

Series 6200 Pneumatically operated Cylinder Actuator Canted Scotch Yoke type

70-17-11-05-EN REV. 2
09/2014
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Specification

Series 6200 Canted Scotch Yoke Actuator

Series 6200 Features

General

The Series 6200 cylinder actuators are designed to operate rotary valves such as Ball valves, V-Notch valves and Butterfly valves for throttling or ON-OFF service. This actuator is unique canted scotch-yoke mechanism.

Performance:

- Ideal high torque
- Reliability
- Low hysteresis
- Light weight
- Easy maintenance

Design Flexibility:

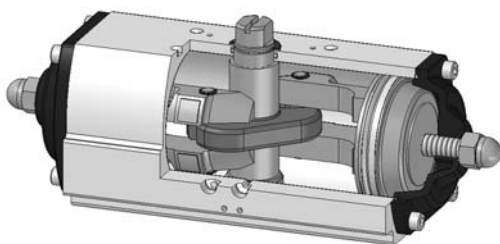
- Double acting and spring return acting
- Wide selection of optional accessories available
- Wide adjustable range (maximum rotation angle – 100°)
- Manual overrides are optional.

Design Integrity:

- Over stroke (-5 ~ 95) for all rotary valves
- Mounting flange dimensions in accordance with ISO 5211

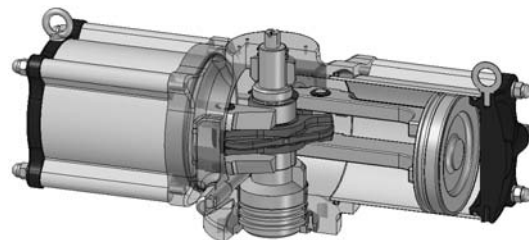
Kind of Actuators:

- **6200D**: Double acting
- **6200S**: Spring return acting (Air to clock-wise or counter clock-wise)



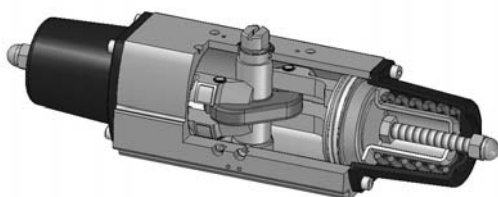
Type A(6200D)

Size: AC06D, 08D, 10D, 12D, 14D, 16D



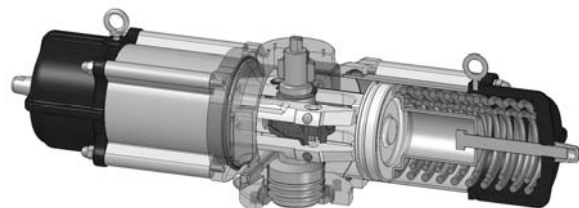
Type B(6200D)

Size: 20D, 25D, 30D



Type A(6200S)

Size: AC06S, 08S, 10S, 12S, 14S, 16S



Type B(6200S)

Size: 20S, 25S, 30S

Scope of Design:

- Maximum output torque: 3.6 to 3539 Kgf-m
- Cylinder bore: 50 to 300 mm

Working conditions:

- Maximum working pressure: 8 Kgf/cm²G
- Temperature:
 - Standard: -20°C ~ +80°C
 - Low: -40°C ~ +60°C
 - High: 0°C ~ +150°C

Canted Scotch Yoke Mechanism

Fig.2 shows the comparison between the output torque curves of a canted, as a constant torque actuator. (i.e. Rack and pinion type)

These graphs demonstrate that, being the same the arm length and the cylinder diameter, the canted scotch-yoke actuator have the most suitable mechanism, from technical and economical reason, to operate quarter turn valves.

The meaning of torque curves in Fig 2 is as follows;

- a. Valve torque
- b. Actual output torque (canted design)
- c. Actual output torque (symmetric design)
- d. Output torque actuator (constant torque design)

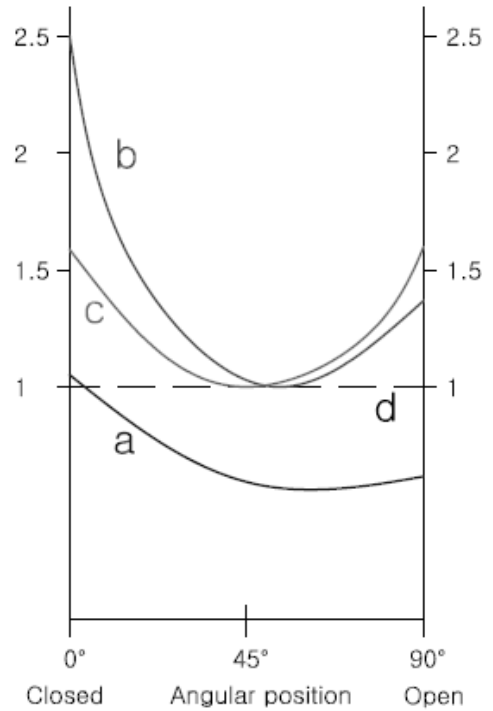


Fig 2 Torque curves

Over torque and travel stops

All manufactured valves have acceptable ± tolerance. When these tolerances of the components of an automated valve assembly are added, the actuator must provide compensation by being able to rotate more than 90° with over travel in both directions, and then stop precisely at the required position. Series 6200 actuator, with two way rotation travel stops, provide a minimum rotation of – 5° to 95°, and positive, adjustable, rotation stopping (10° at each end) (See Fig. 3)

