



HCAG-PA-25P R1

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HKC

PNEUMATIC ACTUATORS & LIMIT SWITCH BOXES

Pneumatic Rack & Pinion Actuator

Pneumatic Scotch Yoke Actuator

Heavy-duty Pneumatic Actuator

Declutchable Gear Override

Limit Switch Box





Company Introduction

Since 1991, HKC has been dedicated to delivering the highest quality products and services to our customers. Furthermore, we have made significant efforts to lead and advance the rapidly changing industry through continuous innovation management, technical development, human resource management, and more.

With a strong foundation in technical theory and diverse experience, HKC possesses unique know-how that serves as the driving force behind the development and scientific production of all our products. As a result, HKC is evolving into a first-class corporation that leads the valve automation industry with cutting-edge technologies.



HKC places great importance on corporate social responsibility.

We actively seek opportunities for mutual progress, sharing, and development with our partners and customers. Moreover, our customer-focused management approach ensures that all our services prioritize customer satisfaction above all else.

HKC will continue to strive to become a global leading corporation in the valve automation industry of the 21st century. We aim to achieve this by making significant contributions to the future through the provision of the highest quality products, continuous development of new technologies, and unwavering customer service.



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Declutchable Gear Override

Heavy-duty Pneumatic Actuator

ET Series

Features

- ※ Safe and reliable operation.
- ※ Quarter-turn (ETS) or linear (ETL) valve applications.
- ※ Wide range of torque outputs.
- ※ Available in either double acting or spring return configurations.
- ※ Versatile modular design.
- ※ MSS or ISO flange standard
- ※ A complete customized solution with pneumatic accessories attached.

Description

Providing safe and reliable operation, the ET Series heavy-duty pneumatic actuators are designed for large, high torque quarter-turn valve applications (ETS) as well as linear valve applications (ETL). The quarter-turn ET Series actuators are available in both single acting (spring return) or double acting configurations

▣ Wide range of application

With reliable and stable operation, the ET Series is used across a wide range of industries, including:

- ※ Oil & gas
- ※ Powerplant
- ※ Chemical & petrochemical
- ※ Water
- ※ Marine & shipbuilding

▣ Inherently Safe Design

The fully welded spring module of the ET Series actuators has been designed to be inherently safe. Located inside the spring case, the springs are held by the piston and piston needle, hence removing the possibility of accidental release of spring force. The different springs may be used to yield different torque outputs.

▣ Robust and Reliable Design

The ET Series actuators are robustly designed to have thick and solid components so it can provide safe and reliable operation with long actuator life. The external surfaces are coated to protect from harsh and corrosive environment while the internal components are permanently lubricated to provide low friction.

▣ Complete customized solution

With years of valve automation experience and manufacturing expertise since 1991, HKC provides not only the actuators but also actuators with pneumatic accessories, a complete customized solution to the needs of our customers.

▣ Versatile Modular Design

The ET Series modular design allows easy assembly and disassembly of its components to meet a variety of applications. The combination of different size of pneumatic cylinder and yoke, along with different size of springs, results in different torque characteristics, all of which can be easily configured, if necessary, to give optimum torque outputs.

▣ Certificates and approvals

- ※ PED
- ※ SIL 2/3
- ※ RINA type approval



Specification

◆ Standard Specification

Material	Steel alloy & epoxy-polyurethane coated
Torque range	495 - 250,000 Nm
Operating pressure	3 - 8 bar
Travel angle	0 to 90°
Ambient temperature	-20 to +80 °C
Lubrication	Grease moly (EP type)
Manual operation	N/A
Travel stoppers	±5° adjustable travel stops
Coating color	● Traffic Red (Munsell No. 6.6R 4.5/13.2)

◆ Optional Specification

Ambient temperature	LT low temperature: -40 to +80 °C
	HT high temperature: -20 to +100 °C
Body	JS Jack screw manual handwheel
	HO Hydraulic override
Coating color	● Other epoxy-polyurethane colors, C5 coating (for corrosive environment)
Others	Compact air tubing

Torque Data

unit: Nm

Model	ETS-050	ETS-065	ETS-065	ETS-100	ETS-130	ETS-160	ETS-160w	ETS-200w	ETS-270w
Max. Torque	1,000	3,500	9,500	14,000	35,000	40,000	59,000	150,000	250,000



Design Features

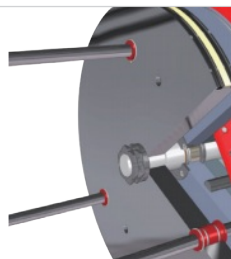
1 Compact Air Tubing Type

Optional built-in air pipe and in/out air blocks on both end of cylinder covers provide simple and easy installation of accessories, such as solenoid valve, air set, and etc.



2 Safe Position Guide Bar

The ET Series is designed to minimize friction under low air pressure and position guide bars inside the cylinder are designed to maintain smooth & steady operation. The ET Series prevents any transformation of spring retainer and piston by using anti-abrasive engineering plastic bushing.



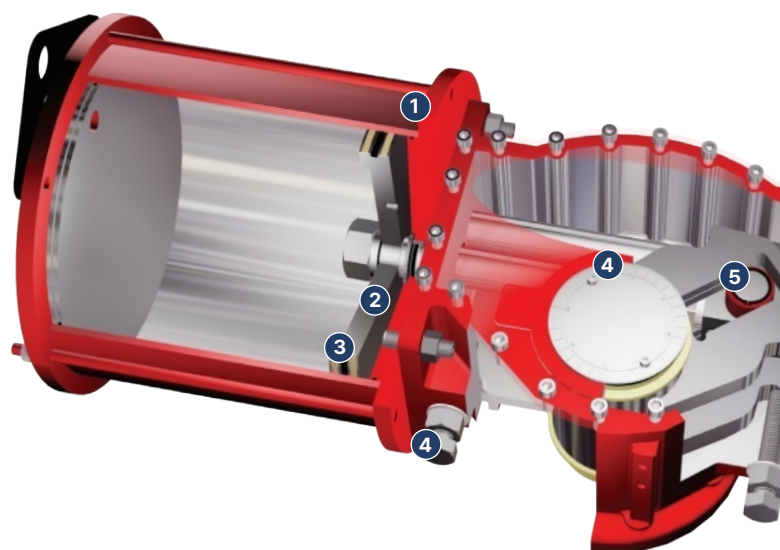
3 Piston Guide Ring

High quality back-up ring prevents any leakage, ensures high performance of piston and extends piston's operating lifespan.



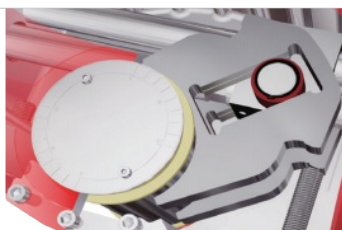
4 Travel Stops / Indicator

Each two travel stops can be set to $\pm 5^\circ$ of adjustment allowing -5° to 95° travel range. With the simple and clear indicator, the current position of the actuator can be easily determined.



5 Replaceable Bearing

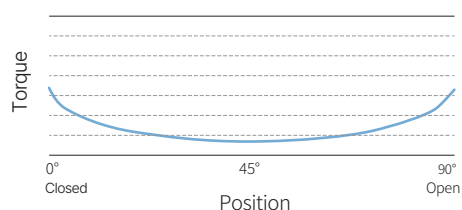
Surface heat treated yoke, bearings and pins extend the actuator's lifespan with low friction and permanent lubrication.



NAMUR Standard

The ET Series provides NAMUR standard interface for quick and convenient mounting of pneumatic accessories, such as positioners and limit switch boxes.

Symmetric Type Yoke



Manual Overrides

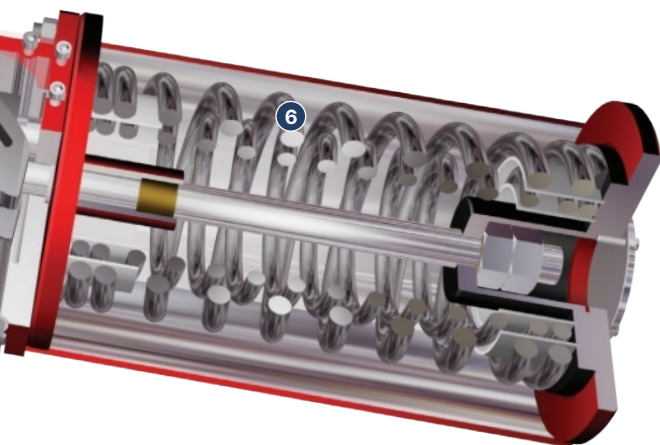
Optional hydraulic / jack screw overrides can be incorporated in accordance with the customer's requirements.



Hydraulic Override

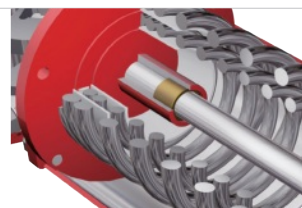


Jack Screw Override

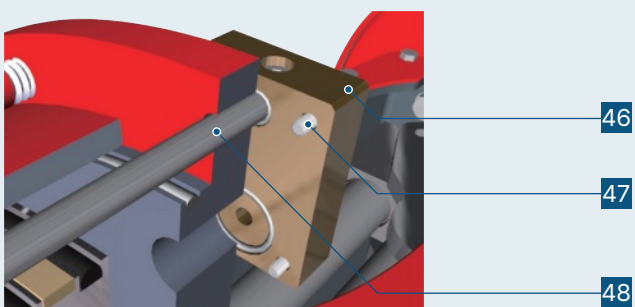
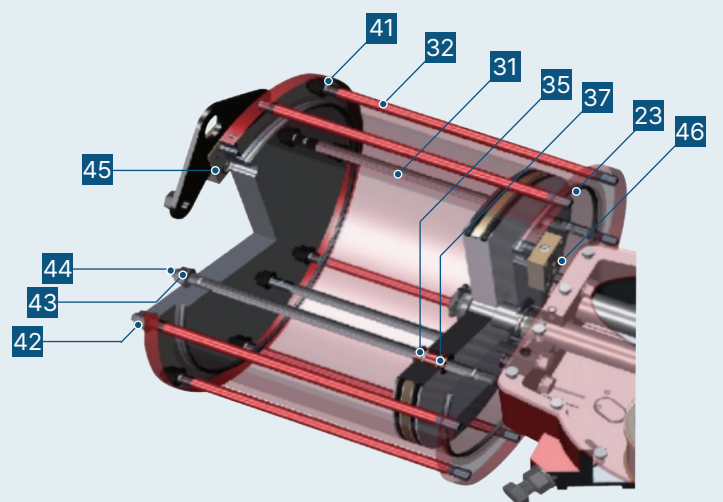
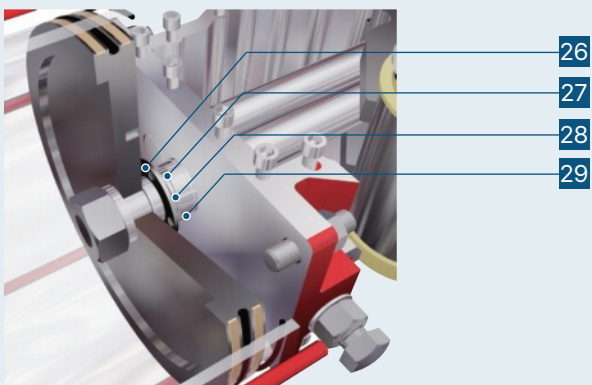
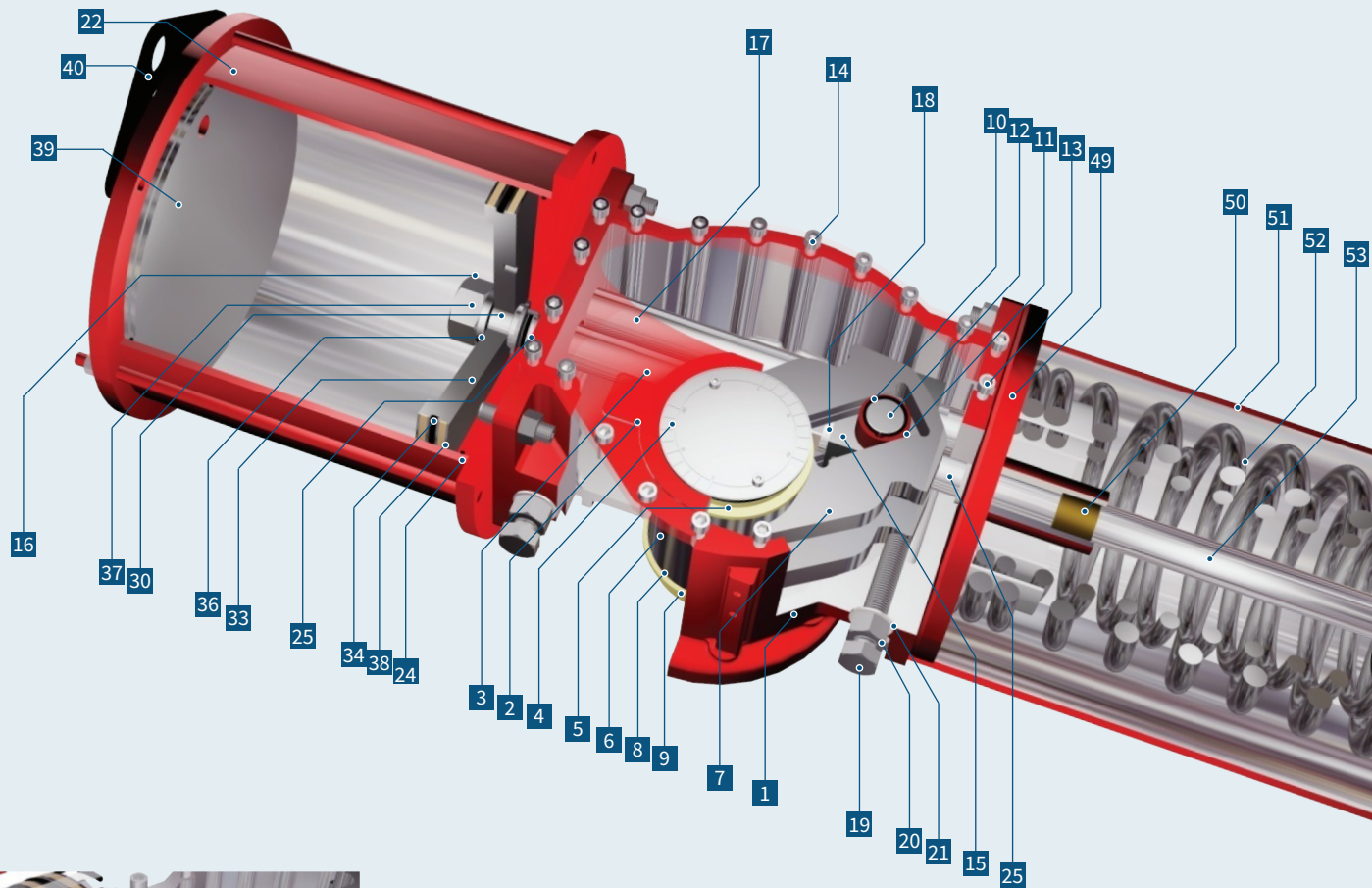


6 Alignment of Modules

Spring rod guide holder and bushing inside the spring case maintain safe and reliable operation of the spring module.

