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PNEUMATIC ACTUATOR HP VALVE AUTOMATION

PNEUMATIC ACTUATOR
HP - SERIES

Rack & Pinion and Scotch Yoke Design
Double Acting / Spring Return Design

Ex II 2 GD c IIC ATEX CE 0036 PED

VALVE AUTOMATION

HT-LIT 01322P 05/03

Quarter turn Actuator — Single Acting and Double Acting

Compact
Lightweight
Reliable
Efficient

II 2 GD c IIC ATEX CE 0036 PED

Introduction

HP series pneumatic actuators are specifically designed to respond to your demanding needs on automation valve market. We can provide a wide range of torque outputs to suit quarter turn ball , butterfly , plug valves and dampers for complete valve automation solutions.
The latest manufacturing technologies have been operated in order to supply a high quality and cycle-life on HP series.
Our extensive inventory & engineering capabilities allow us to provide reliable and safety product to our customer with satisfaction.

Specification

Pressure Range

- Max working pressure : 10 Bar
- Double Acting : 2.5 Bar ~ 8 Bar
- Single Acting : 2.5 Bar ~ 8 Bar

Temperature Range

- Standard : -20 ~ 80 ℃
- Option : -35 ~ 80 ℃
  -20 ~ 150 ℃

Movement

- 90 Degree standard adjustable -5~+5 Degree

Lubrication

- All moving parts are lubricated for life-long cycle of the actuator at factory

Cycle Life

- 1,000,000 Operations

Features

- **Body**

  Extruded Aluminum alloy body is hard anodized to protect internal and external corrosion ,also reduce piston friction for a long cycle life

- **Indicator**

  A disc open / close indicator is standard on all models

- **Travel Stops**

  External travel stops adjust -5 ~ + 5 degree in both open and close position easily

- **End Caps**

  Die cast aluminum end caps is coated with polyester to provide maximum resistance against potentially corrosive elements

- **Spring**

  High tensile spring sets are consisted of strength alloy steel to provide high performance in fail safe and emergency shut down operations

- **Pinion Shaft**

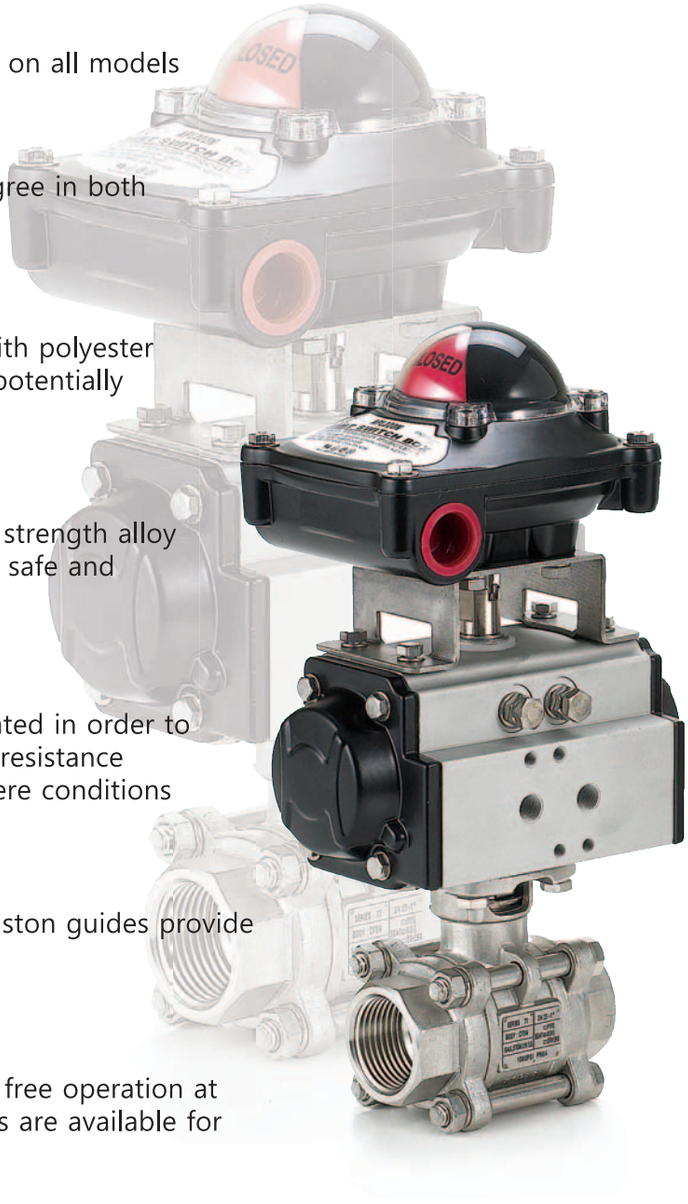
  Alloy steel pinion is electroless nickel plated in order to reduce friction , provide maximum wear resistance and protect against corrosion under severe conditions

- **Piston Guides**

  Self lubricating (Polypropylene + GF) piston guides provide high trust , stability

- **Piston Seals**

  NBR rubber pinion seals provide trouble free operation at standard temperature ranges , viton seals are available for higher or lower temperature extremes



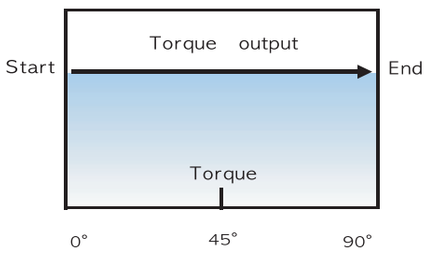
- **Piston**

  Diecasted aluminum dual piston are fitted with high quality seals and guides , providing high ratio output torques , input air pressure. Twin rack and pinion & scotch yoke design a constant torque on all models

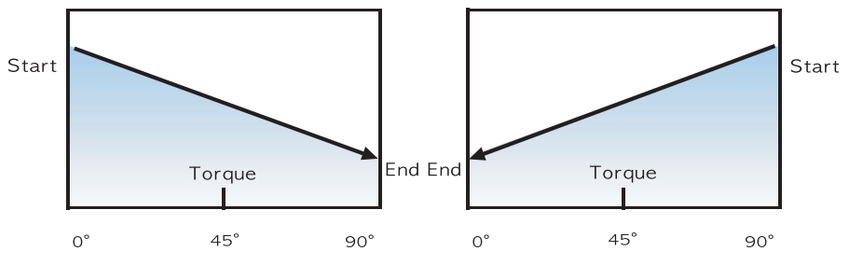
Rack & Pinion Design

Torque Diagram (HP35~HP210)

