

Neles™ high performance heavy duty hydraulic actuator (scotch yoke type)

Series N1-Hydraulic actuator

The N1-Hydraulic actuator is specifically designed for use with quarter-turn valves in on-off service applications. Its advanced yoke construction provides high end-of-stroke torque, ensuring reliable performance in tight shut-off conditions. The actuator's robust design guarantees long-lasting durability, even in harsh environments, due to its unique features, such as welded construction of cylinder & double sealing at rod end.

This combination of strength and reliability makes the N1-Hydraulic actuator an ideal choice for demanding applications.

The design ensures peak performance for the operation of ball, butterfly, and plug valves, even in the most challenging environmental conditions.



Features and benefits

- Heavy duty high performance Hydraulic N1 scotch yoke actuator for quarter turn on/off valves
- Wear and corrosion resistant design
- Safe and easy maintenance
- Ball bearing and hardened yoke thrust pin bearing incorporated into the actuator for long life and smooth operation.
- Wide torque range
- Enables ease of maintenance and reduced inventory costs
- Ductile cast iron center body and fabricated carbon steel hydraulic cylinder provides rugged actuator construction
- Proven product
- The Vent valve has built in non-return function for IP67
- A high-pressure power pack is provided for manual hand pump operation, incorporating essential safety features.

Technical specifications

- Actuator connections in accordance with ISO5211, IS2048 and VDI/ VDE3845.
- Action: Double acting
- Ingress Protection class: IP66 & IP67 (IEC 60529)
- Pressure containing parts as per ASME SECTION VIII, Div 1
- Torque output range: 100 Nm - 400000 Nm.
- Temp range: -20 to +85 °C
- Design pressure: Up to 230 bar
- Working pressure: Up to 210 bar
- External corrosion protection in compliance with ISO 12944-2 class C3; Optionally available class C5M.
- Manufactured and tested as per ISO 9001, and EN 15714-4
- Adjustable travel stops from 85° to 95° (+/- 5°)
- Minimum hydraulic fluid cleanliness shall be in accordance with SAE AS4059 Tab 2, class 6, or ISO 4406 15/13/10
- Please consult Valmet for torque details and sizing.

N1- HYDRAULIC ACTUATOR TECHNICAL DATA

STROKE VOLUME. DM³ - DOUBLE ACTING FOR 90° STROKE OF N1- HYDRAULIC ACTUATOR

Cyl.dia.	63	80	100	125	160	200	250	300	350	400	450
Actuator	Stroke volume, dm ³										
N1A	0.4	0.6	0.9	1.4	2.3	-	-	-	-	-	-
N1B	0.5	0.75	1.2	1.8	3	4.7	-	-	-	-	-
N1C	-	0.9	1.4	2.2	3.6	5.6	8.8	-	-	-	-
N1D	-	1.1	1.7	2.6	4.3	6.8	10.6	-	-	-	-
N1E	-	1.4	2	3.2	5.2	8.2	12.8	18.4	25	32.7	-
N1G	-	-	2.6	4	6.4	10	15.7	22.6	30.8	40.2	50.9
N1H	-	-	-	5	8	12.4	19.4	28	38.1	49.8	63

MAXIMUM OPERATING PRESSURE FOR N1- HYDRAULIC ACTUATOR

Cyl.dia.	63	80	100	125	160	200	250	300	350	400	450
Actuator	Maximum operating pressure, bar										
N1A	158	85	50	30	19	-	-	-	-	-	-
N1B	210	100	70	45	25	15	-	-	-	-	-
N1C	-	167	87	49	28	17	10.5	-	-	-	-
N1D	-	210	100	70	40	24	15	-	-	-	-
N1E	-	210	100	100	100	75	50	30	25	20	-
N1G	-	-	210	210	100	95	60	40	30	20	15
N1H	-	-	-	210	210	100	85	55	40	30	25

