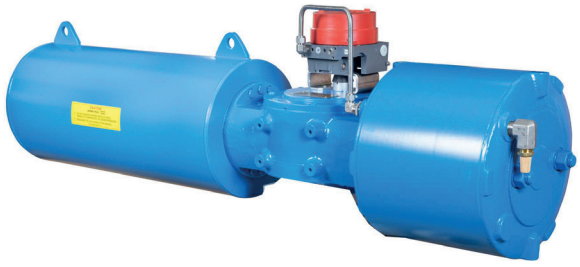
Neles™ high performance heavy duty scotch yoke actuator

Series N1



The Neles scotch yoke N1 series actuator is designed for use with quarter turn valves in both modulating control and on-off service. Its modular design allows for easy field modification of the actuator. The yoke construction creates high end of stroke torques for reliable use in tight shut-off service and ESD applications up to SIL 3. The N1 actuator's robust design ensures a long life in harsh environments due to unique features such as its internal tie-rod mechanism. This heavy duty actuator has all major approvals to easily meet industry standards and customer process requirements.

Features and benefits

- Suitable for on/off, applications in general service, protective service and safety applications eg. ESD or HIPPS.
- Ductile cast iron center body, fabricated carbon steel power cylinder and spring module provides rugged actuator construction.
- Suitable for safety integrated systems up to and including SIL 3 accordance with IEC 61508.
- Modular design allows the flexibility of configuring the actuator in either fail open or fail close functions. In case of need an easy on-site modification can be done by interchanging the spring and pneumatic modules..
- Ball bearing, flexi joint and the hardened yoke thrust pin bearing are all incorporated into the actuator for longer life time, smoother operation.
- Internal tie rods providing highest corrosion protection and the best performance.
- The vent valve has built in non-return function for IP67.
- Secondary vent valve for detecting possible leakages in the rod seal area of pneumatic cylinder.
- Springs are non buckling, lifetime lubricated and
- epoxy coated.
- Full range of accessories: switchboxes, positioners, safety solenoids (ESD, PST) and customized control panels.

Technical specification

- Pneumatic scotch yoke quarter turn actuator.
- Spring return and double acting models
- Supply medium: Air, natural gas (sweet), nitrogen
- Maximum operating pressure depends on model
- Torque output range
  - Spring return model:
    - Spring nominal:
      22 Nm - 109382 Nm
      16.2 lb ft - 80699 lb-ft
    - Air break @5.5 barg / 79.7 PSI
      47Nm - 258121 Nm, 34.5 lb ft - 190340 lb-ft
  - Double acting model:
    - Air break @ 4.0 barg / 58 psi:
      71 Nm – 311333 Nm, 52 lb ft - 229627 lb ft
  - Temperature range: General -20°...+80 °C,
    High -20°...+125 °C
    Arctic -40°...+80 °C
- Mounting face in compliance with ISO 5211/1 and VDI/VDE 3845
- Ingress protection class: IP66M & IP 67M
- API6DX, 2nd edition
- ATEX 2014/34/EU Ex 2G IIC T6 / Ex 2D IIC T80°C
- Other approvals and certificates:
  - SIL3 capable
  - PED 2014/68/EN for Unfired Pressure Vessels
  - CE
  - EAC, TR CU
- External corrosion protection in compliance with ISO 12944-2 and EN 15714-3 class C3; optionally available class C5-I & C5M
- Manufactured and tested in compliance with ISO 9001
- Please consult factory for torque details and sizing
- Adjustable travel stop from 85° to 95° (+/- 5°)

Note: PED offerings available for General temperature (-20 °C to +80 °C) and High temperature (-20 °C to +125 °C).

Actuator, series N1 technical data

Stroke volume. dm³ - Single -and Double acting for 90º stroke

Cyl. Diam (mm)	63	80	100	125	150	200	250	300	350	400	500	600	700	800	900	1000	1100	1200	1300
Actuator	Stroke volume, dm³																		
N1X	0.2	0.3	0.4	0.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N1A	-	-	0.9	1.4	2.0	3.6	5.7	8.2	11.2	-	-	-	-	-	-	-	-	-	-
N1B	-	-	-	-	-	-	7.4	10.6	14.4	18.8	-	-	-	-	-	-	-	-	-
N1C	-	-	-	-	-	-	-	13	17	23	35	-	-	-	-	-	-	-	-
N1D	-	-	-	-	-	-	-	-	21	27	42	61	83	-	-	-	-	-	-
N1E	-	-	-	-	-	-	-	-	-	-	51	74	100	131	165	-	-	-	-
N1G	-	-	-	-	-	-	-	-	-	-	-	90	123	161	204	-	-	-	-
N1H	-	-	-	-	-	-	-	-	-	-	-	-	152	199	252	312	-	-	-
N1J	-	-	-	-	-	-	-	-	-	-	-	-	200	261	331	408	-	-	-
N1M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	526	637	758	889

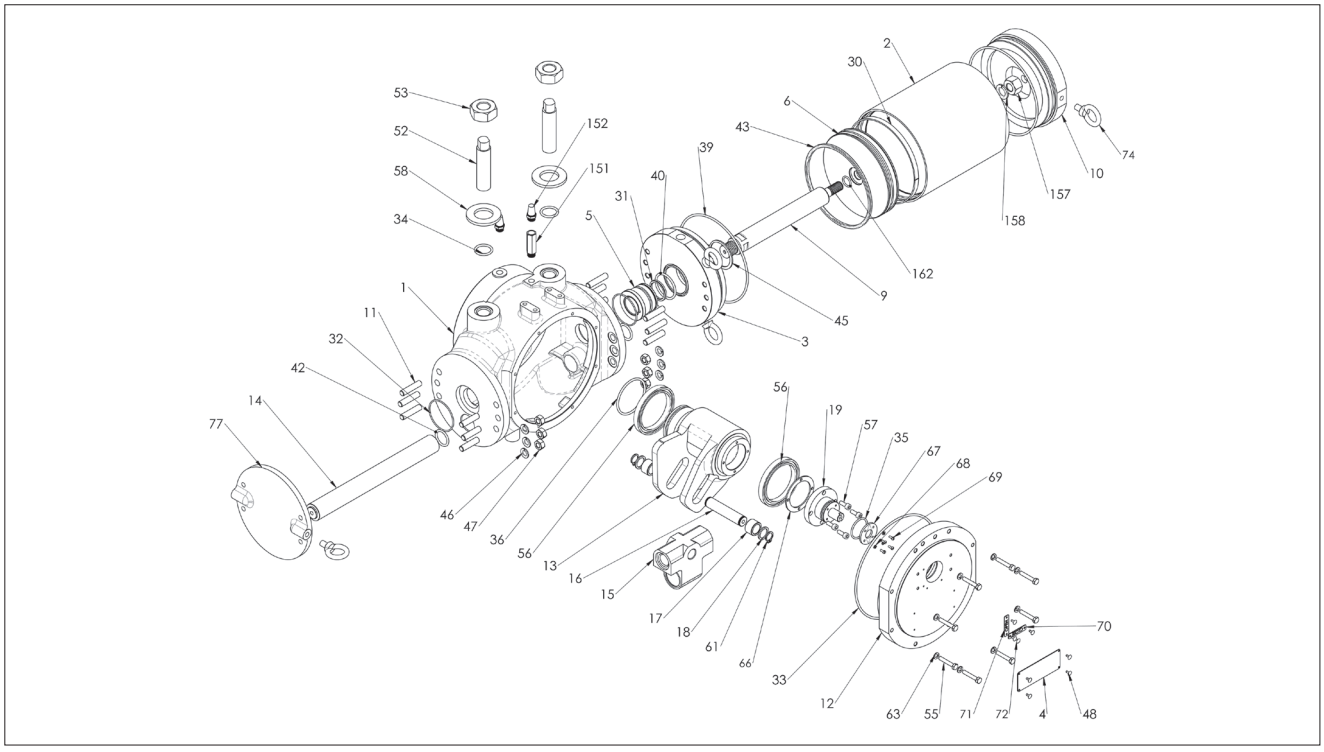
Maximum operating pressure

Cyl. Diam (mm)	63	80	100	125	150	200	250	300	350	400	500	600	700	800	900	1000	1100	1200	1300
Actuator	maximum operating pressure, barg																		
N1X	8.0	8.0	8.0	8.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N1A	-	-	8.0	8.0	8.0	8.0	8.0	6.5	5.0	-	-	-	-	-	-	-	-	-	-
N1B	-	-	-	-	-	-	8.0	8.0	6.0	4.5	-	-	-	-	-	-	-	-	-
N1C	-	-	-	-	-	-	-	8.0	8.0	7.0	4.5	-	-	-	-	-	-	-	-
N1D	-	-	-	-	-	-	-	-	8.0	8.0	6.0	5.5	4.5	-	-	-	-	-	-
N1E	-	-	-	-	-	-	-	-	-	-	6.0	5.5	5.5	5.5	5	-	-	-	-
N1G	-	-	-	-	-	-	-	-	-	-	-	5.5	5.5	5.5	5.5	-	-	-	-
N1H	-	-	-	-	-	-	-	-	-	-	-	-	5.5	5.5	5.5	5.5	-	-	-
N1J	-	-	-	-	-	-	-	-	-	-	-	-	5.5	5.5	5.5	5.5	-	-	-
N1M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.5	5.5	5.5	5.5

Note: Actuator output torques - consult factory.

