





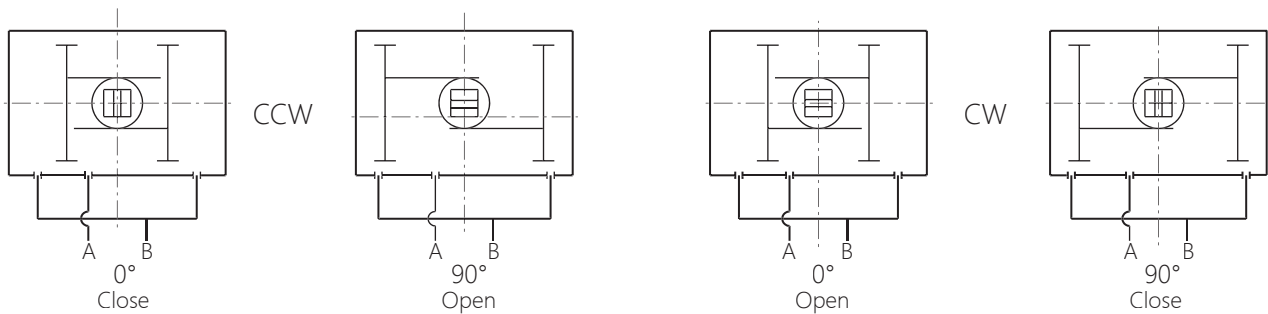
## Performance Characteristics

- **GMP Series Stainless Steel Actuator** are constructed with a compact and reliable design to offer innovative, efficient and high performance. All models are suitable for both on/off and control applications.
- **GMP Series Stainless Steel Actuator** is well suited for automating butterfly, ball, and plug valves in harsh, corrosive environments. The CF8/CF8M Stainless Steel construction provide perfect internal and external corrosion resistance, ensuring the actuators ideal for marine, chemical, mining, sanitary, food and beverage and pharmaceutical applications.
- **NAMUR Mounting:** GMD Series Stainless Steel Actuator meet NAMUR standards (VDI/VDE 3845) for accessory mounting. The NAMUR mounting patterns allows for the direct mounting with both accessories such as limit switches and positioners ect. and controls without additional tubing or fittings.
- **Corrosion Resistant Materials:** All external components are 300 series stainless steel. The wire of springs is coated by teflon painting for internal corrosion resistance.
- **Bi-directional Travel Stops:** The two independent external travel stops allow for adjustment of both clockwise and counterclockwise positions at  $\pm 5^\circ$  overtravel in each direction.
- **Field Reversible Action:** Direct and reverse actions accomplished by simply rotating the pistons  $180^\circ$ .
- **Interchangeability:** One design for spring return and double acting actuators allows for maximum interchangeability.
- **Concentric Nested Spring Design:** Significantly reduces the number of parts and allows for maximum spring gage and cycle life.
- **Wide Size Range:** Wide size range offers optimum actuator sizing.
- **ISO Valve Mounting Pattern:** Actuators conformed with ISO5211 standards for mounting directly to valves without additional brackets or adapters. The double square shaft is standard.
- **Position indicator:** The position indicator provides clearly visible indication of valve position through the full range of travel.



## Operating Principle

### Double Acting Actuators



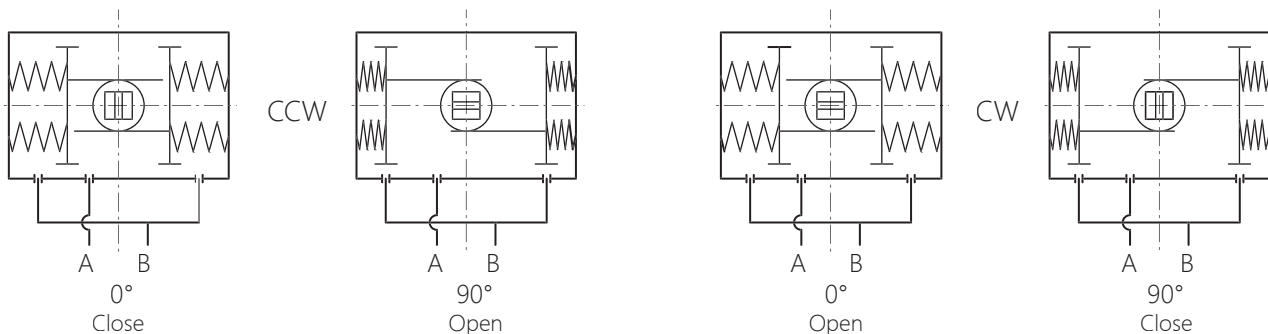
Air to Port A forces the pistons outwards, causing the pinion to turn counterclockwise while the air is being exhausted from Port B.

Air to Port B forces the pistons inwards, causing the pinion to turn clockwise while the air is being exhausted from Port A.

Air to Port A forces the pistons outwards, causing the pinion to turn clockwise while the air is being exhausted from Port B.

Air to Port B forces the pistons inwards, causing the pinion to turn counterclockwise while the air is being exhausted from Port A.

