

# Neles™ high performance heavy duty gas over oil actuator (scotch yoke type), series N1-GOV/GOA

The N1-GOV/GOA series actuators are hydraulic/gas quarter turn cylinder actuators designed for control and shut-off service. Actuator design is modular which enables an ideal configuration of central block, hydraulic/gas modules, Instrumentation & limit switch modules. Ductile cast iron central block & fabricated carbon steel hydraulic module provides rugged actuator construction.

The valve remains in stay put condition if the air/oil supply is interrupted.

The mounting face dimensions of the N1-GOV/GOA series actuator comply with the ISO 5211 standard.

The N1-GOV is gas-over-oil operated double acting actuator. The linkage mechanism converts linear motion (provided by an oil supply and piston) to rotary motion. The yoke of the actuator rotates clockwise (close) when oil supply is in front port of hydraulic cylinder and counter clockwise (open) when oil supply is in rear port of hydraulic cylinder.

To provide increased safety and reliability, the process gas goes through hydraulic fluid stored in gas-over-oil tanks, creating hydraulic pressure and in turn power the actuator.

Gas-over-oil actuators use high-pressure gas supplied from the pipeline, suspended above a hydraulic fluid in oil tank to move the actuator. It uses natural gas (sour gas) or any other gas containing significant amounts of hydrogen sulphide (H<sub>2</sub>S).

The gas supply from main pipeline given for hydraulic cylinder actuation through oil tank is being controlled by different accessories in instrumentation panel, like Air operated valve (AOV), pressure regulator, SOV's, pressure relief valve, etc.

The GOAN1 is direct gas operated double acting actuator. The linkage mechanism converts linear motion (provided by an oil supply and piston) to rotary motion. The yoke of the actuator rotates clockwise (close) when gas supply is in front port of Gas cylinder and counter clockwise (open) when gas supply is in rear port of Gas cylinder.

Gas operated actuators use high-pressure gas supplied from the pipeline, directly connected to gas cylinder to move the actuator. It can be used for sweet gas application only, where hydrogen sulphide (H<sub>2</sub>S) presence is less than 3PPM.

The gas supply from main pipeline given for gas cylinder actuation directly is being controlled by different accessories in instrumentation panel, like Air operated valve (AOV), pressure regulator, SOV's, pressure relief valve, etc ...



The two keyways in the yoke of Neles bore actuator are positioned at an angle of 90° to each other, making it possible to change the position of the actuator in relation to the valve.

Refer figure 1 and 2 for basic construction of N1-GOV and N1-GOA.

## Features and benefits

- Build over double acting N1 scotch yoke actuator for quarter turn valves
- Storage tank for manual override as well for extra stroke
- Sour gas and sweet gases can be used for Gas Over Oil application
- Gas reservoir for operation of actuator on absence of main line pressure
- Local and remote operation selection option
- Double acting version only available
- Wear and corrosion resistant design
- Safe and easy maintenance
- Wide torque range
- Modular design: Enables ease of maintenance and reduced inventory costs
- Scotch yoke design
- Heavy duty high performance
- Proven product

## Technical specifications

Suitable for valves located on gas pipelines in on-off and modulating heavy-duty service with medium as sweet or sour high-pressure gas, nitrogen, or instrument air.

## Actuator

- Actuator connections in accordance with ISO5211 and VDI/VDE3824.
- Action: Double acting
- Protection class: IP66 and 67 (IEC 60529)
- Certification: CE and ATEX
- SIL 3 (Actuator)
- PED 2014/68/EN for unified pressure vessel
- TRCU 012/11, EAC

## For N1-GOV/GOA assembly

- Torque output range: Air break at 700 000 Nm.
- Temp range: -20 to +85 °C
- Design pressure: 150 bar
- Working pressure: 10 to 105 bar
- External corrosion protection in compliance with ISO 12944-2 and EN 15714-3 class C3; Optionally available class C5M.
- Manufactured and tested as per ISO 9001
- Please consult Valmet for torque details and sizing.

## Material of construction

- Cylinder: Carbon steel (hard chrome plating)
- Central frame and cylinder caps: Nodular cast iron
- Instrumentation enclosure: Carbon steel / Stainless steel

## Actuator series N1-GOV/GOA technical data

### Stroke volume (@ 90 deg. stroke length), dm<sup>3</sup> - Double acting

Cyl. dia.	50	63	80	100	125	160	200	250	300	350	400	450	500
Actuator	Stroke volume, dm <sup>3</sup>												
N1X	0.1	0.2	0.3	0.4	0.7	-	-	-	-	-	-	-	-
N1A	-	-	0.5	0.8	1.3	2.2	-	-	-	-	-	-	-
N1B	-	-	0.5	0.9	1.5	2.7	4.4	-	-	-	-	-	-
N1C	-	-	-	1.1	1.9	3.3	5.3	8.5	12.4	-	-	-	-
N1D	-	-	-	1.3	2.2	4	6.4	10.2	14.8	-	-	-	-
N1E	-	-	-	1.5	2.7	4.7	7.7	12.2	18	24.5	32.1	-	-
N1G	-	-	-	-	-	5.5	9.1	14.8	21.7	30	39.3	50	-
N1H	-	-	-	-	-	-	11	18	26.5	36.5	48.2	61.4	-
N1J	-	-	-	-	-	-	-	-	34.1	47.4	62.7	80	99.4

### Maximum operating pressure – N1-GOV/GOA Double acting

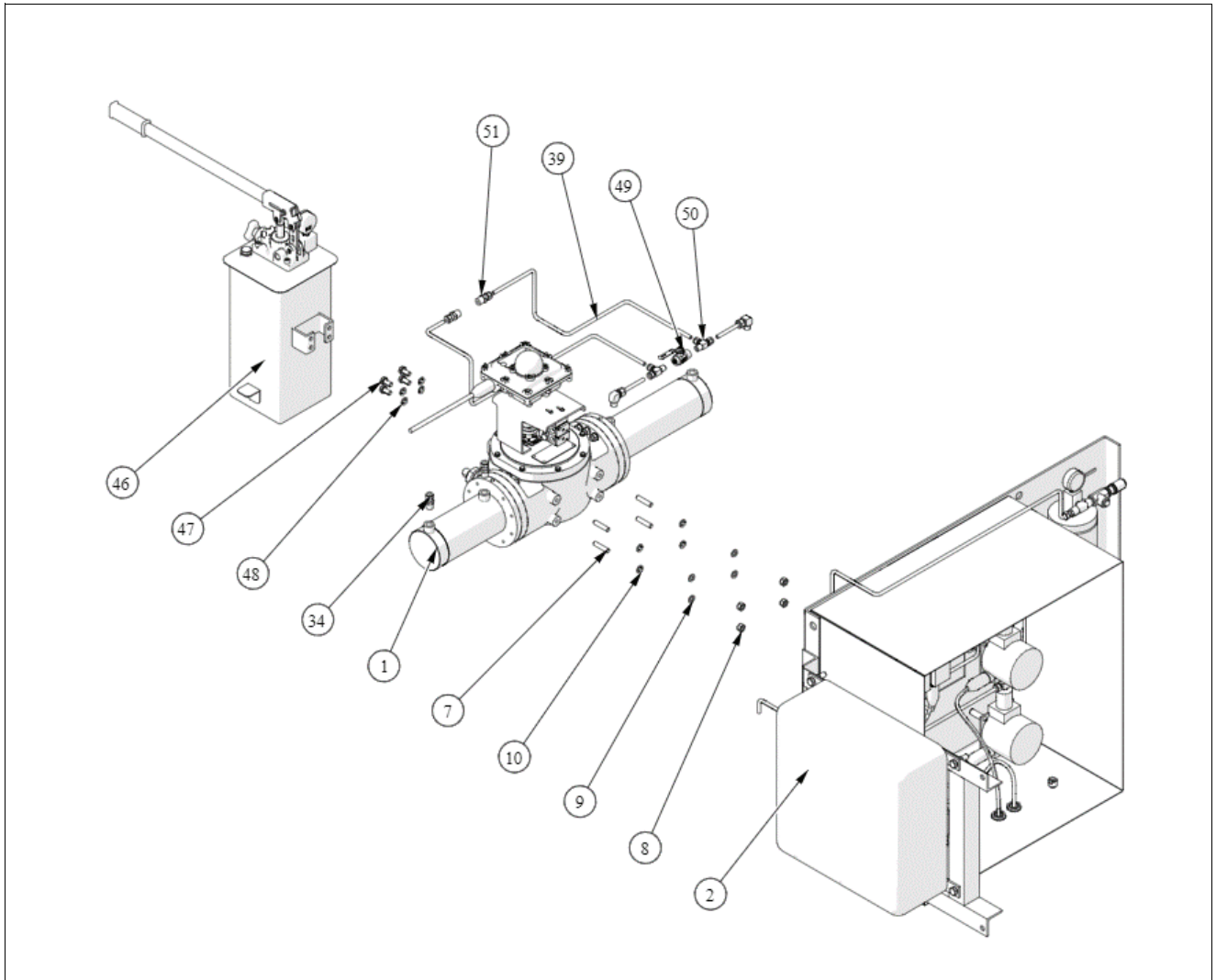
Cyl. dia.	50	63	80	100	125	160	200	250	300	350	400	450	500
Actuator	Maximum operating pressure, bar												
N1X	70	45	25	15	10	-	-	-	-	-	-	-	-
N1A	-	-	90	55	35	20	-	-	-	-	-	-	-
N1B	-	-	100	70	45	25	15	-	-	-	-	-	-
N1C	-	-	-	100	70	40	25	15	10	-	-	-	-
N1D	-	-	-	100	100	80	50	30	20	-	-	-	-
N1E	-	-	-	100	100	100	95	60	40	30	20	-	-
N1G	-	-	-	-	-	100	100	80	55	40	30	25	-
N1H	-	-	-	-	-	-	100	100	75	55	40	30	25
N1J	-	-	-	-	-	-	-	-	100	75	55	45	35

Note: Minimum operating pressure = 10 bar

### Weights N1-GOV/GOA actuator

Cyl. dia.	50	63	80	100	125	160	200	250	300	350	400	450	500
Actuator	Weight, kg												
N1X	220	225	230	235	240	-	-	-	-	-	-	-	-
N1A	-	-	245	250	260	270	-	-	-	-	-	-	-
N1B	-	-	270	275	285	295	315	-	-	-	-	-	-
N1C	-	-	-	290	300	315	345	395	445	-	-	-	-
N1D	-	-	-	325	335	360	390	440	490	-	-	-	-
N1E	-	-	-	375	385	410	440	500	580	620	650	-	-
N1G	-	-	-	-	-	500	560	610	700	770	820	900	-
N1H	-	-	-	-	-	-	730	780	880	950	1000	1050	-
N1J	-	-	-	-	-	-	890	940	1030	1100	1155	1230	1280