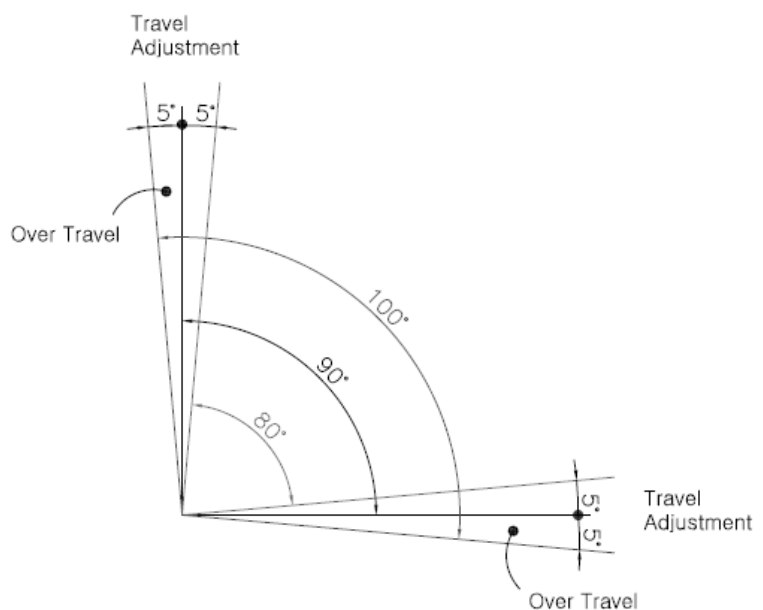


Fig 3 Rotation travel

Torque Table

1. Double Acting Type

Supply Air : 5.0 kgf/cm²G

kgf-m

SIZE	TORQUE	ISO. BASE	SIZE	TORQUE	ISO. BASE
AC06D	10.5	F05/F07	AC16D	148.5	F14
AC08D	15.6	F07	AC20D	416.3	F16
AC10D	33.2	F07/F10	AC25D	817.9	F25
AC12D	72.5	F07/F10	AC30D	1415.7	F25
AC14D	110.5	F12			

2. Spring Return Acting Type

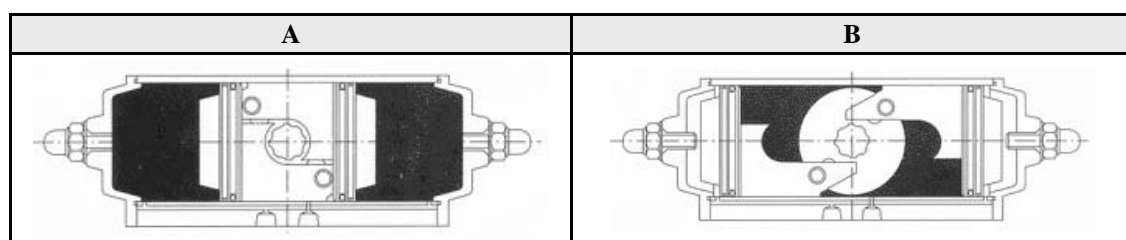
Spring Range: 2~3 kgf/cm²GSupply Air: 5.0 kgf/cm²G

kgf-m

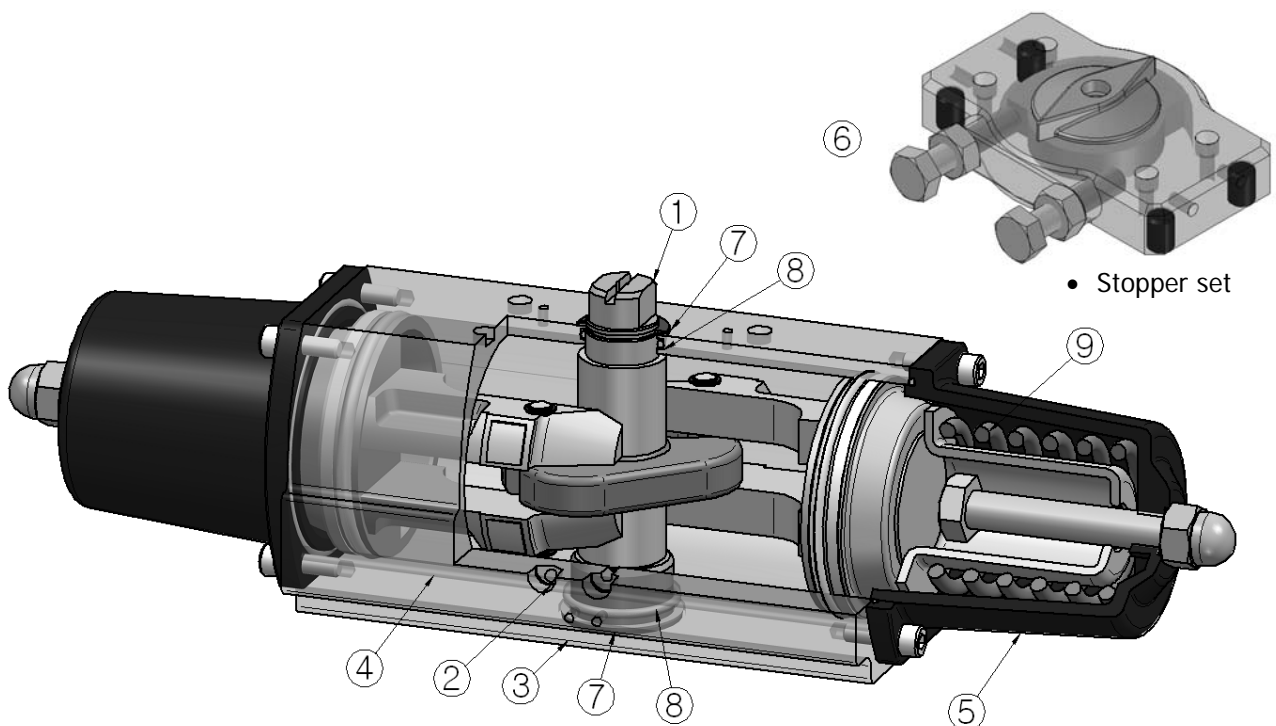
SIZE	NON AIR	0°	ISO. BASE	SIZE	NON AIR	0°	ISO. BASE
AC06S	3.5	5.4	F05/F07	AC16S	55.0	75.0	F14
AC08S	6	10.0	F07	AC20S	166.5	249.8	F16
AC10S	10.0	19.0	F07/F10	AC25S	327.2	490.8	F25
AC12S	23.0	38.0	F07/F10	AC30S	566.3	849.4	F25
AC14S	30.0	55.0	F12				

