FSB 2D Fire-Safe Direct Mount 2-Piece

Flanged End Ball Valves

½" - 8" (DN15 - DN200)
ANSI Class 150; Class 300;
DIN PN16, PN40



FIRE-SAFE ANTI-STATIC 2014/68/EU SAFETY

Before and After, Perfect Operation

In process industries, fire-safe equipments are often required for petroleum and flammable applications. For ideal fire-safe valves, DIE ERSTE offers Series FSB 2D Direct Mount 2-Piece Fire-safe Full Port Flanged End Ball Valve in ANSI Class 150 and Class 300, DIN PN16 and PN40, where maximum flow capacity and minimum pressure drops are required. Series FSB 2D conforms to API 607 5th Edition with fire-safe features, including fire-safe contact, graphite seals, and anti-static devices. The API 607 certification, which is equivalent to ISO 10497, is designed to test soft seat quarter turn valves, where valves are tested under high temperature condition (above 750°C) for certain period of time.

The fire-safe design consists of three elements: fire-safe contact, graphite seals, and anti-static devices. Fire-safe contact is a precise machined metal ring surface to fit with the valve ball after the soft ball seat has been burnt away by high temperature heat. The fire-safe contact acts as a metal seat, and together with the floating ball pushed downstream, the tight-shutoff secondary seal is formed even without the presence of soft ball seat. In the body connection where main body and end cap are connected, DIE ERSTE offers dual body seal to achieve non-leakage externally with PTFE and graphite rings. DIE ERSTE also provides anti-static device for all FSB 2D ball valves. Electrical charges can be grounded with anti-static device, to avoid potential danger.

For flange facing option, DIE ERSTE offers raised face flange for use with most general applications. For special or high pressure applications, please consult with DIE ERSTE representatives.

(A) ISO5211 Actuator Direct-Mount
Square stem and twin ISO 5211 pattern mounting pad allow easy valve automation product installation without bracket and adaptor.

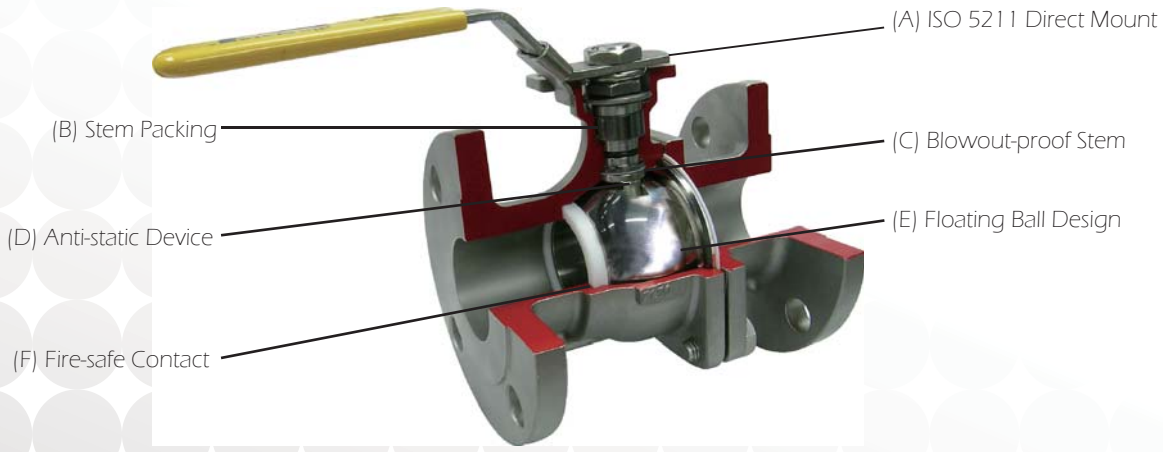
(B) Stem Packing
The stem packing is designed to self-adjust for temperature variation and pipeline system vibration, and thus provideing safe working conditions of the valve. In FSB ball valves, graphite stem packing is used to prevent stem leakage after fire.

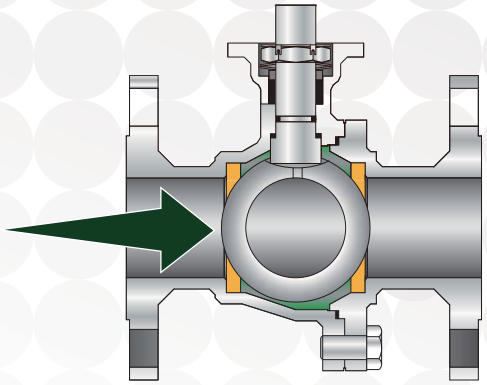
(C) Blowout-Proof Stem
The stem is inserted from inside the body bore. This particular design prevents the stem from shooting out when there is excess pressure in the bore caused by high temperature heat.

(D) Anti-Static Device
All FSB ball valves are equipped with Anti-Static Device in the ball bore. This device provides a grounding path between the valve body and the ball for static electric charges built up by valve operation.

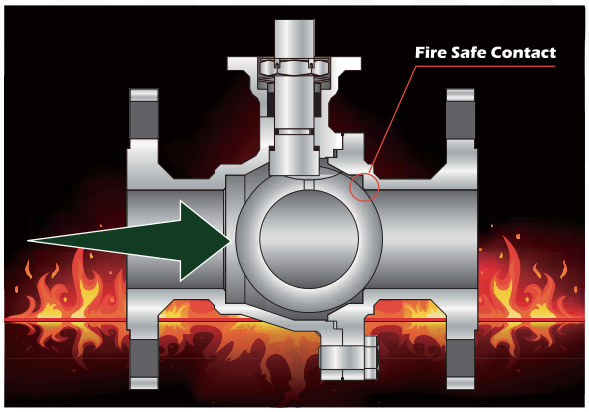
(E) Floating Ball Design
The floating ball design, combined with soft seat, offers bubble-tight shutoff, low operating torque, and prolonged life cycle. For fire-safe purposes, the floating ball design plays important role in the formation of secondary metal-to-metal sealing property.

(F) Fire-Safe Contact
The special designed fire-safe contact forms an alternative seal after the soft ball seat has been burnt away during fire. The new metal-to-metal seal reduces the leaking possibilities to the minimum.





Before a fire



After a fire

Fire-Safe Design

Fire-Safe Contact

The end cap is specially designed and machined precisely to fit with the valve ball surface. During the event of fire, the soft ball seat may disintegrate in high temperature due to the nature of the material. Thus, the valve ball comes into contact with the fire-safe contact surface and forms a secondary metal-to-metal seal. The downstream flow pushes the floating ball to the side, and effectively seals the bore.

Anti-Static Device

Anti-static device provides a grounding path to the electric charge built up from valve operations. This particular device prevents potential spark occurrence, and even fire or explosion when working with flammable fluids. Small metal balls and springs are inserted on the stem to provide the grounding path.

Graphite Stem Seals and Packing

With the high temperature resistance property, graphite becomes the perfect material of choice for sealing parts. The graphite sealing rings are enclosed in a compartment and will not be in touch with the fluid. Therefore, regardless of the temperature and pressure, graphite seals stay immobile and continuously prevent leakage from or into the joined parts while under compression.



Seals and Packings

Dual Body Seal

Dual body seal are often used in DIE ERSTE Series FSB 2D ball valves to prevent leakage. The inner body seal is made with PTFE, and the outer body seal is made with graphite.

Direct Mounting Pad

The dual ISO direct mounting pad allows precise and flexible mounting of actuator. Usually two sets of mounting holes are drilled for different actuator sizes. With the integrally cast top mounting platform, machined flat surface and square stem, the design ensures correct alignment of the actuator to effectively minimize the side-loading during high cycle or continuous duty applications. The well-supplied (air or electric power) actuation equipments can be removed safely and easily while the valve is under the line pressure.



Direct Mount with Actuators

CE Marking CE

The whole series of ball valves is approved according to European Directive 2014/68/EU.

Body Material:

ASTM CF8M, CF8, WCB
DIN 1.4408. 1.4308, 1.0619

Size Range

1/2" – 8" (DN15 ~ DN200)

Standards

Design: ASME B16.34, BS 5351, DIN 3337
Face to face: ASME B16.10, EN 558 Series 14 (DIN 3202-F4)
Flange dimension: ASME B16.5, DIN 2632/2633, DIN 2634/2635
Testing: API 607, ISO 10497, API 598, ISO 5209
Mounting pad: ISO 5211
Material: DIN EN 10204
Marking: MSS SP-25, ISO 5209
Others: MSS SP-72, BS 5351

Pressure Rating:

ANSI Class 150
ANSI Class 300
DIN PN16
DIN PN40 up to DN100
150 psi (10 bar) with saturation steam

Temperature Range:

- -40°F to 350°F (-40°C to 180°C) with TFM 1600 seat
- -4°F to 350°F (-20°C to 180°C) with RPTFE seat
- -4°F to 350°F (-20°C to 180°C) with PTFE seat

End Connection:

Flanged end

Certifications of Series FSB 2D:

API 607 Fire Test or Soft Seated Quarter Turn Valves

Canadian Registration Number

ATEX Directive 2014/34/EU Explosive Prevention

Low Emmision Certificated
TA-Luft 2002, Sec. 5.2.6.4
VDI 2440 2000, Sec. 3.3.1.3

SIL3 Capable
Please inquire

Locking Device

The locking device is ideal for applications where it is critical to keep the valve positions fixed without the risk of accidental operation. The metal piece fit accordingly to the opening on the actuator to lock on open and close position. In addition, padlock can be added with key to lock and secure the position.

