

Top-guided globe valve

Series GU

Installation, maintenance and
operating instructions

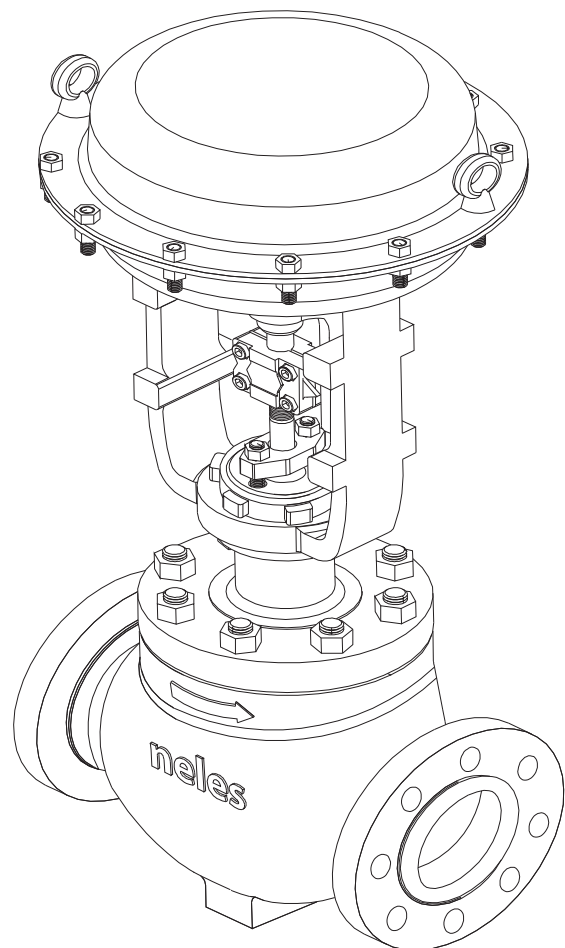


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All trademarks are property of their respective owners.



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 GU, Globe-Unbalanced single seated sliding stem 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 Neles 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 GU, Globe-Unbalanced valves are flanged (weld end available) single seated sliding stem control valves. The valve seat ring and retainer and plug with stem is a module accessible through the bonnet opening (top entry) of the body.

Our standard design provides a top guide with a contoured plug with a quick change seat ring. The solid top (retainer) plug boss guiding makes strong support to ensure valve alignment.

This series is available with series of reduced bore trims and the standard seat tightness is class IV, optional trims can meet to class V and VI, ANSI/FCI 70-2.

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

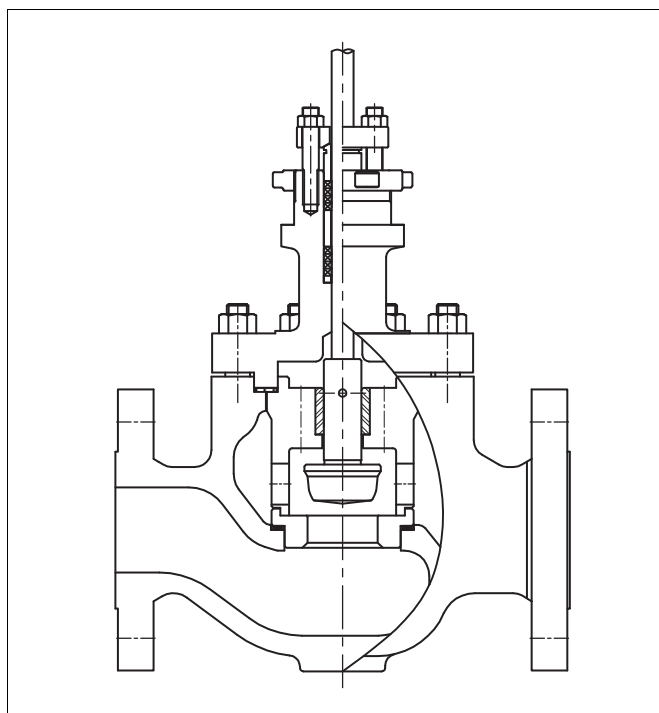


Fig. 1 Neles globe-unbalanced single seated valve

1.3 Valve markings

The body markings are: manufacturer's trademark, nominal size, pressure rating and material of the body. The identification plate is attached on an actuator yoke side, see Fig. 2.

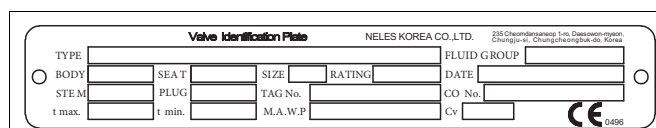


Fig. 2 Identification(name) plate example

Markings on the identification plate:

1. Type designation (Valve code)
2. Size, Rating
3. Cv
4. Body material
5. Plug, Stem material
6. Seat material
7. Temp. min./max.
8. Maximum (shut-off) pressure
9. Valve manufacturing date
10. Tag No.
11. CO No.

1.4 Technical specifications

Face-to-face length: ANSI/ISA-75.08.01, 03, 05 & ANSI/ISA-75.08.06 (Long)

Body rating: Class 150 to Class 2500
PN 10 to PN 250

Max. pressure differential:

acc. to pressure class

Temperature range: -196° to +593 °C (depending on the body materials and bonnet type)

Flow direction: indicated by an arrow on the body (normally flow to open)

Actuator mounting: threaded bonnet with yoke nut or bolted yoke

Stem connection: clamp with bolts/nuts

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 seat leakage class

The valve follows the seat leakage classifications of ANSI/FCI 70-2 requirement.

1.6 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.

1.7 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:

Follow the proper procedures when handling and servicing Oxygen valves.

CAUTION:

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.

CAUTION:

Ensure that any weld splatter does not fall onto the valve trim. This may prevent proper trim movement or damage critical seating surfaces causing leaks.

CAUTION:

Make sure the valve is not pressurized when removing the actuator.

2 TRANSPORTATION, RECEPTION AND STORAGE

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

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.

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

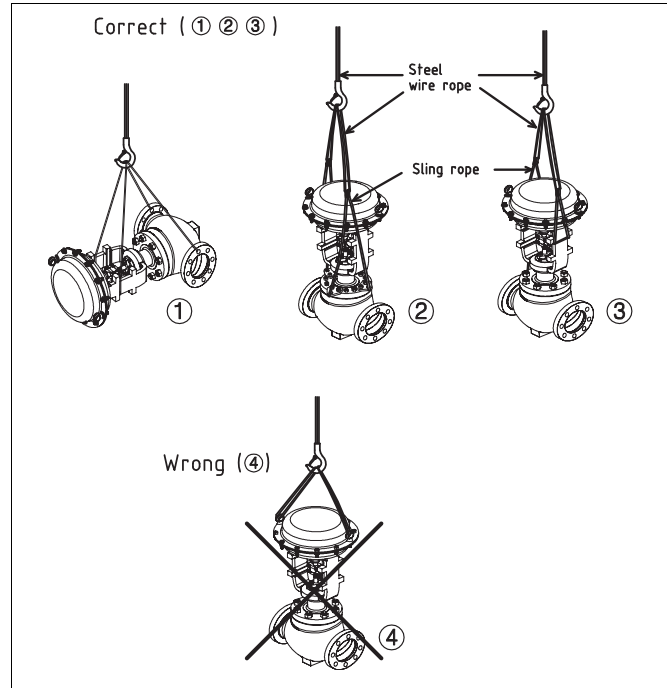


Fig. 3 Lifting the valve

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

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!

NOTE:

Heat insulation should be installed when valve design temperature is over 260°C to protect actuator, positioner and accessories from heat.

3.2 Installation into the pipeline

Pipeline cleaning

Make sure no foreign particles, such as sand or pieces of welding electrode, are in the pipeline, they may damage the sealing surfaces.

Installation valve

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 should be vertical position as it is shown on Fig.4.

CAUTION:

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.

CAUTION:

Ensure that any weld splatter does not fall onto the valve trim. This may prevent proper trim movement or damage critical seating surfaces causing leaks.

NOTE:

For any other mounting position, please consult the factory.

Choose flange gaskets according to the operating conditions.

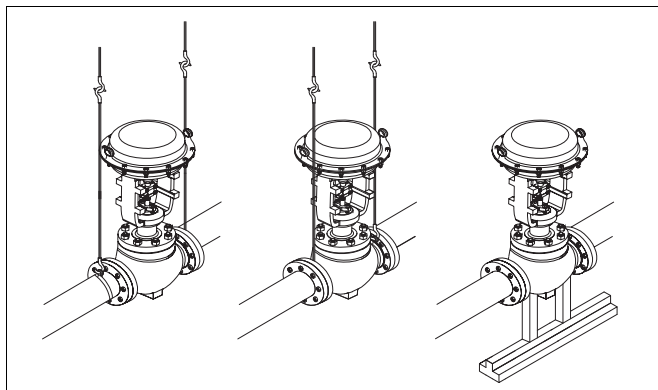


Fig. 4 Installing the control valve into pipeline using supports

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.

Hydrostatic testing and Line flushing

When the line is hydrostatic test and flushing, the control valve should not be used as an isolating valve.

Make sure the control valve always be opened position before start this process.

Otherwise valve and trim damage or failure of the seals could result.

Flushing and hydrostatic test kit can be purchased from Neles.

CAUTION:

Flushing trim kit should be installed in the valve (especially 'Tendril trim' application) to protect the original trim and the flow passages while the valve installation and line flushing. Unless this caution could result in unstable control, valve leakage and excessive noise.

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.

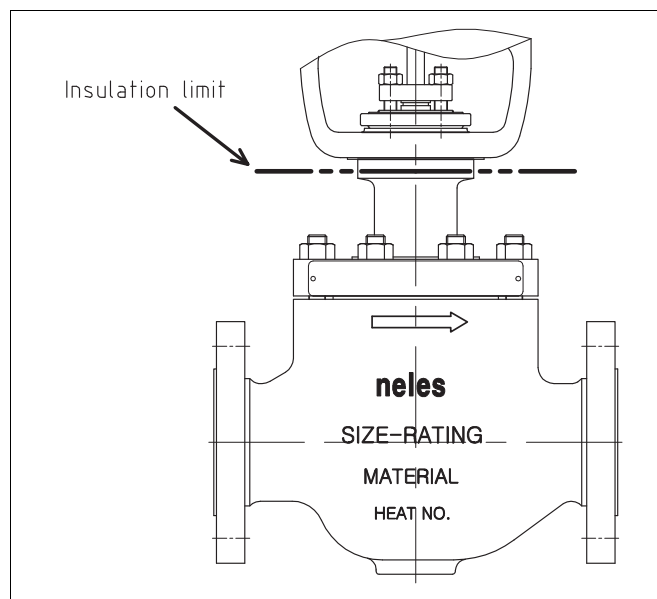


Fig. 5 Insulation of the valve

4 MAINTENANCE

CAUTION:

Observe the safety precautions listed in Section 1.7 before starting work!

CAUTION:

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

4.1 General

The Neles Single Seated Globe valves require no regular maintenance. However, check the gland packing for leakage. This section outlines the maintenance that can be carried out by the user.

The numbers in parentheses refer to the parts lists and the exploded views of the valve in Section 9.

NOTE:

If you send the valve to the manufacturer for repair, do not dismantle it. Clean the valve carefully, including the inside. For safety reasons, inform the manufacturer of the nature of the medium when you send the valve.