Exploded views and parts list

Double acting actuators N1_D00
Cylinder sizes from 63 to 150

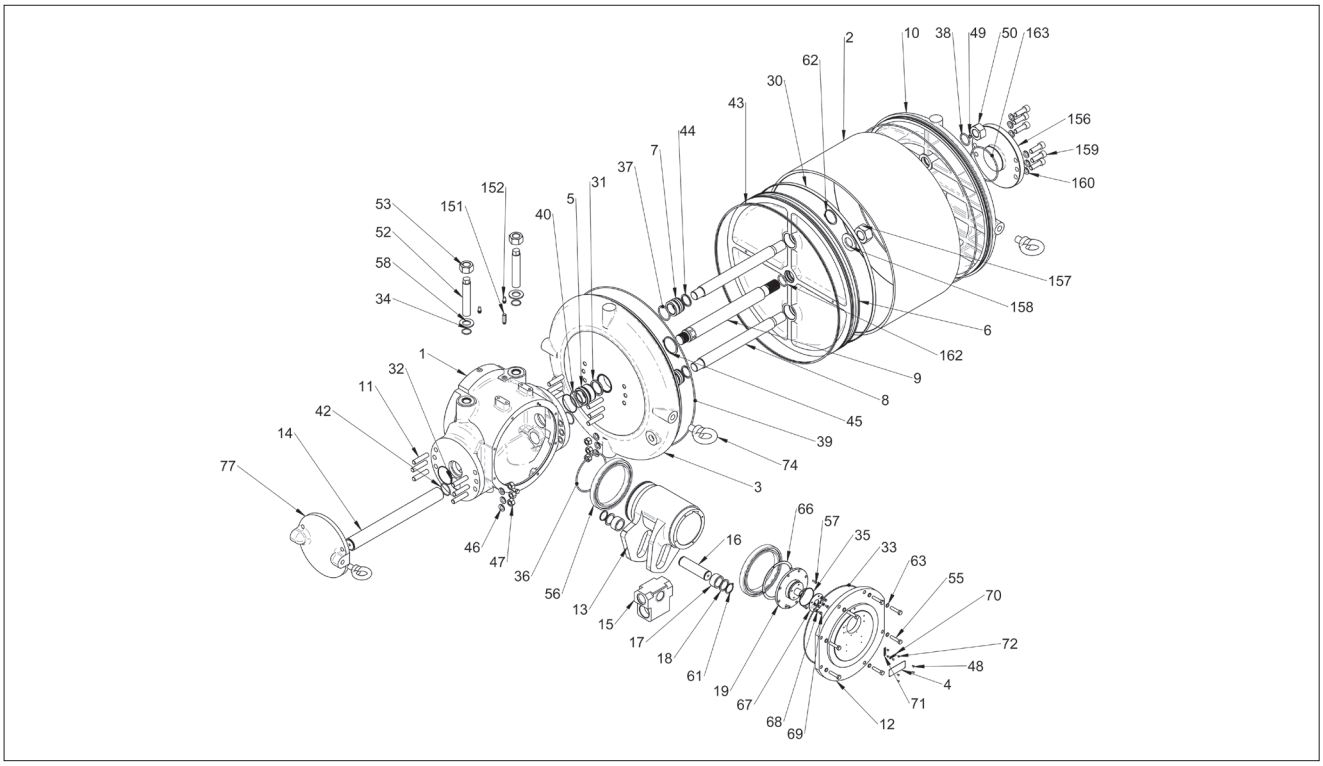


ITEM NO.	DISCRIPTION	QTY.	MATERIAL
1	CENTRAL BLOCK	1	DUCTILE IRON
2	CYLINDER	1	CARBON STEEL (CHROME PLATED)
3	CYLINDER FRONT COVER	1	CARBON STEEL
4	NAME PLATE	1	STAINLESS STEEL
5#	BEARING BUSH	1	CARBONSTEEL + PHOSPHOR BRONZE
6	PISTON	1	CARBON STEEL
9	PISTON ROD	1	STAINLESS STEEL
10	CYLINDER REAR COVER	1	CARBON STEEL
11	STUD BOLT	12	ALLOY STEEL
12	CENTRAL BLOCK COVER	1	DUCTILE IRON
13	YOKE	1	DUCTILE IRON
14	GUIDE ROD	1	STAINLESS STEEL
15	CARRIER	1	DUCTILE IRON
16	YOKE PIN	1	ALLOY STEEL
17	ROLLER FOR YOKE PIN	2	ALLOY STEEL
18	WASHER	2	STAINLESS STEEL
19	YOKE INSERT	1	DUCTILE IRON
30#	PISTON STRIP	1	DELRIN
31* $	ROD SEAL	1	NBR
32* $	O-RING	2	NBR
33* $	O-RING	1	NBR
34* $	O-RING	2	NBR
35* $	O-RING	1	NBR
36* $	O-RING	1	NBR
39* $	O-RING	2	NBR
40* $	O-RING	1	NBR

ITEM NO.	DISCRIPTION	QTY.	MATERIAL
42* $	O-RING	2	NBR
43* $	QUAD SEAL	1	NBR
45	EXTERNAL CIRCLIP	1	DIN 471
46	SPRING WASHER	12	DIN 128
47	HEX. NUT	12	DIN 934
48	RIVET	4	-
52	STROKE ADJUSTMENT SCREW	2	CARBON STEEL
53	HEX. NUT	2	DIN 934
55	HEX. SOC. HEAD CAP SCREW	8	DIN 912
56#	RADIAL BALL BEARING	2	-
57	HEX. SOC. HEAD CAP SCREW	4	DIN 912
58	WASHER	2	CARBON STEEL
61	EXTERNAL CIRCLIP	2	DIN 471
63	SPRING WASHER	8	DIN 128
66* $	GASKET FOR COVER	1	NBR
67	POSITION INDICATOR	1	ALUMINIUM ALLOY
68	SPRING WASHER	4	DIN 128
69	SLOTTED HEAD CAP SCREW	4	IS 6101
70	CLOSE POSITION INDICATOR	1	STAINLESS SHEEL
71	OPEN POCITION INDICATOR	1	STAINLESS STEEL
72	RIVET	4	-
74	EYEBOLT	3	STD
77	REAR CAP	1	DUCTILE IRON
151	CHECK VALVE	1	STD
152	SILENCER	2	BRASS
157	HEX NUT FOR PISTON ROD	1	DIN 934
158	SPRING WASHER	1	DIN 128
162*$	O-RING	1	NBR

1) * Marked components are the parts of the seal kit
2) # Marked components are the parts of the repair kit
3) $ marked components having following notes:
3.1) For Soft parts (seal kit), MOC Mentioned is ''NBR" for Standard temperature option. MOC will be ''VITON" for high temp. option. "FLUOROSILICONE" for arctic temp. option.

Double acting actuators N1_D00
Cylinder sizes from 200 to 1300

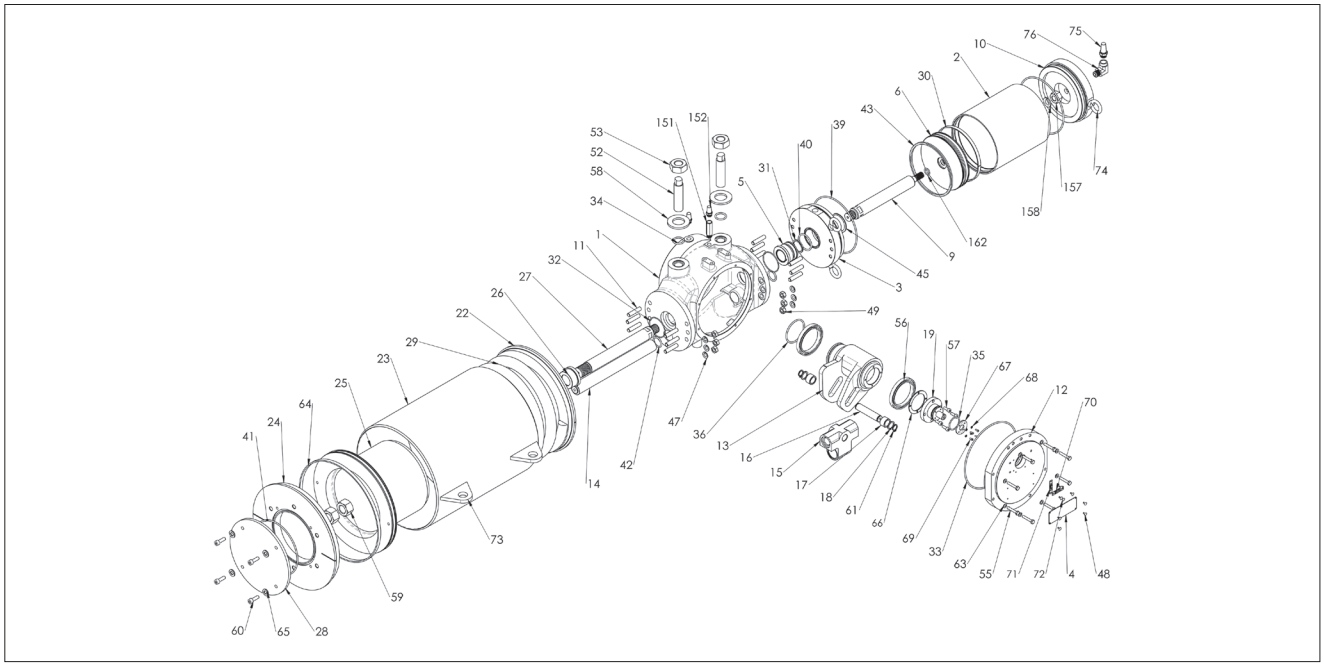


ITEM NO.	DISCRIPTION	QTY.	MATERIAL
1	CENTRAL BLOCK	1	DUCTILE IRON
2	CYLINDER	1	CARBON STEEL (CHROME PLATED)
3$	CYLINDER FRONT COVER	1	DUCTILE IRON / CARBON STEEL
4	NAME PLATE	1	STAINLESS STEEL
5#	BEARING BUSH	1	CARBONSTEEL + PHOSPHOR BRONZE
6$	PISTON	1	DUCTILE IRON / CARBON STEEL
7#	GUIDE BUSH	2	CARBONSTEEL + PHOSPHOR BRONZE
8	TIE ROD	2	STAINLESS STEEL
9	PISTON ROD	1	STAINLESS STEEL
10$	CYLINDER REAR COVER	1	DUCTILE IRON / CARBON STEEL
11	STUD BOLT	12	ALLOY STEEL
12	CENTRAL BLOCK COVER	1	DUCTILE IRON
13	YOKE	1	DUCTILE IRON
14	GUIDE ROD	1	STAINLESS STEEL
15$	CARRIER	1	DUCTILE IRON / CARBON STEEL
16	YOKE PIN	1	ALLOY STEEL
17	ROLLER FOR YOKE PIN	2	ALLOY STEEL
18	WASHER	2	STAINLESS STEEL
19	YOKE INSERT	1	DUCTILE IRON
30#$	PISTON STRIP	1	PTFE
31*$	ROD SEAL	1	NBR
32*$	O-RING	2	NBR
33*$	O-RING	1	NBR
34*$	O-RING	2	NBR
35*$	O-RING	1	NBR
36*$	O-RING	1	NBR
37*$	O-RING	2	NBR
38*$	O-RING	2	NBR
39*$	O-RING	2	NBR
40*$	O-RING	1	NBR
42*$	O-RING	2	NBR
43*$	QUAD SEAL	1	NBR

