


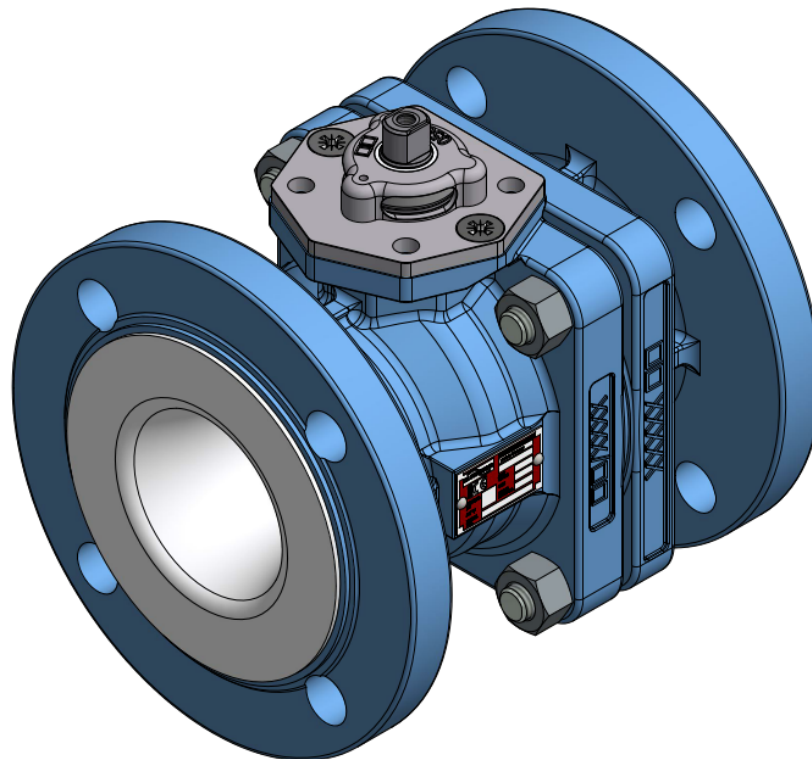
Atomac AKH3.2

Lined Reduced Port Ball Valve
AKH3.2M (Monobloc) & AKH3.2F (Floating Ball)

FCD ATENIM0001-03 (EN/AQ)

Original Instructions

 ***These instructions must be read prior to installing, operating, and maintaining this equipment.***





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Document Version

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1 General Information

1.1 Scope of manual



These instructions must be kept close to the product's operating location or directly with the product.



These instructions must be read prior to installing, operating, using, or maintaining the equipment in any region worldwide. The equipment must not be put into service until all of the safe operating conditions noted in the instructions have been met. **Failure to comply with the information provided in the User Instructions is considered to be misuse. Personal injury, product damage, delay in operation, or product failure caused by misuse are not covered by the Flowserve warranty.**

English ANSI ASME Units – CL150, NPS 1”-6”.

These instructions are intended to familiarize the reader with the product and its permitted use. Operating the product in compliance with these instructions is important to help ensure reliability in service and avoid risks. These instructions may not take into account all local regulations; ensure such regulations are observed by all, including those installing the product. Always coordinate repair activities with operations personnel and follow all plant safety requirements and applicable safety and health legislation.

1.2 Disclaimer

Information in this User Instruction is believed to be complete and reliable. In spite of all Flowserve's efforts to provide comprehensive information and instructions, sound engineering and safety practices should always be used. Please consult with a qualified engineer.

Flowserve manufactures products to applicable International Quality Management System Standards as certified and audited by external Quality Assurance organizations. Genuine parts and accessories have been designed, tested, and incorporated into the products to help ensure continued product quality and performance in use. As Flowserve cannot test parts and accessories sourced from other vendors the incorrect incorporation of such parts and accessories may adversely affect the performance and safety features of the product. The failure to properly select, install, or use authorized Flowserve parts and accessories is considered to be misuse. Damage or failure caused by misuse is not covered by Flowserve's warranty. In addition, any modification of Flowserve products or removal of original components may impair the safety of these products in use.

1.3 Certification instruction

- Declaration of Conformity PED 2014-68-EU, English [🔗](#)
- Declaration of Conformity PED 2014-68-EU, German [🔗](#)
- ATEX 2014-34-EU, English [🔗](#)
- ATEX 2014-34-EU, German [🔗](#)

Note: Certificates defined in the Contract requirements are provided with these instructions where applicable. Examples of the certificates can be found in the Annex of this document. If required, copies of other certificates sent separately to the Purchaser should be obtained from the Manufacturer for retention with this User Instruction.

1.4 Units

This document uses the unit: dual unit system [🔗](#)

2 Safety Information

2.1 Intended use

Flowserve Atomac and Durco are leaders in the design and manufacture of corrosion resistant fluoropolymer lined valves and that these valves are used in the toughest fluids of the CPI.

Table 1: Applicable intended uses of the AKH3.2

Pulp & Paper Industries:	Steel Industry:	Titanium Dioxide Production (both Sulphate and Chloride):	Pharmaceutical Industry:
Spent Acid	Pickling Line	Chlorine	Solvents
Tall oil		Liquid and Vapor	Acids
Sodium Chlorate		Sulphuric Acid	Alkaline
Sulphuric Acid		Barium Chloride	Mixtures of these
HCL		Calcium Chlorides	
Chlorine Dioxide		HCL	
Sodium Hypochlorite			

Flowserve lined ball valves are pressure containing components in accordance with the Pressure Equipment Directive (PED). They are designed for shut-off and passage of different fluids, vapours, gases and liquids of group 1. According to the PED and have a corrosion-resistant plastic lining. **Solids** can have a negative effect on the liner and sealing parts of the valve resulting in increased erosion, damage to surfaces and sealing and to a reduction in the service life of the valve or higher torques.

Before operating under new conditions, the personnel have to carefully examine all information including provided data from Flowserve and service conditions for the operation whether the valve, accessories and materials are suitable for the new application (Flowserve Ahaus GmbH can give recommendations).



The product/system must not be operated beyond the parameters specified for the application. If there is any doubt as to the suitability of the product/system for the application intended, contact Flowserve for advice, quoting the serial number.

- Installing, operating, or maintaining the Valve in any way that is not covered in this User Instruction could cause death, serious personal injury, or damage to the equipment. This includes any modification to the product/system or use of the parts not provided by Flowserve.
- Only operate the Valve when it has successfully passed all inspection acceptance criteria.
- Do not operate the Valve in a partially assembled condition.
- If the conditions of service on the customer's purchase order change (i.e., pumping fluid, temperature, or duty conditions) it is requested that the user seeks written agreement from Flowserve before start-up.
- Observe equipment labels, such as arrows designating the direction of rotation, warning signs, etc., and keep them in a legible condition. Replace any damaged and/or illegible labels immediately.

2.2 Safety symbols and description

This User Instruction contains specific safety markings where non-observance of an instruction would cause a hazard. The specific safety markings are:

Table 2: Definition of safety symbols and markings










Symbol	Description
	DANGER This symbol indicates a hazardous situation which, if not avoided, will result in death or serious injury.
	WARNING This symbol indicates a hazardous situation which, if not avoided, could result in death or serious injury.
	CAUTION This symbol indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.
	Safety Instruction This symbol indicates specific safety-related instruction or procedures.
	NOTICE This symbol is used to address practices not related to physical injury.
	This is the safety alert symbol. It is used to alert you to potential physical injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

Table 3: Additional symbols

Symbol	Description
	ELECTRICAL HAZARD This symbol indicates electrical safety instructions where non-compliance would affect personal safety and could result in loss of life.
	TOXIC HAZARD This symbol indicates “hazardous substances and toxic fluid” safety instructions where non-compliance would affect personal safety and would damage the equipment or property.
	ATEX EXPLOSION PROTECTION This symbol indicates explosive atmosphere marking according to ATEX. It is used in safety instructions where non-compliance in the hazardous area would cause the risk of an explosion.

2.3 General hazard sources

Risk of injury due to ball valve parts in motion!

A ball valve wrench and ball which are in motion may cause crushing and/or amputate fingers.

- Do not reach between the ball valve wrench and the stop.
- Do not reach into the bore of the ball valve.
- Wear appropriate safety gloves.

Risk of injury due to a heavy ball valve!

A heavy ball valve may cause back injury if lifting the ball valve without additional personnel or appropriate mechanical auxiliary means (hoist or swing crane).

- Perform lifting only in compliance with site safety protocol, local regulations, and industry standards.
- Prior to any attempt to lift the ball valve, first determine the approximate weight and stability of the ball valve.
- Always handle the ball valve with the assistance of additional personnel or appropriate mechanical auxiliary means.
- Only lift a ball valve weighing 23 kg (50 lb.) or more using appropriate mechanical means and in accordance with respectively valid statutory regulations.
- Always wear appropriate personal protective equipment (PPE) during handling.
- Evaluate repetitive ball valve handling of any kind as part of a documented end-user safety program.

Furthermore, in case of a non-intended use (reasonably foreseeable misuse) the following may occur:

- Failure of the ball valve’s primary functions.
- Damage to the industrial plant or piping system.
- Failure of required maintenance and repair methods.
- General risk of injury to personnel.
- Environment pollution caused by substances leaking from the ball valve.

2.3.1 Mechanical Hazards

Lifting limits and guidelines

Note: The load values mentioned in this section are Flowserve recommendations only. All liftings must be done in compliance with site safety protocol, local regulations, and related industry standards.

Many precision parts have sharp corners which require appropriate personal protective equipment during handling. Prior to any attempt to lift an item, employees must first determine the approximate weight and stability of the load.

- Large, unstable, or awkward loads should always be handled with the assistance of additional personnel or appropriate mechanical means.
- Loads in excess of 23kg (50 lb.) should only be lifted by appropriate mechanical means and in accordance with current local legislation or with the assistance of additional personnel.
- Lifting items less than 23kg (50 lb.) may be prohibited without assistance if the lift is repetitive and/or awkward (i.e., away from the body, above the shoulders or below the knees) thus placing excessive stress on the personnel.
- Repetitive lifting of any kind should be evaluated as part of a documented end-user safety program.

2.4 Safety data sheets

The following instructions are designed to assist in unpacking, installing and performing maintenance as required on Flowserve products. Product users and maintenance personnel should thoroughly review this bulletin prior to installing, operating or performing any maintenance.