3. Air Consumption:

SIZE	Cylinder Volume (liter)		
	A	B	A+B
AC06	0.31	0.31	0.62
AC08	0.6	0.6	1.2
AC10	1.12	1.12	2.24
AC12	2.27	2.27	4.54
AC14	2.76	2.76	5.52
AC16	4.01	4.01	8.02
AC20	8.15	8.15	16.3
AC25	15.57	15.57	31.14
AC30	27.12	27.12	54.24



Features & Benefits (Size: AC06, 08, 10, 12, 14, 16)



1. NAMUR STANDARD SLOTTED SPINDLE (NAMUR Accessory mounting)

Provide a self centering, positive, no slop drive for positioner and switches and eliminates the actuator/accessory coupling.

2. NAMUR SOLENOID MOUNTING PAD (An international Standard)

Permits choice of various manufactures' solenoid valves to be direct mounted to the actuator. A single solenoid valve can be used for all actuator sizes.

3. ISO 5211 STANDARD MOUNTING PAD (An international Standard)

Designed for optimum strength and interchangeability. Standardized mounting dimensions bolt diameters and bolt hole depths for ease and flexibility of mounting; with or without brackets.

4. VERSATILE MODULAR DESIGN

Attach or remove double acting or spring modules in minutes, select any combination of fail position, spindle rotation or actuator alignment in minutes - Safety!

5. TWO DIRECTIONAL TRAVEL STOPS (Option Parts)

Exclusive standard provides rotational adjustment for the actuator Spindle, in both directions of travel. Standard up to size AC12

6. SPINDLE THRUST AND RADIAL BEARINGS

Acetal thrust bearings project against vertical forces and also seal against atmospheric intrusion. Acetal Radial Bearings support all radial forces.

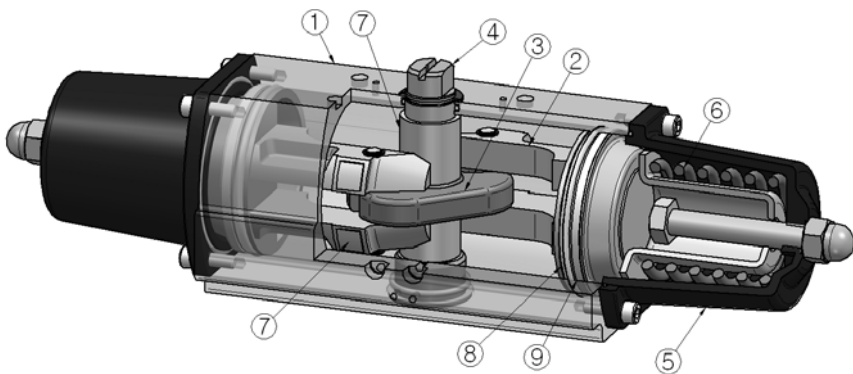
7. SPINDLE SEALS - TOP AND BOTTOM

Seals to the atmosphere are located to minimize any crevices and maximize the protection against external corrosive build up.

8. INDESTRUCTIBLE FAIL SAFE SPRINGS

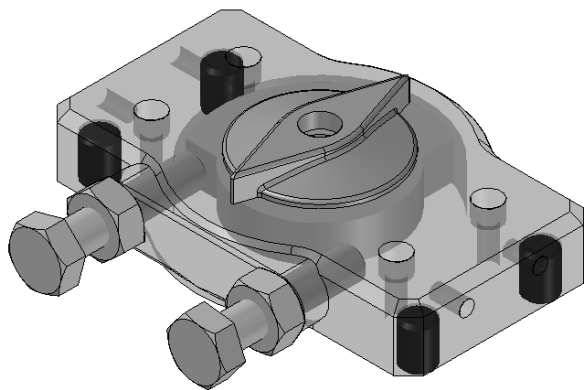
Designed, built and protected to never break - rated to compensate for "spring set" for true fail safe confidence. Guaranteed and backed by a free complete actuator replacement. Highest "end of stroke" forces in the industry, for maximum reserve.