Double acting actuators

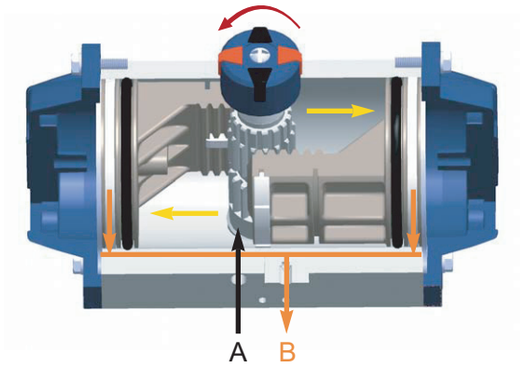


Single acting actuators



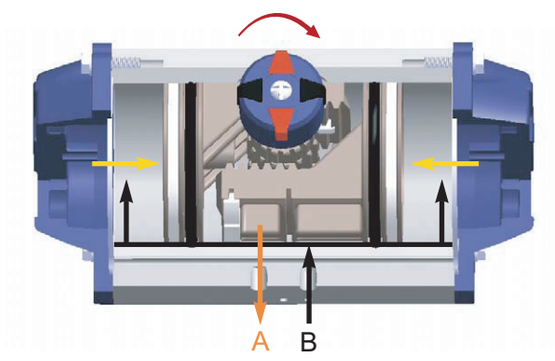
Double Acting Operation

1. Apply an air pressure to Port A and then the piston(s) are apart.
2. Turn the drive shaft counterclockwise.
3. Air volume exhausts through Port B



Counterclockwise

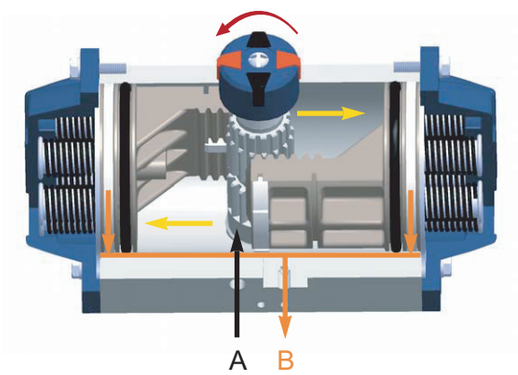
1. Apply an air pressure to Port B and then the piston(s) are together.
2. Turn the drive shaft clockwise as the air.



Clockwise

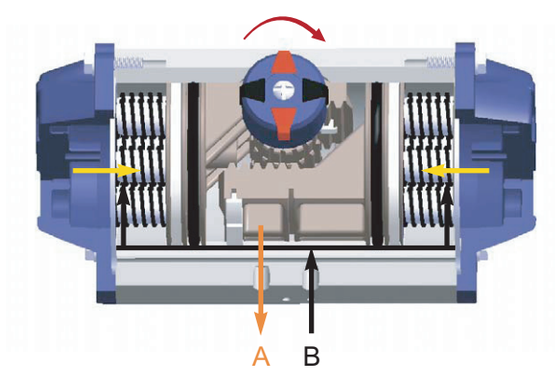
Single Acting Operation

1. Apply an air pressure to Port A and then the piston(s) are apart.
2. The springs are compressed after that the drive shaft counterclockwise.
3. Air volume exhausts through Port B.



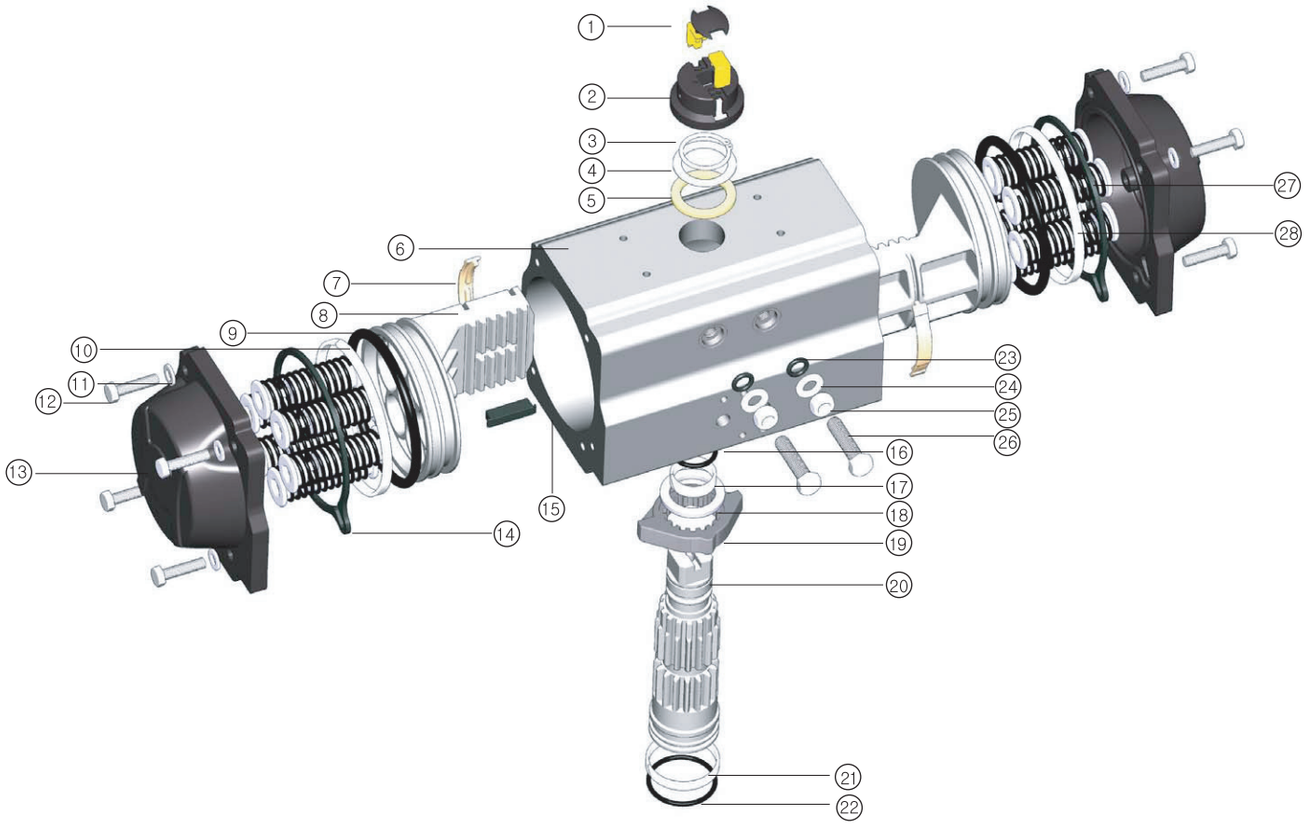
Counterclockwise

1. Exhaust the air pressure from Port A.
2. Allows stored power of the springs to piston(s) inward.
3. Turn the shaft clockwise.
4. Air volume get through Port B.



Clockwise

※ When air fail to counterclockwise is required , the pistons must be inverted.