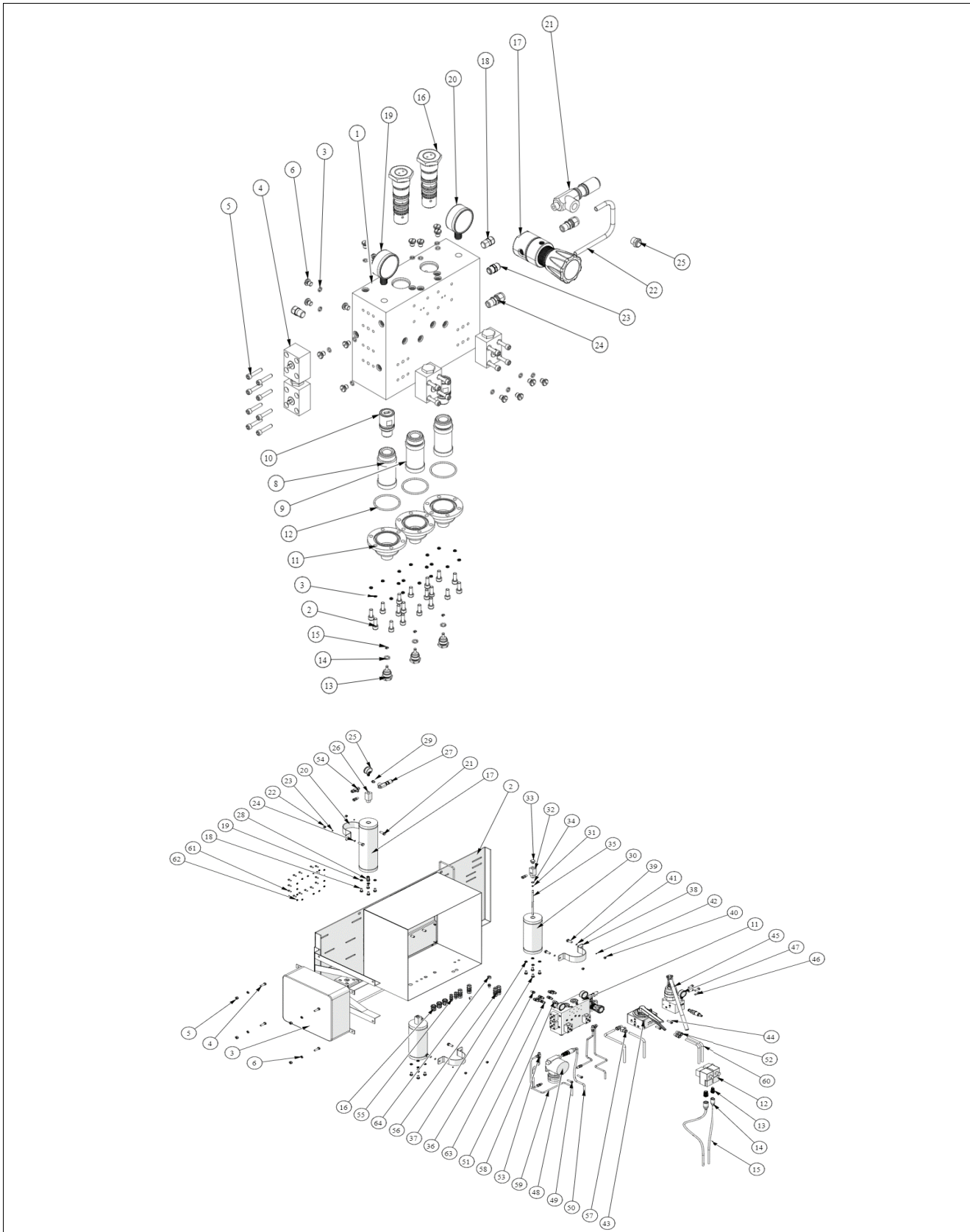
Exploded view and parts list - N1-GOV central block & limit switch



Part no.	Description	Qty.	Material
1	ACTUATOR	1	-
2	GOV ENCLOSER PANNEL ASSEMBLY	1	-
7	STUD BOLT	4	STEEL
8	HEXAGON NUT	4	STEEL
9	SPRING WASHER	4	STEEL
10	PLAIN WASHER	4	STEEL
34	TUBE FITTING	2	STAINLESS STEEL
39	TUBE	11700 mm	STAINLESS STEEL
46	HYDRAULIC PUMP UNIT	1	-
47	SCREW	4	CARBON STEEL
48	SPRING WASHER	4	STEEL
49	BALL VALVE	1	-
50	TEE CONNECTOR	2	STAINLESS STEEL
51	TUBE FITTING	4	STAINLESS STEEL

## Exploded view and parts list

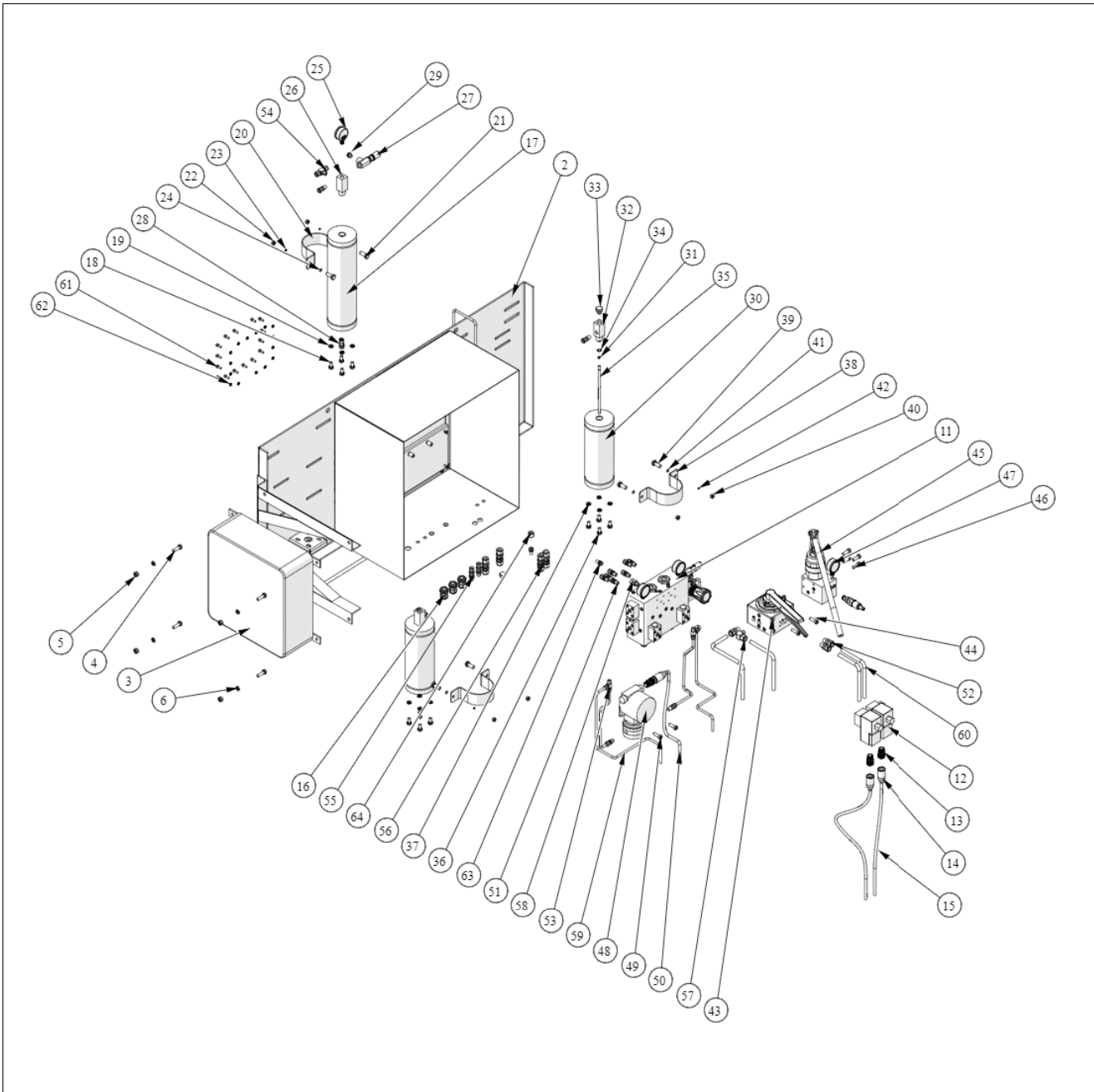
### Exploded view - N1-GOV



## Parts list - N1-GOV

Part no.	Description	Qty.	Material
1	ACTUATOR	1	-
2	GOV ENCLOSER PANNEL ASSEMBLY	1	-
3	JUNCTION BOX	1	-
4	HEXAGON HEAD SCREW	4	STEEL
5	HEXAGON NUT	4	STEEL
6	SPRING WASHER DIN 128 - A10 HGA	4	STEEL
7	STUD BOLT	4	STEEL
8	DIN 934 M10 - HGA HEXAGON NUT	4	STEEL
9	SPRING WASHER DIN 128 - A10 SPRING STEEL	4	STEEL
10	PLAIN WASHER A10 - ZINC FLAKING	4	STEEL
11	MANIFOLD ASSEMBLY	1	STEEL
12	SOLENOID VALVE	2	-
13	CABLE GLAND	6	STAINLESS STEEL
14	SHROUD	6	PVC
15	CABLE	6 m	-
16	CABLE GLAND	3	STAINLESS STEEL
17	GOV AIR TANK	1	STEEL
18	SOCKET HEAD SET SCREW	4	DIN133
19	SPRING WASHER	4	STEEL
20	CLAMP	1	STEEL
21	SCREW	2	CARBON STEEL
22	HEXAGON NUT	2	CARBON STEEL
23	SPRING WASHER	2	STEEL
24	PLANE WASHER	2	STEEL
25	PRESSURE GUAGE	1	-
26	PLUG	1	STAINLESS STEEL
27	PRESSURE RELIF VALVE	1	STAINLESS STEEL
28	PLUG	1	STAINLESS STEEL
29	BUTTON SILENCER	1	BRASS
30	GOV OIL TANK	1	-
31	RETAINNING RING	2	STEEL
32	HOLDER	2	STAINLESS STEEL
33	PLUG	2	STAINLESS STEEL
34	O-RING	2	VITON
35	DIP STICK	2	-
36	SCREW	8	CARBON STEEL
37	SPRING WASHER	8	-
38	CLAMP	2	STEEL
39	SCREW	4	STEEL
40	HEXAGON NUT	4	STEEL
41	SPRING WASHER	4	STEEL
42	WASHER	4	STEEL
43	SAK244V2	1	-
44	HEXAGON SOCKET HEAD	2	STEEL
45	HAND PUMP FOR GOV	1	-
46	HEXAGON SOCKET HEAD	4	STEEL
47	PRESSURE GUAGE 0-40 kg/cm2 ROUND BODY	1	-
48	PRESSURE SWITCH	1	-
49	SOCKET HEAD CAP SCREW	2	STEEL
50	CABLE	3 m	-
51	TUBE FITTING	18	STAINLESS STEEL
52	TUBE FITTING	7	STAINLESS STEEL
53	TEE CONNECTOR	2	STAINLESS STEEL
54	TEE CONNECTOR	1	STAINLESS STEEL
55	FITTING BULKHEAD	2	STAINLESS STEEL
56	BULKHEAD UNION	4	STAINLESS STEEL
57	ELBOW FITTING	1	STAINLESS STEEL
58	FITTING ADAPTER	1	STAINLESS STEEL
59	TUBE	1	STAINLESS STEEL
60	TUBE	1	STAINLESS STEEL
61	SOCKET HEAD CAP SCREW	18	STAINLESS STEEL
62	SPRING WASHER	18	STAINLESS STEEL
63	SILENCER CONICAL TYPE	2	BRASS
64	FITTING FOR EXHAUST	1	STEEL