Part Material

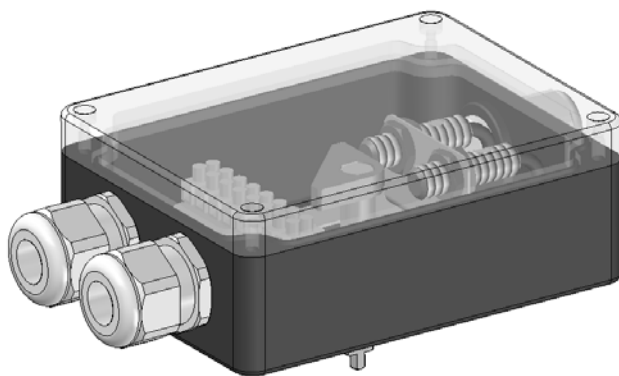


No.	Part Name	Material
1	BODY	A5083
2	PISTON LINK	AC4C
3	DISC	S25C
4	SPINDLE	SUS 303
5	SPRING CASE	AC4C
6	SPRING	SUP9
7	GUIDE	ACETAL
8	O-RING	HNBR
9	WEAR RING	PTFE

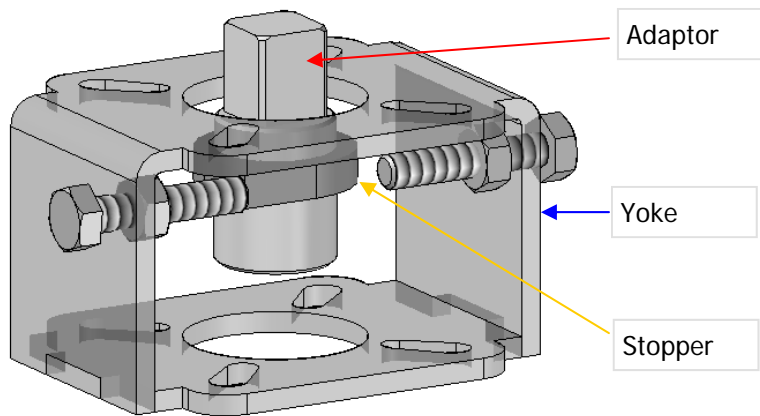
Option Parts



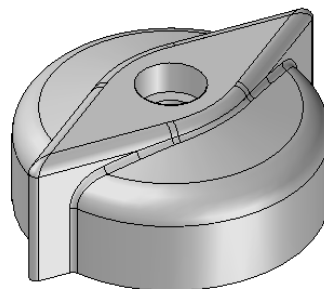
Stopper set



Limit Switch Box



Stopper Yoke Set



Indicate

Torque Curve

1. Double Acting Type

Supply Air : 5.0 kgf/cm²G

Size: AC006D, 08D, 10D, 12D, 14D, 16D

Size	0°	45°	90°
AC06D	9.5	6.3	9.3
AC08D	18.3	12.1	15.6
AC10D	29.2	19.6	30.1
AC12D	67.8	44.3	61.3
AC14D	92.3	58.2	88.0
AC16D	131.2	94.9	163.5

2. Spring Return Acting Type

Supply Air : 5.0 kgf/cm²G

Spring Range: 2.0 ~ 3.0 kgf/cm²G

Size: AC06S, 08S, 10S, 12S, 14S, 16S

Size	0°	45°	90°
AC06S	5.4	2.8	3.5
AC08S	10.0	5.0	6.0
AC10S	19.0	8.0	10.0
AC12S	38.0	19.0	23.0
AC14S	55.0	29.0	30.0
AC16S	75.0	42.0	55.0

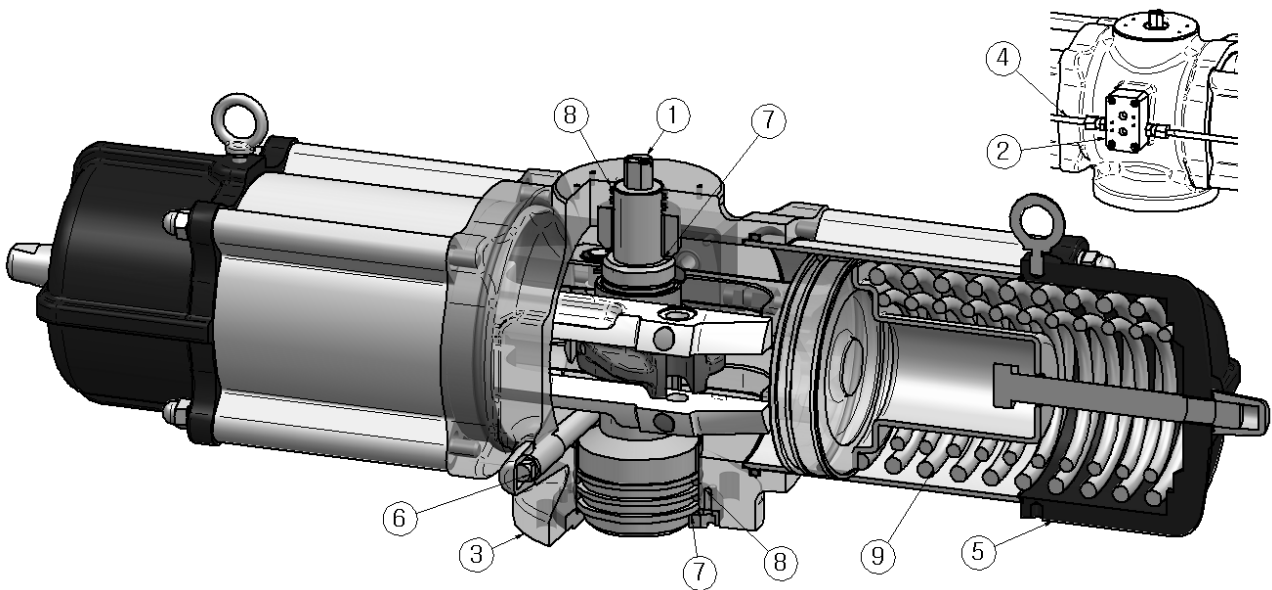
3. Non Air

Spring Range: 2.0 ~ 3.0 kgf/cm²G

Size: AC06S, 08S, 10S, 12S, 14S, 16S

Size	0°	45°	90°
AC06S	3.5	2.8	5.4
AC08S	6.0	5.0	10.0
AC10S	10.0	8.0	19.0
AC12S	23.0	19.0	38.0
AC14S	30.0	29.0	55.0
AC16S	55.0	42.0	75.0

Features & Benefits (Size: AC20, 25, 30)



1. NAMUR STANDARD SLOTTED SPINDLE (An international Standard)

Provide a self centering, positive, no slop drive for positioner and switches and eliminates the actuator / accessory coupling.