DANGER: In most cases Flowserve valves and actuators are designed for specific applications (e.g., with regard to medium, pressure, temperature). For this reason, they should not be used in other applications without first consulting the manufacturer.

2.5 Qualified personnel and targeted group

Qualified personnel are people who, on account of their training, experience and instruction and their knowledge of relevant standards, specifications, accident prevention regulations and operating conditions, have been authorized by those responsible for the safety of the plant to perform the necessary work and who can recognize and avoid possible dangers.

2.6 Industrial health and safety measures

Follow industry safety standards including the use of appropriate equipment in required areas.

2.7 Potential explosive areas

Consideration of Conformity with the Directive 2014/34/EU (ATEX)

The lined and metallic valves of the brands Atomac and Durco produced by Flowserve Ahaus GmbH have been examined according to DIN EN 13463-1 to determine the danger of ignition. Potential sources of ignition coming from the valve itself have not been ascertained. This result was confirmed by the Bundesanstalt für Materialforschung und -prüfung (BAM – Federal Office for Material Research and Testing).

The valves are intended for usage in areas where explosive atmosphere will be present from time to time. As no internal sources of ignition were determined, the following statements are valid:

- The valves do not fall within the scope of the Directive 2014/34/EU.
- A corresponding marking is not permissible.

The specifications and instructions of the corresponding Installation and Operation Manuals have to be obeyed. We would like to point out that potential sources of ignition resulting from operating conditions and/or the used medium fall under the responsibility of the operating company. These potential dangers can be minimized or possibly excluded in cooperation with Flowserve with suitable modifications on the valve e.g., by using conductive lining materials to prevent static charging of the mediums during operation.

2.8 Protective equipment

FLOWSERVE products are often used in problematic applications (e.g., extremely high pressures, dangerous, toxic or corrosive mediums). In particular valves with bellows seals point to such applications. When performing service, inspection or repair operations always ensure, that the valve is depressurised and that the valve has been cleaned and is free from harmful substances. In such cases pay particular attention to personal protective equipment (PSA) (protective clothing, gloves, glasses etc.).

3 Product Description

3.1 General product description

The AKH3.2M & AKH3.2F are 2-piece fully lined ball valves designed to meet ASME B16.34 requirements. The face to face is per ASME B16.10 – short pattern with flanges per ASME B16.5 class 150, RF. The maximum temperature rating is 200°C, refer to our pressure / temperature and vacuum / temperature graph for more details.

The valve is available in 2 designs:

- AKH3.2M - Monobloc Unit with 1-piece ball and stem.
- AKH3.2F - Floating Ball with 2-piece ball and stem.

Both options offer a tight shut-off per API 598 and DIN EN 12266-1 (leakage rate A):

Gland Seal is accomplished by 2 different packing options:

- Top Cap with belleville washers for life loaded packing.
- Re-Adjustable packing gland follower.

Both options fulfill the requirements and acceptance criteria for fugitive emission per ISO 15848, API 641.

The unit comes with a 1 layer epoxy paint with a minimum layer thickness of 60 µm, other paint finishes are available on request.

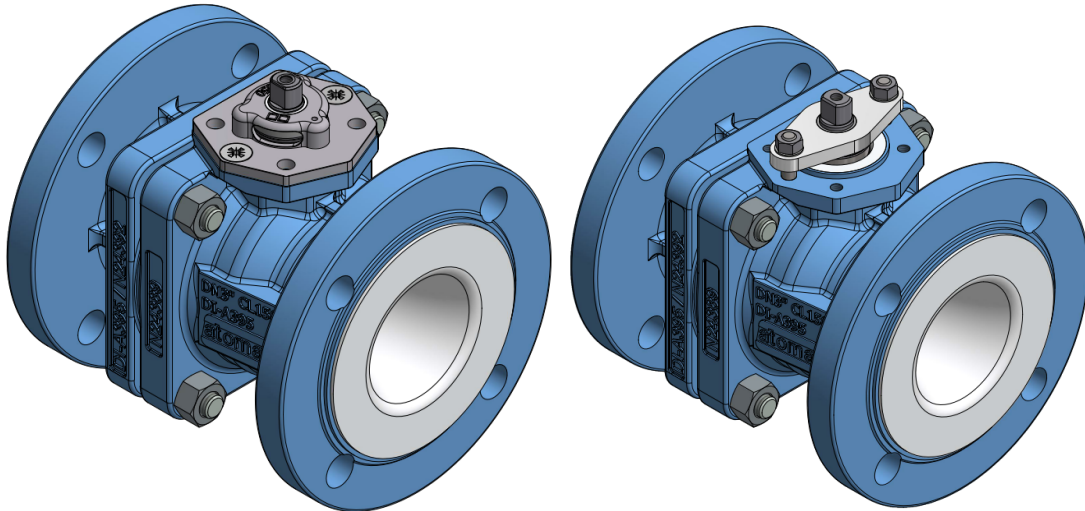


Figure 1: Isometric View of the AKH3.2 Top Cap Version & Gland Follower Version

3.2 Scope of delivery

The exact scope of the delivery is stated in the order documentation.

3.3 Function description

The AKH3.2 is an ASME B16.10 short pattern, CL150, reduced port, lined ball/Monobloc valve with a minimum cavity space.

The floating ball design **AKH3.2F** ensures bubble-tight shut-off across the pressure range of 1 mbar to 19 bar.

AKH3.2M offers a one-piece ball and stem unit. Through this connection between the ball and Stem the use in sticky, adhesive and highly viscous fluid applications is improved, particularly in High cycling requirements as the stem drive connection into the ball slot in floating ball design valves may deteriorate. The AKH3.2M can be used for direct replacement of plug valves and short pattern ball valves without the need of pipework alterations.

The **AKH3.2M** & **AKH3.2F** provides long-term protection against external leakage to atmosphere is provided by PTFE/Viton packing rings in a deep stuffing box, the substantial body flanges, and the moulded liner seal. An anti-static device provides protection against potentially dangerous electrostatic discharge and the anti-blow-out safety stem design eliminates the possibility of a blow-out. Also available as V-port ball valve for precise modulating control services and various liner materials including conductive PFA.

3.4 Connections

3.4.1 Dimensions drawing AKH3.2M & AKH3.2F

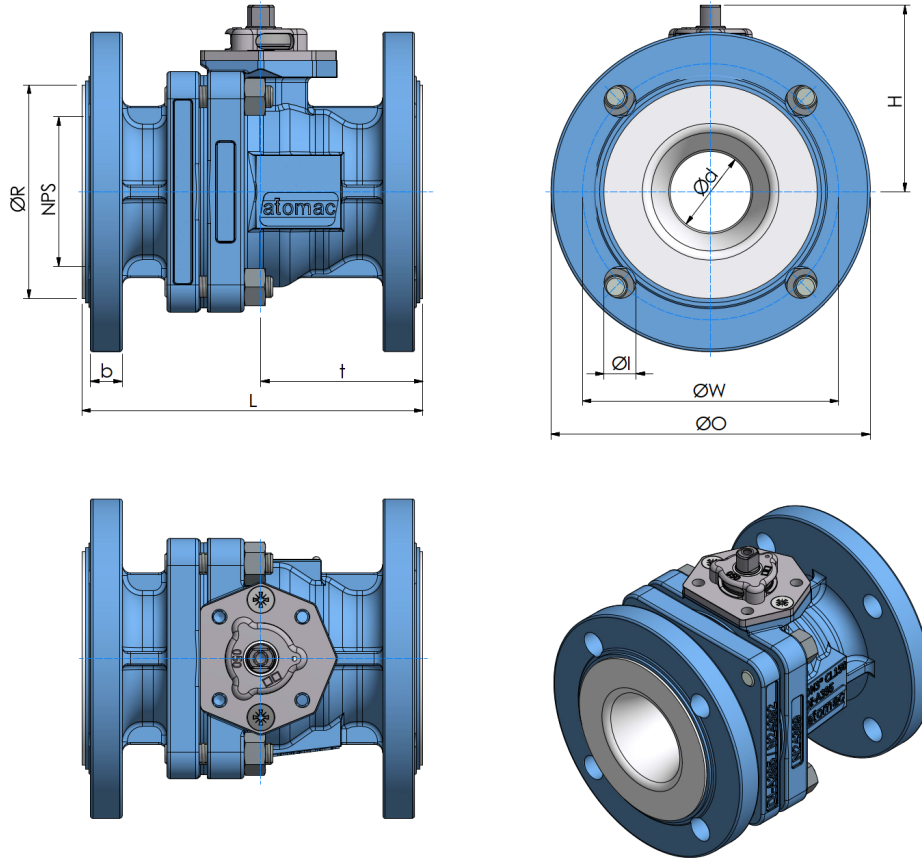


Figure 2: Dimensions drawing

Table 4: Dimensions for AKH3.2, dimensions in mm [in.]