### Spring Return Actuators

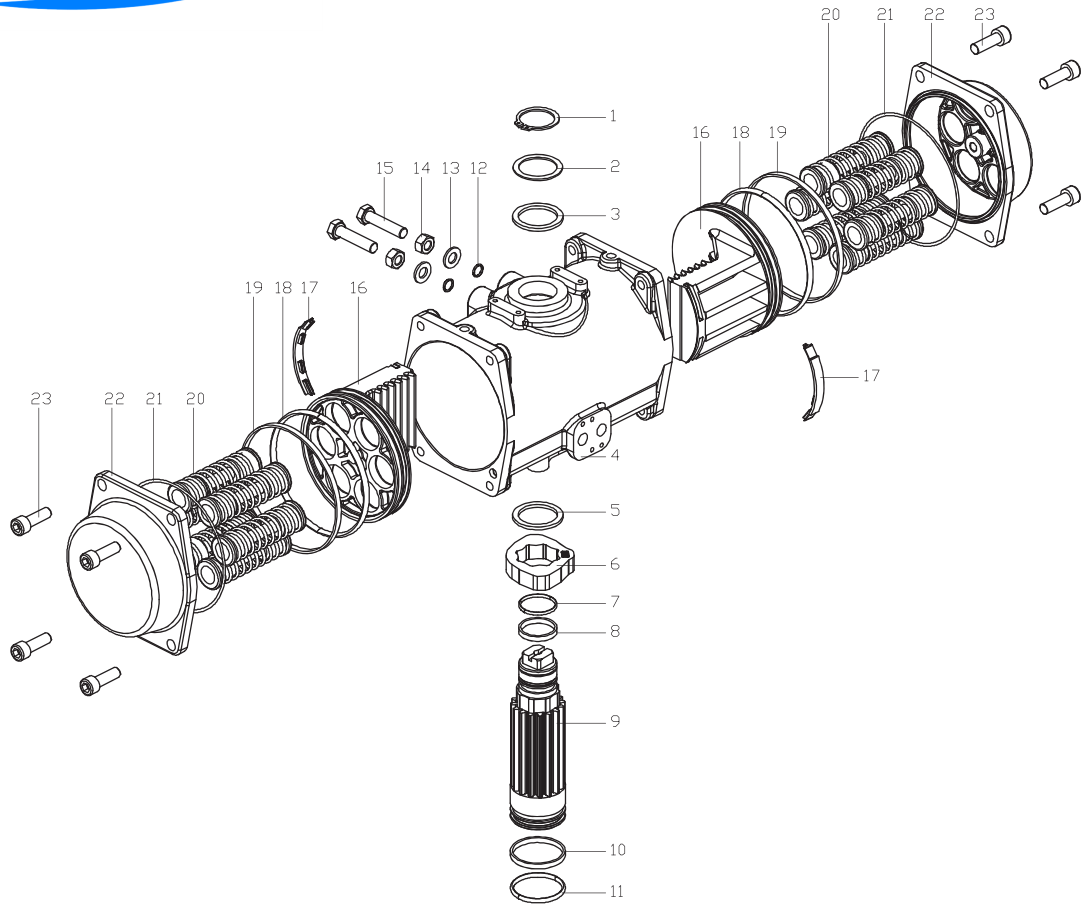


Air to port A forces the pistons outwards, causing the springs to compress, the pinion turns counterclockwise while air is being exhausted from port B.

Loss of air pressure on port A, the stored energy in the springs forces the pistons inwards. The pinion turns clockwise while air is being exhausted from port A.

Air to port B forces the pistons outwards, causing the springs to compress, The pinion turns counterclockwise while air is being exhausted from port B.

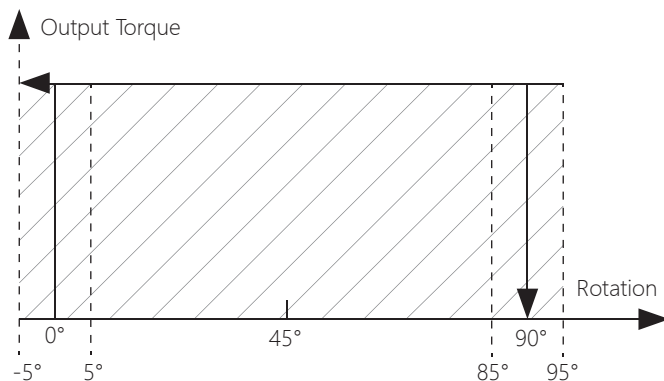
Loss of air pressure on port A, the stored energy in the springs forces the pistons inwards. The pinion turns clockwise while air is being exhausted from port A.



No.	Description	Qty.	Standards Material	Optional
1	Spring Clip	1	SUS304	SUS316
2	Thrust Washer	1	SUS304	SUS316
3	Outside Washer	1	Engineering Plastics	
4	Body	1	CF8	CF8M/CF3M
5	Inside Washer	1	Engineering Plastics	
6	Cam	1	Forged Steel With Nickel Plated	
7	Bearing(Pinion Top)	1	Engineering Plastics	
8	O-ring(Pinion Top)	1	NBR	Viton/Silicone
9	Pinion	1	SUS304	SUS316
10	Bearing(Pinion bottom)	1	Engineering Plastics	
11	O-ring(Pinion Bottom)	1	NBR	Viton/Silicone
12	O-ring(Adjust Screw)	2	NBR	Viton/Silicone
13	Adjustment Screw Washer	2	SUS304	SUS316
14	Nut(Adjust Screw)	2	SUS304	SUS316
15	Adjust Screw	2	SUS304	SUS316
16	Piston	2	ADC12	
17	Guide(Piston)	2	Engineering Plastics	
18	Bearing(Piston)	2	Engineering Plastics	
19	O-ring(Piston)	2	NBR	Viton/Silicone
20	Spring	0-12	Sprign Steel	
21	O-ring (End Cap)	2	NBR	Viton/Silicone
22	End-Cap	2	CF8	CF8M/CF3M
23	Cap Screw	8	SUS304	SUS316



## Output Torque with Double Acting



unit: Nm

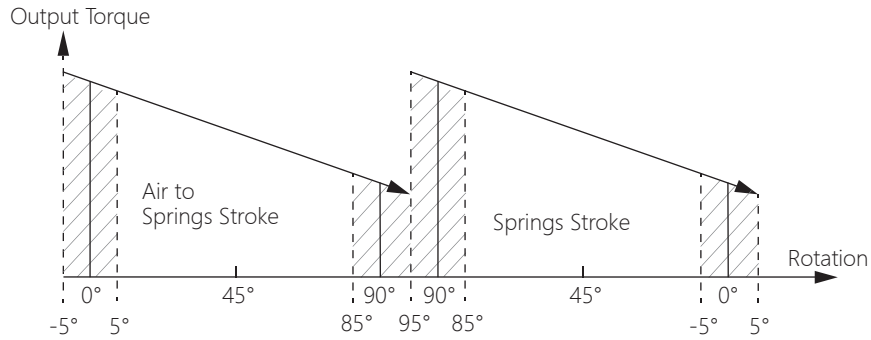
Model	Air supply pressure (Unit: bar)									
	2	2.5	3	4	4.5	5	5.5	6	7	8
GMD052	8	10	12	16	18	20	22	24	28	32
GMD063	15	18	22	29	33	36	40	44	51	58
GMD075	20	25	30	40	45	50	55	60	70	80
GMD083	31	39	47	63	70	78	86	94	110	125
GMD092	45	56	68	90	102	113	124	135	158	181
GMD105	66	83	99	132	149	165	182	198	231	264
GMD125	100	125	150	200	226	251	276	301	351	401
GMD140	171	214	256	342	385	427	470	513	598	684
GMD160	266	332	399	532	598	665	731	798	931	1064
GMD190	426	532	638	851	958	1064	1170	1277	1490	1702
GMD210	532	665	798	1064	1197	1330	1463	1596	1862	2128
GMD240	769	962	1154	1539	1731	1924	2116	2308	2693	3078
GMD270	1170	1462	1754	2339	2632	2924	3216	3509	4094	4679

## Operating conditions

1. Operating media  
Dry or lubricated air, the non-corrosive gases or oil.
2. Air supply pressure  
Double acting: 2 ~ 8 Bar; Spring return: 2 ~ 8 Bar
3. Operating temperature  
Standard: -20°C ~ +80°C  
Low temperature: -40°C ~ +80°C  
High temperature: -15°C ~ +150°C
4. Travel adjustment  
Adjustment range of  $\pm 5^\circ$  when the pistons at the sides.
5. Lubrication  
Under normal operating condition, need not accrete lubricant
6. Application  
Either indoor or outdoor
7. Highest pressure  
The maximum input pressure is 10 Bar