NOTE:

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

4.2 Gland packing adjustment & bellows seal

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

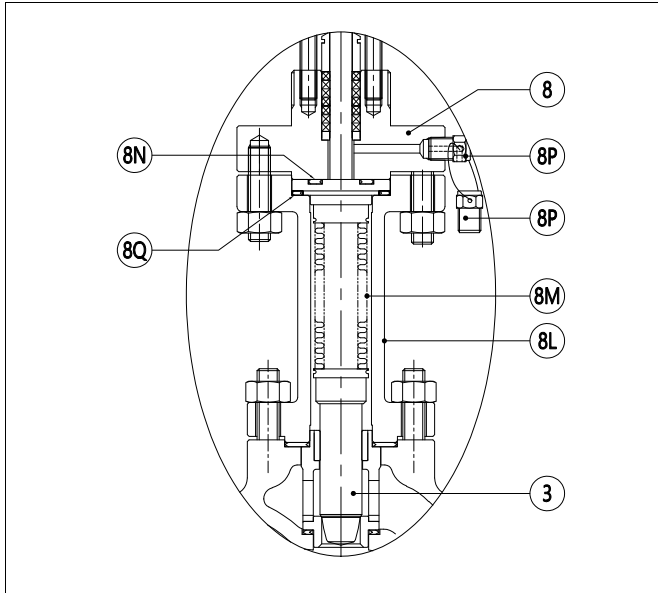


Fig. 6 Bellows seal construction

NOTE:

In case of the bellows seal bonnet construction, the gland packings are installed up at the top of the bellows bonnet(8L).

CAUTION:

Bellows assembly(8M) is welded with a the plug set. The bellows assembly should not be twisted.

CAUTION:

Bellows seal valve is shipped from the factory with a vent plug (8P) installed on the test connector. If there is any damage to the bellows, or external leakage occurred then relace the vent plug(8P) with an additional blind plug(8P) hanging. So that the fluid does not leak to the out side.

4.3 Replacing the gland packing

CAUTION:

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

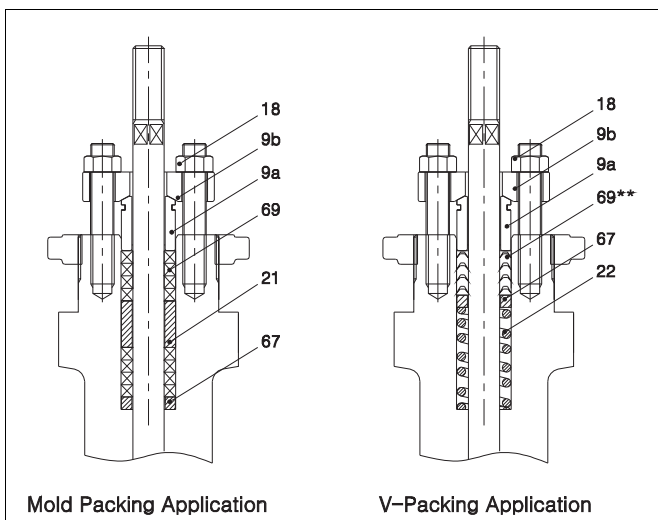


Fig. 7 Gland packing

- Make sure the valve is not pressurised.
- Remove the actuator from the valve stem according to the instructions given in the actuator manual.
- Loosen and remove the hexagon nuts (18).
- Remove the gland flange (9b), and gland (9a) up to the valve stem.

Table 1 Required torques for bonnet nuts

Valve Size		Rating (ANSI)	Bonnet Stud Bolts		Required Torques (±5% allowable)	
mm	in		Size	Q'ty		
15	0.5	150-300	1/2"-13UNC	4	45	33
		600	1/2"-13UNC	4	45	33
20	0.75	150-300	1/2"-13UNC	4	45	33
		600	1/2"-13UNC	4	45	33
25	1	150-300	1/2"-13UNC	4	45	33
		600	1/2"-13UNC	4	45	33
		900	3/4"-10UNC	8	160	118
		1500	3/4"-10UNC	8	160	118
		2500	3/4"-10UNC	8	160	118
40	1.5	150-300	1/2"-13UNC	4	45	33
		600	1/2"-13UNC	4	45	33
		900	7/8"-9UNC	8	140	103
		1500	7/8"-9UNC	8	140	103
		2500	7/8"-9UNC	8	140	103
50	2	150-300	1/2"-13UNC	8	45	33
		600	9/16"-12UNC	8	65	48
		900	7/8"-9UNC	8	140	103
		1500	7/8"-9UNC	8	140	103
		2500	7/8"-9UNC	8	140	103
75	3	150-300	5/8"-11UNC	8	90	66
		600	5/8"-11UNC	10	90	66
		900	7/8"-9UNC	8	250	184
		1500	1-1/8"-8UN	8	300	221
		2500	1-1/4"-8UN	8	400	295
100	4	150-300	3/4"-10UNC	8	160	118
		600	3/4"-10UNC	10	160	118
		900	1-1/8"-8UN	8	560	413
		1500	1-1/8"-8UN	8	560	413
		2500	1-1/2"-8UN	8	1400	1033

- Remove the old packing rings (69) using a pointed tool, avoid damaging the seal surfaces and valve stem.
- Clean the packing ring counterbore.
- Mount the new packing rings one by one into the packing gland box using the gland as a tool and mount the gland with hand-tightened nuts.
- Each packing ring (69) shall be firmly seated into the stuffing box using the packing tamping tool.

CAUTION:

Be carefull when using a hammer.

- Joints of successive braided type packing rings (69 & 69a if applicable) must be inserted 180 degrees against the previously inserted packing rings (69 & 69a if applicable).
- Apply lubricant suitable for process temperature to inner surface of all the packing rings except PTFE packing and emission packing. (69) (& 69a if applicable).
- Apply lubricant suitable for process temperature to the gland studs (14) and nuts (18) properly.
- Fasten the gland with the hexagon nuts (18) and tighten them.

- Check leakage when the valve is pressurised.

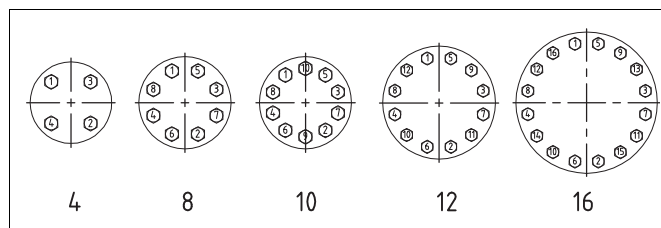


Fig. 8 Tightening sequence of the bonnet nuts

Table 2 Required torques for packing nuts

Packing Type	Stem Size mm	Rating (ANSI)	Required Torques (±5% allowable)	
			Min. Nm(lbf ft)	Max. Nm(lbf ft)
Graphite & PTFE Carbon Fiber packing	Ø12.7	150-300	5 (4)	7 (5)
		600	6 (4)	8 (6)
		900	7 (5)	10 (7)
		1500	9 (7)	12 (9)
		2500	10 (7)	14 (10)
	Ø19.05	150-300	11 (8)	16 (12)
		600	14 (10)	19 (14)
		900	17 (12)	23 (17)
		1500	19 (14)	27 (20)
		2500	22 (16)	21 (15)
	Ø25.4	150-300	18 (13)	25 (18)
		600	23 (17)	32 (24)
		900	27 (20)	38 (28)
		1500	32 (24)	44 (32)
		2500	36 (27)	51 (38)
	Ø36	150-300	26 (19)	36 (27)
		600	32 (24)	45 (33)
		900	39 (29)	54 (40)
		1500	45 (33)	64 (47)
		2500	52 (38)	73 (54)
V-ring packing (PTFE)	Ø12.7	150-300	3 (2)	5 (4)
		600	4 (3)	6 (4)
		900	5 (4)	7 (5)
		1500	6 (4)	8 (5)
		2500	7 (5)	10 (7)
	Ø19.05	150-300	8 (6)	11 (8)
		600	10 (7)	14 (10)
		900	12 (9)	16 (12)
		1500	14 (10)	19 (14)
		2500	16 (12)	22 (16)
	Ø25.4	150-300	13 (10)	18 (13)
		600	16 (12)	22 (16)
		900	19 (14)	27 (20)
		1500	22 (16)	31 (23)
		2500	25 (18)	35 (26)
	Ø36	150-300	18 (13)	25 (18)
		600	23 (17)	32 (24)
		900	27 (20)	38 (28)
		1500	32 (24)	44 (32)
		2500	36 (27)	51 (38)

4.4 Replacing the trim and body reassembly

NOTE:

The trim set consists of the seat, plug and stem, retainer and gaskets (for seat and body).

- Make sure the valve is not pressurised.
- Remove the actuator from the valve stem according to the instructions given in the actuator manual and Section 6.
- Loosen the hexagon nuts (18) slightly.
- Remove the hexagon nuts (17).
- Remove the bonnet (8)
- Remove the plug unit (2) and the retainer (10).
- Remove the body gasket (65), seat ring (7), seat gasket (63)

CAUTION:

Do not reuse the spiral wound gaskets (63 & 65), this is need to be replace each time the valve is disassembled.

- Remove the hexagon nuts (18), gland flange (9b) and packing gland (9a).
- Remove the old packing rings (69) (and optional lantern ring (21))

NOTE:

If the valve have excess leakage, the plug and seating surface need lapping and cleaning.

- Clean the body gasket surface.
- Insert a new seat gasket (63) and the seat ring (7) into the body.
- Install the plug set (2*) with the retainer (10) very carefully.
- Insert the body gasket (65).
- Mount the bonnet on the body carefully maintaining alignment with the plug and the stem and with the retainer in the closed position, so that the arrow on the body and on the bonnet point in the same direction.
- Apply lubricant suitable for process temperature to the studs(13), gland studs (14), hexagon nuts(17), nuts (18), stem(5) thread area properly.
- Insert the bonnet nuts into stud bolts and slightly fasten the stud nuts.

CAUTION:

Do not excessively tighten stud nuts at this time.

- Insert the packing according to above 4.3

NOTE:

Guide Bushing Removal

The Guide Bushing (4) is a press and tag welded fit into the retainer and does not normally necessary replacement. If need, it may be machined out. When machining the bushing out, care must be maintain proper dimensions and tolerances.

CAUTION:

The all related parts (seat ring, retainer, plug & stem, bonnet) must be properly aligned in the body.

- Tighten hexagon nuts (17) until plug and seat contact is obtained with proper bolt torque.
- Adjust and tighten the gland nuts finally.