Optional Material

- Stainless Steel ASTM A351 Gr. CF3M, CF3
- Monel 400
- Low Temperature Carbon Steel ASTM A352 Gr. LCB
- Alloy 20 ASTM A351 CN7M
- Hastelloy ASTM A494 Gr. CW12MW

For more detailed information regarding to different material, please contact your DIE ERSTE representatives

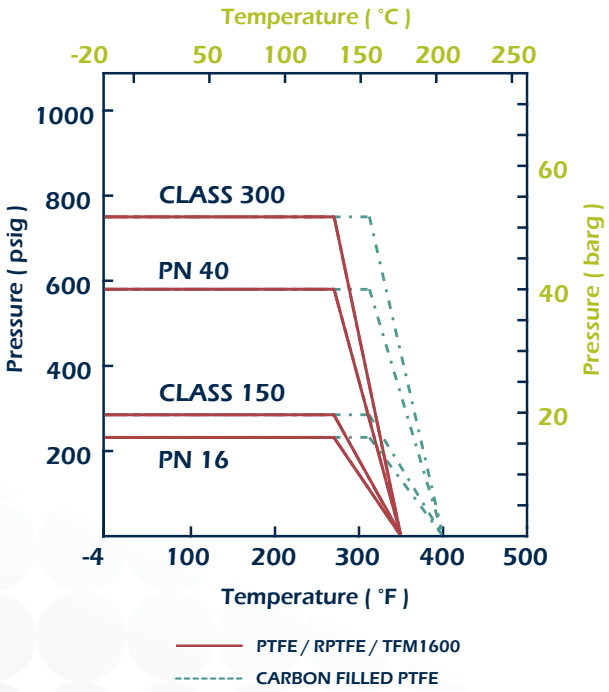
Optional Material of O-Ring

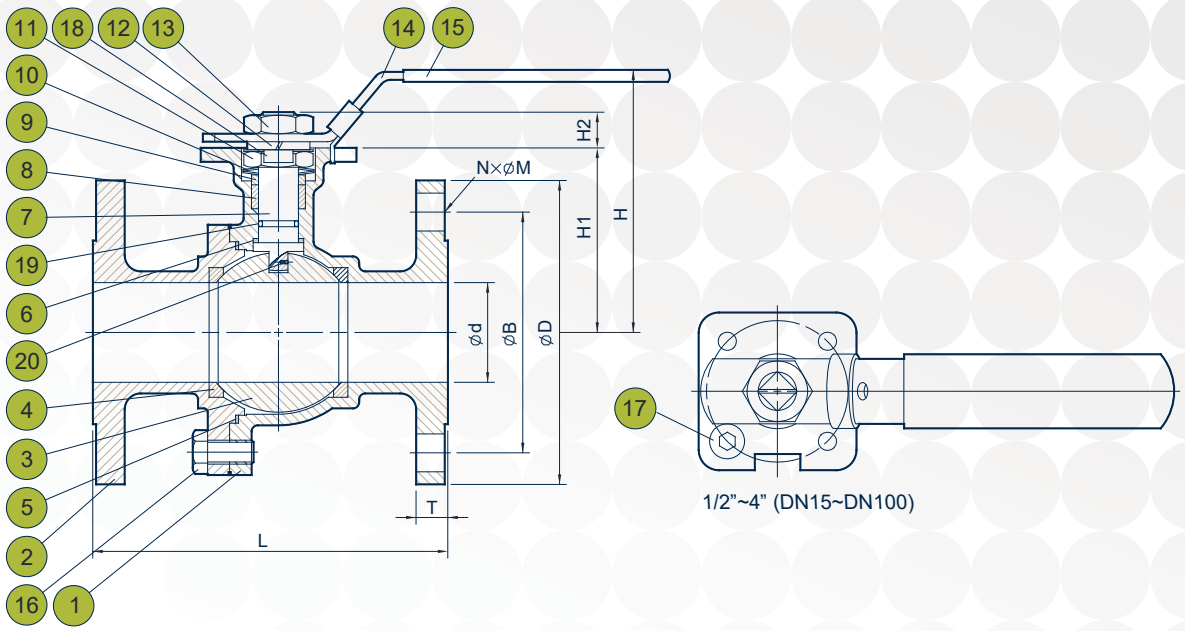
- RPTFE 15%
- Viton

Marine Application

Casting from Lloyd's or DNV approved foundry available upon request.

Pressrue and Temperature Rating





NO	PART NAME	MATERIAL
1	BODY	CF8M / WCB
2	CAP	CF8M / WCB
3	BALL	CF8M / CF8
4	BALL SEAT	PTFE / RPTFE
5	BODY SEAL	PTFE & GRAPHITE
6	THRUST WASHER	PTFE & GRAPHITE
7	STEM	ASTM A276 316 / 304
8	STEM PACKING	GRAPHITE
9	GLAND	SS304
10	BELLEVILLE WASHER	SS301

NO	PART NAME	MATERIAL
11	STEM NUT	SS304
12	HANDLE WASHER	SS304
13	HANDLE NUT	SS304
14	HANDLE	SS304 / ZINC PLATE STEE
15	HANDL SLEEVE	VINYL
16	BODY BOLT	A2-70 / ISO 898-1 8.8
17	STOP PIN	SS304 / ISO 898-1 12.9
18	LOCKING SADDLE	SS304
19	O-RING	VITON
20	ANTI-STATIC DEVICE	SS316

Size		Cv	Kv
Inch	DN		
1/2"	15	23	19.7
3/4"	20	45	38.6
1"	25	77	66
1½"	40	192	165
2"	50	358	307
2½"	65	611	524
3"	80	858	736
4"	100	1512	1296

For v-port ball valves, please see
Flow coefficients of v-port ball valve.

The left table represents the Flow Coefficients (CV) and Flow Factor (Kv) for DIE ERSTE Series FSB 2D ball valves. This number represents the volume of water at 60°F that will flow in US gallon per minute through a valve with a 1 lb/in^2 pressure drop across in the full open position. For Kv, it is the flow of water with temperature from 5°C - 30°C in cubic meters per hour (m^3/h) with a pressure drop of 1 bar.

$$Cv = F\sqrt{\frac{SG}{\Delta P}}$$

The Cv value is dependent on flow rate, pressure drop, specific gravity. The larger the Cv value, the easier the fluid will flow within the valve. However, Cv value is easily affected by various factors, such as fluid type, fluid viscosity, saturated steam pressure.

ANSI CLASS 150 Dimensions inch/mm

SIZE Inch DN	ød	L	H	W	øD	øB	T	H1	H2	S	N	M	ISO 5211	Weight lbs Kg	Torque lbs.in N.m
1/2"	0.59	4.25	3.23	5.31	3.50	2.38	0.44	1.77	0.35	9	4	0.62	F03/	3.53	115.1
15	15	108	82	135	88.9	60.5	11.2	45	9			15.8	F04	1.6	13
3/4"	0.79	4.62	3.46	5.31	3.88	2.75	0.44	1.97	0.35	9	4	0.62	F03/	4.41	132.8
20	20	117	88	135	98.6	69.9	11.2	50	9			15.8	F04	2	15
1"	0.98	5.00	3.62	6.50	4.25	3.12	0.44	2.17	0.47	11	4	0.62	F04/	6.83	177
25	25	127	92	165	108	79.2	11.2	55	12			15.8	F05	3.1	20
1½"	1.51	6.50	4.41	7.68	5.00	3.88	0.56	2.83	0.63	14	4	0.62	F05/	12.79	265.5
40	40	165	112	195	127	98.6	14.2	72	16			15.8	F07	5.8	30
2"	1.99	7.00	5.20	7.68	6.00	4.75	0.62	3.62	0.63	14	4	0.75	F05/	18.3	389.4
50	50	178	132	195	152.4	120.7	15.8	92	16			19.1	F07	8.3	44
2½"	2.56	7.50	5.98	11.81	7.00	5.50	0.69	4.13	0.75	17	4	0.75	F07/	30.86	486.8
65	65	191	152	300	177.8	139.7	17.5	105	19			19.1	F10	14	55
3"	3.15	8.00	6.48	11.81	7.50	6.00	0.75	4,57	0.75	17	4	0.75	F07/	40.12	840.8
80	80	203	164	300	190.5	152.4	19.1	116	19			19.1	F10	18.2	95
4"	3.94	9.02	7.64	13.19	9.00	7.50	0.94	5.43	0.94	22	8	0.75	F10/	65.48	1593.2
100	100	229	194	335	228.6	190.5	23.9	138	24			19.1	F12	29.7	180

ANSI CLASS 300 Dimensions inch/mm

SIZE Inch DN	d	L	H	W	D	B	T	H1	H2	S	N	M	ISO 5211	Weight lbs Kg	Torque lbs.in N.m
1½"	1.57	7.48	4.88	7.68	6.1	4.5	0.75	3.31	0.55	14	4	0.88	F05/	19.4	354
40	40	190	124	195	155	114.3	19.1	84	14			22.3	F07	8.8	40
2"	1.97	8.5	5.2	7.68	6.50	5	0.81	3.62	0.55	14	8	0.75	F05/	24.6	442.6
50	50	216	132	195	165	127	20.7	92	14			19.1	F07	11.2	50
2½"	2.56	9.49	5.98	11.81	7.48	5.87	0.94	4.13	0.67	17	8	0.88	F07/	38.6	619.6
65	65	241	152	300	190	149.2	23.9	105	17			22.3	F10	17.5	70
3"	3.15	11.1	6.46	11.81	8.27	6.63	1.06	4.57	0.67	17	8	0.88	F07/	56	885.1
80	80	282	164	300	210	168.3	27	116	17			22.3	F10	25.4	100
4"	3.94	12.01	7.64	13.19	10.04	7.87	1.19	5.43	0.87	22	8	0.88	F10/	89.07	1593.2
100	100	305	194	335	255	200	30.2	138	22			22.3	F12	40.4	180

