

Neles™ RotaryGlobe Rotary control valve Series ZX

Installation, maintenance and
operating instructions

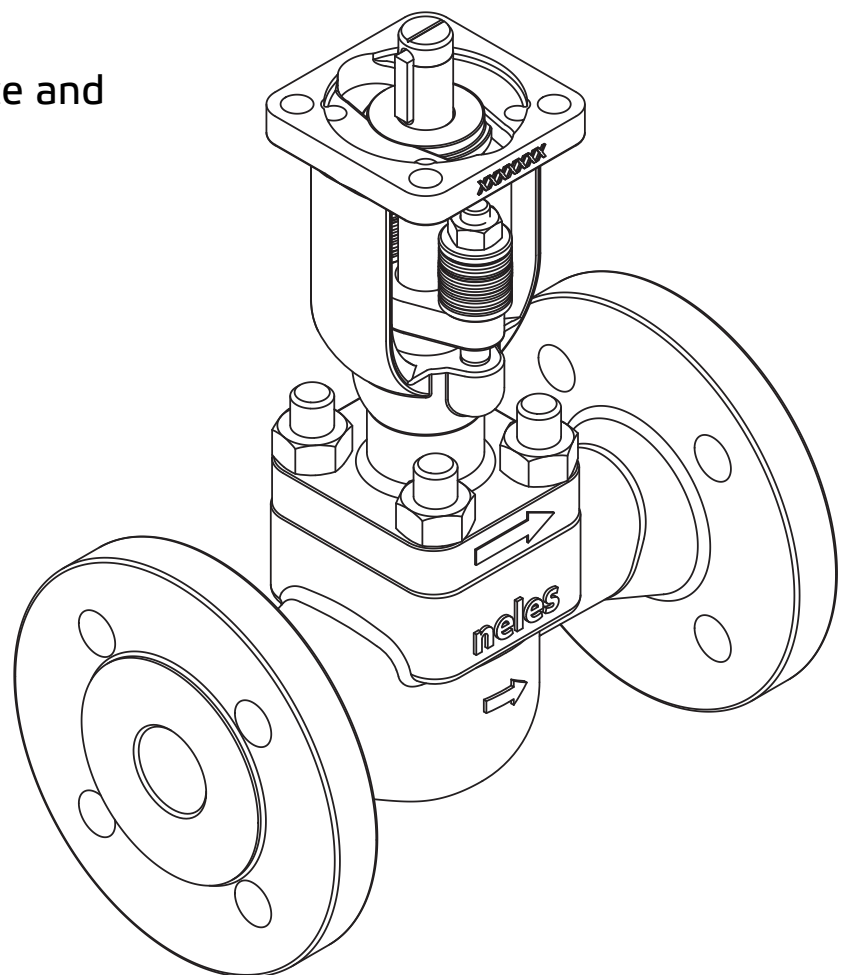


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Subject to change without notice.

All trademarks are property of their respective owners.



This product meets the requirements set by the Customs Union of the Republic of Belarus, the Republic of Kazakhstan and the Russian Federation.

READ THESE INSTRUCTIONS FIRST!

These instructions provide information about safe handling and operation of the valve.

If you require additional assistance, please contact the manufacturer or manufacturer's representative.

SAVE THESE INSTRUCTIONS!

Addresses and phone numbers are printed on the back cover.

1 GENERAL

1.1 Scope of the manual

This manual provides essential information on series ZX rotary globe valves. Actuators and positioners are only discussed briefly. Refer to the individual manuals for further information on their installation, operation and maintenance.

NOTE:

Selection and use of the valve in a specific application requires close consideration of detailed aspects. Due to the nature of the product, this manual cannot cover all the individual situations that may occur when the valve is used.

If you are uncertain about use of the valve or its suitability for your intended purpose, please contact Valmet for more information.

For valves in oxygen service, please see also the separate installation, maintenance and operating instructions for oxygen service (see Neles document id:10O270EN.pdf)

1.2 Valve construction

Series ZX valves are flanged rotary control valves. The valve cage and plug with stem is a module accessible through the bonnet opening of the body. Fluid flows up into the cage sealed between the body and the bonnet. The plug rotates inside the cage and seals against the cage when closed, without any additional parts. The flow opening of the cage and the V-shaped plug form the desired characteristic curve of the valve when operated at 0 to 100 %. Valve closes clockwise.

The axial bearing of the stem is located outside the valve body in the yoke of the bonnet. The bearing support prevents the stem from ejecting through the pressure boundary of the valve under pressure in the event of a structural failure of the stem-to-closure member.

The detailed structure is revealed by the type code shown on the valve identification plate. The type code is explained in Section 11.

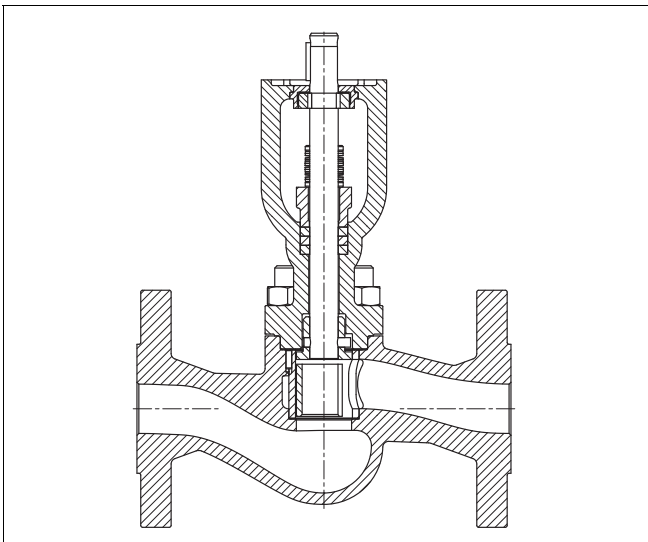


Fig. 1 Construction of a Neles RotaryGlobe

1.3 Valve markings

The body markings are: manufacturer's trademark, nominal size, pressure rating and material of the body. The valve has an identification plate attached to it, see Fig. 2.

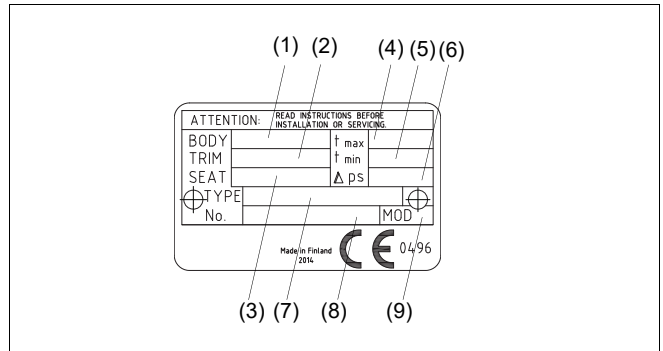


Fig. 2 Identification plate example

Markings on the identification plate:

1. Body and bonnet material
2. Trim material (plug)
3. Seat material (cage)
4. Maximum operating temperature
5. Minimum operating temperature
6. Maximum shut-off pressure differential
7. Type designation
8. Valve manufacturing parts list number
9. Model

1.4 Technical specifications

Face-to-face length: ANSI/ISA-75.08.01, ANSI/ISA-75.08.06 (Long)
 Body rating: Class 150 to Class 1500
 PN 10 to PN 100

Max. pressure differential: acc. to pressure class

Temperature range: -80° to +425 °C

Flow direction: indicated by an arrow on the body

Actuator mounting: ISO 5211 mounting interface

Shaft connection: drive by key

Dimensions: see Section 10

Weights: see Section 10

Note that the max. shut-off pressure is based on the mechanical maximum differential pressure at ambient temperature. You must always observe the fluid temperature when deciding on applicable pressure values. When selecting a valve you must also check the noise level, cavitation intensity, flow velocity, actuator load factor, etc. using Nelprof.

1.5 Valve approvals

The valve meets the fire safety requirements of API 607/ISO 10497-5.

1.6 CE marking

The valve meets the requirements of the European Directive 2014/68/EU relating to pressure equipment, and has been marked according to the Directive.

1.7 Recycling and disposal

Most valve parts can be recycled if sorted according to material. Most parts have a material marking. A material list is supplied with the valve. In addition, separate recycling and disposal instructions are available from the manufacturer. A valve can also be returned to the manufacturer for recycling and disposal for a fee.

1.8 Safety precautions

CAUTION:

Do not exceed the valve performance limitations!

Exceeding the limitations marked on the valve may cause damage and lead to uncontrolled pressure release. Damage or personal injury may result

CAUTION:

Do not dismantle the valve or remove it from the pipeline while the valve is pressurised!

Dismantling or removing a pressurised valve will result in uncontrolled pressure release. Always isolate the relevant part of the pipeline, release the pressure from the valve and remove the medium before dismantling the valve.

Be aware of the type of medium involved. Protect yourself and the environment from any harmful or poisonous substances. Make sure that no medium can enter the pipeline during valve maintenance.

Failure to do this may result in damage or personal injury.

CAUTION:

Beware of the plug movement!

Keep fingers, other parts of the body, tools and other objects out of the open flow port. Leave no foreign objects inside the pipeline. When the valve is actuated, the plug functions as a cutting device. Close and detach the actuator pressure supply pipeline for valve maintenance. Failure to do this may result in damage or personal injury.

CAUTION:

Protect yourself from noise!

The valve may produce noise in the pipeline. The noise level depends on the application. It can be measured or calculated using the Neles Nelprof software. Observe the relevant working environment regulations in terms of noise emission.

CAUTION:

Beware of a very cold or hot valve!

The valve body may be very cold or very hot during use. Protect yourself against cold injuries or burns.

CAUTION:

When handling the valve or the control valve assembly, take its weight into account!

Never lift the valve or control valve assembly by the positioner, the limit switch or their piping.

Place the lifting ropes securely around the valve body (see Fig. 3). Damage or personal injury may result from falling parts.

CAUTION:

Potential electrostatic charging hazard. Ensure the protection in the process.

1.9 Welding notes

WARNING:

Welding and/or grinding stainless steel and other alloys containing chromium metal may cause the release of hexavalent chromium. Hexavalent chromium(VI) or Cr(VI), is known to cause cancer. Be sure to use all appropriate personal protective equipment (PPE) when welding metals containing chromium.

NOTE:

A qualified welder must do the installation welding. The welder and welding procedure should be qualified in accordance with the ASME Boiler and Pressure Vessel Code Section IX or other applicable regulation.

CAUTION:

To prevent damage to the seat and seals, do not allow the temperature of the seat and body seal area to exceed 94 °C (200 °F). It is recommended that thermal chucks be used to check the temperature in these areas during welding.

CAUTION:

Ensure that any weld splatter does not fall onto the valve closing members eg. ball or seats. This may damage critical seating surfaces and cause leaks.

2 TRANSPORTATION, RECEPTION AND STORAGE

Check the valve and the accompanying devices for any damage that may have occurred during transport.

Store the valve carefully before installation, preferably indoors in a dry place.

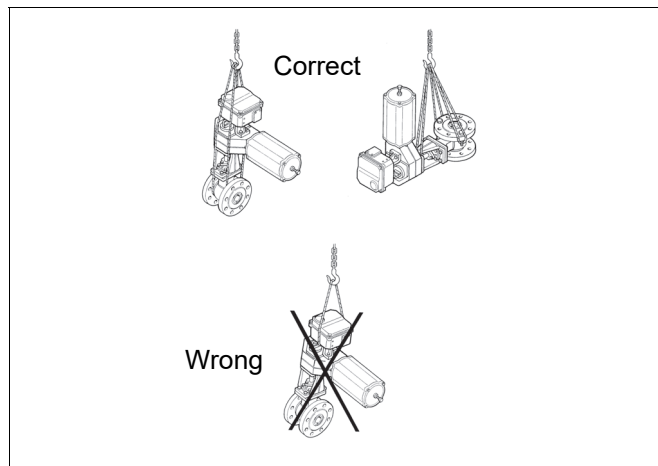


Fig. 3 Lifting the valve

Do not remove the flow port protectors until immediately before installation of the valve into the pipeline.