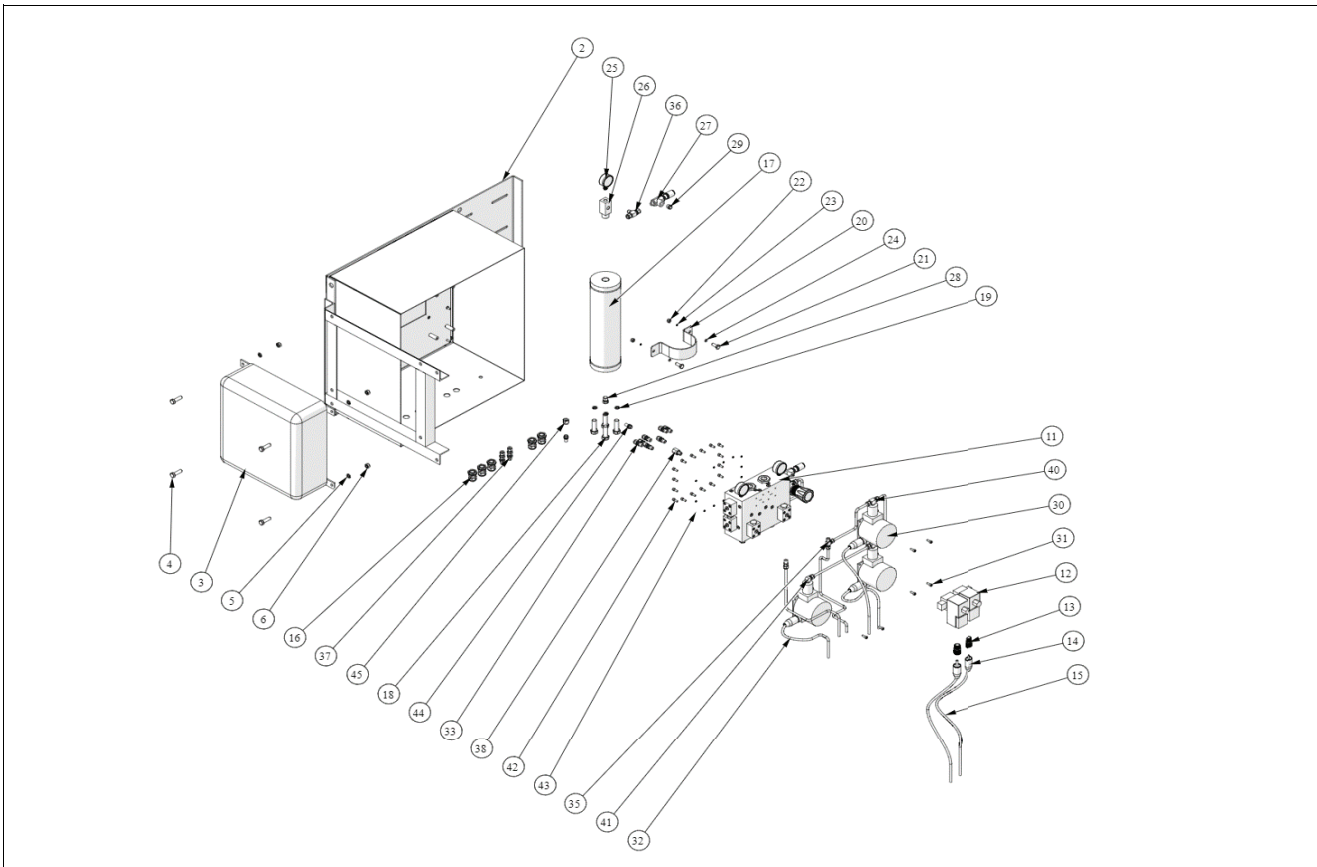
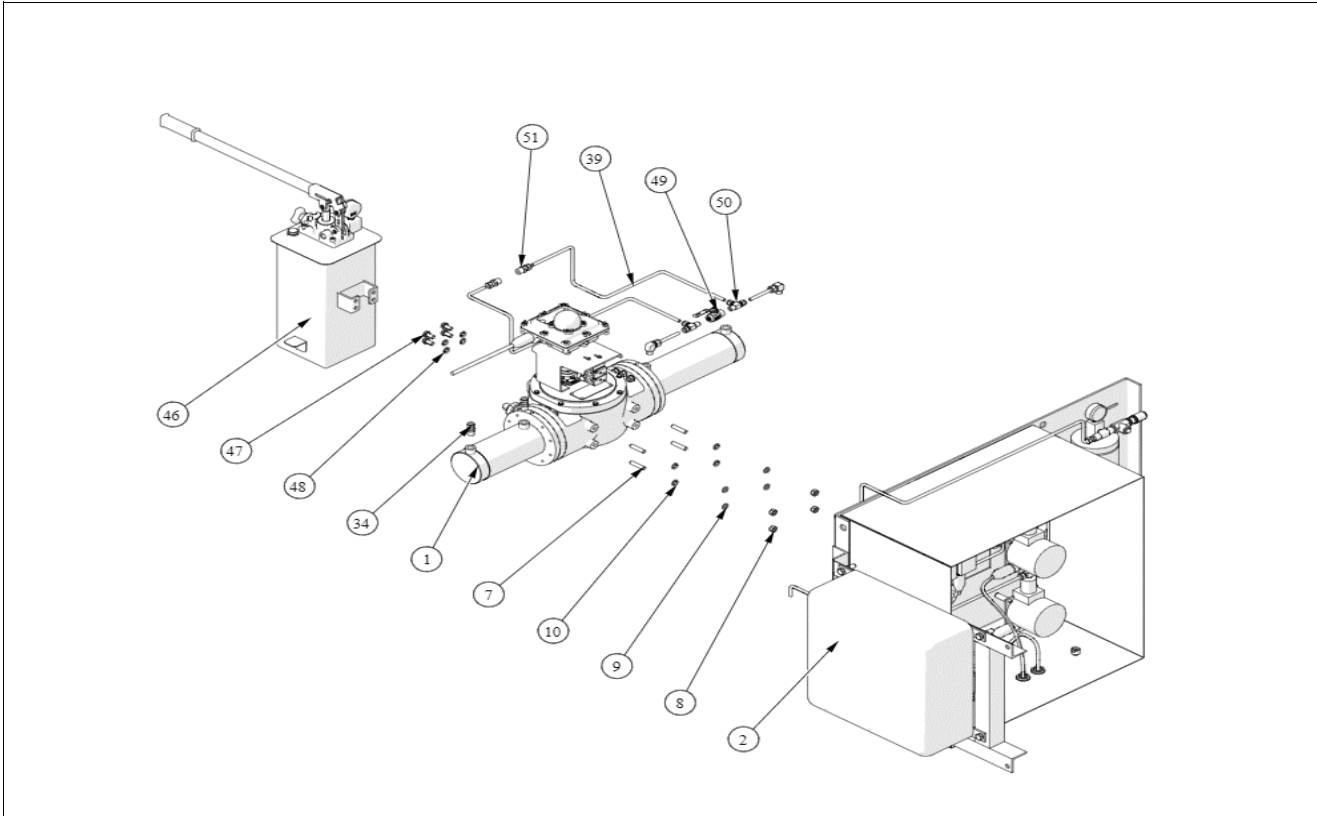
### Exploded view - N1-GOV controls



## Parts list - N1-GOV controls

Part no.	Description	Qty.	Material
2	GOV ENCLOSER PANNEL ASSEMBLY	1	-
3	JUNCTION BOX	1	-
4	HEXAGON HEAD SCREW	4	STEEL
5	HEXAGON NUT	4	STEEL
6	SPRING WASHER DIN 128 - A10 HGA	4	STEEL
11	MANIFOLD ASSEMBLY	1	STEEL
12	SOLENOID VALVE	2	-
13	CABLE GLAND	6	STAINLESS STEEL
14	SHROUD	6	PVC
15	CABLE	6 m	-
16	CABLE GLAND	3	STAINLESS STEEL
17	GOV AIR TANK	1	STEEL
18	SOCKET HEAD SET SCREW	4	DIN133
19	SPRING WASHER	4	STEEL
20	CLAMP	1	STEEL
21	SCREW	2	CARBON STEEL
22	HEXAGON NUT	2	CARBON STEEL
23	SPRING WASHER	2	STEEL
24	PLANE WASHER	2	STEEL
25	PRESSURE GAUGE	1	-
26	PLUG	1	STAINLESS STEEL
27	PRESSURE RELIEF VALVE	1	STAINLESS STEEL
28	PLUG	1	STAINLESS STEEL
29	SILENCER	1	BRASS
30	GOV OIL TANK	1	-
31	RETAINING RING	2	STEEL
32	HOLDER	2	STAINLESS STEEL
33	PLUG	2	STAINLESS STEEL
34	O-RING	2	VITON
35	DIP STICK	2	STEEL
36	SCREW	8	CARBON STEEL
37	SPRING WASHER	8	STEEL
38	CLAMP	2	STEEL
39	SCREW	4	STEEL
40	HEXAGON NUT	4	STEEL
41	SPRING WASHER	4	STEEL
42	WASHER	4	STEEL
43	SAK244V2	1	-
44	HEXAGON SOCKET HEAD	2	STEEL
45	HAND PUMP FOR GOV	1	-
46	HEXAGON SOCKET HEAD	4	STEEL
47	PRESSURE GAUGE 0-40 kg/cm <sup>2</sup> ROUND BODY	1	-
48	PRESSURE SWITCH	1	-
49	SOCKET HEAD CAP SCREW	2	STEEL
50	CABLE	3 m	-
51	TUBE FITTING	18	STAINLESS STEEL
52	TUBE FITTING	7	STAINLESS STEEL
53	TEE CONNECTOR	2	STAINLESS STEEL
54	TEE CONNECTOR	1	STAINLESS STEEL
55	FITTING BULKHEAD	2	STAINLESS STEEL
56	BULKHEAD UNION	4	STAINLESS STEEL
57	ELBOW FITTING	1	STAINLESS STEEL
58	FITTING ADAPTER	1	STAINLESS STEEL
59	TUBE	1	STAINLESS STEEL
60	TUBE	1	STAINLESS STEEL
61	SOCKET HEAD CAP SCREW	18	STAINLESS STEEL
62	SPRING WASHER	18	STAINLESS STEEL
63	SILENCER CONICAL TYPE	2	BRASS
64	FITTING FOR EXHAUST	1	STEEL