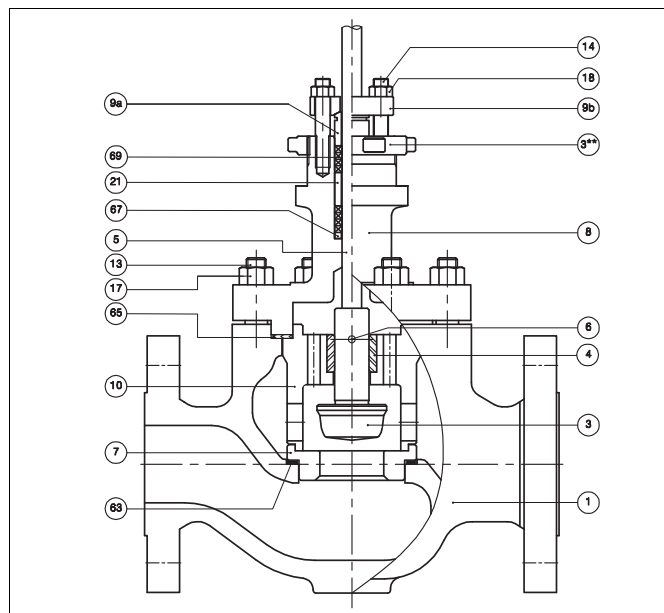


Fig. 9 Conventional Trim

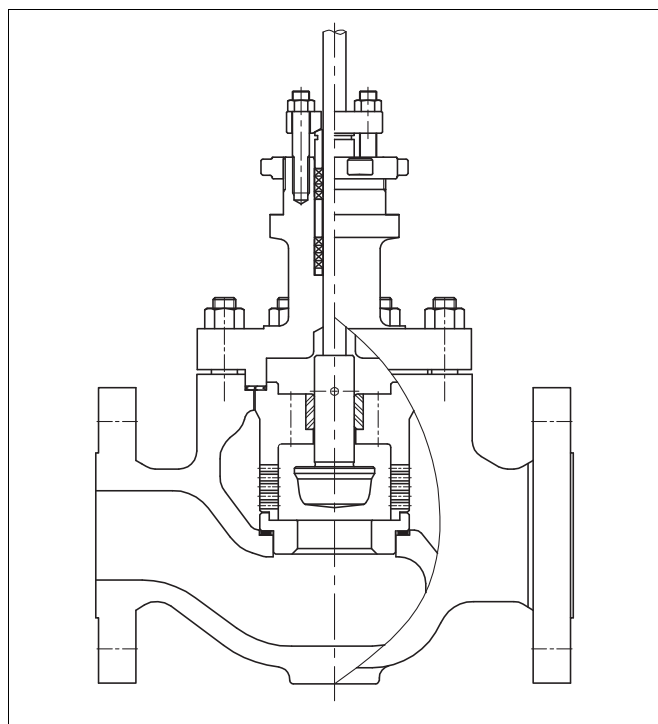
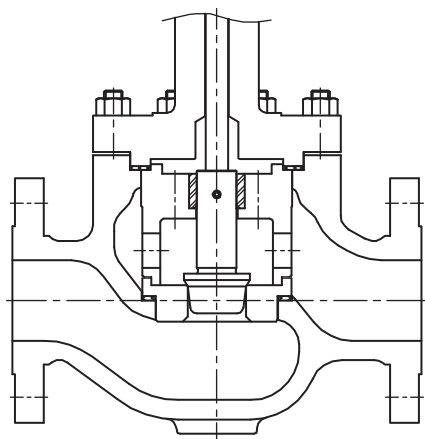
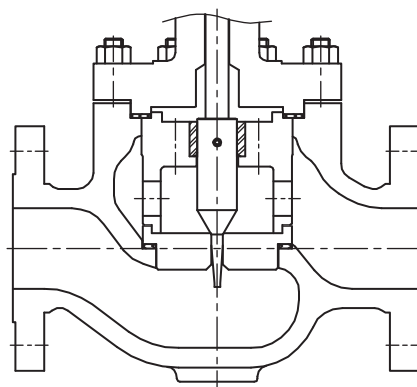


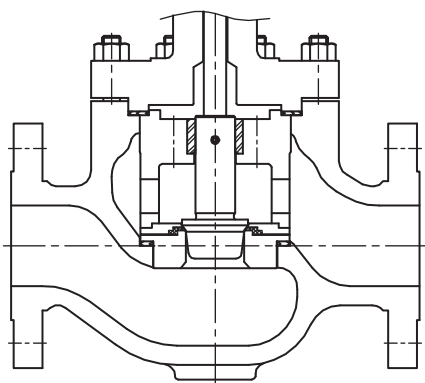
Fig. 10 Tendril Trim



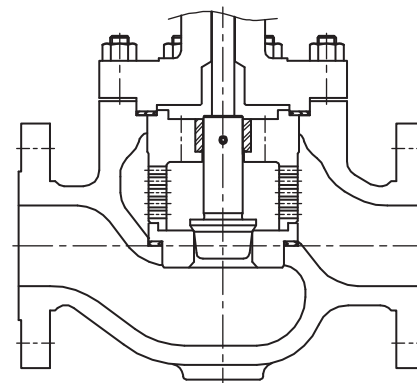
Standard GU Trim



Micro Trim



Soft Seat Trim



Tendril Trim

Fig. 11 Trim Design Applications

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 REMOVAL & MOUNTING THE ACTUATOR

The actuator is attached to the valve according to the manual for actuator with body assembly and plug stem adjustment. Several types of Neles actuators can be used with suitable clamps. The valve can be assembled with VDD/R diaphragm actuator, VBD/R piston spring return actuator and VBC/VCC piston springless actuator. This IMO explains VD actuators removal and mounting, please refer to other actuators IMOs for further information.

CAUTION:

Make sure the valve is not pressurized when removing the actuator.

CAUTION:

Beware of the plug movement!

Do not use air pressure higher than what specified on the identification plate.

NOTE

Threaded area is required to apply lubricant suitable for process temperature to yoke nut(3**) and clamp(1**).

A. Actuator removal for Reverse <air to open, stem retract> actuator (Fig. 13)

- Lift up to the valve plug more than 20 % from the seat ring, using by specified air pressure.
- Loosen the stem locknut (5**) and socket head screws (1a**) and hexagon nuts (1b**).
- Remove the stem clamp (1**).
- Shut off and disconnect air supply line.
- Support actuator with the suitable lifting device.
- Remove the yoke nut (3**).
- Remove the actuator from the valve body assembly.

B. Actuator removal for Direct <air to close, stem extend> actuator (Fig. 13)

- Shut off and disconnect the air supply lines and accessories.
- Loosen stem lock nut (5**) and stem socket head screws (1a**) and hexagon nuts (1b**).
- Remove the stem clamp (1**).
- Support actuator with the suitable lifting device.
- Remove the yoke nut (3**).
- Remove the actuator from the valve body assembly.

C. Actuator replacement (mounting)

- Mount the new or repaired actuator on top of the bonnet, using a suitable lifting device.
- Insert the yoke nut and tightly fasten the yoke by turning the yoke nut clockwise using tightening tools.
- Connect air line and accessories.

Standard valve construction

1. With the handwheel or pneumatically, push the valve stem and plug to be slightly touched with seat ring to make sure if valve is fully closed.
2. With the handwheel or pneumatically, stroke the actuator to the fully open.
3. Measure the maximum distance between the valve stem and actuator top stem.
4. Calculate the gap (measured value – rated travel = gap 1)
5. Move down the top stem so that the distance between the valve stem and actuator top stem should be gap 1
6. Fit the clamp to align with both stems thread
7. Line up the stroke indicator with the clamp indicator arrow and check actuator for operation.
8. Tighten the socket head screws after adjusted the rated stroke.

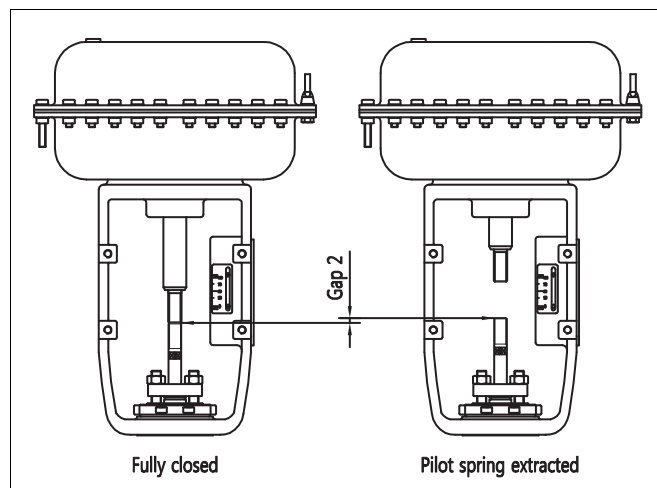


Fig. 12 Measurement of Gap 2

D. Installing VB, VC piston actuators

- VBD and VBR actuators are spring piston actuators for single acting. Please refer to its IMOs for further information
- VBC and VCC actuators are double acting piston actuators without spring. Please refer to its IMOs for further information

CAUTION:

Avoid to turn the valve plug and stem when plug is on seat ring to prevent the seating line from being damaged.

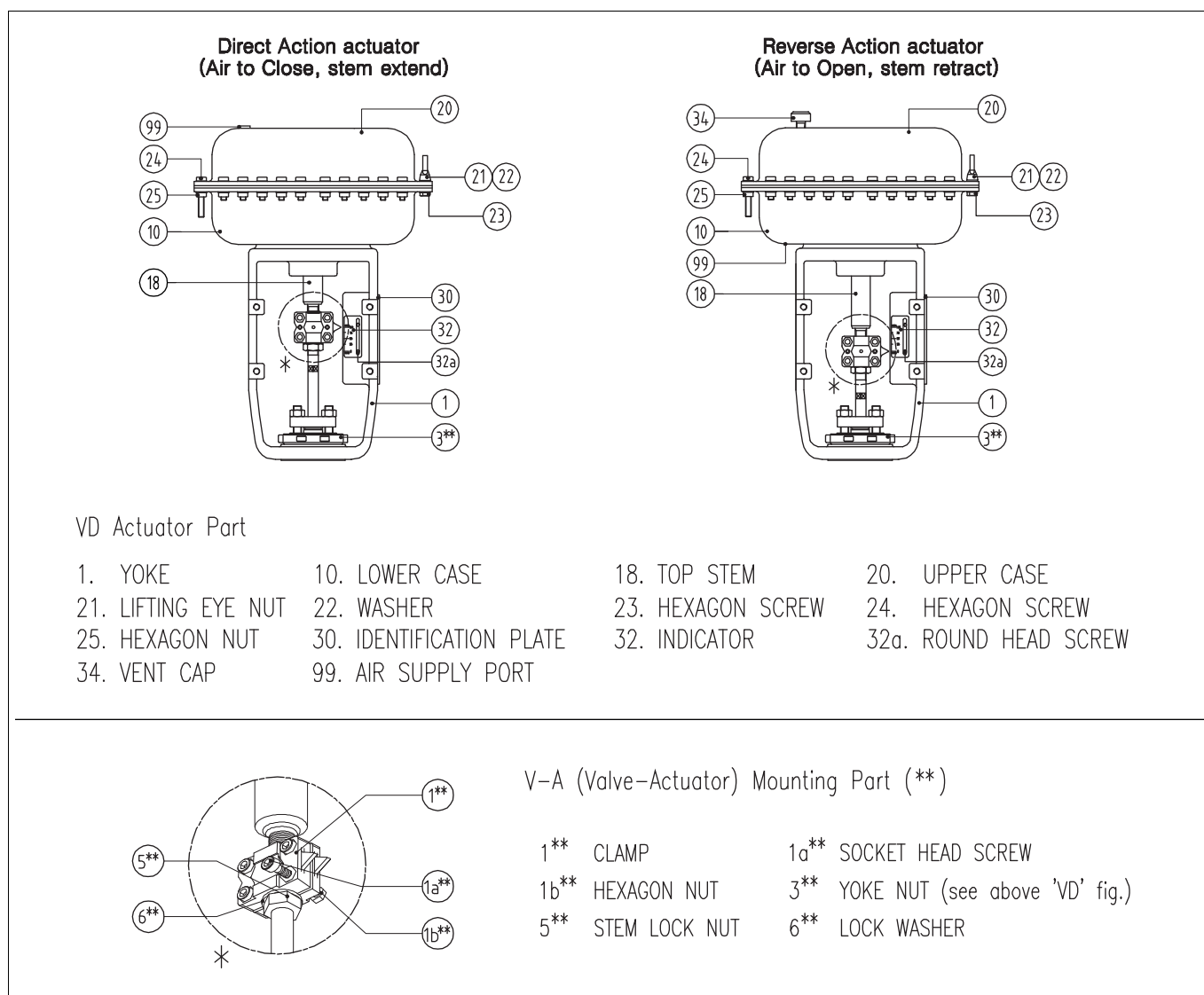


Fig. 13 VD Actuator

7 TOOLS

Removal of the actuator

- L- wrench set (mm)
- hex socket wrench set
- chisel and hammer (10 pound)
- +,- drivers