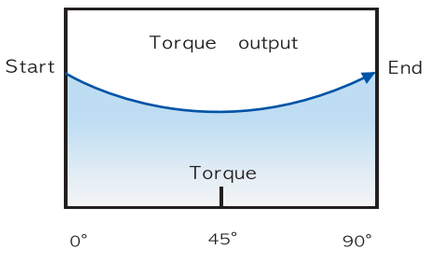
Part And Materials

PART NO	UNIT Q'TY	PART DESCRIPTION	STANDARD MATERIAL	CORROSION PROTECTION	OPTIONAL MATERIAL
1	4	Position indicator	Polypropylene +GF	-------	-------
2	1	Position indicator holder	Polypropylene +GF	-------	-------
3	1	Spring clip(pinion)	Stainless Steel	HP160,200 Nickel plated	-------
4	1	Thrust washer(pinion)	Stainless Steel	-------	-------
5	1	Thrust bearing(pinion)	Polyphthalamide	-------	-------
6	1	Body	Extruded Aluminium alloy	Hard anodized	-------
7	2	Bearing(piston back)	Polyphthalamide	-------	-------
8	2	Piston	Die Cast Aluminium	Hard anodized	-------
9	2	“O” Ring(piston)	Nitrile (NBR70)	-------	Viton SiliconViton
10	2	Bearing(piston head)	Polyphthalamide	-------	-------
11	8	Cap bolt washer	Stainless Steel	-------	-------
12	2	Cap bolt(end cap)	Stainless Steel	-------	-------
13	2	Right and left end cap	Die Cast Aluminium	Chromate + Polyester coated	-------
14	2	“O” Ring(end cap)	Nitrile (NBR70)	-------	Viton SiliconViton
15	2	Piston guide	Polypropylene +GF	-------	-------
16	1	“O” Ring(pinion top)	Nitrile (NBR70)	-------	Viton SiliconViton
17	1	Bearing(piston top)	Nylon 46	-------	-------
18	1	Thrust bearing(pinion)	Polyphthalamide	-------	-------
19	1	Open.Close cam(stop arrangement)	Stainless Steel	-------	-------
20	1	Drive shaft	Steel alloy	Nickel planted	-------
21	1	Bearing(piston bottom)	Nylon 46	-------	
22	1	“O” Ring(pinion bottom)	Nitrile (NBR70)	-------	Viton SiliconViton
23	1	“O” Ring(stop screw)	Nitrile (NBR70)	-------	Viton SiliconViton
24	2	Stop bolt washer	Stainless Steel	-------	-------
25	2	Stop nut	Stainless Steel	-------	-------
26	2	Stop bolt	Stainless Steel	-------	-------
27	min.5/max.12	Spring(catridge)	High alloy Spring Steel	Epoxy coated	-------
28	1	Spring holder	Polypropylene +GF	-------	-------

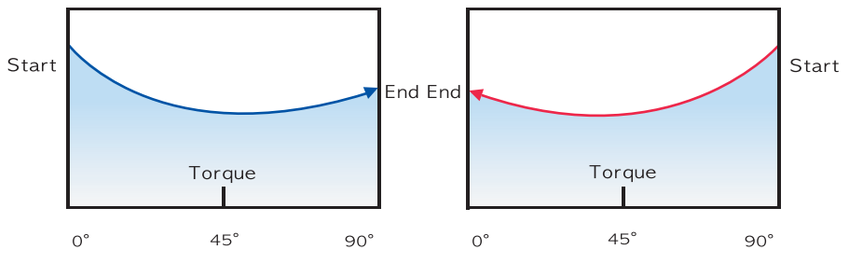
Scotch Yoke Design

Torque Diagram (HP 211 & HP 212)

Double acting actuators

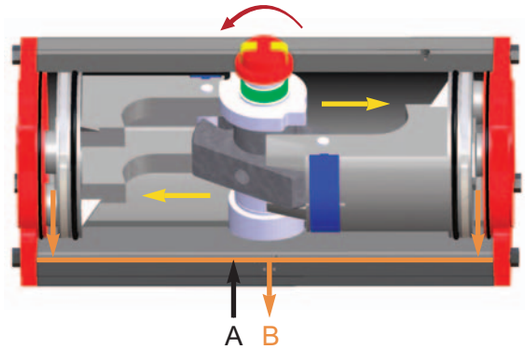


Single acting actuators



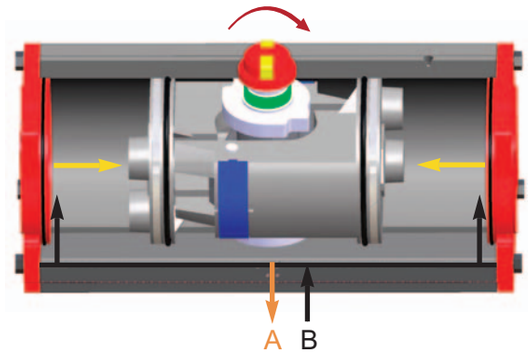
Double Acting Operation

1. Apply an air pressure to Port A and then the piston(s) are apart.
2. Turn the drive shaft counterclockwise.
3. Air volume exhausts through Port B



Counterclockwise

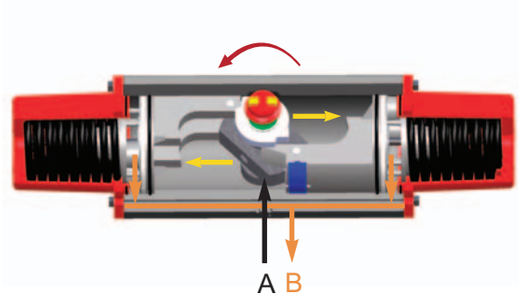
1. Apply an air pressure to Port B and then the piston(s) are together.
2. Turn the drive shaft clockwise as the air.



Clockwise

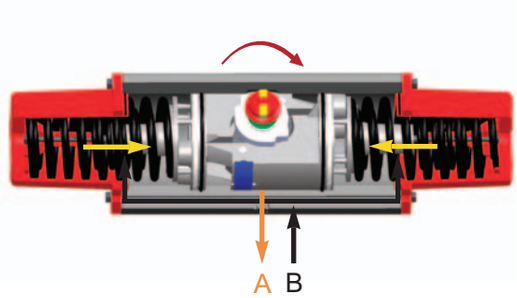
Single Acting Operation

1. Apply an air pressure to Port A and then the piston(s) are apart.
2. The springs are compressed after that the drive shaft counterclockwise.
3. Air volume exhausts through Port B.