### N1-GOA with limit switch & hydraulic manual override

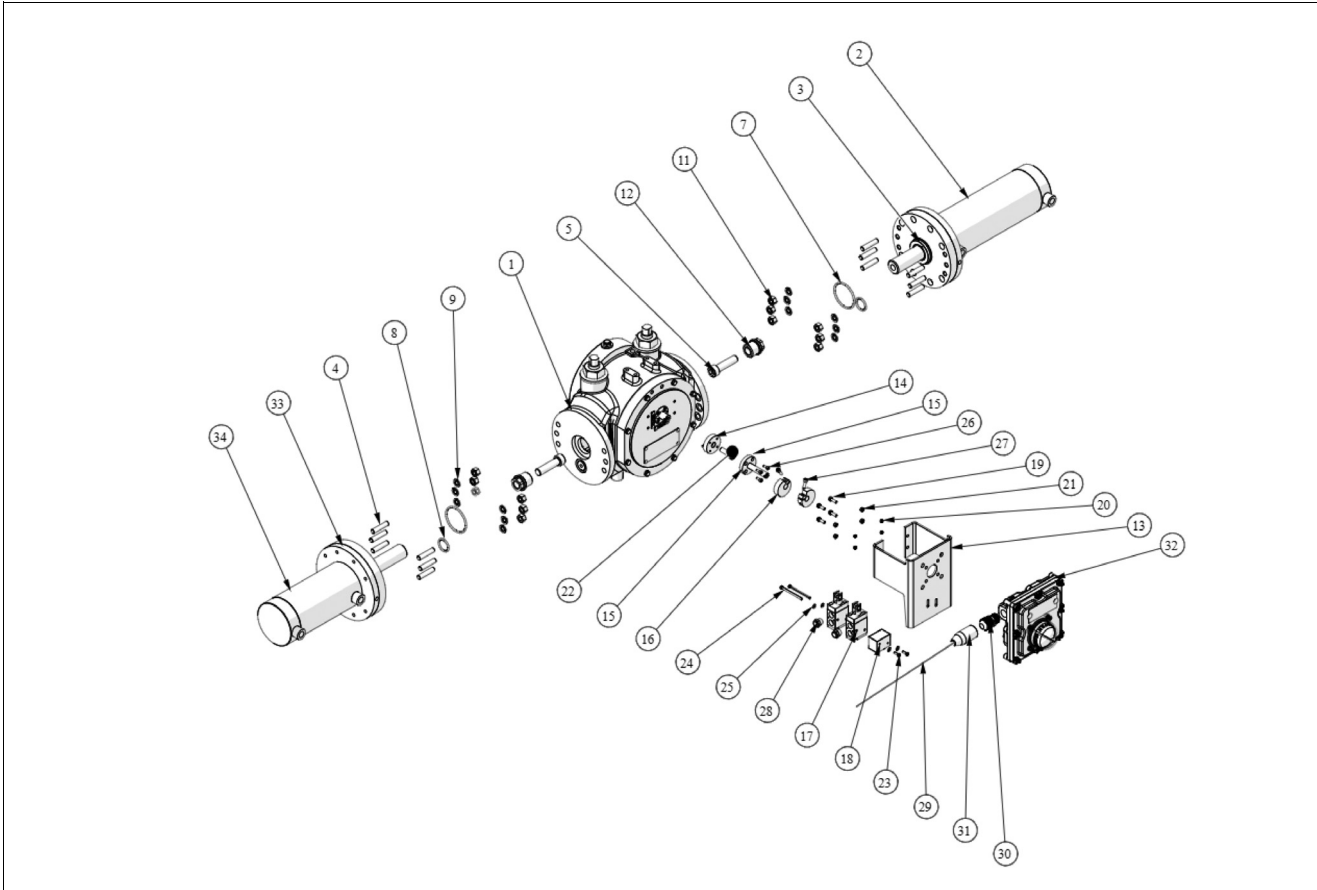




## Parts list - N1-GOA with limit switch &amp; hydraulic manual override

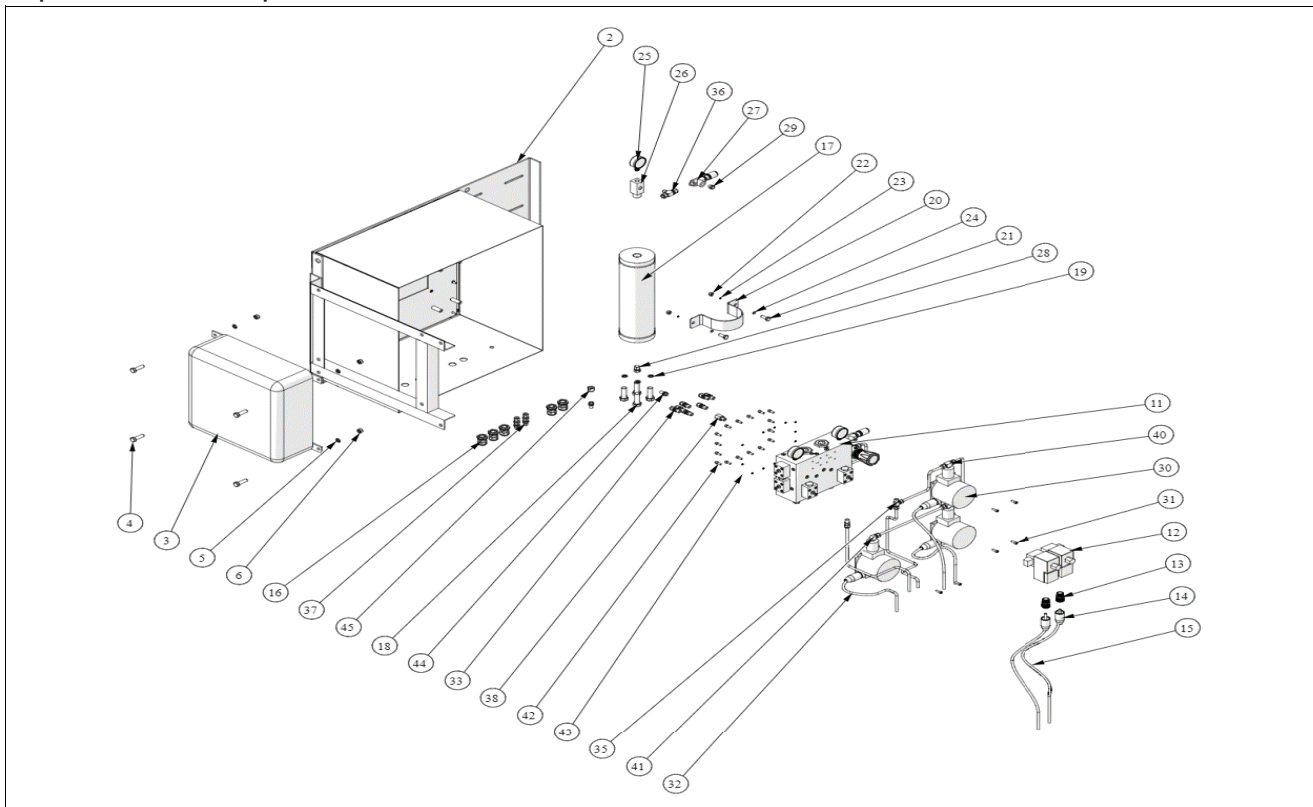
Part no.	Description	Qty.	Material
1	ACTUATOR	1	-
2	GOV ENCLOSER PANNEL ASSEMBLY	1	-
3	JUNCTION BOX	1	-
4	DIN 933 M10 x 35 - 35 - HGA HEXAGON HEAD SCREW	4	STEEL
5	DIN 934 M10 - HGA HEXAGON NUT	4	STEEL
6	SPRING WASHER DIN 128 - A10 HGA	4	STEEL
7	STUD BOLT	4	STEEL
8	HEXAGON NUT	4	STEEL
9	SPRING WASHER	4	STEEL
10	PLAIN WASHER	4	STEEL
11	MANIFOLD ASSEMBLY	1	STEEL
12	SOLENOID VALVE	2	-
13	CABLE GLAND	10	STAINLESS STEEL
14	SHROUD	10	PVC
15	CABLE	6 m	-
16	CABLE GLAND	5	STAINLESS STEEL
17	GOV AIR TANK	1	STEEL
18	SOCKET HEAD SET SCREW	4	DIN133
19	SPRING WASHER	4	STEEL
20	CLAMP	1	STEEL
21	SCREW	2	CARBON STEEL
22	HEXAGON NUT	2	CARBON STEEL
23	SPRING WASHER	2	STEEL
24	PLANE WASHER	2	STEEL
25	PRESSURE GUAGE	1	-
26	HOLDER	1	STAINLESS STEEL
27	PRESSURE RELIF VALVE	1	STAINLESS STEEL
28	PLUG	1	STAINLESS STEEL
29	SILENCER	1	BRASS
30	PRESSURE SWITCH	3	-
31	SOCKET HEAD CAP SCREW	6	STEEL
32	CABLE	10 m	-
33	TUBE FITTING	15	STAINLESS STEEL
34	TUBE FITTING	2	STAINLESS STEEL
35	TEE CONNECTOR	1	STAINLESS STEEL
36	TEE CONNECTOR	1	STAINLESS STEEL
37	TUBE FITTING	2	STAINLESS STEEL
38	FITTING ADAPTER	1	STAINLESS STEEL
39	TUBE	11700 mm	STAINLESS STEEL
40	TEE CONNECTOR	2	STAINLESS STEEL
41	ELBOW FITTING	1	STAINLESS STEEL
42	SOCKET HEAD CAP SCREW	18	STAINLESS STEEL
43	SPRING WASHER	18	STAINLESS STEEL
44	SILENCER CONICAL TYPE	2	BRASS
45	FITTING FOR EXHAUST	1	-
46	HYDRAULIC PUMP UNIT	1	-
47	SCREW	4	CARBON STEEL
48	SPRING WASHER	4	STEEL
49	BALL VALVE	1	-
50	TEE CONNECTOR	2	STAINLESS STEEL
51	TUBE FITTING	4	STAINLESS STEEL