DN [NPS]	L		t		b		ØR	
025 [1]	127	[5.0]	56	[2.2]	11.5	[0.45]	51	[2.0]
040 [1.5]	165	[6.5]	75	[2.95]	14	[0.55]	73	[2.87]
050 [2]	178	[7.0]	73	[2.87]	15.5	[0.61]	92	[3.62]
080 [3]	203	[8.0]	96.5	[3.80]	19	[0.75]	127	[5.0]
100 [4]	229	[9.0]	105	[4.1]	23	[0.91]	157	[6.2]
150 [6]	267	[10.5]	133.5	[5.26]	25	[0.98]	208	[8.2]

DN [NPS]	ØO		ØW		n x Øl		H	
025 [1]	110	[4.33]	79.4	[3.13]	4 x 16	[0.63]	77.5	[3.05]
040 [1.5]	125	[4.92]	98.4	[3.87]	4 x 16	[0.63]	77.5	[3.05]
050 [2]	150	[5.9]	120.7	[4.75]	4 x 19	[0.7]	110	[4.33]
080 [3]	190	[7.48]	152.5	[6.0]	4 x 19	[0.7]	111	[4.4]
100 [4]	230	[9.06]	190.5	[7.5]	8 x 19	[0.7]	158	[6.2]
150 [6]	280	[11.02]	241.5	[9.5]	8 x 22	[0.9]	173	[6.8]

3.4.2 Auxiliary connections (Top Cap)

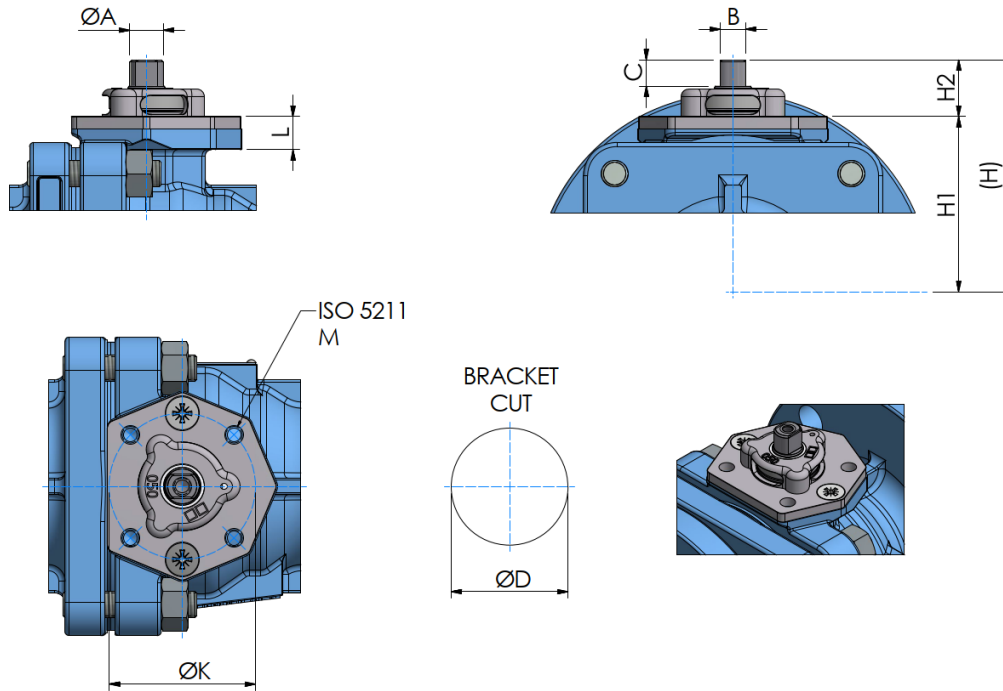


Figure 3: Top Work drawing (Top Cap)

Table 5: Top Work dimensions (Top Cap), dimensions in mm [in.]

DN [NPS]	ØA		B		C	
025 [1]	10	[0.39]	8	[0.31]	9.3	[0.37]
040 [1.5]	10	[0.39]	8	[0.31]	9.3	[0.37]
050 [2]	16	[0.6]	12	[0.5]	12.5	[0.5]
080 [3]	16	[0.6]	12	[0.5]	12.5	[0.5]
100 [4]	22	[0.9]	16	[0.6]	15.5	[0.6]
150 [6]	22	[0.9]	16	[0.6]	15.5	[0.6]

DN [NPS]	(H)		H1		H2	
025 [1]	77.5	[3.05]	54	[2.13]	23.5	[0.93]
040 [1.5]	77.5	[3.05]	54	[2.13]	23.5	[0.93]
050 [2]	110	[4.3]	78	[3]	32	[1.26]
080 [3]	111	[4.4]	84	[3.3]	27	[1.1]
100 [4]	158	[6.2]	123	[4.84]	35	[1.38]
150 [6]	173	[6.8]	138	[5.4]	35	[1.4]

DN [NPS]	ISO 5211	ØK		ØD		M	L
025 [1]	F05	50	[1.97]	36	[1.42]	M6	12.5 [0.49]
040 [1.5]	F05	50	[1.97]	36	[1.42]	M6	12.5 [0.49]
050 [2]	F07	70	[2.8]	56	[2.20]	M8	16 [0.63]
080 [3]	F07	70	[2.8]	56	[2.20]	M8	16 [0.6]
100 [4]	F10	102	[4.0]	72	[2.83]	M10	20 [0.8]
150 [6]	F10	102	[4.0]	72	[2.83]	M10	20 [0.8]

3.4.3 Auxiliary connections (Gland Follower)

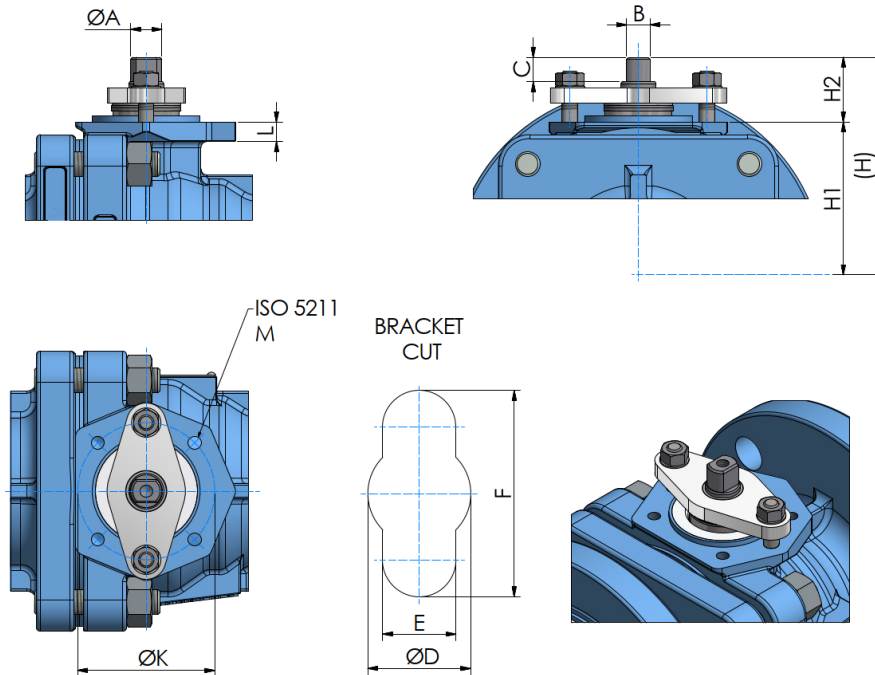


Figure 4: Top Work drawing (Gland Follower)

Table 6: Top Work dimensions (Gland Follower), dimensions in mm [in.]

DN [NPS]	ØA		B		C		E	
025 [1]	10	[0.39]	8	[0.31]	9.3	[0.37]	24	[0.94]
040 [1.5]	10	[0.39]	8	[0.31]	9.3	[0.37]	24	[0.94]
050 [2]	16	[0.6]	12	[0.5]	12.5	[0.5]	30	[1.2]
080 [3]	16	[0.6]	12	[0.5]	12.5	[0.5]	30	[1.2]
100 [4]	22	[0.9]	16	[0.6]	15.5	[0.6]	40	[1.6]
150 [6]	22	[0.9]	16	[0.6]	15.5	[0.6]	40	[1.6]

DN [NPS]	F		(H)		H1		H2	
025 [1]	74	[2.91]	77.5	[3.05]	49	[1.93]	28.5	[1.12]
040 [1.5]	74	[2.91]	77.5	[3.05]	49	[1.93]	28.5	[1.12]
050 [2]	100	[3.9]	110	[4.3]	72	[2.8]	38	[1.5]
080 [3]	100	[3.9]	111	[4.4]	78	[3.1]	33	[1.3]
100 [4]	142	[5.59]	158	[6.2]	116	[4.6]	42	[1.7]
150 [6]	142	[5.59]	173	[6.8]	131	[5.2]	42	[1.7]

DN [NPS]	ISO 5211	ØK		ØD		M	L	
025 [1]	F05	50	[1.97]	36	[1.42]	M6	7.5	[0.3]
040 [1.5]	F05	50	[1.97]	36	[1.42]	M6	7.5	[0.3]
050 [2]	F07	70	[2.8]	56	[2.20]	M8	10	[0.4]
080 [3]	F07	70	[2.8]	56	[2.20]	M8	10	[0.4]
100 [4]	F10	102	[4.0]	72	[2.83]	M10	13	[0.5]
150 [6]	F10	102	[4.0]	72	[2.83]	M10	13	[0.5]

3.5 Accessories

Manual and Automated Operations

Atomac lined valve are equipped with lockable lever as a standard.

Larger valves are equipped by request with a manual gear. The modular construction of lined Atomac valves allows are easy use of all types of pneumatic or electric actuation systems. Due to the ISO 5211 universal mounting pad, actuators can be mounted to the valves on-site, without removing them from the pipeline.

3.6 Tools, Equipment, and fixtures

No special tools, equipment and fixtures are needed.

4 Packaging, Transportation and Storage

4.1 Unpacking

Each delivery includes a packing slip. When unpacking, check all delivered valves and accessories using this packing slip.

Larger valves can be lifted using slings on the yoke or if present, using the lifting lugs or eyebolt connections provided for this purpose. If slings are used, attach them so that the outer tubing or attaching parts are not damaged.



WARNING: If slings are used, be aware that the centre of gravity of the valve may be above the lifting point. In this case, secure or support the valve against rotating, to prevent damage or personnel injury Report transport damage to the carrier immediately.

4.2 Packaging

The packaging of completed valves is made in packing material like e.g., cartons pallets, skeleton containers, or wooden boxes. For the packing of single valves mainly cardboard boxes are used. On customer request overseas or export shipments are collected to be packed in wooden or cardboard boxes and are filled up with different kind of filling material. Single packages will be marked with product labels, if required by the customer. Special packaging requirements, provided by the customer will be marked in the customer order, so that the information is available in shipping department. Packing staff is instructed accordingly in those cases by Logistics.

Orders or part orders are prepared as per EDP packing lists, are packed and contents of packages are listed in the packing list stating date and signature of the responsible packing employee. Serial numbers of all valves as well as the number of valves are scanned to the EDP-system. Spare parts are marked with a label that shows the relevant order data. In general, only clean and proper packaging material is to be used.

The following symbols are used to label the packaging:



This side up



Fragile



Keep dry



Protect from direct sunlight



Centre of gravity



Do not use hooks



Attachment point

4.2.1 Standard packaging

Overland Transport (Truck or Rail)

Valves and parts, which are transported by truck or rail to the consignee are packed in skeleton pallets, wooden cases (comp. section 2)) cartons, cardboard on pallet.

Countries: Domestic, EC, Eastern Europe (excl. Russian Federation).

As there are special requirements in respect of climate, overland transports to Russian Federation require special packaging. The packaging will be subject to agreement between Flowserve and the customer. For example, a packing according to section 2a) can be used.