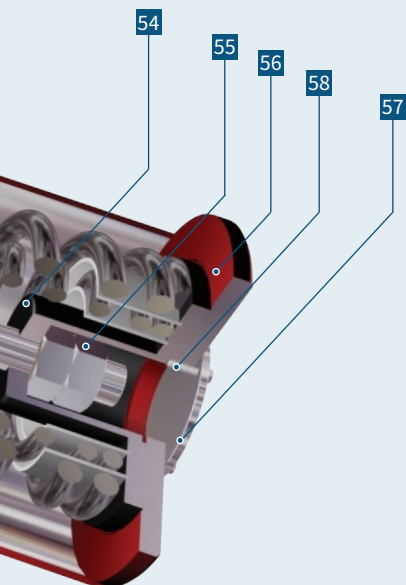


ETS Parts List



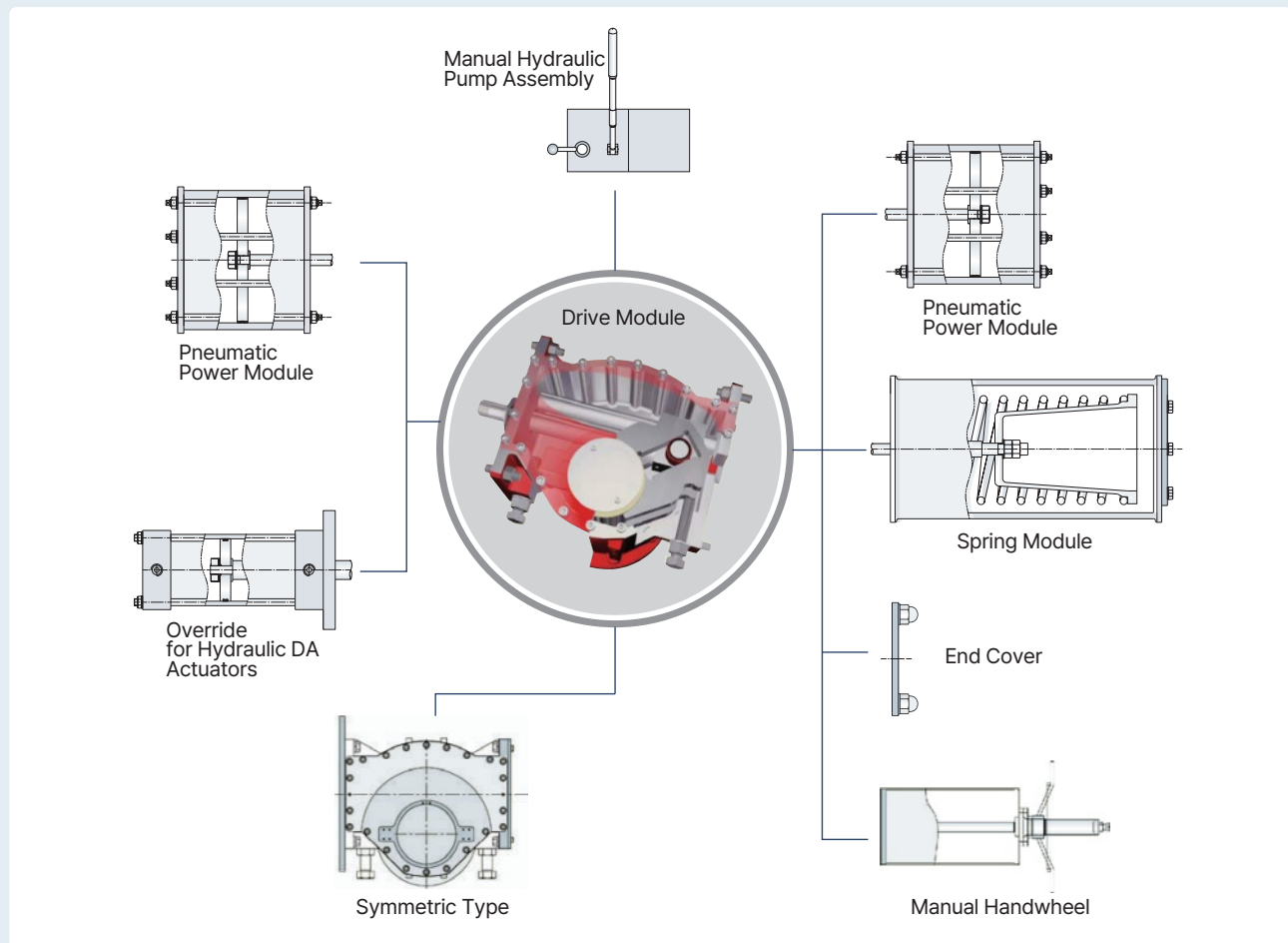
* Recommended spare parts

No.	Description	Material
1	Housing	Ductile iron
2	Housing cover	Ductile iron
3	Position needle	Alloy steel
4	Position indicator	Stainless steel
* 5	Upper bushing o-ring	NBR
6	Upper bushing	BSC
7	Yoke	Alloy steel
* 8	Low bushing o-ring	NBR
9	Low bushing	BSC
10	Snap-ring	Alloy steel
11	Slide bearing	Alloy steel
12	Slide pin	Alloy steel
13	Cover fixed pin	Alloy steel
14	Cover bolt	Alloy steel
15	Slide block	Alloy steel
16	Piston rod lock nut	Alloy steel
17	Guide bar	Alloy steel
18	Guide bushing	DU dry bushing
19	Travel stopper bolt	Alloy steel
20	Travel stopper nut	Alloy steel
21	Travel stopper washer	Alloy steel
22	Cylinder	Alloy steel
23	Cover o-ring	NBR
* 24	Center-ring	Alloy steel
25	Piston rod bushing	DU dry bushing
* 26	Rod seals	PTFE
* 27	Rod seals o-ring	NBR
28	Piston rod o-ring retainer	Alloy steel
29	Seals retainer bolt	Alloy steel
30	Piston rod	Alloy steel
31	Piston guide bar	Alloy steel
32	Tie bolt	Alloy steel
33	Piston	Alloy steel
* 34	Piston o-ring	NBR
* 35	Piston guide bushing	Engineering plastic
36	Rod washer	Alloy steel
37	Rod lock nut	Alloy steel
* 38	Back-up ring	PTFE
39	Cylinder end cover	Alloy steel
40	Lift plate	Alloy steel
41	Tie bolt washer	Alloy steel
42	Tie bolt nut	Alloy steel
43	Piston guide bar nut	Alloy steel
44	Piston guide bar bolt	Alloy steel
45	End air plate	ALM
46	Front air plate	ALM
47	Air plate bolt	Alloy steel
48	Air pipe	Stainless steel
49	Spring case front cover	Alloy steel
50	Spring rod guide bushing	Engineering plastic
51	Spring case	Carbon steel
52	Spring	Alloy steel
53	Spring rod	Alloy steel
54	Spring retainer	Alloy steel
55	Rod adjust nut	Alloy steel
56	Spring case end cover	Alloy steel
57	Cap	Alloy steel
58	Cap bolt	Alloy steel

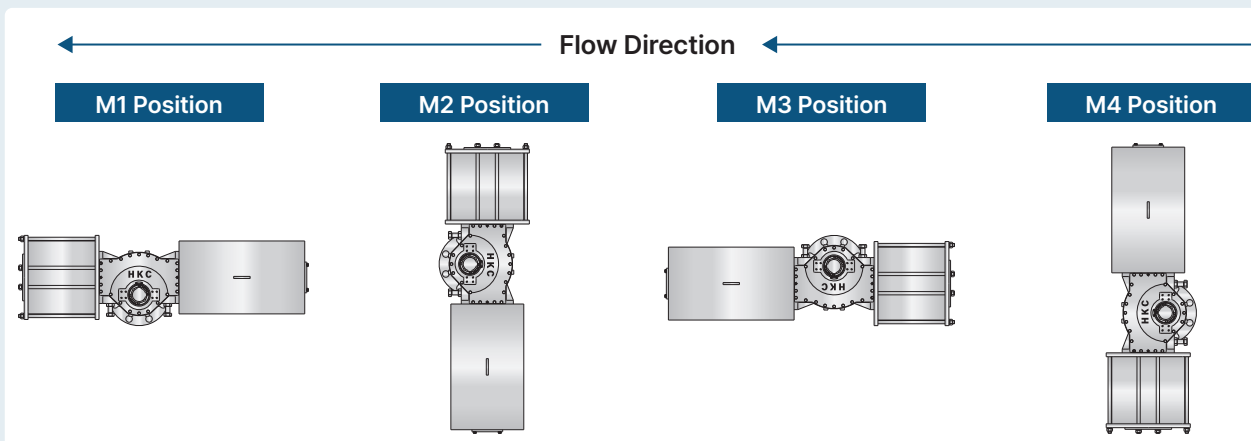


Versatile Modular Design

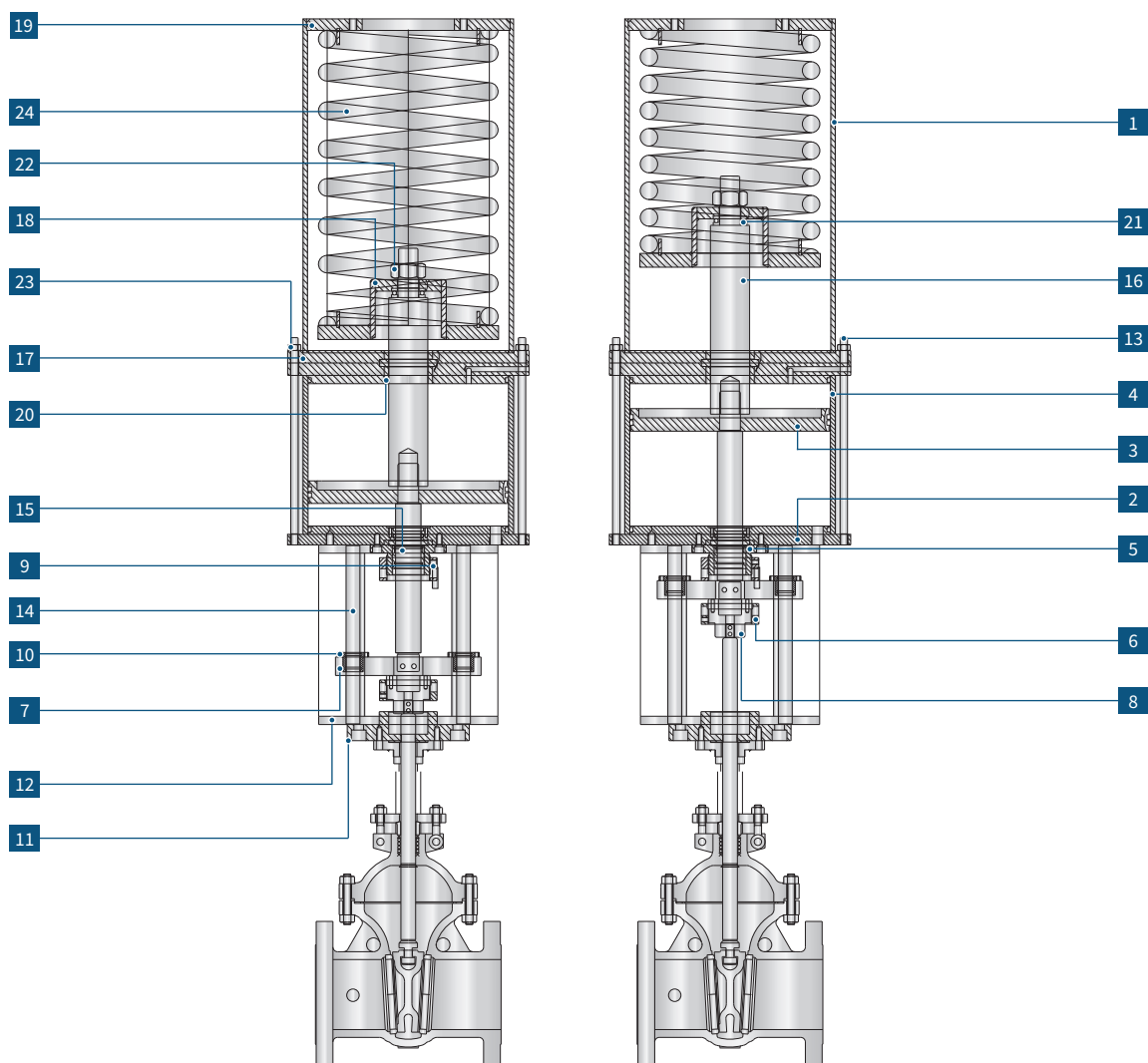
The ET Series provides versatile modular configuration. The following removable modules can be easily added, removed and altered; converting from a single-acting to a double-acting and vice versa, or adding a hydraulic manual override can be done after installation and without the need for disassembly of other modules.



ETS Mounting Position



ETL Parts List



No.	Description	Material
1	Spring cylinder	SB410
2	Front cover	S45C
3	Piston	SS41
4	Cylinder	S45C
5	Front cover flange	S45C
6	Stopper Nut-A	S45C
7	Yoke	S45C
8	Stopper	S45C
9	Stopper Nut-B	S45C
10	LM Bushing	PBC
11	Body Flange	S45C
12	Body	SS400

No.	Description	Material
13	Tie bolt	S45C
14	Guide bar	S45C
15	Guide bar bushing	-
16	Piston rod	S45C
17	Cylinder end cover	S45C
18	Spring retainer	S45C
19	Spring end cover	S45C
20	Guide bush	PBC
21	Thrust bearing	Ally steel
22	Nut	Alloy steel
23	Nut	Alloy steel
24	Out spring	SEA9254

Ordering Code

Example

ETS - ¹085 ²SR ³385 ⁴C ⁵8 ⁶10 ⁷HO

1

Model	
050	ETS-050
065	ETS-065
085	ETS-085
100	ETS-100
130	ETS-130
160	ETS-160
160w	ETS-160w
200w	ETS-200w
270w	ETS-270w

2

Acting Type	
DA	Double acting
SR	Single acting (spring return)

3

Cylinder	
130	130
150	150
180	180
200	200
235	235
250	250
300	300
335	335
385	385
⋮	⋮
935	935
985	985
1050	1050
1150	1150
1200	1200
1250	1250

4

Fail Position	
	N/A (double acting)
C	Fail Close
O	Fail Open

5

Spring No.	
	N/A (double acting)
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10

6

Color	
10	● Traffic Red (Munsell No. 6.6R 4.5/13.2)
SP	● Other colors
C5	C5 coating

7

Manual Operation	
	N/A (double acting)
JS	Jack Screw
HO	Hydraulic Override



Pneumatic Actuator HP Series

Features

- ※ Safe and reliable operation.
- ※ Rack & Pinion (HP-035 to HP-210) and Scotch Yoke (HP-211 & HP-212) design.
- ※ Wide range of torque outputs.
- ※ Available in either double acting or spring return configurations.
- ※ NAMUR and ISO flange standard.
- ※ A complete customized solution with pneumatic accessories attached.

Description

Designed for small to medium-sized quarter-turn valve applications, the HP Series pneumatic actuators ensure safe and reliable operation. The HP Series quarter-turn actuators are offered in both single-acting (spring return) and double-acting configurations.

