on the operating instructions being read and observed.

Kempen, 18.10.2017



Gregor Kleining
Leiter Forschung & Entwicklung
Manager Research & Development



Michael Pohlmann
Leiter Qualitätsmanagement
Quality Manager

Kempen, 27.01.2011

SIL

Declaration by the Manufacturer

Functional Safety according to IEC 61508

We declare, that the devices

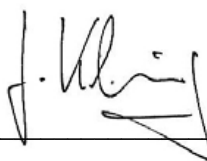
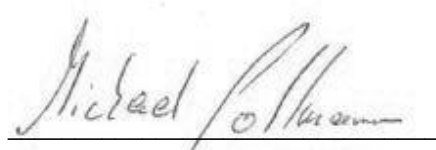
NKS, NKL

are suitable for use in a safety related application, if the safety instructions and the following parameters are observed:

Device Type:	A
Proof Test Interval:	≤ 1 year
HFT:	0 (single channel usage)
λ_{SU}:	231 FIT
λ_{SD}:	26 FIT
λ_{DU}:	195 FIT
λ_{DD}:	62 FIT
SFF:	62,1 %
PFD_{Avg}:	$8,54 \cdot 10^{-4}$ (for $T_{Proof} = 1$ year)
MTBF:	222 years

Safety Integrity Level: SIL 2

The specified values are valid only for the valve. Accessories such as an actuator, solenoid valves, limit switches etc. are not included.

G. Kleining
Leiter Forschung & Entwicklung
Manager Research & DevelopmentM. Pohlmann
Leiter Qualitätsmanagement
Quality Manager

Safety Information / **Declaration of No Objection** Concerning the Contamination of Richter-Pumps, -Valves and Components

1 SCOPE AND PURPOSE

Each entrepreneur (operator) carries the responsibility for the health and safety of his employees. This extends also to the personnel, who implements repairs with the operator or with the contractor.

Enclosed declaration is for the information of the contractor concerning the possible contamination of the pumps, valves and component sent in for repair. On the basis of this information for the contractor is it possible to meet the necessary preventive action during the execution of the repair.

Note: The same regulations apply to repairs **on-site**.

2 PREPARATION OF DISPATCH

Before the dispatch of the aggregates the operator must fill in the following declaration completely and attach it to the shipping documents. The shipping instructions indicated in the respective manual are to be considered, for example:

- Discharge of operational liquids
- remove filter inserts
- lock all openings hermetically
- proper packing
- Dispatch in suitable transport container
- Declaration of the contamination fixed **outside!!** on the packing

Declaration about the Contamination of Richter Pumps, -Valves and Components

The repair and/or maintenance of pumps, valves and components can only be implemented if a completely filled out declaration is available. If this is not the case, delay of the work will occur. If this declaration is not attached to the devices, which have to be repaired, the transmission can be rejected.

Every aggregate has to have it's own declaration.

This declaration may be filled out and signed only by authorized technical personnel of the operator.

Contractor/dep./institute :		Reason for transmitting ☒ Please mark the applicable																
Street :		Repair: ☐ subject to fee ☐ Warranty																
Postcode, city:		Exchange: ☐ subject to fee ☐ Warranty																
Contact person:		☐ Exchange/ Replacement already initiated/received																
Phone :	Fax :	Return: ☐ Leasing ☐ Loan ☐ for credit note																
End user :																		
A. Details of Richter-product:		Failure description:																
Classification:																		
Article number:		Equipment:																
Serial number:		Application tool:																
		Application process:																
B. Condition of the Richter-product:																		
	no ¹⁾ yes no																	
Was it in operation ?	☐ ☐	Contamination :																
Drained (product/operating supply item) ?	☐ ☐	no ¹⁾ yes																
All openings hermetically locked!	☐ ☐	toxic ☐ ☐																
Cleaned ?	☐ ☐	caustic ☐ ☐																
If yes, with which cleaning agent:		inflammable ☐ ☐																
and with which cleaning method:		explosive ²⁾ ☐ ☐																
¹⁾ if "no", then forward to D. ²⁾ Aggregates, which are contaminated with microbiological or explosive substances, are only accepted with documented evidence of an approved cleaning. ³⁾ Aggregates, which are contaminated with radioactive substances, are not accepted in principle.		mikrobiological ²⁾ ☐ ☐																
		radioactive ³⁾ ☐ ☐																
		other pollutant ☐ ☐																
C. Details of the discharged materials (must be filled out imperatively)																		
1. With which materials did the aggregate come into contact ? Trade name and/or chemical designation of operational funds and discharged materials, material properties, e.g. as per safety data sheet (e.g. toxic, inflammable, caustic)																		
<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width: 5%;">X</td> <td style="width: 40%;">Trade name:</td> <td style="width: 55%;">Chemical designation:</td> </tr> <tr><td></td><td>a)</td><td></td></tr> <tr><td></td><td>b)</td><td></td></tr> <tr><td></td><td>c)</td><td></td></tr> <tr><td></td><td>d)</td><td></td></tr> </table>				X	Trade name:	Chemical designation:		a)			b)			c)			d)	
X	Trade name:	Chemical designation:																
	a)																	
	b)																	
	c)																	
	d)																	
<table style="width:100%;"> <tr> <td></td> <td style="text-align: center;">no yes</td> <td></td> </tr> <tr> <td>2. Are the materials specified above harmful to health ?</td> <td style="text-align: center;">☐ ☐</td> <td rowspan="2" style="text-align: center;"></td> </tr> <tr> <td>3. Dangerous decomposition products during thermal load ?</td> <td style="text-align: center;">☐ ☐</td> </tr> <tr> <td colspan="3">If yes, which ones ?</td> </tr> </table>					no yes		2. Are the materials specified above harmful to health ?	☐ ☐		3. Dangerous decomposition products during thermal load ?	☐ ☐	If yes, which ones ?						
	no yes																	
2. Are the materials specified above harmful to health ?	☐ ☐																	
3. Dangerous decomposition products during thermal load ?	☐ ☐																	
If yes, which ones ?																		