ITEM NO.	DISCRIPTION	QTY.	MATERIAL
44*$	QUAD SEAL	2	NBR
45	EXTERNAL CIRCLIP	1	DIN 471
46	SPRING WASHER	12	DIN 128
47	HEX. NUT	12	DIN 934
48	RIVET	4	-
49	SPRING WASHER	2	DIN 934
50	HEX. NUT	2	DIN 934
52	STROKE ADJUSTMENT SCREW	2	CARBON STEEL
53	HEX. NUT	2	DIN 934
55	HEX. HEAD SCREW	8	DIN 912
56#	RADIAL BALL BEARING	2	-
57	HEX. SOC. HEAD CAP SCREW	4	DIN 912
58	WASHER	2	CARBON STEEL
61	EXTERNAL CIRCLIP	2	DIN 471
62	EXTERNAL CIRCLIP	2	DIN 471
63	SPRING WASHER	8	DIN 128
66*$	GASKET FOR COVER	1	NBR
67	POSITION INDICATOR	1	ALUMINIUM ALLOY
68	SPRING WASHER	4	DIN 128
69	SLOTTED HEAD CAP SCREW	4	IS 6101
70	CLOSE POSITION INDICATOR	1	STAINLESS STEEL
71	OPEN POSITION INDICATOR	1	STAINLESS STEEL
72	RIVET	4	-
74	EYEBOLT	3	STD
77	REAR CAP	1	DUCTILE IRON
151	CHECK VALVE	1	STD
152	SILENCER	2	BRASS
156	REAR PLUG	1	CARBON STEEL
157	HEX NUT FOR PISTON ROD	1	DIN 934
158	SPRING WASHER	1	DIN 128
159	HEX. SOC. HEAD CAP SCREW	6	DIN 912
160	SPRING WASHER	6	DIN 128
162*$	O-RING	1	NBR
163*$	O-RING	1	NBR

1) *Marked components are the parts of the seal kit
2) # Marked components are the parts of the repair kit
3) $ marked components having following notes:
3.1) For Pneumatic side Front Cover, Rear Cover & Piston (Item no 3, 6 & 10 resp.), from bore dia 0200 to 900mm MOC is Ductile iron. Rest of other sizes Front Cover, Rear Cover & Piston (Item no 3, 6 & 10 resp .) MOC is carbon steel.
3.2) Carrier (Item no 15), for bore Dia. 0200 MOC is Ductile iron, From rest of the other sizes MOC is Carbon steel.
3.3) For Soft parts (seal kit), MOC Mentioned is "NBR" for Standard temperature option. MOC will be"VITON" for high temp. option, "FLUOROSILICONE" for arctic temp. option.

Single acting actuators N1_E_C
Cylinder sizes from 63 to 150



ITEM NO.	DESCRIPTION	QTY.	MATERIAL
1	CENTRAL BLOCK	1	DUCTILE IRON
2	CYLINDER	1	CARBON STEEL (CHROME PLATED)
3	CYLINDER FRONT COVER	1	CARBON STEEL
4	NAME PLATE	1	STAINLESS STEEL
5#	BEARING BUSH	1	CARBONSTEEL + PHOSPHOR BRONZE
6	PISTON	1	CARBON STEEL
9	PISTON ROD	1	STAINLESS STEEL
10	CYLINDER REAR COVER	1	CARBON STEEL
11	STUD BOLT	12	ALLOY STEEL
12	CENTRAL BLOCK COVER	1	DUCTILE IRON
13	YOKE	1	DUCTILE IRON
14	GUIDE ROD	1	STAINLESS STEEL
15	CARRIER	1	DUCTILE IRON
16	YOKE PIN	1	ALLOY STEEL
17	ROLLER FOR YOKE PIN	2	ALLOY STEEL
18	WASHER	2	STAINLESS STEEL
19	YOKE INSERT	1	DUCTILE IRON
22	SPRING COVER FRONT END	1	CARBON STEEL
23	E- TUBE	1	CARBON STEEL
24	SPRING COVER REAR END	1	CARBON STEEL
25	SPRING RETAINER	1	DUCTILE IRON
26#	BEARING BUSH	1	CARBONSTEEL+PHOSPHOR BRONZE
27	CONNECTING ROD	1	STAINLESS STEEL
28	E-COVER REAR CAP	1	CARBON STEEL
29	SPRING	1	SPRING STEEL
30#	PISTON STRIP	1	DELRIN
31*$	ROD SEAL	1	NBR
32*$	O-RING	2	NBR
33*$	O-RING	1	NBR
34*$	O-RING	2	NBR
35*$	O-RING	1	NBR
36*$	O-RING	1	NBR
39*$	O-RING	2	NBR

ITEM NO.	DESCRIPTION	QTY.	MATERIAL
40*$	O-RING	1	NBR
41*$	O-RING	1	NBR
42*$	O-RING	2	NBR
43*$	QUAD SEAL	1	NBR
45	EXTERNAL CIRCLIP	1	DIN 471
46	SPRING WASHER	12	DIN 128
47	HEX. NUT	12	DIN 934
48	RIVET	4	-
52	STROKE ADJUSTMENT SCREW	2	CARBON STEEL
53	HEX. NUT	2	DIN 934
55	HEX. HEAD SCREW	8	DIN 912
56#	RADIAL BALL BEARING	2	-
57	HEX. SOC. HEAD CAP SCREW	4	DIN 912
58	WASHER	2	CARBON STEEL
59	HEXAGON JAM NUT	2	-
60	HEX. SOC. HEAD CAP SCREW	4	DIN 912
61	EXTERNAL CIRCLIP	2	DIN 471
63	SPRING WASHER	8	DIN 128
64	RETAINER GUIDE STRIP	1	PTFE
65	SPRING WASHER	4	DIN 128
66*$	GASKET FOR COVER	1	NBR
67	POSITION INDICATOR	1	ALUMINIUM ALLOY
68	SPRING WASHER	4	DIN 128
69	SLOTTED HEAD CAP SCREW	4	IS 6101
70	CLOSE POSITION INDICATOR	1	STAINLESS STEEL
71	OPEN POSITION INDICATOR	1	STAINLESS STEEL
72	RIVET	4	-
73	LIFTING LUG	2	MILD STEEL
74	EYEBOLT	2	STD
75	SILENCER	1	BRASS
76	ELBOW FITTING	1	STAINLESS STEEL
151	CHECK VALVE	1	STD
152	SILENCER	2	BRASS
157	HEX NUT FOR PISTON ROD	1	DIN 934
158	SPRING WASHER	1	DIN 128
162*$	O-RING	1	NBR

1) * Marked components are the parts of the seal kit
2) # Marked components are the parts of the repair kit
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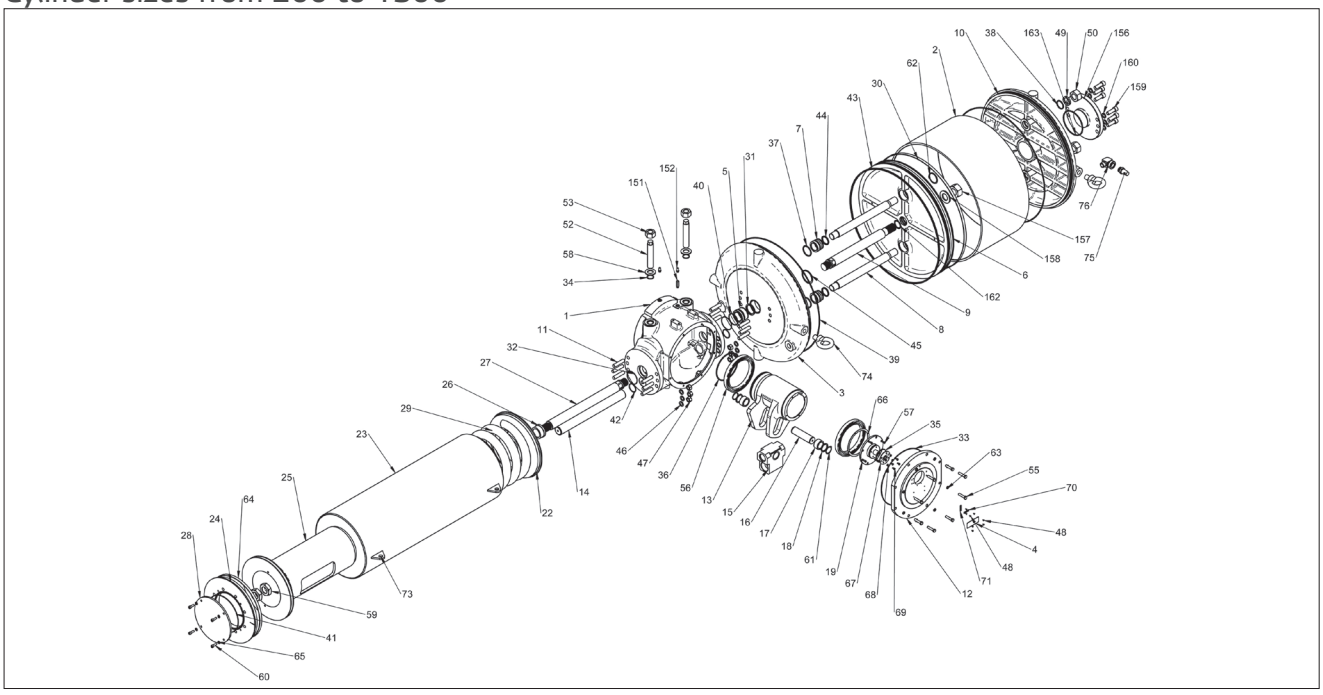
3.1) For Soft parts (seal kit), MOC Mentioned is ''NBR" for Standard temperature option. MOC will be"VITON" for high temp. option, "FLUOROSILICONE" for arctic temp. option