2. NAMUR SOLENOID MOUNTING PAD (An international Standard)

Permits choice of various manufactures' solenoid valves to be direct mounted to the actuator. A single solenoid valve can be used for all actuator sizes.

3. ISO 5211 STANDARD MOUNTING PAD (An international Standard)

Designed for optimum strength and interchangeability. Standardized mounting dimensions bolt Diameters and bolt hole depths for ease and flexibility of mounting; with or without brackets.

4. LARGE AIR PASSAGE

This unique "supply-size" internal air passage permits obstruction free, fast operation and simple "air assist" when required.

5. VERSATILE MODULAR DESIGN

Attach or remove double acting or spring modules in minutes, select any combination of fail position, spindle rotation or actuator alignment in minutes - Safety!

6. TWO DIRECTIONAL TRAVEL STOPS

A unique, exclusive standard provides rotational adjustment for the actuator spindle, in both directions of travel. Standard from size AC14.

7. SPINDLE THRUST AND RADIAL BEARINGS

Metal thrust bearings project against vertical forces and also seal against atmospheric intrusion. BC6 Radial Bearings support all radial forces.

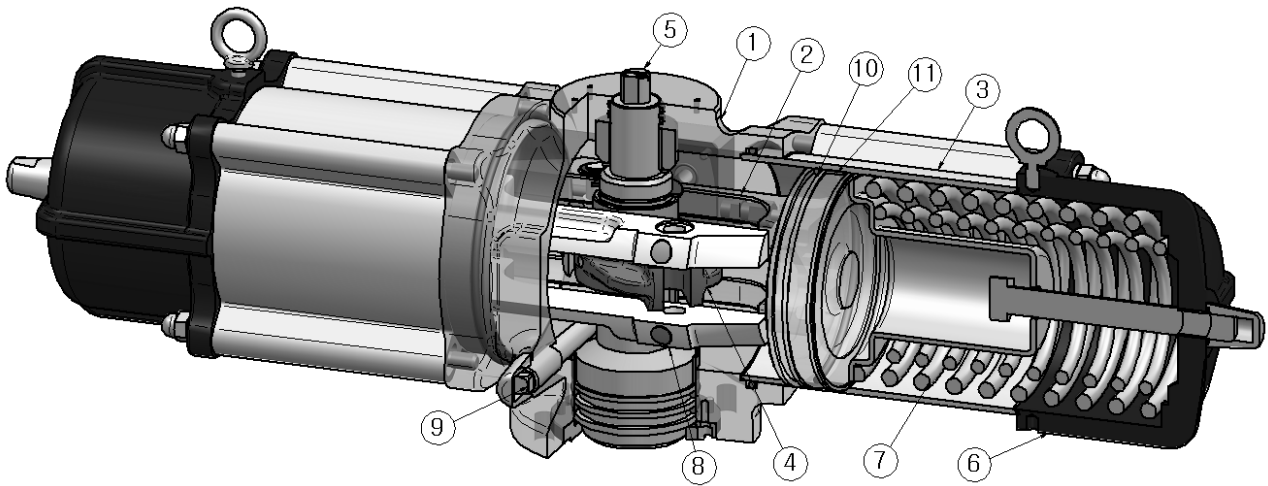
8. SPINDLE DOUBLE SEALS - TOP AND BOTTOM

Seals to the atmosphere are located to minimize any crevices and maximize the protection against external corrosive build up.

9. INDESTRUCTIBLE FAIL SAFE SPRINGS

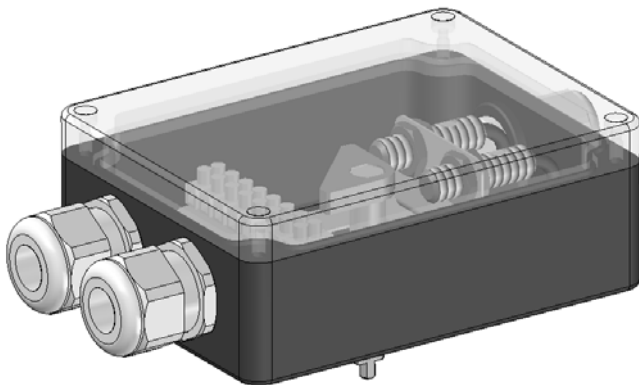
Designed, built and protected to never break - rated to compensate for "spring set" for true fail safe confidence.