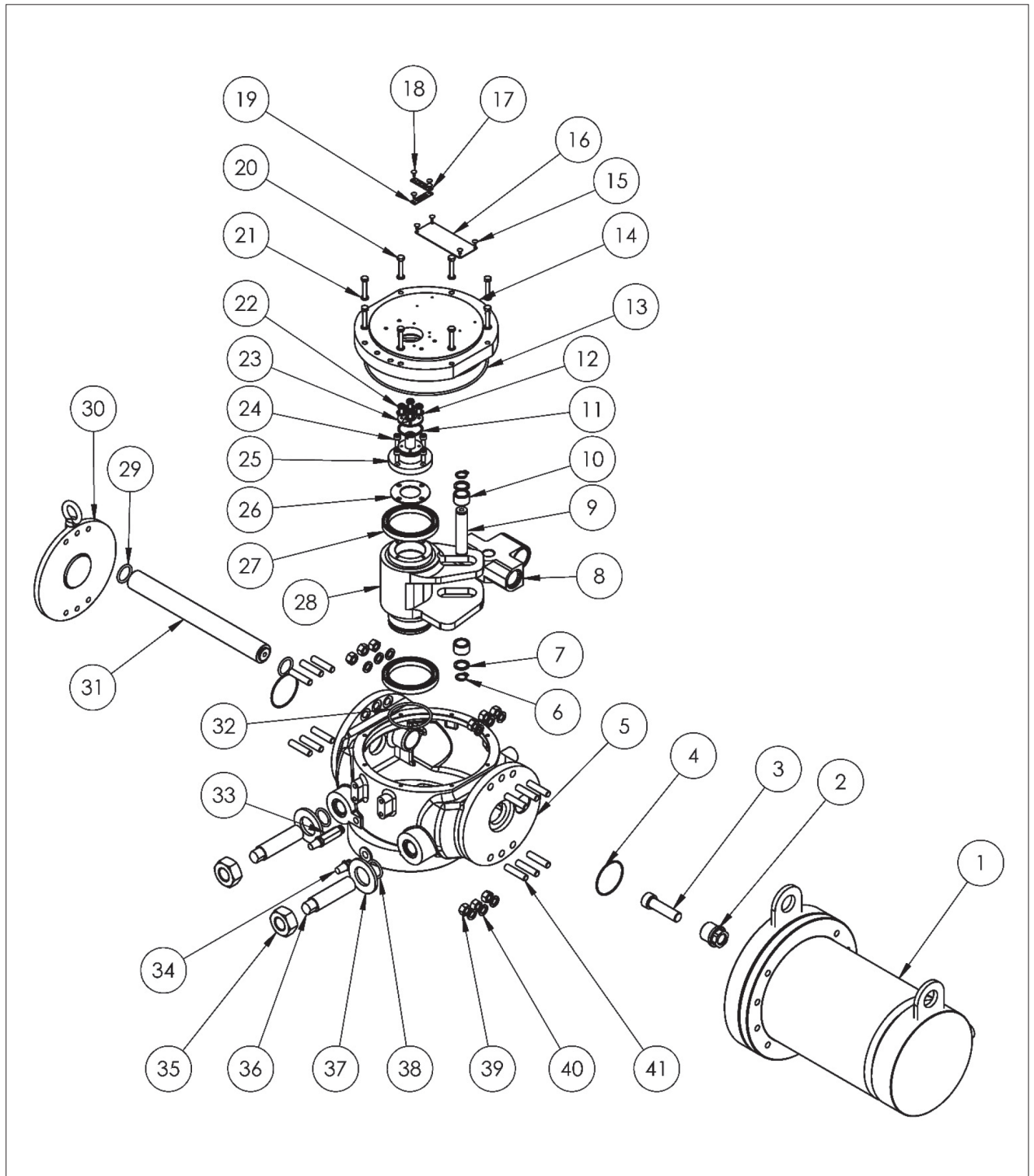
WEIGHTS OF N1 HYDRAULIC ACTUATOR

Cyl.dia.	63	80	100	125	160	200	250	300	350	400	450
Actuator	Weight, Kg										
N1A	55	55	61	72	98	-	-	-	-	-	-
N1B	85	85	91	101	127	162	-	-	-	-	-
N1C	-	115	115	124	151	185	255	-	-	-	-
N1D	-	175	175	185	215	251	311	-	-	-	-
N1E	-	265	265	273	290	335	400	450	524	620	-
N1G	-	-	310	310	310	355	445	470	550	650	670
N1H	-	-	-	357	357	408	512	541	633	748	357

WEIGHTS OF N1 HYDRAULIC ACTUATOR WITH HAND PUMP

Cyl.dia.	63	80	100	125	160	200	250	300	350	400	450
Actuator	Weight, Kg										
N1A	78	78	84	95	121	-	-	-	-	-	-
N1B	108	108	114	124	150	185	-	-	-	-	-
N1C	-	138	138	147	174	208	278	-	-	-	-
N1D	-	198	198	208	238	274	334	-	-	-	-
N1E	-	288	288	296	313	374	439	489	563	659	-
N1G	-	-	333	333	333	394	484	509	589	689	709
N1H	-	-	-	380	380	447	551	580	672	787	396