4.2.2 Packaging according to IPPC Standard

Ocean Freight Export Overseas

The packaging for ocean freight shipments to overseas is subject to various prerequisites in respect of transport or climatically conditions. This requires strong wooden cases – heat treated according to IPPC-Standard with license number of the supplier. Cases with standardized dimensions are utilized. These cases are internally lined with aluminium foil. The packaging of valves and parts is made according to customer's specifications, if provided by the customer. Vapor corrosion inhibitor pouches in sufficient quantity will be used to protect the goods from moisture during transport/storage for a period of 12 months. The aluminium foil is then sealed.

Airfreight Export Overseas

As an alternative for wooden cases (see a) the following packaging material – without having a license number of the packaging supplier – can be used for air shipments. If a long(er) storage period is applicable, the package is filled with a sufficient quantity of vapor corrosion inhibitor pouches. Cardboard Boxes on plywood pallets, plywood cases, plywood pallets, plastic cases or wooden pallets according to IPPC-Standard. Small shipments are packed in cartons.

4.2.3 Filling material

For standard packaging Styrofoam, packing chips, paper board container- and corrugated cardboard are used as filling material.

It is forbidden to use vegetable material such as hay, flax, straw etc. as filling material.

In general, all special packing requirements of customers with regard to products are carried out (e.g., chlorine packing).

4.2.4 Chlorine Packaging

Chlorine packaging will be included in the work order as a separate item line and will be reported as "finished" in EDP system.

Standard procedure:

- put caps on the valve flanges.
- mold valve into a PVC-pouch, including drying pouches.
- drying pouches not to be placed within the valve.

4.3 Transportation

The shipping department prepares the shipping documents required for transport to the customer and issues the transport order to the respective forwarding agent. This takes into account the internal processes and controls (for example, with regard to goods / countries subject to approval). The associated procedural instructions apply accordingly. Subsequent documents are created as default.

- Packing list.
- Invoice / commercial invoice.
- Delivery note.
- Certificate of origin.
- Movement certificate.
- Export declaration / export accompanying document (abd).
- Manufacturer 's declaration country of origin.
- Supplier declaration.

Here customer wishes and specifications are considered.

Assessment of freight forwarders

Forwarding agents commissioned for the dispatch of products are supervised for faulty services. For this purpose, a list is maintained in the Logistics Office. Should a freight forwarder attract attention above average, measures will be discussed with it.

4.4 Storage

4.4.1 Storage Procedure for Packaged Valves

The valves are adequately packaged for shipping and outdoor storage. Outdoor storage should always be under a roof. Use only suitable transportation devices for the packaged valves. Ensure the packaging is not damaged on the transportation. If the packaging is damaged treat the valves as unpackaged products.

4.4.2 Storage Procedure for Unpacked Valves

Handle the valves with care to avoid any damage to the PFA lining or the coating. Use only sufficient lifting and transportation devices. Store the valves in a clean, dry and protected warehouse. Do not store the valves together with caustic chemicals, acids or leaches. If the valves contain elastomer components do not store the valves in a warehouse together with ozone generating devices like fluorescent lights or high voltage sources. Store the valves only on appropriate pallet or skid, off the floor and out of the pathway. Plastic caps are fitted to the flange faces for protection and should not be removed until the valve is mounted to the piping system.

4.4.3 Storage Inspection

Visual inspection shall be performed on at least on a semi-annual basis and results recorded. The visual inspection shall include as a minimum the checking of packaging, covers, dryness and cleanliness.

5 Installation

The valve must be installed and commissioned by qualified staff - personnel who are familiar with the installation, commissioning and operation of this product and possess the relevant qualifications in their field of activity.

5.1 Fluoropolymer-lined Atomac valves

Fluorocarbon resin lined valves cannot be treated in the same way as unlined steel valves. The lining material is softer and more sensitive than metal and is subject to cold flow. If only one tiny spot of the lining materials is damaged, this could result in leakage or damage to the metal body by the medium. It is essential for all Atomac valves that before start-up of a new plant the piping system is being flushed in order to remove possible solids such as welding beads, sand, etc. The Atomac valves must be 100% open during the flushing process to avoid impurities which could cause damages when the valve is operated.

The lining material moves under temperature and pressure, in that it expands and shrinks. This means that in practical applications all data given for lined valves must be seen in relation to certain conditions of temperature and pressure.

For the handling of Atomac valves, we are giving you the following guidelines:

1. Lined valves have soft sealing faces. Therefore, the flange protection caps intended, or transport and storage must not be removed until immediately before installation. Should it prove necessary to remove the protection caps for inspection purposes, care must be taken to re-fit them into their original position upon completion of the inspection.
2. If the flange protection caps are removed, fittings must never be placed so as to rest on the soft sealing faces. If this cannot be avoided, care must be taken to keep the workbench clean and free of metal chip, sand or other solid particles.
3. No additional gaskets are required for the installation of Atomac lined valves.
4. For maintenance work on an Atomac valve installed in a pipeline, the works safety requirements and the general accident prevention instructions are to be observed. Look for contact between stem, grounding spring and gland follower.
5. 2 - 5 hours after the installation has reached its final operating temperature, flange bolts must be retightened in accordance with the corresponding torque values (see standard valve chart of the respective valve). Should any leakage occur, it is recommended to check by means of a torque wrench that the tension bolts have been tightened evenly. If this is the case, the nut of the tension bolt which is closest to the area where leakage is occurring must be tightened with a 45-degree turn. The 45-degree turns may then be repeated until the valve leak is eliminated. However, where, valves are concerned, the valve must be operated after every 90-degree turn of the nut to make sure that the valves can be opened and closed without problems. If leakage has been eliminated by this method, then all remaining bolts on the same side of the fitting must be tightened by means of a torque wrench. Finally, the valve must be operated to check its performance.
6. After lengthy operation period, leakage may occur in the stem area due to normal wear and tear of the material. In such a case, the adjusting nuts above the gland follower must be tightened evenly with short turns until leakage stops. An uneven tightening of the packing gland follower can result in a tilting of the same. Every time that the packing gland follower has been re-adjusted, a test must be carried out to establish that the valve still opens and closes smoothly.



Excessive tightening of the adjusting nuts might damage the stem lining. The packing gland follower must only be adjusted to such a degree as is required for the elimination of the leak.


7. If the above measures do not succeed in stopping the leakage, it is recommended to return the valve to the manufacturer in order to have the valve checked and to eliminate the problem. For security reasons, it is absolutely necessary to decontaminate the valve. The user has to confirm the decontamination by fixing a return goods tag on the valve. Before returning the valve, the procedure must be coordinated with Atomac sales.
8. If, for any reason, an Atomac valve becomes difficult to operate or jams, you must not use a hammer on the hand lever or extend the hand lever with pipe pieces. Such a procedure may lead to damage of ball and/or stem and invalidates any guarantees.

Atomac valves are manufactured, assembled and tested with the utmost care according to DIN EN ISO 9001. Continuous quality controls make sure that defects are reduced to a minimum. This and an adequate handling of the valves during transportation, storage, installation and maintenance will ensure a long service life and many trouble-free hours of operation.

5.2 Inspection and preparation

Before installation check the order-no, serial-no. and/or the tag-no. to ensure that the valve/ actuator is correct for the intended application. Prior to installation of the valve, we require, that you check the following conditions to reduce the risk of malfunction and safety related incidents.

1. Remove the protective flange covers valve; clean the flange sealing surface



Unsuitable cleaning agents can damage and cause leakage. Consult a current chemical resistance list before applying.
2. Check if enough space for all the moving part.
3. Before installing, check flows direction. In general, the valve is bidirectional in case of unidirectional valve (for example V-ball) the flow is shown by the arrow on the valve.
4. Automated valves connect the power supply and instrument signal lines.
 - For pneumatic actuators, connect the air supply and instrument signal lines.
 - For electric actuators, connect the power supply using the wiring diagram located on removable actuator cover or in the manufacturer 's actuator documentation

After installing, check direction of flow again.

5.3 Mounting of Lever & Gear

If the lever is delivered unassembled, install lever on to stem and tighten it using a hexagon bolt. Note that the standard lever is lockable.