D. Mandatory declaration: We assure that the data in this explanation are truthful and complete and as a signatory I am able to form an opinion about this. We are aware that we are responsible towards the contractor for damages, which results from incomplete and incorrect data. We commit ourselves to exempt the contractor from claims for damages of thirds resulting from incomplete or incorrect data. We are aware that we are directly responsible towards thirds, irrespective of this declaration, which belongs in particularly to the employees of the contractor consigned with the handling repair of the product.

Name of the authorized person
(in block letters): _____

_____ Date

_____ Signature

_____ Company stamp

08.01.2015

Declaration of no objection

Dear Sirs,

The compliance with laws for the industrial safety obligates all commercial enterprises to protect their employees and/or humans and environment against harmful effects while handling dangerous materials. The laws are such as: the Health and Safety at Work Act (ArbStättV), the Ordinance on Harzadous Substances (GefStoffV, BIOSTOFFV), the procedures for the prevention of accidents as well as regulations to environmental protection, e.g. the Waste Management Law (AbfG) and the Water Resources Act (WHG)

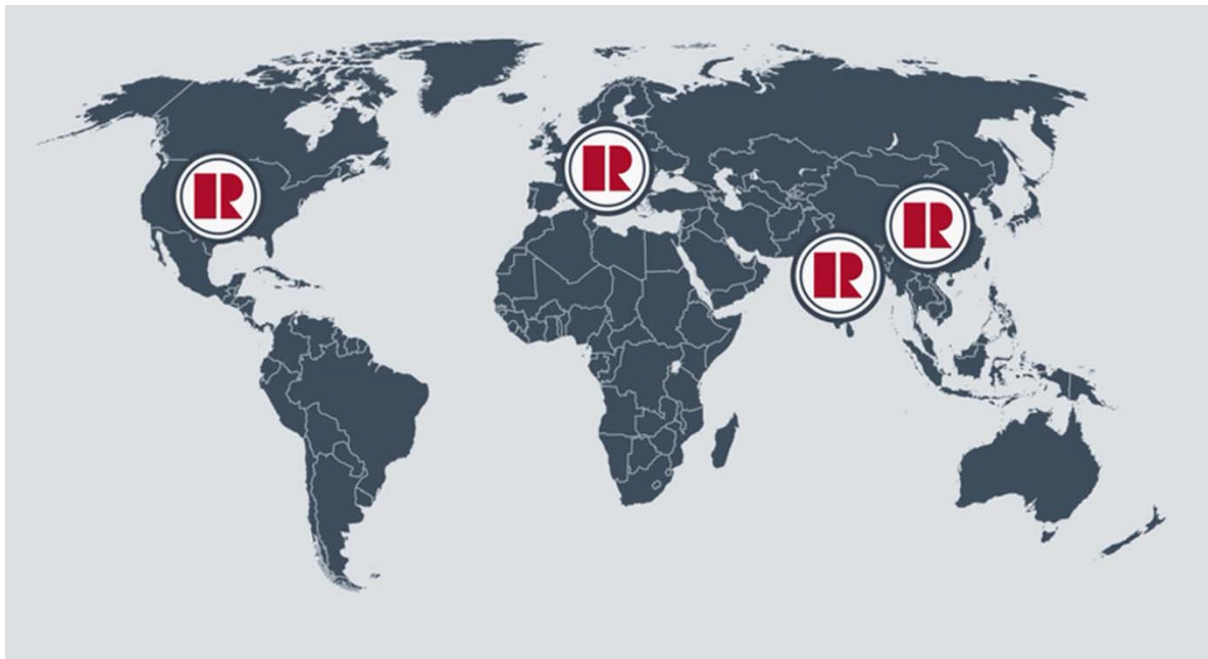
An inspection/repair of Richter products and parts will only take place, if the attached explanation is filled out correctly and completely by authorized and qualified technical personnel and is available.

In principle, radioactively loaded devices sent in, are not accepted.

Despite careful draining and cleaning of the devices, safety precautions should be necessary however, the essential information must be given.

The enclosed declaration of no objection is part of the inspection/repair order. Even if this certificate is available, we reserve the right to reject the acceptance of this order for other reasons.

Best regards
RICHTER CHEMIE-TECHNIK GMBH



Edition 07/2016
Revision 13
9520-070-en

Richter = TM Richter Chemie-Technik GmbH; IDEX = TM IDEX Corporation



**Valve
& Automation**
Total Valve & Control Solutions®

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