The valve is delivered in the closed position. A valve equipped with a spring-return actuator is delivered in the position determined by the spring.

3 VALVE INSTALLATION

3.1 General

Remove the flow port protectors and check that the valve is clean inside.

CAUTION:
When handling the valve or the control valve assembly, take its weight into account!

3.2 Installation into the pipeline

Make sure no foreign particles, such as sand or pieces of welding electrode, are in the pipeline, they may damage the sealing surfaces. The valve has an arrow indicating the flow direction. Install the valve in the pipeline so that the flow direction of the valve corresponds to the flow direction marked on the pipe. The mounting orientation of the valve does not restrict the operation of the valve, actuator or positioner. You should, however, avoid installing the valve so that the shaft points downwards as impurities in the fluid may enter and damage the gland packing. Any leak from the packing may then damage the actuator. See Fig. 4.

Choose flange gaskets according to the operating conditions.

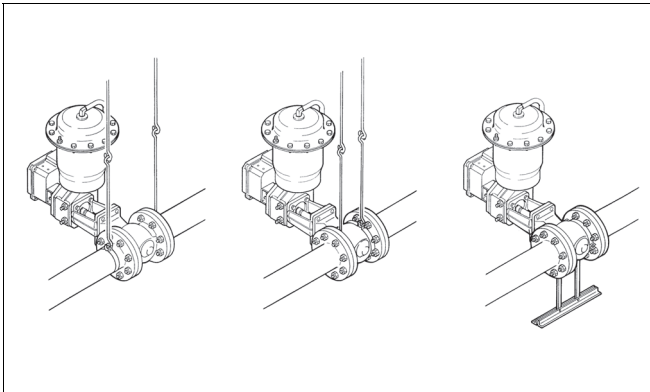


Fig. 4 Installing the control valve into pipeline using supports

Do not attempt to correct a pipeline misalignment by means of flange bolting.

Loads on the valve body from pipeline vibrations can be reduced by supporting the pipeline properly. Reduced vibration also increases the lifetime of the positioner.

Where necessary, you can support the valve by the body, using regular pipe clamps and supports. Do not fasten supports to the valve or flange bolting or to the actuator, see Fig. 4.

3.3 Control valve assembly

Check all joints, piping and cables.

Check that the actuator stop screws, positioner and limit switches are calibrated. Refer to their installation, maintenance and operating manuals.

3.4 Valve insulation

If necessary, the valve may be insulated. Insulation must not continue above the upper level of the valve body, see Figure 5.

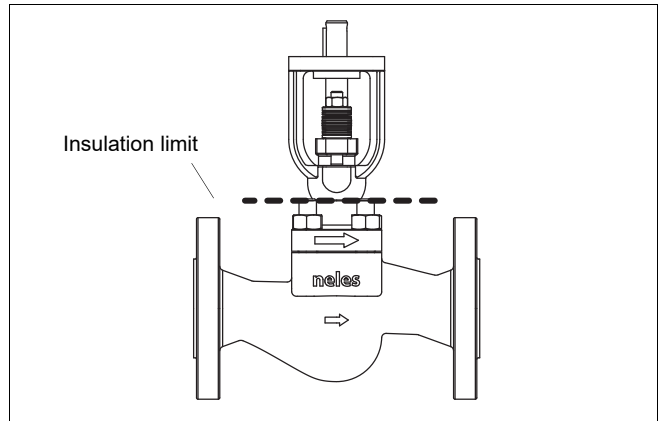


Fig. 5 Insulation of the valve

4 MAINTENANCE

CAUTION:
Observe the safety precautions mentioned in Section 1.8 before maintenance!

CAUTION:
When handling the valve or the valve package as a whole, bear in mind the weight of the valve or the entire package.

4.1 Maintenance general

Although Neles valves are designed to work under severe conditions, proper preventative maintenance can significantly help to prevent unplanned downtime and in real terms reduce the total cost of ownership. Valmet recommends inspecting the valves at least every five (5) years. The inspection and maintenance interval depends on the actual application and process condition.

The inspection and maintenance intervals can be specified together with your local Valmet experts. During this periodic inspection the parts detailed in the Spare Part Set should be replaced. Time in storage should be included in the inspection interval.

Maintenance can be performed as presented below. For maintenance assistance, please contact your local Valmet office. The part numbers in the text refer to the exploded view and to the parts list in Section 9, unless otherwise stated.

NOTE:
When sending goods to the manufacturer for repair, do not disassemble them. Clean the valve carefully and flush the valve internals. For safety reasons, inform the manufacturer of the type of medium used in the valve (include material safety datasheets (MSDS)).

NOTE:
In order to ensure safe and effective operation, always use original spare parts to make sure that the valve functions as intended.

NOTE:
For safety reasons, replace pressure retaining bolting if the threads are damaged, have been heated, stretched or corroded.

4.2 Gland packing adjustment

In the event of a packing leakage tighten the gland nuts (18) in ¼ turn steps each until the leakage is stopped. Do not tighten more than necessary.

4.3 Replacing the gland packing

CAUTION:

Do not dismantle the valve or remove it from the pipeline while the valve is pressurised!

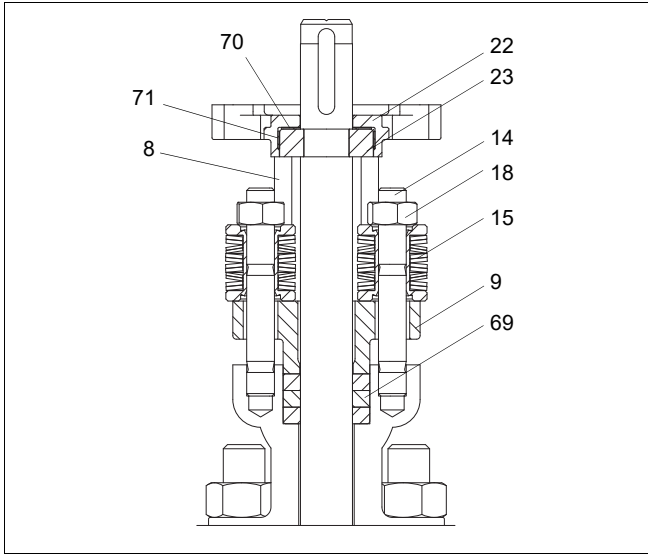


Fig. 6 Gland packing

- Make sure the valve is not pressurised.
- Remove the actuator from the valve shaft according to the instructions given in the actuator manual.
- Remove the key (10) from the drive shaft (5) and gland nuts (18) with the optional spring package (15).
- Remove the hexagon nuts (17) and lift the bonnet (8) with the shaft and plug (3) out of the body.
- Push the shaft until the thrust bearing (22) can be released from the groove of the shaft by lifting the support ring (23).
- Slide the support ring, sheet ring (70) and gland (9) away from the shaft.
- Draw the shaft out of the bonnet.
- Remove the old packing rings (69) using a pointed tool. Avoid damaging the sealing surfaces.
- Clean the packing ring counterbore.
- Mount the new packing rings one by one to the bore using the gland as a tool and mount the gland with hand-tightened nuts.
- Push the shaft through the bonnet halfway to the yoke, and check the keyway edges not to scratch the packing rings.
- Mount the sheet ring (70) and support ring (23) with the bearing strip (71) on the shaft. Mount the net side of the sheet ring and bearing strip against the thrust bearing. Hold the thrust bearing halves onto the groove of the shaft and slide the support ring onto the thrust bearing to lock it. Push the shaft into the upper position. Make sure the pin (6) head of the plug is in the recess of the bonnet.
- Fasten the gland with the nuts (18) and tighten them according to Table 1.

- Remove the old bonnet seal (66) from the body, clean the surfaces and install the new seal.
- **Make sure the pin (21) is in the hole between the cage (7) and the body before mounting the bonnet seal.**
Mount the bonnet with the shaft and plug onto the body with the plug in the closed position, so that the arrows on the body and on the bonnet point in the same direction. Tighten the nuts (17) in a crosswise pattern according to Table 1.

Screw	M8	M10	M12	M14	M16	M20	M30	M36
Torque Nm	15	30	75	120	170	330	1250	2150
ft lb	11	22	55	90	125	250	920	1580

- Tap the key (10) to the keyway.
- Check leakage when the valve is pressurised.

4.4 Replacing the trim

NOTE:

The trim set consists of the cage, pin, plug with shaft and seals. Do not mix the cage or plug between sets.

- Make sure the valve is not pressurised.
- Remove the actuator from the valve shaft according to the instructions given in the actuator manual.
- Remove the key (10) from the drive shaft (5) and gland nuts (18) with the optional spring package (15).
- Remove the bonnet nuts (17) and lift the bonnet (8) with the shaft and plug out of the body.
- Push the shaft until the thrust bearing (22) can be released from the groove of the shaft by lifting the support ring (23).
- Slide the support ring, sheet ring (70) and gland (9) away from the shaft.
- Draw the shaft out of the bonnet.
- Remove the cage (7) using the removal tool as in Figure 7, where necessary.

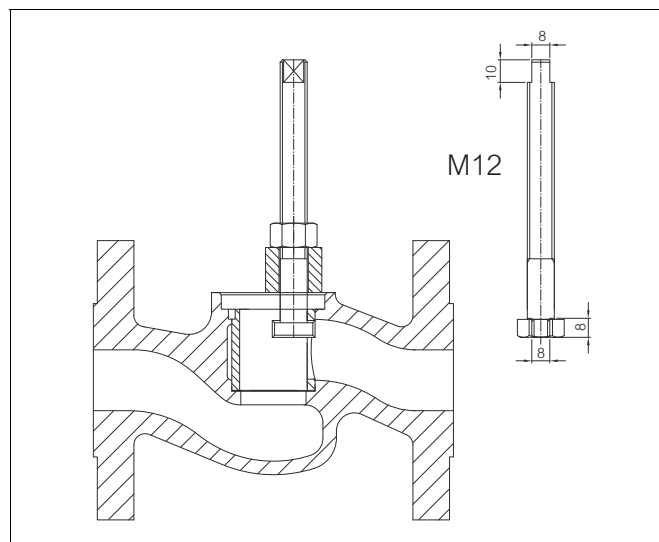


Fig. 7 Cage removal tool

- Remove the old cage seal ring (67) from the bottom of the body cavity and remains of the bonnet seal (66). Do not scratch the sealing surfaces.

- Clean the cage cavity of the body.
- Mount the new cage seal to the bottom of the cage cavity of the body.
- Mount the cage into the body so the pin hole sections are aligned.
- Mount the pin (21) into the hole, make sure the top is not above the bonnet seal surface.
- **Make sure the pin (21) is in the hole between the cage (7) and the body before mounting the bonnet seal.**
Mount the new bonnet seal.
- Push the shaft through the bonnet halfway to the yoke and check the keyway edges so as not to scratch the packing rings.
- Mount the sheet ring (70) and support ring (23) with the bearing strip (71) on the shaft. Mount the net side of the sheet ring and bearing strip against the thrust bearing. Hold the thrust bearing halves onto the groove of the shaft and slide the support ring onto the thrust bearing to lock it. Push the shaft to the upper position. Make sure the pin (6) head of the plug is in the recess of the bonnet.
- Fasten the gland (9) with the nuts (18) and tighten them according to the Table 1.
- Mount the bonnet with the shaft and plug to the body, plug in closed position, so the arrows on the body and on the bonnet point to the same direction. Tighten the nuts (17) in a cross-tightening manner according to the Table 1.
- Tap the key (10) to the keyway.