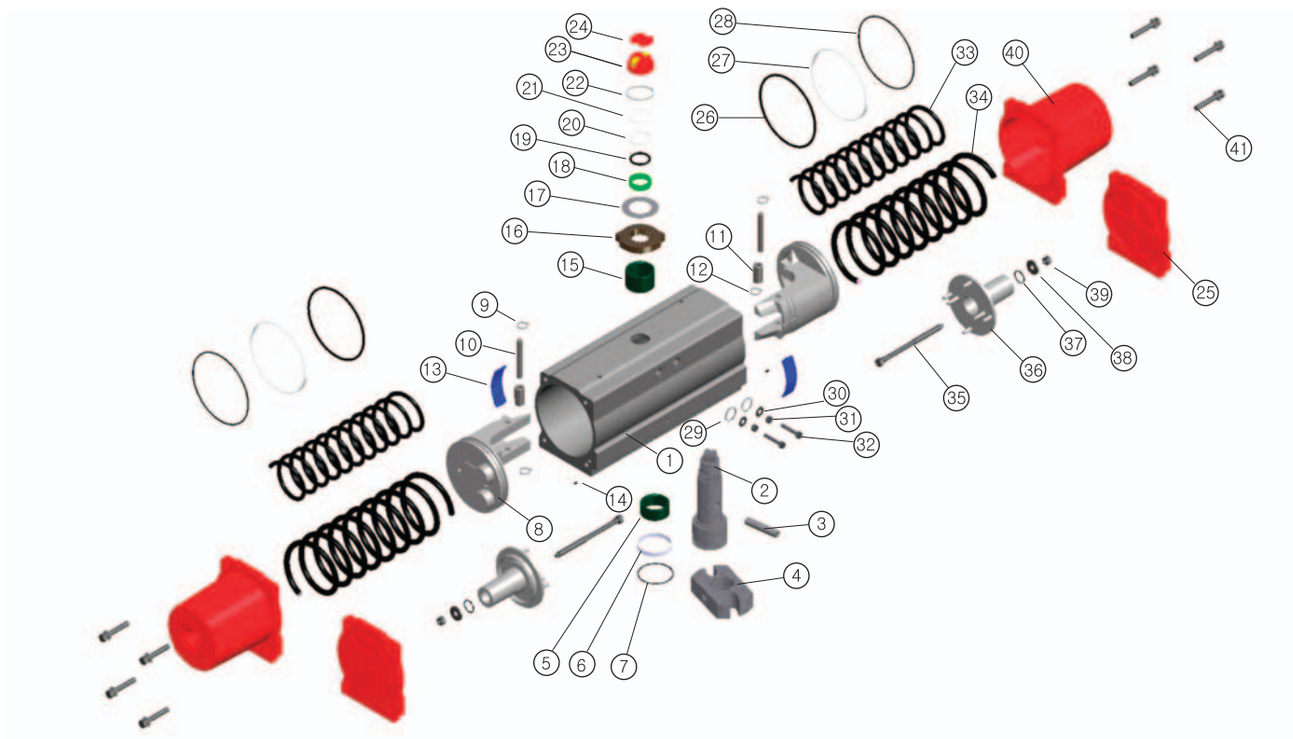
Counterclockwise

1. Exhaust the air pressure from Port A.
2. Allows stored power of the springs to piston(s) inward.
3. Turn the shaft clockwise.
4. Air volume get through Port B.



Clockwise

※ When air fail to counterclockwise is required , the pistons must be inverted.



Part and Material

PART NO	UNIT Q'TY	PART DESCRIPTION	STANDARD MATERIAL	PART NO	UNIT Q'TY	PART DESCRIPTION	STANDARD MATERIAL
1	1	Cylinder Body	Aluminum Alloy	22	5	Snap Ring	Stainless Steel
2	1	Drive Shaft	Steel Alloy	23	1	Indicator	ABS
3	1	Yoke Pin	Steel	24	1	Indicator Holder Cover	ABS
4	1	Yoke	Steel	25	2	Double Acting Cover	Aluminum
5	1	Bottom Spacer	Nylon	26	2	Piston O-Ring	NBR
6	1	Stem Bottom Bearing	Stainless Steel	27	3	Piston Head Bearing	PTFE
7	1	Stem Bottom O-Ring	NBR	28	2	Cover O-Ring	NBR
8	2	Piston	Aluminum	29	2	Stop Bolt O-Ring	NBR
9	2	Snap Ring	Stainless Steel	30	2	Stop Bolt Washer	Stainless Steel
10	1	Roller Pin	Steel	31	2	Stop Bolt Nut	Stainless Steel
11	1	Shaft	Steel	32	2	Stop Bolt	Stainless Steel
12	2	Snap Ring	Stainless Steel	33	1 or 2	Inner Spring	Spring Steel
13	3	Piston Back Bearing	PTFE	34	1 or 2	Outer Spring	Spring Steel
14	2	Hole Sealant	NBR	35	1 or 2	Spring Bolt	Stainless Steel
15	1	Top Spacer	Nylon	36	1 or 2	Spring Retainer	Aluminum
16	1	OCT Cam	Steel	37	1 or 2	Spring O-Ring	NBR
17	1	Stem Thrust Bearing	Stainless Steel	38	1 or 2	Spring Washer	Steel
18	1	Stem Top Bearing	Stainless Steel	39	1 or 2	Spring Nut	Stainless Steel
19	1	Stem Top O-Ring	NBR	40	2	Spring Return Cover	Aluminum
20	1	Teflon Washer	PTFE	41	8	Cover Bolt	Stainless Steel
21	1	Stem Thrust Washer	Stainless Steel	42			

Torque Data

Double Acting Torque Ratings In Nm

Model	AIR SUPPLY									
	2.5Bar	3Bar	3.5Bar	4Bar	4.5Bar	5Bar	5.5Bar	6Bar	7Bar	8Bar
HP 35	3.8	4.5	5.3	6	6.8	7.5	8.3	9	10.5	12
HP 50	8.3	10	11.7	13.3	15	16.6	18.3	20	23.3	26.6
HP 63	15	17.9	20.9	23.9	26.9	29.9	32.9	35.9	41.9	47
HP 66	20.9	25.1	29.3	33.5	37.7	41.9	46.1	50.3	58.6	67
HP 75	28.7	34.5	40.2	45.9	51.7	57.4	63.2	68.9	80.4	92
HP 88	46.1	55.3	64.5	73.7	83	92.2	101.4	110.6	129	147
HP 100	68.2	81.9	95.5	109.2	122.8	136.5	150.1	163.8	191.1	214
HP 115	107.5	129	150.5	172	193.5	215	236.5	258	301	344
HP 125	138.5	166.2	194	221.7	249.4	277.1	304.8	332.5	387.9	443.3
HP 145	217.5	261	304.5	348	391.5	435	478.5	522	609	696
HP 160	283.7	340.5	397.2	454	510.7	567.4	624.2	680.9	794.4	908
HP 180	382.8	459.4	536	612.5	689.1	765.7	842.2	918.8	1071.9	1225
HP 200	531.7	638	744.4	850.7	957.1	1063.4	1169.8	1276.1	1488.8	1701.5
HP 210	586.9	704.3	821.6	939	1056.4	1173.8	1291.2	1408.5	1643.3	1878.1