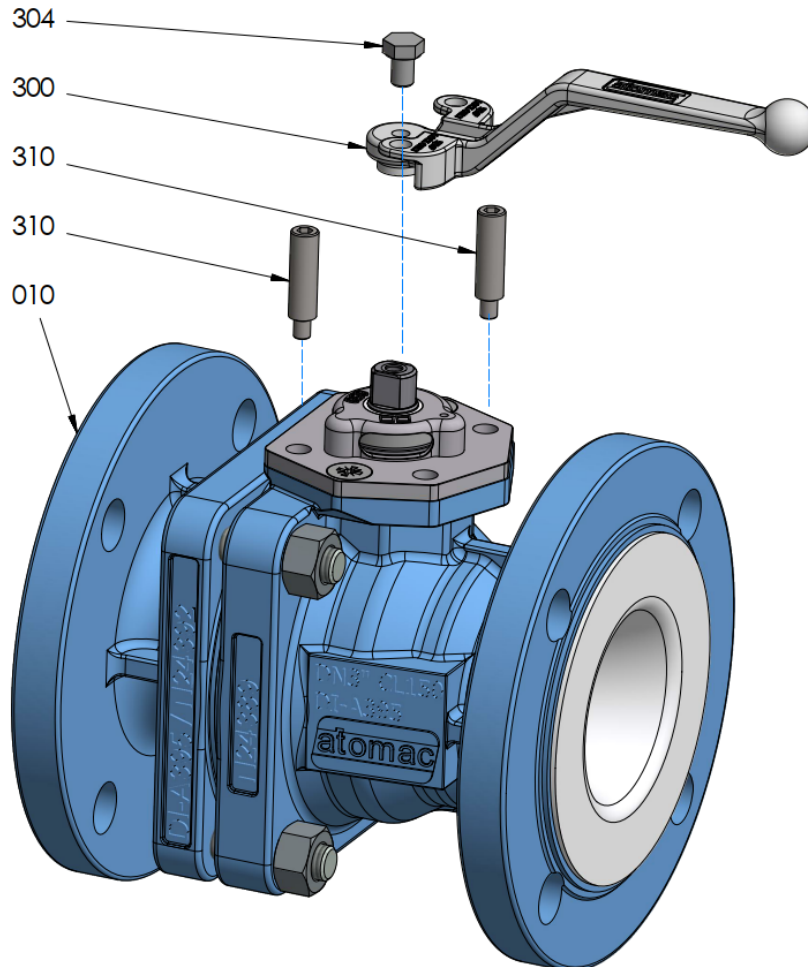


Figure 5: Valve with lever – Exploded view

Table 7: Valve with Lever - description

Item	Part
010	Valve
300	Lever
304	Screw
310	Stop

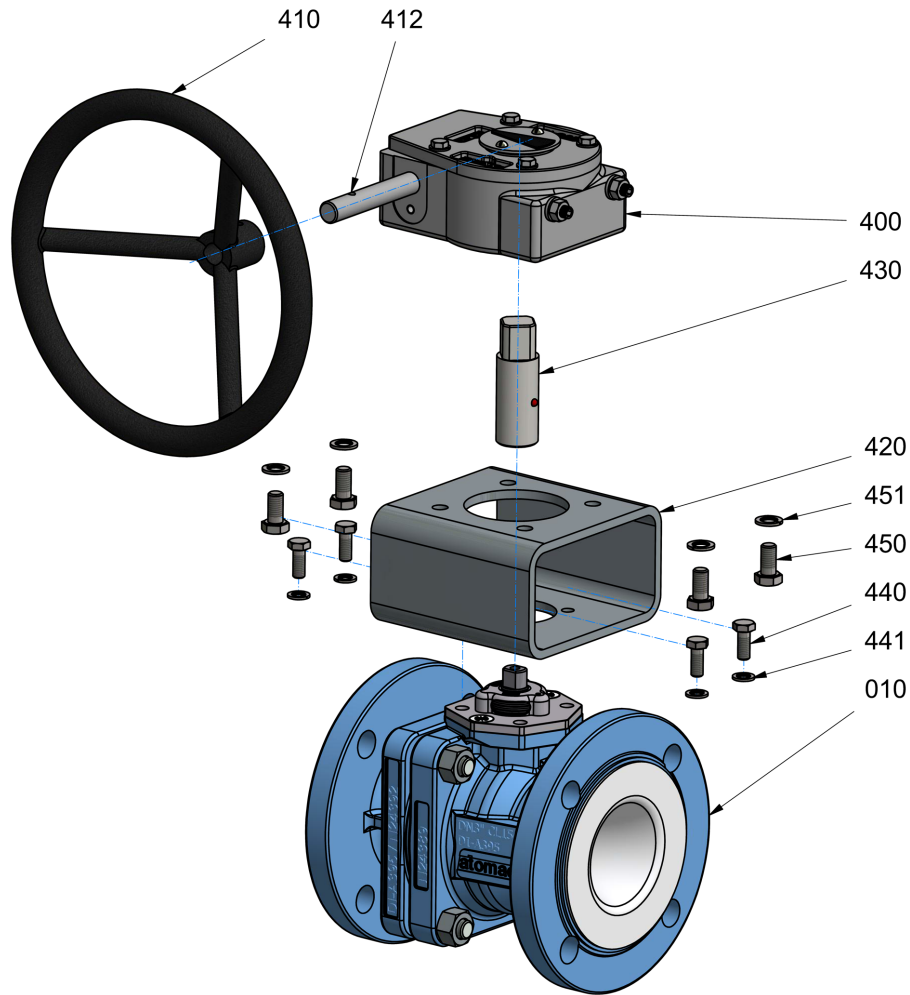


Figure 6: Valve with gear – Exploded view

Table 8: Valve with Gear - description

Item	Part
010	Valve
400	Gear (Worm Gear)
410	Handwheel
412	Pin
429	Bracket
430	Adapter
440	Hexagon Bolt
441	Serrated Lock Washer
450	Hexagon Bolt
451	Serrated Lock Washer

5.4 Installation

Pipelines must be correctly aligned to ensure that the valve is not fitted under tension. Flange bolts should be tightened as in [Table 9](#) and the scheme [Figure 7](#).

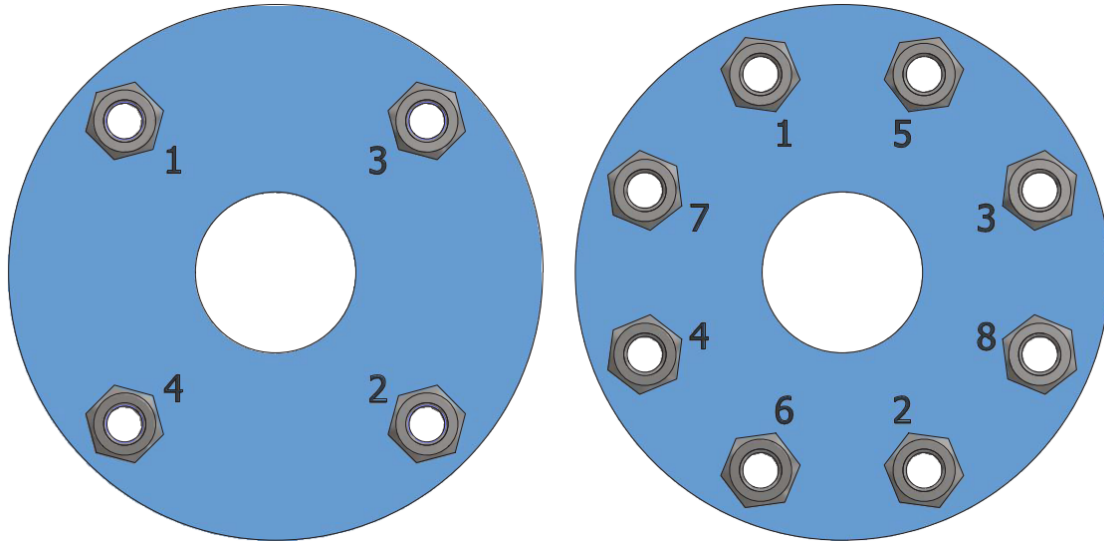


Figure 7: Crisscross method to recommended torques

Table 9: Recommended tightening torques for AKH3.2M & AKH3.2F (connection flange) *

DN [NPS]	Connection flange	
	Nm	[lbf·ft]
025 [1]	16	[12]
040 [1.5]	33	[25]
050 [2]	64	[48]
080 [3]	105	[78]
100 [4]	81	[60]
150 [6]	139	[103]

* maximum value

6 Commissioning

Before Installation, the service condition, the valve check of leakage and as needed look at [Table 9](#) & [Table 12](#) and tighten bolts. Make sure that sufficient overhead clearance around the valve/actuator is maintained.

After installing, check direction of flow again in case of unidirectional valves. The direction of flow is shown by the arrow on the valve.

QUICK CHECK

Before operating, check the valve as follows:

- Open and close the valve.
- Check all air connections for leaks in case the valve is with gland insert.
- Check packing nuts for proper tightness. Packing nuts should be slightly over finger-tight; however, tighten only as necessary to prevent stem leakage (see [Figure 10](#) Pos. 110).

NOTE: An excessively tightened packing can cause excessive packing wear and can hinder the free movement of the stem.

If applicable, check fail-safe position. To do this, close supply pressure and / or electrical signal and observe whether the valve opens or closes as defined.

If temperature cycling occurs, retighten all bolt connections and packing as necessary and check for leaks.

7 Operation

7.1 Normal operation

Observe the conditions of use on the nameplate and

Pressure-Temperature-Diagram & Vacuum-Temperature-Diagram

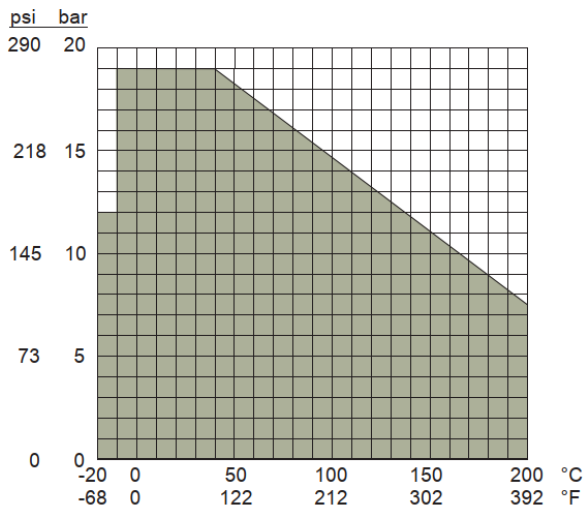


Figure 8: Pressure-Temperature-Diagram

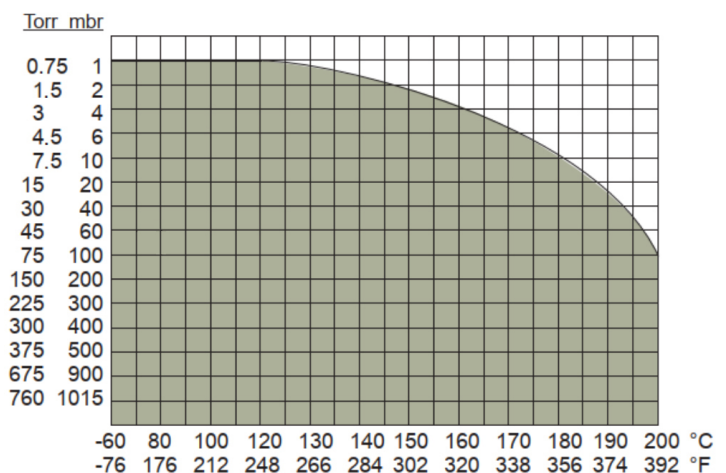


Figure 9: Vacuum-Temperature-Diagram

8 Maintenance

8.1 Schedule

Your valves should be checked and inspected on a consistent basis. If you have valves that are under high stress (temperature or pressure), you should monitor these valves more often than others. Pushing a valve to its limit will cause it to fail more quickly.

Make sure the enclosure is properly exhausted. Ensure that bolts, nuts, and other hardware are tight. If possible, open, and close the valves to make sure they aren't seized. If you find any leaks, they should be addressed immediately. Leaking valves are a leading cause of fugitive emissions. Leaks are easily noticed by seeing mineral build up or corrosion on the casing. You should also test valves that are typically static to ensure that the valve position indicator is providing an accurate reading.

8.2 Required replacement parts for maintenance

When ordering spare part, the following information should be provided to Flowserve.