# Output Torque with Spring Return



unit: Nm

Air pressure		Output torque of air to springs														Springs' output	
Model	Spring Qty.	2.5BAR		3BAR		4BAR		5BAR		6BAR		7BAR		8BAR		90°	0°
		0° Start	90° End	0° Start	90° End	0° Start	90° End	0° Start	90° End	0° Start	90° End	0° Start	90° End	0° Start	90° End	Start	End
GMS052	K5	5.7	3.8	7.6	5.7											6.2	4.3
	K6	4.9	2.5	6.9	4.5	10.9	8.5									7.4	5.0
	K7	4.0	1.3	6.0	3.3	9.8	7.3	14.0	10.4							8.6	5.9
	K8			5.2	2.0	9.2	6.0	13.2	9.1	17.2	14.1					9.9	6.7
	K9			4.3	0.8	8.3	4.8	12.3	7.9	16.3	12.8	20.3	16.8			11.1	7.6
	K10					7.4	3.6	11.5	6.7	15.5	11.6	19.5	15.6			12.4	8.5
	K11					6.6	2.3	10.6	5.4	14.6	10.4	18.6	14.3	22.6	18.3	13.6	9.3
K12								9.7	4.2	13.8	9.1	17.8	12.2	21.8	17.1	14.8	10.2
GMS063	K5	11.4	7.7	15.0	11.4	22.3	14.9									10.4	6.8
	K6	10.1	5.7	13.6	9.3	20.9	16.6	28.3	23.9							12.5	8.2
	K7	8.6	3.6	12.5	7.2	19.5	14.5	26.8	21.9							14.6	9.6
	K8			10.9	5.1	18.2	12.4	25.5	19.8	32.8	27.0	40.1	34.3			16.7	10.9
	K9					16.8	10.4	24.1	17.7	31.4	24.9	38.7	32.2			18.8	12.3
	K10					1.4	8.2	22.8	15.6	30.0	22.8	37.3	30.1	44.7	37.4	20.9	13.7
	K11							21.5	13.5	28.7	20.7	36.0	28.0	43.3	35.3	22.9	15.0
K12								20.0	11.4	27.3	18.6	34.6	25.9	41.9	33.3	25.0	16.4
GMS075	K5	14.5	10.6	19.4	15.5	29.5	25.7									14.5	10.5
	K6	12.4	7.6	17.3	12.6	27.4	22.7	37.5	32.8							17.4	12.7
	K7	10.4	4.8	15.2	9.7	25.3	19.9	35.4	29.9							20.3	14.8
	K8			13.1	6.8	23.1	16.9	33.3	27.0	43.2	37.0	53.3	47.0			23.2	16.9
	K9					21.0	14.1	31.2	24.1	41.1	34.1	51.2	44.2			26.1	19.0
	K10					19.0	11.1	28.8	21.2	39.0	31.2	49.1	41.2	59.1	51.2	29.0	21.1
	K11							27.0	18.3	37.0	28.3	47.0	38.4	57.0	48.4	31.9	23.2
K12							24.9	15.4	34.9	25.4	44.9	35.4	54.9	45.4	34.7	25.3	
GMS083	K5	23.3	16.1	31.1	24.0	46.8	39.7									23.0	15.8
	K6	20.1	11.5	28.0	19.3	43.7	35.1	59.4	50.7							27.6	19.0
	K7	17.0	6.9	24.8	14.8	40.5	30.5	56.2	46.2							32.2	22.1
	K8			21.7	10.1	37.4	25.8	53.1	41.5	68.8	57.2	84.5	72.9			36.8	25.3
	K9					34.2	21.3	49.9	37.0	65.6	52.6	81.2	68.3			41.4	28.5
	K10					31.0	16.6	46.7	32.3	62.4	48.0	78.1	63.7	93.8	79.3	46.0	31.6
	K11							43.6	27.7	59.3	43.4	75.0	59.1	90.6	74.8	50.6	34.8
K12							40.4	23.2	56.1	38.9	71.7	54.5	87.4	70.2	55.2	38.0	
GMS092	K5	33.1	22.0	44.2	33.2	66.8	55.9									34.4	23.3
	K6	28.4	15.2	39.6	26.4	62.2	49.0	84.8	71.6							41.2	28.0
	K7	23.8	8.2	34.9	19.4	57.5	42.1	80.2	64.7							48.1	32.7
	K8			31.3	12.6	52.9	35.2	75.5	57.9	98.1	80.5	120.7	103.0			55.0	37.3
	K9					48.2	28.4	70.9	51.0	93.5	73.6	116.0	96.1			61.9	42.0
	K10					43.6	21.5	66.2	44.1	88.8	66.7	111.3	89.2	134.0	111.8	68.7	46.7
	K11							61.5	37.2	84.1	59.9	106.6	82.4	129.2	105.0	75.6	51.4
K12							56.8	30.4	79.4	53.0	101.9	75.5	124.5	98.1	82.5	56.0	
GMS105	K5	51.0	33.4	67.5	49.9	100.6	83.0									49.2	31.6
	K6	44.7	23.5	61.1	40.0	94.2	73.2	127.3	106.2							59.1	38.0
	K7	38.4	13.7	54.9	30.3	87.9	63.4	121.0	96.4							68.9	44.3
	K8			48.5	20.4	81.6	53.5	114.7	86.5	147.7	119.6	180.8	152.7			78.7	50.6
	K9					75.3	43.7	108.4	76.8	141.5	109.8	174.5	142.9			88.6	56.9
	K10					68.9	33.4	102.0	66.5	135.1	99.6	168.2	132.6	201.2	165.7	98.4	63.3
	K11							95.7	57.0	128.7	90.1	161.8	123.1	194.8	156.2	108.3	69.6
K12							89.4	47.5	122.5	80.6	155.5	113.6	188.6	146.7	118.1	75.9	