Wide range of application

With reliable and stable operation, the HP Series is used across a wide range of industries, including:

- ※ Oil & gas
- ※ Powerplant
- ※ Chemical & petrochemical
- ※ Water
- ※ Marine & shipbuilding
- ※ Semi-conductor factory
- ※ General industry

Safe and Reliable Operation

The HP Series is designed to have a thick aluminum body so that it can safely operate at high operating pressure and provides efficient performance with long actuator life. The external surfaces are anodized to protect from harsh and corrosive environment. For usage in severe corrosive environments, polyester powder coating and/or nano-coating can be further applied to the HP Series to enhance corrosion protection.

Complete customized solution

With years of valve automation experience and manufacturing expertise since 1991, HKC provides not only the actuators but also actuators with pneumatic accessories, a complete customized solution to the needs of our customers.

Certificates and approvals

- ※ PED
- ※ SIL 2/3
- ※ RINA type approval

CE 0045 PED

SIL
IEC 61508

RINA



Specification

◆ Standard Specification

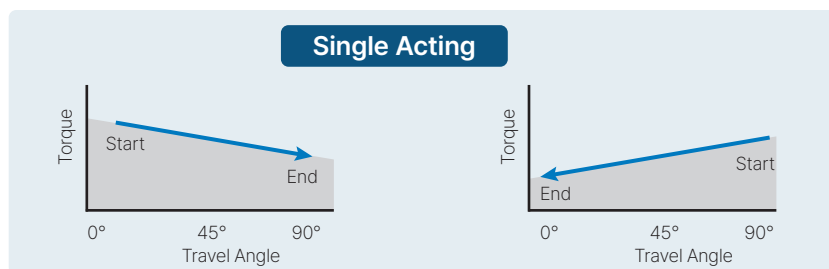
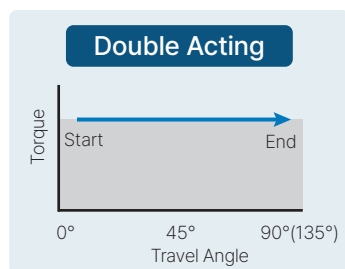
Material	High grade aluminium alloy
Design	Rack & pinion (HP-035 to HP-210) and scotch yoke (HP-211 to HP-212)a
Operating pressure	2.5 to 8 bar
Travel angle	0 to 90±5° (with travel stoppers)
Ambient temperature	-20 to +80 °C
Lubrication	Grease moly (EP type)
Body	Soft anodized
Cover color	● Black (RAL 9005), ● Red (RAL 3001), ● Blue (RAL 5005), ● Yellow (RAL 1033)

◆ Optional Specification

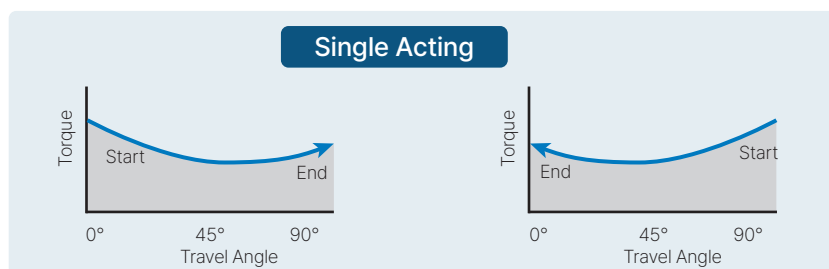
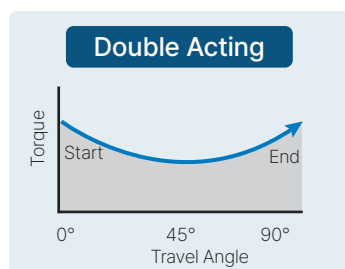
Travel angle	135° 0 to 135° (±5° with travel stoppers) (HP-075D, HP-100D, HP-125D, HP-145D, HP-180D, HP-200D only)
	3P 0 to 45 to 90° (±5° with travel stoppers) (HP-075D only)
	Side 0 to 60°, 0 to 120°, etc. (±5° with travel stoppers)
Ambient temperature	LT low temperature: -40 to +80 °C
	HT high temperature: -20 to +150 °C
Body	Dark(AD) hard anodized
	● Epoxy-polyurethane coating, C5 coating (for corrosive environment)
Cover color	● Other colors, C5 coating (for corrosive environment)

Torque Diagram

◆ Rack & Pinion



◆ Scotch Yoke



Torque Data

◆ Double Acting (Rack & Pinion)

unit: Nm

Model	135°	Air Supply									
		2.5 bar	3 bar	3.5 bar	4 bar	4.5 bar	5 bar	5.6 bar	6 bar	7 bar	8 bar
HP-035D		3.8	4.5	5.3	6.0	6.8	7.5	8.3	9.0	10.5	12.0
HP-050D		8.3	10.0	11.7	13.3	15.0	16.6	18.3	20.0	23.3	26.6
HP-063D		15.0	17.9	20.9	23.9	26.9	29.9	32.9	35.9	41.9	47.0
HP-066D		20.9	25.1	29.3	35.5	37.7	41.9	46.1	50.3	58.6	67.0
HP-075D	✓	28.7	34.5	40.2	45.9	51.7	57.4	63.2	68.9	80.4	92.0
HP-088D		46.1	55.3	64.5	73.7	83.0	92.2	101.4	110.6	129.0	147.0
HP-100D	✓	68.1	81.9	95.5	109.2	122.8	136.5	150.1	163.8	191.1	214.0
HP-115D		107.5	129.0	150.5	172.0	193.5	215.0	236.5	258.0	301.0	344.0
HP-125D	✓	138.5	166.2	190.4	221.7	249.4	277.1	304.8	332.5	387.9	443.3
HP-145D	✓	217.5	261.0	304.5	348.0	391.5	435.0	478.5	522.0	609.0	696.0
HP-160D		283.7	340.5	397.2	454.0	510.7	567.4	624.2	680.9	794.4	908.0
HP-180D	✓	382.8	459.4	536.0	612.5	689.1	765.7	842.2	918.8	1071.9	1225.0
HP-200D	✓	531.7	638.0	744.4	850.7	957.1	1063.4	1169.8	1276.1	1488.8	1701.5
HP-210D		586.9	704.3	821.6	939.0	1056.4	1173.8	1291.2	1408.5	1643.3	1878.1

◆ Single Acting (Rack & Pinion)

unit: Nm

Model	No. of Spring	Air Supply																							
		2.5 bar		3 bar		3.5 bar		4 bar		4.5 bar		5 bar		5.6 bar		6 bar		7 bar		8 bar		Spring			
		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	0° Start	90° End	0° Start	90° End	0° Start	90° End	0° Start	90° End		
HP-050S	05	4.9	3.4	6.6	5.1	8.3	6.8	9.9	8.4	11.6	10.1	13.2	11.7	14.9	13.4									4.9	3.4
	06	4.3	2.5	6.0	4.2	7.7	5.9	9.3	7.5	11.0	9.2	12.6	10.8	14.3	12.5	16.0	14.2							5.8	4.0
	07	3.6	1.5	5.3	3.2	7.0	4.9	8.6	6.5	10.3	8.2	11.9	9.8	13.6	11.5	15.3	13.2	18.6	16.5					6.8	4.7
	08			4.6	2.2	6.3	3.9	7.9	5.5	9.6	7.2	11.2	8.8	12.9	10.5	14.6	12.2	17.9	15.5					7.8	5.4
	09					5.6	2.9	7.2	4.5	8.9	6.2	10.5	7.8	12.2	9.5	13.9	11.2	17.2	14.5	20.5	17.8	8.8	6.1		
	10							6.6	3.6	8.3	5.3	9.9	6.9	11.6	8.6	13.3	10.3	16.6	13.6	19.9	16.9	9.7	6.7		
	11									7.6	4.3	9.2	5.9	10.9	7.6	12.6	9.3	15.9	12.6	19.2	15.9	10.7	7.4		
	12													10.2	6.6	11.9	8.3	15.2	11.6	18.5	14.9	11.7	8.1		
HP-063S	05	9.5	6.6	12.4	9.5	15.4	12.5	18.4	15.5	21.4	18.5	24.4	21.5	27.4	24.5									8.4	5.5
	06	8.3	4.9	11.2	7.8	14.2	10.8	17.2	13.8	20.2	16.8	23.2	19.8	26.2	22.8	29.2	25.8							10.1	6.7
	07	7.2	3.2	10.9	6.1	13.1	9.1	16.1	12.1	19.1	15.1	22.1	18.1	25.1	21.1	28.1	24.1	34.1	30.1					11.8	7.8
	08			9.0	4.4	12.0	7.4	15.0	10.4	18.0	13.4	21.0	16.4	24.0	19.4	27.0	22.4	33.0	28.4					13.5	8.9
	09					10.9	5.7	13.9	8.7	16.9	11.7	19.9	14.7	22.9	17.7	25.9	20.7	31.9	26.7	37.0	31.8	15.2	10.0		
	10							12.8	7.0	15.8	10.0	18.8	13.0	21.8	16.0	24.8	19.0	30.8	25.0	35.9	30.1	16.9	11.1		
	11									14.7	8.3	17.7	11.3	20.7	14.3	23.7	17.3	29.7	23.3	34.8	28.4	18.6	12.2		
	12													19.6	12.7	22.6	15.7	28.6	21.7	33.7	26.8	20.2	13.3		
HP-066S	05	13.3	8.9	17.5	13.1	21.7	17.3	25.9	21.5	30.1	25.7	34.3	29.9	38.5	34.1									12.0	7.6
	06	11.8	6.5	16.0	10.7	20.2	14.9	24.4	19.1	28.6	23.3	32.8	27.5	37.0	31.7	41.2	35.9							14.4	9.1
	07			14.5	8.3	18.7	12.5	22.9	16.7	27.1	20.9	31.3	25.1	35.5	29.3	39.7	33.5	48.0	41.8					16.8	10.6
	08			13.0	5.9	17.2	10.1	21.4	14.3	25.6	18.5	29.8	22.7	34.0	26.9	38.2	31.1	46.5	39.4					19.2	12.1
	09					15.6	7.7	19.8	11.9	24.0	16.1	38.2	20.3	32.4	24.5	36.6	28.7	44.9	37.0	53.3	45.4	21.6	13.7		
	10							18.3	9.5	22.5	13.7	26.7	17.9	30.9	22.1	35.1	26.3	43.4	34.6	51.8	43.0	24.0	15.2		
	11									21.0	11.3	25.2	15.5	29.4	19.7	33.6	23.9	41.9	32.2	50.3	40.6	26.4	16.7		
	12													27.9	17.3	32.1	21.5	40.4	29.8	48.8	38.2	28.8	18.2		

Model	No. of Spring	Air Supply																							
		2.5 bar		3 bar		3.5 bar		4 bar		4.5 bar		5 bar		5.6 bar		6 bar		7 bar		8 bar		Spring			
		0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°		
		Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End		
HP-075S	05	17.6	11.4	23.4	17.2	29.1	22.9	34.8	28.6	40.6	34.4	46.3	40.1	52.1	45.9								17.3	11.1	
	06	15.4	7.9	21.2	13.7	26.9	19.4	32.6	25.1	38.4	30.9	44.1	36.6	49.9	42.4	55.6	48.1						20.8	13.3	
	07	13.2	4.5	19.0	10.3	24.7	16.0	30.4	21.7	36.2	27.5	41.9	33.2	47.7	39.0	53.4	44.7	64.9	56.2				24.2	15.5	
	08			16.8	6.8	22.5	12.5	28.2	18.2	34.0	24.0	39.7	29.7	45.5	35.5	51.2	41.2	62.7	52.7				27.7	17.7	
	09					20.3	9.0	26.0	14.7	31.8	20.5	37.5	26.2	43.3	32.0	49.0	37.7	60.5	49.2	72.1	60.8	31.2	19.9		
	10							23.8	11.3	29.6	17.1	35.3	22.8	41.1	28.6	46.8	34.3	58.3	45.8	69.9	57.4	34.6	22.1		
	11									27.4	13.6	33.1	19.3	38.9	25.1	44.6	30.8	56.1	42.3	67.7	53.9	38.1	24.6		
	12													36.7	21.7	42.4	27.4	53.9	38.9	65.5	50.5	41.5	26.5		
HP-088S	05	27.8	17.2	37.0	26.4	46.2	35.6	55.4	44.8	64.7	54.1	73.9	63.3	83.1	72.5								28.9	18.3	
	06	24.1	11.4	33.3	20.6	42.5	29.8	51.7	39.0	61.0	48.3	70.2	57.5	79.4	66.7	88.6	75.9						34.7	22.0	
	07	20.4	5.7	29.6	14.9	38.8	24.1	48.0	33.3	57.3	42.6	66.5	51.8	75.7	61.0	84.9	70.2	103	88.6				40.4	25.7	
	08			26.6	9.1	35.2	18.3	44.4	27.5	53.7	36.8	62.9	46.0	72.1	55.2	81.3	64.4	99.7	82.8				46.2	29.3	
	09					31.5	12.5	40.7	21.7	50.0	31.0	59.2	40.2	68.4	49.4	77.6	58.6	96.0	77.0	114	95.0	52.0	33.0		
	10							37.0	15.9	46.3	25.2	55.5	34.4	64.7	43.6	73.9	52.8	92.3	71.2	110	89.2	57.8	36.7		
	11									42.7	19.5	51.9	28.7	61.1	37.9	70.3	47.1	88.7	65.5	107	83.5	63.5	40.3		
	12													57.4	32.1	66.6	41.3	85.0	59.7	103	77.7	69.3	44.0		
HP-100S	05	42.9	28.8	56.6	42.5	70.2	56.1	83.9	69.8	97.5	83.4	111	97.1	125	111								39.4	25.3	
	06	37.8	20.9	51.5	34.6	65.1	48.2	78.8	61.9	92.4	75.5	106	89.2	120	103	133	117						47.3	30.4	
	07	32.7	13.1	46.4	26.8	60.0	40.4	73.7	54.1	87.3	67.7	101	81.4	115	95.0	128	109	156	136				55.1	35.5	
	08			41.4	18.9	55.0	32.5	68.7	46.2	82.3	59.8	96.0	73.5	110	87.1	123	101	151	128				63.0	40.5	
	09					49.9	24.6	63.6	38.3	77.2	51.9	90.9	65.6	105	79.2	118	92.9	156	120	168	143	70.9	45.6		
	10							58.5	30.4	72.1	44.0	85.8	57.7	99.4	71.3	113	85.0	140	112	163	135	78.8	50.7		
	11									67.1	36.1	80.8	49.8	94.4	63.4	108	77.1	135	104	158	127	86.7	55.7		
	12													89.3	55.6	103	69.3	130	96.6	153	120	94.5	60.8		
HP-115S	05	66.5	42.0	88.0	63.5	110	85.0	131	107	153	128	174	150	196	171								65.5	41.0	
	06	58.3	28.9	79.8	50.4	101	71.9	123	93.4	114	115	166	136	187	158	209	179						78.6	49.2	
	07	50.1	15.8	71.6	37.3	93.1	58.8	115	80.3	136	102	158	123	179	145	207	166	244	209				91.7	57.4	
	08			63.4	24.0	84.9	45.5	106	67.0	128	88.5	149	110	171	132	192	153	235	196				105	65.6	
	09					76.7	32.5	98.2	54.0	120	75.5	141	97.0	163	119	184	140	227	183	270	226	118	73.8		
	10							90.0	41.0	112	62.5	133	84.0	155	106	176	127	219	170	262	213	131	82.0		
	11									103	49.5	125	71.0	146	92.5	168	114	211	157	254	200	144	90.2		
	12													138	79.5	160	101	203	144	246	187	157	98.4		
HP-125S	05	86.0	56.5	114	84.2	142	112	169	140	197	167	225	195	252	223								82.0	52.5	
	06	75.5	39.5	103	67.2	131	95.0	159	123	186	105	214	178	242	206	270	234						99.0	63.0	
	07	65.0	23.5	92.7	51.2	126	79.0	148	107	176	134	204	162	231	190	259	218	314	273				115	73.5	
	08			82.2	34.2	110	62.0	138	89.7	165	117	193	145	221	173	249	201	304	256				132	84.0	
	09					99.5	46.0	127	73.7	155	101	183	129	210	157	238	185	293	240	349	295	148	94.5		
	10							117	56.7	144	84.4	172	112	200	140	228	168	283	223	338	278	165	105		
	11									133	68.4	161	96.1	189	124	217	152	272	207	327	262	181	116		
	12													179	107	207	135	262	190	317	245	198	126		
HP-145S	05	136	88.5	179	132	223	176	266	219	310	263	353	306	397	350								129	82	
	06	119	62.5	162	106	206	150	249	193	293	237	336	280	380	324	423	367						155	99	
	07	103	37.5	146	81.0	190	125	233	168	277	212	320	255	364	299	407	342	494	429				180	115	
	08			129	55.0	173	98.5	216	142	260	186	303	229	367	273	390	316	477	403				206	132	
	09					157	72.5	200	116	244	160	287	203	331	247	374	290	461	377	548	464	232	148		
	10							183	90.0	227	134	270	177	314	221	357	264	444	351	531	438	258	165		
	11									211	109	254	152	298	196	341	239	428	326	515	413	283	181		
	12													281	170	324	213	411	300	498	384	309	198		