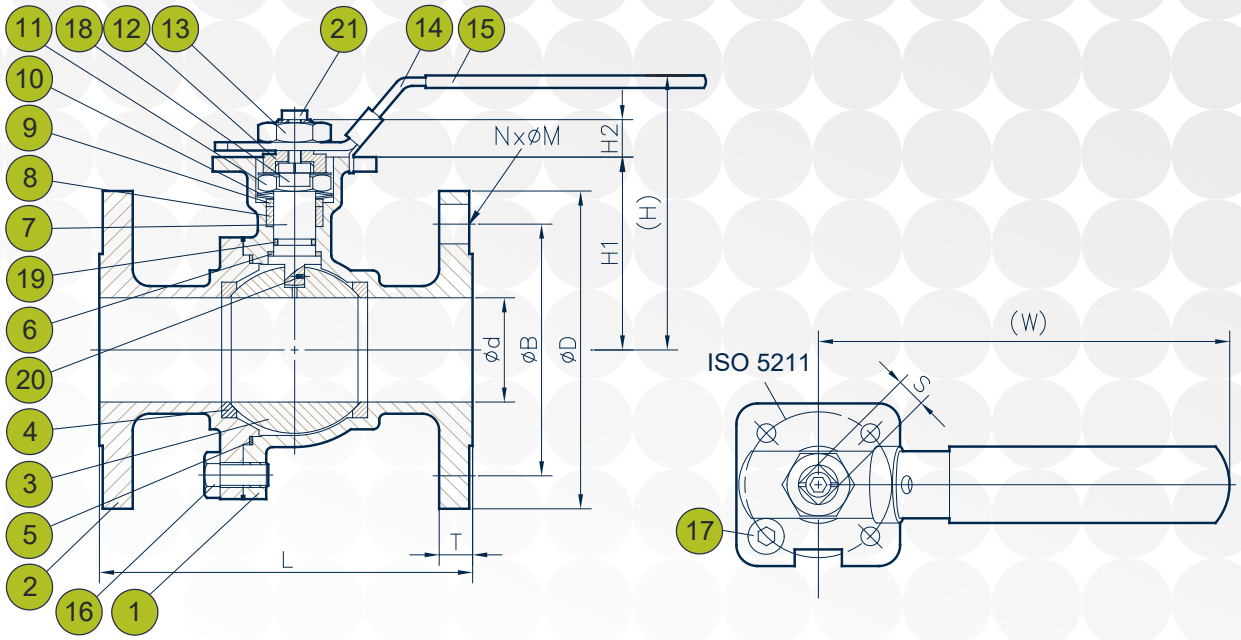
PN16 Dimensions inch/mm

SIZE Inch DN	ød	L	H	W	øD	øB	T	H1	H2	S	N	M	ISO 5211	Weight lbs Kg	Torque lbs.in N.m
1/2"~2" (DN15~DN50) same as PN40															
2½"	2.53	6.69	5.98	11.81	7.28	5.71	0.71	4.13	0.75	17	4	0.71	F07/	30.42	486.8
65	64	170	152	300	185	145	18	105	19			18	F10	13.8	55
3"	3.00	7.09	6.48	11.81	7.87	6.30	0.79	4.57	0.75	17	8	0.71	F07/	40.57	840.8
80	76	180	164	300	200	160	20	116	19			18	F10	18.4	95
4"	3.94	7.48	7.64	13.19	8.66	7.09	0.79	5.43	0.94	22	8	0.71	F10/	55.78	1593.2
100	100	190	194	335	220	180	20	138	24			18	F12	25.3	180

PN40 Dimensions inch/mm

SIZE Inch DN	ød	L	H	W	øD	øB	T	H1	H2	S	N	M	ISO 5211	Weight lbs Kg	Torque lbs.in N.m
1/2"	0.59	4.53	3.46	5.31	3.74	2.56	0.63	1.93	0.35	9	4	0.55	F03/	4.85	115.1
15	15	115	88	135	95	65	16	49	9			14	F04	2.2	13
3/4"	0.79	4.72	3.66	5.31	4.13	2.95	0.71	2.13	0.35	9	4	0.55	F03/	6.61	132.8
20	20	120	93	135	105	75	18	54	9			14	F04	3	15
1"	1.00	4.92	3.86	6.50	4.53	3.35	0.71	2.32	0.47	11	4	0.55	F04/	9.48	177
25	25	125	98	165	115	85	18	59	12			14	F05	4.3	20
1¼"	1.26	5.12	4.33	6.50	5.51	3.94	0.71	2.83	0.47	11	4	0.71	F04/	12.35	221.3
32	32	130	110	165	140	100	18	72	12			18	F05	5.6	25
1½"	1.51	5.51	4.56	7.68	5.91	4.33	0.71	3.03	0.63	14	4	0.71	F05/	15.87	265.5
40	40	140	116	195	150	110	18	77	16			18	F07	7.2	30
2"	1.97	5.91	4.88	7.68	6.50	4.92	0.79	3.35	0.63	14	4	0.71	F05/	21.16	389.4
50	50	150	124	195	165	125	20	85	16			18	F07	9.6	44
2½"	2.53	6.69	5.98	11.81	7.28	5.71	00.87	4.13	0.75	17	8	0.71	F07/	30.42	486.8
65	64	170	152	300	185	145	22	105	19			18	F10	13.8	55
3"	3.00	7.09	6.48	11.81	7.87	6.30	0.94	4.57	0.75	17	8	0.71	F07/	40.57	840.8
80	76	180	164	300	200	160	24	116	19			18	F10	18.4	95
4"	3.94	7.48	7.64	13.19	9.25	7.49	0.94	5.43	0.94	22	8	0.87	F10/	55.78	1593.2
100	100	190	194	335	235	190	24	138	24			22	F12	25.3	180

Note1: Torque measured at ambient temperature with no loading; safety factor is not included.
Note2: Datasheet for larger sizes available upon request.



NO	PART NAME	MATERIAL
1	BODY	CF8M / WCB
2	CAP	CF8M / WCB
3	BALL	CF8M / CF8
4	BALL SEAT	PTFE / RPTFE
5	BODY SEAL	PTFE & GRAPHITE
6	THRUST WASHER	PTFE & GRAPHITE
7	STEM	ASTM A276 316 / 304
8	STEM PACKING	GRAPHITE
9	GLAND	SS304
10	BELLEVILLE WASHER	SS301

NO	PART NAME	MATERIAL
11	STEM NUT	SS304
12	COUPLER	SS304
13	HANDLE NUT	SS304
14	HANDLE	SS304 / ZINC PLATE STEEL
15	HANDLE SLEEVE	VINYL
16	BODY BOLT	A2-70 / ISO 898-1 8.8
17	STOP PIN	SS304 / ISO 898-1 12.9
18	LOCKING SADDLE	SS304
19	O-RING	VITON
20	ANTI-STATIC DEVICE	SS316
21	COUPLER BOLT	SS304 / ISO 898-1 12.9

ANSI CLASS 300 Dimensions inch/mm

SIZE Inch DN	d	L	H	W	D	B	T	H1	H2	S	N	M	ISO 5211	Weight lbs Kg	Torque lbs.in N.m
1/2" 15	0.59 15	5.51 140	3.62 92	5.31 135	3.74 95	2.63 66.7	0.5 12.7	2.4 61	0.35 9	9	4	0.63 15.9	F03/ F04	-	159.3 18
3/4" 20	0.79 20	5.98 152	3.82 97	5.31 135	4.53 115	3.25 82.6	0.56 14.3	2.6 66	0.35 9	9	4	0.75 19.1	F03/ F04	-	177 20
1" 25	1.00 25	6.50 165	4.02 102	6.50 165	4.92 125	3.5 88.9	0.63 15.9	2.8 71	0.47 12	11	4	0.75 19.1	F04/ F05	11.02 5	221.3 25

Note: Torque measured at ambient temperature with no loading; safety factor is not included.