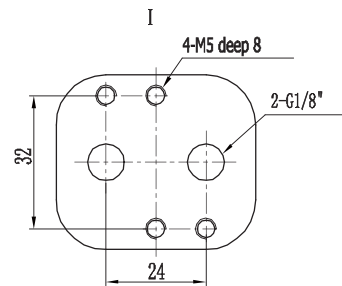
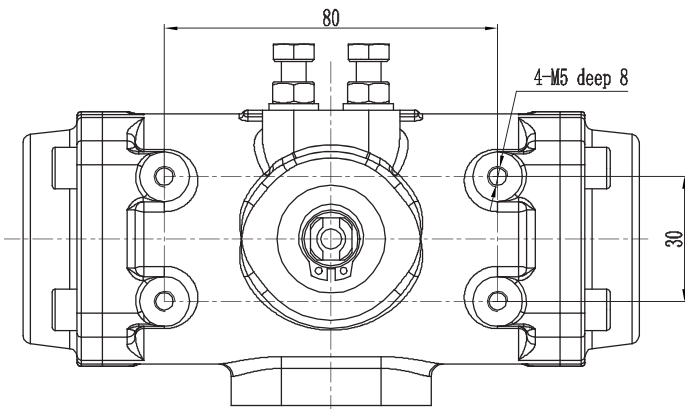
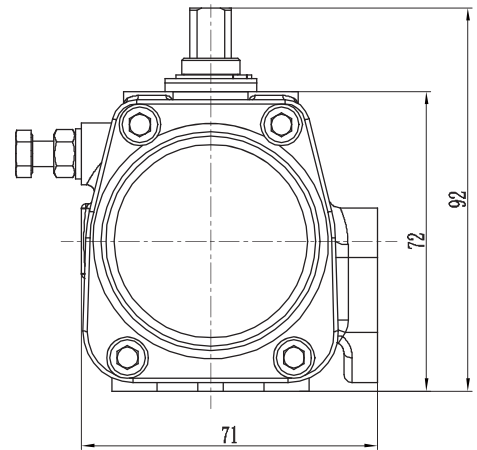
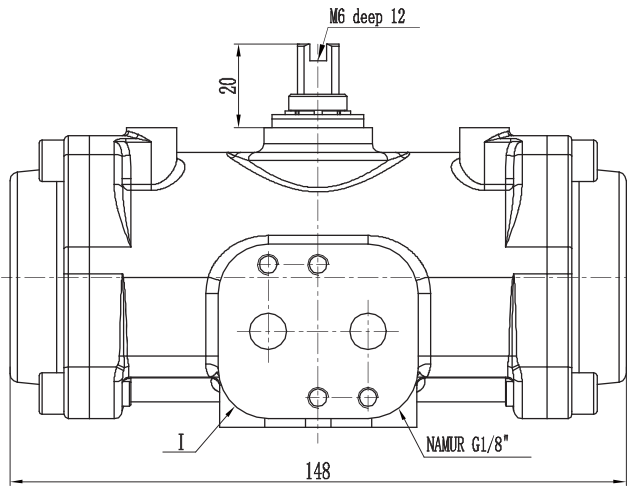
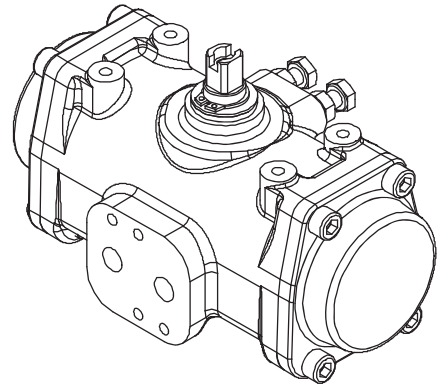
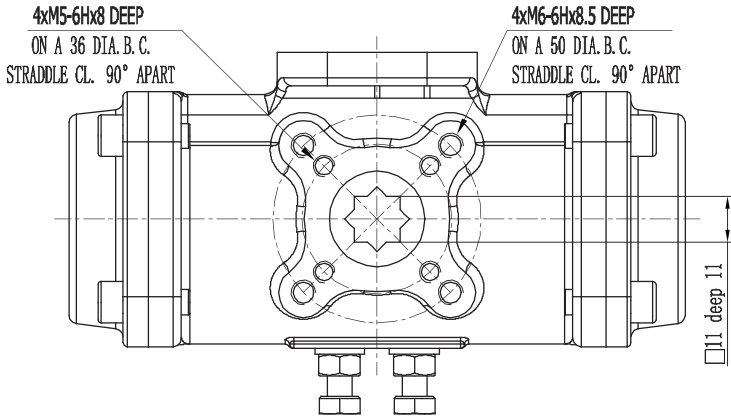


unit: Nm

Output torque of air to springs																	Springs' output	
pressure		2.5Bar		3Bar		4Bar		5Bar		6Bar		7Bar		8Bar		90°	0°	
Model	Spring Qty.	0° Start	90° End	0° Start	90° End	0° Start	90° End	0° Start	90° End	0° Start	90° End	0° Start	90° End	0° Start	90° End	Start	End	
GMS125	K5	73	47	98	72	148	122									79	52	
	K6	63	31	88	56	138	107	188	157							94	63	
	K7	52	15	77	40	127	90	178	141							110	73	
	K8			67	25	117	75	167	125	217	176	268	226			125	84	
	K9					107	59	157	109	207	159	257	210			141	94	
	K10					96	44	146	94	196	144	247	194	297	245	157	105	
	K11							136	78	186	128	236	178	286	228	173	115	
	K12							125	63	176	113	226	163	276	213	188	125	
GMS140	K5	128	85	171	127	256	213									129	86	
	K6	111	59	154	102	239	187	325	273							155	103	
	K7	94	33	137	76	222	162	308	247							181	120	
	K8			120	50	205	136	291	221	376	307	462	392			206	137	
	K9					187	110	273	196	358	281	444	367			232	155	
	K10					170	84	256	169	341	255	427	340	512	426	258	172	
	K11							238	143	324	229	409	314	495	400	284	189	
	K12							221	118	307	203	392	289	478	374	310	206	
GMS160	K5	193	124	259	191	392	324									208	140	
	K6	165	83	232	149	365	282	498	415							250	168	
	K7	137	41	203	107	336	240	469	373							292	196	
	K8			176	66	309	199	442	237	575	465	708	598			333	223	
	K9					280	157	413	290	546	423	679	556			375	251	
	K10					253	115	386	248	519	381	652	514	785	647	417	279	
	K11							358	207	491	340	624	473	757	606	458	307	
	K12							330	165	463	298	596	431	729	564	500	335	
GMS190	K5	332	222	438	329	651	542									309	200	
	K6	292	161	398	267	611	480	824	693							371	240	
	K7	252	99	358	205	571	418	784	631							433	280	
	K8			318	143	531	356	744	569	957	782	1169	995			495	320	
	K9					491	295	704	507	917	720	1130	933			557	360	
	K10					451	233	664	446	877	658	1090	871	1302	1084	618	400	
	K11							624	384	837	597	1050	809	1263	1022	680	440	
	K12							584	322	797	535	1010	748	1223	960	742	480	
GMS210	K5	390	285	523	418	789	684									380	275	
	K6	335	209	468	342	734	608	1000	874							456	330	
	K7	280	133	413	266	679	532	945	798							532	385	
	K8			358	190	624	456	890	722	1156	988	1422	1254			608	440	
	K9					569	380	835	646	1101	912	1367	1178			684	495	
	K10					514	304	780	570	1046	836	1312	1102	1578	1368	760	550	
	K11							725	494	991	760	1257	1026	1523	1292	836	605	
	K12							670	418	936	684	1202	950	1468	1216	912	660	
GMS240	K5	552	409	744	600	1129	985									554	410	
	K6	470	297	662	489	1047	874	1432	1259							665	492	
	K7	388	187	580	379	964	764	1349	1149							775	575	
	K8			498	268	883	653	1267	1037	1652	1422	2037	1807			886	656	
	K9					800	542	1185	926	1569	1311	1954	1696			998	739	
	K10					718	431	1103	816	1488	1201	1872	1586	2257	1970	1108	821	
	K11							1021	705	1406	1090	1791	1474	2176	1859	1219	903	
	K12							939	594	1323	979	1708	1363	2093	1748	1330	985	
GMS270	K5	903	675	1195	968	1779	1552									787	560	
	K6	790	519	1083	811	1667	1396	2252	1981							943	672	
	K7	679	361	972	654	1556	1238	2141	1823							1101	783	
	K8			860	497	1444	1081	2029	1666	2614	2252	3199	2836			1258	895	
	K9					1332	923	1917	1509	2502	2094	3087	2678			1416	1007	
	K10					1220	767	1805	1352	2390	1937	2974	2521	3560	3107	1572	1119	
	K11							1693	1194	2278	1779	2862	2364	3448	2949	1730	1231	
	K12							1582	1037	2167	1623	2751	2207	3336	2792	1887	1342	