Single acting actuators N1_E_C
Cylinder sizes from 200 to 1300



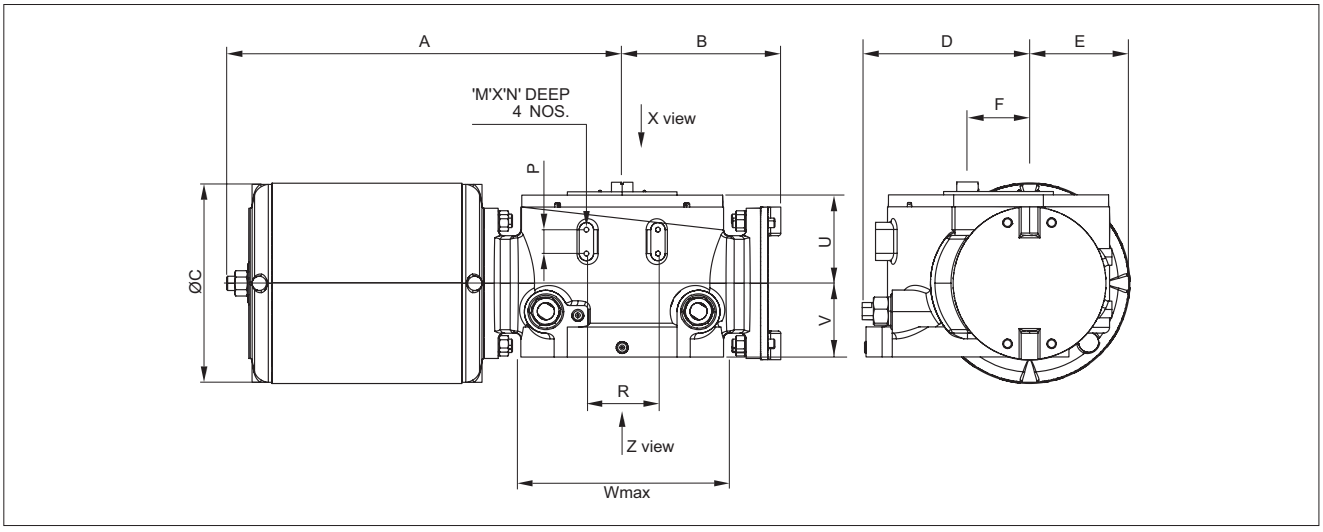
ITEM NO.	DISCRIPTION	QTY.	MATERIAL
1	CENTRAL BLOCK	1	DUCTILE IRON
2	CYLINDER	1	CARBON STEEL (CHROME PLATED)
3$	CYLINDER FRONT COVER	1	DUCTILE IRON / CARBON STEEL
4	NAME PLATE	1	STAINLESS STEEL
5#	BEARING BUSH	1	CARBONSTEEL + PHOSPHOR BRONZE
6$	PISTON	1	DUCTILE IRON / CARBON STEEL
7#	GUIDE BUSHING	2	CARBONSTEEL + PHOSPHOR BRONZE
8	TIE ROD	2	STAINLESS STEEL
9	PISTON ROD	1	STAINLESS STEEL
10$	CYLINDER REAR COVER	1	DUCTILE IRON / CARBON STEEL
11	STUD BOLT	12	ALLOY STEEL
12	CENTRAL BLOCK COVER	1	DUCTILE IRON
13	YOKE	1	DUCTILE IRON
14	GUIDE ROD	1	STAINLESS STEEL
15	CARRIER	1	CARBON STEEL
16	YOKE PIN	1	ALLOY STEEL
17	ROLLER FOR YOKE PIN	2	ALLOY STEEL
18	WASHER	2	STAINLESS STEEL
19	YOKE INSERT	1	DUCTILE IRON
22	SPRING COVER FRONT END	1	CARBON STEEL
23	E- TUBE	1	CARBON STEEL
24	SPRING COVER REAR END	1	CARBON STEEL
25 $	SPRING RETAINER	1	DUCTILE IRON / CARBON STEEL
26#	BEARING BUSH	1	CARBONSTEEL + PHOSPHOR BRONZE
27	CONNECTING ROD	1	STAINLESS STEEL
28	E-COVER REAR CAP	1	CARBON STEEL
29	SPRING	1	SPRING STEEL
30#	PISTON STRIP	1	PTFE
31* $	ROD SEAL	1	NBR
32* $	O-RING	2	NBR
33* $	O-RING	1	NBR
34* $	O-RING	2	NBR
35* $	O-RING	1	NBR
36* $	O-RING	1	NBR
37* $	O-RING	2	NBR
38*$	O-RING	2	NBR
39*$	O-RING	2	NBR
40*$	O-RING	1	NBR
41*$	O-RING	1	NBR

ITEM NO.	DESCRIPTION	QTY.	MATERIAL
42* $	O-RING	2	NBR
43* $	QUAD SEAL	1	NBR
44* $	QUAD SEAL	2	NBR
45	EXTERNAL CIRCLIP	1	DIN 471
46	SPRING WASHER	12	DIN 128
47	HEX. NUT	12	DIN 934
48	RIVET	4	-
49	SPRING WASHER	2	DIN 934
50	HEX NUT	2	DIN 934
52	STROKE ADJUSTMENT SCREW	2	CARBON STEEL
53	HEX. NUT	2	DIN 934
55	HEX. HEAD SCREW	8	DIN 912
56#	RADIAL BALL BEARING	2	-
57	HEX. SOC. HEAD CAP SCREW	4	DIN 912
58	WASHER	2	CARBON STEEL
59	HEXAGON JAM NUT	2	-
60	HEX. SOC. HEAD CAP SCREW	4	DIN 912
61	EXTERNAL CIRCLIP	2	DIN 471
62	EXTERNAL CIRCLIP	2	DIN 471
63	SPRING WASHER	8	DIN 128
64	RETAINER GUIDE STRIP	1	PTFE
65	SPRING WASHER	4	DIN 128
66* $	GASKET FOR COVER	1	NBR
67	POSITION INDICATOR	1	ALUMINIUM ALLOY
68	SPRING WASHER	4	DIN 128
69	SLOTTED HEAD CAP SCREW	4	IS 6101
70	CLOSE POSITION INDICATOR	1	STAINLESS STEEL
71	OPEN POSITION INDICATOR	1	STAINLESS STEEL
72	RIVET	4	-
73	LIFTING LUG	2	MILD STEEL
74	EYEBOLT	2	STD
75	SILENCER	1	BRASS
76	ELBOW FITTING	1	STAINLESS STEEL
151	CHECK VALVE	1	STD
152	SILENCER	2	BRASS
156	REAR PLUG	1	CARBON STEEL
157	HEX NUT FOR PISTON ROD	1	DIN 934
158	SPRING WASHER	1	DIN 128
159	HEX. SOC. HEAD CAP SCREW	6	DIN 912
160	SPRING WASHER	6	DIN 128
162*$	O-RING	1	NBR
163*$	O-RING	1	NBR

1) * Marked components are the parts of the seal kit
2) # Marked components are the parts of the repair kit
3) $ marked components having following notes:
3.1) For Pneumatic side Front Cover, Rear Cover & Piston (Item no 3, 6 & 10 resp.), from bore dia 0200 to 900mm MOC is Ductile iron. Rest of other sizes Front Cover, Rear Cover & Piston (Item no 3, 6 & 10 resp .) MOC is carbon steel.
3.2) Spring retainer (Item no 25), from frame N1A to N1E MOC is Ductile iron & From frame N1G to N1M MOC is Carbon steel.
3.3) Carrier (Item no 15), For bore dia. 200 MOC is Ductile iron, rest of other sizes MOC is Carbon steel.
3.4) For Soft parts (seal kit), MOC Mentioned is ''NBR" for Standard temperature option. MOC will be"VITON" for high temp. option, "FLUOROSILICONE" for arctic temp. option.