Flow Coefficients (Cv) of V-port Ball Valve

Valve Size	V Type	100%	90%	80%	70%	60%	50%	40%	30%	20%	10%
1/2"	10°	2.95	2.36	1.94	1.53	1.19	0.84	0.51	0.36	0.00	0.00
	30°	5.76	3.99	3.15	2.22	1.46	0.89	0.51	0.32	0.02	0.00
	60°	10.13	6.93	4.56	3.18	2.02	1.32	0.73	0.33	0.03	0.00
	90°	15.28	9.83	6.29	4.10	2.57	1.58	0.84	0.34	0.03	0.00
3/4"	10°	4.27	3.55	2.70	2.13	1.55	1.19	0.66	0.37	0.03	0.00
	30°	8.43	6.45	4.88	3.51	2.18	1.49	0.79	0.38	0.03	0.00
	60°	16.84	11.09	7.59	5.12	3.17	2.09	0.95	0.41	0.03	0.00
	90°	27.63	17.52	11.28	6.70	4.14	2.47	1.29	0.46	0.03	0.00
1"	10°	5.88	4.97	4.25	3.28	2.14	1.74	1.06	0.84	0.22	0.00
	30°	12.34	9.86	7.50	5.36	3.89	2.41	1.63	0.95	0.24	0.00
	60°	26.91	17.37	12.47	8.19	5.45	3.45	2.16	0.97	0.26	0.00
	90°	40.62	26.78	17.96	11.74	7.48	4.49	2.55	1.09	0.28	0.00
1-1/4"	10°	10.24	6.87	6.86	5.22	3.73	2.86	2.23	1.19	0.52	0.00
	30°	20.10	16.09	12.17	8.66	6.09	4.22	2.55	1.67	0.56	0.00
	60°	39.26	27.25	19.36	13.11	8.82	5.60	3.25	1.75	0.56	0.00
	90°	70.96	44.32	29.44	18.79	11.83	7.44	4.51	2.32	0.75	0.00
1-1/2"	10°	12.76	11.06	7.65	5.94	5.21	3.50	2.41	0.89	0.00	0.00
	30°	28.60	22.35	15.23	11.38	8.30	5.48	2.46	1.37	0.46	0.00
	60°	55.73	40.16	26.54	17.53	11.87	7.31	3.07	1.59	0.34	0.00
	90°	96.99	62.87	38.90	24.95	15.69	9.73	5.46	2.37	0.62	0.00
2"	10°	21.53	16.98	16.01	12.47	10.07	5.26	4.43	2.37	0.79	0.00
	30°	47.47	37.46	27.32	20.75	14.12	9.65	6.53	3.05	1.15	0.00
	60°	92.06	69.69	49.08	31.92	21.36	13.98	8.52	4.21	1.31	0.00
	90°	173.40	110.49	73.44	48.50	29.56	18.56	11.54	5.13	1.44	0.00
2-1/2"	10°	35.16	29.35	24.60	19.68	14.70	10.63	7.63	3.85	1.32	0.00
	30°	79.21	63.94	49.22	34.32	25.24	15.90	9.98	4.98	2.16	0.00
	60°	150.59	107.54	80.65	52.93	34.89	22.72	14.87	6.44	2.02	0.00
	90°	253.06	180.69	119.78	84.32	50.76	32.69	21.11	11.67	1.79	0.00
3"	10°	47.02	32.65	26.34	19.84	15.89	12.27	7.97	3.98	1.81	0.00
	30°	105.15	80.57	58.10	42.90	29.96	19.58	12.14	5.04	1.96	0.00
	60°	190.26	136.08	112.14	82.22	54.10	27.60	15.80	13.54	1.43	0.00
	90°	388.90	235.03	157.48	99.49	64.78	38.40	22.20	11.64	2.10	0.00
4"	10°	58.97	52.74	43.58	33.52	25.93	18.16	11.12	7.42	3.66	0.00
	30°	160.29	131.67	100.78	72.91	53.71	35.10	19.49	10.73	3.90	0.00
	60°	332.17	243.98	174.60	118.86	81.15	51.80	24.79	15.34	6.48	0.00
	90°	652.17	401.89	262.88	170.63	111.42	73.39	43.49	24.32	7.20	0.00



UHMWPE – Ultra High Molecular Weight Polyethylene

Valve Seat Selection

Please contact your sales for more properties of materials



Seat Code	Description	Temprature Range
VIRGIN PTFE	The most common material of seat ring. With excellent chemical resistance, PTFE can be used almost in all media.	-20°C to 180°C (-4°F to 350°F)
RPTFE (15% GLASS FILLED PTFE)	Similar to PTFE, but offers higher pressure capacity while temperature is increasing. The material itself is harder than conventional PTFE. Please specify the application due to confusion with PTFE.	-20°C to 180°C (-4°F to 350°F)
CARBON FILLED PTFE	Specially used for steam and thermal oil, with low coefficient of friction. The chemical resistance is similar to PTFE and RPTFE. 15% carbon and 25% carbon are provided.	-20°C to 200°C (-4°F to 392°F)
S/S POWDER FILLED PTFE	Combined with the strength of stainless steel and lubricity of PTFE, 50% SS316 powder is added to 50% PTFE. Abrasion resistance of metal and higher pressure rating than RPTFE.	-20°C to 200°C (-4°F to 392°F)
TFM1600	TFM is a modified PTFE which reduces permeation to provide advantages for corrosive applications or those applications where PTFE is used as a barrier to protect against or contain aggressive chemicals.	-40°C to 180°C (-40°F to 350°F)
DELRIN	High pressure seat material. Delrin material is able to sustain pressure up to 5000 psig. However, it is not recommended to use in oxygen applications.	-20°C to 80°C (-4°F to 180°F)
PEEK	Highest pressure resistance. Excellent in recovery from deformation, and high degree of dimensional stability. High mechanical strength.	-20°C to 240°C (-4°F to 464°F)

More Automation Choices

Pneumatic Actuators

VT Series – Rack & Pinion Type



The VT Series rack & pinion actuators are reliable quality products, which can be relied on to perform faultlessly under any difficult circumstances.. For double-acting mode , the actuator is available in 11 sizes. Under the provision of common power supply (80 psi), the output torque ranges from 8.02 to 2877 Nm (71 to 25469 in-lbs). For single-active, also known as spring return type, 10 sizes are available.

Electric Actuators

JS Series



The Jexme electric actuators are made in new sizes from 34.3 to 597.8 Nm (303.6 to 5290.8 in-lbs), which are generally applied for ball valves with maximum size 6", and butterfly valves with maximum size 12", and are available in on-off or modulating versions, with a choice of duty cycles. All models include standard manual override, visual position indicator, torque limiter and adjustable-position switches.

VSII™ Namur Type Solenoid Valves

for Valve Actuator



VSII™ namur type solenoid valve is specifically engineered to pilot pneumatic process valve actuators. Using enhanced materials, VSII™ has an operating temperature range from -20°C up to 50°C (-4°F up to 140°F). The most notable improvement is the patened rotary sealing plate. It features in the field conversion form 3/2 to 5/2 action without the need for tools or additional parts, and incorporates exhaust feedback to increase actuator spring life span.

Other Fire-safe Products

FSB 35	FSB 26	FSB 23	FSB 1D	FSB 22
				
2000 psi (140 bar) DN8 - DN100	6000 psi (420 bar) DN8 - DN50	3000 psi (210 bar) DN8 - DN50	PN16/PN40 DN15 - DN150	2000 psi (140bar) DN8 - DN50

How to order

VALVE TYPE	PORT	BODY MATERIAL	SEAT	TRIM	TYPE OF CONNECTION	PRESSURE RATING	SPECIAL REQUEST	SIZE OF CONNECTION	OTHER
A	B	C	D	E	F	G	H	I	J

die erste®

Taiwan
5F-1, No. 936,
Wen-Xin Rd., Sec. 4,
Taichung City 406, Taiwan
T +886 (4) 2231 0059
F +886 (4) 2236 0236

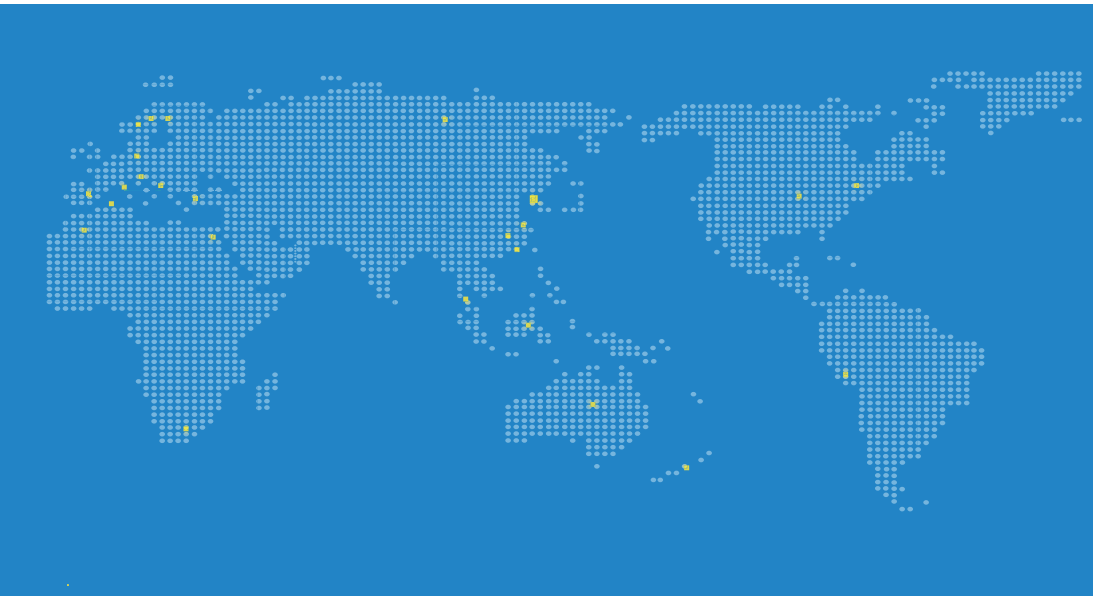
Shanghai
Rm. 1803-A, No.
678, Gu-Bei Rd.,
Shanghai, China
T +86 (21) 5777 3810
F +86 (21) 5777 3819

DIE-ERSTE INDUSTRY CO., LTD.
www.die-erste.com | sales@die-erste.ocm

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Due to continuous development of the products, DIE ERSTE reserves the right to alter the dimension and information contained in the document as required without notice. For specific performance data and proper material selection, please consult with your DIE ERSTE representatives.