- Product serial number.
- Product size.
- Part name – taken from the parts list/sectional drawing.
- Part number – taken from the parts list/sectional drawing.
- Number of the parts required.

The product size and serial number are provided on the nameplate.

To ensure continued satisfactory operation, replacement parts to the original design specification should be obtained from Flowserve. Any change to the original design specification (modification or use of non-standard part) will invalidate the product safety certification.

Table 10: Spare Parts (item n°)

DN [NPS]	AKH3.2M	AKH3.2F		Stem	AKH3.2M & AKH3.2F	
	Monobloc	Ball			Seat Rings	Packing (set)
	PFA lined	PFA lined	Ceramic [Al ₂ O ₃]	PFA lined	PTFE	PTFE / Viton
025 [1]	80-0077062	80-0000323	80-0002317	80-0082162	80-0011124	80-0078860
040 [1.5]	80-0077073	80-0000323	80-0002317	80-0082162	80-0011124	80-0078860
050 [2]	80-0077081	80-0000325	80-0002319	80-0072763	80-0011365	80-0078861
080 [3]	80-0072756	80-0000326	80-0002320	80-0072763	80-0063493	80-0078861
100 [4]	80-0072780	80-0000328	80-0002322	80-0072778	80-0076197	80-0078862
150 [6]	80-0072801	80-0000329	80-0002323	80-0072778	80-0076198	80-0078862

8.3 Disassembly & Assembly Procedure

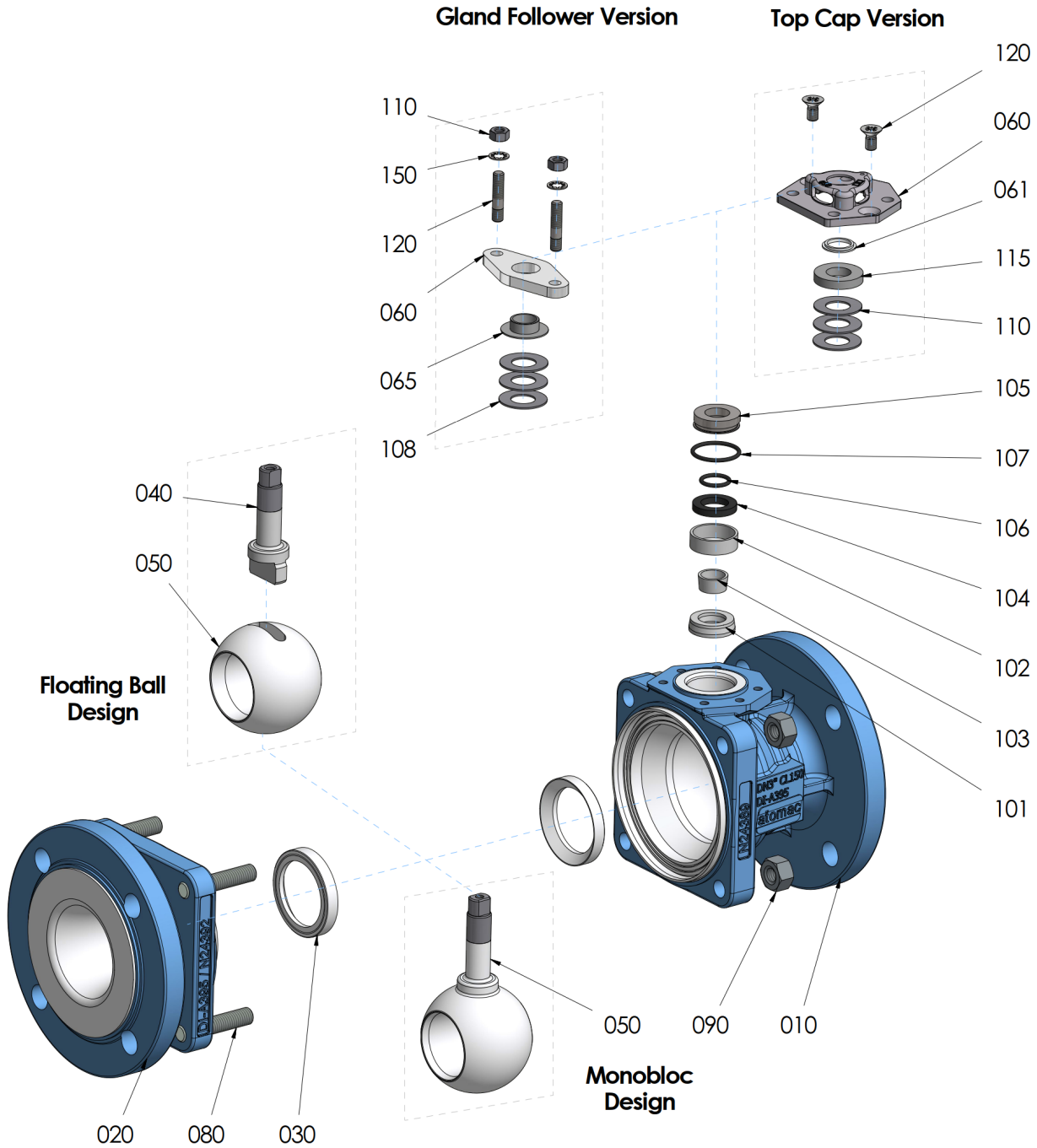


Figure 10: Exploded View

8.3.1 Disassembly Procedure – Floating Ball and Monobloc design

Table 11: Parts Description

Top Cap Version		Gland Follower Version	
Item	Part	Item	Part
010	Body	010	Body
020	Side Piece	020	Side Piece
030	Seat Ring	030	Seat Ring
040	Stem *	040	Stem *
050	Monobloc or Ball **	050	Monobloc or Ball **
060	Top Cap	060	Gland Follower
061	Bushing	065	Gland Insert
080	Stud Bolt	080	Stud Bolt
090	Hexagon Nut	090	Hexagon Nut
100	Packing Set	100	Packing Set
115	Distance Ring	108	Belleville Washer
110	Belleville Washer	110	Hexagon Nut
120	Countersunk Screw	120	Stud Bolt
		150	Serrated Lock Washer

* Not applicable for Monobloc Design

** Depends upon Monobloc / Floating Ball Design

For all jobs which are to be carried out on an installed valve, the works safety requirements and the general accident prevention instructions must be observed. Moreover, the general installation and maintenance instructions for Atomac fluorocarbon resin lined valves must be considered.

1. Prior to disassembly, the valve must be cleared of all fluid according to the before mentioned instructions. Particular care must be taken that during rinsing and draining of the piping, the valve is opened and closed repeatedly. These cycles (opening and closing) are to be repeated during draining of the piping. Only when following this procedure, is it ensured that all remaining pressure inside the body (stem guide and ball seats) is eliminated.
2. For disassembly of the valve, put body on a work bench with a soft cover (rubber mat).

Gland follower version: Remove hexagon nut (110) and lock washer (150). Disassemble gland follower (060), gland insert (065) and Belleville washer (108). If necessary, stud bolts (120) can also be removed now.

Top cap version: Remove countersunk screws (120), top cap (060), bushing (061), distance ring (115) and Belleville washers (110).
3. Open valve completely.
4. Remove body nuts (090) and separate side piece from body.
5. Remove first ball seat ring (030).
6. **Floating Ball Design:**
 - a. Turn ball (050) in closed position and push out of the body (010).
 - b. Remove stem (040) by pushing it down through the body (010). Care must be taken not to damage body liner.
 - c. Packing set (100) can be removed.

Monobloc Design:

- a. Remove packing set (100).
- b. Turn monobloc (050) in closed position and push it down through the body (010). Care must be taken not to damage body liner.

8.3.2 Assembly Procedure – Monobloc Design (AKH3.2M)

The general safety information [Section 2](#) must be observed.

1. **Top cap version:** Insert first seat ring (030) into body (010).
2. Insert Monobloc (050) from inside of body in such a way that the flat side is parallel to body longitudinal axis.
3. Insert packing set (100).
4. Install Belleville washers (110), distance ring (115), top cap (060) and bushing (061) on valve body using countersunk screws (120).
1. **Gland follower version:** Screw stud bolts (120) into body (010).
2. Insert first seat ring (030) into body (010).
3. Insert Monobloc (050) from inside of body in such a way that the flat side is parallel to body longitudinal axis.
4. Insert packing set (100) and Belleville washer (108). Install gland insert (065), gland follower (060), lock washers (150) and hexagon nuts (110).
5. Install second seat ring (030) on to monobloc (050).
6. Install bolts (080) into side piece (020).
7. Install side piece (020) on body (010) by using nuts (090) and tighten by crisscross method to recommended torques.

8.3.3 Assembly Procedure – Floating Ball Design (AKH3.2F)

The general safety information [Section 2](#) must be observed.

1. **Top cap version:** Insert stem (040) from inside of body in such a way that the flat side is parallel to body longitudinal axis.
2. Insert packing set (100).
3. Install Belleville washers (110), distance ring (115), top cap (060) and bushing (061) on valve body using countersunk screws (120).
1. **Gland follower version:** Screw stud bolts (120) into body (010).
2. Insert stem (040) from inside of body in such a way that the flat side is parallel to body longitudinal axis.
3. Insert packing set (100) and Belleville washer (108). Install gland insert (065), gland follower (060), lock washers (150) and hexagon nuts (110).
4. Insert first seat ring (030) into body (010).
5. Insert ball (050) to valve stem by pushing the ball in a downward motion through valve body.
6. Install second seat ring (030) on to ball (050).
7. Install bolts (080) into side piece (020).
8. Install side piece (020) on body (010) by using nuts (090) and tighten by crisscross method to recommended torques.

Table 12: Recommended tightening torques*

DN [NPS]	Tie rods		Screws [120]		Nuts [110/120]	
	Metal to Metal		Top Cap		Gland Follower	
	Nm	[lbf· ft]	Nm	[lbf· ft]	Nm	[lbf· ft]
025 [1]	26	[19.20]	10	[7.38]	4	[3.00]
040 [1.5]	26	[19.20]	10	[7.38]	4	[3.00]
050 [2]	60	[44.30]	24	[17.70]	7	[5.16]
080 [3]	88	[64.90]	24	[17.70]	7	[5.16]
100 [4]	86	[63.43]	48	[35.40]	8	[5.90]
150 [6]	143	[105.47]	48	[35.40]	8	[5.90]

* Maximum value

8.4 Maintenance procedure



Any work on the valve must be performed when all safety precautions have been observed and it is dismantled and flushed. It is imperative that the procedure for disassembly the valve is followed, as described in Chapter 8.3.