Single Acting Torque Ratings In Nm

AIR SUPPLY		2.5Bar		3Bar		3.5Bar		4Bar		4.5Bar		5Bar		5.5Bar		6Bar		7Bar		8Bar		Spring	
Actuator Spring		0	90	0	90	0	90	0	90	0	90	0	90	0	90	0	90	0	90	0	90	90	0
Model	Set	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End
HP 50S	S 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
	S 06	4.3	2.5	6	4.2	7.7	5.9	9.3	7.5	11	9.2	12.6	10.8	14.3	12.5	16	14.2					5.8	4
	S 07	3.6	1.5	5.3	3.2	7	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
	S 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
	S 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
	S 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
	S 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
	S 12													10.2	6.6	11.9	8.3	15.2	11.6	18.5	14.9	11.7	8.1
	D. A TORQUE	8.3		10		11.7		13.3		15		16.6		18.3		20		23.3		26.6			
HP 63S	S 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
	S 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
	S 07	7.2	3.2	10.1	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
	S 08			9	4.4	12	7.4	15	10.4	18	13.4	21	16.4	24	19.4	27	22.4	33	28.4			13.5	8.9
	S 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	31.8	15.2	10
	S 10							12.8	7	15.8	10	18.8	13	21.8	16	24.8	19	30.8	25	35.9	30.1	16.9	11.1
	S 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
	S 12													19.6	12.7	22.6	15.7	28.6	21.7	33.7	26.8	20.2	13.3
	D. A TORQUE	15		17.9		20.9		23.9		26.9		29.9		32.9		35.9		41.9		47			
HP 66S	S 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	7.6
	S 06	11.8	6.5	16	10.7	20.2	14.9	24.4	19.1	28.6	23.3	32.8	27.5	37	31.7	41.2	35.9					14.4	9.1
	S 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	41.8			16.8	10.6
	S 08			13	5.9	17.2	10.1	21.4	14.3	25.6	18.5	29.8	22.7	34	26.9	38.2	31.1	46.5	39.4			19.2	12.1
	S 09					15.6	7.7	19.8	11.9	24	16.1	28.2	20.3	32.4	24.5	36.6	28.7	44.9	37	53.3	45.4	21.6	13.7
	S 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	24	15.2
	S 11									21	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
	S 12													27.9	17.3	32.1	21.5	40.4	29.8	48.8	38.2	28.8	18.2
	D. A TORQUE	20.9		25.1		29.3		33.5		37.7		41.9		46.1		50.3		58.6		67			
HP 75S	S 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
	S 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
	S 07	13.2	4.5	19	10.3	24.7	16	30.4	21.7	36.2	27.5	41.9	33.2	47.7	39	53.4	44.7	64.9	56.2			24.2	15.5
	S 08			16.8	6.8	22.5	12.5	28.2	18.2	34	24	39.7	29.7	45.5	35.5	51.2	41.2	62.7	52.7			27.7	17.7
	S 09					20.3	9	26	14.7	31.8	20.5	37.5	26.2	43.3	32	49	37.7	60.5	49.2	72.1	60.8	31.2	19.9
	S 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
	S 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	24.3
	S 12													36.7	21.7	42.4	27.4	53.9	38.9	65.5	50.5	41.5	26.5
	D. A TORQUE	28.7		34.5		40.2		45.9		51.7		57.4		63.2		68.9		80.4		92			
HP 88S	S 05	27.8	17.2	37	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
	S 06	24.1	11.4	33.3	20.6	42.5	29.8	51.7	39	61	48.3	70.2	57.5	79.4	66.7	88.6	75.9					34.7	22
	S 07	20.4	5.7	29.6	14.9	38.8	24.1	48	33.3	57.3	42.6	66.5	51.8	75.7	61	84.9	70.2	103.3	88.6			40.4	25.7
	S 08			26	9.1	35.2	18.3	44.4	27.5	53.7	36.8	62.9	46	72.1	55.2	81.3	64.4	99.7	82.8			46.2	29.3
	S 09					31.5	12.5	40.7	21.7	50	31	59.2	40.2	68.4	49.4	77.6	58.6	96	77	114	95	52	33
	S 10							37	15.9	46.3	25.2	55.5	34.4	64.7	43.6	73.9	52.8	92.3	71.2	110.3	89.2	57.8	36.7
	S 11									42.7	19.5	51.9	28.7	61.1	37.9	70.3	47.1	88.7	65.5	106.7	83.5	63.5	40.3
	S 12													57.4	32.1	66.6	41.3	85	59.7	103	77.7	69.3	44
	D. A TORQUE	46.1		55.3		64.5		73.7		83		92.2		101.4		110.6		129		147			
HP 100S	S 05	42.9	28.8	56.6	42.5	70.2	56.1	83.9	69.8	97.5	83.4	111.2	97.1	124.8	110.7							39.4	25.3
	S 06	37.8	20.9	51.5	34.6	65.1	48.2	78.8	61.9	92.4	75.5	106.1	89.2	119.7	102.8	133.4	116.5					47.3	30.4
	S 07	32.7	13.1	46.4	26.8	60	40.4	73.7	54.1	87.3	67.7	101	81.4	114.6	95	128.3	108.7	155.6	136			55.1	35.5
	S 08			41.4	18.9	55	32.5	68.7	46.2	82.3	59.8	96	73.5	109.6	87.1	123.3	100.8	150.6	128.1			63	40.5
	S 09					49.9	24.6	63.6	38.3	77.2	51.9	90.9	65.6	104.5	79.2	118.2	92.9	145.5	120.2	168.4	143.1	70.9	45.6
	S 10							58.5	30.4	72.1	44	85.8	57.7	99.4	71.3	113.1	85	140.4	112.3	163.3	135.2	78.8	50.7
	S 11									67.1	36.1	80.8	49.8	94.4	63.4	108.1	77.1	135.4	104.4	158.3	127.3	86.7	55.7
	S 12													89.3	55.6	103	69.3	130.3	96.6	153.2	119.5	94.5	60.8
	D. A TORQUE	68.2		81.9		95.5		109.2		122.8		136.5		150.1		163.8		191.1		214			
HP 115S	S 05	66.5	42	88	63.5	109.5	85	131	106.5	152.5	128	174	149.5	195.5	171							65.5	41
	S 06	58.3	28.9	79.8	50.4	101.3	71.9	122.8	93.4	144.3	114.9	165.8	136.4	187.3	157.9	208.8	179.4					78.6	49.2
	S 07	50.1	15.8	71.6	37.3	93.1	58.8	114.6	80.3	136.1	101.8	157.6	123.3	179.1	144.8	200.6	166.3	243.6	209.3			91.7	57.4
	S 08			63.4	24	84.9	45.5	106.4	67	127.9	88.5	149.4	110	170.9	131.5	192.4	153	235.4	196			105	65.6
	S 09					76.7	32.5	98.2	54	119.7	75.5	141.2	97	162.7	118.5	184.2	140	227.2	183	270.2	226	118	73.8
	S 10							90	41	111.5	62.5	133	84	154.5	105.5	176	127	219	170	262	213	131	82
	S 11									103.3	49.5	124.8	71	146.3	92.5	167.8	114	210.8	157	253.8	200	144	90.2
	S 12													138.1	79.5	159.6	101	202.6	144	245.6	187	157	98.4
	D. A TORQUE	107.5		129		150.5		172		193.5		215		236.5		258		301		344			