### Exploded view and parts list- GOA central block & limit switch



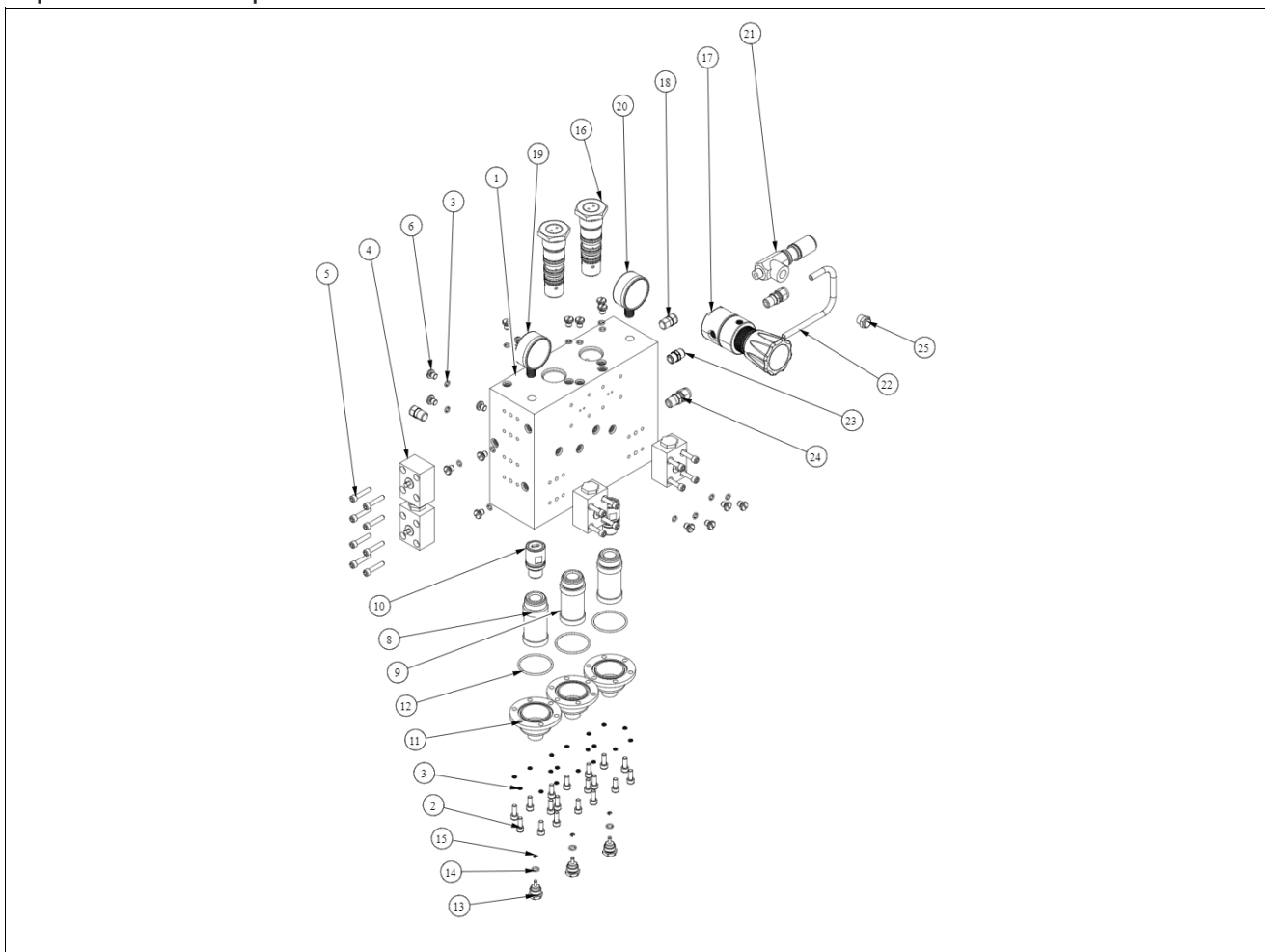
Part no.	Description	Qty.	Material
1	CENTER BLOCK ASSEMBLY	1	-
2	HYDRAULIC CYLINDER	1	-
3	CYLINDER SEAL KIT	1	-
4	STUD BOLT	12	Alloy STEEL
5	CONNECTING BOLT PNEUMATIC	2	Alloy STEEL
7	O-RING	2	NBR
8	O-RING	2	NBR
9	SPRING WASHER	12	DIN 128
10	HEX. NUT.	12	DIN 934
12	CONNECTING NUT	2	Alloy STEEL
13	L.S. BRACKET	1	STEEL
14	COUPLER MATING FLANGE	1	STEEL
15	COUPLER BET. L.S.	1	STAINLESS STEEL
16	CAM FOR VALVE	2	STEEL
17	SPOOL VALVE FOR L.S.	2	-
18	SPACER	2	STEEL
19	HEXA. HEAD BOLT	4	DIN 912
20	SOCKET SET SCREW	4	DIN 912
21	HEXA NUT	4	DIN 912
22	SOCKET HEAD CAP SCREW	1	DIN 912
23	HEXAGON SOCKET HEAD	2	DIN 912
24	HEXAGON SOCKET HEAD	2	DIN 912
25	WASHER	4	DIN 125
26	HEXAGON SOCKET HEAD	4	
27	HEXAGON SOCKET HEAD	2	
28	SILENCER BUTTON TYPE	2	BRASS
29	CABLE	6 m	
30	CABLE GLAND	2	STEEL
31	PVC SHROUD	2	PVC
32	LIMIT SWITCH	1	-
33	GAS CYLINDER	1	-
34	GAS CYLINDER SEAL KIT	1	-

Exploded view and parts list - N1-GOA controls



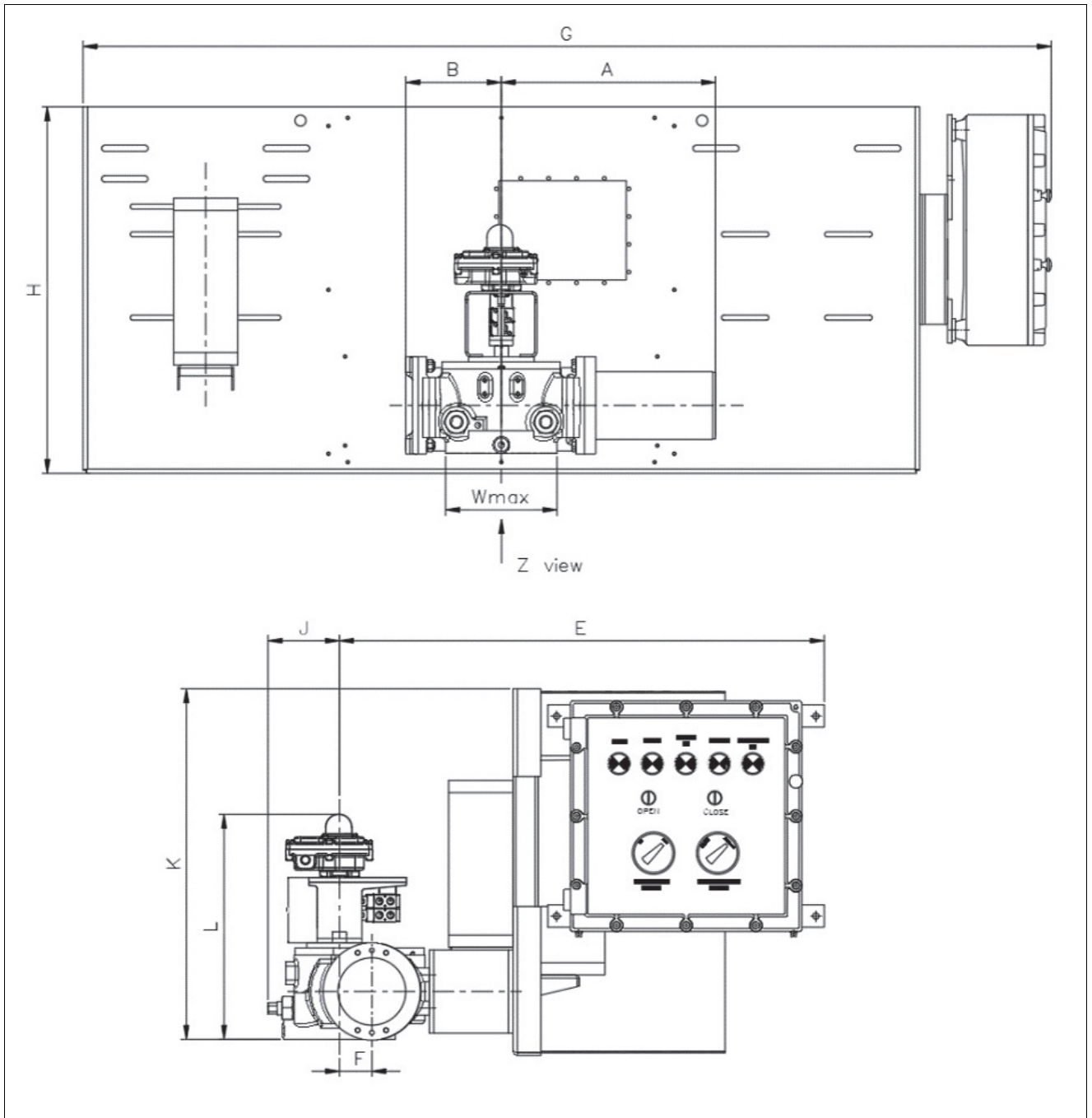
Part no.	Description	Qty.	Material
2	GOV ENCLOSER PANNEL ASSEMBLY	1	-
3	JUNCTION BOX	1	-
4	DIN 933 M10 x 35 - 35 - HGA HEXAGON HEAD SCREW	4	STEEL
5	DIN 934 M10 - HGA HEXAGON NUT	4	STEEL
6	SPRING WASHER DIN 128 - A10 HGA	4	STEEL
11	MANIFOLD ASSEMBLY	1	STEEL
12	SOLENOID VALVE	2	-
13	CABLE GLAND	10	STAINLESS STELL
14	SHROUD	10	PVC
15	CABLE	6 m	-
16	CABLE GLAND	5	STAINLESS STELL
17	GOV AIR TANK	1	STEEL
18	SOCKET HEAD SET SCREW	4	DIN133
19	SPRING WASHER	4	STEEL
20	CLAMP	1	STEEL
21	SCREW	2	CARBON STEEL
22	HEXAGON NUT	2	CARBON STEEL
23	SPRING WASHER	2	STEEL
24	PLANE WASHER	2	STEEL
25	PRESSURE GUAGE	1	-
26	HOLDER	1	STAINLESS STELL
27	PRESSURE RELIF VALVE	1	STAINLESS STELL
28	PLUG	1	STAINLESS STELL
29	SILENCER	1	BRASS
30	PRESSURE SWITCH	3	-
31	SOCKET HEAD CAP SCREW	6	STEEL
32	CABLE	10 m	-
33	TUBE FITTING	15	STAINLESS STELL
35	TEE CONNECTOR	1	STAINLESS STELL
36	TEE CONNECTOR	1	STAINLESS STELL
37	TUBE FITTING	2	STAINLESS STELL
38	FITTING ADAPTER	1	STAINLESS STELL
40	TEE CONNECTOR	2	STAINLESS STELL
41	ELBOW FITTING	1	STAINLESS STELL
42	SOCKET HEAD CAP SCREW	18	STAINLESS STELL
43	SPRING WASHER	18	STAINLESS STELL
44	SILENCER CONICAL TYPE	2	BRASS
45	FITTING FOR EXHAUST	1	STAINLESS STELL