# GMD(S)052 Dimension

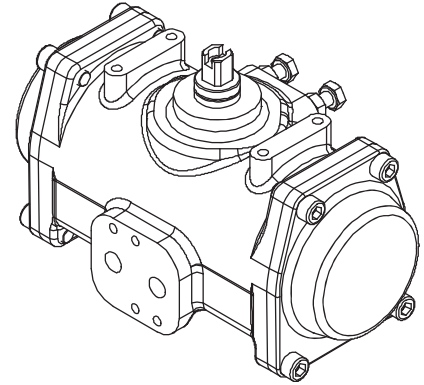
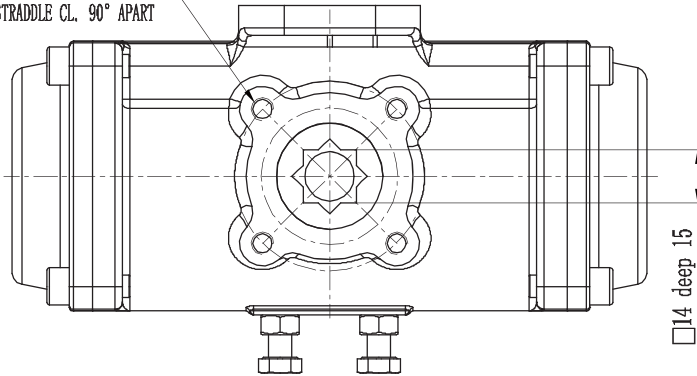


G1/8" NAMUR STANDARD



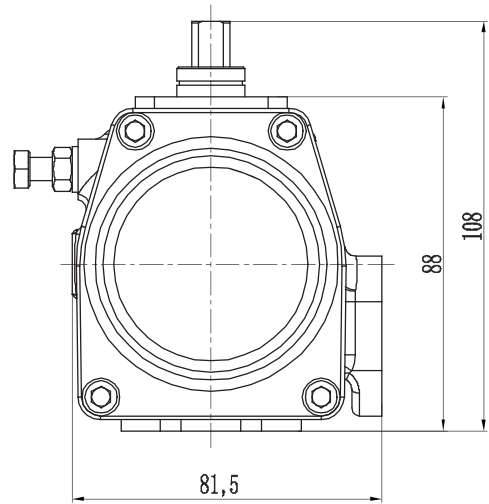
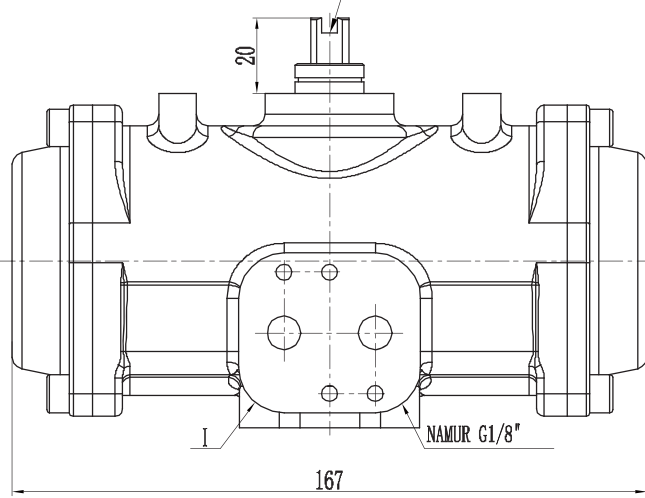
# GMD(S)063 Dimension