5 TESTING THE VALVE

CAUTION:
Pressure testing should be carried out using equipment conforming to the correct pressure class!

We recommend that the valve body is pressure-tested after the valve has been assembled.

The pressure test should be carried out in accordance with an applicable standard for the pressure rating. The valve must be in the open position during the test.

6 MOUNTING THE ACTUATOR

The actuator is attached to the valve via an ISO 5211 standard mounting interface. Several types of Neles actuators can be used with suitable couplings. Refer to the individual manuals for further information on their installation, maintenance and operation.

CAUTION:
Beware of the plug movement!

- Push the actuator carefully onto the valve shaft. Avoid forcing it, since this may damage the plug and cage. Tighten the screws of the interface, see Table 1.

- The cone coupling has an axial tightening screw in E-series actuators. Make sure it is tightened according to the instructions.

NOTE:

The B1J actuator (spring-to-close) may not be driven against the internal stop screw with the full spring torque. Adjust the limit by lowering the actuator pressure slowly. The counterpressure in the actuator limits the spring torque. Operate the B1JA (spring-to-open) actuator, or the double-acting B1C actuator with the lowest possible pressure against the internal stop. Excessive torque may damage the valve.

- Adjust the closed position of the trim by means of the actuator stop screw, see actuator instructions. The valve has an internal limit stop to find the closed position of the valve. Unscrew the closed position stop screw of the actuator until the rotation of the valve shaft stops or if the valve shaft does not rotate turn in the opposite direction until the shaft starts to rotate. Then adjust the stop screw by one half turn so the valve rotates in the open direction slightly. Lock the stop screw.
- Adjust the open position of the trim by means of the actuator stop screw. Drive the actuator 90 degrees from the closed position. Turn the stop screw to the contact and lock the stop screw.
- The stop screw threads through the cylinder heads of the actuator must be sealed using an appropriate non-hardening sealant, e.g. Loctite 225.

7 TOOLS

Removal of the actuator

In addition to standard tools, the following special tools might facilitate some phases of the work.

- Extractor. (ID-code table in actuator's IMO)
- cage removal tool, see Table 1.

Table 1 Cage removal tools series ZX

Product:	ID:
DN 0H-02 (12 mm - 50 mm)	H083121
DN 03 (80 mm)	H137439
DN 04 (100 mm)	H137435

Tools can be ordered from the manufacturer.

8 ORDERING SPARE PARTS

NOTE:

Always use original spare parts to make sure that the valve functions as intended.

When ordering spare parts, always include the following information:

- type code, sales order number, serial number
- number of the parts list, part number, name of the part and quantity required

This information can be found from the identification plate or documents.

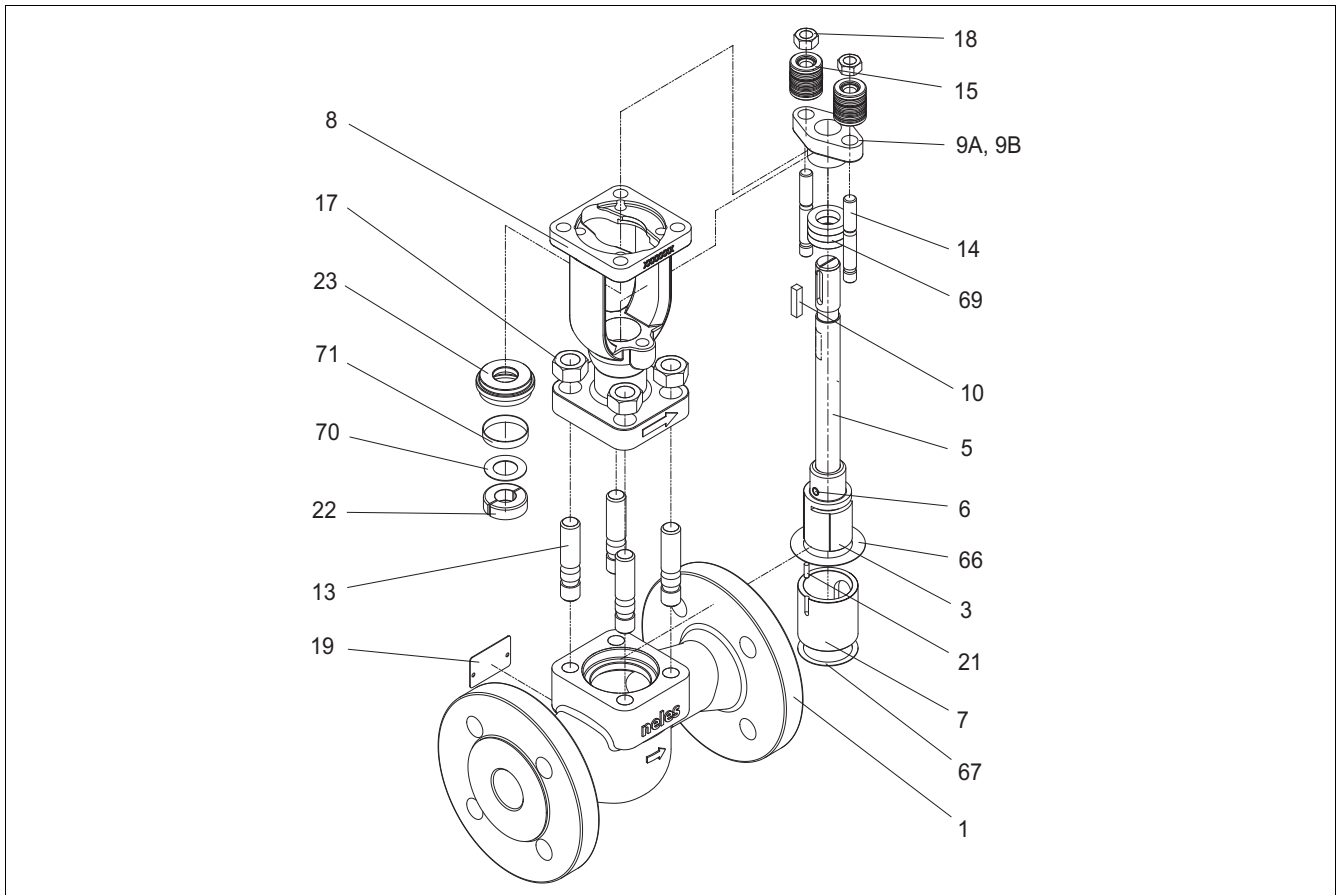
9 TROUBLE SHOOTING TABLE

The following Table 2 lists malfunctions that might occur after prolonged use.

Table 2 Trouble shooting

Symptom	Possible fault	Recommended action
Leakage through a closed valve	Wrong stop screw adjustment of the actuator	Adjust the stop screw for closed position
	Faulty zero setting of the positioner	Adjust the positioner
	Damaged seat	Replace seat
	Damaged closing member	Replace the closing member
Leakage through body joint	Closing member in a wrong position relative to the actuator	Select the correct keyway in the actuator
	Damaged gasket	Replace the gasket
Irregular valve movements	Loose body joint	Tighten the nuts or screws
	Actuator or positioner malfunction	Check the operation of the actuator and positioner
	Process medium accumulated on the sealing surface	Clean the sealing surfaces
	Closing member or seat damaged	Replace the closing member or seat
Gland packing leaking	Crystallizing medium has entered the bearing spaces	Flush the bearing spaces
	Gland packing worn or damaged	Replace the gland packing
	Loose packing	Tighten the packing nuts

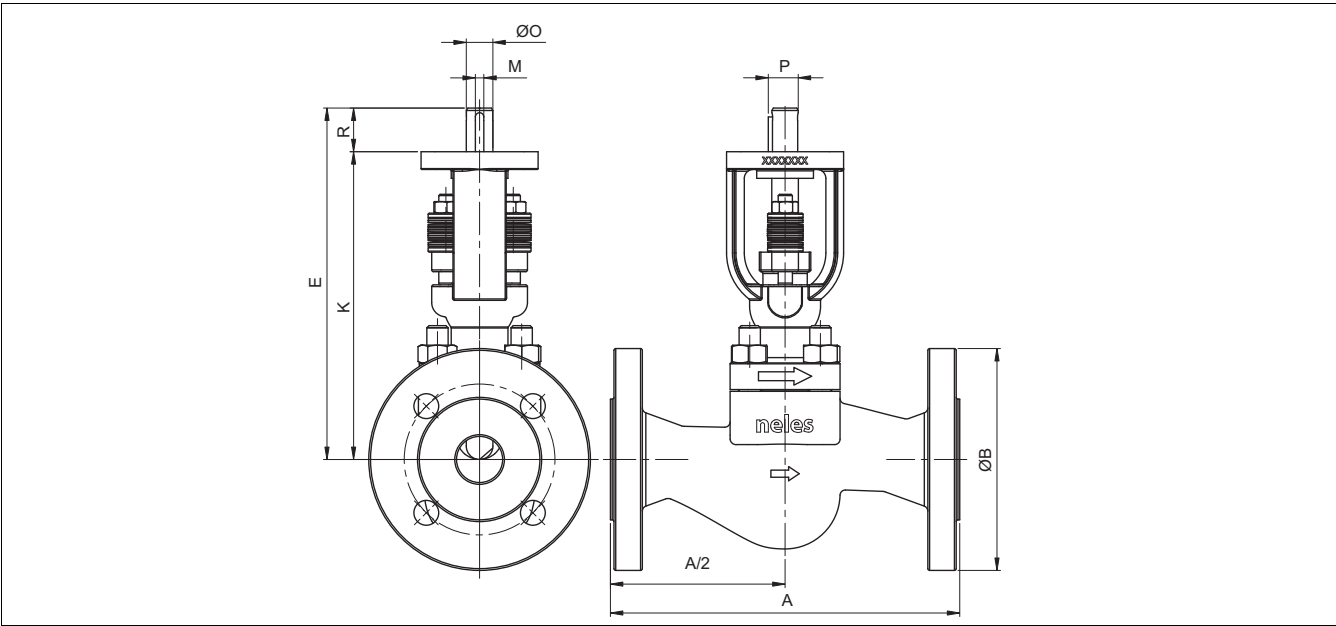
10 EXPLODED VIEW AND PARTS LIST



Item	Qty.	Description	Recommended spare part
1	1	Body	
3 *)	1	Plug	
5 *)	1	Shaft	
6 *)	1	Pin	
7	1	Valve cage	
8	1	Bonnet	
9A	1	Gland	
9B	1	Compression sleeve **)	
10	1	Key	
13	4	Stud	
14	2	Stud	
15	2	Disc spring set	
17	4	Hexagon nut	
18	2	Hexagon nut	
19	1	Identification plate	
21	1	Pin	X
22	2	Thrust bearing	
23	1	Support ring	
66	1	Sheet ring	X
67	1	Sheet ring	X
69	1	V-ring set	X
70	1	Sheet ring	X
71	1	Bearing strip	X