8 ORDERING SPARE PARTS

NOTE:

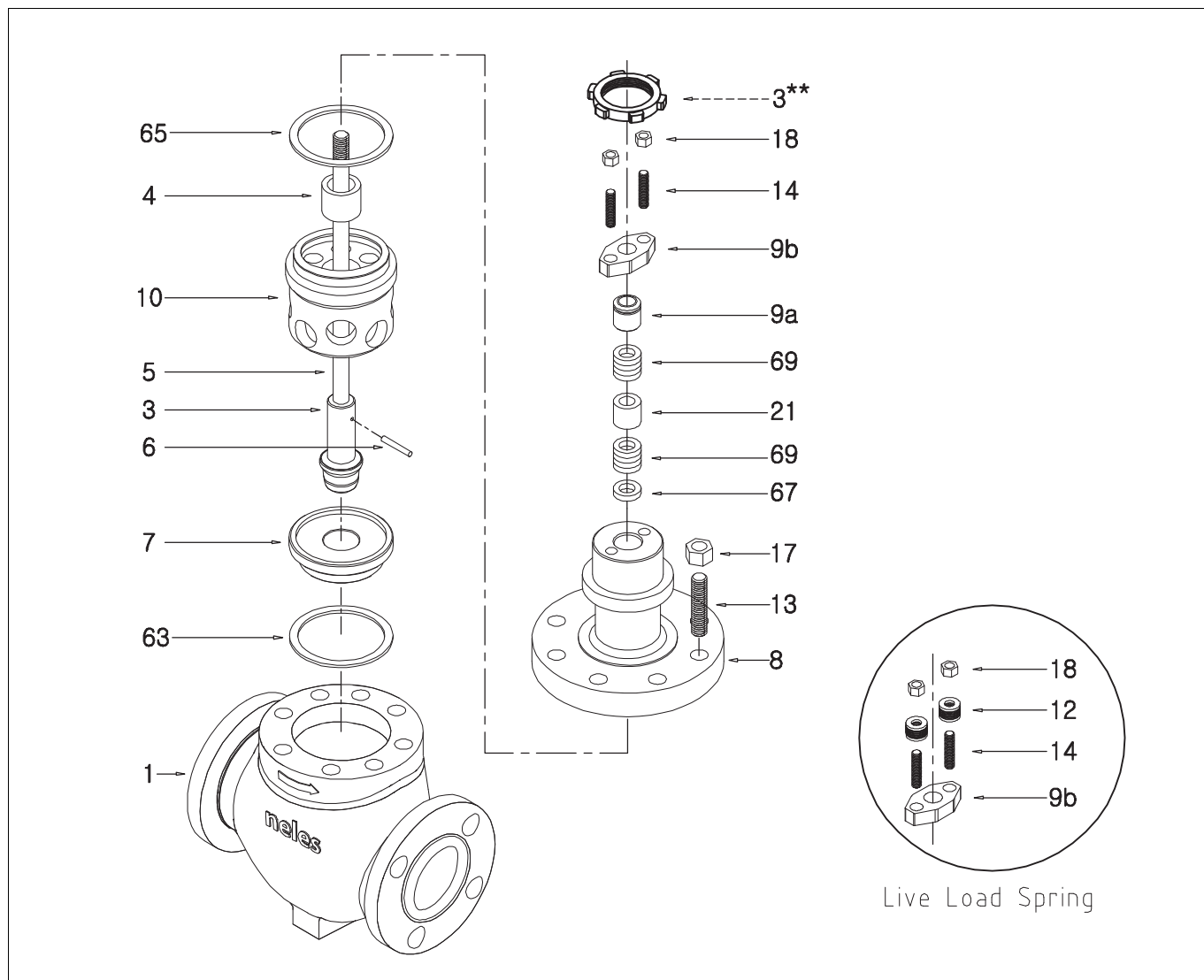
Always use original spare parts to make sure that the valve functions as intended.

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 EXPLODED VIEW AND PARTS LIST



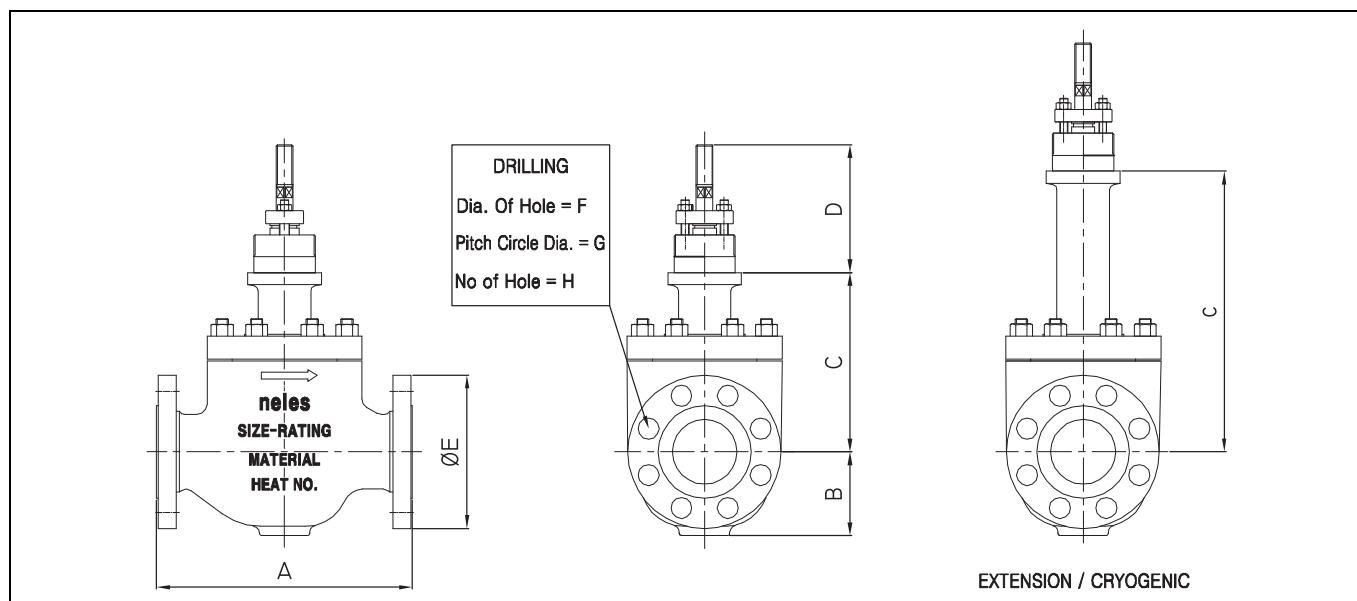
Item	Description	Recommended spare part
1	BODY	
2*	PLUG SET	
	3* PLUG	
	5* STEM	
	6* PLUG PIN	
3**	YOKE NUT	
4	GUIDE BUSHING	
7	SEAT RING	
8	BONNET	
9a	GLAND	
9b	GLAND FLANGE	
10	RETAINER	
12	DISC SPRING ASSY	
13	STUD	
14	STUD	
17	HEXAGON NUT	
18	HEXAGON NUT	
19	IDENTIFICATION PLATE	
21	LANTERN RING	
63	SEAT GASKET	X
65	BODY GASKET	X
67	PACKING SPACER	
69	PACKING RING	X

*) delivered as a set

**) Valve-Actuator mounting parts

10 DIMENSIONS AND WEIGHTS

10.1 Valve GU



150 #/ 300 #/ 600

Dimension (mm)	A			B			C		D	E			F			G			H			Weight (kg) (Approximate)		
	150#	300#	600#	150#	300#	600#	STD	EXT	COMMON	150#	300#	600#	150#	300#	600#	150#	300#	600#	150#	300#	600#	150#	300#	600#
15	184	190	203	44.5	47.5	47.5	142	250	110	90	95	95	15.9	15.9	15.9	60.3	66.7	66.7	4	4	4	14	15	23
20	184	194	206	49	57.5	57.5	142	250	110	100	115	115	15.9	19.1	19.1	69.9	82.6	82.6	4	4	4	14	15	23
25	184	197	210	55	63	63	142	250	110	110	125	125	15.9	19.1	19.1	79.4	88.9	88.9	4	4	4	14	15	23
40	222	235	251	65	78	78	161	270	110	125	155	155	15.9	22.2	22.2	98.4	114.3	114.3	4	4	4	22	23	27
50	254	267	286	83	83	83	178	295	110	150	165	165	19.1	19.1	19.1	120.7	127	127	4	8	8	25	27	32
80	298	318	337	109	109	120	222	330	115	190	210	210	19.1	22.2	22.2	152.4	168.3	168.3	4	8	8	55	57	62
100	352	368	394	135	135	135	248	380	140	230	255	275	19.1	22.2	25.4	190.5	200	215.9	8	8	8	80	83	92

Dimension (inch)	A			B			C		D	E			F			G			H			Weight (lbs) (Approximate)		
	150#	300#	600#	150#	300#	600#	STD	EXT	COMMON	150#	300#	600#	150#	300#	600#	150#	300#	600#	150#	300#	600#	150#	300#	600#
1/2"	7.24	7.48	7.99	1.75	1.87	1.87	5.59	9.84	4.33	3.54	3.74	3.74	0.63	0.63	0.63	2.37	2.63	2.63	4	4	4	31	33	51
3/4"	7.24	7.64	8.11	1.93	2.26	2.26	5.59	9.84	4.33	3.94	4.53	4.53	0.63	0.75	0.75	2.75	3.25	3.25	4	4	4	31	33	51
1"	7.24	7.76	8.27	2.17	2.48	2.48	5.59	9.84	4.33	4.33	4.92	4.92	0.63	0.75	0.75	3.13	3.5	3.5	4	4	4	31	33	51
1-1/2"	8.74	9.25	9.88	2.56	3.07	3.07	6.34	10.63	4.33	4.92	6.1	6.1	0.63	0.87	0.87	3.87	4.5	4.5	4	4	4	49	51	60
2"	10	10.51	11.26	3.27	3.27	3.27	7.01	11.61	4.33	5.91	6.5	6.5	0.75	0.75	0.75	4.75	5	5	4	8	8	55	60	71
3"	11.73	12.52	13.27	4.29	4.29	4.72	8.74	12.99	4.53	7.48	8.27	8.27	0.75	0.87	0.87	6	6.63	6.63	4	8	8	121	126	137
4"	13.86	14.49	15.51	5.31	5.31	5.31	9.76	14.96	5.51	9.06	10.04	10.83	0.75	0.87	1	7.5	7.87	8.5	8	8	8	176	183	203