Dimensions and weights

Dimensions double acting

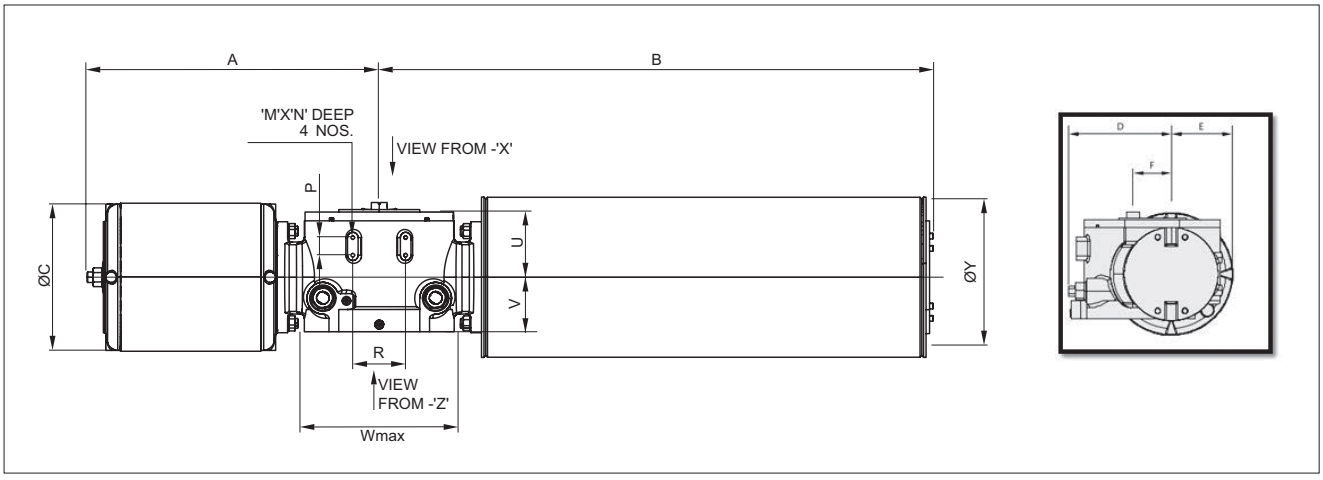


DIMENSION- DOUBLE ACTING ACTUTOR, mm														
MODEL	A	B	Øc	D	E	F	M	N	P	R	W max	U	V	S
N1X0063	250	107	84	116	73	28	M6	9	20	30	125	67	58	1/4 NPT
N1X0080	250	107	100	116	73	28	M6	9	20	30	125	67	58	1/4 NPT
N1X0100	262	107	122	116	73	28	M6	9	20	30	125	67	58	1/4 NPT
N1X0125	285	107	150	116	73	28	M6	9	20	30	125	67	58	1/4 NPT
N1A0100	389	171	122	194	88	58	M8	12	25	60	200	94	86	1/4 NPT
N1A0125	411	171	150	194	88	58	M8	12	25	60	200	94	86	1/4 NPT
N1A0150	395	171	175	194	88	58	M8	12	25	60	200	94	86	3/8 NPT
N1A0200	476	171	210	194	88	58	M8	12	25	60	200	94	86	1/2 NPT
N1A0250	418	171	263	194	131,5	58	M8	12	25	60	200	94	86	1/2 NPT
N1A0300	456	171	314	194	157	58	M8	12	25	60	200	94	86	3/4 NPT
N1A0350	459	171	364	194	182	58	M8	12	25	60	200	94	86	3/4 NPT
N1B0250	574	230	263	245	131,5	75	M10	15	25	80	210	102	105	1/2 NPT
N1B0300	548	230	308	245	155	75	M10	15	25	80	210	102	105	3/4 NPT
N1B0350	551	230	360	245	180	75	M10	15	25	80	210	102	105	3/4 NPT
N1B0400	596	230	416	245	208	75	M10	15	25	80	210	102	105	3/4 NPT
N1C0300	599	248	308	252	155	90	M10	15	50	90	294	130	112	3/4 NPT
N1C0350	583	248	360	252	180	90	M10	15	50	90	294	130	112	3/4 NPT
N1C0400	660	248	416	252	208	90	M10	15	50	90	294	130	112	3/4 NPT
N1C0500	675	248	522	252	257	90	M10	15	50	90	294	130	112	3/4 NPT
N1D0350	789	328	366	321	180	108	M12	15	50	150	350	138	121	3/4 NPT
N1D0400	736	328	416	321	208	108	M12	15	50	150	350	138	121	3/4 NPT
N1D0500	739	328	522	321	257	108	M12	15	50	150	350	138	121	3/4 NPT
N1D0600	766,5	328	625	321	312	108	M12	15	50	150	350	138	121	1 NPT
N1D0700	815,5	328	725	321	404	108	M12	15	50	150	350	138	121	1 NPT
N1E0500	832	365	522	368	257	130	M12	15	50	150	425	199	155	3/4 NPT
N1E0600	849	365	625	368	312	130	M12	15	50	150	425	199	155	1 NPT
N1E0700	909	365	725	368	404	130	M12	15	50	150	425	199	155	1 NPT
N1E0800	920	365	826	368	458	130	M12	15	50	150	425	199	155	1 NPT
N1E0900	986	365	926	368	558	130	M12	15	50	150	425	199	155	1 1/2 NPT
N1G0600	975	450	625	444	312	160	M12	15	50	150	475	251	177	1 NPT
N1G0700	1040	450	725	444	404	160	M12	15	50	150	475	251	177	1 NPT
N1G0800	1065	450	826	444	458	160	M12	15	50	150	475	251	177	1 NPT
N1G0900	1095	450	926	444	558	160	M12	15	50	150	475	251	177	1 1/2 NPT
N1H0700	1228	566	725	549	404	198	M12	15	50	150	600	222	213	1 NPT
N1H0800	1253	566	824	549	458	198	M12	15	50	150	600	222	213	1 NPT
N1H0900	1305	566	926	549	558	198	M12	15	50	150	600	222	213	1 1/2 NPT
N1H1000	1284	566	1040	549	549	198	M12	15	50	150	600	222	213	1 1/2 NPT
N1J0700	1498	676	725	677	404	260	M16	32	100	300	686	299	247	1 NPT
N1J0800	1517	676	824	677	458	260	M16	32	100	300	686	299	247	1 NPT
N1J0900	1570	676	926	677	558	260	M16	32	100	300	686	299	247	1 1/2 NPT
N1J1000	1529	676	1040	677	549	260	M16	32	100	300	686	299	247	1 1/2 NPT
N1M1000	1865	851	1040	884	520	335	M20	40	100	300	1164	300	270	1 1/2 NPT
N1M1100	1935	851	1150	884	575	335	M20	40	100	300	1164	300	270	2 NPT
N1M1200	1945	851	1250	884	625	335	M20	40	100	300	1164	300	270	2 NPT
N1M1300	1945	851	1350	884	675	335	M20	40	100	300	1164	300	270	2 NPT

Weights double acting

Cyl. Diam	63	80	100	125	150	200	250	300	350	400	500	600	700	800	900	1000	1100	1200	1300
Actuator	weight, kg																		
N1X	18	20	22	29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N1A	-	-	52	57	63	65	68	90	98	-	-	-	-	-	-	-	-	-	-
N1B	-	-	-	-	-	-	106	122	135	245	-	-	-	-	-	-	-	-	-
N1C	-	-	-	-	-	-	-	145	165	207	274	-	-	-	-	-	-	-	-
N1D	-	-	-	-	-	-	-	-	245	276	342	441	563	-	-	-	-	-	-
N1E	-	-	-	-	-	-	-	-	-	-	450	541	677	872	1102	-		-	-
N1G	-	-	-	-	-	-	-	-	-	-	-	633	853	1057	1278	-	-	-	-
N1H	-	-	-	-	-	-	-	-	-	-	-	-	1138	1345	1580	2785	-	-	-
N1J	-	-	-	-	-	-	-	-	-	-	-	-	1610	1800	2041	3300	-	-	-
N1M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4500	5644	6273	6950