EXPLODED VIEW AND PARTS LIST OF BARE HYDRAULIC ACTUATOR



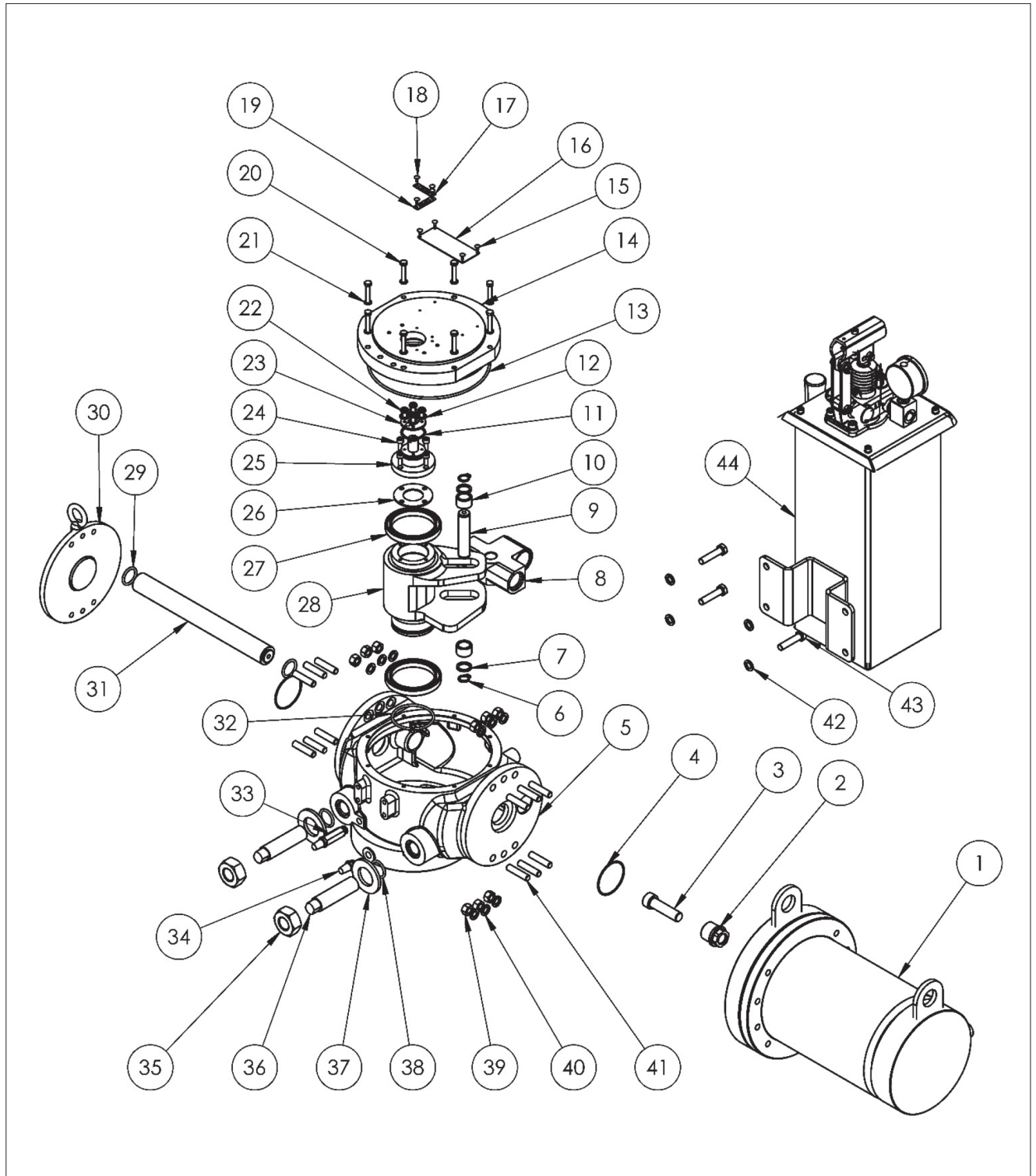
ITEM NO.	DESCRIPTION	QTY.	MATERIAL
1	HYDRAULIC CYLINDER	1	CARBON STEEL
2	CONNECTING NUT	1	ALLOY STEEL
3	CONNECTING BOLT	1	ALLOY STEEL
4*	O-RING	2	NBR
5	CENTRAL BLOCK	1	DUCTILE IRON
6	EXTERNAL CIRCLIP	2	DIN 471
7	WASHER	2	STAINLESS STEEL
8\$	CARRIER	1	DUCTILE IRON / CARBON STEEL / STAINLESS STEEL
9	YOKE PIN	1	ALLOY STEEL
10	ROLLER FOR YOKE PIN	2	ALLOY STEEL
11*	O-RING	1	NBR
12	SPRING WASHER	4	DIN 128
13*	O-RING	1	NBR
14	CENTRAL BLOCK COVER	1	DUCTILE IRON
15	RIVET	4	-
16	NAME PLATE	1	STAINLESS STEEL
17	CLOSE POSITION INDICATOR	1	STAINLESS SHEEL
18	RIVET	4	-
19	OPEN POSITION INDICATOR	1	STAINLESS STEEL
20	HEX. SOC. HEAD CAP SCREW	8	DIN 912
21	SPRING WASHER	8	DIN 128
22	SLOTTED HEAD CAP SCREW	4	IS 6101
23	POSITION INDICATOR	1	ALUMINIUM ALLOY
24	HEX. SOC. HEAD CAP SCREW	4	DIN 912
25	YOKE INSERT	1	DUCTILE IRON
26*	GASKET FOR COVER	1	NBR
27	RADIAL BALL BEARING	2	-
28	YOKE	1	DUCTILE IRON
29*	O-RING	2	NBR
30	REAR CAP	1	DUCTILE IRON
31	GUIDE ROD	1	STAINLESS STEEL
32*	O-RING	1	NBR
33	CHECK VALVE	1	STD
34	SILENCER	2	BRASS
35	HEX. NUT	2	DIN 934
36	STROKE ADJUSTMENT SCREW	2	CARBON STEEL
37	WASHER	2	CARBON STEEL
38*	O-RING	2	NBR
39	HEX. NUT	12	DIN 934
40	SPRING WASHER	12	DIN 128
41	STUD BOLT	12	ALLOY STEEL