### Exploded view and parts list - N1-GOV/GOA manifold



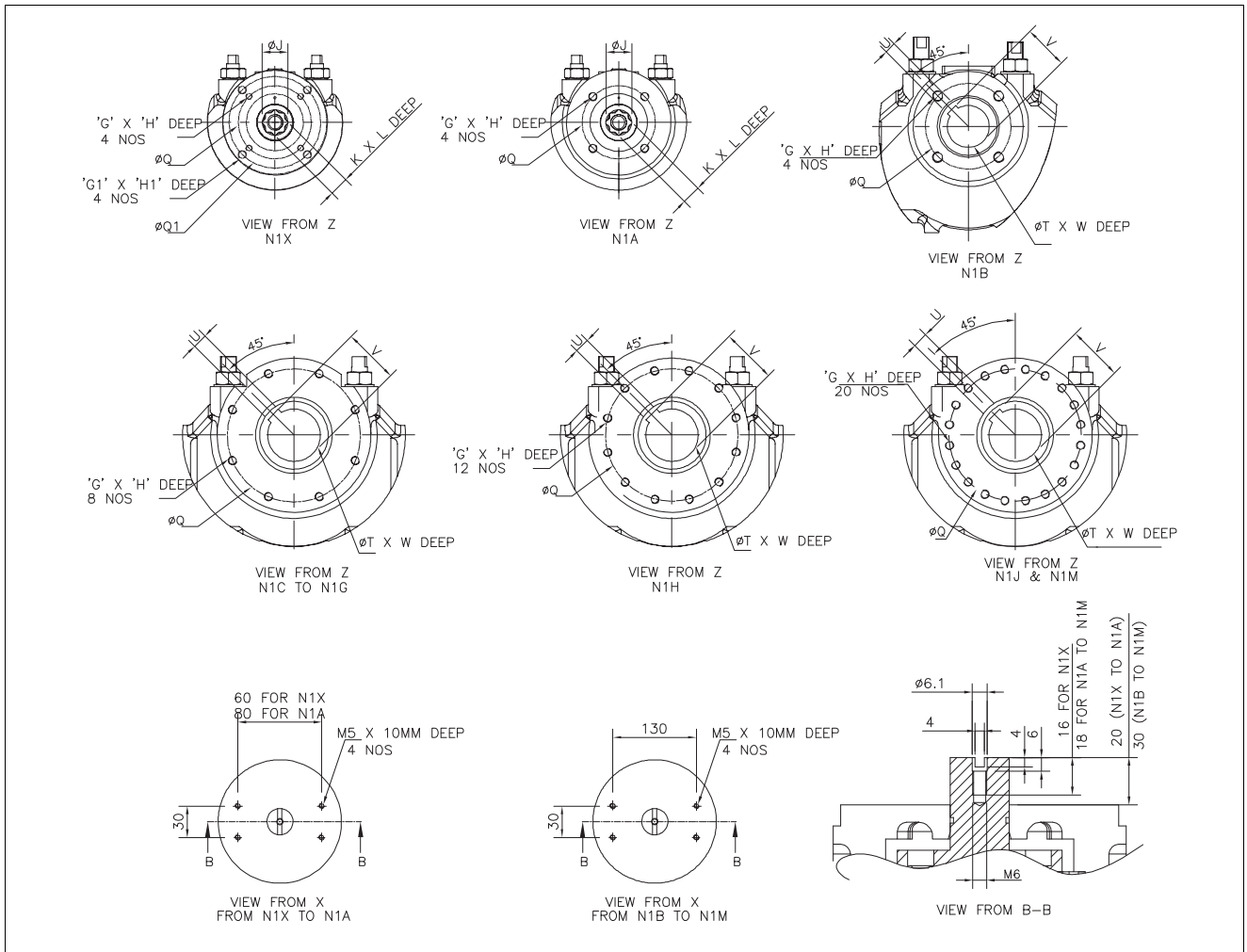
Part no.	Description	Qty.	Material
1	MANIFOLD GOV	1	ALUMINIUM ALLOY
2	SOCKET HEAD CAP SCREW	18	STAINLESS STEEL
3	SPRING WASHER	18	STAINLESS STEEL
4	BALL VALVE	4	STEEL
5	HEX. SOCKET HEAD SCREW.	16	ALLOY STEEL
6	MANIFOLD PLUG	22	STEEL
7	O-RING	22	NBR
8	FILTER-GAS MOSITURE SEPRATOR	2	STAINLESS STEEL
9	FILTER - GAS COALESCER	1	STAINLESS STEEL
10	NON-RETURN VALVE	2	STAINLESS STEEL
11	BOWL FILTER ELEMENT	3	STAINLESS STEEL
12	O-RING	3	NBR
13	LOCKING BOWL BOLT	3	STAINLESS STEEL
14	O-RING	3	NBR
15	RETAINNING RING	3	STEEL
16	AIR OPERATED VALVE	2	-
17	PRESSURE REGULATOR	1	-
18	PLUG	4	STAINLESS STEEL
19	PRESSURE GAUGE	1	-
20	PRESSURE GUAGE	1	-
21	RPRESSURE RELIFE VALVE	1	STAINLESS STEEL
22	TUBE	300 mm	STAINLESS STEEL
23	DOUBLE NIPPLE	1	STAINLESS STEEL
24	TUBE FITTING	2	STAINLESS STEEL
25	SILENCER	1	BRASS

### Dimensions: N1-GOV/GOA actuator



MODEL	A	B	E	F	G	H	J	K	L	Wmax	S
N1XH050	330	107	810	28	1780	660	71	603	360	125	3/8" NPT
N1XH063	330	107	810	28	1780	660	71	603	360	125	3/8" NPT
N1XH080	330	107	810	28	1780	660	71	603	360	125	3/8" NPT
N1XH100	340	107	810	28	1780	660	71	603	360	125	3/8" NPT
N1XH125	340	107	810	28	1780	660	71	603	360	125	3/8" NPT
N1AH080	460	171	810	58	1780	660	129	631	420	200	3/8" NPT
N1AH100	460	171	870	58	1780	660	129	631	420	200	3/8" NPT
N1AH125	470	171	870	58	1780	660	129	631	420	200	3/8" NPT
N1AH160	470	171	870	58	1780	660	129	631	420	200	3/8" NPT
N1BH080	570	230	915	75	1780	660	161	650	440	210	3/8" NPT
N1BH100	570	230	915	75	1780	660	161	650	440	210	3/8" NPT
N1BH160	580	230	915	75	1780	660	161	650	440	210	3/8" NPT
N1BH200	580	230	915	75	1780	660	161	650	440	210	3/8" NPT
N1CH100	620	248	940	90	1780	660	153	652	480	294	3/8" NPT
N1CH125	620	248	940	90	1780	660	153	652	480	294	3/8" NPT
N1CH160	620	248	940	90	1780	660	153	652	480	294	3/8" NPT
N1CH200	620	248	940	90	1780	660	153	652	480	294	3/8" NPT
N1CH250	630	248	940	90	1780	660	153	652	480	294	3/8" NPT
N1CH300	630	248	940	90	1780	660	153	652	480	294	3/8" NPT
N1DH100	730	303	975	108	1780	660	252	666	500	350	3/8" NPT
N1DH125	730	303	975	108	1780	660	252	666	500	350	3/8" NPT
N1DH160	730	303	975	108	1780	660	252	666	500	350	3/8" NPT
N1DH200	740	303	975	108	1780	660	252	666	500	350	3/8" NPT
N1DH250	750	303	975	108	1780	660	252	666	500	350	3/8" NPT
N1DH300	750	303	975	108	1780	660	252	666	500	350	3/8" NPT
N1EH100	850	333	1015	130	1780	660	220	700	600	425	3/8" NPT
N1EH125	850	333	1015	130	1780	660	220	700	600	425	3/8" NPT
N1EH160	850	333	1015	130	1780	660	220	700	600	425	3/8" NPT
N1EH200	860	333	1015	130	1780	660	220	700	600	425	3/8" NPT
N1EH250	860	333	1015	130	1780	660	220	700	600	425	3/8" NPT
N1EH300	870	333	1015	130	1780	660	220	700	600	425	3/8" NPT
N1EH350	870	333	1015	130	1780	660	220	700	600	425	3/8" NPT
N1EH400	870	333	1015	130	1780	660	220	700	600	425	3/8" NPT
N1GH160	1000	425	1110	160	1780	660	280	722	670	475	3/8" NPT
N1GH200	1000	425	1110	160	1780	660	280	722	670	475	3/8" NPT
N1GH250	1010	425	1110	160	1780	660	280	722	670	475	3/8" NPT
N1GH300	1020	425	1110	160	1780	660	280	722	670	475	3/8" NPT
N1GH350	1030	425	1110	160	1780	660	280	722	670	475	3/8" NPT
N1GH400	1030	425	1110	160	1780	660	280	722	670	475	3/8" NPT
N1GH450	1040	425	1110	160	1780	660	280	722	670	475	3/8" NPT
N1HH200	1230	531	1170	198	1780	660	318	758	680	600	1/2" NPT
N1HH250	1230	531	1170	198	1780	660	318	758	680	600	1/2" NPT
N1HH300	1240	531	1170	198	1780	660	318	758	680	600	1/2" NPT
N1HH350	1240	531	1170	198	1780	660	318	758	680	600	1/2" NPT
N1HH400	1250	531	1170	198	1780	660	318	758	680	600	1/2" NPT
N1HH450	1250	531	1170	198	1780	660	318	758	680	600	1/2" NPT
N1JH300	1450	626	1290	260	1780	660	402	792	780	686	1/2" NPT
N1JH350	1450	626	1290	260	1780	660	402	792	780	686	1/2" NPT
N1JH400	1460	626	1290	260	1780	660	402	792	780	686	1/2" NPT
N1JH450	1460	626	1290	260	1780	660	402	792	780	686	1/2" NPT
N1JH500	1470	626	1290	260	1780	660	402	792	780	686	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
	-	M10	-	15				-	102	-	-	-	-	-
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	170	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-GOV series type coding

### GOV/GOA actuator

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
N1	B	H250	S	1	G	D00	D	D	/	*(NIL)

1. sign	Series
GOVN1	Neles gas over oil heavy duty actuator
GOAN1	Neles gas operated heavy duty actuator
	For GOV select H series cylinder For GOA select G series cylinder

4. sign	Link type
S	symmetric

5.sign	Cylinder type
1	Single cylinder

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

6. sign	Temperature range
G	-20°...+80 °C

7. sign	Single / 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
G/H250	050
	063
	080
	100
	125
	150
	200
	250
	300
	350
	400
	500
	600
	H = Hydraulic version for GOV: H050...H600
	G = Gas operated version for GOA: G050...G600

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

11. sign	Options
HP	Manual hydraulic pump operation (for GOA only).