Dimensions single acting



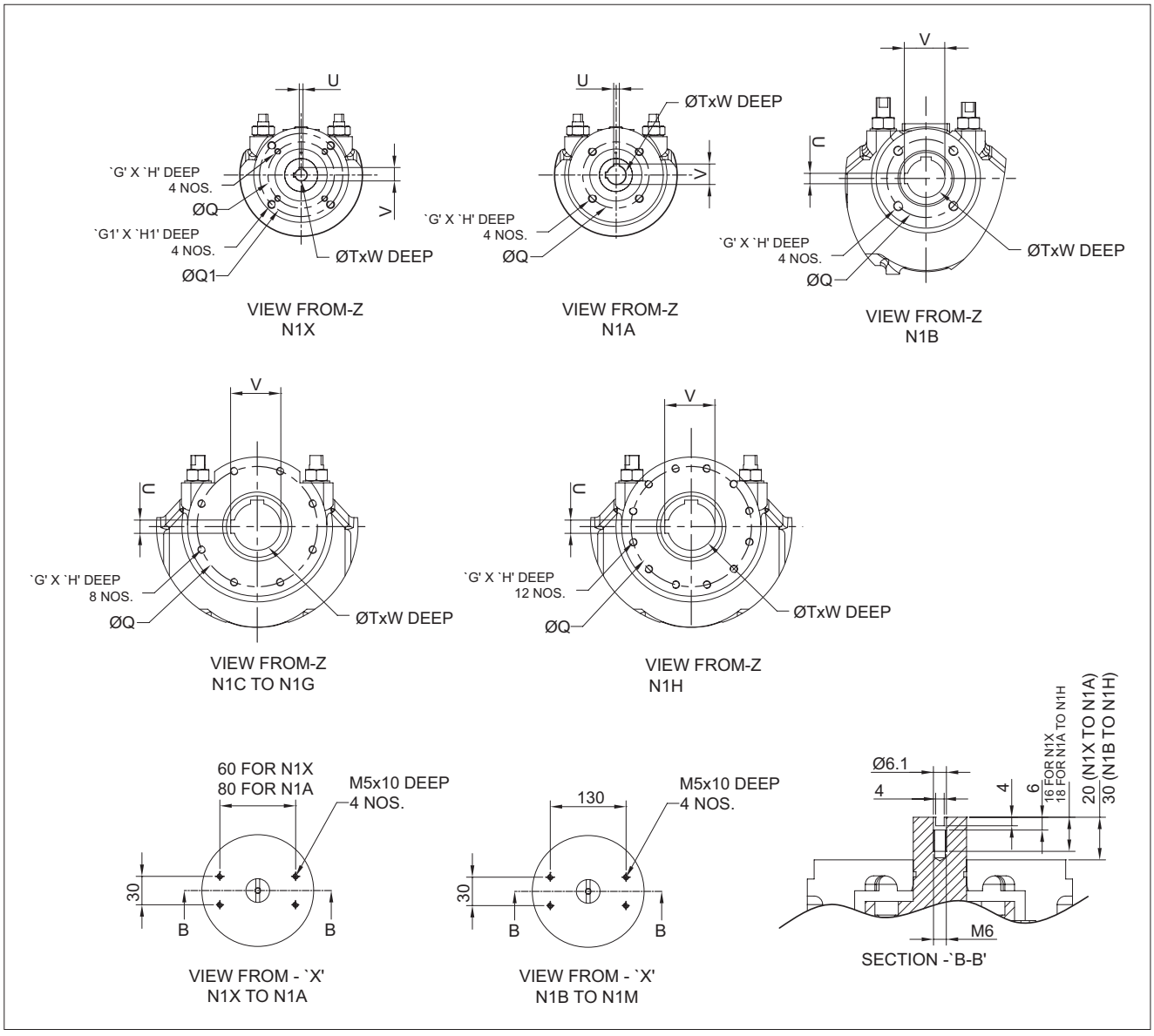
DIMENSION- SINGLE ACTING ACTUTOR, mm															
MODEL	A	B	Øc	D	E	F	M	N	P	R	W max	U	V	ØY	S
N1X0063-E4-E5	250	365	84	116	73	28	M6	9	20	30	125	67	58	170	1/4 NPT
N1X0080-E1-E5	250	365	100	116	73	28	M6	9	20	30	125	67	58	170	1/4 NPT
N1X0100-E1-E4	262	365	122	116	73	28	M6	9	20	30	125	67	58	170	1/4 NPT
N1X0125-E1-E2	285	365	150	116	73	28	M6	9	20	30	125	67	58	170	1/4 NPT
N1A0100-E9-E11	389	498	122	194	88	58	M8	12	25	60	200	94	86	255	1/4 NPT
N1A0125-E7	411	573	150	194	88	58	M8	12	25	60	200	94	86	310	1/4 NPT
N1A0125-E8-E11	411	498	150	194	88	58	M8	12	25	60	200	94	86	255	1/4 NPT
N1A0150-E6-E7	395	573	175	194	88	58	M8	12	25	60	200	94	86	310	3/8 NPT
N1A0150-E8-E11	395	498	175	194	88	58	M8	12	25	60	200	94	86	255	3/8 NPT
N1A0200-E4	476	612	210	194	88	58	M8	12	25	60	200	94	86	320	1/2 NPT
N1A0200-E5-E6	476	573	210	194	88	58	M8	12	25	60	200	94	86	310	1/2 NPT
N1A0250-E1-E4	418	612	263	194	131,5	58	M8	12	25	60	200	94	86	320	1/2 NPT
N1A0250-E5-E6	418	573	263	194	131,5	58	M8	12	25	60	200	94	86	310	1/2 NPT
N1A0300-E1-E4	456	612	314	194	157	58	M8	12	25	60	200	94	86	320	3/4 NPT
N1A0300-E5	456	573	314	194	157	58	M8	12	25	60	200	94	86	310	3/4 NPT
N1A0350-E1-E4	459	612	364	194	182	58	M8	12	25	60	200	94	86	320	3/4 NPT
N1B0250-E3-E6	574	955	263	245	131,5	75	M10	15	25	80	210	102	105	321	1/2 NPT
N1B0300-E1-E6	548	955	308	245	155	75	M10	15	25	80	210	102	105	321	3/4 NPT
N1B0350-E1-E6	551	955	360	245	180	75	M10	15	25	80	210	102	105	321	3/4 NPT
N1B0400-E1-E6	596	955	416	245	208	75	M10	15	25	80	210	102	105	321	3/4 NPT
N1C0300-E3-E4	599	1060	308	252	155	90	M10	15	50	90	294	130	112	379	3/4 NPT
N1C0350-E1-E4	583	1060	360	252	180	90	M10	15	50	90	294	130	112	379	3/4 NPT
N1C0400-E1-E4	660	1060	416	252	208	90	M10	15	50	90	294	130	112	379	3/4 NPT
N1C0500-E1-E4	675	1060	522	252	257	90	M10	15	50	90	294	130	112	379	3/4 NPT
N1D0350-E4	789	1287	366	321	180	108	M12	15	50	150	350	138	121	434	3/4 NPT
N1D0400-E3-E4	736	1287	416	321	208	108	M12	15	50	150	350	138	121	434	3/4 NPT
N1D0500-E1-E4	739	1287	522	321	257	108	M12	15	50	150	350	138	121	434	3/4 NPT
N1D0600-E1-E4	766,5	1287	625	321	312	108	M12	15	50	150	350	138	121	434	1 NPT
N1D0700-E1-E3	815,5	1287	725	321	404	108	M12	15	50	150	350	138	121	434	1 NPT
N1E0500-E4	832	1573	522	368	257	130	M12	15	50	150	425	199	155	454	3/4 NPT
N1E0600-E1-E4	849	1573	625	368	312	130	M12	15	50	150	425	199	155	454	1 NPT
N1E0700-E1-E4	909	1573	725	368	404	130	M12	15	50	150	425	199	155	454	1 NPT
N1E0800-E1-E4	920	1573	826	368	458	130	M12	15	50	150	425	199	155	454	1 NPT
N1E0900-E1-E3	986	1573	926	368	558	130	M12	15	50	150	425	199	155	454	1 1/2 NPT
N1G0600-E3-E4	975	2380	625	444	312	160	M12	15	50	150	475	251	177	550	1 NPT
N1G0700-E2-E4	1040	2380	725	444	404	160	M12	15	50	150	475	251	177	550	1 NPT
N1G0800-E1-E4	1065	2380	826	444	458	160	M12	15	50	150	475	251	177	550	1 NPT
N1G0900-E1-E4	1095	2380	926	444	558	160	M12	15	50	150	475	251	177	550	1 1/2 NPT
N1H0700-E3	1228	1942	725	549	404	198	M12	15	50	150	600	222	213	605	1 NPT
N1H0800-E2	1253	2382	824	549	458	198	M12	15	50	150	600	222	213	605	1 NPT
N1H0800-E3	1253	1942	824	549	458	198	M12	15	50	150	600	222	213	605	1 NPT
N1H0900-E1	1305	2615	926	549	558	198	M12	15	50	150	600	222	213	684	1 1/2 NPT
N1H0900-E2	1305	2382	926	549	558	198	M12	15	50	150	600	222	213	605	1 1/2 NPT
N1H0900-E3	1305	1942	926	549	558	198	M12	15	50	150	600	222	213	605	1 1/2 NPT
N1H1000-E1	1284	2615	1040	549	549	198	M12	15	50	150	600	222	213	684	1 1/2 NPT
N1H1000-E2	1284	2382	1040	549	549	198	M12	15	50	150	600	222	213	628	1 1/2 NPT
N1H1000-E3	1284	1942	1040	549	549	198	M12	15	50	150	600	222	213	605	1 1/2 NPT
N1J0800-E4	1517	2868	824	677	458	260	M16	32	100	300	686	299	247	782	1 NPT
N1J0900-E2-E4	1570	2868	926	677	558	260	M16	32	100	300	686	299	247	782	1 1/2 NPT
N1J1000-E2-E4	1529	2868	1040	677	549	260	M16	32	100	300	686	299	247	782	1 1/2 NPT
N1M1100-E4	1935	3040	1150	884	620	335	M20	40	100	300	1164	300	270	1070	2 NPT
N1M1200-E3-E4	1945	3040	1250	884	625	335	M20	40	100	300	1164	300	270	1070	2 NPT
N1M1300-E3-E4	1945	3040	1350	884	675	335	M20	40	100	300	1164	300	270	1070	2 NPT

Weights single acting

Cyl. Diam	63	80	100	125	150	200	250	300	350	400	500	600	700	800	900	1000	1100	1200	1300
Actuator	weight, kg																		
N1X	35	38	40	43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N1A	-	-	126	131	136	162	168	188	195	-	-	-	-	-	-	-	-	-	-
N1B	-	-	-	-	-	-	271	286	298	348	-	-	-	-	-	-	-	-	-
N1C	-	-	-	-	-	-	-	413	426	475	542	-	-	-	-	-	-	-	-
N1D	-	-	-	-	-	-	-	-	622	652	718	817	939	-	-	-	-	-	-
N1E	-	-	-	-	-	-	-	-	-	-	961	1054	1195	1390	1620	-	-	-	-
N1G	-	-	-	-	-	-	-	-	-	-	-	1874	2173	2378	2600	-	-	-	-
N1H	-	-	-	-	-	-	-	-	-	-	-	-	2268	2710	3980	5109	-	-	-
N1J	-	-	-	-	-	-	-	-	-	-	-	-	-	5100	5580	6680	-	-	-
N1M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11410	12018	12372