Before working on the equipment, take measures to prevent an uncontrolled start. Put a warning board on the starting device with the words:

“Valve under repair: do not start”

All repair work is to be performed by qualified personnel using the appropriate tools. Generally recognized practice in mechanical engineering is to be observed.

For the arrangement, designation and item numbers of all parts of the valve, see [Figure 10](#) & [Table 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 [Table 9](#) & [Table 12](#).

For each repair it is imperative to replace both seat rings and the packing with new seat rings and packing.

8.5 Post maintenance inspection

Leak test and a functional test has to be conducted according to API 598.

9 Decommissioning and Recommissioning

9.1 Decommissioning



Risk of severe injuries to the whole body!

Before loosening flanged connections, stuffing box unions or sealing plugs make sure that all connected lines are depressurized (zero bar) and cooled down to room temperature (20 °C). Dismantle the valve and separate the waste materials, using the material specifications in the table “Technical Documentation” as reference. For the disposal of the valve observe the pertinent legal regulations concerning waste disposal. For details on the conformity assessment according to the European Directives see our Declaration of Conformity or our Declaration of Manufacturer. The current Declaration of Conformity or Declaration of Manufacturer is available in the Internet under [Annex A: Declaration of Conformity](#). This declaration is no longer valid if modifications are made to the equipment without consultation.

9.2 Recommissioning

For Recommissioning see [Section 6](#)

11 Technical Data

Dimensions drawing see [3.4.1](#)

11.1 Weights

Table 13: Valve weight

DN [NPS]	Weight	
	Kg	[Lbs]
025 [1]	4.4	[9.7]
040 [1.5]	6.2	[13.7]
050 [2]	10.6	[23.4]
080 [3]	16.1	[35.5]
100 [4]	30.2	[66.6]
150 [6]	50.2	[110.7]

11.2 Nameplate

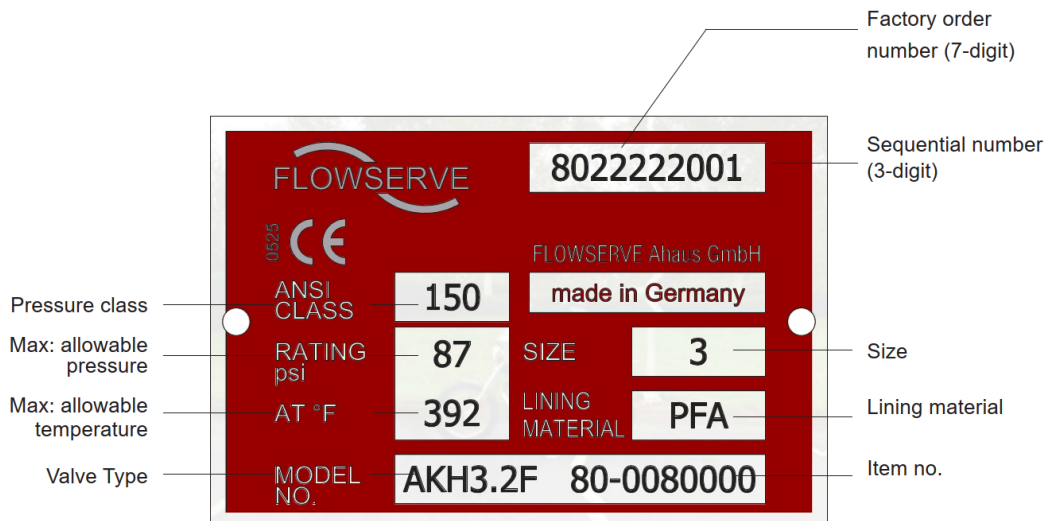


Figure 11: Example Nameplate – Global (Except USA)

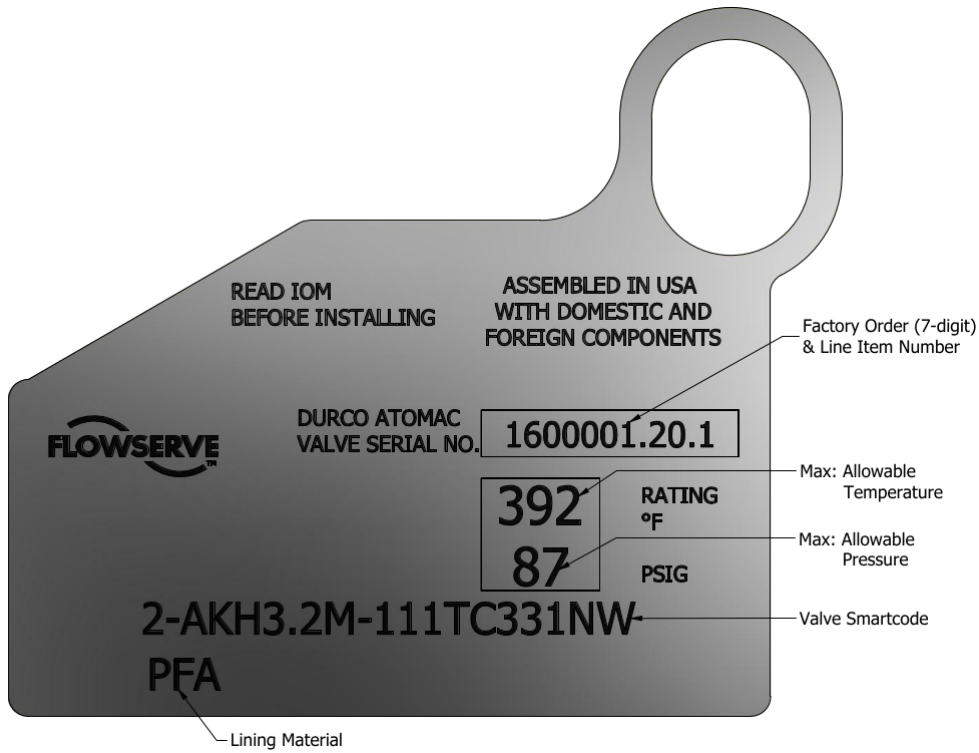


Figure 12: Example Nameplate – USA Only

11.3 Operating limits

Refer to [Section 7.1](#) for operating limits.

11.4 Torque requirements

11.4.1 Actuator Sizing Torques AKH3.2

Table 14: Actuator sizing torques

For clean and clear application

DN [NPS]	0 bar [0 psi] Δp		10 bar [150 psi] Δ p		19 bar [275 psi] Δp		MAST *	
	Nm	[lbf· ft]	Nm	[lbf· ft]	Nm	[lbf· ft]	Nm	[lbf· ft]
025 [1]	7	[5.2]	7	[5.2]	8	[5.9]	40	[29.5]
040 [1.5]	7	[5.2]	8	[5.9]	8	[5.9]	40	[29.5]
050 [2]	20	[14.8]	27	[19.9]	34	[25.1]	115	[85]
080 [3]	27	[20]	34	[25]	45	[33]	130	[96]
100 [4]	59	[44]	85	[63]	108	[80]	420	[310]
150 [6]	79	[59]	119	[88]	158	[117]	420	[310]

For dry and slurry application

DN [NPS]	0 bar [0 psi] Δp		10 bar [150 psi] Δp		19 bar [275 psi] Δp		MAST *	
	Nm	[lbf·ft]	Nm	[lbf·ft]	Nm	[lbf·ft]	Nm	[lbf·ft]
025 [1]	9	[6.6]	9	[6.6]	10	[7.4]	40	[29.5]
040 [1.5]	9	[6.6]	10	[7.4]	10	[7.4]	40	[29.5]
050 [2]	26	[19.2]	35	[25.8]	44	[32.5]	115	[85]
080 [3]	35	[26]	44	[33]	59	[44]	130	[96]
100 [4]	77	[57]	111	[82]	140	[104]	420	[310]
150 [6]	103	[76]	155	[115]	205	[151]	420	[310]

* The value is for standard material **DUPLEX STAINLESS STEEL / 1.4470 / ASTM A890 Gr. 4A**

The sizing torques are the factory recommended minimum Break-to-Open (BTO) or Break-to-Close (BTC) values required to fully operate the valve. Running torques are typically 35% below BTO and BTC torques. Actuators should be sized so that the minimum actuator output exceeds the published sizing torque. (These sizing torques are evaluated from experience to cover most applications).

Following process conditions may have an influence on the torques.

- Adjusting the packing.
- Pressure and Temperature of the process.
- Build-up of process products and/or by-products on the ball or seals.
- Lubricity of media.
- Permeation of media through PFA and/or PTFE.
- Frequency of operation.
- Erosion of ball and/or seat-ring.

For applications where valves are turned infrequently, an increased sizing torque may be selected. Process conditions above must be considered.

In situations where additional actuator torque is required to meet customer and process requirements, the user must consult [Table 14](#): actuator torques, the column with MAST-values (MAST Maximum Allowable Stem Torque). The MAST torque should not be exceeded in service. Beyond the MAST-value permanent deformation of liner is to be expected.

Following experienced safety factors can be taken:

Using Ceramic Balls: 1,15.

11.4.2 Recommended tightening torque

Recommended tightening torques (connection flange) see [Table 9](#).

Recommended tightening torques (tie rods / gland bolts) see [Table 12: Recommended tightening torques*Table 12](#).