Model	No. of Spring	Air Supply																							
		2.5 bar		3 bar		3.5 bar		4 bar		4.5 bar		5 bar		5.6 bar		6 bar		7 bar		8 bar		Spring			
		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	0° Start	90° End	0° Start	90° End	0° Start	90° End	0° Start	90° End	0° Start	90° End
HP-160S	05	172	118	229	175	286	231	342	288	399	345	455	401	512	458									166	112
	06	149	84.7	206	142	262	198	319	255	376	312	432	368	489	425	546	482							199	135
	07	127	50.7	184	108	240	164	297	221	354	278	410	334	467	391	524	448	637	561					233	157
	08			161	74.5	217	131	274	188	331	245	387	301	444	358	501	415	614	528					266	180
	09					195	98.2	252	155	309	212	365	268	422	325	479	382	592	495	706	609	299	202		
	10							230	122	287	179	343	235	400	292	457	349	570	462	684	576	332	224		
	11									264	146	320	202	377	259	434	316	547	429	661	543	365			
	12													355	225	412	282	525	395	639	509	399	269		
HP-180S	05	225	146	301	222	378	299	455	376	531	452	608	529	684	605									237	158
	06	193	98.8	269	175	346	252	423	329	499	405	576	482	652	558	729	635							284	190
	07	162	50.8	238	127	315	204	392	281	468	357	545	434	621	510	698	587	851	740					332	221
	08			206	80.4	283	157	360	234	436	310	513	387	289	463	666	540	819	693					379	253
	09					251	110	328	187	404	263	481	340	557	416	634	493	787	646	940	799	426	285		
	10							297	139	373	215	450		526	368	603	445	756	598	909	751	474	316		
	11									341	168	418	245	494	321	508	398	724	551	877	704	521	348		
	12													463	274	540	351	693	504	843	657	568	379		
HP-200S	05	319	217	425	323	531	429	638	536	744	642	850	748	957	855									315	213
	06	277	154	383	260	489	366	596	473	702	579	808	685	915	792	1021	898							378	255
	07	234	90.7	340	197	446	303	553	410	659	516	765	622	872	729	978	835	1191	1048					441	298
	08			298	134	404	240	511	347	617	453	723	559	830	666	936	772	1149	985					504	340
	09					361	177	468	284	574	390	680	496	787	603	893	709	1106	922	1319	1135	567	383		
	10							426	221	532	327	638	433	745	540	851	646	1064	859	1277	1072	630	425		
	11									489	264	595	370	702	477	808	583	1021	796	1234	1009	693	468		
	12													660	414	766	520	979	733	1191	946	756	510		
HP-210S	04	430	313	547	430	665	547	782	665															274	157
	05	391	244	508	362	626	479	743	596	860	714	978	831	1095	948									343	196
	06	352	176	469	293	586	410	704	528	821	645	939	762	1056	880	1173	997							411	253
	07			430	224	547	342	664	459	782	576	899	694	1017	811	1134	929	1369	1163					480	275
	08					508	273	625	391	743	508	860	625	977	743	1095	860	1330	1095					549	314
	09					469	205	586	322	703	439	821	557	938	674	1056	791	1290	1026	1525	1261	617	353		
	10					429	136	547	253	664	371	782	488	899	606	1016	723	1251	958	1486	1192	686	392		
	11									625	302	742	420	860	537	977	654	1212	889	1447	1124	754	431		
	12									586	234	703	351	821	468	938	586	1173	821	1407	1055	823	471		

◆ Double Acting (Scotch Yoke)

unit: Nm

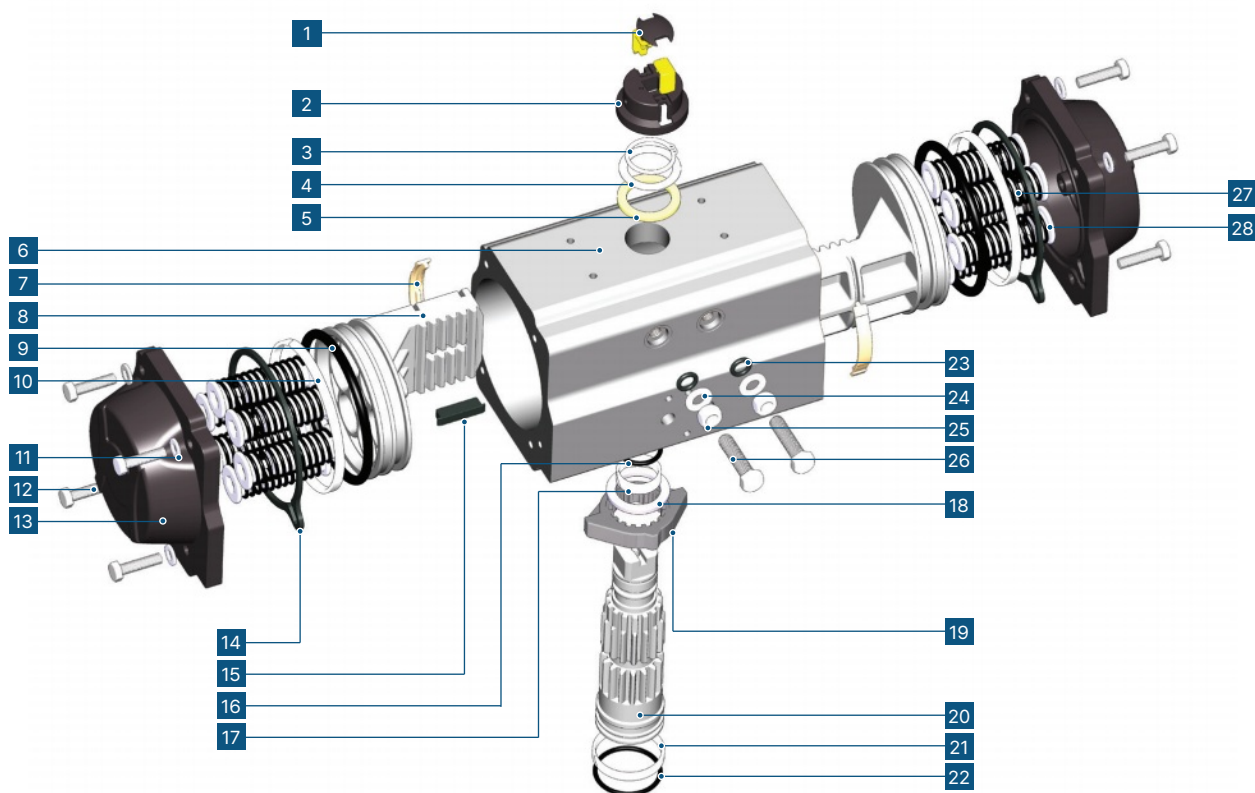
Model	Air Supply								
	4.2 bar			5.6 bar			7 bar		
	Start	Run	End	Start	Run	End	Start	Run	End
HP-211D	1,507	753	1,312	2,009	1,005	1,705	2,511	1,255	2,187
HP-212D	3,011	1,506	2,622	4,017	2,006	3,498	5,022	2,509	4,373

◆ Single Acting (Scotch Yoke)

unit: Nm

Model	4.2 bar						5.6 bar					
	Air Torque			Spring Torque			Air Torque			Spring Torque		
	Start	Run	End	Start	Run	End	Start	Run	End	Start	Run	End
HP-211S	1,114	452	634	678	283	393	1,385	537	724	1,026	446	624
HP-212S	2,226	904	1,266	1,356	565	780	2,769	1,074	1,446	2,045	883	1,243

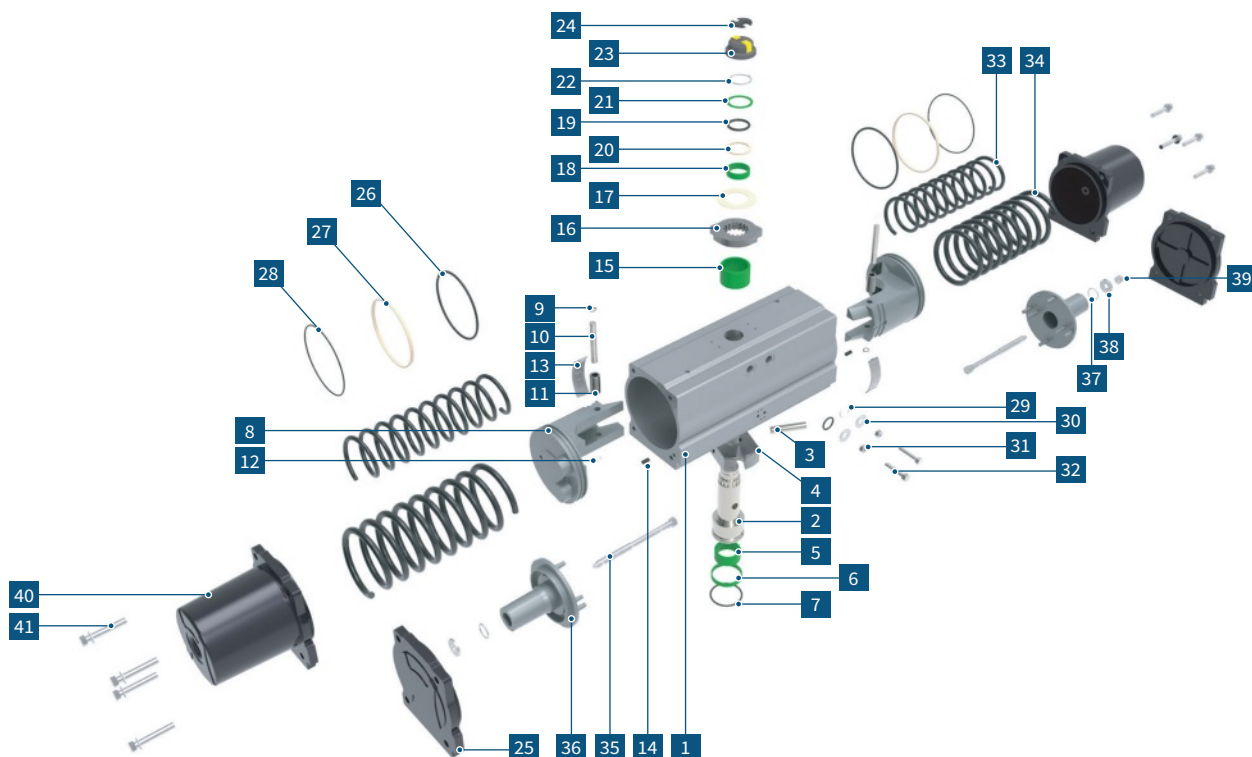
Parts List (Rack & Pinion, HP-035 to HP-210)



* Recommended spare parts

No.	Description	Material	Corrosion Protection	Q'ty
1	Position indicator	Polypropylene + GF	-	2
2	Position indicator holder	Polypropylene + GF	-	1
3	Spring clip (pinion)	Stainless steel	Nickel plated (HP-160, HP-200)	1
4	Thrust washer (pinion)	Stainless steel	-	1
5	Thrust bearing (pinion)	Polyphthalamide	-	1
6	Body	Extruded aluminium alloy	Soft or hard anodized	1
7	Bearing (piston back)	Polyphthalamide	-	2
8	Piston	Die cast aluminium	Soft or hard anodized	2
* 9	O-ring (piston)	Nitrile (NBR70)	-	2
* 10	Bearing (piston head)	Polyphthalamide	-	2
11	Cover bolt washer	Stainless steel	-	8
12	Cover bolt (end cover)	Stainless steel	-	2
13	Right and left end cover	Die cast aluminium	Chromated + polyester coated	2
* 14	O-ring (end cover)	Nitrile (NBR70)	-	2
* 15	Piston guide	Polyphthalamide	-	2
* 16	O-ring (pinion top)	Nitrile (NBR70)	-	1
* 17	Bearing (piston top)	Nylon 46	-	1
* 18	Thrust bearing (pinion)	Polyphthalamide	-	1
19	Open, close cam (stop arrangement)	Stainless steel	-	1
20	Drive shaft	Alloy steel	Nickel plated	1
* 21	Bearing (pinion bottom)	Nylon 46	-	1
* 22	O-ring (pinion bottom)	Nitrile (NBR70)	-	1
* 23	O-ring (stop screw)	Nitrile (NBR70)	-	1
24	Stop bolt washer	Stainless steel	-	2
25	Stop nut	Stainless steel	-	2
26	Stop bolt	Stainless steel	-	2
27	Spring	High alloy spring steel	Epoxy coated	5 - 12
28	Spring holder	Polypropylene + GF	-	1

Parts List (Scotch Yoke, HP-211 & HP-212)