1)* Marked component are the parts of the seal kit

2)\$ Marked components having following notes:

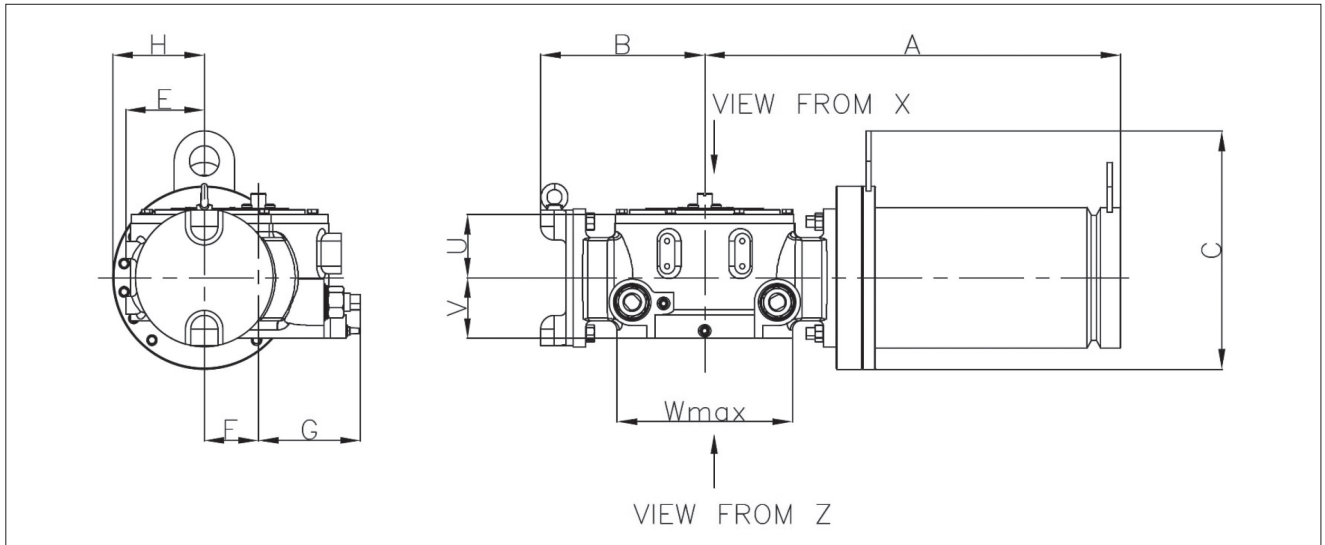
- Carrier MOC is Ductile iron up to D frame and Stainless steel from E frame onwards.