Part Material

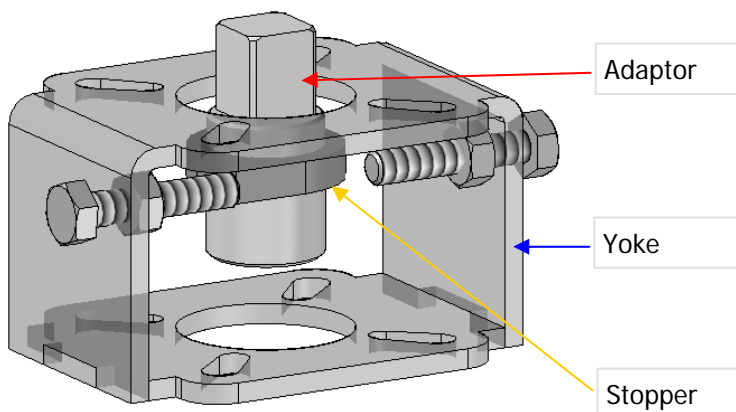


No.	Part Name	Material
1	HOUSING	FC300
2	PISTON LINK	AC4C
3	CYLINDER	A5083, TPG370
4	DISC	S25C
5	SPINDLE	SC450
6	SPRING CASE	FC300
7	SPRING	SUP9
8	GUIDE	BC6
9	STOPPER BOLT	SNB7
10	O-RING	HNBR
11	WEAR RING	PTFE

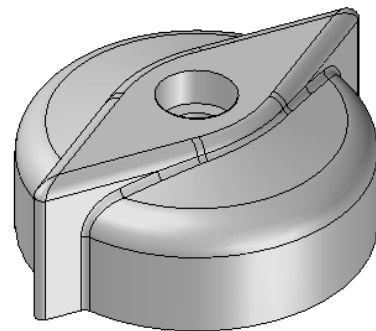
Option Parts



Limit Switch Box



Stopper Yoke Set



Indicate

Torque Curve

1. Double Acting Type

Supply Air : 5.0 kgf/cm²G

Size: AC20D, 25D, 30D

Size	0°	15°	30°	45°	60°	75°	90°
AC20D	416.3	223.4	162.2	142.9	145.8	169.5	226.5
AC25D	817.9	434.8	312.3	272.1	274.9	317.2	420.7
AC30D	1415.7	754.3	543.4	474.6	480.6	555.8	738.5

2. Spring Return Acting Type

Supply Air : 5.0 kgf/cm²G

Spring Range: 2.0 ~ 3.0 kgf/cm²G

Size: AC20S, 25S, 30S

Size	0°	15°	30°	45°	60°	75°	90°
AC20S	249.8	134.1	97.3	85.1	87.5	101.7	135.9
AC25S	490.8	260.9	187.4	163.2	164.9	190.3	252.4
AC30S	849.4	452.6	326.0	284.7	288.4	333.5	443.1

3. Non Air

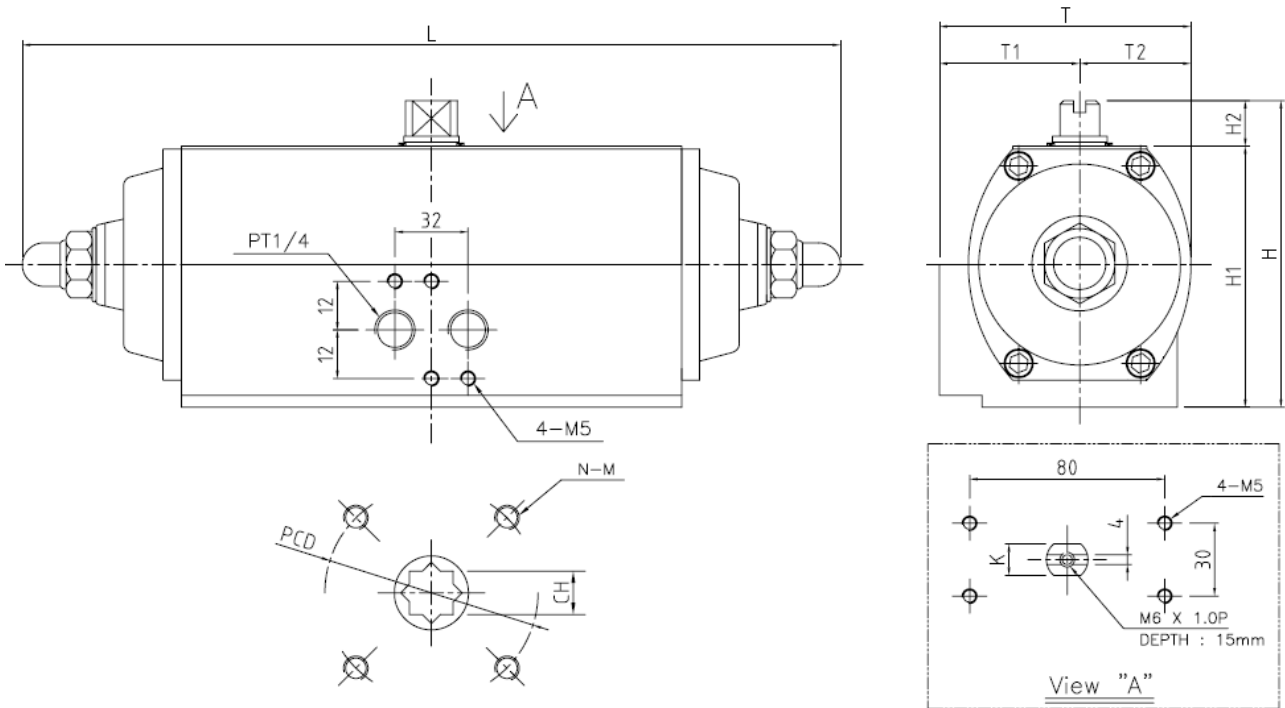
Spring Range: 2.0 ~ 3.0 kgf/cm²G

Size: AC20S, 25S, 30S

Size	0°	15°	30°	45°	60°	75°	90°
AC20S	166.5	89.4	64.9	57.2	58.3	67.8	90.6
AC25S	327.2	173.9	124.9	108.8	110.0	126.9	168.3
AC30S	566.3	301.7	217.3	189.8	192.3	222.3	295.4