NOTE
P.C.D = Pitch Circle Diameter

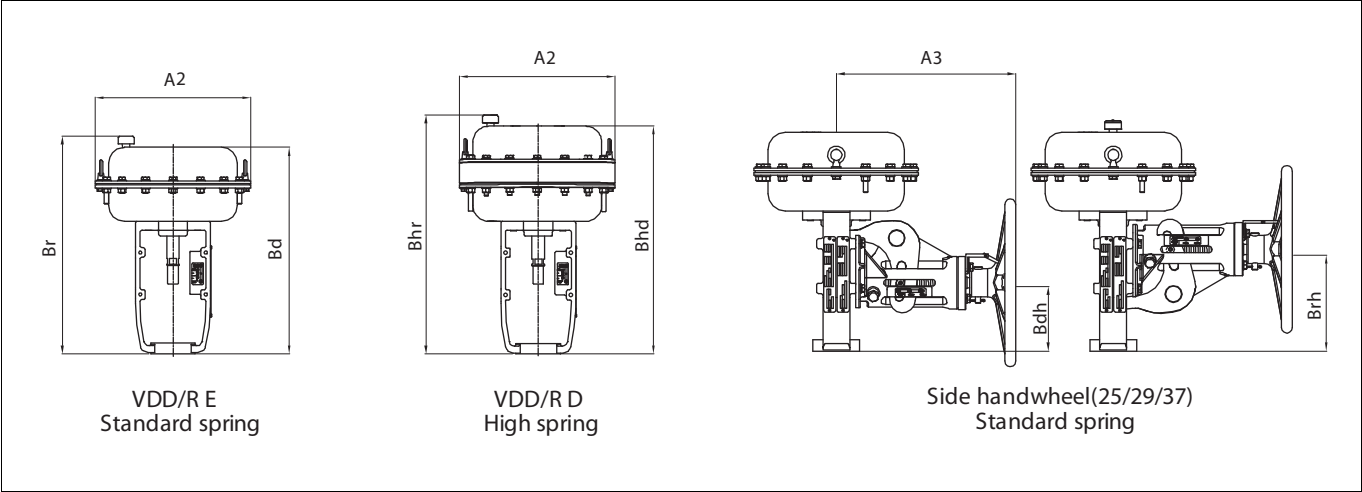
900 #/ 1500

Dimension (mm)	A		B		C		D	E		F		G		H		Weight (kg) (Approximate)	
	900#	1500#	900#	1500#	STD	EXT	COMMON	900#	1500#	900#	1500#	900#	1500#	900#	1500#	900#	1500#
15	292	292	82	82	236	330	110	120	120	22.2	22.2	82.6	82.6	4	4	60	60
20	292	292	82	82	236	330	110	130	130	22.2	22.2	88.9	88.9	4	4	60	60
25	292	292	82	82	236	330	110	150	150	25.4	25.4	101.6	101.6	4	4	60	60
40	333	333	90	90	248	380	110	180	180	28.6	28.6	123.8	123.8	4	4	63	63
50	375	375	113	113	315	380	110	215	215	25.4	25.4	165.1	165.1	8	8	67	67
80	441	460	135	135	335	430	115	240	265	25.4	31.8	190.5	203.2	8	8	150	163
100	511	530	182	182	376	475	140	290	310	31.8	34.9	235	241.3	8	8	244	255

Dimension (inch)	A		B		C		D	E		F		G		H		Weight (lbs) (Approximate)	
	900#	1500#	900#	1500#	STD	EXT	COMMON	900#	1500#	900#	1500#	900#	1500#	900#	1500#	900#	1500#
1/2"	11.5	11.5	3.23	3.23	9.29	13	4.33	4.72	4.72	0.87	0.87	3.25	3.25	4	4	132	132
3/4"	11.5	11.5	3.23	3.23	9.29	13	4.33	5.12	5.12	0.87	0.87	3.5	3.5	4	4	132	132
1"	11.5	11.5	3.23	3.23	9.29	13	4.33	5.91	5.91	1	1	4	4	4	4	132	132
1-1/2"	13.11	13.11	3.54	3.54	9.76	15	4.33	7.09	7.09	1.13	1.13	4.87	4.87	4	4	139	139
2"	14.76	14.76	4.45	4.45	12.4	15	4.33	8.46	8.46	1	1	6.5	6.5	8	8	148	148
3"	17.36	18.11	5.31	5.31	13.19	17	4.53	9.45	10.43	1	1.25	7.5	8	8	8	331	359
4"	20.12	20.87	7.17	7.17	14.8	18.7	5.51	11.42	12.2	1.25	1.37	9.25	9.5	8	8	538	562

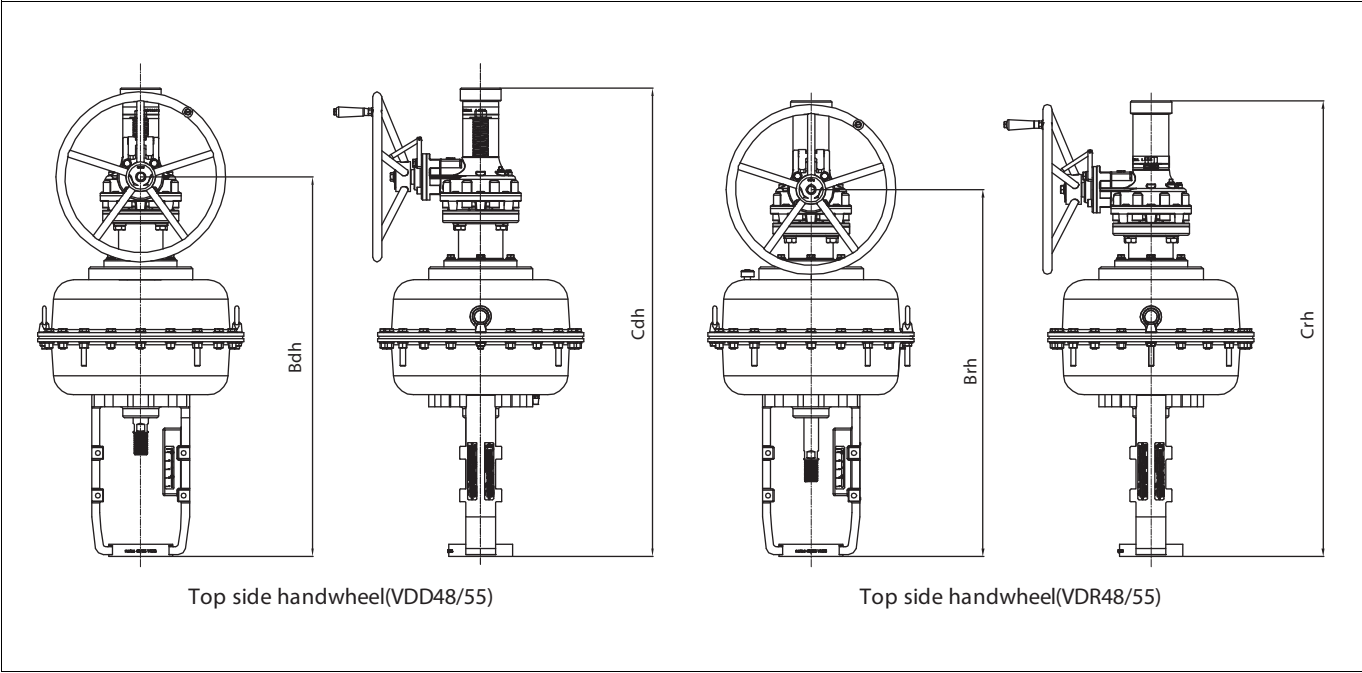
NOTE
P.C.D = Pitch Circle Diameter

10.2 Actuator VDD/VDR



Dimension (mm)	Size (mm)	Without handwheel				With handwheel				
		A2	Bd / Bhd	Br / Bhr	Weight (kg)	A2	A3	Bdh	Brh	Weight (kg)
VD_25 E		255	348	373	12	255	312	110	170	23
VD_25 D		255	373	395	17	255	312	110	170	28
VD_29 E		295	391	416	18	295	312	122	182	29
VD_29 D		295	431	453	26	295	312	122	182	32
VD_37 E		375	464	489	28	375	352	131	211	43
VD_37 D		375	514	535	46					

Dimension (inch)	Size (inch)	Without handwheel				With handwheel				
		A2	Bd / Bhd	Br / Bhr	Weight (lbs)	A2	A3	Bdh	Brh	Weight (lbs)
VD_25 E		10	14	15	26	10	12	4	7	51
VD_25 D		10	15	16	37	10	12	4	7	62
VD_29 E		12	15	16	40	12	12	5	7	64
VD_29 D		12	17	18	57	12	12	5	7	82
VD_37 E		15	18	19	62	15	14	5	8	95
VD_37 D		15	20	21	101					



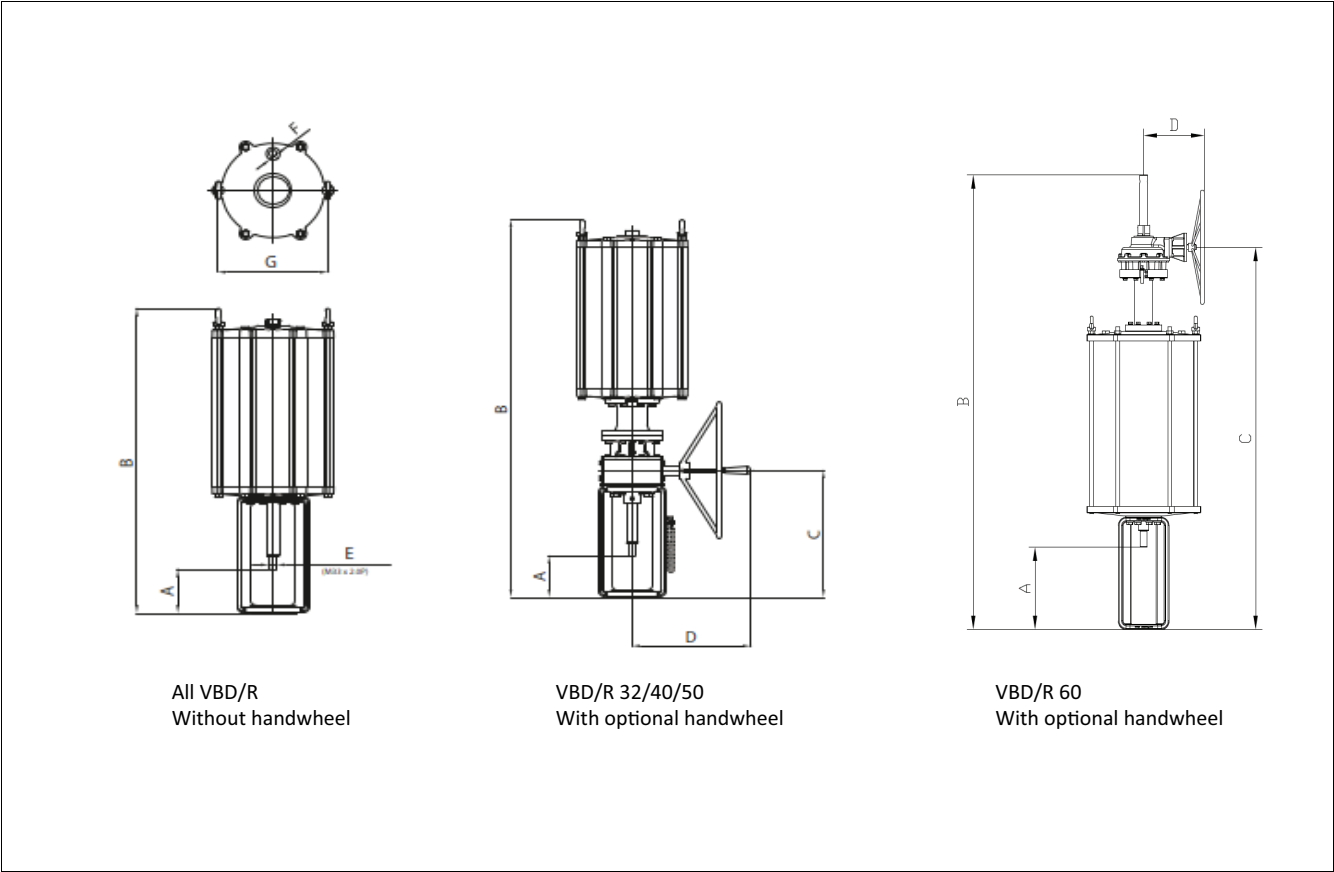
Dimension (mm)	Without handwheel				With handwheel				
	A2	Bd / Bh	Br / Bh	Weight (kg)	Bdh	Brh	Cdh	Crh	Weight (kg)
VD_48 E	486	652	677	86	896	865	1102	1072	112
VD_48 D	486	702	724	118	946	915	1152	1122	144
VD_55 E	566	695	720	112	940	910	1145	1115	145
VD_55 D	566	745	767	152					