Single Acting Torque Ratings In Nm

AIR SUPPLY		2.5Bar		3Bar		3.5Bar		4Bar		4.5Bar		5Bar		5.5Bar		6Bar		7Bar		8Bar		Spring	
Actuator Spring		0	90	0	90	0	90	0	90	0	90	0	90	0	90	0	90	0	90	0	90	90	0
Model	Set	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End
HP 125S	S 05	86	56.5	113.7	84.2	141.5	112	169.2	139.7	196.9	167.4	224.6	195.1	252.3	222.8							82	52.5
	S 06	75.5	39.5	103.2	67.2	131	95	158.7	122.7	186.4	150.4	214.1	178.1	241.8	205.8	269.5	233.5					99	63
	S 07	65	23.5	92.7	51.2	120.5	79	148.2	106.7	175.9	134.4	203.6	162.1	231.3	189.8	259	217.5	314.4	272.9			115	73.5
	S 08			82.2	34.2	110	62	137.7	89.7	165.4	117.4	193.1	145.1	220.8	172.8	248.5	200.5	303.9	255.9			132	84
	S 09					99.5	46	127.2	73.7	154.9	101.4	182.6	129.1	210.3	156.8	238	184.5	293.4	239.9	348.8	295.3	148	94.5
	S 10							116.7	56.7	144.4	84.4	172.1	112.1	199.8	139.8	227.5	167.5	282.9	222.9	338.3	278.3	165	105
	S 11									133.4	68.4	161.1	96.1	188.8	123.8	216.5	151.5	271.9	206.9	327.3	262.3	181	116
	S 12													178.8	106.8	206.5	134.5	261.9	189.9	317.3	245.3	198	126
	D. A TORQUE	138.5		166.2		194		221.7		249.4		277.1		304.8		332.5		387.9		443.3			
HP 145S	S 05	135.5	88.5	135.5	88.5	222.5	175.5	266	219	309.5	262.5	353	306	396.5	349.5							129	82
	S 06	118.5	62.5	118.5	62.5	205.5	149.5	249	193	292.5	236.5	336	280	379.5	323.5	423	367					155	99
	S 07	102.5	37.5	102.5	37.5	189.5	124.5	233	168	276.5	211.5	320	255	363.5	298.5	407	342	494	429			180	115
	S 08			85.5	11.5	172.5	98.5	216	142	259.5	185.5	303	229	346.5	272.5	390	316	477	403			206	132
	S 09					156.5	72.5	200	116	243.5	159.5	287	203	330.5	246.5	374	290	461	377	548	464	232	148
	S 10							183	90	226.5	133.5	270	177	313.5	220.5	357	264	444	351	531	438	258	165
	S 11									210.5	108.5	254	152	297.5	195.5	341	239	428	326	515	413	283	181
	S 12													280.5	169.5	324	213	411	300	498	387	309	198
	D. A TORQUE	217.5		261		304.5		348		391.5		435		478.5		522		609		696			
HP 160S	S 05	171.7	117.7	228.5	174.5	285.2	231.2	342	288	398.7	344.7	455.4	401.4	512.2	458.2							166	112
	S 06	148.7	84.7	205.5	141.5	262.2	198.2	319	255	375.7	311.7	432.4	368.4	489.2	425.2	545.9	481.9					199	135
	S 07	126.7	50.7	183.5	107.5	240.2	164.2	297	221	353.7	277.7	410.4	334.4	467.2	391.2	523.9	447.9	637.4	561.4			233	157
	S 08			160.5	74.5	217.2	131.2	274	188	330.7	244.7	387.4	301.4	444.2	358.2	500.9	414.9	614.4	528.4			266	180
	S 09					195.2	98.2	252	155	308.7	211.7	365.4	268.4	422.2	325.2	478.9	381.9	592.4	495.4	706	609	299	202
	S 10							230	122	286.7	178.7	343.4	235.4	400.2	292.2	456.9	348.9	570.4	462.4	684	576	332	224
	S 11									263.7	145.7	320.4	202.4	377.2	259.2	433.9	315.9	547.4	429.4	661	543	365	247
	S 12													355.2	225.2	411.9	281.9	525.4	395.4	639	509	399	269
	D. A TORQUE	283.7		340.5		397.2		454		510.7		567.4		624.2		680.9		794.4		908			
HP 180S	S 05	224.8	145.8	301.4	222.4	378	299	454.5	375.5	531.1	452.1	607.7	528.7	684.2	605.2							237	158
	S 06	192.8	98.8	269.4	175.4	346	252	422.5	328.5	499.1	405.1	575.7	481.7	652.2	558.2	728.8	634.8					284	190
	S 07	161.8	50.8	238.4	127.4	315	204	391.5	280.5	468.1	357.1	544.7	433.7	621.2	510.2	697.8	586.8	850.9	739.9			332	221
	S 08			206.4	80.4	283	157	359.5	233.5	436.1	310.1	512.7	386.7	589.2	463.2	665.8	539.8	818.9	692.9			379	253
	S 09					251	110	327.5	186.5	404.1	263.1	480.7	339.7	557.2	416.2	633.8	492.8	786.9	645.9	940	799	426	285
	S 10							296.5	138.5	373.1	215.1	449.7	291.7	526.2	368.2	602.8	444.8	755.9	597.9	909	751	474	316
	S 11									341.1	168.1	417.7	244.7	494.2	321.2	570.8	397.8	723.9	550.9	877	704	521	348
	S 12													463.2	274.2	539.8	350.8	692.9	503.9	846	657	568	379
	D. A TORQUE	382.8		459.4		536		612.5		689.1		765.7		842.2		918.8		1071.9		1225			
HP 200S	S 05	318.7	216.7	425	323	531.4	429.4	637.7	535.7	744.1	642.1	850.4	748.4	956.8	854.8							315	213
	S 06	276.7	153.7	383	260	489.4	366.4	595.7	472.7	702.1	579.1	808.4	685.4	914.8	791.8	1021	898.1					378	255
	S 07	233.7	90.7	340	197	446.4	303.4	552.7	409.7	659.1	516.1	765.4	622.4	871.8	728.8	978.1	835.1	1191	1048			441	298
	S 08			298	134	404.4	240.4	510.7	346.7	617.1	453.1	723.4	559.4	829.8	665.8	936.1	772.1	1149	984.8			504	340
	S 09					361.4	177.4	467.7	283.7	574.1	390.1	680.4	496.4	786.8	602.8	893.1	709.1	1106	921.8	1319	1135	567	383
	S 10							425.7	220.7	532.1	327.1	638.4	433.4	744.8	539.8	851.1	646.1	1064	858.8	1277	1072	630	425
	S 11									489.1	264.1	595.4	370.4	701.8	476.8	808.1	583.1	1021	795.8	1234	1009	693	468
	S 12													659.8	413.8	766.1	520.1	978.8	732.8	1192	945.5	756	510
	D. A TORQUE	531.7		638		744.4		850.7		957.1		1063.4		1169.8		1276.1		1488.8		1701.5			
HP 210S	S 04	430	312.6	547.4	430	664.7	547.3	782.1	664.7													274.3	156.9
	S 05	390.8	244.1	508.2	361.5	625.5	478.8	742.9	596.2	860.3	713.6	977.7	831	1095	948.4							342.8	196.1
	S 06	351.6	175.5	469	292.9	586.3	410.2	703.7	527.6	821.1	645	938.5	762.4	1056	879.8	1173	997.1					411.4	235.3
	S 07			429.7	224.3	547	341.6	664.4	459	781.8	576.4	899.2	693.8	1017	811.2	1134	928.5	1369	1163			480	274.6
	S 08					507.8	273.1	625.2	390.5	742.6	507.9	860	625.3	977.4	742.7	1095	860	1330	1095			548.5	313.8
	S 09					468.6	204.5	586	321.9	703.4	439.3	820.8	556.7	938.2	674.1	1056	791.4	1290	1026	1525	1261	617.1	353
	S 10					429.4	135.9	546.8	253.3	664.2	370.7	781.6	488.1	899	605.5	1016	722.8	1251	957.6	1486	1192	685.7	392.2
	S 11									625	302.2	742.4	419.6	859.8	537	977.1	654.3	1212	889.1	1447	1124	754.2	431.4
	S 12									585.7	233.6	703.1	351	820.5	468.4	937.8	585.7	1173	820.5	1407	1055	822.8	470.7
	D. A TORQUE	586.9		704.3		821.6		939		1056.4		1173.8		1291.2		1408.5		1643.3		1878.1			