Dimension Table

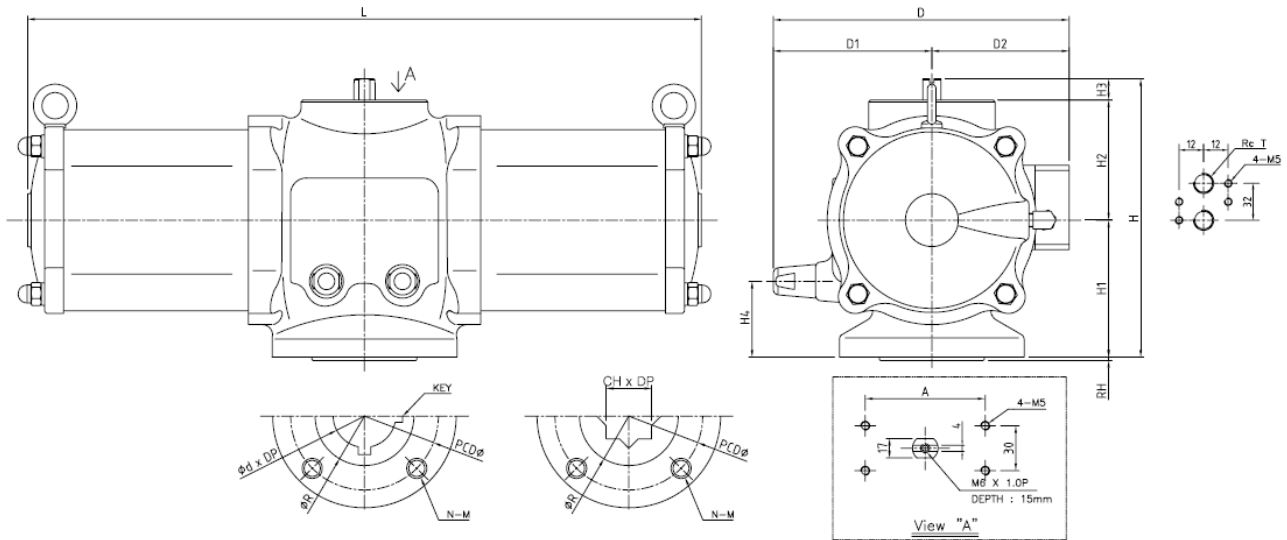
1. Double Acting Type



Unit: mm

SIZE	ISO. BASE	L	T	T1	T2	H	H1	H2	K
AC06D	F05/F07	234	83	46	37	108	86	22	13
AC08D	F07	286	98	56	42	123	103	20	17
AC10D	F07/F10	344	114	62	52	143	123	20	22
AC12D	F07/F10	443	136	68	68	164	144	20	22
AC14D	F10/F12	486	158	79	79	180	160	20	22
AC16D	F10/F12	560	178	86	92	210	190	20	26
	F14								

SIZE	ISO. BASE	PCDØ	CH	Dp	N-M
AC06D	F05/F07	Ø50 / Ø70	□14x14	17	4-M6, M8
AC08D	F07	Ø70	□17x17	19	4-M8
AC10D	F07/F10	Ø70 / Ø102	□22x22	26	4-M8, M10
AC12D	F07/F10	Ø70 / Ø102	□22x22	26	4-M8, M10
AC14D	F10/F12	Ø102/ Ø125	□27x27	30	4-M10/M12
AC16D	F10/F12	Ø102/ Ø125	□27x27	30	4-M10/M12
	F14	Ø140	□36x36		4-M16



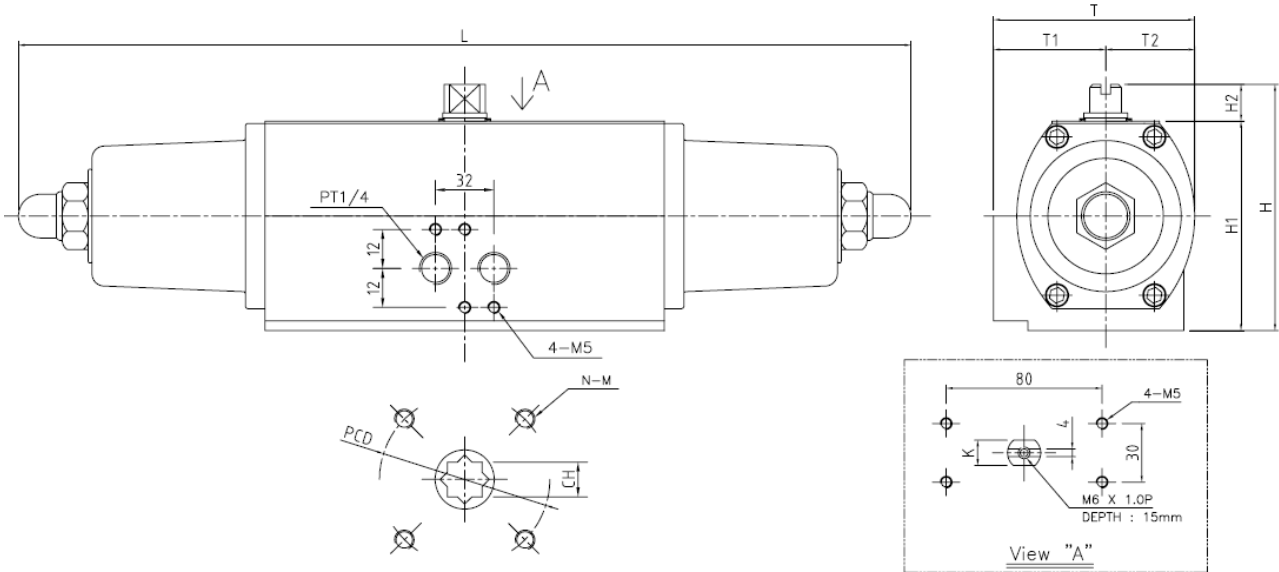
Unit: mm

SIZE	ISO. BASE	L	D	D1	D2	H	H1	H2	H3	H4	ØR
AC20D	F16	793	334	180	154	308	150	138	20	81	Ø130
AC25D	F25	928	411	225	186	373	188	165	20	100	Ø200
AC30D	F25	1098	472	260	212	422	212	190	20	110	Ø200