*) delivered as a set
 **) sizes 3" and 4" only

11 DIMENSIONS AND WEIGHTS



Class 150

TYPE	SIZE	ISO FLANGE	DIMENSIONS, mm (inch)								kg (lbs)
			A	ØB	E	K	M	ØO	P	R	
ZXC	1/2	F05, F07	184 (7.24)	90 (3.54)	199 (7.83)	174 (6.85)	4.76 (0.19)	15 (0.59)	17 (0.67)	25 (0.98)	4.6 (10.1)
	3/4	F05, F07	184 (7.24)	100 (3.94)	199 (7.83)	174 (6.85)	4.76 (0.19)	15 (0.59)	17 (0.67)	25 (0.98)	5.0 (11.0)
	1	F05, F07	184 (7.24)	110 (4.33)	199 (7.83)	174 (6.85)	4.76 (0.19)	15 (0.59)	17 (0.67)	25 (0.98)	5.4 (11.9)
	1 1/2	F07, F10	222 (8.74)	125 (4.92)	236 (9.29)	201 (7.91)	4.76 (0.19)	20 (0.79)	22.2 (0.87)	35 (1.38)	11.2 (24.7)
	2	F07, F10	254 (10.00)	150 (5.91)	236 (9.29)	201 (7.91)	4.76 (0.19)	20 (0.79)	22.2 (0.87)	35 (1.38)	13.2 (29.2)
	3	F10, F12	298 (11.73)	190 (7.48)	382 (15.03)	331 (13.02)	6.35 (0.25)	30 (1.18)	32.85 (1.29)	51 (2.01)	27.7 (60.8)
4	F12, F14	352 (13.85)	230 (9.05)	436 (17.16)	368 (14.48)	9.53 (0.37)	40 (1.57)	44.2 (1.74)	68 (2.68)	60.7 (133.3)	

Class 300

TYPE	SIZE	ISO FLANGE	DIMENSIONS, mm (inch)								kg (lbs)
			A	ØB	E	K	M	ØO	P	R	
ZXD ZXM	1/2	F05, F07	190 (7.48)	95 (3.74)	199 (7.83)	174 (6.85)	4.76 (0.19)	15 (0.59)	17 (0.67)	25 (0.98)	5.6 (12.3)
	3/4	F05, F07	194 (7.64)	115 (4.53)	199 (7.83)	174 (6.85)	4.76 (0.19)	15 (0.59)	17 (0.67)	25 (0.98)	7.5 (16.5)
	1	F05, F07	197 (7.76)	125 (4.92)	199 (7.83)	174 (6.85)	4.76 (0.19)	15 (0.59)	17 (0.67)	25 (0.98)	7.5 (16.5)
	1 1/2	F07, F10	235 (9.25)	155 (6.10)	236 (9.29)	201 (7.91)	4.76 (0.19)	20 (0.79)	22.2 (0.87)	35 (1.38)	15.3 (33.7)
	2	F07, F10	267 (10.51)	165 (6.50)	236 (9.29)	201 (7.91)	4.76 (0.19)	20 (0.79)	22.2 (0.87)	35 (1.38)	16.9 (37.2)
	3	F10, F12	316 (12.43)	210 (8.26)	382 (15.03)	331 (13.02)	6.35 (0.25)	30 (1.18)	32.85 (1.29)	51 (2.01)	32.6 (71.6)
4	F12, F14	368.2 (14.49)	255 (10.03)	436 (17.16)	368 (14.48)	9.53 (0.37)	40 (1.57)	44.2 (1.74)	68 (2.68)	68.7 (150.8)	

Class 600

TYPE	SIZE	ISO FLANGE	DIMENSIONS, mm (inch)								kg (lbs)
			A	ØB	E	K	M	ØO	P	R	
ZXD ZXM ZXP	1/2	F05, F07	203 (7.99)	95 (3.74)	199 (7.83)	174 (6.85)	4.76 (0.19)	15 (0.59)	17 (0.67)	25 (0.98)	5.7 (12.6)
	3/4	F05, F07	206 (8.11)	115 (4.53)	199 (7.83)	174 (6.85)	4.76 (0.19)	15 (0.59)	17 (0.67)	25 (0.98)	6.7 (14.8)
	1	F05, F07	210 (8.27)	125 (4.92)	199 (7.83)	174 (6.85)	4.76 (0.19)	15 (0.59)	17 (0.67)	25 (0.98)	7.6 (16.7)
	1 1/2	F07, F10	251 (9.88)	155 (6.10)	236 (9.29)	201 (7.91)	4.76 (0.19)	20 (0.79)	22.2 (0.87)	35 (1.38)	15.8 (34.8)
	2	F07, F10	286 (11.26)	165 (6.50)	236 (9.29)	201 (7.91)	4.76 (0.19)	20 (0.79)	22.2 (0.87)	35 (1.38)	18.0 (39.7)
	3	F10, F12	337 (13.26)	210 (8.26)	382 (15.03)	331 (13.02)	6.35 (0.25)	30 (1.18)	32.85 (1.29)	51 (2.01)	41.6 (91.3)
4	F12, F14	394 (15.5)	275 (10.82)	436 (17.16)	368 (14.48)	9.53 (0.37)	40 (1.57)	44.2 (1.74)	68 (2.68)	75.2 (165.1)	

Class 900

TYPE	SIZE	ISO FLANGE	DIMENSIONS, mm (inch)								kg (lbs)
			A	ØB	E	K	M	ØO	P	R	
ZXC	3	F12, F14	441 (17.36)	240 (9.45)	473 (18.62)	405 (15.94)	9.53 (0.38)	40 (1.57)	44.2 (1.74)	68 (2.68)	93.9 (207.0)
	4	F14, F16	511 (20.12)	290 (11.42)	567 (22.32)	477 (18.78)	12.70 (0.50)	50 (1.97)	55.4 (2.18)	90 (3.54)	159.6 (351.9)

Class 1500

TYPE	SIZE	ISO FLANGE	DIMENSIONS, mm (inch)								kg (lbs)
			A	ØB	E	K	M	ØO	P	R	
ZXH	1	F07, F10	292 (11.50)	150 (5.91)	264 (10.39)	229 (9.02)	4.76 (0.19)	20 (0.79)	22.2 (0.87)	35 (1.38)	23.5 (51.8)
	1 1/2	F10, F12	333 (13.11)	180 (7.09)	373 (14.69)	327 (12.87)	6.35 (0.25)	25 (0.98)	27.8 (1.09)	46 (1.81)	38.0 (83.7)
	2	F10, F12	375 (14.76)	215 (8.46)	373 (14.69)	327 (12.87)	6.35 (0.25)	25 (0.98)	27.8 (1.09)	46 (1.81)	49.2 (108.4)
	3	F12, F14	460 (18.11)	265 (10.43)	473 (18.62)	405 (15.94)	9.53 (0.38)	40 (1.57)	44.2 (1.74)	68 (2.68)	104.9 (231.3)
	4	F14, F16	530 (20.87)	310 (12.20)	567 (22.32)	477 (18.78)	12.70 (0.50)	50 (1.97)	55.4 (2.18)	90 (3.54)	174.1 (385.5)

Actuator selection and maximum differential pressures

Safety factor 1.1		Shut-off pressure, bar																				
		Supply pressure 4 barG min																				
		B1C6			B1C9			B1C11			B1C13			B1C17			B1C20			B1C25		
Actuator Class	150-600	900	1500	150-600	900	1500	150-600	900	1500	150-600	900	1500	150-600	900	1500	150-600	900	1500	150-600	900	1500	
015 / 1/2"	<100	N/A			N/A			N/A			N/A			N/A			N/A			N/A		
020 / 3/4"	<100	N/A			N/A			N/A			N/A			N/A			N/A			N/A		
025 / 1"	<100	N/A	<250		N/A			N/A			N/A			N/A			N/A			N/A		
040 / 1-1/2"	<70	N/A		<100	N/A			N/A	<245			N/A	<250			N/A			N/A		N/A	
050 / 2"	<70	N/A		<100	N/A			N/A	<245			N/A	<250			N/A			N/A		N/A	
080 / 3"							<85				<100	<125	<95		<150	<250						
100 / 4"											<65			<100	<80	<60		<110	<90		<150	<230

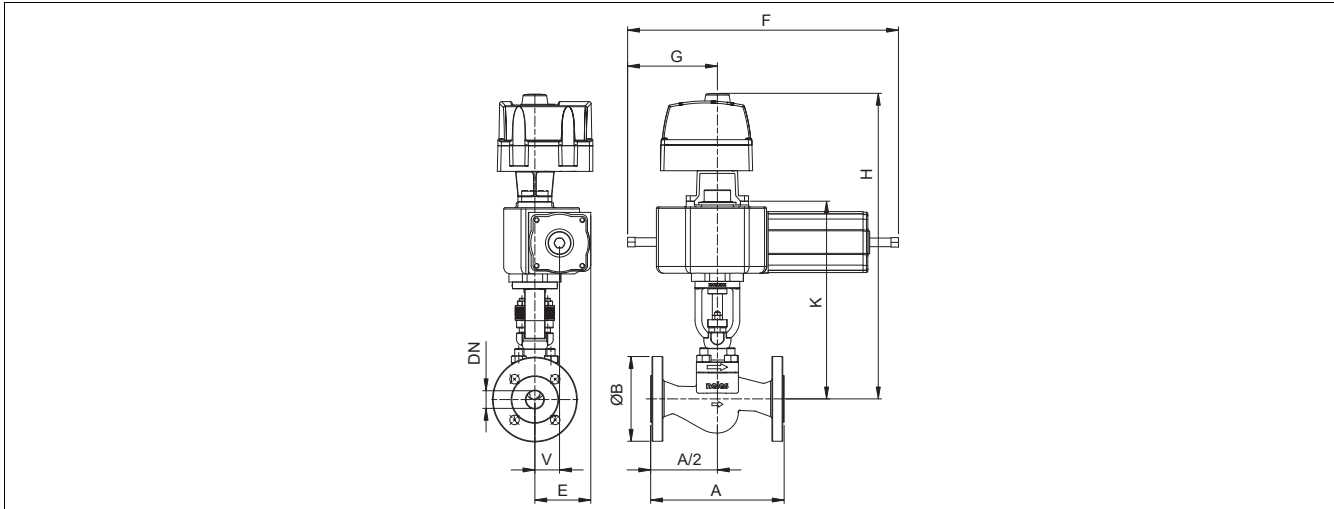
Actuator Class		Shut-off pressure, bar																				
		Supply pressure 3.5 barG min																				
		B1J6			B1J8			B1J10			B1J12			B1J16			B1J20			B1J25		
Size (mm/inch)	150-600	900	1500	150-600	900	1500	150-600	900	1500	150-600	900	1500	150-600	900	1500	150-600	900	1500	150-600	900	1500	
015 / 1/2"	<100	N/A		<100	N/A			N/A			N/A			N/A			N/A			N/A		
020 / 3/4"	<100	N/A		<100	N/A			N/A			N/A			N/A			N/A			N/A		
025 / 1"	<100	N/A	<220	<100	N/A	<250		N/A			N/A			N/A			N/A			N/A		
040 / 1-1/2"	<60	N/A		<75	N/A		<100	N/A	<155			N/A	<250			N/A			N/A		N/A	
050 / 2"	<60	N/A		<75	N/A		<100	N/A	<155			N/A	<250			N/A			N/A		N/A	
080 / 3"							<45				<100	<70	<40		<150	<150			<250			
100 / 4"											<35			<90	<45	<25	<100	<120	<100		<150	<250