Pneumatic Scotch Yoke Actuators(HP211, HP212)

Double Acting Torque (Nm)

HP-211	Start	Run	End
4.2 Bar	1,507	753	1,312
5.6 Bar	2,009	1,005	1,750
7 Bar	2,511	1,255	2,187

HP-212	Start	Run	End
4.2 Bar	3,011	1,506	2,622
5.6 Bar	4,017	2,006	3,498
7 Bar	5,022	2,509	4,373

Single Acting Torque (Nm)

HP-211S	AIR TORQUE			SPRING TORQUE		
	Start	Run	End	Start	Run	End
4.2 Bar	1,114	452	634	678	283	393
5.6 Bar	1,385	537	724	1,026	446	624

HP-212S	AIR TORQUE			SPRING TORQUE		
	Start	Run	End	Start	Run	End
4.2 Bar	2,226	904	1,266	1356	565	780
5.6 Bar	2,769	1,074	1,446	2,045	883	1,243

Air Consumption

- Double Acting Actuator

Unit : Liter (ℓ)

Model	Volume	2.5 Bar	3 Bar	3.5 Bar	4 Bar	4.5 Bar	5 Bar	5.5 Bar	6 Bar	7 Bar	8 Bar
HP - 35	0.2	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.6	1.8
HP - 50	0.3	1.1	1.2	1.4	1.5	1.7	1.8	2.0	2.1	2.4	2.7
HP - 63	0.5	1.8	2.0	2.3	2.5	2.8	3.0	3.3	3.6	4.1	4.6
HP - 66	0.5	1.8	2.0	2.3	2.5	2.8	3.0	3.3	3.6	4.1	4.6
HP - 75	0.8	2.8	3.2	3.7	4.1	4.5	4.9	5.3	5.7	6.5	7.3
HP - 88	1.3	4.6	5.3	5.9	6.6	7.3	7.9	8.6	9.3	10.6	11.9
HP - 100	1.8	6.4	7.3	8.2	9.1	10.1	11.0	11.9	12.8	14.6	16.5
HP - 115	3.0	10.6	12.2	13.7	15.2	16.8	18.3	19.8	21.4	24.4	27.5
HP - 125	3.8	13.5	15.4	17.4	19.3	21.2	23.3	25.1	27.0	30.9	34.8
HP - 145	6.2	22.0	25.2	28.3	31.5	34.6	37.8	41.0	44.1	50.5	56.8
HP - 160	7.3	25.9	29.6	33.4	37.1	40.8	44.5	48.2	52.0	59.4	66.9
HP - 180	11.2	39.8	45.5	51.2	56.9	62.6	68.3	74.0	79.7	91.1	102.6
HP - 200	15.4	54.7	62.5	70.4	78.2	86.1	93.9	101.8	109.6	125.3	141.0
HP - 210	23.8	84.5	96.6	108.7	120.9	133.0	145.1	157.3	169.4	193.7	218.0
HP - 211	19.1	67.8	77.5	87.3	97.0	106.7	116.5	126.2	136.0	155.4	174.9
HP - 212	29.6	105.1	120.1	135.2	150.3	165.4	180.5	195.6	210.7	240.9	271.1

- Single Acting Actuator

Model	Volume	2.5 Bar	3 Bar	3.5 Bar	4 Bar	4.5 Bar	5 Bar	5.5 Bar	6 Bar	7 Bar	8 Bar
HP - 50S	0.1	0.4	0.4	0.5	0.5	0.6	0.6	0.7	0.7	0.8	0.9
HP - 63S	0.2	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.6	1.8
HP - 66S	0.2	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.6	1.8
HP - 75S	0.3	1.1	1.2	1.4	1.5	1.7	1.8	2.0	2.1	2.4	2.7
HP - 88S	0.5	1.8	2.0	2.3	2.5	2.8	3.0	3.3	3.6	4.1	4.6
HP - 100S	0.7	2.5	2.8	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	7.9	8.5	9.8	11.0
HP - 125S	1.5	5.3	6.1	6.9	7.6	8.4	9.1	9.9	10.7	12.2	13.7
HP - 145S	2.4	8.5	9.7	11.0	12.2	13.4	14.6	15.9	17.1	19.5	22.0
HP - 160S	3.1	11.0	12.6	14.2	15.7	17.3	18.9	20.5	22.1	25.2	28.4
HP - 180S	4.3	15.3	17.5	19.6	21.8	24.0	26.2	28.4	30.6	35.0	39.4
HP - 200S	5.9	20.9	23.9	27.0	30.0	33.0	36.0	39.0	42.0	48.0	54.0
HP - 210S	7.8	27.7	31.7	35.6	39.6	43.6	47.6	51.5	55.5	63.5	71.4
HP - 211S	5.1	18.1	20.7	23.3	25.9	28.5	31.1	33.7	36.3	41.5	46.7
HP - 212S	9.6	34.1	39.0	43.9	48.8	53.7	58.5	63.4	68.3	78.1	87.9