4xM6-6Hx10 DEEP  
ON A 50 DIA. B. C.  
STRADDLE CL. 90° APART



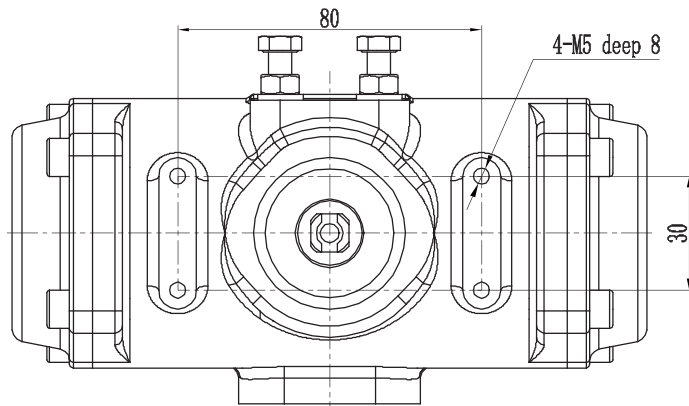
M6 deep 12

20



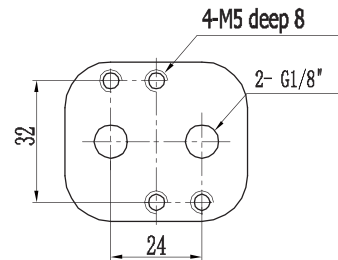
80

4-M5 deep 8



4-M5 deep 8

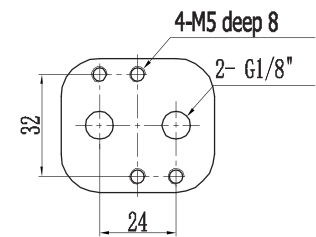
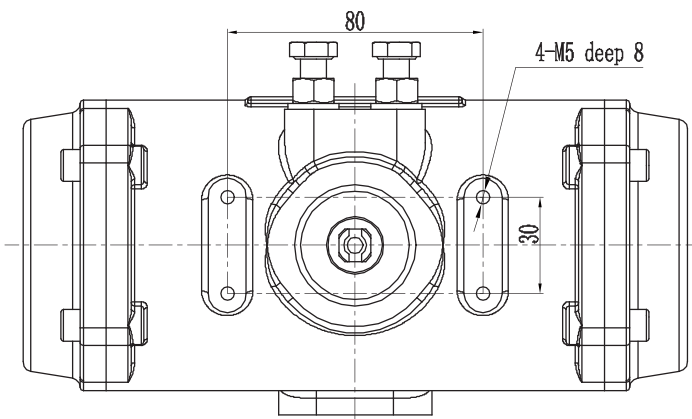
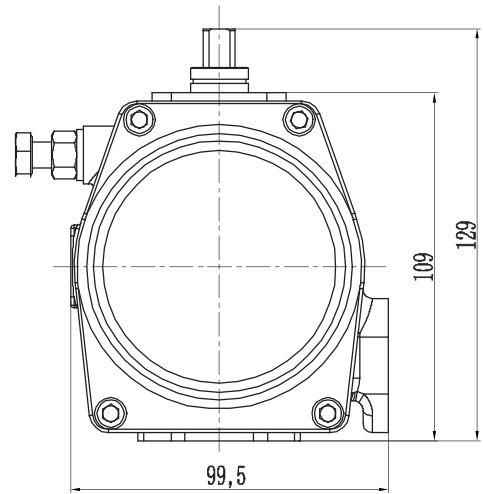
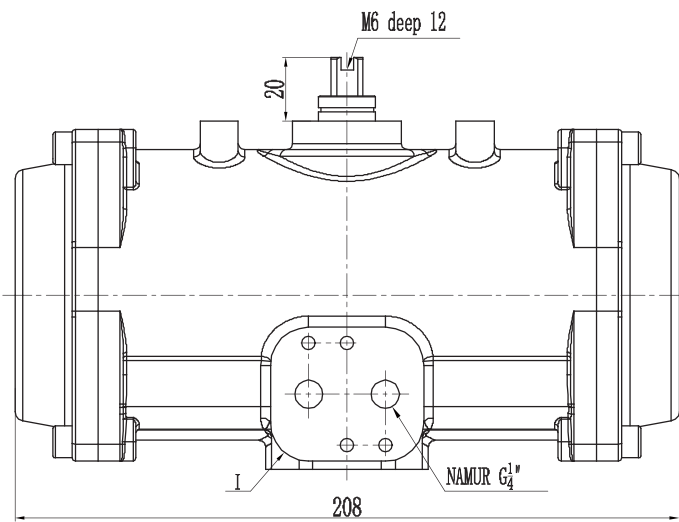
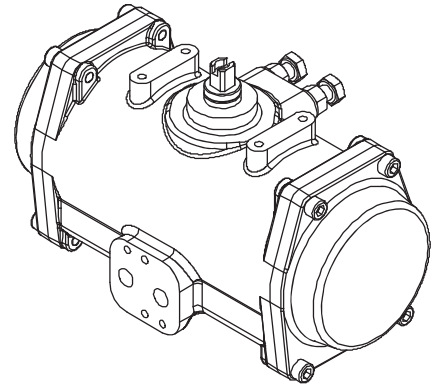
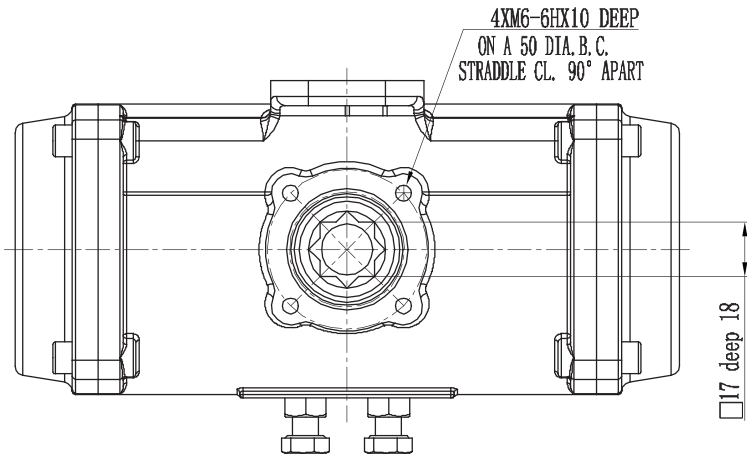
2- G1/8"



G1/8" NAMUR STANDARD



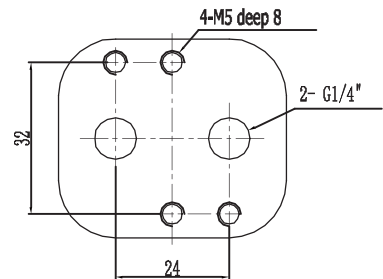
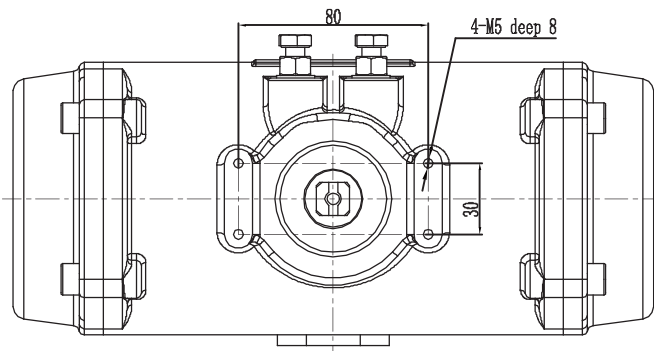
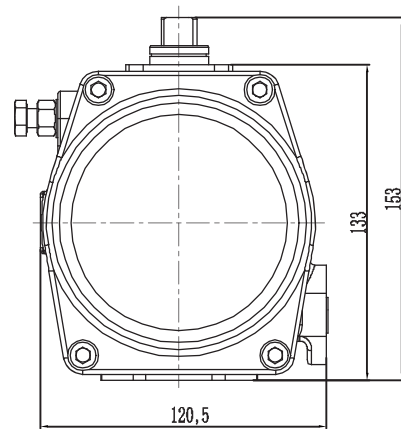
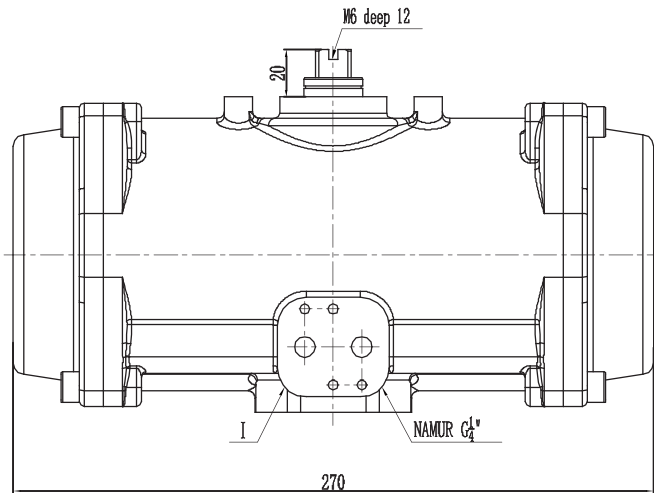
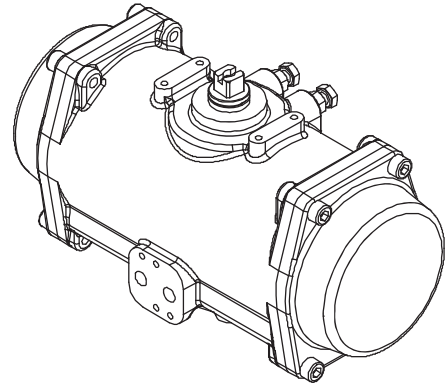
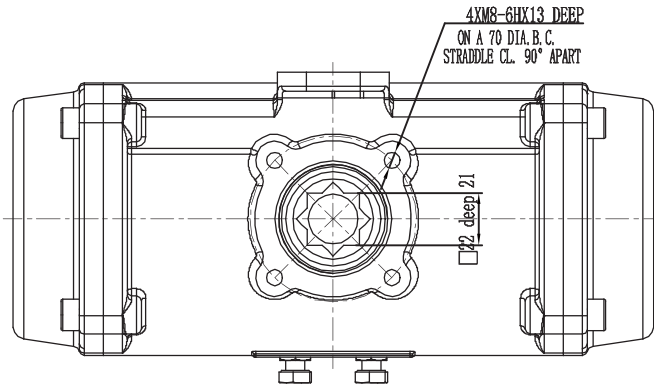
# GMD(S)083 Dimension