Actuator Class		Shut-off pressure, bar														
		Supply pressure 3.5 barG min														
		Spring to close														
Size (mm/inch)"	QPX1C			QPX2C			QPX3C			QPX4C			QPX5C			
	150-600	900	1500	150-600	900	1500	150-600	900	1500	150-600	900	1500	150-600	900	1500	
015 / 1/2"	<100	N/A			N/A			N/A			N/A			N/A		
020 / 3/4"	<100	N/A			N/A			N/A			N/A			N/A		
025 / 1"	<100	N/A			N/A	<250		N/A			N/A			N/A		
040 / 1-1/2"		N/A		<80	N/A		<100	N/A			N/A	<250		N/A		
050 / 2"		N/A		<80	N/A		<100	N/A			N/A	<250		N/A		
080 / 3"											<100				<150	<145
100 / 4"															<85	

Actuator Class		Shut-off pressure, bar																			
		Supply pressure 3.5 barG min																			
		B1JA6			B1JA8			B1JA10			B1JA12			B1JA16			B1JA20			B1JA25	
Size (mm/inch)	150-600	900	1500	150-600	900	1500	150-600	900	1500	150-600	900	1500	150-600	900	1500	150-600	900	1500	150-600	900	1500
015 / 1/2"	<100			<100	N/A			N/A			N/A			N/A			N/A			N/A	
020 / 3/4"	<100			<100	N/A			N/A			N/A			N/A			N/A			N/A	
025 / 1"	<100		<120	<100	N/A	<180		N/A	<250		N/A			N/A			N/A			N/A	
040 / 1-1/2"	<30			<50	N/A		<100	N/A	<110		N/A	<225		N/A			N/A			N/A	
050 / 2"	<30			<50	N/A		<100	N/A	<110		N/A	<225		N/A			N/A			N/A	
080 / 3"							<25			<75	<30		<100	<110	<80	<150	<245				
100 / 4"										<20			<55	<20		<100	<80	<60		<150	<170

Actuator Class		Shut-off pressure, bar														
		Supply pressure 3.5 barG min														
		Spring to open														
Size (mm/inch)	QPX1C			QPX2C			QPX3C			QPX4C			QPX5C			
	150-600	900	1500	150-600	900	1500	150-600	900	1500	150-600	900	1500	150-600	900	1500	
015 / 1/2"	<100	N/A			N/A			N/A			N/A			N/A		
020 / 3/4"	<100	N/A			N/A			N/A			N/A			N/A		
025 / 1"	<65	N/A		<100	N/A	<135		N/A	<250		N/A			N/A		
040 / 1-1/2"		N/A		<35	N/A		<80	N/A		<100	N/A	<165		N/A	<250	
050 / 2"		N/A		<35	N/A		<80	N/A		<100	N/A	<165		N/A	<250	
080 / 3"										<50			<100	<70	<40	
100 / 4"													<35			

ZX-B1C-ND9100



Class 150

Type	SIZE	ACTUATOR	ISO FLANGE	DIMENSIONS, mm (inch)								kg (lbs)
				A	ØB	E	F	G	H	K	V	
ZXC	1/2	B1C6	F07	184 (7.24)	90 (3.54)	83 (3.27)	395 (15.55)	125 (4.92)	451 (17.76)	292 (11.50)	36 (1.42)	11.1 (24.6)
	3/4	B1C6	F07	184 (7.24)	100 (3.94)	83 (3.27)	395 (15.55)	125 (4.92)	451 (17.76)	292 (11.50)	36 (1.42)	11.5 (25.3)
	1	B1C6	F07	184 (7.24)	110 (4.33)	83 (3.27)	395 (15.55)	125 (4.92)	451 (17.76)	292 (11.50)	36 (1.42)	11.9 (26.2)
	1 1/2	B1C6	F07	222 (8.74)	125 (4.92)	83 (3.27)	395 (15.55)	125 (4.92)	478 (18.82)	319 (12.56)	36 (1.42)	17.7 (39.0)
	2	B1C6	F07	254 (10.00)	150 (5.91)	83 (3.27)	395 (15.55)	125 (4.92)	478 (18.82)	319 (12.56)	36 (1.42)	19.7 (43.3)
	3	B1C11	F10	298 (11.73)	190 (7.48)	124 (4.88)	535 (21.06)	160 (6.30)	644 (25.35)	485 (19.10)	51 (2.01)	46 (101.2)
		B1C13	F12	352 (13.85)	230 (9.05)	155 (6.10)	640 (25.20)	195 (7.68)	690 (27.17)	521 (20.51)	65 (2.56)	61.2 (134.6)
	4	B1C13	F12	352 (13.85)	230 (9.05)	155 (6.10)	640 (25.20)	195 (7.68)	727 (28.62)	558 (21.97)	65 (2.56)	94.2 (207.2)
		B1C17	F14	352 (13.85)	230 (9.05)	186 (7.32)	785 (30.91)	230 (9.06)	756 (29.76)	590 (23.23)	78 (3.07)	121.7 (267.7)

Class 300

Type	SIZE	ACTUATOR	ISO FLANGE	DIMENSIONS, mm (inch)								kg (lbs)
				A	ØB	E	F	G	H	K	V	
ZXD, ZXM	1/2	B1C6	F07	190 (7.48)	95 (3.74)	83 (3.27)	395 (15.55)	125 (4.92)	451 (17.76)	292 (11.50)	36 (1.42)	12.1 (26.7)
	3/4	B1C6	F07	194 (7.64)	115 (4.53)	83 (3.27)	395 (15.55)	125 (4.92)	451 (17.76)	292 (11.50)	36 (1.42)	13.3 (29.3)
	1	B1C6	F07	197 (7.76)	125 (4.92)	83 (3.27)	395 (15.55)	125 (4.92)	451 (17.76)	292 (11.50)	36 (1.42)	14.0 (30.8)
	1 1/2	B1C6	F07	235 (9.25)	155 (6.10)	83 (3.27)	395 (15.55)	125 (4.92)	478 (18.82)	319 (12.56)	36 (1.42)	21.5 (47.4)
	2	B1C6	F07	267 (10.51)	165 (6.50)	83 (3.27)	395 (15.55)	125 (4.92)	478 (18.82)	319 (12.56)	36 (1.42)	23.4 (51.6)
	3	B1C11	F10	316 (12.43)	210 (8.26)	124 (4.88)	535 (21.06)	160 (6.30)	644 (25.35)	485 (19.10)	51 (2.01)	50.6 (111.3)
		B1C13	F12	316 (12.43)	210 (8.26)	155 (6.10)	640 (25.20)	195 (7.68)	690 (27.17)	521 (20.51)	65 (2.56)	66.1 (145.4)
	4	B1C13	F12	368.2 (14.49)	255 (10.03)	155 (6.10)	640 (25.20)	195 (7.68)	727 (28.62)	558 (21.97)	65 (2.56)	102.2 (224.8)
B1C17		F14	368.2 (14.49)	255 (10.03)	186 (7.32)	785 (30.91)	230 (9.06)	756 (29.76)	590 (23.23)	78 (3.07)	129.7 (285.3)	

Class 600

Type	SIZE	ACTUATOR	ISO FLANGE	DIMENSIONS, mm (inch)								kg (lbs)
				A	ØB	E	F	G	H	K	V	
ZXF, ZXP	1/2	B1C6	F07	203 (7.99)	95 (3.74)	83 (3.27)	395 (15.55)	125 (4.92)	451 (17.76)	292 (11.50)	36 (1.42)	12.2 (26.9)
	3/4	B1C6	F07	206 (8.11)	115 (4.53)	83 (3.27)	395 (15.55)	125 (4.92)	451 (17.76)	292 (11.50)	36 (1.42)	13.2 (29.1)
	1	B1C6	F07	210 (8.27)	125 (4.92)	83 (3.27)	395 (15.55)	125 (4.92)	451 (17.76)	292 (11.50)	36 (1.42)	14.1 (31.1)
	1 1/2	B1C6	F07	251 (9.88)	155 (6.10)	83 (3.27)	395 (15.55)	125 (4.92)	478 (18.82)	319 (12.56)	36 (1.42)	22.3 (49.1)
		B1C9	F07	251 (9.88)	155 (6.10)	102 (4.02)	450 (17.72)	135 (5.31)	480 (18.90)	321 (12.64)	43 (1.69)	27.7 (61.1)
	2	B1C6	F07	286 (11.26)	165 (6.50)	83 (3.27)	395 (15.55)	125 (4.92)	478 (18.82)	319 (12.56)	36 (1.42)	24.5 (54.0)
		B1C9	F07	286 (11.26)	165 (6.50)	102 (4.02)	450 (17.72)	135 (5.31)	480 (18.90)	321 (12.64)	43 (1.69)	29.9 (65.9)
	3	B1C11	F10	337 (13.26)	210 (8.26)	124 (4.88)	535 (21.06)	160 (6.30)	644 (25.35)	485 (19.10)	51 (2.01)	59.9 (131.8)
		B1C13	F12	337 (13.26)	210 (8.26)	155 (6.10)	640 (25.20)	195 (7.68)	690 (27.17)	521 (20.51)	65 (2.56)	75.1 (165.2)
	4	B1C13	F12	394 (15.5)	275 (10.82)	155 (6.10)	640 (25.20)	195 (7.68)	727 (28.62)	558 (21.97)	65 (2.56)	108.7 (239.1)
		B1C17	F14	394 (15.5)	275 (10.82)	186 (7.32)	785 (30.91)	230 (9.06)	756 (29.76)	590 (23.23)	78 (3.07)	136.2 (299.6)

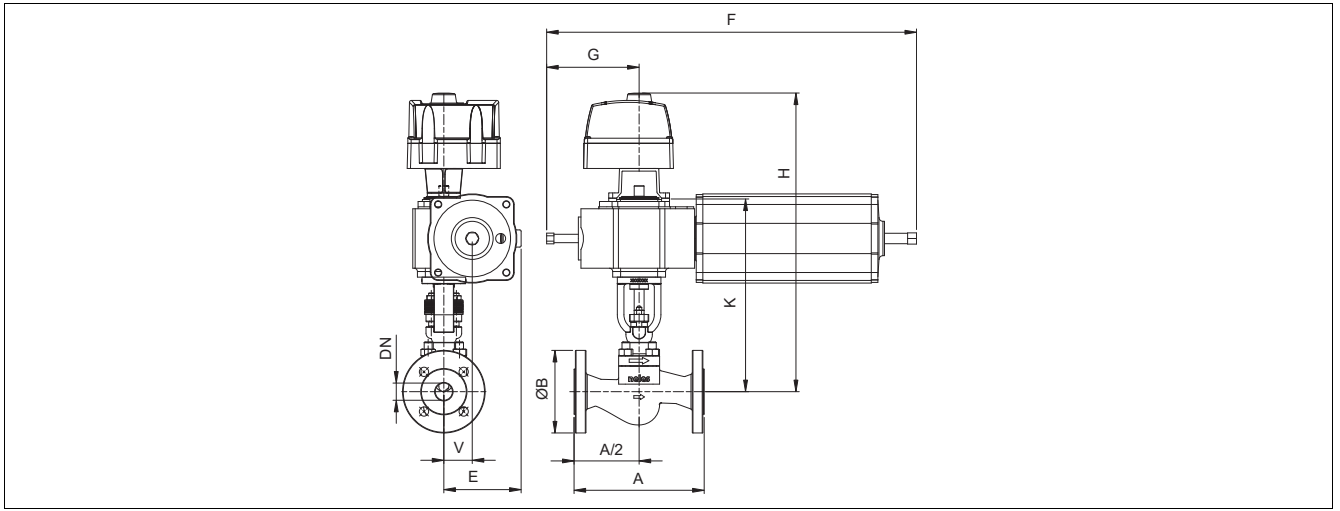
Class 900

Type	SIZE	ACTUATOR	ISO FLANGE	DIMENSIONS, mm (inch)								kg (lbs)
				A	ØB	E	F	G	H	K	V	
ZXC	3	B1C13	F12	441 (17.36)	240 (9.45)	155 (6.10)	640 (25.20)	195 (7.68)	746 (29.37)	580 (22.83)	65 (2.56)	131.9 (290.8)
		B1C17	F14	441 (17.36)	240 (9.45)	186 (7.32)	785 (30.91)	230 (9.06)	778 (30.63)	612 (24.09)	78 (3.07)	154.9 (341.5)
		B1C20	F14	441 (17.36)	240 (9.45)	205 (8.07)	880 (34.65)	290 (11.42)	811 (31.93)	645 (25.39)	97 (3.82)	173.9 (383.4)
	4	B1C17	F14	511 (20.12)	290 (11.42)	186 (7.32)	785 (30.91)	230 (9.06)	850 (33.46)	684 (26.93)	78 (3.07)	220.6 (486.3)
		B1C20	F14	511 (20.12)	290 (11.42)	205 (8.07)	880 (34.65)	290 (11.42)	883 (34.76)	717 (28.23)	97 (3.82)	239.6 (528.2)
		B1C25	F16	511 (20.12)	290 (11.42)	254 (10.00)	1075 (42.32)	350 (13.78)	943 (37.13)	777 (30.59)	121 (4.76)	297.6 (656.1)