## N1-GOV/GOA actuator controls

1. sign	Basic series
	GOC

2. sign	Sub category
1	GOV
2	GOA STANDARD
3	GOA AUTO CLOSURE

3. sign	Enclosure size
E02	ENCLOSURE 4"/4"
E01	ENCLOSURE 4"
Options	
E03	ENCLOSURE 4"/8"
E04	ENCLOSURE 4"/10"
E05	ENCLOSURE 8"/8"
E06	ENCLOSURE 8"/10"
E07	ENCLOSURE 10"/10"
E08	ENCLOSURE 8"
E09	ENCLOSURE 10"
(1st digit - Oil tank mtg / 2nd digit - Air tank mtg )	

4. sign	Mounting type
M1	A / C / E - N1 frame mounting
M2	B / D / G - N1 frame mounting

5. sign	Manifold pressure gauges ranges
P1	Manifold assembly < 30 bar ( <b>PG40</b> )
P2	Manifold assembly ≥ 30 bar ( <b>PG60</b> )

6. sign	Pressure switch kit
S	SPDT differential pressure switch
D	DPDT differential pressure switch
A	Pressure switch for GOA auto-closure

7. sign	Air tank
01	1 LITRE
02	2 LITRE
03	3 LITRE
05	5 LITRE
10	10 LITRE
99	No air tank

### Options

15	15 LITRE
20	20 LITRE
30	30 LITRE
45	45 LITRE
50	50 LITRE
55	55 LITRE
60	60 LITRE

8. sign	Oil tank
01	1 LITRE
02	2 LITRE
03	3 LITRE
05	5 LITRE
10	10 LITRE
99	Select this if GOA (No oil tank)

### Options

15	15 LITRE
20	20 LITRE
30	30 LITRE
45	45 LITRE
50	50 LITRE
55	55 LITRE
60	60 LITRE

9. sign	Break
/	Double acting

10. sign	Special construction
xx	Two running digits to define the approval / special construction To be left blank if not needed

## Sizing and selection guidelines: Actuator

### Digit 1

Actuator: GOVN1 (Neles gas over oil heavy duty actuator) or GOAN1 (Neles gas operated heavy duty actuator)

### Digit 2

Frame size: To be selected based on the torque requirements (refer torque chart for N1-GOV/GOA actuators) available from factory.

### Digit 3

Cylinder size: For N1-GOV select H series cylinder and for N1-GOA select G series cylinder. The frame and cylinder combination can be selected based on the torque (refer torque chart for N1-GOV/GOA actuators)

### Possible frame – Cylinder combination

Hydraulic/Gas cylinder size	Available frame
050	X
063	X
080	X, A, B
100	X, A, B, C, D, E
125	X, A, B, C, D, E
160	A, B, C, D, E, G
200	A, B, C, D, E, G, H
250	C, D, E, G, H
300	C, D, E, G, H, J
350	E, G, H, J, M
400	E, G, H, J, M
450	G, H, J, M
500	H, J, M
550	M
600	M

### Digit 4

Link type: Symmetric option only available for selection currently.

### Digit 5

Cylinder type: Single cylinder construction available currently.

### Digit 6

Temperature range: G = -20°C...+80°C (general temp range with NBR seals available for selection). For high temp option with Viton seals please contact factory (High temp: H = -20°C...+125°C). Currently available as ETO.

### Digit 7

Single/Double acting: Only double acting version available for GOV currently. Single acting versions are not design ready, hence not available for selection.

### Digit 8

Spring action: Only double acting version available for GOV currently.

### Digit 9

Shaft bore key type: D = According to ISO bore keyway, for more info refer mounting face dimensions on page 15.

### Digit 10

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

### Digit 11

Options : HP = Manual hydraulic pump operation (for GOA only). To be selected when there is a requirement from customer with GOA. For GOV hydraulic pump is available as default unit (no need for selection). The hydraulic pump can be operated by hand for open or close position.

### Digit 11

Special construction: Two running digits to define the approval / special construction. Select YY for any special construction.

## Sizing and selection guidelines: GOV/GOA controls

### Digit 1

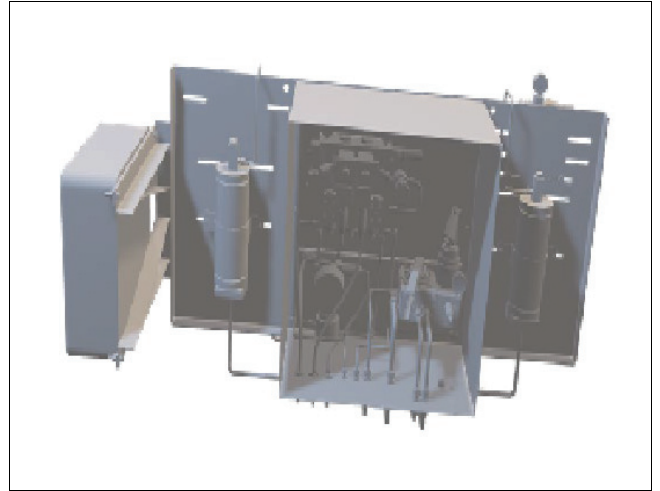
Controls: To be selected as GOC (controls for GOV and GOA)

### Digit 2

Sub category: 1= GOV, 2= GOA STANDARD and 3 = GOA AUTO CLOSURE. These 3 options can be selected based on customer requirements.

### Digit 3

Enclosure: E01= ENCLOSURE 4" and E02 = ENCLOSURE 4"/4" to be selected as standard offering, however below options can be selected as ETO. 1st digit - oil tank mtg / 2nd digit - air tank mtg, i.e. for E02 1st 4" defines oil tank mounting and 2nd 4" defines Air tank mounting). The oil tanks/air tanks are defines the enclosure type selected i.e. 4" defines the diameter of the tank.



## Enclosure with oil and gas tank mounting

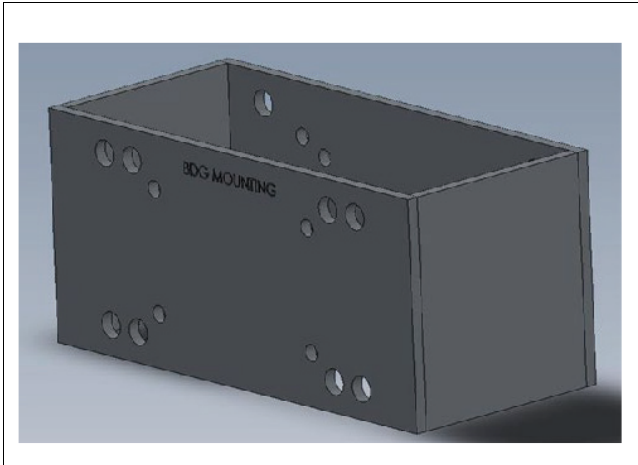
### Options

- E03 = ENCLOSURE 4"/8"
- E04 = ENCLOSURE 4"/10"
- E05 = ENCLOSURE 8"/8"
- E06 = ENCLOSURE 8"/10"
- E07 = ENCLOSURE 10"/10"
- E08 = ENCLOSURE 8"
- E09 = ENCLOSURE 10"

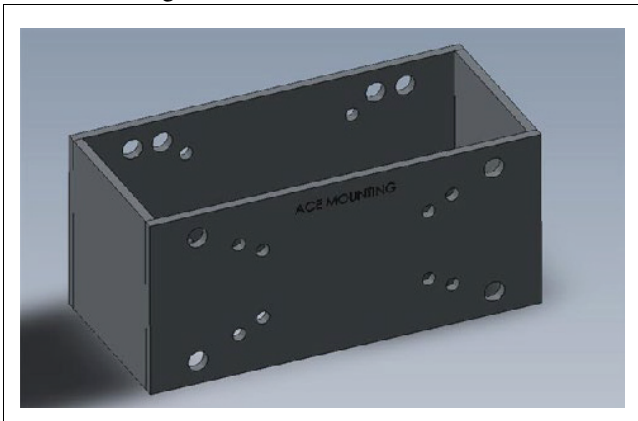
### Digit 4

Mounting type: Can be selected from 2 options (M1 and M2). M1 is applicable for A, C and E frame and M2 is applicable for B, D and G frame. For more details on mounting dimensions, please refer figure below

### BDG mounting



### ACE Mounting



### Digit 5

Manifold pressure gauge : Either P1 (PG 40) or P2 (PG 60) can be selected. This defines the manifold assembly with 40 or 60 bar pressure gauge. Pressure regulator less than 30 bar in P1 & pressure regulator upto 100 bar in P2.

### Digit 6

Pressure switch: There are 3 options to choose S = SPDT differential pressure switch, D = DPDT differential pressure switch and A = pressure switch for GOA auto-closure. S and D options goes with GOV and the A option to be selected when there is auto closure requirement for GOA. For GOA standard option no switch is applicable.

### Digit 7

Air tank: There can be 1 ltr, 2 ltr , 3 ltr , 5 ltr and 10 ltr tank to choose which are defined below

- 01 = 1 LITRE
- 02 = 2 LITRE
- 03 = 3 LITRE
- 05 = 5 LITRE
- 10 = 10 LITRE

With options of air tank as

### Options

- 15 = 15 LITRE
- 20 = 20 LITRE
- 30 = 30 LITRE
- 45 = 45 LITRE
- 50 = 50 LITRE
- 55 = 55 LITRE
- 60 = 60 LITRE

To be selected as 99 if no air tank is required (99 = no air tank).