G1/4" NAMUR STANDARD

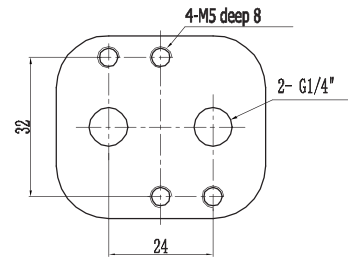
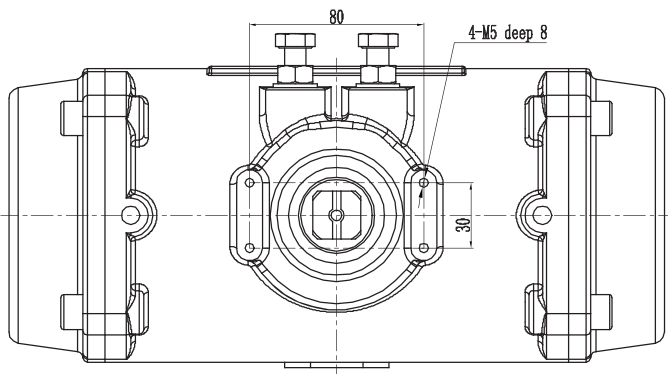
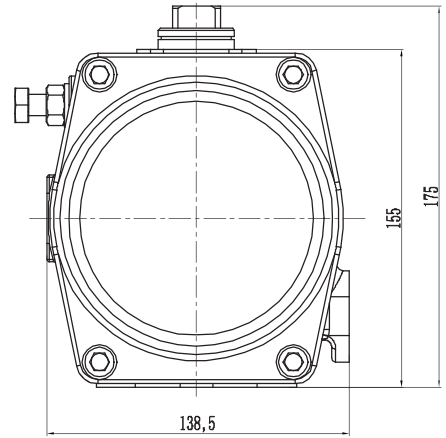
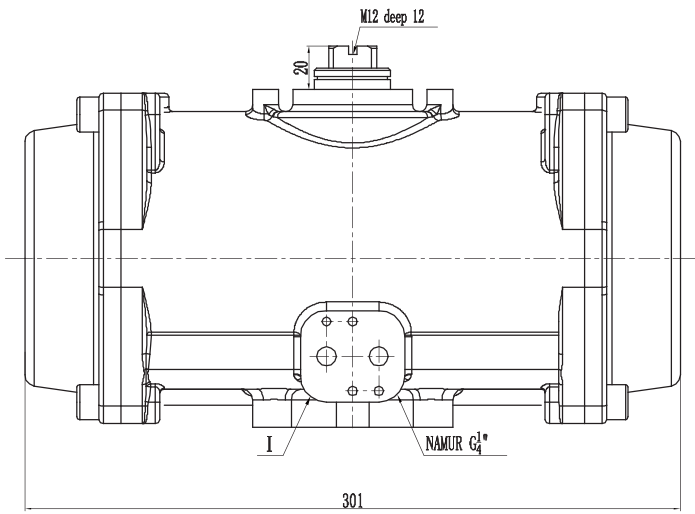
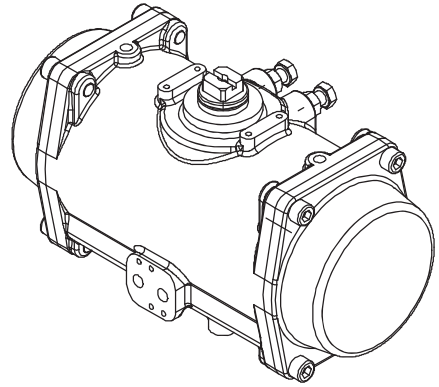
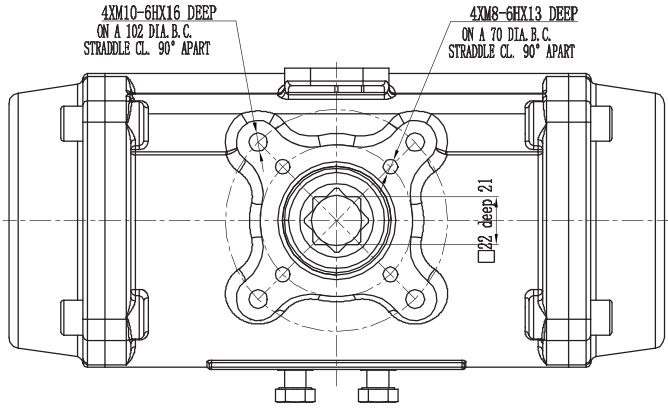