NOAH
Actuation

Part-turn Actuator





NOAH ACTUATION CO., LTD

Unit 47, 425 Gilju-ro(70-1, Chunui-dong), Bucheon-si, Gyeonggi-do, Korea

TEL +82-2-806-4263 / FAX +82-2-806-4266

Overseas Sales: noah@emico.co.kr

Domestic Sales: actuator@emico.co.kr

www.emico.co.kr

N2 BS C E – Ver.A



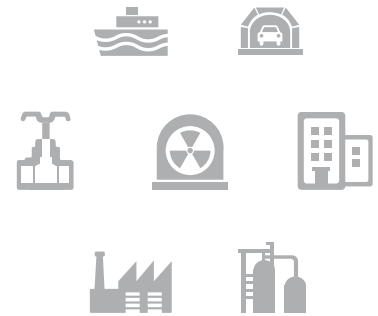
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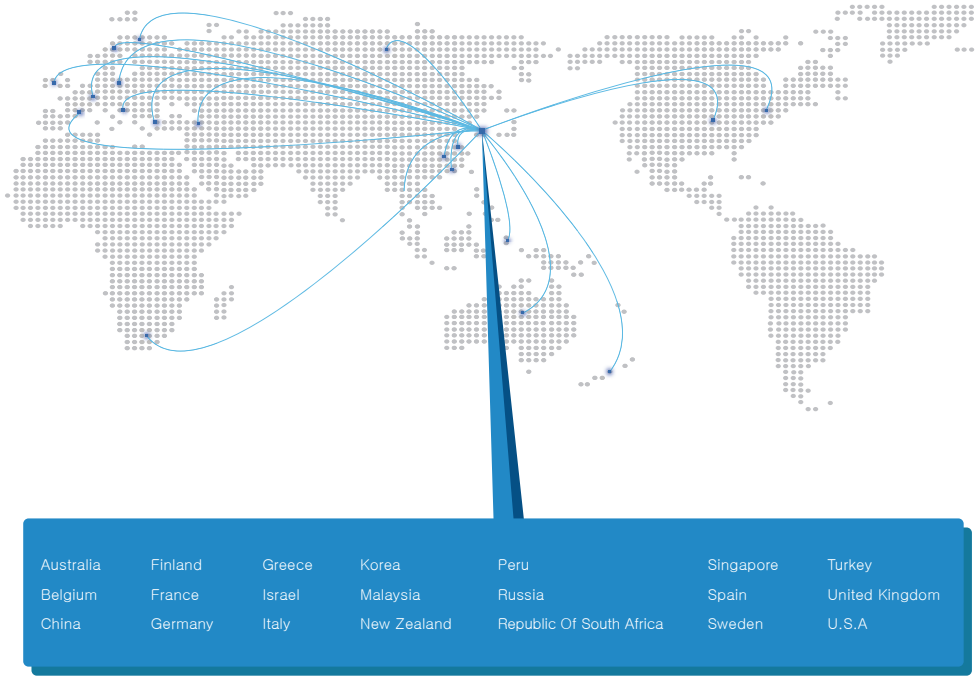
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NOAH, founded in 1977, is the leading manufacturer of electric actuators in Korea and provides the best quality products with high technology and satisfactory services.

NOAH supplies electric actuators especially to buildings, plant, steelworks, power plants over 40 countries as well as domestic sales.
NOAH has launched spring return actuator for the first time in Korea and accelerated to expand market and to satisfy customers' need by specialized products.
We have made concerted efforts with expertise in electric actuators and continuous investment in R&D to be the world best in the market.

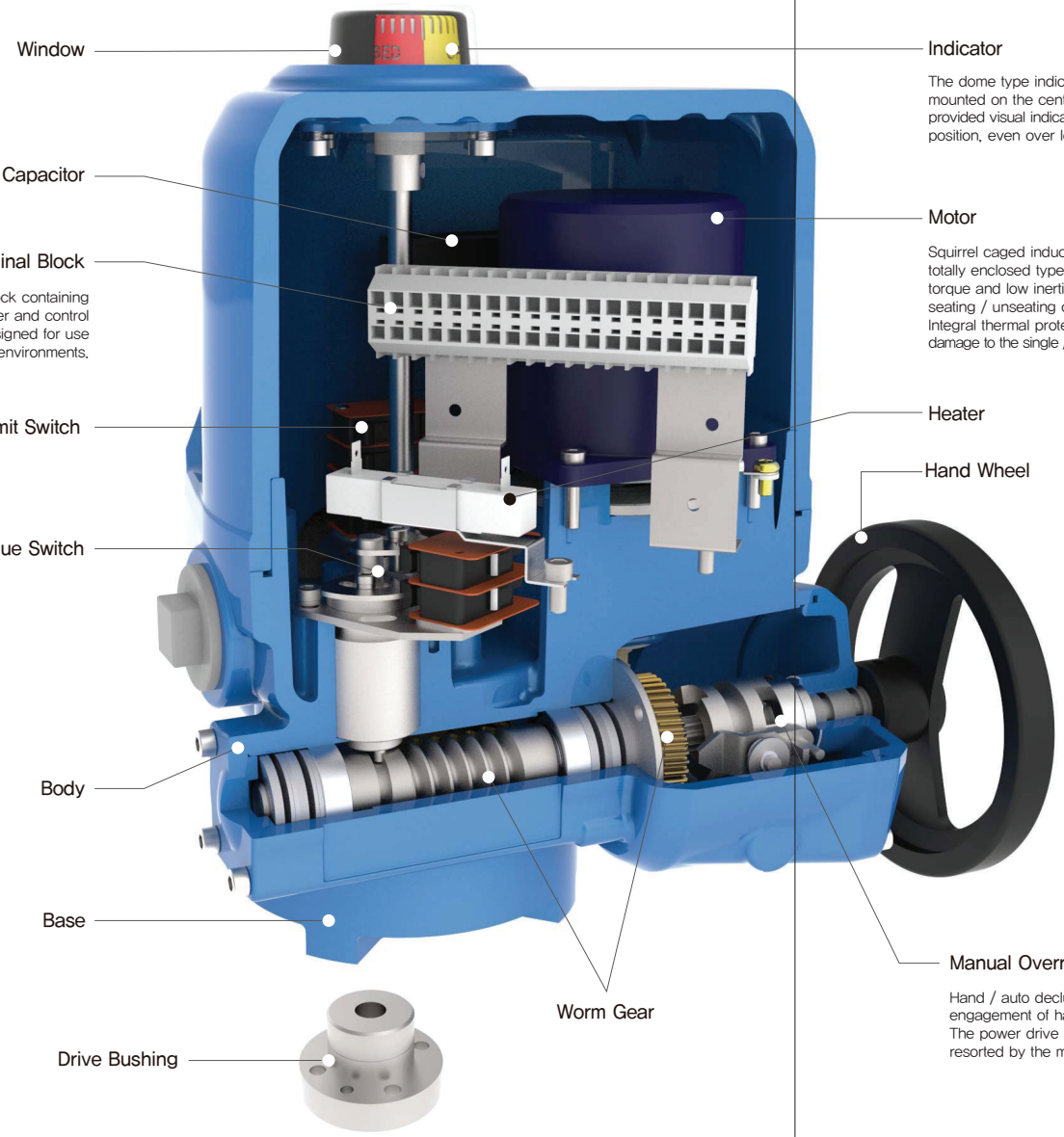
We promise we do everything we can to supply the reliable products and competent services.





Australia	Finland	Greece	Korea	Peru	Singapore	Turkey
Belgium	France	Israel	Malaysia	Russia	Spain	United Kingdom
China	Germany	Italy	New Zealand	Republic Of South Africa	Sweden	U.S.A

Configuration



- **SEALING**

Standard enclosure with o-ring sealing is watertight to IEC IP67, NEMA 6. The actuator is available with optional explosion proof enclosure.

- **WIRING**

Electric wiring of control circuit is standardized for single and three phase power supply in a single module. Multiple terminal contacts sufficiently cover additional requirements such as auxiliary contacts for interlocking and other options.

- **COMPONENT ARRANGEMENT**

Mechanical and electrical module can be separated easily to improve assembling, maintenance and alteration of electrical requirements. Actuator has enough internal space for optional accessories.

- **HAND WHEEL**

Size of hand wheel is designed for safe and efficient emergency manual operation.

- **MANUAL OVERRIDE**

Hand / auto declutching lever for hand wheel engagement. The power drive is automatically restored by motor start.

- **ADAPTION**

Base mounting is standard to ISO5211.
Drive bushing is removable for maching to valve stem requirement. The actuator position on the valve can be selected for 4 positions by means of 4 bolt holes in the drive bushing.

- **HEATER**

A space heater inside the actuator prevents condensation due to temperature and weather changes. Standard heater keeps all electrical components in the actuator clean and dry.

- **LIMIT SWITCHES**

The limit switch is activated by means of a simple and yet reliable cam mechanism mounted and driven by the center column. The valve position can be accurately and easily set with the simple adjustable switch mechanism. The set position is permanent and is not affected by over-travel resulting form manual operation.

- **TORQUE SWITCHES**

Cam activated torque switches are easily adjustable to provide over-load protection.

- **SELF LOCKING**

Rolled steel wormgear on aluminium bronze wormwheel self-locks to prevent valve back drive on control signal or power failure.