### Digit 8

Oil Tank : There can be 1 ltr, 2 ltr , 3 ltr , 5 ltr and 10 ltr oil tank to choose which are defined as below

- 01 = 1 LITRE
- 02 = 2 LITRE
- 03 = 3 LITRE
- 05 = 5 LITRE
- 10 = 10 LITRE

With options of oil tank as

### Options

- 15 = 15 LITRE
- 20 = 20 LITRE
- 30 = 30 LITRE
- 45 = 45 LITRE
- 50 = 50 LITRE
- 55 = 55 LITRE
- 60 = 60 LITRE

To be selected as 99 if no oil tank is required (99 = No Oil Tank). For GOA cases oil tanks are not applicable, so this option can be selected.

### Digit 9

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

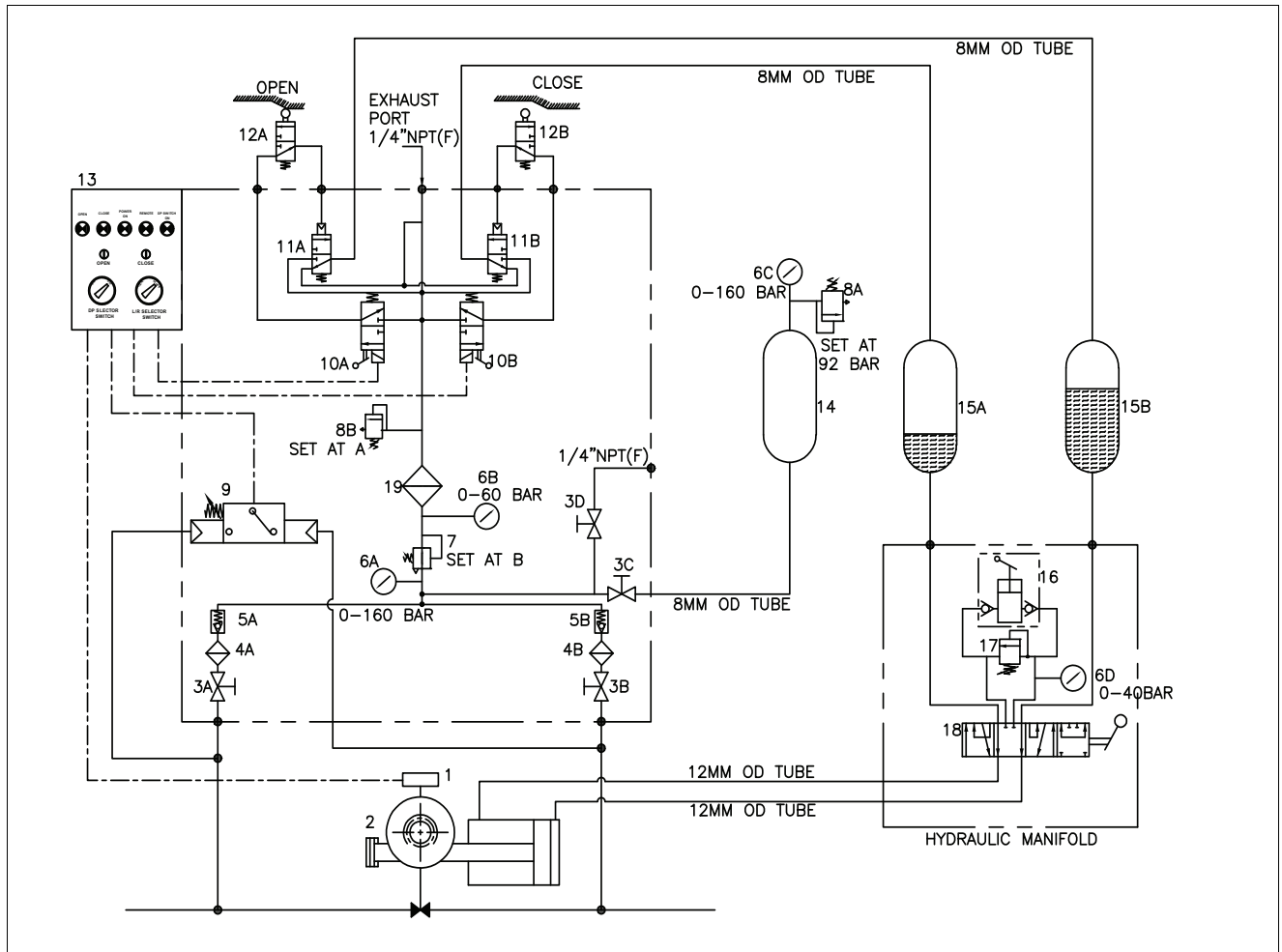
### Digit 10

Accessories for GOV and GOA to be selected. Accessories have been defined as instrumentation components and can be selected in Instrument Category ...

### Digit 11

Special construction: Two running digits to define the approval / special construction. Select YY for any special construction.

## Basic GOV Construction and accessories



**Fig. 1**

Bill of materials		
SR no.	Description	TAG no.
1	LIMIT SWITCH	1
2	ROTARY ACTUATOR	2
3	BALL VALVE (1/4")	3A, 3B, 3C, 3D
4	GAS MOISTURE SEPRATOR	4A, 4B
5	NRV	5A, 5B
6	PRESSURE GAUGE	6A, 6B, 6C, 6D
7	PRESSURE REGULATOR	7
8	PRESSURE RELIEF VALVE	8A, 8B
9	DIFFERENTIAL PRESSURE SWITCH	9
10	SOLENOID VALVE	10A, 10B
11	PILOT OPERATED VALVE	11A, 11B
12	PNEUMATIC LIMIT VALVE	12A, 12C
13	JUNCTION BOX	13
14	GAS TANK	14
15	GAS + OIL TANK	15A, 15B
16	HAND PUMP	16
17	PRESSURE RELIEF VALVE	17
18	6/4 HAND OPERATED VALVE	18
19	GAS COALESCER FILTER	19

## Basic N1-GOA construction and accessories

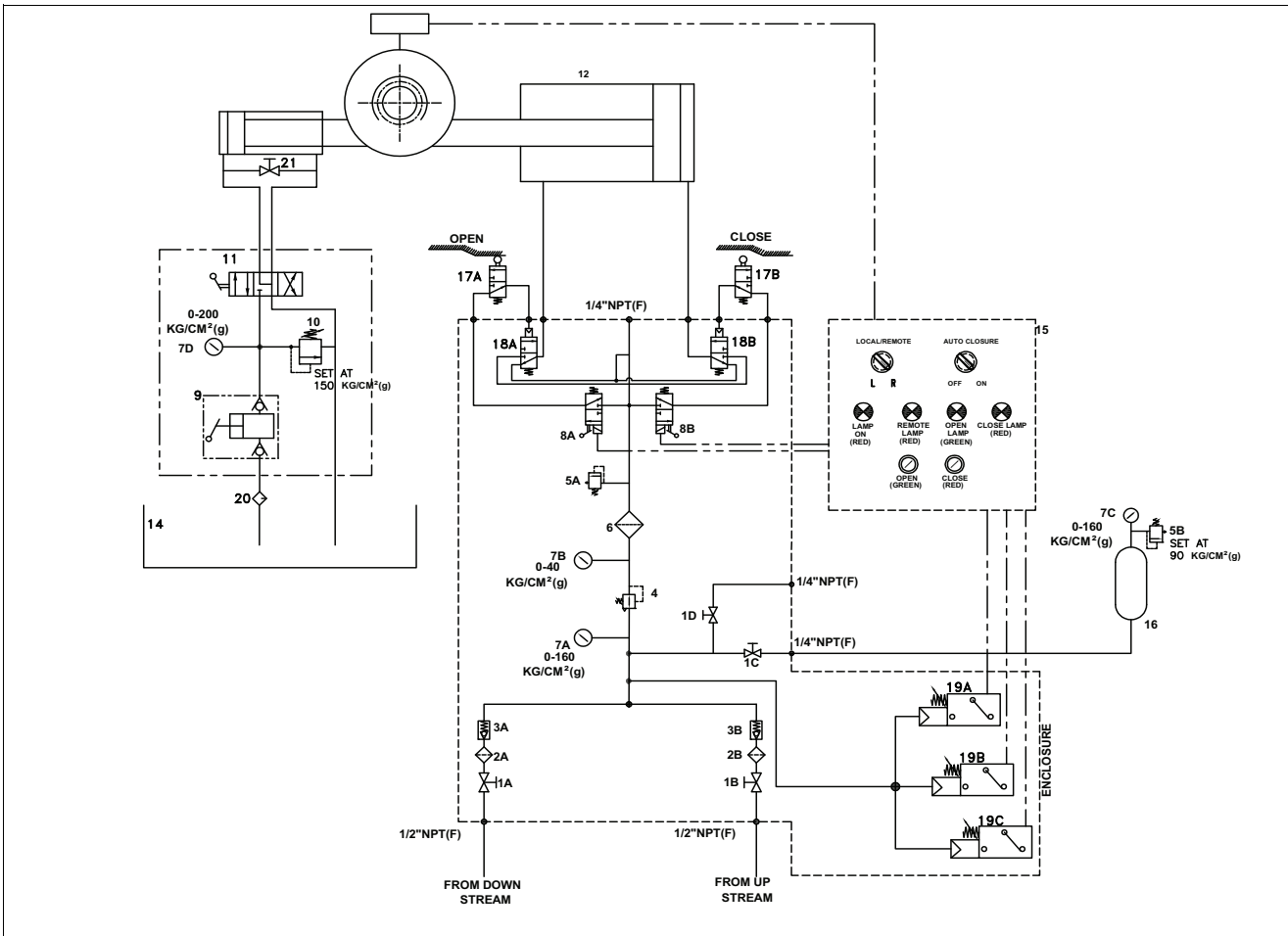


Fig. 2

Bill of materials		
SR no.	Description	TAG no.
1	BALL VALVE	1A, 1B, 1C, 1D
1	GAS MOISTURE SEPARATOR	2A, 2B
'	NON RETURN VALVE	3A, 3B
4	PRESSURE REGULATOR	4
5	PRESSURE RELIEF VALVE	5A, 58
6	GAS COALESCER FILTER	6
7	PRESSURE GAUGE	7A, 7B, 7C, 7D
8	SOLENOID VALVE	8A, 8B
9	HYDRAULIC HAND PUMP	9
10	PRV	10
11	4/3 WAY MANUAL	11
12	ROTARY ACTUATOR	12
13	LIMIT SWITCH	13
14	OIL TANK	14
15	JUNCTION BOX	15
16	AUXILLARY AIR TANK	16
17	PNEUMATIC LIMIT VALVE	17
18	PILOT OPERATED VALVE	18A, 18B
19	EQUALISING BALL VALVE	19
20	OIL FILTER	20



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