Class 1500

Type	SIZE	ACTUATOR	ISO FLANGE	DIMENSIONS, mm (inch)								kg (lbs)
				A	ØB	E	F	G	H	K	V	
ZXH	1	B1C6	F07	292 (11.50)	150 (5.91)	83 (3.27)	395 (15.55)	125 (4.92)	506 (19.92)	347 (13.66)	36 (1.42)	30.0 (66.1)
		B1C9	F07	292 (11.50)	150 (5.91)	102 (4.02)	450 (17.72)	135 (5.31)	508 (20.00)	349 (13.74)	43 (1.69)	35.4 (78.0)
	1 1/2	B1C11	F10	333 (13.11)	180 (7.09)	124 (4.88)	535 (21.06)	160 (6.30)	620 (24.41)	461 (18.15)	51 (2.01)	56.3 (124.1)
		B1C13	F12	333 (13.11)	180 (7.09)	155 (6.10)	640 (25.20)	195 (7.68)	656 (25.83)	487 (19.17)	65 (2.56)	71.5 (157.6)
	2	B1C11	F10	375 (14.76)	215 (8.46)	124 (4.88)	535 (21.06)	160 (6.30)	620 (24.41)	461 (18.15)	51 (2.01)	67.5 (148.7)
		B1C13	F12	375 (14.76)	215 (8.46)	155 (6.10)	640 (25.20)	195 (7.68)	656 (25.83)	487 (19.17)	65 (2.56)	82.6 (182.1)
	3	B1C13	F12	460 (18.11)	265 (10.43)	155 (6.10)	640 (25.20)	195 (7.68)	746 (29.37)	580 (22.83)	65 (2.56)	142.9 (315.0)
		B1C17	F14	460 (18.11)	265 (10.43)	186 (7.32)	785 (30.91)	230 (9.06)	778 (30.63)	612 (24.09)	78 (3.07)	165.9 (365.7)
		B1C20	F14	460 (18.11)	265 (10.43)	205 (8.07)	880 (34.65)	290 (11.42)	811 (31.93)	645 (25.39)	97 (3.82)	184.9 (407.6)
	4	B1C17	F14	530 (20.87)	310 (12.20)	186 (7.32)	785 (30.91)	230 (9.06)	850 (33.46)	684 (26.93)	78 (3.07)	235.1 (518.3)
B1C20		F14	530 (20.87)	310 (12.20)	205 (8.07)	880 (34.65)	290 (11.42)	883 (34.76)	717 (28.23)	97 (3.82)	254.1 (560.2)	
B1C25		F16	530 (20.87)	310 (12.20)	254 (10.00)	1075 (42.32)	350 (13.78)	943 (37.13)	777 (30.59)	121 (4.76)	312.1 (688.1)	

ZX-B1J-ND9100



Class 150

TYPE	SIZE	ACTUATOR	ISO FLANGE	Dimensions, mm (inch)								kg (lbs)	
				A	ØB	E	F	G	H	K	V		
ZXC	1/2	B1J_6	F07	184 (7.24)	90 (3.54)	100 (3.94)	485 (19.01)	118 (4.65)	451 (17.76)	292 (11.50)	36 (1.42)	19.9 (43.9)	
	3/4	B1J_6	F07	184 (7.24)	100 (3.94)	100 (3.94)	485 (19.01)	118 (4.65)	451 (17.76)	292 (11.50)	36 (1.42)	20.3 (44.8)	
	1	B1J_6	F07	184 (7.24)	110 (4.33)	100 (3.94)	485 (19.01)	118 (4.65)	451 (17.76)	292 (11.50)	36 (1.42)	20.7 (45.6)	
	1 1/2	B1J_6	F07	222 (8.74)	125 (4.92)	100 (3.94)	485 (19.01)	118 (4.65)	478 (18.82)	319 (12.56)	36 (1.42)	26.5 (58.4)	
	2	B1J_6	F07	254 (10.00)	150 (5.91)	100 (3.94)	485 (19.01)	118 (4.65)	478 (18.82)	319 (12.56)	36 (1.42)	28.5 (62.8)	
	1/2	B1J_8	F07	184 (7.24)	90 (3.54)	117 (4.61)	555 (21.85)	135 (5.31)	453 (17.83)	294 (11.57)	43 (1.69)	23.9 (52.7)	
	3/4	B1J_8	F07	184 (7.24)	100 (3.94)	117 (4.61)	555 (21.85)	135 (5.31)	453 (17.83)	294 (11.57)	43 (1.69)	24.3 (53.6)	
	1	B1J_8	F07	184 (7.24)	110 (4.33)	117 (4.61)	555 (21.85)	135 (5.31)	453 (17.83)	294 (11.57)	43 (1.69)	24.7 (54.4)	
	1 1/2	B1J_8	F07	222 (8.74)	125 (4.92)	117 (4.61)	555 (21.85)	135 (5.31)	480 (18.90)	321 (12.64)	43 (1.69)	30.5 (67.2)	
	2	B1J_8	F07	254 (10.00)	150 (5.91)	117 (4.61)	555 (21.85)	135 (5.31)	480 (18.90)	321 (12.64)	43 (1.69)	32.5 (71.6)	
	3	B1J_10	F10	298 (11.73)	190 (7.48)	137 (5.39)	640 (25.20)	160 (6.30)	617 (24.29)	458 (18.03)	51 (2.01)	60 (132)	
		B1J_12	F12	352 (13.85)	230 (9.05)	172 (6.77)	815 (32.09)	195 (7.68)	690 (27.17)	521 (20.51)	65 (2.56)	90.8 (199.8)	
	4	B1J_12	F12	352 (13.85)	230 (9.05)	172 (6.77)	815 (32.09)	195 (7.68)	727 (28.62)	558 (21.97)	65 (2.56)	123.8 (272.4)	
		B1J_16	F14	352 (13.85)	230 (9.05)	211 (8.31)	990 (38.98)	230 (9.06)	756 (29.76)	590 (23.23)	78 (3.07)	168 (369.6)	
			B1J_20	F14	352 (13.85)	230 (9.05)	295 (11.61)	1230 (48.43)	290 (11.42)	796 (31.34)	630 (24.80)	97 (3.82)	243 (534.6)

Class 300

TYPE	SIZE	ACTUATOR	ISO FLANGE	Dimensions, mm (inch)								kg (lbs)	
				A	ØB	E	F	G	H	K	V		
ZXD, ZXM	1/2	B1J_6	F07	190 (7.48)	95 (3.74)	100 (3.94)	485 (19.01)	118 (4.65)	451 (17.76)	292 (11.50)	36 (1.42)	20.9 (46.1)	
	3/4	B1J_6	F07	194 (7.64)	115 (4.53)	100 (3.94)	485 (19.01)	118 (4.65)	451 (17.76)	292 (11.50)	36 (1.42)	22.1 (48.7)	
	1	B1J_6	F07	197 (7.76)	125 (4.92)	100 (3.94)	485 (19.01)	118 (4.65)	451 (17.76)	292 (11.50)	36 (1.42)	22.8 (50.3)	
	1 1/2	B1J_6	F07	235 (9.25)	155 (6.10)	100 (3.94)	485 (19.01)	118 (4.65)	478 (18.82)	319 (12.56)	36 (1.42)	30.3 (66.8)	
	2	B1J_6	F07	267 (10.51)	165 (6.50)	100 (3.94)	485 (19.01)	118 (4.65)	478 (18.82)	319 (12.56)	36 (1.42)	32.2 (71.0)	
	1/2	B1J_8	F07	190 (7.48)	95 (3.74)	117 (4.61)	555 (21.85)	135 (5.31)	453 (17.83)	294 (11.57)	43 (1.69)	24.9 (54.9)	
	3/4	B1J_8	F07	194 (7.64)	115 (4.53)	117 (4.61)	555 (21.85)	135 (5.31)	453 (17.83)	294 (11.57)	43 (1.69)	26.1 (57.5)	
	1	B1J_8	F07	197 (7.76)	125 (4.92)	117 (4.61)	555 (21.85)	135 (5.31)	453 (17.83)	294 (11.57)	43 (1.69)	26.8 (59.1)	
	1 1/2	B1J_8	F07	235 (9.25)	155 (6.10)	117 (4.61)	555 (21.85)	135 (5.31)	480 (18.90)	321 (12.64)	43 (1.69)	34.3 (75.6)	
	2	B1J_8	F07	267 (10.51)	165 (6.50)	117 (4.61)	555 (21.85)	135 (5.31)	480 (18.90)	321 (12.64)	43 (1.69)	36.2 (79.8)	
	3	B1J_10	F10	316 (12.43)	210 (8.26)	137 (5.39)	640 (25.20)	160 (6.30)	617 (24.29)	458 (18.03)	51 (2.01)	64.9 (142.8)	
		B1J_12	F12	316 (12.43)	210 (8.26)	172 (6.77)	815 (32.09)	195 (7.68)	690 (27.17)	521 (20.51)	65 (2.56)	95.7 (210.5)	
	4	B1J_12	F12	368.2 (14.49)	255 (10.03)	172 (6.77)	815 (32.09)	195 (7.68)	727 (28.62)	558 (21.97)	65 (2.56)	131.8 (290)	
		B1J_16	F14	368.2 (14.49)	255 (10.03)	211 (8.31)	990 (38.98)	230 (9.06)	756 (29.76)	590 (23.23)	78 (3.07)	176 (387.2)	
			B1J_20	F14	368.2 (14.49)	255 (10.03)	295 (11.61)	1230 (48.43)	290 (11.42)	796 (31.34)	630 (24.80)	97 (3.82)	251 (552.2)