EXPLODED VIEW AND PARTS LIST OF HYDRAULIC ACTUATORS WITH HAND PUMP



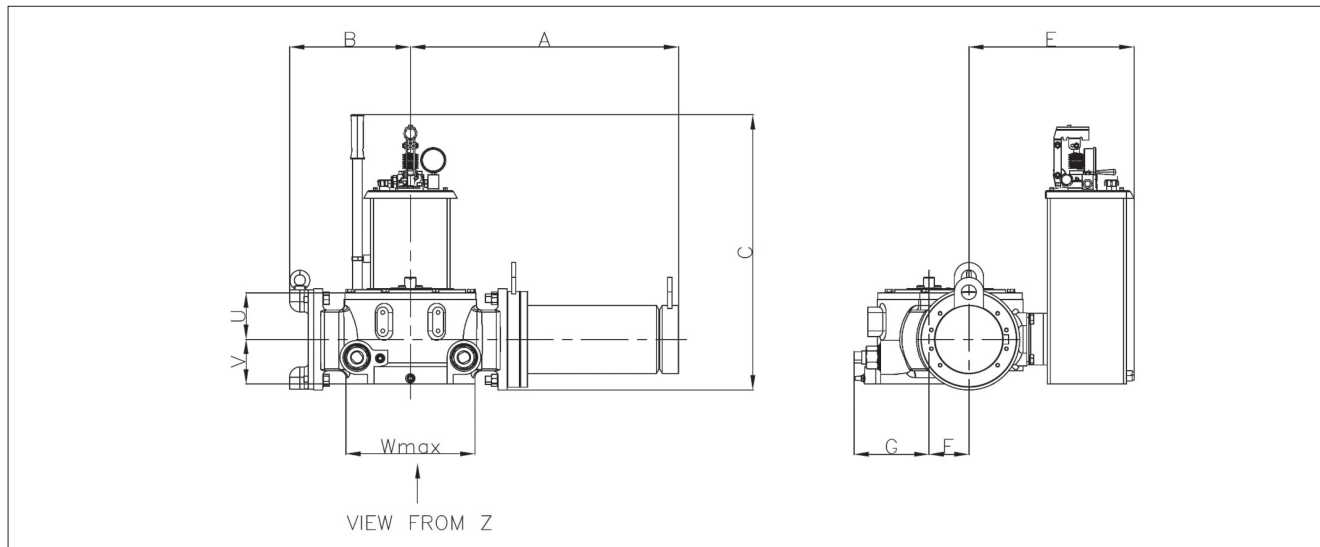
ITEM NO.	DESCRIPTION	QTY.	MATERIAL
1	HYDRAULIC CYLINDER	1	CARBON STEEL
2	CONNECTING NUT	1	ALLOY STEEL
3	CONNECTING BOLT	1	ALLOY STEEL
4*	O-RING	2	NBR
5	CENTRAL BLOCK	1	DUCTILE IRON
6	EXTERNAL CIRCLIP	2	DIN 471
7	WASHER	2	STAINLESS STEEL
8\$	CARRIER	1	DUCTILE IRON / CARBON STEEL / STAINLESS STEEL
9	YOKE PIN	1	ALLOY STEEL
10	ROLLER FOR YOKE PIN	2	ALLOY STEEL
11*	O-RING	1	NBR
12	SPRING WASHER	4	DIN 128
13*	O-RING	1	NBR
14	CENTRAL BLOCK COVER	1	DUCTILE IRON
15	RIVET	4	-
16	NAME PLATE	1	STAINLESS STEEL
17	CLOSE POSITION INDICATOR	1	STAINLESS SHEEL
18	RIVET	4	-
19	OPEN POSITION INDICATOR	1	STAINLESS STEEL
20	HEX. SOC. HEAD CAP SCREW	8	DIN 912
21	SPRING WASHER	8	DIN 128
22	SLOTTED HEAD CAP SCREW	4	IS 6101
23	POSITION INDICATOR	1	ALUMINIUM ALLOY
24	HEX. SOC. HEAD CAP SCREW	4	DIN 912
25	YOKE INSERT	1	DUCTILE IRON
26*	GASKET FOR COVER	1	NBR
27	RADIAL BALL BEARING	2	-
28	YOKE	1	DUCTILE IRON
29*	O-RING	2	NBR
30	REAR CAP	1	DUCTILE IRON
31	GUIDE ROD	1	STAINLESS STEEL
32*	O-RING	1	NBR
33	CHECK VALVE	1	STD
34	SILENCER	2	BRASS
35	HEX. NUT	2	DIN 934
36	STROKE ADJUSTMENT SCREW	2	CARBON STEEL
37	WASHER	2	CARBON STEEL
38*	O-RING	2	NBR
39	HEX. NUT	12	DIN 934
40	SPRING WASHER	12	DIN 128
41	STUD BOLT	12	ALLOY STEEL
42	SPRING WASHER	4	STEEL
43	HEXAGON HEAD CAP SCREW	4	CARBON STEEL
44	HYDRAULIC PUMP UNIT	1	-