Annex A: Declaration of Conformity

		Flow Control Division
<div style="border: 1px solid black; padding: 5px; display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;"> <p>DECLARATION OF CONFORMITY</p> <p>with the Pressure Equipment Directive 2014/68/EU</p> </div> <div style="font-size: 2em; font-weight: bold;">CE</div> </div>		
Herewith we, the manufacturer	<p>Flowserve Ahaus GmbH von-Braun-Strasse 19a D-48683 Ahaus Germany</p>	
declare the construction, manufacturing and testing of the pressure equipment is in conformance with the directive 2014/68/EU.		
Description of the pressure equipment:		
<u>Brand</u>	<u>Type</u>	<u>Description</u>
Atomac	AKH2, AKH2A, AKH3, AKH5, AKH6, AKH7, AKH8, AKH8A, AMP3, AtoStar	Lined Ball Valve
Atomac	ARK2	Lined Swing Check Valve
Atomac	ARV2, ARL2, AKR2, ARV/SG	Lined Ball / Piston Check Valve
Atomac	ASG, ASG3, ASG4, ASG/B	Lined Sight Glass
Atomac	ASF	Lined Strainer
Atomac	AtoPro	Lined Ball Sampling System
Durco	T4E1, T4E2, T4E3	Lined Plug Valve
Durco	BTL, BTW	Lined Butterfly Valve
Durco	Mach1, G411, G431, G4E	Sleeved Plug Valve
Conformity assessment modules:		
Module H – Category III – Fluid Group 1 Lloyd’s Certificate No. 50006 / 1		
Notified body that carried out the controls and monitors the quality system to 2014/68/EU:		
Lloyd’s Register Hamburg; Mönkebergstrasse 27; D-2095 Hamburg; Germany - No.: 0525		
Name and address of the notified body which carried out the inspection:		
not applicable		
Referenced harmonised standards used:		
EN 19 – EN 558 – EN 10213– EN 1563 – EN 1092 T1/T2 – EN 10204		
References of other technical standards, specifications and European Directives used:		
DIN EN 12266 T1/T2 – DIN EN12516 T2 – ISO 5211		
Authorised person for the manufacturer within the European Community:		
Date	Jun-06-2019	
Signature		
Name	Jörg-Christian Harnisch	
Title	Managing Director / Plant Manager	
Stamp	<p>FLOWSERVE FLOWSERVE AHAUS GmbH von - Braun - Str. 19a D-48683 Ahaus Postfach 11 02 D-48661 Ahaus Telefon 0 25 61 / 6 86 - 0 Fax 0 25 61 / 6 86 48</p>	

Figure 13: Declaration of Conformity PED 2014_68_EU, English

FLOWSERVE		Flow Control Division
KONFORMITÄTSERKLÄRUNG zur Druckgeräterichtlinie 2014/68/EU		
Wir als Hersteller,		Flowserve Ahaus GmbH von-Braun-Strasse 19a D-48683 Ahaus Germany
bestätigen das die Konstruktion, Herstellung und Endprüfung in Übereinstimmung mit der Richtlinie 2014/68/EU durchgeführt wurde.		
Beschreibung des Druckgerätes:		
<u>Produktreihe</u>	<u>Type</u>	<u>Beschreibung</u>
Atomac	AKH2, AKH2A, AKH3, AKH5, AKH6, AKH7, AKH8, AKH8A, AMP3, AtoStar	Ausgekleideter Kugelhahn
Atomac	ARK2	Ausgekleidete Rückschlagklappe
Atomac	ARV2, ARL2, AKR2, ARV/SG	Kugel / Kegel-Rückschlagventil
Atomac	ASG, ASG3, ASG4, ASG/B	Ausgekleidetes Schauglas
Atomac	ASF	Ausgekleideter Schmutzfänger
Atomac	AtoPro	Kugelhahn-Probenentnahmesystem
Durco	T4E1, T4E2, T4E3	Ausgekleideter Kùkenhahn
Durco	BTL, BTW	Ausgekleidete Klappe
Durco	Mach1, G411, G431, G4E	Kùkenhahn
Bestätigung des Moduls und der Kategorie:		
Module H – Category III – Fluid Group 1 Lloyd's Certificate No. 50006 / 1		
Kontrollierende, benannte Stelle für QM- und Richtlinie 2014/68/EU:		
Lloyd's Register Hamburg; Mönkebergstrasse 27; D-2095 Hamburg; Germany - No.: 0525		
Name der benannten Stelle für Endabnahmen:		
Nicht anwendbar		
Angewendete harmonisierter Standard und Normen:		
EN 19 – EN 558 – EN 10213– EN 1563 – EN 1092 T1/T2 – EN 10204		
Angewandte nationale Standard und Normen:		
DIN EN 12266 T1/T2 – DIN EN12516 T2 – ISO 5211		
Autorisierte Person für den Hersteller in der EU:		
Datum	06.06.2019	
Unterschrift		
Name	Jörg-Christian Hamisch	
Titel	Managing Director / Plant Manager	
	FLOWSERVE AHAUS GmbH von - Braun - Str. 19a D-48683 Ahaus Postfach 11 02 D-48661 Ahaus Tele on 0 25 61 1 6 86 - 0 Fax 0 25 61 1 6 86 48	

Figure 14: Declaration of Conformity PED 2014_68_EU, German




 Flowserve Ahaus GmbH	Consideration of Conformity Directive 2014/34/EU (ATEX)	Revision: 03 Datum: Jun-06-2019
<p>Flowserve Ahaus GmbH Von-Braun-Straße 19a D-48683 Ahaus Germany Tel.: +49 (0) 2561 686 – 100 E-Mail: FCD_Ahaus@flowserve.com</p> <p><u>Consideration of Conformity with the Directive 2014/34/EU (ATEX)</u></p> <p>The lined and metallic valves of the brands ATOMAC and DURCO produced by Flowserve Ahaus have been examined according to DIN EN 13463-1 to determine the danger of ignition. Potential sources of ignition coming from the valve itself have not been ascertained. This result was confirmed by the Bundesanstalt für Materialforschung und -prüfung (BAM – Federal Office for Material Research and Testing).</p> <p>The valves are intended for usage in areas where explosive atmosphere will be present from time to time. As no internal sources of ignition were determined, the following statements are valid:</p> <ul style="list-style-type: none"> • The valves do not fall within the scope of the Directive 2014/34/EU • A corresponding marking is not permissible <p>The specifications and instructions of the corresponding Installation and Operation Manuals have to be obeyed. We would like to point out that potential sources of ignition resulting from operating conditions and/or the used medium fall under the responsibility of the operating company. These potential dangers can be minimized or possibly excluded in cooperation with Flowserve with suitable modifications on the valve e.g. by using conductive lining materials to prevent static charging of the mediums during operation.</p> <div style="display: flex; justify-content: space-between; align-items: flex-end; margin-top: 20px;"> <div style="width: 40%;"> <p>Signature </p> <p>Name Jörg-Christian Harnisch</p> <p>Title Managing Director / Plant Manager</p> </div> <div style="width: 50%; text-align: right;">  FLOWSERVE AHAUS GmbH von - Braun - Str. 19a D-48683 Ahaus Postfach 11 02 D-48661 Ahaus Telefon 0 25 61 / 6 86 - 0 Fax 0 25 61 / 6 86 48 </div> </div>		

Figure 15: ATEX 2014_34_EU – EN_Rev01, English

 Flowserve Ahaus GmbH	Betrachtung der Konformität Richtlinie 2014/34/EU (ATEX)	Revision: 03 Datum: 06.06.2019
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Betrachtung der Konformität mit der Richtlinie 2014/34/EU (ATEX)

Die von Flowserve Ahaus produzierten Armaturen der Marken ATOMAC und DURCO, sowohl in ausgekleideter als auch in metallischer Ausführung, sind hinsichtlich einer Zündgefahr nach DIN EN 13463-1 bewertet worden. Hierbei wurden keine eigenen, von der Armatur selbst ausgehenden, potentiellen Zündquellen festgestellt. Eine Überprüfung dieser Bewertung bei der Bundesanstalt für Materialforschung und -prüfung (BAM) hat dieses Ergebnis bestätigt.

Die Armaturen sind für den Einsatz in Bereichen geeignet, in denen eine explosionsfähige Atmosphäre gelegentlich vorhanden ist. Da keine eigenen potentiellen Zündquellen gemäß der durchgeführten Bewertung vorhanden sind, gilt:

- Die Armaturen fallen nicht in den Anwendungsbereich der Richtlinie 2014/34/EU
- Eine entsprechende Kennzeichnung ist nicht zulässig.

Die Vorgaben und Hinweise zur Inbetriebnahme und Wartung aus den zugehörigen Betriebsanleitungen sind zu beachten. Wir weisen darauf hin, dass potentielle Zündquellen, die durch die Betriebsbedingungen und/oder die verwendeten Medien entstehen, der Verantwortung des Betreibers unterliegen. Derartige Gefahrenquellen können in Abstimmung mit Flowserve Ahaus durch geeignete Maßnahmen an der Armatur minimiert ggf. ausgeschlossen werden, z.B. durch den Einsatz leitfähiger Auskleidungen bei der Gefahr durch statische Aufladung des Mediums im Betrieb.


 Unterschrift
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Figure 16: ATEX 2014_34_EU – EN_Rev01, German

Annex B: Technical Terms, Acronyms, and Abbreviations

Table 15: Technical Terms, Acronyms, and Abbreviations

Designation	ISO unit abbreviation	USC unit abbreviation
Length	mm	in.
Mass	kg	lb.
Pressure	bar	psi
Temperature	°C	°F
Torque	Nm	lbf.ft / lbf.in
Size	DN (Diameter Nominal)	NPS (Nominal Pipe Size)
Rating	PN (Pressure Nominal)	CL (Pressure Class)
Maximum Allowable Stem Torque	MAST	MAST
Perfluoro alkoxy Alkane	PFA	PFA
Ball and Stem as one-Piece Unit	Monobloc	Monobloc

Annex C: Additional Sources of Information

- 1) Standard, ASME B16.10 – Face-to-Face and End-to-End Dimensions of Valves. American society of Mechanical Engineers.
- 2) Standard, ASME B16.34 – Valves – Flanged, Threaded and Welding End. American society of Mechanical Engineers.
- 3) Standard, ASME B16.5 – Pipe Flanges and Flanged Fittings. American society of Mechanical Engineers.
- 4) Standard, EN 10204, Metallic Products: Types of Inspection Documents. German Institute for Standardization e.V.
- 5) Standard, EN 1092, Flanges and their joints – Circular flanges for pipes, valves, fittings and accessories, PN designated. German Institute for Standardization e.V.
- 6) Standard, API 598, Valve Inspection and testing. American Petroleum Institute.
- 7) Standard, EN 558, Industrial Valves – Face-to-Face and Center-to-Face dimensions of metal valves for use in flanged pipe systems – PN and Class designated valves. German Institute for Standardization e.V.
- 8) Standard, ISO 5211, Industrial Valves – Part-turn actuator attachments. German Institute for Standardization e.V.
- 9) Directive 2014/68/EU of the European Parliament and of the Council of 15 May 2014 on the harmonization of the laws of the Member States relating to the making available on the market of pressure equipment Text with EEA relevance. European Union.

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