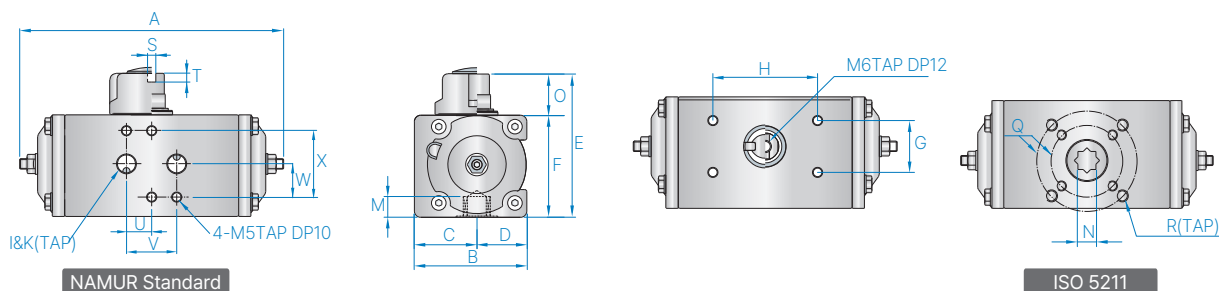
* Recommended spare parts

No.	Description	Material	Q'ty
1	Cylinder body	Aluminum alloy	1
2	Drive shaft	Alloy steel	1
3	Yoke pin	Steel	1
4	Yoke	Steel	1
5	Bottom spacer	Nylon	1
* 6	Stem bottom bearing	Stainless steel	1
* 7	Stem bottom o-ring	NBR	1
8	Piston	Aluminum	2
9	Snap ring	Stainless steel	2
10	Roller pin	Steel	1
11	Shaft	Steel	1
12	Snap ring	Stainless steel	2
13	Piston back bearing	PTFE	3
14	Hole sealant	NBR	2
15	Top spacer	Nylon	1
16	OCT cam	Steel	1
* 17	Stem thrust bearing	Stainless steel	1
* 18	Stem top bearing	Stainless steel	1
* 19	Stem top O-ring	NBR	1
* 20	Teflon washer	PTFE	1
* 21	Stem thrust washer	Stainless steel	1
22	Snap ring	Stainless steel	5
23	Indicator	ABS	1
24	Indicator holder cover	ABS	1
25	Double acting cover	Aluminum	2
* 26	Piston o-ring	NBR	2
* 27	Piston head bearing	PTFE	3
* 28	Cover o-ring	NBR	2

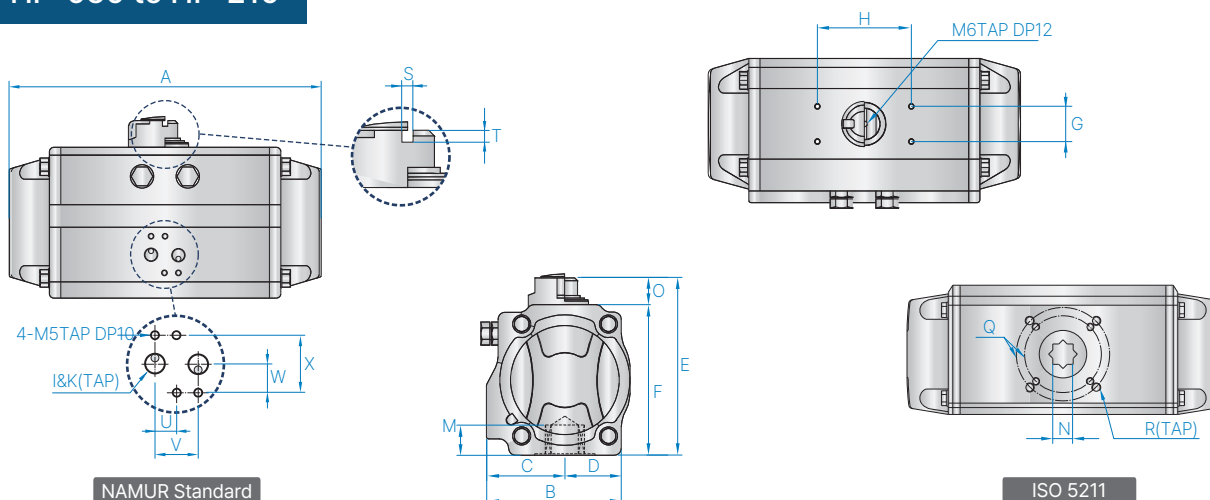
No.	Description	Material	Q'ty
* 29	Stop bolt o-ring	NBR	2
30	Stop bolt washer	Stainless steel	2
31	Stop bolt nut	Stainless steel	2
32	Stop bolt	Stainless steel	2
33	Inner spring	Spring steel	1 - 2
34	Outer spring	Spring steel	1 - 2
35	Spring bolt	Stainless steel	1 - 2
36	Spring retainer	Aluminum	1 - 2
37	Spring o-ring	NBR	1 - 2
38	Spring washer	Steel	1 - 2
39	Spring nut	Stainless steel	1 - 2
40	Spring retainer cover	Aluminum	2
41	Cover bolt	Stainless steel	8

Dimensional Drawing

HP-035



HP-050 to HP-210

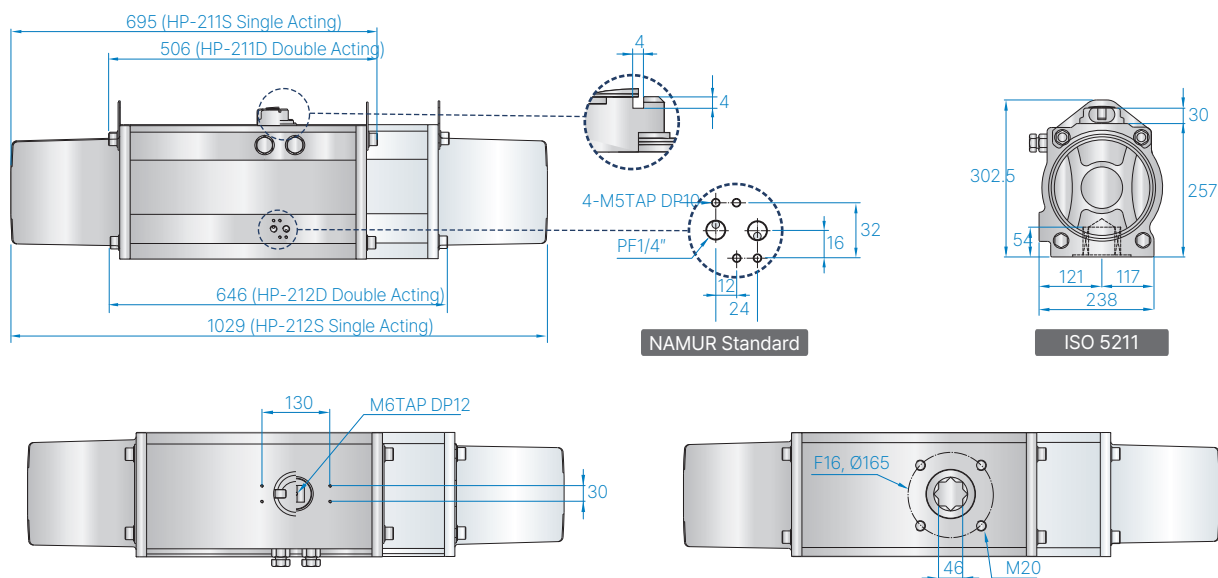


Dimension

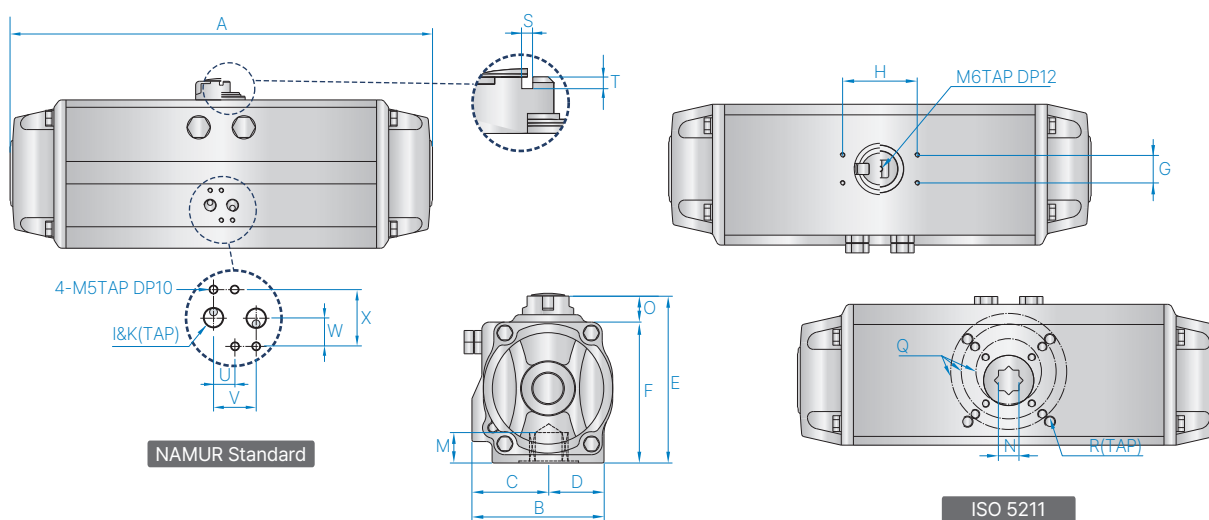
unit (mm)

Model	Flange (ISO 5211)	R	A	B	C	D	E	F	G	H	I	K	O	S	T	U	V	W	X
	Q	M/N (min)																	
HP-035D	F03/F05 Ø36/Ø50	M5/M6 10/9	126	54	30	24	69	49	25	50	PF	1/8"	20	4	4	12	24	16	32
HP-050	F03/F05 Ø36/Ø50	M5/M6 14/11	144	72	42	30	93	73	30	80	PF	1/8"	20	4	4	12	24	16	32
HP-063	F05/F07 Ø50/Ø70	M6/M8 18/14	163	85	47	38	107	87	30	80	PF	1/8"	20	4	4	12	24	16	32
HP-066	F05/F07 Ø50/Ø70	M6/M8 18/14	202	85	47	38	107	87	30	80	PF	1/8"	20	4	4	12	24	16	32
HP-075	F05/F07 Ø50/Ø70	M6/M8 22/17	210	96	53.5	42.5	124	104	30	80	PF	1/8"	20	4	4	12	24	16	32
HP-088	F05/F07/F10 Ø50/Ø70/Ø102	M6/M8/M10 22/17	247	108	58.5	49.5	136	116	30	80	PF	1/8"	20	4	4	12	24	16	32
HP-100	F05/F07/F10 Ø50/Ø70/Ø102	M6/M8/M10 22/17	268	123	67	56	148	128	30	80	PF	1/4"	20	4	4	12	24	16	32
HP-115	F07/F10 Ø70/Ø102	M8/M10 32/22	316	141	77	64	166	146	30	80	PF	1/4"	20	4	4	12	24	16	32
HP-125	F07/F10/F12 Ø70/Ø102/Ø125	M8/M10/M12 32/22	347	151	82	69	179	159	30	80	PF	1/4"	20	4	4	12	24	16	32
HP-145	F10/F12 Ø102/Ø125	M10/M12 36/27	414	172	92	80	209	179	30	130	PF	1/4"	30	4	4	12	24	16	32
HP-160	F10/F12 Ø102/Ø125	M10/M12 36/27	467	190	101	89	226	196	30	130	PF	1/4"	30	4	4	12	24	16	32
HP-180	F10/F12 Ø102/Ø125	M10/M12 39/36	497	206	107	99	251	221	30	130	PF	1/4"	30	4	4	12	24	16	32
HP-200	F14 Ø140	M16 39/36	555	227	116	111	277	247	30	130	PF	1/4"	30	4	4	12	24	16	32
HP-210	F14 Ø140	M16 43/36	628	236	120	116	286	256	30	130	PF	1/4"	30	4	4	12	24	16	32

HP-211 to HP-212



135° turn (HP-075, 100, 125, 145, 180, 200)



◆ Dimension

unit (mm)

Model	Flange (ISO 5211)	R	A	B	C	D	E	F	G	H	I	K	O	S	T	U	V	W	X
	Q	M/N (min)																	
HP-075D(135°)	F05/F07 Ø50/Ø70	M6/M8 22/17	272	96	53.5	42.5	124	104	30	80	PF	1/8"	20	4	4	12	24	16	32
HP-100D(135°)	F05/F07/F10 Ø50/Ø70/Ø102	M6/M8/M10 22/17	346	123	67	56	148	128	30	80	PF	1/8"	20	4	4	12	24	16	32
HP-125D(135°)	F07/F10/F12 Ø70/Ø102/Ø125	M8/M10/M12 32/22	453	151	82	69	179	159	30	80	PF	1/4"	20	4	4	12	24	16	32
HP-145D(135°)	F10/F12 Ø102/Ø125	M10/M12 36/27	545	172	92	80	209	179	30	80	PF	1/4"	30	4	4	12	24	16	32
HP-180D(135°)	F10/F12 Ø102/Ø125	M10/M12 39/36	634	206	107	99	251	221	30	130	PF	1/4"	30	4	4	12	24	16	32
HP-200D(135°)	F14 Ø140	M16 39/36	727	227	116	111	277	247	30	130	PF	1/4"	30	4	4	12	24	16	32

Air Consumption

◆ Double Acting (90° turn)

Unit: liter (L)

Model	Volume	Air Supply									
		2.5 bar	3 bar	3.5 bar	4 bar	4.5 bar	5 bar	5.6 bar	6 bar	7bar	8 bar
HP-035D	0.2	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.6	1.8
HP-050D	0.3	1.1	1.2	1.4	1.5	1.7	1.8	2.0	2.1	2.5	2.8
HP-063D	0.5	1.8	2.0	2.3	2.6	2.8	3.1	3.3	3.6	4.1	4.6
HP-066D	0.5	2.1	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.9	5.5
HP-075D	0.8	2.9	3.3	3.7	4.1	4.5	4.9	5.3	5.7	6.5	7.4
HP-088D	1.3	4.7	5.3	6.0	6.6	7.3	8.0	8.6	9.3	10.6	11.9
HP-100D	1.8	6.4	7.4	8.3	9.2	10.1	11.0	12.0	12.9	14.7	16.5
HP-115D	3.0	10.7	12.3	13.8	15.3	16.9	18.4	19.9	21.5	24.5	27.6
HP-125D	3.8	13.6	15.6	17.5	19.4	21.4	23.3	25.2	27.2	31.0	34.9
HP-145D	6.2	22.2	25.4	28.5	31.7	34.9	38.0	41.2	44.3	50.7	57.0
HP-160D	7.3	26.2	29.9	33.6	37.3	41.0	44.8	48.5	52.2	59.6	67.1
HP-180D	11.2	40.1	45.8	51.5	57.3	63.0	68.7	74.4	80.1	91.5	102.9
HP-200D	15.4	55.2	63.0	70.9	78.7	86.6	94.4	102.3	110.1	125.8	141.5
HP-210D	16.0	57.3	65.5	73.6	81.8	89.9	98.1	106.3	114.4	130.7	147.1
HP-211D	13.7	49.1	56.1	63.0	70.0	77.0	84.0	91.0	98.0	111.9	125.9
HP-212D	20.3	72.7	83.1	93.4	103.8	114.1	124.5	134.8	145.2	165.9	186.6

◆ Double Acting (135° turn)

Unit: liter (L)