SIZE	ISO. BASE	RH	PCDØ	N-M	Ød x Dp	Key	CH x Dp	A	RCT
AC20D	F16	3	Ø165	4-M20	-	-	□46x65	80	1/4
AC25D	F25	4	Ø254	8-M16	Ø75x85	20x12	-	130	3/8
AC30D	F25	4	Ø254	8-M16	Ø90x85	25x14	-	130	3/8

Dimension Table

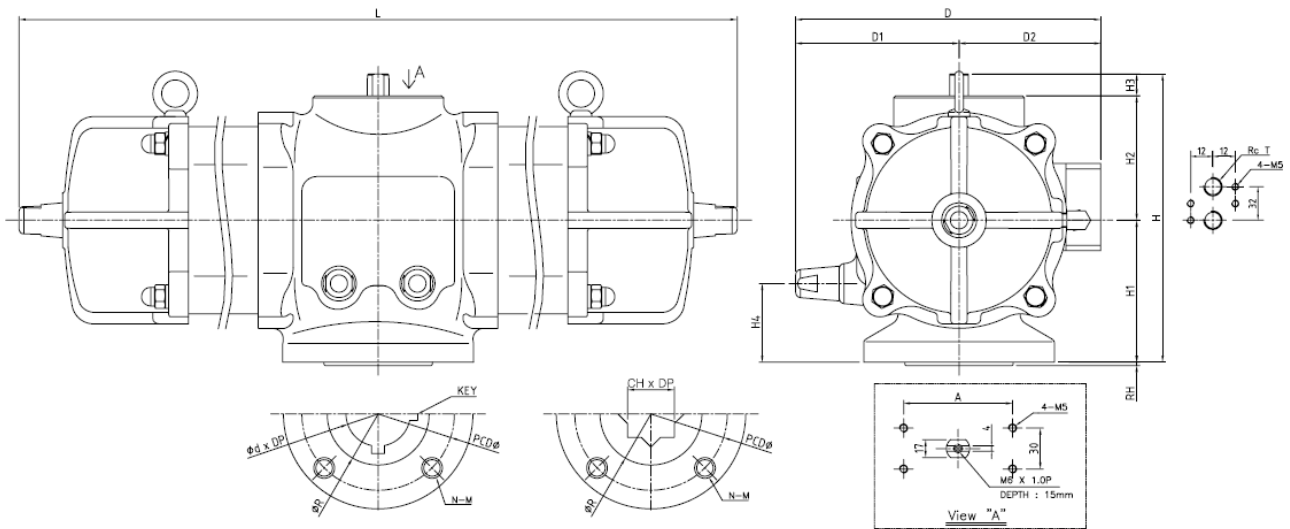
2. Spring Return Acting Type



Unit: mm

SIZE	ISO. BASE	L	T	T1	T2	H	H1	H2	K
AC06S	F05/F07	320	83	46	37	108	86	22	13
AC08S	F07	418	98	56	42	123	103	20	17
AC10S	F07/F10	506	114	62	52	143	123	20	22
AC12S	F07/F10	640	136	68	68	164	144	20	22
AC14S	F10/F12	716	158	79	79	180	160	20	22
AC16S	F10/F12	850	178	86	92	210	190	20	26
	F14								

SIZE	ISO. BASE	PCDØ	CH	Dp	N-M
AC06S	F05/F07	Ø50 / Ø70	□14x14	17	4-M6, M8
AC08S	F07	Ø70	□17x17	19	4-M8
AC10S	F07/F10	Ø70 / Ø102	□22x22	26	4-M8, M10
AC12S	F07/F10	Ø70 / Ø102	□22x22	26	4-M8, M10
AC14S	F10/F12	Ø102/ Ø125	□27x27	30	4-M10, M12
AC16S	F10/F12	Ø102/ Ø125	□27x27	30	4-M10, M12
	F14		□36x36		4-M16



Unit: mm

SIZE	ISO. BASE	L	D	D1	D2	H	H1	H2	H3	H4	ØR	RH
AC20S	F16	1172	334	180	154	308	150	138	20	81	Ø130	3
AC25S	F25	1424	411	225	186	373	188	165	20	100	Ø200	4
AC30S	F25	1664	472	260	212	422	212	190	20	110	Ø200	4

SIZE	ISO. BASE	PCDØ	N-M	Ød x Dp	Key	CH x Dp	A	Rc T
AC20S	F16	Ø165	4-M20	-	-	□46x65	80	1/4
AC25S	F25	Ø254	8-M16	Ø75x85	20x12	-	130	3/8
AC30S	F25	Ø254	8-M16	Ø90x85	25x14	-	130	3/8

Warranty / Remedy

Honeywell warrants goods of its manufacture as being free of defective materials and faulty workmanship. Contact your local sales office for warranty information. If warranted goods are returned to Honeywell during the period of coverage, Honeywell will repair or replace without charge those items it finds defective. The foregoing is Buyer's sole remedy and is **in lieu of all other warranties, expressed or implied, including those of merchantability and fitness for a particular purpose.**

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