# GMD(S)105 Dimension





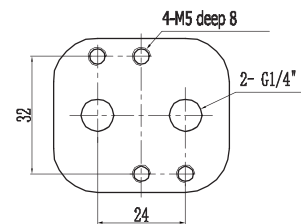
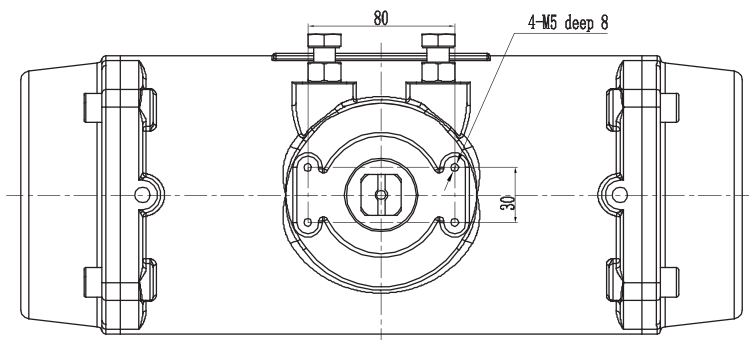
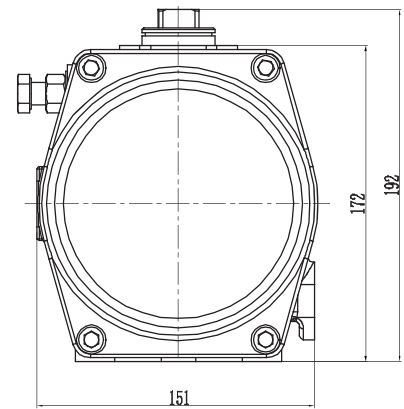
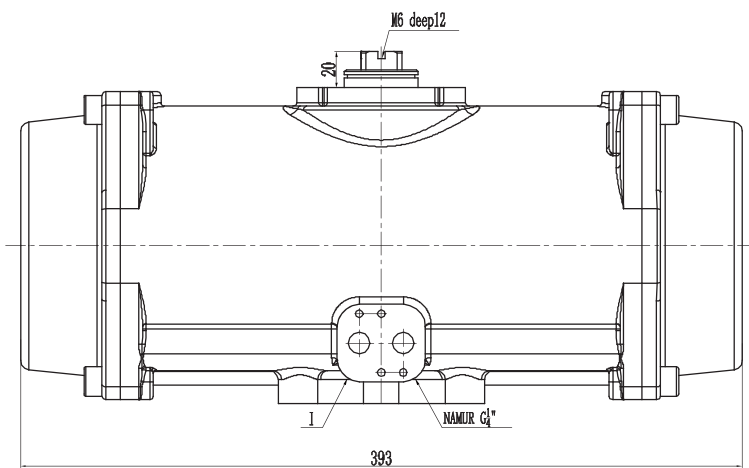
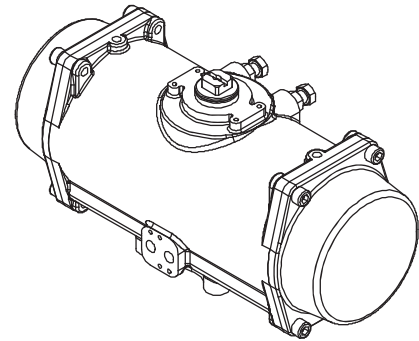
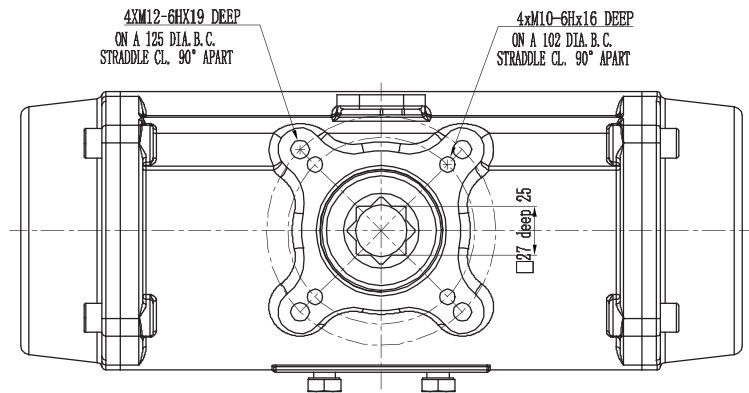
# GMD(S)125 Dimension



G1/4" NAMUR STANDARD



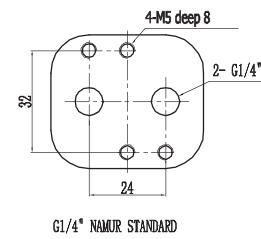
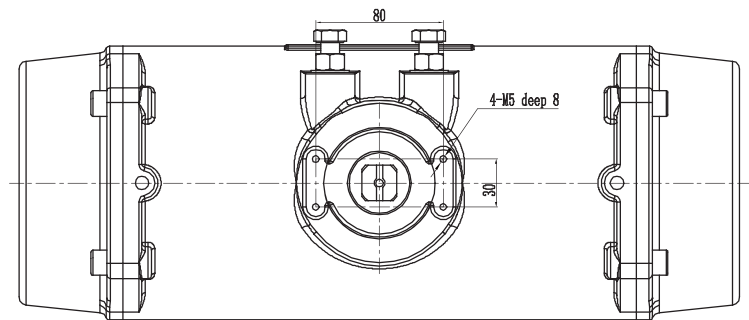
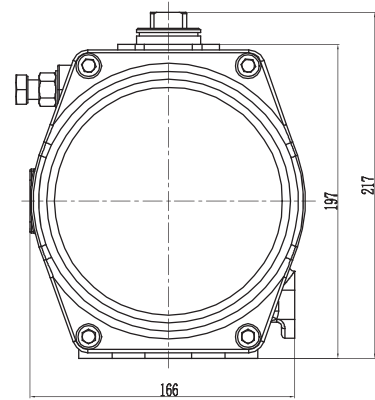
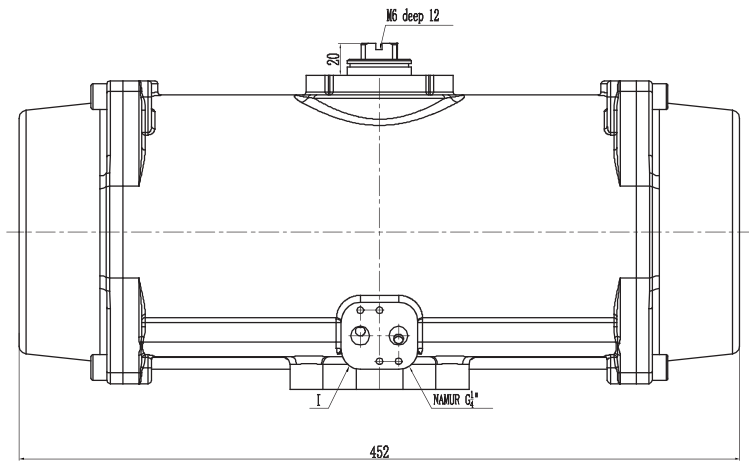
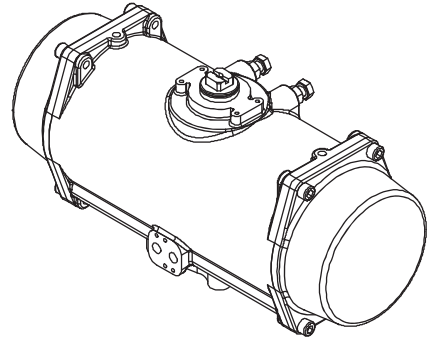
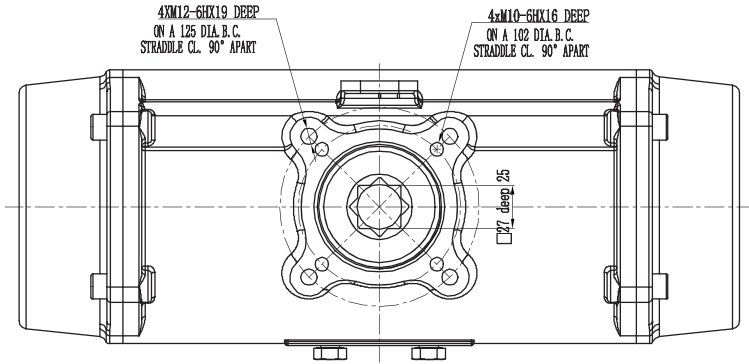
# GMD(S)140 Dimension



G1/4" NAMUR STANDARD



# GMD(S)160 Dimension





# GMD(S)210 Dimension