Dimension (inch)	Without handwheel				With handwheel				
	A2	Bd / Bh	Br / Bh	Weight (lbs)	Bdh	Brh	Cdh	Crh	Weight (lbs)
VD_48 E	19	26	27	190	35	34	43	42	247
VD_48 D	19	28	29	260	37	36	45	44	317
VD_55 E	22	27	28	247	37	36	45	44	320
VD_55 D	22	29	30	335					

NOTE

1. "E" refers to Spring range 0.8~2.6
2. "D" refers to Spring range 1.5~3.4
3. "Br / Bh" refers to reverse acting actuator, VDR E / D
4. "Bd / Bh" refers to direct acting actuator, VDD E / D
5. "Cdh / Crh" Top side handwheel actuator, VD_48/55

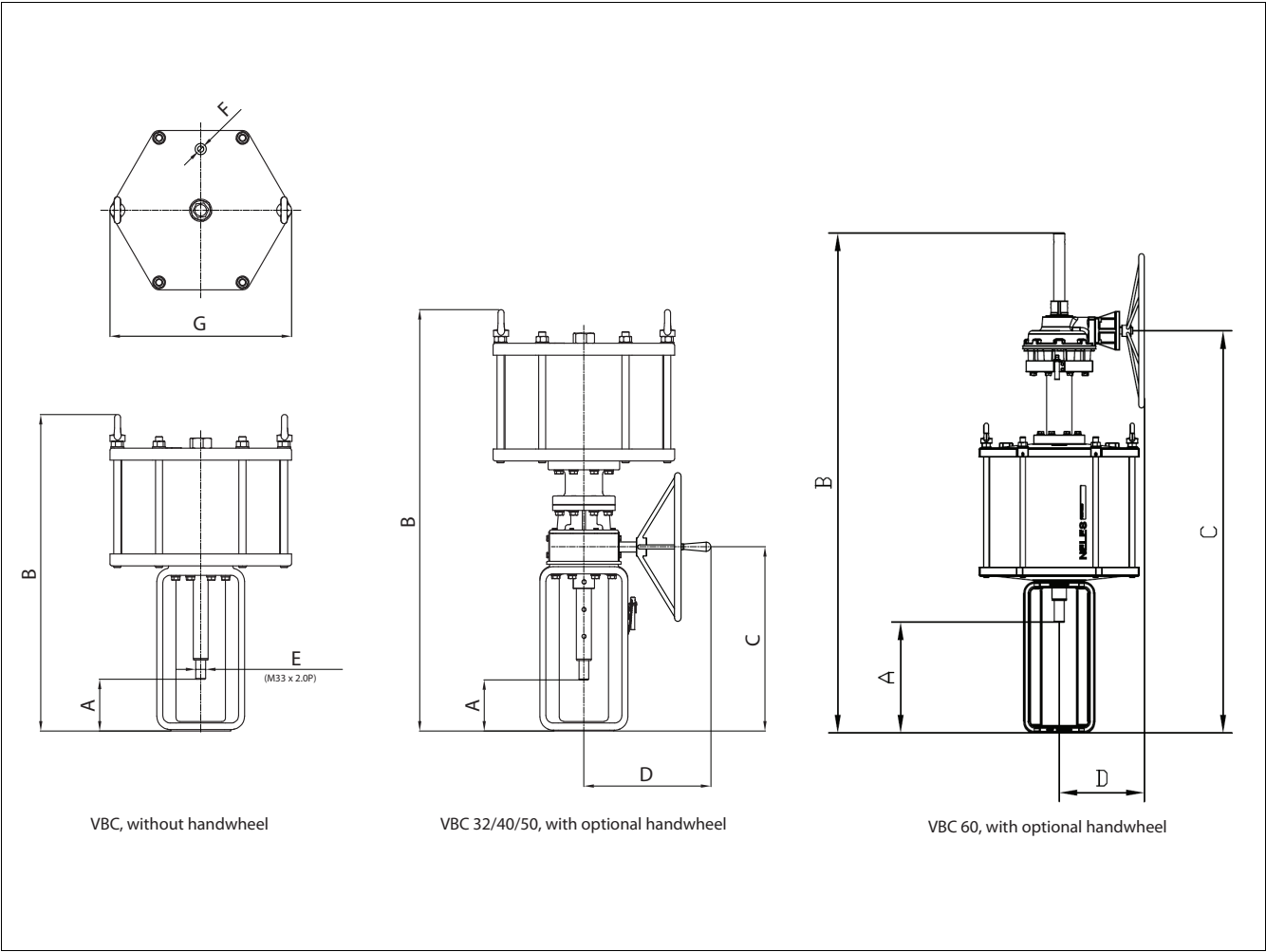
10.3 Actuator VBD/R



Dimension (mm)	Stroke Range	Without handwheel					With handwheel				
		A	B	F	G	Weight (kg)	A	B	C	D	Weight (kg)
VBD/R32	50,60,70,80,120	153	1064	3/4" NPT	392	145	155	1388	466	401	199
VBD/R40	60,70,80,120,140,160,180	185	1450	3/4" NPT	497	290	178	1800	619	427	268
VBD/R50	60,70,80,120,140,160,180	185	1535	1" NPT	610	485	178	1885	619	427	563

Dimension (inch)	Stroke Range	Without handwheel					With handwheel				
		A	B	F	G	Weight (lbs)	A	B	C	D	Weight (lbs)
VBD/R32	50,60,70,80,120	6	41.9	3/4" NPT	15.4	320	6.1	54.6	18.3	15.8	439
VBD/R40	60,70,80,120,140,160,180	7.2	57.1	3/4" NPT	19.6	639	7	70.9	24.4	16.8	591
VBD/R50	60,70,80,120,140,160,180	7.2	60.4	1" NPT	24	1069	7	74.2	24.4	16.8	1241

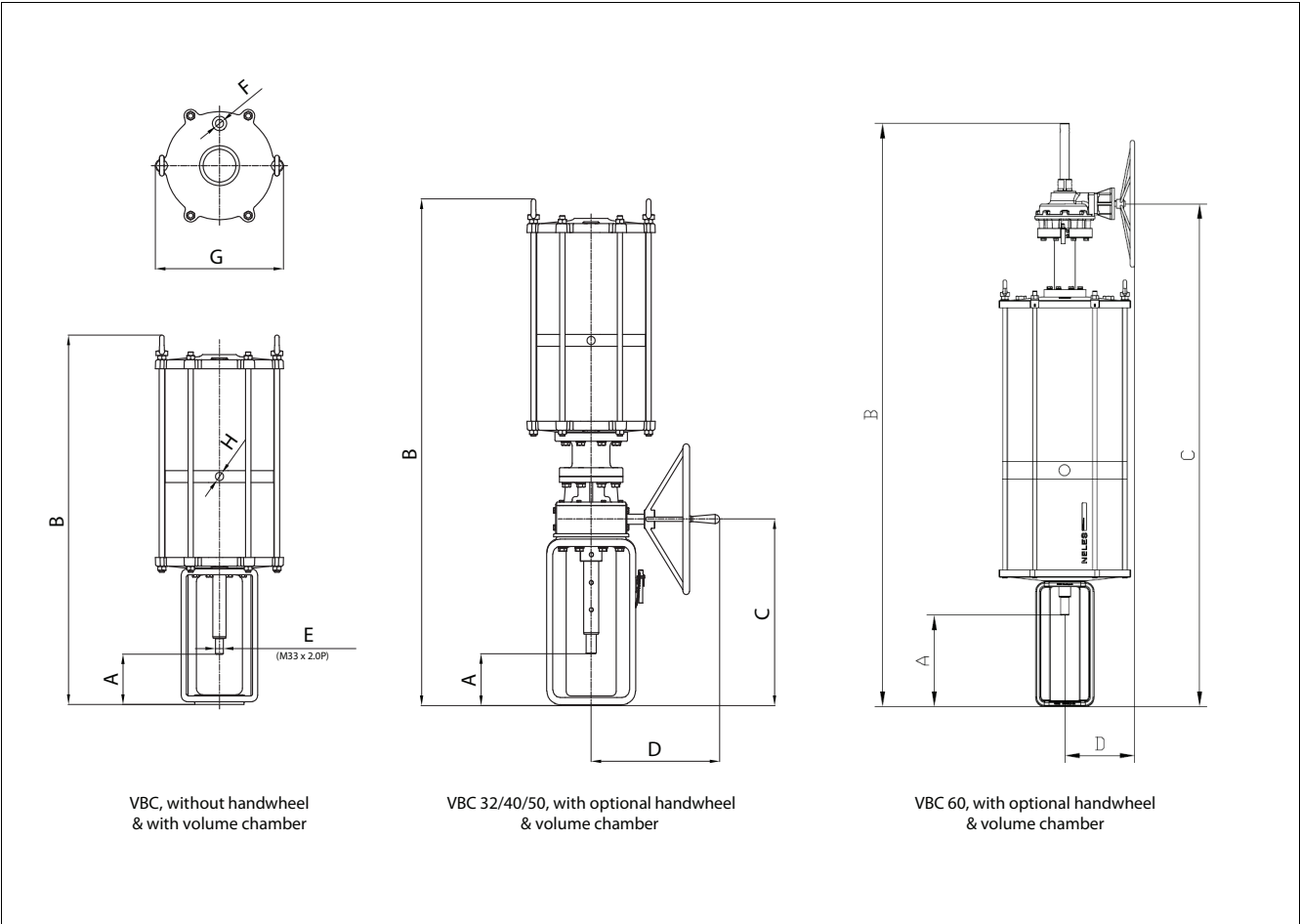
10.4 Actuator VBC



Dimension (mm) Size	Stroke Range	Without handwheel					With handwheel				
		A	B	F	G	Weight (kg)	A	B	C	D	Weight (kg)
VBC32	50,60,70,80,120	153	769	3/4" NPT	392	96	158	1093	471	417	147
VBC40	60,70,80,120,140,160,180	185	1054	3/4" NPT	499	190	185	1403	619	427	263
VBC50	60,70,80,120,140,160,180	184	1066	1" NPT	610	297	179	1415	619	427	371