- **WORM GEAR**

The precision worm and worm wheel mechanism transfers high torque with high efficiency and low sound level (Max 50db), even though small in size. Additional benefits include low backlash and longer life. Various output torques (60N.m~3,500N.m) cater for valves from 2" to 24"

Performance

Type	Max Output Torque		Operating Time (90°/sec)		Rated Current (A) 60Hz							Motor			Duty Cycle	Max Stem Dia	Handle Turns	Weight
	Kg.m	N.m	50Hz	60Hz	DC 12V	DC 24V	AC 110V	AC 220V	AC 230V	AC 380V	AC 440V	DC (W)	AC (W)	Class	S4 (%)	mm		kg
NA006	6	60	18	16	7.3	3.0	0.85	0.42	0.42	0.15	0.15	15	15	F	50	22	8.5	11
NA009	9	90	20	17	8.2	4.3	1.35	0.55	0.55	0.19	0.19	25	25	F	50	22	8.5	11
NA015	15	150	23	20	10.2	4.3	1.75	1.0	1.0	0.3	0.33	40	40	F	50	22	10	14
NA019	19	190	23	20	12	5.0	1.9	1.05	1.05	0.31	0.33	40	40	F	50	22	10	14
NA028	28	280	29	25	14	7.0	2.0	1.05	1.05	0.35	0.32	40	40	F	50	32	13.3	17
NA038	38	380	29	25	19.8	13.5	2.1	1.3	1.3	0.4	0.37	120	60	F	30	32	13.3	17
NA050	50	500	29	25	24.5	14.5	3.8	1.45	1.45	0.51	0.5	120	90	F	25	32	13.3	17
NA060	60	600	38	31	24.7	15.0	2.4	1.6	1.6	0.47	0.48	120	90	F	25	42	15	24
NA080	80	800	38	31	–	16.0	3.15	2.0	2.0	0.62	0.62	120	180	F	25	42	15	25
NA100	100	1000	38	31	–	–	3.5	2.1	2.1	0.7	0.7	–	180	F	25	42	15	25
NA120	120	1200	36	30	–	–	4.0	2.4	2.4	0.9	0.75	–	180	F	25	42	15	25
NA150	150	1500	111	93	–	–	2.4	1.6	1.6	0.47	0.48	–	90	F	25	75	45	65
NA200	200	2000	114	93	–	–	3.15	2.1	2.1	0.62	0.62	–	180	F	25	75	45	65
NA250	250	2500	114	93	–	–	3.5	2.2	2.2	0.7	0.7	–	180	F	25	75	45	65
NA300	300	3000	144	120	–	–	3.15	2.1	2.1	0.62	0.62	–	180	F	25	75	60	65
NA350	350	3500	144	120	–	–	3.5	2.2	2.2	0.7	0.7	–	180	F	25	75	60	65

Standard Specification

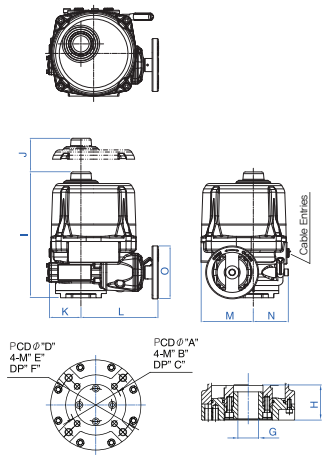
Enclosure	Watertight Ingress Protection 67 NEMA 6	
Ambient Temperation	–20℃ ~ +70℃ , 150℃ / 1hr (Option: –60℃, 400℃ / 1hr)	
Power Supply	110 ~ 230 VAC 50/60Hz , 380 / 440 VAC 50/60Hz (Option : AC 24V , DC 24V, DC 12V)	
Torque Switches	2 Open / Close (Except NA006, NA009)	
Limit Switches	2 Open / Close	
Stall Protection	Built – in Thermal Protection	
Travel Angle	90±5℃	
Indicator	Continuous Position Indicator	
Manual Override	Hand / Auto Declutching Mechanism	
Self Locking	Provided by means of Worm Gearing	
Mechanical Stops	External Adjustable Screws	
Space Heater	20W	
Conduit Entries	NA006~009	2–PF 3/4" (Option : PF 1", NPT 3/4", NPT 1", M20 Pitch1.5, M25 Pitch1.5)
	NA015~350	3–PF 3/4" (Option : PF 1", NPT 3/4", NPT 1", M20 Pitch1.5, M25 Pitch1.5)
Lubrication	Shell Gadus S2 V220 2	
External Material	Aluminium Alloy	
Surface Treatment	Anodizing	
External Coating	Polyester(TGIC–Free)	

Optional Specification

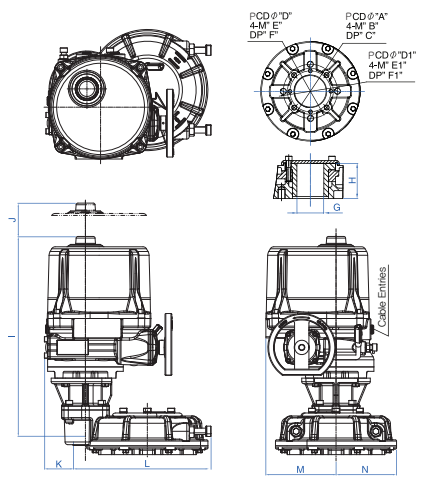
E X P	Explosion Proof / Ex d IIC T4 – S2 15min
IP68	Watertight Enclosure IP68 / NEMA 6P
A L S	Auxiliary Open, Close Limit Switches
A T S	Auxiliary Open, Close Torque Switches (Except NA006, NA009)
P I U	Potentiometer (1K–Ohm)
P C U	Proportional Control Unit Input : DC 4–20mA, 0–5VDC, 0–10VDC, 1–5VDC, 2–10VDC / Output : DC 4–20mA
C P T	Current Position Transmitter / Output : DC 4–20mA
L C U	Local Control Unit
I M S	Integral Motor Starter (On–Off Action)
E X T	Travel Angle (120 °, 135 °, 180 °, 270 °, 300 °)
D C M	Power Supply DC 24V (NA006 ~ NA080), DC 12V (NA006 ~ NA060)
Field–Bus	Profi–Bus, Mod–Bus, Can–Bus

Dimension

MODEL : NA006~NA120



MODEL : NA150~NA350



Type		NA006 NA009	NA015 NA019	NA028 NA038 NA050	NA060, NA080 NA100, NA120	NA150, NA200, NA250, NA300, NA350	
A		PCD70	PCD70	PCD102	PCD125	PCD125	
B		4–M8	4–M8	4–M10	4–M12	4–M12	
C		12	12	18	22	22	
Flange ISO5211		F07	F07	F10	F12	F12	
D	D1	–	PCD102	PCD125	PCD140	PCD140	PCD165
E	E1	–	4–M10	4–M12	4–M16	4–M16	4–M20
F	F1	–	15	18	22	22	25
Flange ISO5211		–	F10	F12	F14	F14	F16
Option		PCD82	PCD82	–	PCD102(F10)	–	
G(MAX)	Key	22	22	32	42	75	
	Square	20	20	26	34	65	
H		46	46	55	62	100	
I		269	298	307	336	547.5	
J		108	108	130	178	178	
K		51	81	83	103	103	
L		179	183	198	217	315	
M		103.5	124	142	176	176	
N		78.5	83	88	103	152	
O		102	102	125	155	170	
Cable Entries		2–PF3/4?	3–PF3/4?	3–PF3/4?	3–PF3/4?	3–PF3/4?	
		2–M20x1.5	3–M20x1.5	3–M20x1.5	3–M20x1.5	3–M20x1.5	
		2–M25x1.5	3–M25x1.5	3–M25x1.5	3–M25x1.5	3–M25x1.5	
		2–NPT1?	3–NPT1?	3–NPT1?	3–NPT1?	3–NPT1?	
		2–NPT3/4?	3–NPT3/4?	3–NPT3/4?	3–NPT3/4?	3–NPT3/4?	

NA Option Specification

Optional

ALS (Auxiliary Limit Switches)

Provide dry contact signal to check valve's positions (cam switches structure).

ATS (Auxiliary Torque Switches)

Provide dry contact signal send to customer's panel as fault signal (cam switches structure).

CPT (Current Position Transmitter)

Combined with P.I.U and transfer output signal (DC 4–20mA) from P.I.U's value of resistance.

- Output Signal : DC 4–20mA



PCU (Proportional Control Unit)

Combined with P.I.U and control the valve's position proportionally by input signal and provide valve's position as their output signal.

- Input signal : DC 4–20mA, 0–5VDC, 0–10VDC, 1–5VDC, 2–10VDC
- Output signal : DC 4–20mA



PIU (Position Indication Unit)

Provide resistance value (0~1KΩ) according to valve's position.

LCU (Local Control Unit)

LCU can be installed either on the actuator or distantly by cable. It can be controlled conveniently as it consists of Local / Remote Switch, Open / Stop / Close Switch and LED Lamp



Field–Bus

Field–Bus can control 126pcs of electric actuators at the same time using communication hardware system based on PC.

(Profi–Bus PROFIBUS, Mod–Bus Modbus, Can–Bus)
For more information please contact noah actuation.