Model	Volume	Air Supply									
		2.5 bar	3 bar	3.5 bar	4 bar	4.5 bar	5 bar	5.6 bar	6 bar	7bar	8 bar
HP-075D	1.2	4.2	4.8	5.3	5.9	6.5	7.1	7.7	8.3	9.5	10.7
HP-100D	2.6	9.3	10.7	12.0	13.3	14.6	16.0	17.3	18.6	21.3	23.9
HP-125D	5.5	19.9	22.7	25.5	28.3	31.2	34.0	36.8	39.6	45.3	50.9
HP-145D	9.2	32.9	37.6	42.3	47.0	51.7	56.4	61.1	65.8	75.2	84.5
HP-180D	16.4	58.6	67.0	75.3	83.7	92.0	100.3	108.7	117.0	133.7	150.4
HP-200D	22.9	82.2	93.9	105.6	117.3	129.0	140.7	152.4	164.1	187.5	210.9

◆ Single Acting (90° turn)

Unit: liter (L)

Model	Volume	Air Supply									
		2.5 bar	3 bar	3.5 bar	4 bar	4.5 bar	5 bar	5.6 bar	6 bar	7bar	8 bar
HP-050S	0.1	0.4	0.4	0.5	0.5	0.6	0.6	0.7	0.7	0.8	0.9
HP-063S	0.2	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.6	1.8
HP-066S	0.2	0.9	1.0	1.2	1.3	1.4	1.5	1.7	1.8	2.0	2.3
HP-075S	0.3	1.1	1.2	1.4	1.5	1.7	1.8	2.0	2.1	2.5	2.8
HP-088S	0.5	1.8	2.0	2.3	2.6	2.8	3.1	3.3	3.6	4.1	4.6
HP-100S	0.7	2.5	2.9	3.2	3.6	3.9	4.3	4.6	5.0	5.7	6.4
HP-115S	1.2	4.3	4.9	5.5	6.1	6.7	7.3	8.0	8.6	9.8	11.0
HP-125S	1.5	5.4	6.1	6.9	7.7	8.4	9.1	10.0	10.7	12.3	13.8
HP-145S	2.4	8.6	9.8	11.0	12.3	13.5	14.6	15.9	17.2	19.6	22.1
HP-160S	3.1	11.1	12.7	14.3	15.8	17.4	18.9	20.6	22.2	25.3	28.5
HP-180S	4.3	15.4	17.6	19.8	22.0	24.2	26.2	28.6	30.8	35.1	39.5
HP-200S	5.9	21.1	24.1	27.2	30.2	33.2	36.0	39.2	42.2	48.2	54.2
HP-210S	7.8	27.9	31.9	35.9	39.9	43.8	47.6	51.8	55.8	63.7	71.7
HP-211S	5.1	18.3	20.9	23.5	26.1	28.7	31.1	33.9	36.5	41.7	46.9
HP-212S	9.6	34.4	39.9	44.2	49.1	54.0	58.5	63.8	68.7	78.4	88.2

Weight

◆ Rack & Pinion

Unit: kg

Model	90°	135°	Spring each
HP-035	0.5		N/A
HP-050	1.2		0.009
HP-063	1.7		0.017
HP-066	2.4		0.021
HP-075	3.1	4.1	0.033
HP-088	4.3		0.056
HP-100	6.1	8.8	0.078
HP-115	9.0		0.121
HP-125	11.3	15.3	0.165
HP-145	14.1	22.9	0.202
HP-160	22.0		0.359
HP-180	26.5	36.7	0.521
HP-200	38.4	49.7	0.752
HP-210	46.0		0.882

◆ Scotch Yoke

Unit: kg

Model	90°
HP-211D	46.1
HP-211S (4.2 bar)	59.8
HP-211S (5.6 bar)	64.0
HP-212D	71.1
HP-212S (4.2 bar)	85.9
HP-212S (5.6 bar)	95.3

Pneumatic Actuator

Ordering Code

Example

HP - ¹088 ²S ³(12) ⁴01 ⁵00 ⁶0 ⁷0 ⁸0

1

Model	
035	HP-035
050	HP-050
063	HP-063
066	HP-066
075	HP-075
088	HP-088
100	HP-100
115	HP-115
125	HP-125
145	HP-145
160	HP-160
180	HP-180
200	HP-200
210	HP-210
211	HP-211
212	HP-212

2

Acting Type	
D	Double acting
S	Single acting (spring return)

3

No. of Springs	
(05)	5
(06)	6
(07)	7
(08)	8
(09)	9
(10)	10
(11)	11
(12)	12

4

Cover Color	
01	● Black (RAL 9005)
02	● Red (RAL 3001)
16	● Blue (RAL 5005)
11	● Yellow (RAL 1033)
SP	● Other colors
C5	C5 coating

5

Body	
00	Soft anodized
27	Hard anodized
SP	● Other colors
C5	C5 coating

6

Travel Angle	
0	90°
1	135°

7

Side Stopper	
0	N/A
1	Side

8

Temperature	
0	Standard: -20 to +80 °C
L	Low temp.: -40 to +80 °C
H	High temp.: -20 to +150 °C

Description

Providing accurate and reliable valve position monitoring, APL Series limit switch boxes are designed for quarter-turn valve applications, used in many many industries:

▣ Wide range of application

With reliable and stable operation, the APL Series is used across a wide range of industries, including:

- ※ Oil & gas
- ※ Powerplant
- ※ Chemical & petrochemical
- ※ Water
- ※ Marine & shipbuilding
- ※ Semi-conductor factory
- ※ General industry

▣ Quick and easy installation

The APL Series offers quick and easy installation with pre-wired switches and pre-set cams. It features spring-loaded, splined cams that can be adjusted without tools. Once the initial setting is complete, no further adjustments are necessary. Additionally, a full range of NAMUR standard mounting brackets is available for all APL Series models.

▣ Wide range of product selection

The APL Series offers a broad range of products with various switches, sensors, and other options to meet diverse customer needs, including cost-effective solutions, compatibility with corrosive and hostile environments, multiple IP ratings (IP67, IP68, NEMA 4, 4X, 6), explosion-proof enclosures, suitability for low and high operating temperatures, 3-way valve applications, stainless steel 316L body and cover, current position signaling, and 120° & 135° valve applications, among many others.

APL-2

weatherproof



APL-3

weatherproof



APL-4

Explosion proof



APL-5

Explosion proof



APL-7

Explosion proof



APL-8

Explosion proof



APL-9

Weatherproof



APL-2 for General Purpose

Features

- * Aluminum die-cast, compact size, and light weight.
- * High corrosion resistance due to double chromate treatment and polyester powder coating.
- * Double sealed indicator that prevents water ingress in case of a dome failure.
- * With spring loaded cams, limit positions can be easily set without tools.



Certificates and approvals

- * CSA
- * EAC
- * SIL 2/3
- * ABS type approval
- * RMRS type approval
- * RINA type approval



Specification

Standard Specification

Material	High grade aluminium alloy, chromate treated twice & polyester powder coated
Enclosure	Weatherproof enclosure IP67, type 4X
Travel angle	0 - 90 °
Ambient temperature	-20 to +80 °C
Cable entry	2 x PF1/2", 2 x NPT1/2", 2 x M20
Switches	2 x mechanical switches or proximity sensors
Terminal points	8 points
Weight	0.5 kg (without bracket)
Indicator	2-way yellow (open) / red (close) 2-way green (open) / red (close)
Bracket	Stainless steel 304, MBP-100 (30 x 80, H:20)
Coating (color)	● Black (RAL 9005), ● Red (RAL 3001), ● Blue (RAL 5005), ● Yellow (RAL 1033), ● Grey (RAL 7046), ● Green (RAL 6034)

Optional Specification

Enclosure	WTA Watertight enclosure actuator (IP68 10 m 72 hr)
Travel angle	0 - 120°, 135°
Indicator	L-port 3-way, yellow (open) / red (close) L-port 3-way, green (open) / red (close) T-port 3-way, yellow (open) / red (close) T-port 3-way, green (open) / red (close)
Bracket	Stainless steel 304 or 316, MBP-050 (25 x 50, H:20), MBP-200 (30 x 80, H:30), MBP-300 (30 x 130, H:30), MBP-400 (30 x 130, H:50)
Coating (color)	Other colors, C5 coating (for corrosive environment)

Limit Switch Box

APL-3 for General Purpose

Features

- * Aluminum die-cast, compact size, and light weight.
- * High corrosion resistance due to double chromate treatment and polyester powder coating.
- * Double sealed indicator that prevents water ingress in case of a dome failure.
- * With spring loaded cams, limit positions can be easily set without tools.
- * Upto 4 mechanical switches or proximity sensors.



Certificates and approvals

- * CSA
- * EAC
- * SIL 2/3
- * S mark
- * ABS type approval
- * RMRS type approval
- * RINA type approval



Specification

Standard Specification

Material	High grade aluminium alloy, chromate treated twice & polyester powder coated
Enclosure	Weatherproof enclosure IP67, type 4X
Travel angle	0 - 90 °
Ambient temperature	-20 to +80 °C
Cable entry	2 x PF1/2", 2 x NPT1/2", 2 x M20
Switches	2 x mechanical switches or proximity sensors
Terminal points	8 points
Weight	0.5 kg (without bracket)
Indicator	2-way yellow (open) / red (close) 2-way green (open) / red (close)
Bracket	Stainless steel 304, MBP-100 (30 x 80, H:20)
Coating (color)	● Black (RAL 9005), ● Red (RAL 3001), ● Blue (RAL 5005), ● Yellow (RAL 1033), ● Grey (RAL 7046), ● Green (RAL 6034)

Optional Specification

Enclosure	WTA Watertight enclosure actuator (IP68 10 m 72 hr)
Travel angle	0 - 120°, 135°
Ambient temperature	LT low temperature: -40 to +60 °C, HT high temperature: -20 to +150 °C (APL-6 series)
Switches	4 x mechanical switches or proximity sensors
Terminal points	10, 12, 14 points
Control	PIU Potentiometer (1 kΩ, 10 kΩ) CPT Current Position Transmitter (output: 4 - 20 mA dc)
Indicator	L-port 3-way yellow (open) / red (close), 3-way green (open) / red (close) T-port 3-way yellow (open) / red (close), 3-way green (open) / red (close)
Bracket	Stainless steel 304 or 316, MBP-050 (25 x 50, H:20), MBP-200 (30 x 80, H:30), MBP-300 (30 x 130, H:30), MBP-400 (30 x 130, H:50) Carbon steel (C) or stainless steel 304 (S), MBP-O-1(30 x 80, H:20), MBP-O-2 (30 x 80, H:30), MBP-O-3 (30 x 130, H:30), MBP-O-4 (30 x 130, H:50)
Coating (color)	● Other colors, C5 coating (for corrosive environment)

APL-4 for Explosion proof

Features

- * Aluminum die-cast, and robust.
- * Up to 20 terminal points.
- * Double sealed indicator that prevents water ingress in case of a dome failure.
- * With spring loaded cams, limit positions can be easily set without tools.
- * Upto 4 mechanical switches or proximity sensors.



Certificates and approvals

- * IECEx (Ex db IIB T6)
- * ATEX (II 2G Ex db IIB T6)
- * CAS (Class I, Division 1, Groups C & D T6)
- * EAC (1 Ex d IIB T6 Gb)
- * KCs (Ex d IIB T6)
- * CCC (Ex db IIB T6)
- * SIL 2/3
- * RMRS type approval
- * RINA type approval



Specification

Standard Specification

Material	High grade aluminium alloy, chromate treated twice & polyester powder coated
Enclosure	Flameproof enclosure Ex db IIB T6, weatherproof enclosure IP67, type 4X, 6
Travel angle	0 - 90 °
Ambient temperature	-20 to +60 °C
Cable entry	2 x NPT1/2", NPT3/4", M20, M25
Switches	2 x mechanical switches or proximity sensors
Terminal points	8 points
Weight	3.1 kg (without bracket)
Indicator	2-way: yellow (open) / red (close), green (open / red (close)
Bracket	Carbon steel (C), MBP-O-1C(30 x 80, H20)
Coating (color)	● Black (RAL 9005)

Optional Specification

Enclosure	WTA Watertight enclosure actuator (IP68 10 m 72 hr)
Ambient temperature	LT low temperature: -40 to +60 °C, HT high temperature: -20 to +150 °C (APL-6 series)
Switches	4 x mechanical switches or proximity sensors
Terminal points	10, 12, 14, 20 points
Control	PIU Potentiometer (1 kΩ, 10 kΩ) CPT Current Position Transmitter (output: 4 - 20 mA dc)
Indicator	L-port 3-way yellow (open) / red (close), 3-way green (open) / red (close) T-port 3-way yellow (open) / red (close), 3-way green (open) / red (close)
Bracket	Carbon steel (C) or stainless steel 304 (S), MBP-O-1(30 x 80, H20), MBP-O-2 (30 x 80, H30), MBP-O-3 (30 x 130, H:30), MBP-O-4 (30 x 130, H:50)
Coating (color)	● Other colors, C5 coating (for corrosive environment)

APL-5 for Explosion proof

Features

- * Aluminum die-cast, light weight, and robust.
- * High corrosion resistance due to double chromate treatment and polyester powder coating.
- * Double sealed indicator that prevents water ingress in case of a dome failure.
- * With spring loaded cams, limit positions can be easily set without tools.
- * Stainless steel 316 & flag type indicator options



Certificates and approvals

- * IECEx (Ex db IIC T6, Ex ia IIC T6, Ex tb IIIC T85°C, Ex ia IIIC T85°C)
- * ATEX (Ex db IIC T6, Ex ia IIC T6, Ex tb IIIC T85°C, Ex ia IIIC T85°C)
- * KCs (Ex d IIC T6 IP67, Ex tD A21 IP67 T85°C)
- * CCC (Ex db IIC T6, Ex ia IIC T6, Ex tb IIIC T85°C)
- * INMETRO (Ex db IIC T6, Ex ia IIC T6, Ex tb IIIC T85 °C)
- * CSA (Cl. I, Div. 1, Gr. B, C & D T6; Cl. II, Div. 1, Gr. E, F & G; Cl. III)
- * EAC (1 Ex d IIC T6)
- * SIL 2 (SC 3)
- * ABS type approval
- * RMRS type approval
- * RINA type approval



Specification

Standard Specification

Material	High grade aluminium alloy, chromate treated twice & polyester powder coated		
Enclosure	Flameproof enclosure Ex db IIC T6, dust ignition proof Ex tb IIIC T85°C, Intrinsic safety Ex ia IIC T6, IP67, type 4X		
Travel angle	0 - 90 °	Terminal points	8 points
Ambient temperature	-20 to +60 °C	Weight	1.2 kg
Cable entry	2 x NPT1/2", NPT3/4", M20	Bracket	Stainless steel 304, MBP-100 (30 x 80, H:20)
Switches	2 x mechanical switches or proximity sensors	Coating (color)	● Black (RAL 9005)
Indicator	2-way: yellow (open) / red (close), green (open) / red (close)		

* For more details of Tamb, refer to IOM manual

Optional Specification

Material	SS316 Stainless steel 316, weight: 3.1 kg (without bracket)
Enclosure	WTA Watertight enclosure actuator (IP68 10 m 72 hr)
Travel angle	0 - 120°, 135°
Ambient temperature	LT low temperature: -40 to +60 °C (APL-51X, APL-53X), -25 to +60 °C (APL-52X), -50 to +60 °C (APL-5HX)
Switches	4 x mechanical switches or proximity sensors
Terminal points	10, 12 points
Control	PIU Potentiometer (1 kΩ, 10 kΩ), CPT Current Position Transmitter (output: 4 - 20 mA dc)
Indicator	L-port 3-way yellow (open) / red (close), 3-way green (open) / red (close)
	T-port 3-way yellow (open) / red (close), 3-way green (open) / red (close)
	Flag Flag type indicator (stainless steel 316 option, non-explosionproof), weight: 3.4 kg (without bracket)
Bracket	Stainless steel 304 or 316, MBP-050 (25 x 50, H20), MBP-200 (30 x 80, H30), MBP-300 (30 x 130, H:30), MBP-400 (30 x 130, H:50)
Coating (color)	● Other colors, C5 coating (for corrosive environment)