Class 600

TYPE	SIZE	ACTUATOR	ISO FLANGE	Dimensions, mm (inch)								kg (lbs)
				A	ØB	E	F	G	H	K	V	
ZXF, ZXM, ZXP	1/2	B1J_6	F07	203 (7.99)	95 (3.74)	100 (3.94)	485 (19.01)	118 (4.65)	451 (17.76)	292 (11.50)	36 (1.42)	21 (46.3)
	3/4	B1J_6	F07	206 (8.11)	115 (4.53)	100 (3.94)	485 (19.01)	118 (4.65)	451 (17.76)	292 (11.50)	36 (1.42)	22 (48.5)
	1	B1J_6	F07	210 (8.27)	125 (4.92)	100 (3.94)	485 (19.01)	118 (4.65)	451 (17.76)	292 (11.50)	36 (1.42)	22.9 (50.5)
	1 1/2	B1J_6	F07	251 (9.88)	155 (6.10)	100 (3.94)	485 (19.01)	118 (4.65)	478 (18.82)	319 (12.56)	36 (1.42)	31.1 (68.6)
	1/2	B1J_8	F07	203 (7.99)	95 (3.74)	117 (4.61)	555 (21.85)	135 (5.31)	453 (17.83)	294 (11.57)	43 (1.69)	25.0 (55.1)
	3/4	B1J_8	F07	206 (8.11)	115 (4.53)	117 (4.61)	555 (21.85)	135 (5.31)	453 (17.83)	294 (11.57)	43 (1.69)	26.0 (57.3)
	1	B1J_8	F07	210 (8.27)	125 (4.92)	117 (4.61)	555 (21.85)	135 (5.31)	453 (17.83)	294 (11.57)	43 (1.69)	26.9 (59.3)
	1 1/2	B1J_8	F07	251 (9.88)	155 (6.10)	117 (4.61)	555 (21.85)	135 (5.31)	480 (18.90)	321 (12.64)	43 (1.69)	35.1 (77.4)
		B1J_10	F10	251 (9.88)	155 (6.10)	137 (5.39)	640 (25.20)	160 (6.30)	494 (19.45)	335 (13.19)	51 (2.01)	48.1 (106.0)
	2	B1J_6	F07	286 (11.26)	165 (6.50)	100 (3.94)	485 (19.01)	118 (4.65)	478 (18.82)	319 (12.56)	36 (1.42)	33.3 (73.4)
		B1J_8	F07	286 (11.26)	165 (6.50)	117 (4.61)	555 (21.85)	135 (5.31)	480 (18.90)	321 (12.64)	43 (1.69)	37.3 (82.2)
		B1J_10	F10	286 (11.26)	165 (6.50)	137 (5.39)	640 (25.20)	160 (6.30)	494 (19.45)	335 (13.19)	51 (2.01)	50.3 (110.9)
	3	B1J_10	F10	337 (13.26)	210 (8.26)	137 (5.39)	640 (25.20)	160 (6.30)	617 (24.29)	458 (18.03)	51 (2.01)	73.9 (162.6)
		B1J_12	F12	337 (13.26)	210 (8.26)	172 (6.77)	815 (32.09)	195 (7.68)	690 (27.17)	521 (20.51)	65 (2.56)	104.7 (230.3)
	4	B1J_12	F12	394 (15.5)	275 (10.82)	172 (6.77)	815 (32.09)	195 (7.68)	727 (28.62)	558 (21.97)	65 (2.56)	138.3 (140.5)
		B1J_16	F14	394 (15.5)	275 (10.82)	211 (8.31)	990 (38.98)	230 (9.06)	756 (29.76)	590 (23.23)	78 (3.07)	182.5 (401.5)
		B1J_20	F14	394 (15.5)	275 (10.82)	295 (11.61)	1230 (48.43)	290 (11.42)	796 (31.34)	630 (24.80)	97 (3.82)	257.5 (566.5)

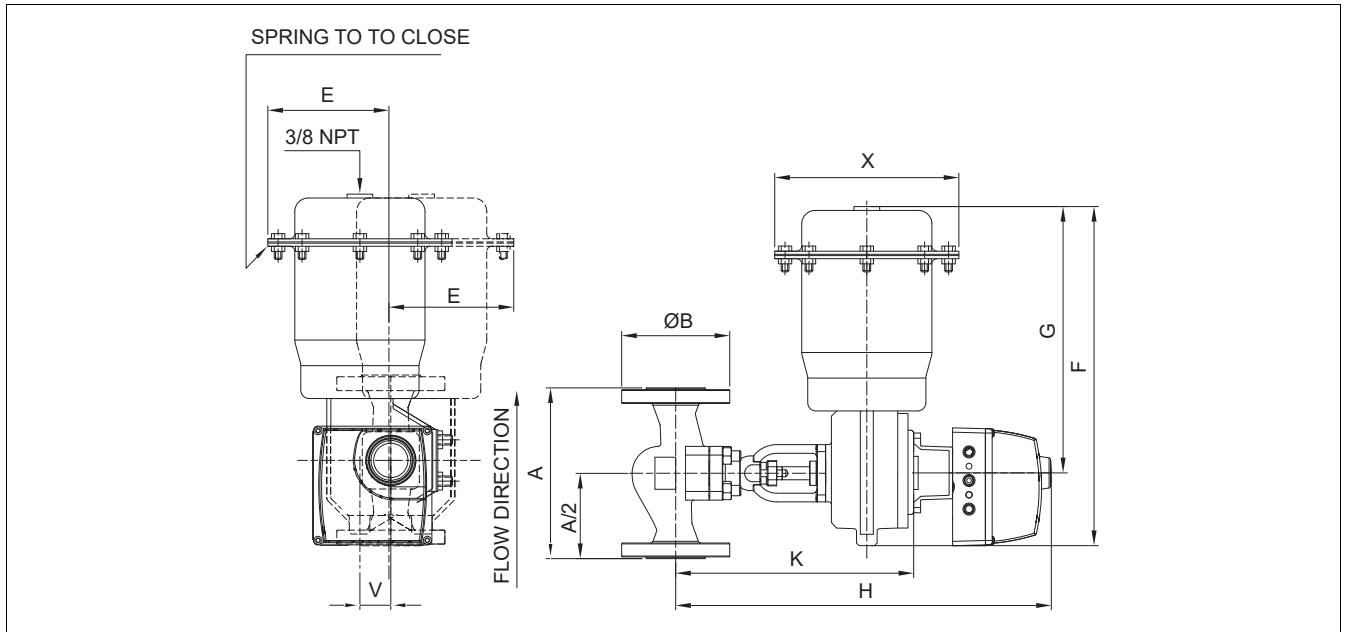
Class 900

TYPE	SIZE	ACTUATOR	ISO FLANGE	Dimensions, mm (inch)								kg (lbs)
				A	ØB	E	F	G	H	K	V	
ZXC	3	B1J_12	F12	441 (17.36)	240 (9.45)	173 (6.81)	815 (32.09)	195 (7.68)	746 (29.37)	580 (22.83)	65 (2.56)	157 (348.1)
		B1J_16	F14	441 (17.36)	240 (9.45)	211 (8.31)	990 (38.98)	230 (9.06)	778 (30.63)	612 (24.09)	78 (3.07)	200.9 (442.9)
		B1J_20	F14	441 (17.36)	240 (9.45)	295 (11.61)	1230 (48.43)	290 (11.42)	811 (31.93)	645 (25.39)	97 (3.82)	275.9 (608.3)
	4	B1J_16	F14	511 (20.12)	290 (11.42)	211 (8.31)	990 (38.98)	230 (9.06)	850 (33.46)	684 (26.93)	78 (3.07)	266.9 (588.4)
		B1J_20	F14	511 (20.12)	290 (11.42)	295 (11.61)	1230 (48.43)	290 (11.42)	883 (34.76)	717 (28.23)	97 (3.82)	341.9 (753.8)
		B1J_25	F16	511 (20.12)	290 (11.42)	374 (14.72)	1490 (58.66)	350 (13.78)	943 (37.13)	777 (30.59)	121 (4.76)	516.9 (1139.6)

Class 1500

TYPE	SIZE	ACTUATOR	ISO FLANGE	Dimensions, mm (inch)								kg (lbs)
				A	ØB	E	F	G	H	K	V	
ZXH	1	B1J_6	F07	292 (11.50)	150 (5.91)	100 (3.94)	485 (19.01)	118 (4.65)	451 (17.76)	292 (11.50)	36 (1.42)	38.8 (85.5)
		B1J_8	F07	292 (11.50)	150 (5.91)	117 (4.61)	555 (21.85)	135 (5.31)	453 (17.83)	294 (11.57)	43 (1.69)	42.8 (94.3)
		B1J_10	F10	333 (13.11)	180 (7.09)	137 (5.39)	640 (25.20)	160 (6.30)	522 (20.55)	363 (14.29)	51 (2.01)	55.8 (123.0)
	1 1/2	B1J_10	F10	333 (13.11)	180 (7.09)	137 (5.39)	640 (25.20)	160 (6.30)	620 (24.41)	461 (18.15)	51 (2.01)	70.3 (155.0)
		B1J_12	F12	333 (13.11)	180 (7.09)	172 (6.77)	815 (32.09)	195 (7.68)	656 (25.83)	487 (19.17)	65 (2.56)	97.5 (214.9)
	2	B1J_10	F10	375 (14.76)	215 (8.46)	137 (5.39)	640 (25.20)	160 (6.30)	620 (24.41)	461 (18.15)	51 (2.01)	81.5 (179.6)
		B1J_12	F12	375 (14.76)	215 (8.46)	172 (6.77)	815 (32.09)	195 (7.68)	656 (25.83)	487 (19.17)	65 (2.56)	108.6 (239.4)
	3	B1J_12	F12	460 (18.11)	265 (10.43)	173 (6.81)	815 (32.09)	195 (7.68)	746 (29.37)	580 (22.83)	65 (2.56)	168.9 (372.4)
		B1J_16	F14	460 (18.11)	265 (10.43)	211 (8.31)	990 (38.98)	230 (9.06)	778 (30.63)	612 (24.09)	78 (3.07)	211.9 (467.2)
		B1J_20	F14	460 (18.11)	265 (10.43)	295 (11.61)	1230 (48.43)	290 (11.42)	811 (31.93)	645 (25.39)	97 (3.82)	286.9 (632.5)
	4	B1J_16	F14	530 (20.87)	310 (12.20)	211 (8.31)	990 (38.98)	230 (9.06)	850 (33.46)	684 (26.93)	78 (3.07)	281.1 (619.7)
		B1J_20	F14	530 (20.87)	310 (12.20)	295 (11.61)	1230 (48.43)	290 (11.42)	883 (34.76)	717 (28.23)	97 (3.82)	356.1 (785.1)
B1J_25		F16	530 (20.87)	310 (12.20)	374 (14.72)	1490 (58.66)	350 (13.78)	943 (37.13)	777 (30.59)	121 (4.76)	531.1 (1170.9)	

ZX-QPX-ND9100



Class 150

TYPE	SIZE	ACTUATOR	ISO FLANGE	DIMENSIONS, mm (inch)									kg (lbs)
				A	ØB	E	F	G	H	K	V	X	
ZXC	1/2	QPX1C	F05	184 (7.24)	90 (3.54)	142 (5.59)	338 (13.31)	330 (12.99)	430 (16.93)	271 (10.67)	36 (1.42)	197 (7.76)	17.9 (39.5)
	3/4	QPX1C	F05	184 (7.24)	100 (3.94)	142 (5.59)	338 (13.31)	330 (12.99)	430 (16.93)	271 (10.67)	36 (1.42)	197 (7.76)	18.3 (40.3)
	1	QPX1C	F05	184 (7.24)	110 (4.33)	142 (5.59)	338 (13.31)	330 (12.99)	430 (16.93)	271 (10.67)	36 (1.42)	197 (7.76)	18.7 (41.0)
	1 1/2	QPX2C	F07	222 (8.74)	125 (4.92)	156 (6.14)	430 (16.93)	389 (15.31)	464 (18.27)	305 (12.01)	42 (1.65)	228 (8.98)	32.5 (71.6)
	2	QPX2C	F07	254 (10.00)	150 (5.91)	156 (6.14)	430 (16.93)	389 (15.31)	464 (18.27)	305 (12.01)	42 (1.65)	228 (8.98)	34.4 (75.8)
	3	QPX4C	F10	298 (11.73)	190 (7.48)	228 (8.98)	592 (23.31)	452 (17.8)	612 (24.1)	453 (17.83)	68 (2.68)	320 (12.6)	83 (182.6)
4	QPX5C	F12	352 (13.85)	230 (9.05)	276 (10.87)	721 (28.39)	561 (22.09)	681 (26.81)	522 (20.55)	85 (3.35)	382 (15.04)	170 (374)	