NA Integral Standard Specification

Main Power	110/220 VAC 50/60Hz , 380/440 VAC 50/60Hz	
Internal Control Power	24 VDC	
External Control Power	110 VAC, 24 VDC	
Torque Switches	2 Open / Close (Except NA006, NA009)	
Limit Switches	2 Open / Close	
Control Unit	1. Non Instrusive Push Butttons [Open/ Stop/ Close] 2. Non Instrusive Selector Switch [Remote / Off / Local] 3. Reversing Contactor 4. Phase Discriminator	
Position Indicator	Digital Display (0~100%)	
Remote Dry Contact (Max 250VAC 5A)	1. Full Open / Close 2. Opening / Closing 3. Open / Close Over Torque 4. Monitor (Remote / Local)	
Conduit Entries	Standard	1–PF 1" , 2–PF 3/4"
	Option	1–NPT 1" , 2–NPT 3/4" 1–M25 Pitch 1.5 , 2–M20 Pitch 1.5
Potentiometer	0 ~ 1 KΩ	
Lubrication	Shell Gadus S2 V220 2	
External Materials	Aluminium Alloy	
Surface Treatment	Anodizing	
External Coating	Polyester(TGIC–Free)	

NA Integral Optional Specification

P C U	PCU enables the actuator to be controlled form a distance. Input: DC 4–20mA, DC 0–5VDC, 0–10VDC, 1–5VDC, 2–10VDC / Output: DC 4–20mA
C P T	CPT outputs signal by converting the actuator's place value to ampere. Output Signal: DC 4–20mA
Field Bus	FDB is used when controlling actuators using communication hardware system based on PC. Profi–Bus PROFIBUS, Mod–Bus Modbus, Can–Bus

rotork®

Keeping the World Flowing
for Future Generations



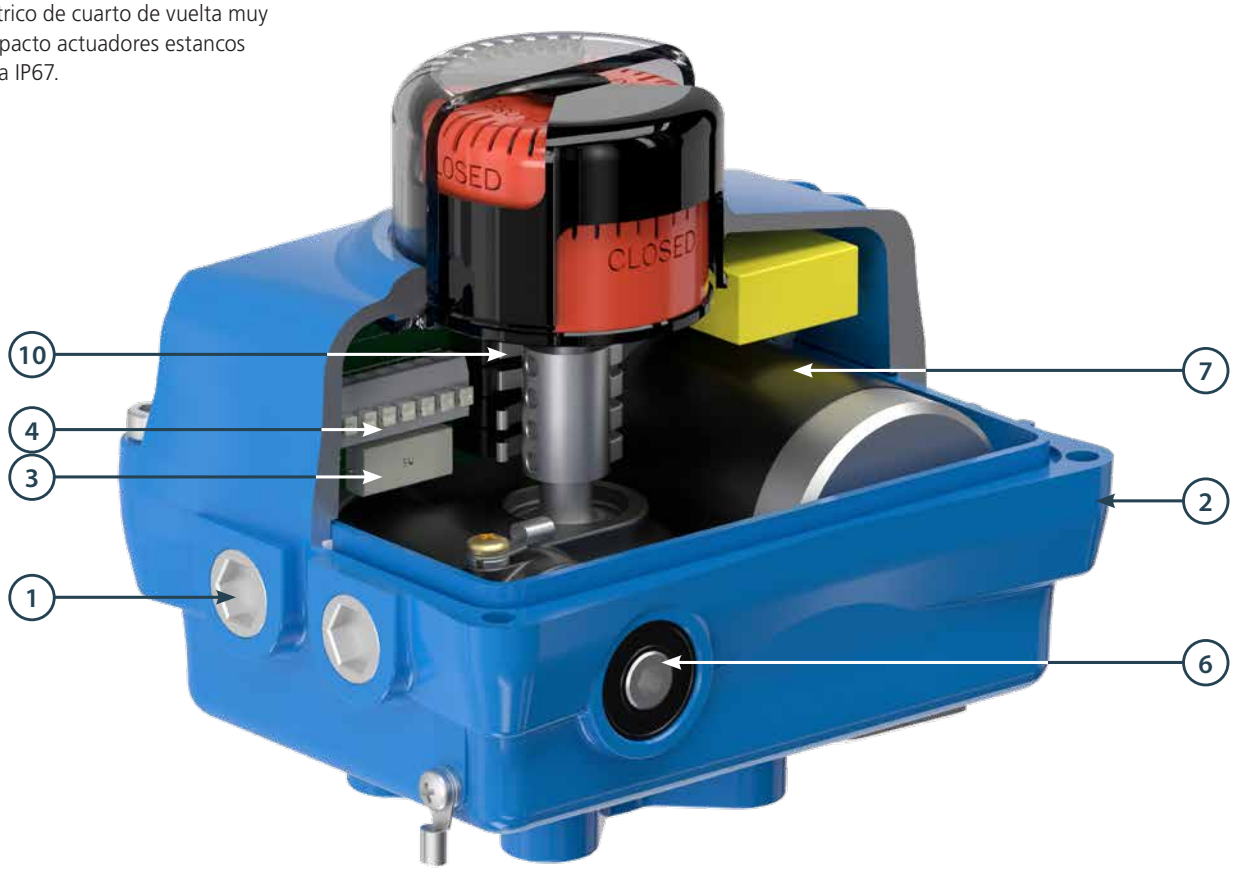
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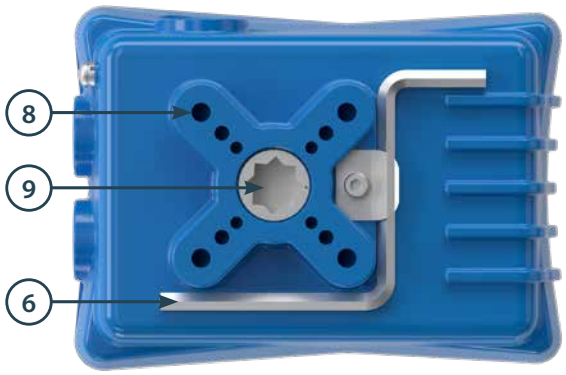
Gama Noah SA

Actuadores eléctricos compactos
de cuarto de vuelta

Noah SA

Eléctrico de cuarto de vuelta muy compacto actuadores estancos hasta IP67.







Interior del actuador Noah SA

1. Entrada de cables

Especificación estándar: 2-PF ½"

Opcional: M20 x Paso 1,5, NPT ½"

2. Caja exterior

La fundición de aleación de aluminio está tratada con película de óxido y luego recubierta de polvo (poliéster, sin TGIC) para proporcionar el mejor rendimiento de protección contra la corrosión en cualquier entorno.

Opcional - A prueba de explosiones: Exd IIB T4
(excepto modelo SA003)

3. Resistencia de caldeo interna

La resistencia interna incorporada evita la condensación y la formación de humedad en el interior del actuador para proteger los componentes internos.

4. Bloque de terminales

La regleta de bornes con estructura WAGO permite un cableado sencillo y es muy resistente a las vibraciones y a la corrosión.



5. Indicador de posición

Una lámpara LED dentro del indicador ilumina la tapa cuando se completan las operaciones de apertura total y cierre total.
El modelo SA estándar dispone de una cubierta abovedada para el indicador de posición, mientras que la versión antideflagrante utiliza un diseño plano muy robusto apto para la certificación antideflagrante.



6. Funcionamiento manual

La gama SA permite el accionamiento manual insertando la llave incluida (fijada en la base del actuador) en el lateral del actuador como se muestra a continuación y girando en sentido horario o antihorario para accionar manualmente el actuador.



7. Motor

Las tensiones de alimentación a elección del cliente incluyen monofásica (110/220 VAC) y 24 VDC. Los actuadores de la gama Noah SA incluyen un protector térmico integrado para proteger el motor en caso de sobrecarga.

8. Base

Dimensiones de montaje según la norma ISO5211, lo que facilita el montaje directo en válvulas y compuertas

Especificaciones estándar - F03, F05, F07

9. Conexión eje de salida / vástago de válvula

La gama SA incluye una conexión estándar de vástago de válvula con 14x14, con insertos opcionales de 11x11 y 9x9 disponibles.

Nota: SA003 : sólo 11x11, 9x9

10. Final de carrera

Se incluye un final de carrera mecánico tipo leva que controla con precisión la posición de las válvulas y los dispositivos giratorios. Su diseño y estructura sencillos permiten un ajuste fácil.

Especificaciones estándar



Grado de estanqueidad	Grado de protección IP67
Temperatura de funcionamiento	Tª amb -20 a +70 °C (-4 a +158 °F)
Alimentación	110 / 220 VAC 50/60 Hz / AC/DC 24 V
Indicador	Tipo cúpula (LED incorporado)
Final de carrera	2 uds Abrir/Cerrar + 2 uds Abrir/Cerrar (250 VAC) Contactos sin tensión
Ángulo de recorrido	90° ±5° (hasta 270° cuando está extendido)
Autobloqueante	Prevención de la rotación inversa mediante tornillo sin fin de dos etapas
Mando manual	Con una llave en L (hexagonal de 6 mm)
Entradas de cable	2-PF ½" (Opciones: 2-M20 x Paso 1,5, 2-NPT ½")
Resistencia de caldeo	5 W
Material de la carcasa	Aluminio
Lubricante	Shell Gadus S2 V220 2
Acabado de pintura estándar	Anodizado

Datos de rendimiento

Modelo	Opciones	Par de maniobra		Tiempo de funcionamiento (90°/seg		Potencia del motor (W)	Corriente nominal (A) 60 Hz				Ciclo de trabajo	Número de vueltas del volante	Peso		Rango de aplicación de la válvula (10K)
							1 fase (AC)			DC					
		Nm	lbf.ft	50 Hz	60 Hz	DC motor	24 V	110 V	220 V	24 V	S2 (min)		kg	lbs	
SA005L	PCU	50	37	17	14	25	1,8	0,35	0,23	1,8	15	6	3,2	7,1	Válvula de Mariposa: ~65A Válvulas de Bola: ~32A
	SCP	50	37	8	8	25	-	0,8	0,51	0,25		6	4,3	9,5	
SA009L	PCU	90	66	32	26	25	2,1	0,35	0,25	2,1	15	4,5	3,2	7,1	Válvula de Mariposa: ~100A Válvulas de Bola: ~50A
	SCP	90	66	13	15	25	-	0,8	0,51	2,25		4,5	4,3	9,5	

Extras opcionales

AC24V	Tarjeta de control para alimentación de 24 VAC
Unidad de potenciómetro (PIU)	Emite la posición del actuador como una señal de 0-1 kΩ
Unidad de control proporcional (PCU)	Se utiliza para controlar el actuador de forma que el grado de apertura/cierre de la válvula sea proporcional a la señal de entrada.
Transmisor de posición de corriente (CPT)	Se utiliza cuando se cambia el valor de resistencia de un potenciómetro conectado directamente al actuador a un valor de corriente y se utiliza la posición del actuador como valor de corriente.
Super capacitador (SCP)	Un dispositivo de super capacitador está incorporado en el actuador de modo que cuando se corta la corriente, funciona en la posición abierta/cerrada/parada establecida por el usuario.