DIMENSIONS: HYDRAULIC BARE ACTUATOR



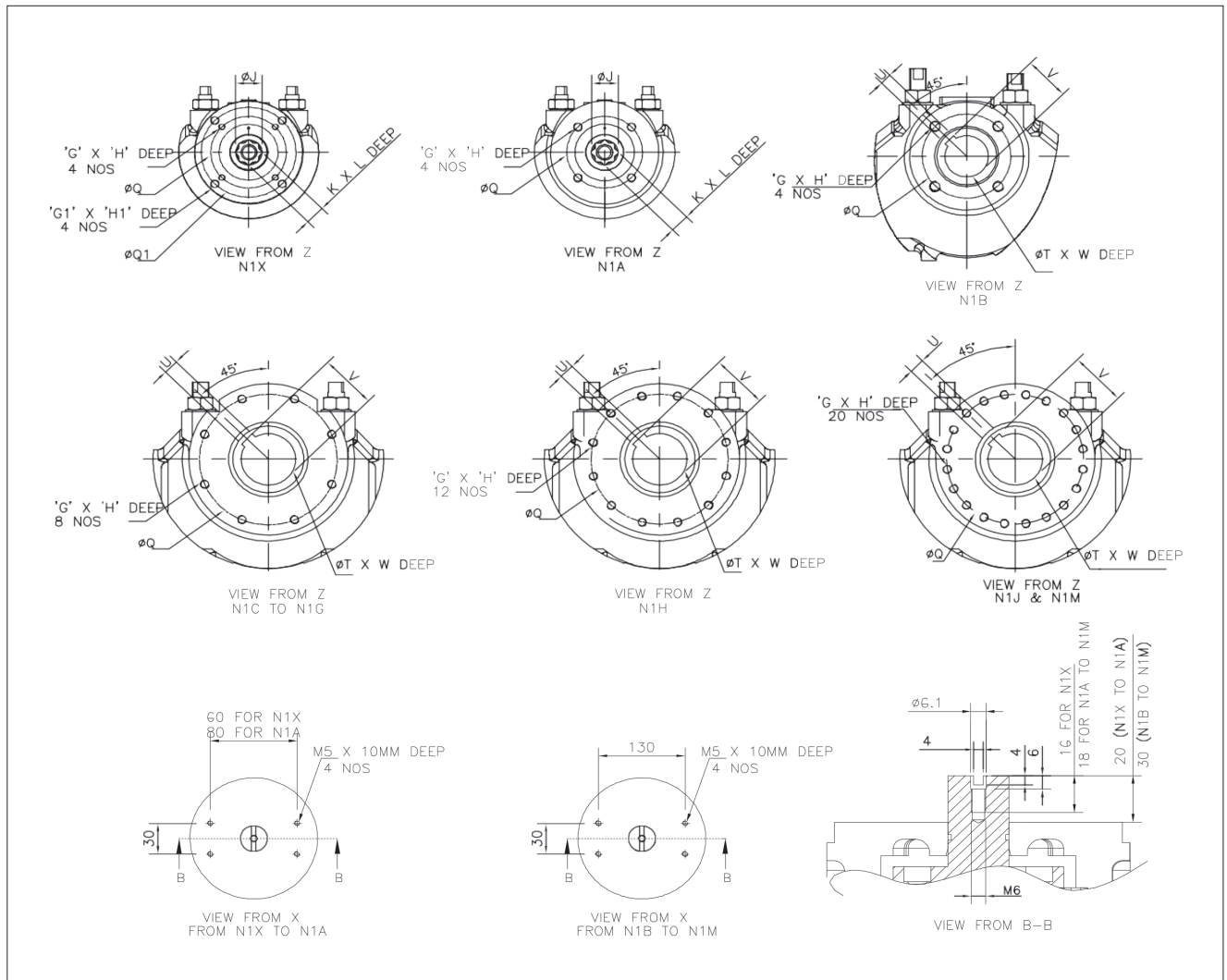
DIMENSIONS: HYDRAULIC BARE ACTUATOR												
SR NO	MODEL	A	B	C	E	F	G	H	V	U	Wmax	PORT
1	N1AH063	605	171	215	103	58	131	82.5	94	86	200	3/8" NPT
2	N1AH080	605	171	215	103	58	131	82.5	94	86	200	3/8" NPT
3	N1AH100	605	171	221	103	58	131	85.5	94	86	200	3/8" NPT
4	N1AH125	622	171	260	103	58	131	105	94	86	200	3/8" NPT
5	N1AH160	645	171	310	103	58	131	125	94	86	200	3/8" NPT
6	N1BH063	773.5	230	262	129	75	165	106	102	105	210	3/8" NPT
7	N1BH080	773	230	262	129	75	165	106	102	105	210	3/8" NPT
8	N1BH100	773	230	273	129	75	165	111.5	102	105	210	3/8" NPT
9	N1BH125	788	230	266	129	75	165	108	102	105	210	3/8" NPT
10	N1BH160	788	230	310	129	75	165	125	102	105	210	3/8" NPT
11	N1BH200	794	248	350	129	75	165	145	102	105	210	3/8" NPT
12	N1CH080	870.5	248	273	139	90	157	111.5	130	112	294	3/8" NPT
13	N1CH100	870	248	273	139	90	157	111.5	130	112	294	3/8" NPT
14	N1CH125	870	248	325	139	90	157	137.5	130	112	294	3/8" NPT
15	N1CH160	870	248	305	139	90	157	122.5	130	112	294	3/8" NPT
16	N1CH200	915	248	350	139	90	157	145	130	112	294	3/8" NPT
17	N1CH250	915	328	425	139	90	157	182.5	130	112	294	3/8" NPT
18	N1DH080	980.5	328	318	172	108	203	129	138	121	350	3/8" NPT
19	N1DH100	980	328	318	172	108	203	129	138	121	350	3/8" NPT
20	N1DH125	1003	328	320	172	108	203	130	138	121	350	3/8" NPT
21	N1DH160	1003	328	340	172	108	203	130	138	121	350	3/8" NPT
22	N1DH200	1042	328	386	172	108	203	153	138	121	350	3/8" NPT
23	N1DH250	1042	365	445	172	108	203	182.5	138	121	350	3/8" NPT