Dimension (mm) Size	Stroke Range	Without handwheel					With handwheel				
		A	B	F	G	Weight (lbs)	A	B	C	D	Weight (lbs)
VBC32	50,60,70,80,120	6	30.3	3/4" NPT	15.4	212	6.2	43	18.5	16.4	324
VBC40	60,70,80,120,140,160,180	7.3	41.5	3/4" NPT	19.6	419	7.3	55.2	24.4	16.8	580
VBC50	60,70,80,120,140,160,180	7.2	42	1" NPT	24	655	7	55.7	24.4	16.8	818

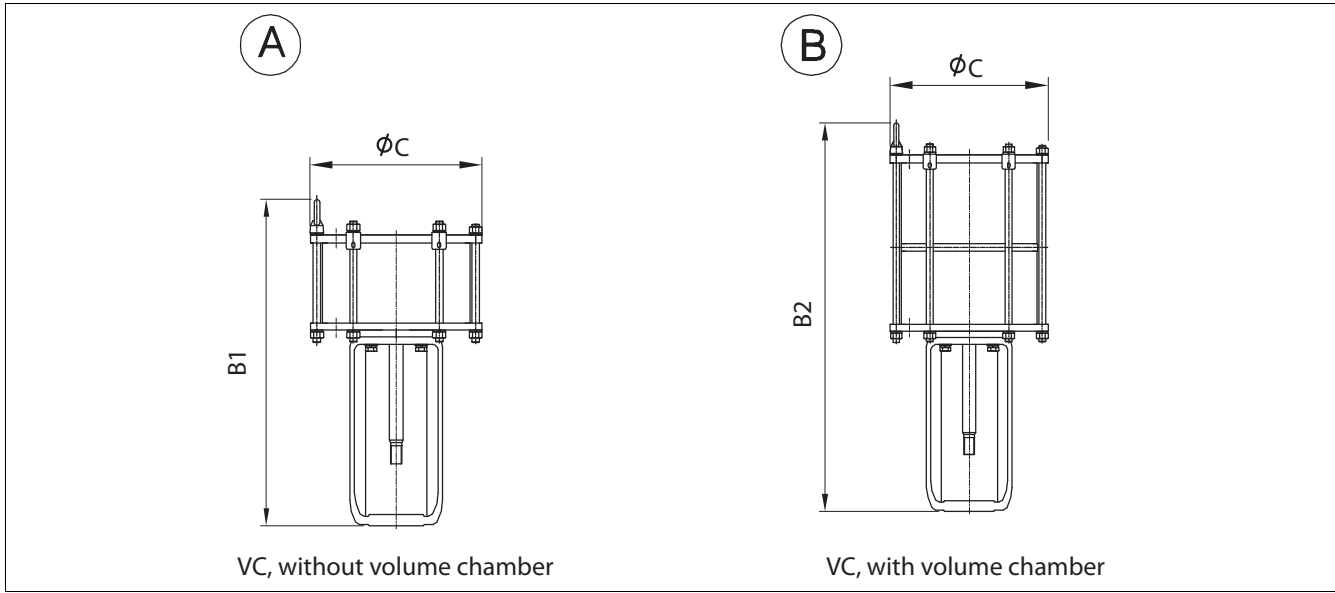
10.5 Actuator VBC with volume chamber



Dimension (mm) Size	Stroke Range	Without handwheel					With handwheel					
		A	B	F	G	H	Weight (kg)	A	B	C	D	Weight (kg)
VBC32_V	50,60,70,80,120	153	1116	3/4" NPT	390	3/4" NPT	129	158	1440	471	417	180
VBC40_V	60,70,80,120,140,160,180	185	1550	3/4" NPT	499	3/4" NPT	255	185	1899	619	427	329
VBC50_V	60,70,80,120,140,160,180	184	1570	1" NPT	610	1" NPT	415	179	1919	619	427	490

Dimension (mm) Size	Stroke Range	Without handwheel						With handwheel				
		A	B	F	G	H	Weight (lbs)	A	B	C	D	Weight (lbs)
VBC32_V	50,60,70,80,120	6	43.9	3/4" NPT	15.4	3/4" NPT	284	6.2	56.7	18.5	16.4	397
VBC40_V	60,70,80,120,140,160,180	7.3	61	3/4" NPT	19.7	3/4" NPT	562	7.3	74.8	24.4	16.8	725
VBC50_V	60,70,80,120,140,160,180	7.2	61.8	1" NPT	24	1" NPT	915	7	75.6	24.4	16.8	1080

10.6 Actuator VCC without handwheel



VC actuator without handwheel

Stroke (mm)	# 30				# 40				# 50			
	C		370		C		460		C		560	
	B1		Weight(kg)		B1		Weight(kg)		B1		Weight(kg)	
	B2	A	B		B2	A	B		B2	A	B	
40	640	92	115		810	120	148		810	186	234	
	760				935				935			
50	650	94	118		820	123	152		820	189	237	
	790				965				965			
60	660	97	121		830	126	155		830	192	242	
	820				995				995			
70	670	100	124		840	128	159		840	195	246	
	850				1025				1025			
80	680	103	127		850	131	162		850	198	251	
	880				1055				1055			
90	690	106	130		860	134	166		860	201	256	
	910				1085				1085			
100	700	108	133		870	137	173		870	203	261	
	940				1115				1115			
120	720	114	139		890	142	177		890	209	270	
	1000				1175				1175			
140					910	148	184		910	215	279	
					1235				1235			
180					950	159	198		950	227	298	
					1355				1355			

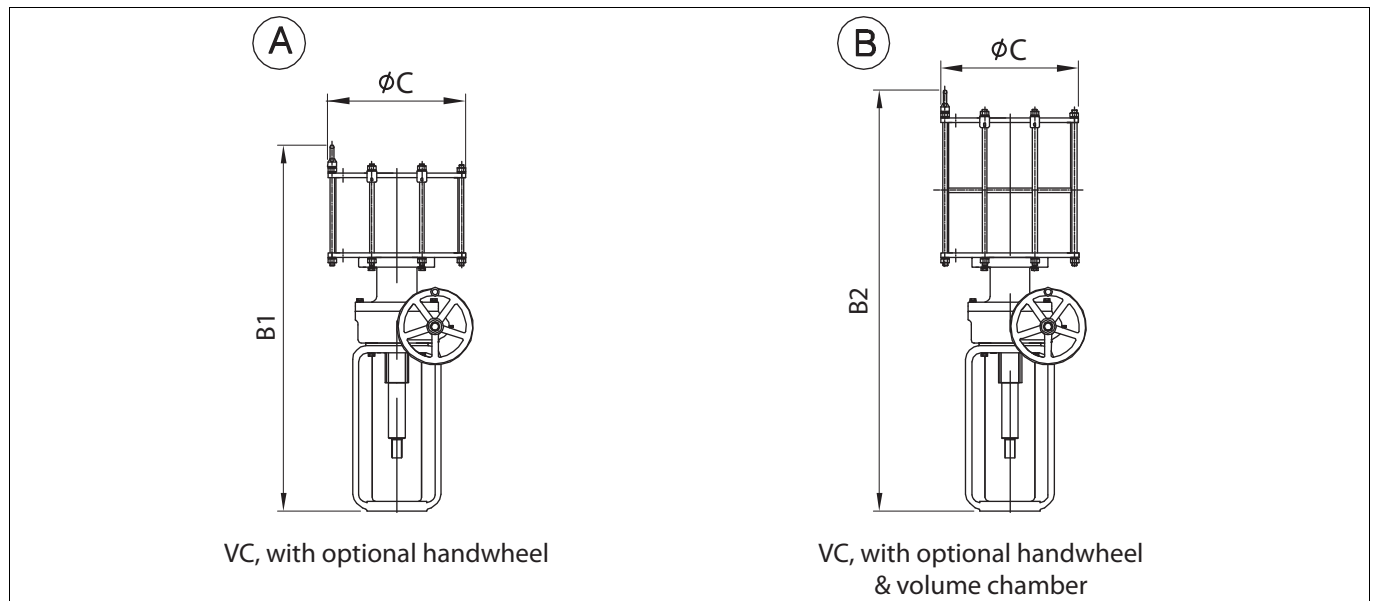
VC actuator without handwheel

Stroke (mm)	# 30				# 40				# 50			
	C		15		C		18		C		22	
	B1		Weight(lbs)		B1		Weight(lbs)		B1		Weight(lbs)	
	B2	A	B		B2	A	B		B2	A	B	
40	25	203	254		32	265	326		32	410	516	
	30				37				37			
50	26	207	260		32	271	335		32	417	522	
	31				38				38			
60	26	214	267		33	278	342		33	423	534	
	32				39				39			
70	26	220	273		33	282	351		33	430	542	
	33				40				40			
80	27	227	280		33	289	357		33	437	553	
	35				42				42			
90	27	234	287		34	295	366		34	443	564	
	36				43				43			
100	28	238	293		34	302	381		34	448	575	
	37				44				44			
120	28	251	306		35	313	390		35	461	595	
	39				46				46			
140					36	326	406		36	474	615	
					49				49			
180					37	351	437		37	500	657	
					53				53			

Stroke (mm)	# 60				# 70				# 80			
	C		660		C		710		C		820	
	B1		Weight(kg)		B1		Weight(kg)		B1		Weight(kg)	
	B2	A	B		B2	A	B		B2	A	B	
100	954	255	344		955	322	438		954	378	519	
	1199				1203				1207			
120	974	262	355		975	330	450		974	386	531	
	1259				1263				1267			
140	994	269	365		995	338	461		994	394	543	
	1319				1323				1327			
180	1034	283	386		1035	354	484		1034	410	567	
	1439				1443				1447			
240	1094	303	417		1095	377	518		1094	435	604	
	1619				1623				1627			
280									1134	451	628	
									1747			

Stroke (mm)	# 60				# 70				# 80			
	C		26		C		28		C		32	
	B1		Weight(lbs)		B1		Weight(lbs)		B1		Weight(lbs)	
	B2	A	B		B2	A	B		B2	A	B	
100	38	562	758		38	710	966		37	833	1144	
	47				47				48			
120	38	578	783		38	728	992		38	851	1171	
	50				50				50			
140	39	593	805		39	745	1016		39	869	1197	
	52				52				52			
180	41	624	851		41	780	1067		41	904	1250	
	57				57				57			
240	43	668	919		43	831	1142		43	959	1332	
	64				64				64			
280									45	994	1385	
									69			

10.7 Actuator VCC with handwheel



VC actuator with handwheel

Stroke (mm)	#30			#40			#50		
	C	370		C	460		C	560	
	B1	Weight(kg)		B1	Weight(kg)		B1	Weight(kg)	
	B2	A	B	B2	A	B	B2	A	B
40	930	134	157	1095	180	208	1095	246	294
	1055			1220			1220		
50	940	137	160	1105	183	212	1105	249	299
	1085			1250			1250		
60	950	139	163	1115	186	215	1115	252	303
	1115			1280			1280		
70	960	142	167	1125	188	219	1125	255	308
	1145			1310			1310		
80	970	144	170	1135	191	222	1135	258	313
	1175			1340			1340		
90	980	147	173	1145	194	226	1145	261	318
	1205			1370			1370		
100	990	150	176	1155	197	230	1155	263	322
	1235			1400			1400		
120	1010	155	183	1175	202	237	1175	269	332
	1295			1460			1460		
140				1195	208	244	1195	275	341
				1520			1520		
180				1235	219	258	1235	287	360
				1640			1640		