Attachment dimensions

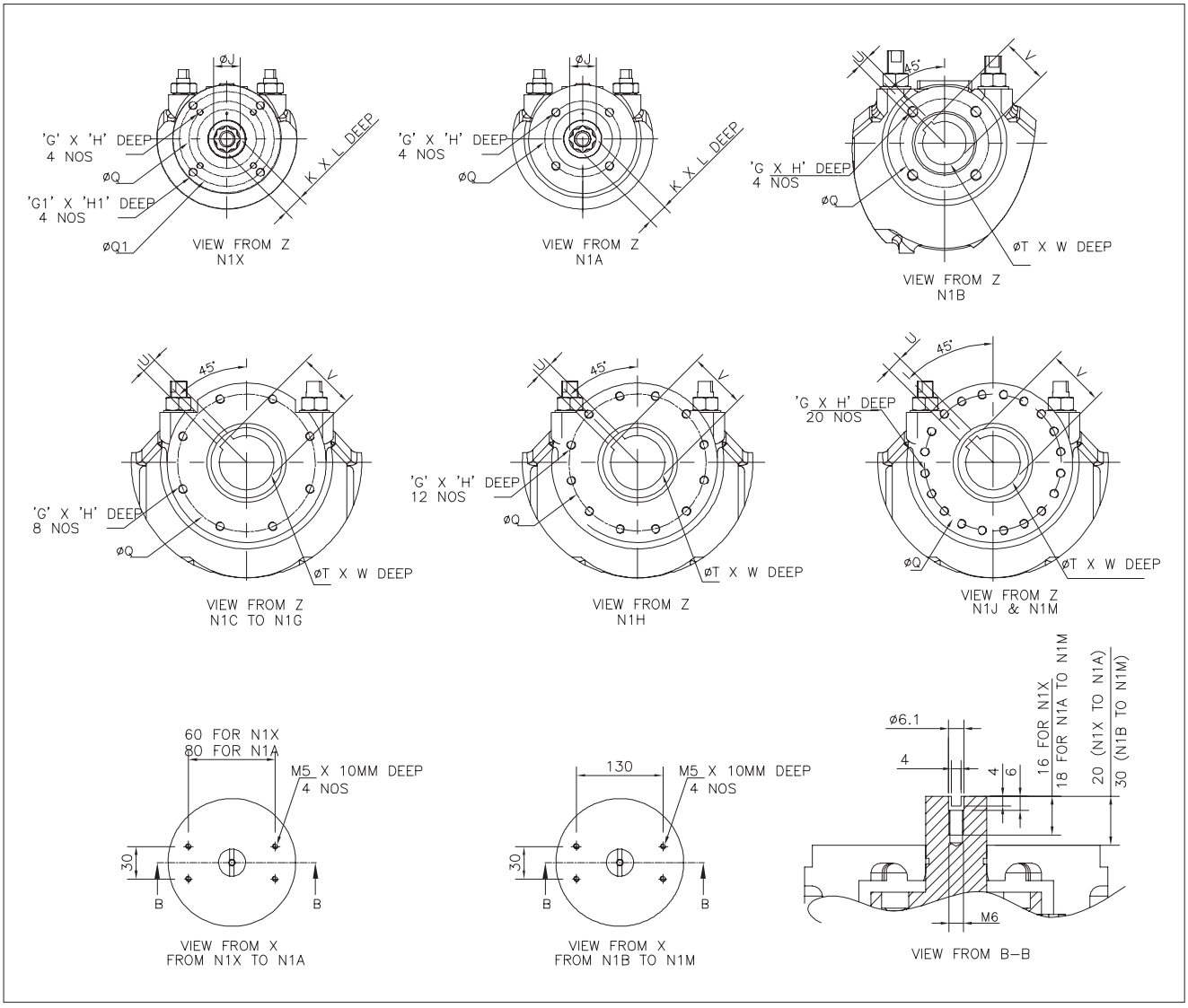
Mounting face dimensions with Neles bore



Actuator	Dimensions, mm										Mounting face
	G	G1	H	H1	Q	Q1	T	U	V	W	
N1X	M8	-	12	-	70	-	20	4.76	22.3	35	F07
	-	M10	-	15	-	102	20	4.76	22.3	35	F10
N1A	M16	-	24	-	140	-	40	9.53	44.4	68	F14
N1B	M20	-	30	-	165	-	70	19.05	78.3	173	F16
N1C	M16	-	24	-	254	-	95	22.23	105.0	202	F25
N1D	M20	-	30	-	298	-	105	25.40	116.3	217	F30
N1E	M30	-	45	-	356	-	135	31.75	149.0	309	F35
N1G	M36	-	54	-	406	-	180	44.45	199.4	383	F40
N1H	M36	-	54	-	483	-	200	50.80	222.1	385	F48

Note: More detailed dimensions with tolerances available in document F102307

Mounting face dimensions with iso bore

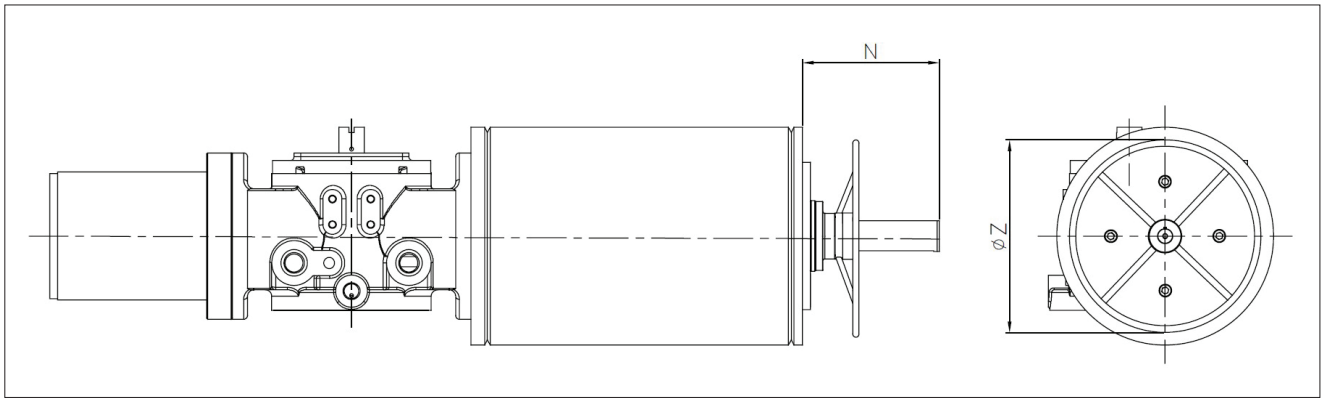


Actuator	Dimensions, mm													Mounting face
	G	G1	H	H1	ØJ	K	L	Q	Q1	T	U	V	W	
N1X	M8	-	12	-	30.5	22	25	70	-	-	-	-	-	F07
	-	M10	-	15				-	102	-	-	-	-	F10
N1A	M16	-	24	-	48.2	36	45	140	-	-	-	-	-	F14
N1B	M20	-	30	-	-	-	-	165	-	80	22	85.4	173	F16
N1C	M16	-	24	-	-	-	-	254	-	100	28	106.4	202	F25
N1D	M20	-	30	-	-	-	-	298	-	120	32	127.4	217	F30
N1E	M30	-	45	-	-	-	-	356	-	160	40	169.4	309	F35
N1G	M36	-	54	-	-	-	-	406	-	178	45	188.4	383	F40
N1H	M36	-	54	-	-	-	-	483	-	220	50	231.4	385	F48
N1J	M36	-	54	-	-	-	-	603	-	280	63	292.4	483	F60
N1M	M42	-	75	-	-	-	-	724	-	336	80	351.4	556	-

Note: More detailed dimensions with tolerances available in document F102307.

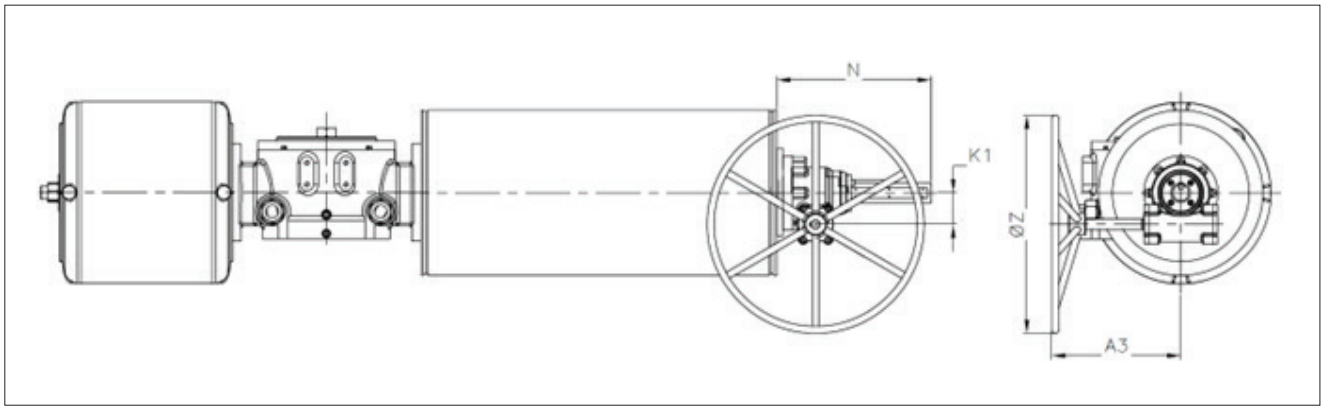
N1 Actuator Details with Manual Overrides

N1 Actuator with Straight Handwheel Dimension details, mm: HW



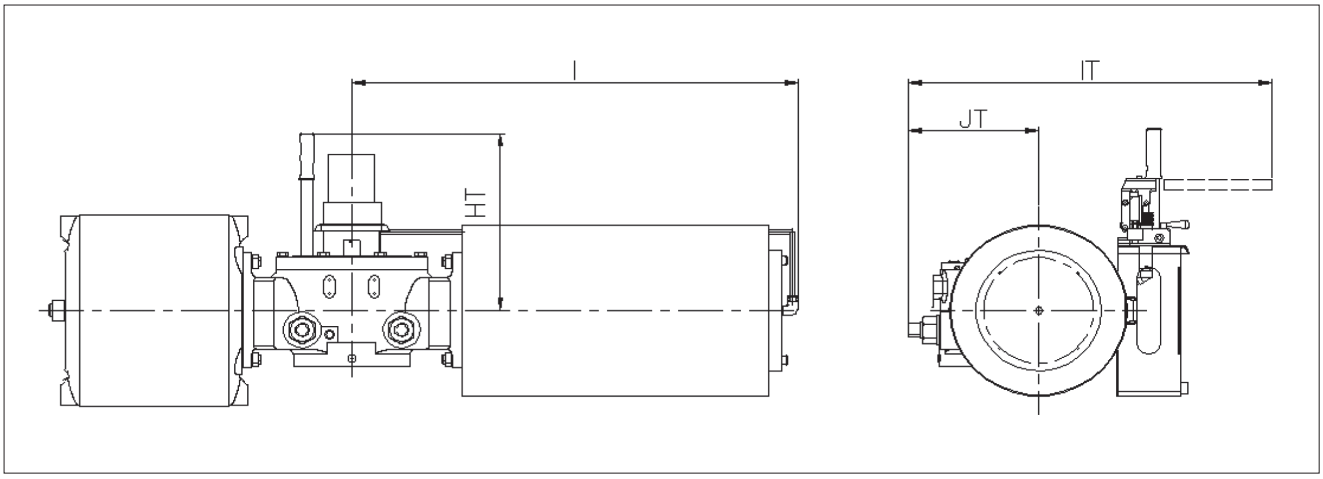
MODEL	N	Z
N1X0063 - 0125	142.5	300
N1A0100 - 0125	219	300