24	N1EH080	1090	365	376	188	130	235	148	199	155	425	3/8" NPT
25	N1EH100	1090	365	376	188	130	235	148	199	155	425	3/8" NPT
26	N1EH125	1090	365	378	188	130	235	149	199	155	425	3/8" NPT
27	N1EH160	1170	365	378	188	130	235	149	199	155	425	3/8" NPT
28	N1EH200	1116	365	418	188	130	235	149	199	155	425	3/8" NPT
29	N1EH250	1116	365	485	188	130	235	182.5	199	155	425	3/8" NPT
30	N1EH300	1170	365	540	188	130	235	210	199	155	425	3/8" NPT
31	N1EH350	1170	365	600	188	130	235	240	199	155	425	3/8" NPT
32	N1EH400	1170	450	670	188	130	235	275	199	155	425	3/8" NPT
33	N1GH100	1386	450	420	250	160	286	170	251	177	475	3/8" NPT
34	N1GH125	1386	450	420	250	160	286	170	251	177	475	3/8" NPT
35	N1GH160	1386	450	460	250	160	286	170	251	177	475	3/8" NPT
36	N1GH200	1386	450	465	250	160	286	172.5	251	177	475	3/8" NPT
37	N1GH250	1386	450	470	250	160	286	175	251	177	475	3/8" NPT
38	N1GH300	1386	450	560	250	160	286	220	251	177	475	3/8" NPT
39	N1GH350	1386	450	600	250	160	286	240	251	177	475	3/8" NPT
40	N1GH400	1400	450	670	250	160	286	275	251	177	475	3/8" NPT
41	N1GH450	1400	450	720	250	160	286	300	251	177	475	3/8" NPT
42	N1HH125	1606	566	425	256	198	334	172.5	222	213	600	1/2" NPT
43	N1HH160	1606	566	465	256	198	334	172.5	222	213	600	1/2" NPT
44	N1HH200	1606	566	465	256	198	334	172.5	222	213	600	1/2" NPT
45	N1HH250	1606	566	470	256	198	334	175	222	213	600	1/2" NPT
46	N1HH300	1606	566	560	256	198	334	220	222	213	600	1/2" NPT
47	N1HH350	1606	566	600	256	198	334	240	222	213	600	1/2" NPT
48	N1HH400	1606	566	670	256	198	334	275	222	213	600	1/2" NPT
49	N1HH450	1606	566	720	256	198	334	300	222	213	600	1/2" NPT