APL-7 for Explosion proof

Features

- ※ Aluminum die casting that is lightweight and robust.
- ※ High corrosion resistance due to double chromate treatment and polyester powder coating.
- ※ Double sealed indicator that prevents water ingress in case of a dome failure.
- ※ With spring loaded cams, limit positions can be easily set without tools.
- ※ Solenoid valve integrated with 3 cable entries



Certificates and approvals

- ※ IECEx (Ex db IIC T5)
- ※ ATEX (Ex db IIC T5)
- ※ KCs (Ex d IIC T6 IP68)
- ※ CCC (Ex db IIC T5)
- ※ SIL 2 (SC 3)
- ※ ABS type approval
- ※ RMRS type approval



Specification

Standard Specification

Material	High grade aluminium alloy, chromate treated twice & polyester powder coated		
Enclosure	Flameproof enclosure Ex db IIC T5, weatherproof enclosure IP67		
Travel angle	0 - 90 °	Terminal points	8 points
Ambient temperature	-20 to +60 °C	Weight	2.1 kg (without bracket)
Cable entry	3 x NPT3/4", 3 x M20	Bracket	Stainless steel 304, MBP-100 (30 x 80, H:20)
Switches	2 x mechanical switches or proximity sensors	Coating (color)	● Black (RAL 9005)
Indicator	2-way: yellow (open) / red (close), green (open) / red (close)		
Solenoid valve voltage	110/220 V ac 1ph, 50/60 Hz, ±10%, 24 V dc		
Solenoid valve port	3-way: NPT1/8, NPT1/4, G1/4, 5-way: NPT1/4, NPT3/8, G1/8, G1/4		

Optional Specification

Enclosure	WTA Watertight enclosure actuator (IP68 10 m 72 hr)
Travel angle	0 - 120°, 135°
Ambient temperature	4 x mechanical switches or proximity sensors
Switches	10 points
Terminal points	PIU Potentiometer (1 kΩ, 10 kΩ)
Control	CPT Current Position Transmitter (output: 4 - 20 mA dc)
Indicator	L-port 3-way yellow (open) / red (close), 3-way green (open) / red (close)
	T-port 3-way yellow (open) / red (close), 3-way green (open) / red (close)
Bracket	Stainless steel 304 or 316, MBP-050 (25 x 50, H20), MBP-200 (30 x 80, H30), MBP-300 (30 x 130, H:30), MBP-400 (30 x 130, H:50)
Coating (color)	● Other colors, C5 coating (for corrosive environment)

Limit Switch Box

APL-8 for Explosion proof

Features

- ※ Aluminum die casting that is lightweight and robust.
- ※ High corrosion resistance due to double chromate treatment and polyester powder coating.
- ※ With spring loaded cams, limit positions can be easily set without tools.
- ※ Double sealed indicator that prevents water ingress in case of a dome failure.
- ※ Stainless steel 316 & flag type indicator options.
- ※ 4 cable entries.



Certificates and approvals

- ※ IECEx (Ex db IIC T6, Ex ia IIC T6)
- ※ ATEX (Ex db IIC T6, Ex ia IIC T6)
- ※ KCs (Ex d IIC T6)
- ※ CCC (Ex db IIC T6)
- ※ SIL 2 (SC 3)
- ※ ABS type approval
- ※ RMRS type approval



Specification

Standard Specification

Material	High grade aluminium alloy, chromate treated twice & polyester powder coated		
Enclosure	Flameproof enclosure Ex db IIC T6, Intrinsic safety Ex ia IIC T6, weatherproof enclosure IP67		
Travel angle	0 - 90 °	Terminal points	8 points
Ambient temperature	-20 to +60 °C	Weight	1.3 kg (without bracket)
Cable entry	4 x NPT3/4", 4 x M20, 2 x NPT3/4", 2 x M20	Bracket	Stainless steel 304, MBP-100 (30 x 80, H:20)
Switches	2 x mechanical switches or proximity sensors	Coating (color)	● Black (RAL 9005)
Indicator	2-way: yellow (open) / red (close), green (open) / red (close)		

* For more details of Tamb, refer to IOM manual

Optional Specification

Material	SS316 Stainless steel 316, weight: 3.1 kg (without bracket)
Enclosure	WTA Watertight enclosure actuator (IP68 10 m 72 hr)
Travel angle	0 - 120°, 135°
Switches	4 x mechanical switches or proximity sensors
Terminal points	10 points
Control	PIU Potentiometer (1 kΩ, 10 kΩ), CPT Current Position Transmitter (output: 4 - 20 mA dc)
Indicator	L-port 3-way yellow (open) / red (close), 3-way green (open) / red (close)
	T-port 3-way yellow (open) / red (close), 3-way green (open) / red (close)
	Flag Flag type indicator (stainless steel 316 option, non-explosionproof), weight: 3.4 kg (without bracket)
Bracket	Stainless steel 304 or 316, MBP-050 (25 x 50, H20), MBP-200 (30 x 80, H30), MBP-300 (30 x 130, H:30),
	MBP-400 (30 x 130, H:50)
Coating (color)	Other colors, C5 coating (for corrosive environment)

APL-9 for General Purpose

Features

- * Press formed stainless steel 304 material.
- * Lightweight, robust and has high corrosion resistance.
- * With spring loaded cams, limit positions can be easily set without tools.
- * High visibility dome indicator with a double sealed structure prevents water ingress in case of a dome failure
- * Stainless steel 316L option.
- * Permanent laser marking nameplate.
- * Flag type indicator option.



Certificates and approvals

- * ABS type approval
- * RMRS type approval
- * USCG test approval



Specification

Standard Specification

Material	Stainless steel 304
Enclosure	Weatherproof enclosure IP67
Travel angle	0 - 90 °
Ambient temperature	-20 to +80 °C
Cable entry	2 x M20, 2 x NPT1/2"
Switches	2 x mechanical switches or proximity sensors
Terminal points	8 points
Weight	0.7 kg
Indicator	2-way yellow (open) / red (close) 2-way green (open) / red (close)
Bracket	S type (30 x 80, H:20. 30)

Optional Specification

Material	Stainless steel 316L Cable entry : 2 x M20, 2 x M25, 2 x NPT1/2"
Switches	4 x mechanical switches or proximity sensors
Terminal points	10, 12 points
Control	PIU Potentiometer (1 kΩ, 10 kΩ)
Indicator	Flag Flag type indicator, weight: 0.9 kg
Bracket	O type (30 x 130, H:30, 50)
Coating (color)	C5 coating (for corrosive environment)

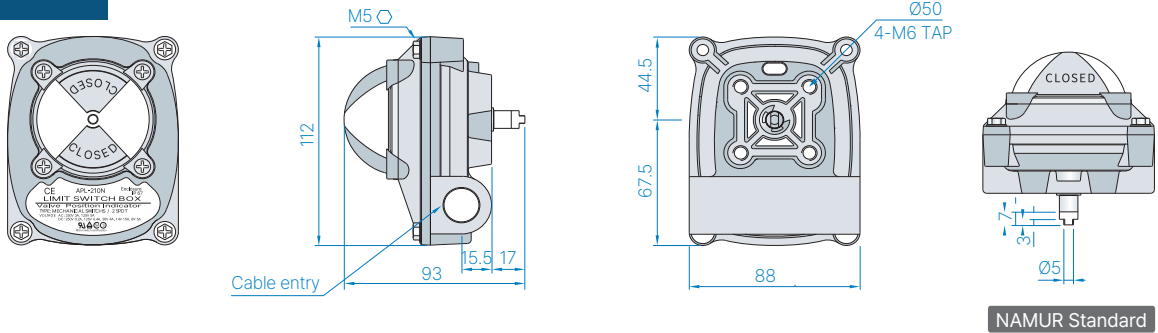
Specification

Model		APL-2	APL-3	APL-4
Use				
Enclosure		General purpose	General purpose	Explosion proof
Material	Material	Aluminium	Aluminium	Aluminium
	IP rating	Standard: IP67 Option: IP68	Standard: IP67 Option: IP68	Standard: IP67 Option: IP68
	NEMA rating	NEMA 4, 4X	NEMA 4, 4X	NEMA 4X, 6
Explosion proof	IECEX, ATEX	-	-	Ex db IIB T6
	CSA	-	-	Cl. 1, Div. 1, Gr. C,D T6
	EAC	-	-	1 Ex d IIB T6
	KCs	-	-	Ex d IIB T6
	CCC	-	-	Ex db IIB T6 Gb
Other approvals		EAC, SIL, ABS, RMRS, RINA	S mark, EAC, SIL, ABS, RMRS, RINA	SIL, ABS, RMRS, RINA
Travel angle		0-90°	0-90°	0-90°
Ambient temperature		-20 to +80°C	Standard: -20 to +80°C Option (low): -40 to +80°C Option (high): -20 to +150°C	Standard: -20 to +60°C Option (low, CSA): -40 to +60°C (APL-41X)
Cable entries		2 x NPT1/2", PF1/2", M20	2 x NPT1/2", PF1/2", M20	2 x NPT1/2", NPT3/4", M20
No. of switches & sensors		2	Standard: 2 Option: 4	Standard: 2 Option: 4
Terminal strips		8 points	Standard: 8 points Option: 10, 12, 14 points	Standard: 8 points Option: 10, 12, 14 points
Shaft		Standard: stainless steel 304 Option: stainless steel 316	Standard: stainless steel 304 Option: stainless steel 316	Standard: stainless steel 304 Option: stainless steel 316
Control option	Potentiometer (PIU)	-	1 kΩ (standard), 10 kΩ	1 kΩ (standard), 10 kΩ
	Current Position Transmitter (CPT)	-	4-20 mA dc 12.5-37.0 V dc (24 V typical)	4-20 mA dc 12.5-37.0 V dc (24 V typical)
Dome indicator		Standard: 2-way Option: No indicator, 3-way (L-port, T-port)	Standard: 2-way Option: No indicator, 3-way (L-port, T-port)	Standard: 2-way Option: No indicator, 3-way (L-port, T-port)
Weight (without bracket)		0.5 kg	1.0 kg	3.1 kg
Coating		● Black ● Blue ● Grey ● Other colors ● Red ● Yellow ● Green ● C5 coating	● Black ● Blue ● Grey ● Other colors ● Red ● Yellow ● Green ● C5 coating	● Black ● Other colors C5 coating

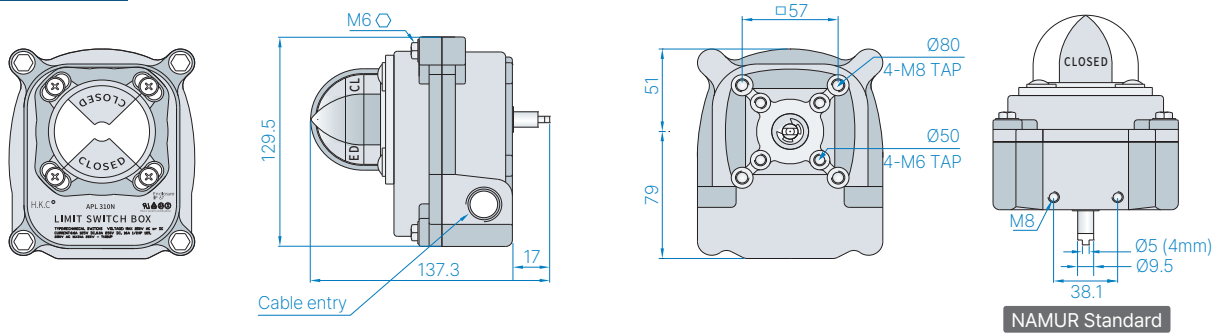
APL-5	APL-7	APL-8	APL-9
			
Explosion proof	Explosion proof	Explosion proof	General purpose
Standard: aluminium Option: stainless steel 316	Aluminium	Standard: aluminium Option: stainless steel 316	Standard: stainless steel 304 Option: stainless steel 316L
Standard: IP67 Option: IP68	Standard: IP67 Option: IP68	Standard: IP67 Option: IP68	Standard: IP67
NEMA 4X, 6	-	-	-
Ex db IIC T6 Ex ia IIC T6 Ex tb IIIC T85°C Ex ia IIIC T85°C	Ex db IIC T5	Ex db IIC T6 Ex tb IIIC T85°C Ex ia IIC T6	-
Cl. 1, Div. 1, Gr. B,C,D T6; Cl. 2, Div. 1, Gr. E,F,G; Cl.3	-	-	-
1 Ex d IIC T6	-	-	-
Ex d IIC T6 Ex tD A21	Ex d IIC T6	Ex d IIC T6	-
Ex db IIC T6 Ex ia IIC T6 Ex tb IIIC T85°C	Ex d IIC T5 Gb	Ex d IIC T6 Gb	-
SIL, ABS, RMRS, RINA	SIL, ABS, RMRS	SIL, ABS, RMRS	ABS, RMRS, USCG test
Standard: 0-90° Option: 0-120°, 0-135°	Standard: 0-90° Option: 0-120°, 0-135°	Standard: 0-90° Option: 0-120°, 0-135°	0-90°
Standard: -20 to +60°C Option (low, CSA): -40 to +60°C (APL-51X) -25 to +60°C (APL-52X) -40 to +60°C (APL-53X) -50 to +60°C (APL-5HX)	-20 to +60°C	-20 to +60°C	Standard: -20 to +80°C
Standard: 2 x NPT3/4", NPT1/2", M20 Stainless steel 316 option: 2 x NPT3/4", NPT1/2", M20	3 x NPT3/4", M20	Standard: 2 or 4 x NPT3/4", M20 Stainless steel 316 option: 2 x NPT3/4", M20	Stainless steel 304 (std): 2 x NPT1/2", M20 Stainless steel 316L option 2 x NPT1/2", M20, M25
Standard: 2 Option: 4	Standard: 2 Option: 4	Standard: 2 Option: 4	2
Standard: 8 points Option: 10, 12, 14 points	Standard: 8 points Option: 10, 12, 14 points	Standard: 8 points Option: 10, 12, 14 points	Standard: 8 points Option: 10, 12 points
Standard: stainless steel 304 Option: stainless steel 316	Standard: stainless steel 304 Option: stainless steel 316	Standard: stainless steel 304 Option: stainless steel 316	Standard: stainless steel 304 Option: stainless steel 316
1 kΩ (standard), 10 kΩ	1 kΩ (standard), 10 kΩ	1 kΩ (standard), 10 kΩ	1 kΩ (standard), 10 kΩ
4-20 mA dc 12.5-37.0 V dc (24 V typical)	4-20 mA dc 12.5-37.0 V dc (24 V typical)	4-20 mA dc 12.5-37.0 V dc (24 V typical)	-
Standard: 2-way Option: No indicator, 3-way (L-port, T-port), flag type (SS316, non-explosionproof)	Standard: 2-way Option: No indicator, 3-way (L-port, T-port)	Standard: 2-way Option: No indicator, 3-way (L-port, T-port), flag type (SS316, non-explosionproof)	Standard: 2-way Option: No indicator, flag type
Standard: 1.5 kg SS316 option: 3.1 kg SS316 & flag type: 3.4 kg	2.1 kg	Standard: 1.3 kg SS316 option: 4.2 kg SS316 & flag type: 4.5 kg	Standard: 0.7 kg Flag type: 0.9 kg
● Black C5 coating ● Other colors	● Black C5 coating ● Other colors	● Black C5 coating ● Other colors	