VC actuator with handwheel

Stroke (mm)	#30			#40			#50		
	C	15		C	18		C	22	
	B1	Weight(lbs)		B1	Weight(lbs)		B1	Weight(lbs)	
	B2	A	B	B2	A	B	B2	A	B
40	37	295	346	43	397	459	43	542	648
	42			48			48		
50	37	302	353	44	403	467	44	549	659
	43			49			49		
60	37	306	359	44	410	474	44	556	668
	44			50			50		
70	38	313	368	44	414	483	44	562	679
	45			52			52		
80	38	317	375	45	421	489	45	569	690
	46			53			53		
90	39	324	381	45	428	498	45	575	701
	47			54			54		
100	39	331	388	45	434	507	45	580	710
	49			55			55		
120	40	342	403	46	445	522	46	593	732
	51			57			57		
140				47	459	538	47	606	752
				60			60		
180				49	483	569	49	633	794
				65			65		

Stroke (mm)	#60			#70			#80		
	C	660		C	710		C	820	
	B1	Weight(kg)		B1	Weight(kg)		B1	Weight(kg)	
	B2	A	B	B2	A	B	B2	A	B
100	1239	315	404	1240	368	502	1289	438	579
	1484			1488			1542		
120	1259	322	415	1260	376	514	1309	446	591
	1544			1548			1602		
140	1279	329	425	1280	384	525	1329	454	603
	1604			1608			1662		
180	1319	343	446	1320	400	548	1369	470	627
	1724			1728			1782		
240	1379	363	477	1380	423	582	1429	495	664
	1904			1908			1962		
280							1469	511	688
							2082		

Stroke (mm)	#60			#70			#80		
	C	26		C	28		C	32	
	B1	Weight(lbs)		B1	Weight(lbs)		B1	Weight(lbs)	
	B2	A	B	B2	A	B	B2	A	B
100	49	694	891	49	811	1107	51	966	1276
	58			58			61		
120	50	710	915	50	829	1133	52	983	1303
	61			61			63		
140	50	725	937	50	847	1157	52	1001	1329
	63			63			65		
180	52	756	983	52	882	1208	54	1036	1382
	68			68			70		
240	54	800	1052	54	933	1283	56	1091	1464
	75			75			77		
280							58	1127	1517
							82		

11 TYPE CODE

Globe Unbalanced, Top Guided Type, Series GU

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.
GU	01	C	W	A	J2	B	P1	X	BC	S1	R1	X	S	G	X	S	G	X	A	E	FC

VALVE CONSTRUCTIONS

1.	VALVE SERIES		
GU	Globe unbalanced, Top guided type		
2.	BODY SIZE		
0H	0.5" / DN 15	3Q	0.75" / DN 20
01	1" / DN 25	1H	1.5" / DN 40
02	2" / DN 50	03	3" / DN 80
04	4" / DN 100		
	Optional body size		
06	6" / DN 150	YY	Special
3.	PRESSURE RATING		
C	ASME Class 150	D	ASME class 300
F	ASME Class 600	G	ASME class 900
H	ASME class 1500	I	ASME Class 2500
J	EN PN 10	K	EN PN 16
L	EN PN 25	M	EN PN 40
N	EN PN 63	P	EN PN 100
B	EN PN 160	E	EN PN 250
Y	EN PN 320	R	JIS 10K
T	JIS 20K		
4.	END CONNECTION		
W	Flanged RF, ASME B16.5		
C	Flanged RF, EN 1092-1		
V	Socket welding, ASME B16.11		
Q	Butt welding, ASME B16.25		
	Optional end connection		
Z	Ring joint flange, ASME B16.5		
Y	Special		
5.	BONNET CONSTRUCTION		
	Bonnet type	Actuator connection	
A	General	Applicable for VD_25/29/37	
B	General	Applicable for VD_48/55	
C	General	Applicable for VC_30, VB_32	
E	Extension	Applicable for VD_25/29/37	
F	Extension	Applicable for VD_48/55	
G	Extension	Applicable for VC_30, VB_32	
P	Cryogenic	Applicable for VD_25/29/37	
Q	Cryogenic	Applicable for VD_48/55	
R	Cryogenic	Applicable for VC_30, VB_32	
	Optional bonnet construction		
J	Bellows seals	Applicable for VD_25/29/37	
K	Bellows seals	Applicable for VD_48/55	
M	Bellows seal	Applicable for VC_30, VB_32	
Y	Special	Special	
6.	BODY & BONNET MATERIAL		
J2	A216 gr. WCB		
S6	A351 gr. CF8M		
J4	A217 gr. WC6		
CG	A217 gr. WC9		
	Optional body material		
S1	A351 gr. CF3M		
YY	Special		

- Bonnet material is equivalent to Body material.

7.	MODEL CODE
B	Model B

TRIM CONSTRUCTIONS

8.	PLUG MATERIAL			
	Material	Description		
	P1	410 SS	General for carbon steel valve	
	T6	316 SS	General for stainless steel valve	
	VM	Alloy 6	Use for small Cv and Micro plug	
P2	420J2	General for Cr-Mo valve		
Optional plug material				
S1	316L SS			
YY	Special			
9.	PLUG APPLICATION			
X	Not applicable			
A	Cobalt based alloy			
Optional Plug Application				
Y	Special			
10.	STEM MATERIAL			
	Material	Description		
	BC	630 SS + HCr	Standard for carbon steel body	
	TC	316 SS + HCr	General for stainless steel valve	
	VX	XM-19	General for Cr-Mo valve	
Optional stem material				
FC	316L SS + HCr			
11.	SEAT TYPE			
S1	Single metal seat			
T1	Single soft seat			
Optional seat type				
YY	Special			
12.	SEAT / RETAINER MATERIAL			
	Seat	Retainer	Guide bushing	
	R1	410 SS	CB7Cu-1 / 630 SS	AISI 440C
	T6	316 SS	CF8M / 316 SS	AISI 316 + Alloy 6
	V6	Alloy 6	CF8M / 316 SS	AISI 316 + Alloy 6
	P2	420J2	CA40/420J2	AISI 440C
	Optional seat / Retainer material			
R2	420J2 SS	CB7Cu-1 / 630 SS	AISI 440C	
R3	316L SS	316L SS	AISI 316 + Alloy 6	
YY	Special	Special	Special	
- AISI 410 is general for carbon steel valve. - AISI 316 is general for stainless steel valve.				
13.	SEAT APPLICATION			
	X	Not applicable		
	A	Cobalt based alloy		
	P	Insert PTFE		
	Optional seat application			
Q	Insert PTFE + Cobalt based alloy			
Y	Special			

- AISI 410 is general for carbon steel valve.
- AISI 316 is general for stainless steel valve.

* ASME valve face to face length according to ISA 75.08.

* The body, bonnet, trim materials are subject to change as equivalent depending on detail design.

* See 'Neles Globe Typecode Instruction' for further options and explanations.

OTHERS

14.	PACKING TYPE
S	Standard
E	Low emission, Live loaded
Optional Packing / Bellows Type	
C	Bellows Seal (316L SS, Formed)
Y	Special

15.	PACKING MATERIAL
G	PTFE + Carbon fiber
F	Graphite
T	PTFE V-Ring
C	PTFE + Carbon fiber (ATEX)
Optional packing material	
H	Hi-Graphite
Y	Special

16.	SEAL RING MATERIAL
X	Not applicable

17.	GASKET MATERIAL
S	S/W gasket type, 316L SS + Graphite for general
L	S/W gasket type, 316L SS + PTFE
Optional gasket material	
H	S/W gasket type, 316L SS + Hi-Graphite
Y	Special

18.	STUD / NUT MATERIAL
G	A193 gr. B7M / A194 gr. 2HM
D	A193 gr. B8M/ A 194 gr. 8M
K	A320 gr. B8M cl. 2 / A194 gr. 8M
H	A193 gr. B16 / A194 gr. 7
E	A453 gr. 660/ A453 gr. 660
Optional Stud / Nut Material	
Y	Special

19.	OPTIONS
X	Not applicable
E	Anti-erosion
H	Alloy 6 coating on plug & plug guide for High temp. (top-guided valve only)
L	Lub. & Isol. valve
W	Water seal
Y	Special

* ASME valve face to face length according to ISA 75.08.

* The body, bonnet, trim materials are subject to change as equivalent depending on detail design.

* See 'Neles Globe Typecode Instruction' for further options and explanations.

TRIM TYPE & RATED Cv

20. Sign	TRIM TYPE	21. Sign	TRIM CHARACTERISTIC	22. Sign	RATED Cv																
					DESCRIPTION	BODY SIZE AND STROKE															
						0.5"	Str.	0.75"	Str.	1"	Str.	1.5"	Str.	2"	Str.	3"	Str.	4"	Str.	6"	Str.
A	General plug	L E	Linear Equal %	FC	General / Full capacity	7	(20)	9	(20)	13.5	(20)	28	(20)	49	(20)	100	(40)	190	(40)	295	(60)
				1A	General / 1-Step reduction	4	(20)	5.5	(20)	9	(20)	16	(20)	28	(20)	70	(40)	120	(40)	165	(60)
				2A	General / 2-Step reduction	2.3	(20)	3	(20)	5	(20)	10.5	(20)	17	(20)	42	(40)	72	(40)	85	(60)
				3A	General / 3-Step reduction	1.5	(20)	2	(20)	3	(20)	6	(20)	10	(20)	25	(40)	42	(40)	50	(60)
				4A	General / 4-Step reduction	0.8	(20)	1.2	(20)	2	(20)	4	(20)								
				5A	General / 5-Step reduction	0.5	(20)	0.7	(20)	1	(20)	2.2	(20)								
				6A	General / 6-Step reduction	0.3	(20)	0.4	(20)	1	(20)	1.2	(20)								
				FT	Tendril / Full capacity	7	(20)	9	(20)	14	(20)	28	(20)	49	(20)	100	(40)	190	(40)		
				1T	Tendril / 1-Step reduction	4	(20)	5.5	(20)	9	(20)	16	(20)	28	(20)	70	(40)	120	(40)		
				2T	Tendril / 2-Step reduction	2.3	(20)	3	(20)	5	(20)	10.5	(20)	17	(20)	42	(40)	72	(40)		
				3T	Tendril / 3-Step reduction	1.5	(20)	2	(20)	3	(20)	6	(20)	10	(20)	25	(40)	42	(40)		
				4T	Tendril / 4-Step reduction	0.8	(20)	1.2	(20)	2	(20)	4	(20)								
				5T	Tendril / 5-Step reduction	0.5	(20)	0.7	(20)	1	(20)	2.2	(20)								
				6T	Tendril / 6-Step reduction	0.3	(20)	0.4	(20)	1	(20)	1.2	(20)								
C	Micro plug	L	Linear	FC	General / Full capacity	0.1	(20)	0.1	(20)	0	(20)										
				1A	General / 1-Step reduction	0.06	(20)	0.06	(20)	0	(20)										
				2A	General / 2-Step reduction	0.03	(20)	0.03	(20)	0	(20)										
				3A	General / 3-Step reduction	0.01	(20)	0.01	(20)	0	(20)										
				4A	General / 4-Step reduction	0.006	(20)	0.006	(15)	0	(20)										
				5A	General / 5-Step reduction	0.003	(20)	0.003	(15)	0	(20)										
Y	Special	Y	Special	YY	Special	Please contact Neles for more information															

- Rated Cv is different depending on trim type and characteristic.

- Str. : valve stroke length(mm). It should be matched with actuator stroke length.

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