Class 300

TYPE	SIZE	ACTUATOR	ISO FLANGE	DIMENSIONS, mm (inch)									kg (lbs)
				A	ØB	E	F	G	H	K	V	X	
ZXD ZXM	1/2	QPX1C	F05	190 (7.48)	95 (3.74)	142 (5.59)	338 (13.31)	330 (12.99)	430 (16.93)	271 (10.67)	36 (1.42)	197 (7.76)	18.6 (41.0)
	3/4	QPX1C	F05	194 (7.64)	115 (4.53)	142 (5.59)	338 (13.31)	330 (12.99)	430 (16.93)	271 (10.67)	36 (1.42)	197 (7.76)	19.8 (43.7)
	1	QPX1C	F05	197 (7.76)	125 (4.92)	142 (5.59)	338 (13.31)	330 (12.99)	430 (16.93)	271 (10.67)	36 (1.42)	197 (7.76)	20.5 (45.2)
	1 1/2	QPX2C	F07	235 (9.25)	155 (6.10)	156 (6.14)	430 (16.93)	389 (15.31)	464 (18.27)	305 (12.01)	42 (1.65)	228 (8.98)	36.0 (79.4)
		QPX3C	F07	235 (9.25)	155 (6.10)	190 (7.48)	520 (20.47)	446 (17.56)	472 (18.58)	313 (12.32)	53 (2.09)	274 (10.79)	50.0 (110.2)
	2	QPX2C	F07	267 (10.51)	165 (6.50)	156 (6.14)	430 (16.93)	389 (15.31)	464 (18.27)	305 (12.01)	42 (1.65)	228 (8.98)	37.9 (83.2)
		QPX3C	F07	267 (10.51)	165 (6.50)	190 (7.48)	520 (20.47)	446 (17.56)	472 (18.58)	313 (12.32)	53 (2.09)	274 (10.79)	51.9 (114.4)
	3	QPX4C	F10	316 (12.43)	210 (8.26)	228 (8.98)	592 (23.31)	452 (17.8)	612 (24.1)	453 (17.83)	68 (2.68)	320 (12.6)	87.9 (193.4)
	4	QPX5C	F12	368.2 (14.49)	255 (10.03)	276 (10.87)	721 (28.39)	561 (22.09)	681 (26.81)	522 (20.55)	85 (3.35)	382 (15.04)	178 (391.6)

Class 600

TYPE	SIZE	ACTUATOR	ISO FLANGE	DIMENSIONS, mm (inch)									kg (lbs)
				A	ØB	E	F	G	H	K	V	X	
ZXF ZXN ZXP	1/2	QPX1C	F05	203 (7.99)	95 (3.74)	142 (5.59)	338 (13.31)	330 (12.99)	430 (16.93)	271 (10.67)	36 (1.42)	197 (7.76)	18.7 (41.0)
	3/4	QPX1C	F05	206 (8.11)	115 (4.53)	142 (5.59)	338 (13.31)	330 (12.99)	430 (16.93)	271 (10.67)	36 (1.42)	197 (7.76)	19.7 (43.4)
	1	QPX1C	F05	210 (8.27)	125 (4.92)	142 (5.59)	338 (13.31)	330 (12.99)	430 (16.93)	271 (10.67)	36 (1.42)	197 (7.76)	20.6 (45.4)
		QPX2C	F07	210 (8.27)	125 (4.92)	156 (6.14)	430 (16.93)	389 (15.31)	437 (17.20)	278 (10.94)	42 (1.65)	228 (8.98)	28.6 (63.1)
	1 1/2	QPX2C	F07	251 (9.88)	155 (6.10)	156 (6.14)	430 (16.93)	389 (15.31)	464 (18.27)	305 (12.01)	42 (1.65)	228 (8.98)	36.8 (81.1)
		QPX3C	F07	251 (9.88)	155 (6.10)	190 (7.48)	520 (20.47)	446 (17.56)	472 (18.58)	313 (12.32)	53 (2.09)	274 (10.79)	50.8 (112.0)
	2	QPX2C	F07	286 (11.26)	165 (6.50)	156 (6.14)	430 (16.93)	389 (15.31)	464 (18.27)	305 (12.01)	42 (1.65)	228 (8.98)	39.0 (86.0)
		QPX3C	F07	286 (11.26)	165 (6.50)	190 (7.48)	520 (20.47)	446 (17.56)	472 (18.58)	313 (12.32)	53 (2.09)	274 (10.79)	53.0 (116.8)
	3	QPX4C	F10	337 (13.26)	210 (8.26)	228 (8.98)	592 (23.31)	452 (17.8)	612 (24.1)	453 (17.83)	68 (2.68)	320 (12.6)	96.9 (213.2)
4	QPX5C	F12	394 (15.5)	275 (10.82)	276 (10.87)	721 (28.39)	561 (22.09)	681 (26.81)	522 (20.55)	85 (3.35)	382 (15.04)	184.5 (405.9)	

Class 900

Type	SIZE	ACTUATOR	ISO FLANGE	DIMENSIONS, mm (inch)									kg (lbs)
				A	ØB	E	F	G	H	K	V	X	
ZXG	3	QPX5C	F12	441 (17.36)	240 (9.45)	276 (10.87)	768 (30.24)	608 (23.94)	738 (29.06)	572 (22.52)	85 (3.35)	382 (15.04)	207.9 (458.3)

Class 1500

Type	SIZE	ACTUATOR	ISO FLANGE	DIMENSIONS, mm (inch)									kg (lbs)
				A	ØB	E	F	G	H	K	V	X	
ZXH	1	QPX2C	F07	292 (11.50)	150 (5.91)	156 (6.14)	430 (16.93)	389 (15.31)	492 (19.37)	333 (13.11)	42 (1.65)	228 (8.98)	44.8 (98.8)
	1 1/2	QPX4C	F10	333 (13.11)	180 (7.09)	228 (8.98)	592 (23.31)	495 (19.49)	609 (23.98)	450 (17.72)	68 (2.68)	320 (12.60)	93.5 (206.1)
	2	QPX4C	F10	375 (14.76)	215 (8.46)	228 (8.98)	592 (23.31)	495 (19.49)	609 (23.98)	450 (17.72)	68 (2.68)	320 (12.60)	104.7 (230.8)
	3	QPX5C	F12	460 (18.11)	265 (10.43)	276 (10.87)	768 (30.24)	608 (23.94)	738 (29.06)	572 (22.52)	85 (3.35)	382 (15.04)	218.9 (482.6)

12 TYPE CODE

Neles™ RotaryGlobe Control Valve, Series ZX						
1.	2.	3.	4.	5.	6.	7.
ZX	D	01	A	A	A	L060

1.	VALVE SERIES, CONNECTION AND FACE TO FACE LENGTH
ZX	RotaryGlobe valve, flanged, f-to-f length acc. to ISA S75.03 and EN 558-2 series 37-39

2.	PRESSURE RATING, FLANGES, FLANGE DRILLINGS
C	ASME class 150
D	ASME class 300
F	ASME class 600
G	ASME class 900
H	ASME class 1500
M	PN40 (PN10-40) (body face to face acc. ASME 300)
N	PN63 (body face to face acc. ASME 600)
P	PN100 (body face to face acc. ASME 600)

3.	SIZE
0H	½"
3Q	¾"
01	1"
1H	1½"
02	2"
03*	3"
04*	4"

*) 3" and 4" only available in ASME pressure classes 900 and 1500

4.	BODY MATERIAL & BODY RELATED MATERIALS			
	Standard materials			
	Body and bonnet			
A	CF8M / 1.4408			
D	WCC / 1.0619			
	Optional materials			
	Body and bonnet			
J	WC6 / F11 Cl 2			

5.	PLUG, STEM, PIN AND SEAT CAGE MATERIALS			
	Standard materials			
	Plug	Stem and pin	Seat Cage	Max. temp.
A	17-4PH + HCr	AISI 316	Nitronic 60	425 °C
	Optional materials			
	Plug	Stem and pin	Seat Cage	Max. temp.
J	17-4PH + HCr	AISI 316	Nitronic 50	425 °C

6.	PACKING	SEALS
	STANDARD	
A	PTFE	Graphite
T	Live loaded PTFE	Graphite
F	Graphite	Graphite
G	Live loaded graphite	Graphite
	OPTIONAL	
P	PTFE	PTFE
S	Live loaded PTFE	PTFE

7.	TRIM		
C _v VALUES FOR SIZES DN15 - DN25 / 1/2"-1"			
TRIM TYPE	DESCRIPTION (SIZE)	C _v VALUE	INITIAL OPENINGS (h0) in %
L001	Linear (DN15-DN25 / 1/2" - 1")	0.1	16.7
L003	Linear (DN15-DN25 / 1/2" - 1")	0.3	16.7
L011	Linear (DN15-DN25 / 1/2" - 1")	1.1	16.7
L025	Linear (DN15-DN25 / 1/2" - 1")	2.5	16.7
L060	Linear (DN20-DN25 / 3/4" - 1")	6.0	15.0
L120	Linear (DN25 / 1")	12.0	12.8
E011	Equal % (DN15-DN25 / 1/2" - 1")	1.1	8.9
E022	Equal % (DN15-DN25 / 1/2" - 1")	2.2	15.6
E043	Equal % (DN15-DN25 / 1/2" - 1")	4.3	15.0
E090	Equal % (DN 25 / 1")	9.0	12.8
B020	Balanced trim for high Δp and noise reduction. Linear (DN15-DN25 / 1/2" - 1")	2.0	15.0
B050	Balanced trim for high Δp and noise reduction. Linear (DN20-DN25 / 3/4" - 1")	5.0	15.0
C _v VALUES FOR SIZES DN40 - DN50 / 1 1/2"- 2"			
TRIM TYPE	DESCRIPTION	C _v VALUE	INITIAL OPENINGS (h0) in %
L030	Linear	3.0	15.0
L070	Linear	7.0	15.0
L150	Linear	15.0	13.3
L310	Linear	31.0	12.8
E115	Equal %	11.5	13.3
E260	Equal %	26.0	12.8
B050	Balanced trim for high Δp and noise reduction. Linear.	6.0	15.0
B130	Balanced trim for high Δp and noise reduction. Linear.	13.0	15.0
C _v VALUES FOR SIZE DN 80 / 3"			
TRIM TYPE	DESCRIPTION	C _v VALUE	INITIAL OPENINGS (h0) in %
L180	Linear	18	8.9
L350	Linear	35	9.4
L550	Linear	55	8.3
E320	Equal %	32	10.0
E460	Equal %	46	8.9
B130	Balanced trim for high Δp and noise reduction. Linear.	13	9.4
B280	Balanced trim for high Δp and noise reduction. Linear.	28	9.4
C _v VALUES FOR SIZE DN 100 / 4"			
TRIM TYPE	DESCRIPTION	C _v VALUE	INITIAL OPENINGS (h0) in %
L350	Linear	35	9.4
L700	Linear	70	9.4
L1150	Linear	115	9.4
E540	Equal %	54	9.4
E800	Equal %	80	9.4
B280	Balanced trim for high Δp and noise reduction. Linear.	28	10.0
B520	Balanced trim for high Δp and noise reduction. Linear.	52	10.0

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