Dimensional Drawing

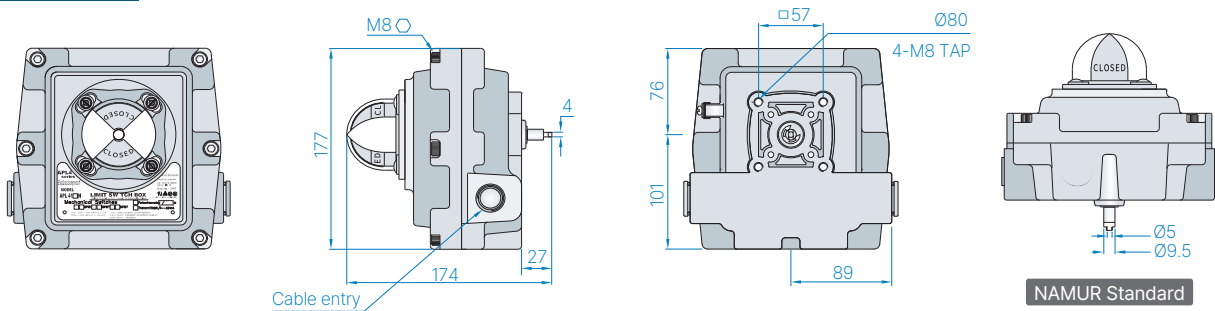
APL-2



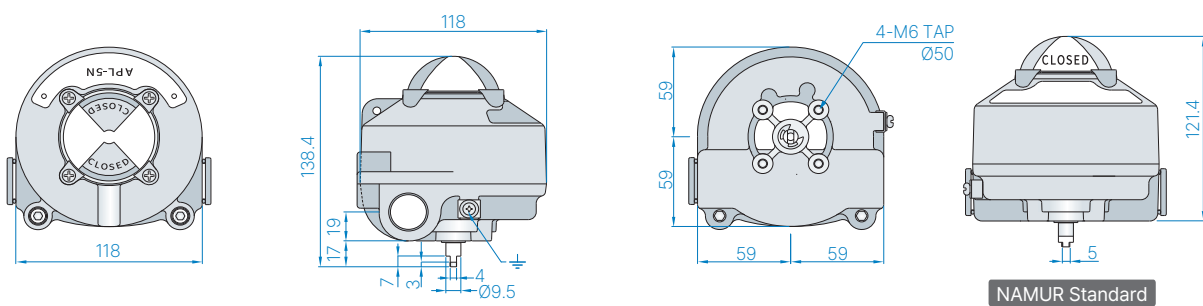
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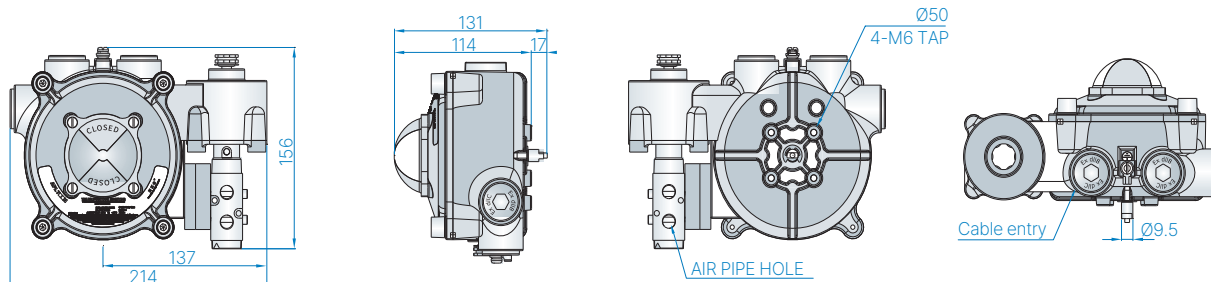
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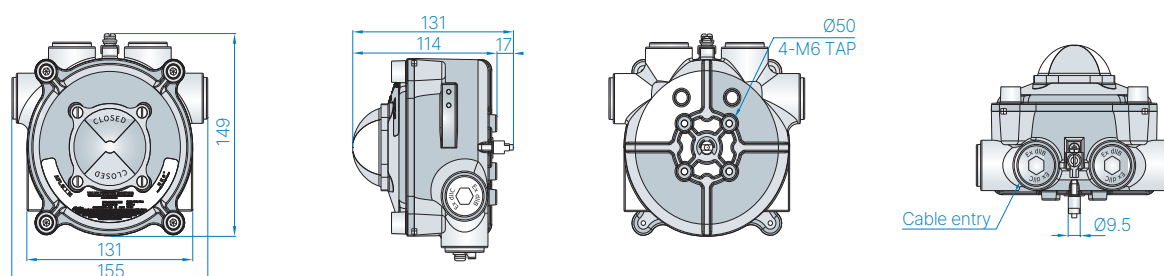
APL-5



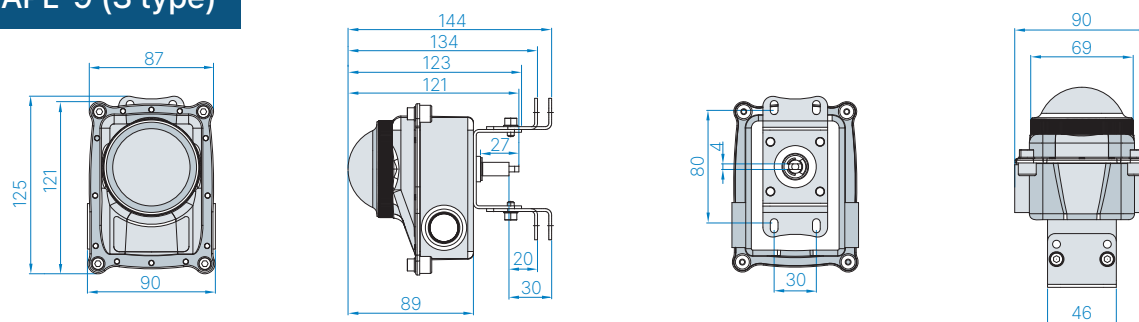
APL-7



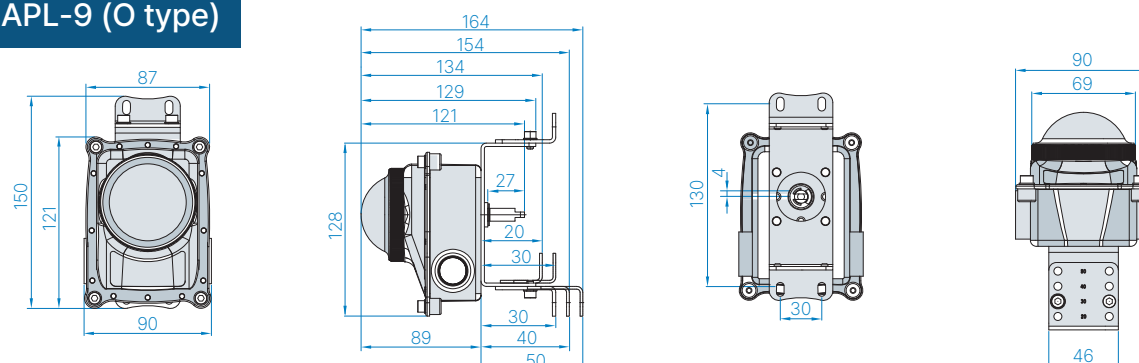
APL-8



APL-9 (S type)



APL-9 (O type)



Brackets

Shape						
Model	MBP-50	(25 x 50 H:20) Bracket height: 30.5	MBP-O1C	(30 x 80 H:20) Bracket height: 41.5	MBP-O3C	(30 x 130 H:30) Bracket height: 51.5
	MBP-100	(30 x 80 H:20) Bracket height: 30.5	MBP-O1S	(30 x 80 H:20) Bracket height: 41.5	MBP-O3S	(30 x 130 H:30) Bracket height: 51.5
	MBP-200	(30 x 80 H:30) Bracket height: 40.5	MBP-O2C	(30 x 80 H:30) Bracket height: 51.5	MBP-O4C	(30 x 130 H:50) Bracket height: 71.5
	MBP-300	(30 x 130 H:30) Bracket height: 40.5	MBP-O2S	(30 x 80 H:30) Bracket height: 51.5	MBP-O4S	(30 x 130 H:50) Bracket height: 71.5
	MBP-400	(30 x 130 H:50) Bracket height: 60.5				

Ordering Code

Example

APL - ¹2 ²01 ³N ⁴01 ⁵0 ⁶0 ⁷01

1		2		3		7	
Model		Switches		Material		Brackets	
2	APL-2 Series	10	2-SPDT	N	Non-ferrous metal (Aluminium)	01	MBP-100
3	APL-3 Series	11	3-SPDT	S	Stainless steel	02	MBP-200
4	APL-4 Series	12	4-SPDT			03	MBP-300
5	APL-5 Series	14	2-DPDT			04	MBP-400
7	APL-7 Series	15	2-SPDT + Potentiometer			05	MBP-050
8	APL-8 Series	16	2-SPDT + CPT(4-20 mA)			1C	MBP-O1C
9	APL-9 Series	:	:			1S	MBP-O1S
						2C	MBP-O2C
						2S	MBP-O2S
						3C	MBP-O3C
						3S	MBP-O3S
						4C	MBP-O4C
						4S	MBP-O4S

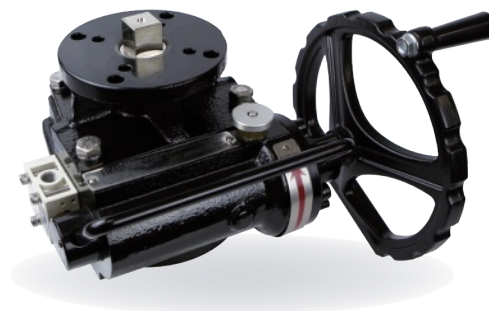
Please see page 34 for more details

Declutchable Gear Override

HGO Series

Features

- ※ In case of air failure, the HGO Series enables manual operation of the pneumatic actuator.
- ※ The HGO Series is installed between a pneumatic actuator and quarter-turn valves, including ball, butterfly, and plug valves.
- ※ To rapidly discharge the residual air used in the actuator, a block-bleed valve is employed.
- ※ The self-lubricating worn shaft guide ensures high reliability and stability of the product.



Specification

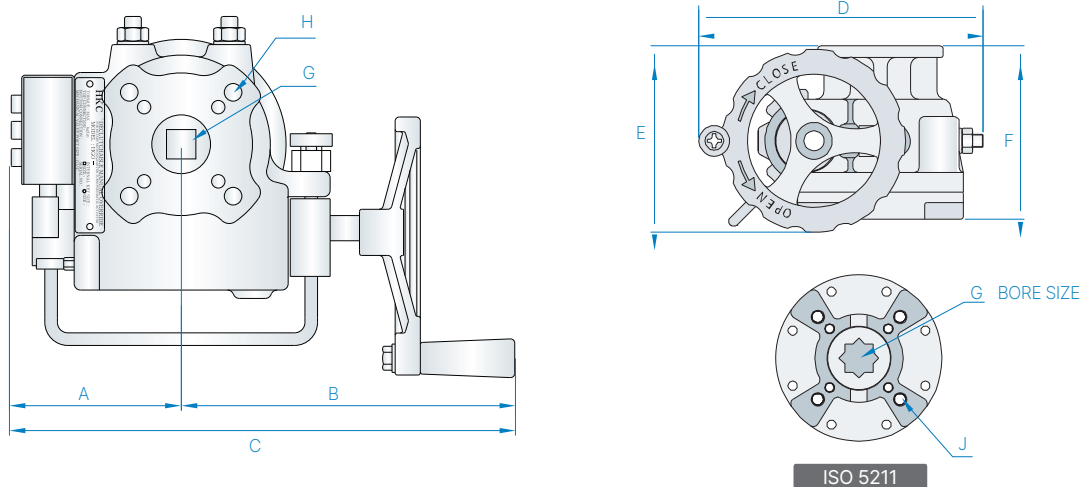
◆ Standard Specification

Material	HGO-010: High grade aluminium alloy, chromate treated, & polyester powder coated HGO-050, 080, 150: Ductile iron, epoxy-polyurethane coated		
Enclosure	Weatherproof IP67		
Ambient temperature	-30 to +90 °C		
Max. output torque	HGO-010: 120 Nm	Weight	HGO-010: 3.2 kg
	HGO-050: 500 Nm		HGO-050: 5.1 kg
	HGO-080: 800 Nm		HGO-080: 16.1 kg
	HGO-150: 1,500 Nm		HGO-150: 42.8 kg
Applicable HP Series actuator	HGO-010: HP-035 to HP-075		
	HGO-050: HP-088 to HP-125		
	HGO-080: HP-125 to HP-160		
	HGO-150: HP-160 to HP-200		
Coating (color)	● Black (RAL 9005)		

◆ Optional Specification

Coating (color)	● Other colors , C5 coating (for corrosive environment)
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Dimensional Drawing



Model	unit	A	B	C	D	E	F	G	H/J
HGO-010	mm	81	159	240	158	112	104	□11, 14, 17	F05, F07
	inch	3.2	6.3	9.5	6.2	4.4	4.1	☉17	
HGO-050	mm	104	233	337	282	164	148	□17, 22	F07, F10/ F10, F12
	inch	4.1	9.2	13.2	11.1	6.5	5.8	☉22	
HGO-080	mm	104	204	308	330	244	154	□22,27	F10, F12
	inch	4.1	8.0	12.1	13.0	9.6	6.1	☉27	
HGO-150	mm	128	316	444	479	336	192	□27,36	F10, F14 or F12 / F14
	inch	5.0	12.4	17.5	18.9	13.2	7.5	☉36	

Ordering Code

Example

HGO - ¹010 ²01 ³1714 ⁴1

1		2		3		4	
Model		Color		Shaft Size (Bottom / Top)		No. of Mechanical Valve	
010	HGO-010	01	● Black (RAL 9005)	1711	HGO-010: Star 17 / Square 11	0	0 (single acting)
050	HGO-050	SP	● Other colors	1714	HGO-010: Star 17 / Square 14	1	1 (double acting)
080	HGO-080			1717	HGO-010: Star 17 / Square 17	2	2 (double acting)
150	HGO-150			2217	HGO-050: Star 22 / Square 17		
				2222	HGO-050: Star 22 / Square 22		
				2722	HGO-080: Star 27 / Square 22		
				2727	HGO-080: Star 27 / Square 27		
				3627	HGO-150: Star 36 / Square 27		
				3636	HGO-150: Star 36 / Square 36		

HKC

VALVE AUTOMATION

HKC