Tarjeta PCU

La unidad de control proporcional (PCU) funciona hasta que el estado actual de apertura y cierre coincide con el valor establecido por el sistema de control externo. Proporciona la función de salida y transmisión de una señal de 4-20 mA en proporción al estado de posición actual (0-100%).

Banda muerta

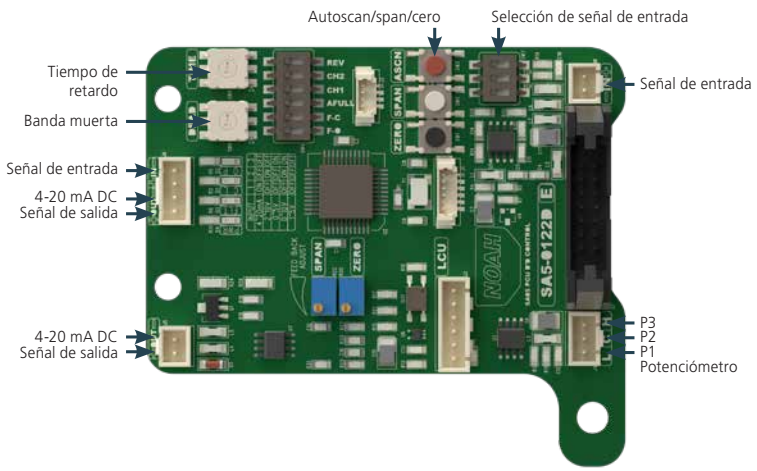
El actuador intenta detenerse en la posición exacta en función del valor ajustado, pero para evitar la caza, se establece un rango de zonas muertas que permiten al actuador abrir y cerrar repetidamente mientras intenta alcanzar la posición exacta debido a la inercia mecánica del motor o de la válvula. (±0,3 mA)

Tiempo de retardo

La señal de entrada puede verse afectada por ruidos momentáneos o frecuencias externas. El tiempo de retardo se ajusta (mín. 0,5 seg.) para evitar el fenómeno de caza causado por el funcionamiento con la misma entrada de señal durante un cierto periodo de tiempo.

Escaneo automático

La función de escaneo automático opera automáticamente desde la posición totalmente cerrada a la posición totalmente abierta con una pulsación de 2 segundos, y guarda cada posición.



Placa de alimentación

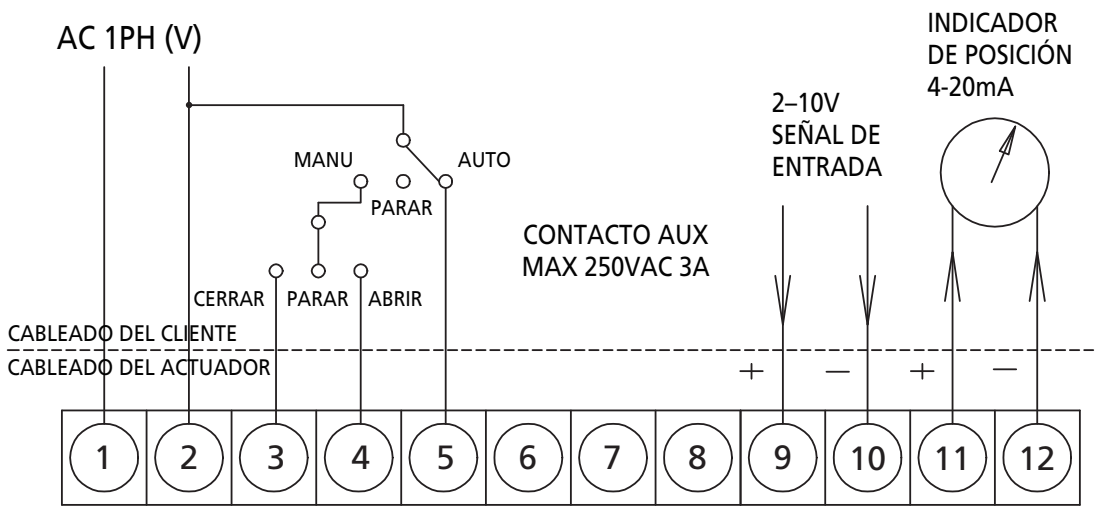
Esta tarjeta convierte la energía de una fuente externa para que el actuador la utilice para operar la tarjeta PCU.

Potenciómetro

Responsable de la resolución del actuador mediante el uso de 0-1 kΩ y desempeña un papel en el reconocimiento del valor de posición actual. (Opcional 135 Ω)

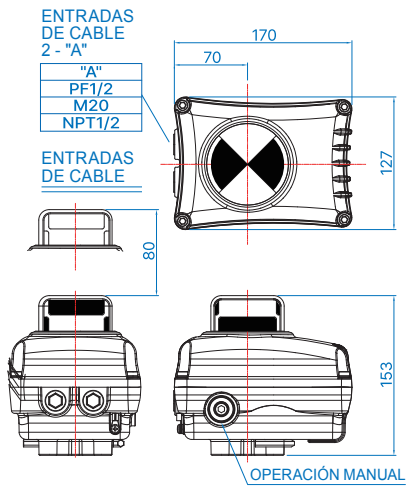
Esquema eléctrico estándar

Diagrama cableado estándar de tipo PCU

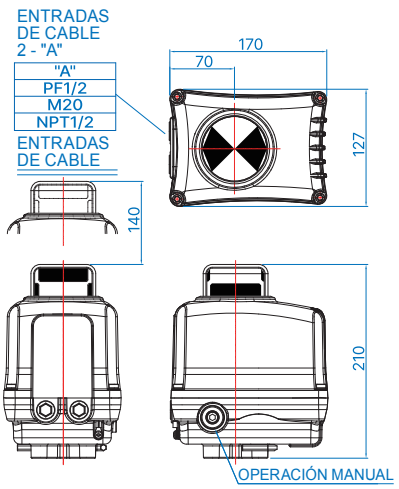


Datos dimensionales

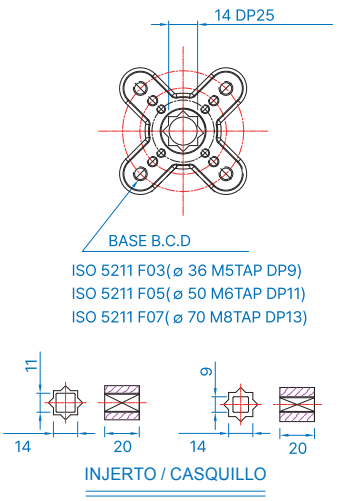
Noah SA005, SA009



Noah SA005L, SA009L

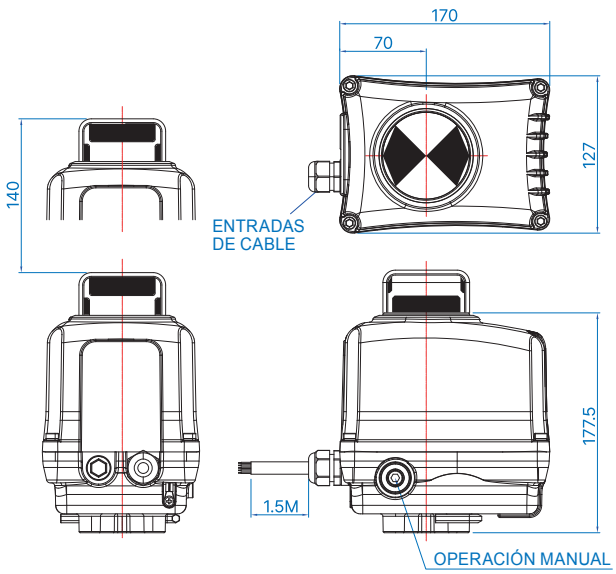


Base

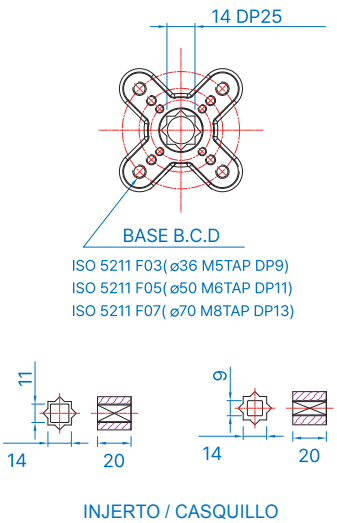


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Noah SCP



Base



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