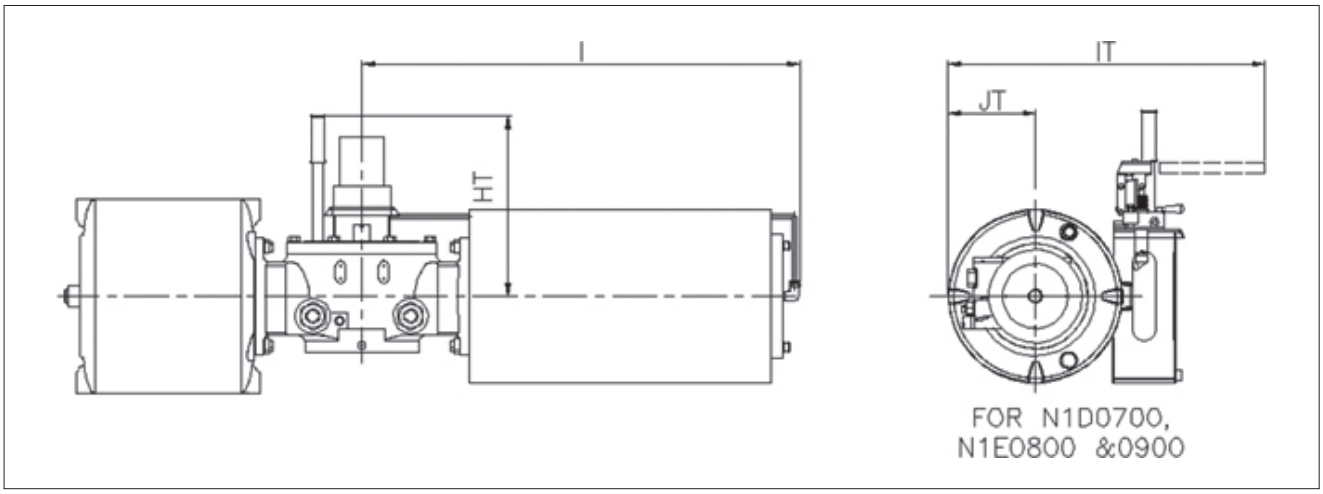
N1 Actuator with Side Handwheel Dimension details, mm: HW



MODEL	N	Z	K1	A3
N1A0150 - 0250	299	290	51	222
N1A0300 - 0350	351.5	500	72	297.5
N1B0250	337	290	51	222
N1B0300 – 0400	389.5	500	72	297.5
N1C0300 - 0400	425	500	72	297.5
N1C0500	471	650	118.3	296.7

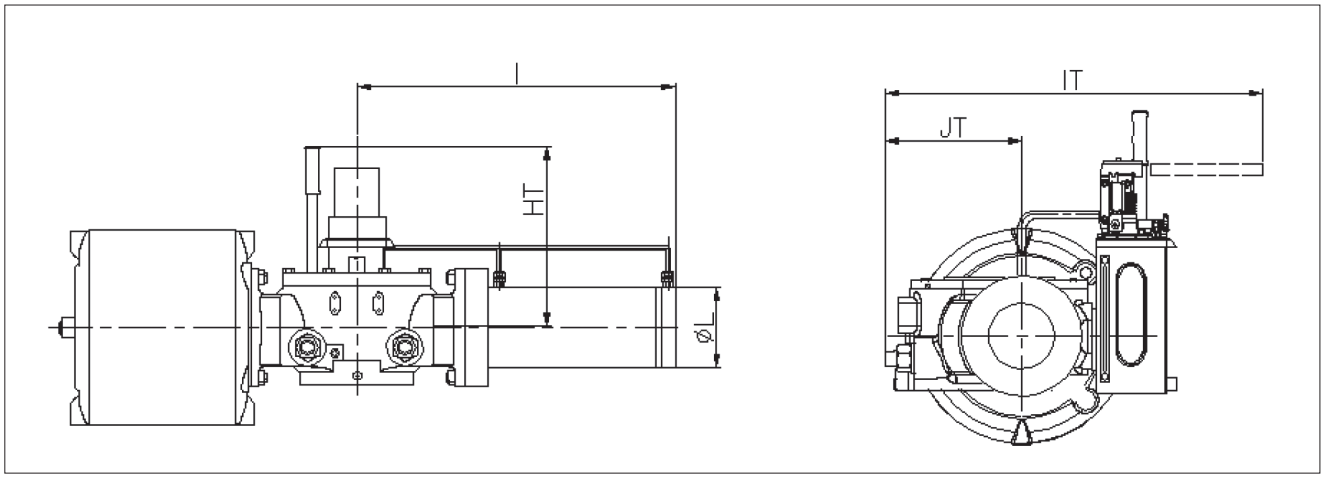
N1 Actuator with Spring Return Manual Override Dimensions, mm: HP

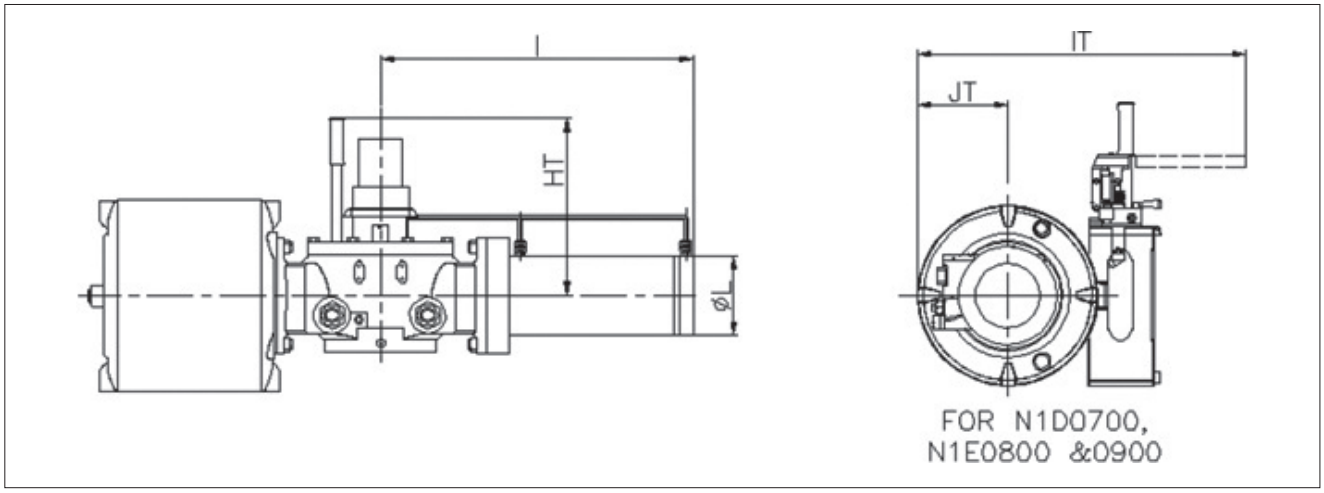




MODEL	I	IT	JT	HT
N1C0300 - 0500	1110	891	252	574
N1D0350 - 0600	1337	975	321	559
N1D0700	1337	1009	321	559
N1E0500 - 0700	1623	993	368	525,5
N1E0800 - 0900	1623	1208	368	525,5
N1G0600 - 0900	2440	1132	444	503
N1H0700E3-0900E3	2010	1301	549	530
N1H0800E2-0900E2	2450	1301	549	530
N1H0900E1	2683	1301	549	530
N1H1000-E1	2683	1316	549	530
N1H1000-E2	2450	1316	549	530
N1H1000-E3	2010	1316	549	530
N1J0800 - 01000	2948	1637	677	565
N1M1100-1300	3135	850	899	750

Actuator with Double Acting Manual Override Dimensions, mm: HP





MODEL	I	IT	JT	L	HT
N1C0300 - 500	635	891	252	150	574
N1D0350 - 600	818	975	321	150	559
N1D0700	818	1017	321	150	559
N1E0500 - 700	866	801	368	200	525,5
N1E0800	866	1208	368	200	525,5
N1E0900	866	1258	368	200	525,5
N1G0600 - 900	1049	1132	444	200	503
N1H0700-1000	1293	1299	549	200	530
N1J0700 - 1000	1631	1637	677	250	565
N1M1000-1300	2082	1637	899	300	565

N1-series type code

Heavy duty scotch yoke actuator

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
N1	B	0250	S	1	G	E03	C	N	/	* (NIL)

1.	Series
N1	Neles heavy duty actuator

2.	Frame size
B	X
	A
	B
	C
	D
	E
	G
	H
	J
	M

3.	Cylinder size, mm	Available frame
0250	0063	X
	0080	X
	0100	X, A
	0125	X, A
	0150	A
	0200	A
	0250	A, B
	0300	A, B, C
	0350	A, B, C, D
	0400	B, C, D
	0500	C, D, E
	0600	D, E, G
	0700	D, E, G, H, J
	0800	E, G, H, J
	0900	E, G, H, J
	1000	H, J, M
	1100	M
	1200	M
	1300	M

4.	Link type
S	Symmetric

5.	Cylinder type
1	Single cylinder

6.	Temperature range
G	-20...+80 °C
H	-20...+125 °C
A	-40...+80 °C

7.	Single / Double acting
E01....E11	Single acting
D00	Double acting

8.	Spring action
C	Spring to close
A	Spring to open
D	Double acting

9.	Shaft bore-key type
N	Neles bore, female double key way
D	ISO bore, female keyway.

10.	Break
/	Type code break to be left blank if no options specified

11.	Options
HW	Handwheel, manual override
HP	Hydraulic, manual override

Note: For API 6DX with N1 actuators for M frame consult factory.

Note: PED offerings available for General temperature (-20 °C to +80 °C) and High temperature (-20 °C to +125 °C).

Subject to change without prior notice.
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