DIMENSIONS: HYDRAULIC ACTUATOR WITH HAND PUMP UNIT



DIMENSIONS: HYDRAULIC ACTUATOR WITH HAND PUMP UNIT											
SR NO	MODEL	A	B	C	E	F	G	V	U	Wmax	PORT
1	N1AH063	605	171	680	321	58	131	94	86	200	3/8" NPT
2	N1AH080	605	171	680	321	58	131	94	86	200	3/8" NPT
3	N1AH100	605	171	680	321	58	131	94	86	200	3/8" NPT
4	N1AH125	622	171	680	321	58	131	94	86	200	3/8" NPT
5	N1AH160	645	171	680	321	58	131	94	86	200	3/8" NPT
6	N1BH063	773.5	230	680	347	75	165	102	105	210	3/8" NPT
7	N1BH080	773	230	680	347	75	165	102	105	210	3/8" NPT
8	N1BH100	773	230	680	347	75	165	102	105	210	3/8" NPT
9	N1BH125	788	230	680	347	75	165	102	105	210	3/8" NPT
10	N1BH160	788	230	680	347	75	165	102	105	210	3/8" NPT
11	N1BH200	794	248	680	357	75	165	102	105	210	3/8" NPT
12	N1CH080	870.5	248	680	357	90	157	130	112	294	3/8" NPT
13	N1CH100	870	248	680	357	90	157	130	112	294	3/8" NPT
14	N1CH125	870	248	680	357	90	157	130	112	294	3/8" NPT
15	N1CH160	870	248	680	357	90	157	130	112	294	3/8" NPT
16	N1CH200	915	248	680	357	90	157	130	112	294	3/8" NPT
17	N1CH250	915	328	680	433	90	157	130	112	294	3/8" NPT
18	N1DH080	980.5	328	680	390	108	203	138	121	350	3/8" NPT
19	N1DH100	980	328	680	390	108	203	138	121	350	3/8" NPT
20	N1DH125	1003	328	680	390	108	203	138	121	350	3/8" NPT
21	N1DH160	1003	328	680	390	108	203	138	121	350	3/8" NPT
22	N1DH200	1042	328	680	433	108	203	138	121	350	3/8" NPT
23	N1DH250	1042	365	680	449	108	203	138	121	350	3/8" NPT
24	N1EH080	1090	365	680	406	130	235	199	155	425	3/8" NPT
25	N1EH100	1090	365	680	406	130	235	199	155	425	3/8" NPT
26	N1EH125	1090	365	680	406	130	235	199	155	425	3/8" NPT
27	N1EH160	1170	365	680	406	130	235	199	155	425	3/8" NPT
28	N1EH200	1116	365	680	406	130	235	199	155	425	3/8" NPT
29	N1EH250	1116	365	680	406	130	235	199	155	425	3/8" NPT
30	N1EH300	1170	365	880	474	130	235	199	155	425	3/8" NPT
31	N1EH350	1170	365	880	474	130	235	199	155	425	3/8" NPT
32	N1EH400	1170	450	880	536	130	235	199	155	425	3/8" NPT
33	N1GH100	1386	450	680	468	160	286	251	177	475	3/8" NPT
34	N1GH125	1386	450	680	468	160	286	251	177	475	3/8" NPT
35	N1GH160	1386	450	680	511	160	286	251	177	475	3/8" NPT
36	N1GH200	1386	450	680	511	160	286	251	177	475	3/8" NPT
37	N1GH250	1386	450	680	511	160	286	251	177	475	3/8" NPT
38	N1GH300	1386	450	880	536	160	286	251	177	475	3/8" NPT
39	N1GH350	1386	450	880	536	160	286	251	177	475	3/8" NPT
40	N1GH400	1400	450	910	536	160	286	251	177	475	3/8" NPT
41	N1GH450	1400	450	910	536	160	286	251	177	475	3/8" NPT
42	N1HH125	1606	566	680	474	198	334	222	213	600	1/2" NPT
43	N1HH160	1606	566	680	517	198	334	222	213	600	1/2" NPT
44	N1HH200	1606	566	680	517	198	334	222	213	600	1/2" NPT
45	N1HH250	1606	566	880	542	198	334	222	213	600	1/2" NPT
46	N1HH300	1606	566	880	542	198	334	222	213	600	1/2" NPT
47	N1HH350	1606	566	910	602	198	334	222	213	600	1/2" NPT
48	N1HH400	1606	566	910	602	198	334	222	213	600	1/2" NPT
49	N1HH450	1606	566	910	602	198	334	222	213	600	1/2" NPT

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
N1X	-	M10	-	15	30.5	22	25	-	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	-

N1 -Hydraulic actuator type code

Heavy duty hydraulic actuator

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
N1	B	H063	S	1	G	D00	D	D	/	* (NIL)

1. sign	Series
N1	Neles heavy duty hydraulic actuator

6. sign	Temperature range
G	-20...+85 °C

2. sign	Frame size
B	A
	B
	C
	D
	E
	G
	H

7. sign	Double acting
D00	Double acting

8. sign	Spring action
D	Double acting

9. sign	Shaft bore key type
D	According to ISO bore keyway

3. sign	Cylinder size
H063	H063
	H080
	H100
	H125
	H160
	H200
	H250
	H300
	H350
	H400
	H450

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

11. sign	Options
HP	Manual Hydraulic Pump operation

4. sign	Link type
S	Symmetric

5. sign	Cylinder type
1	Single cylinder

Valmet Flow Control Oy

Vanha Porvoontie 229, 01380 Vantaa, Finland.

Tel. +358 10 417 5000.

www.valmet.com/flowcontrol

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