Actuator Weight

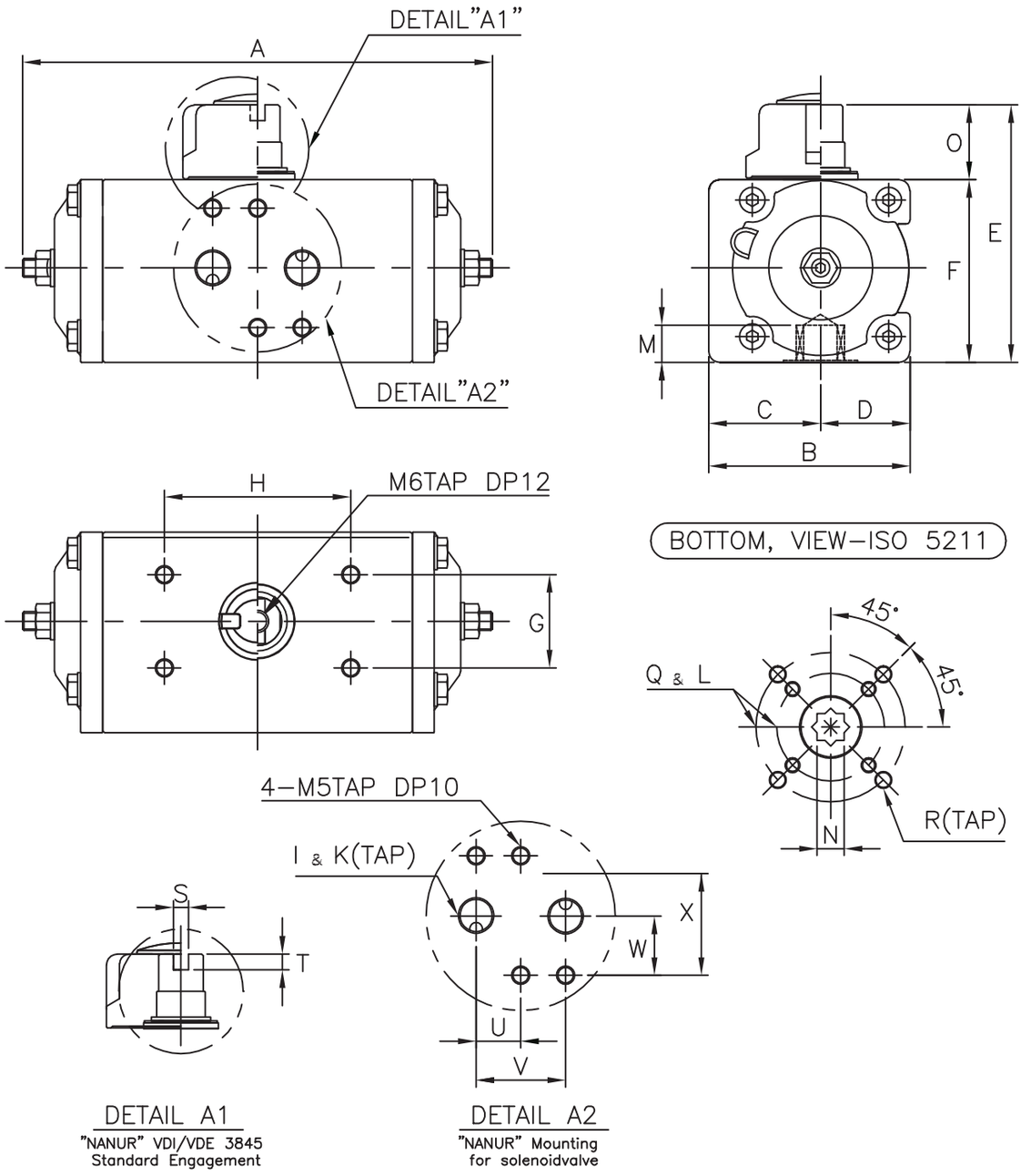
Unit : kg

Model	HP - 35	HP - 50	HP - 63	HP - 66	HP - 75	HP - 88	HP - 100	HP - 115
Weight (Double Acting)	0.54	1.16	1.68	2.4	3	4.3	6	9
Spring(1ea)	N/A	0.009	0.017	0.021	0.033	0.056	0.078	0.121

Model	HP - 125	HP - 145	HP - 160	HP - 180	HP - 200	HP - 210	HP - 211	HP - 212
Weight (Double Acting)	11.3	14.1	22	26.5	38.4	46	46	71
Spring(1ea)	0.165	0.202	0.359	0.521	0.752	0.882	14.1	28.2

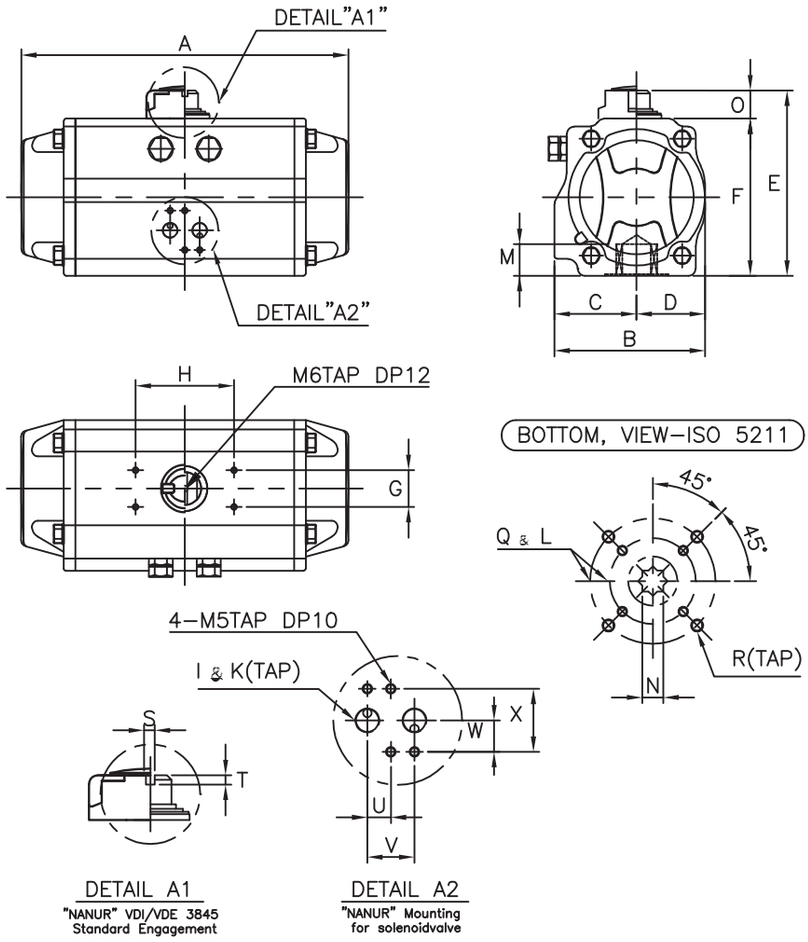
※ Single Acting weight = Packed Springs + Double Acting Weight

(HP-35) - Rack & Pinion Design



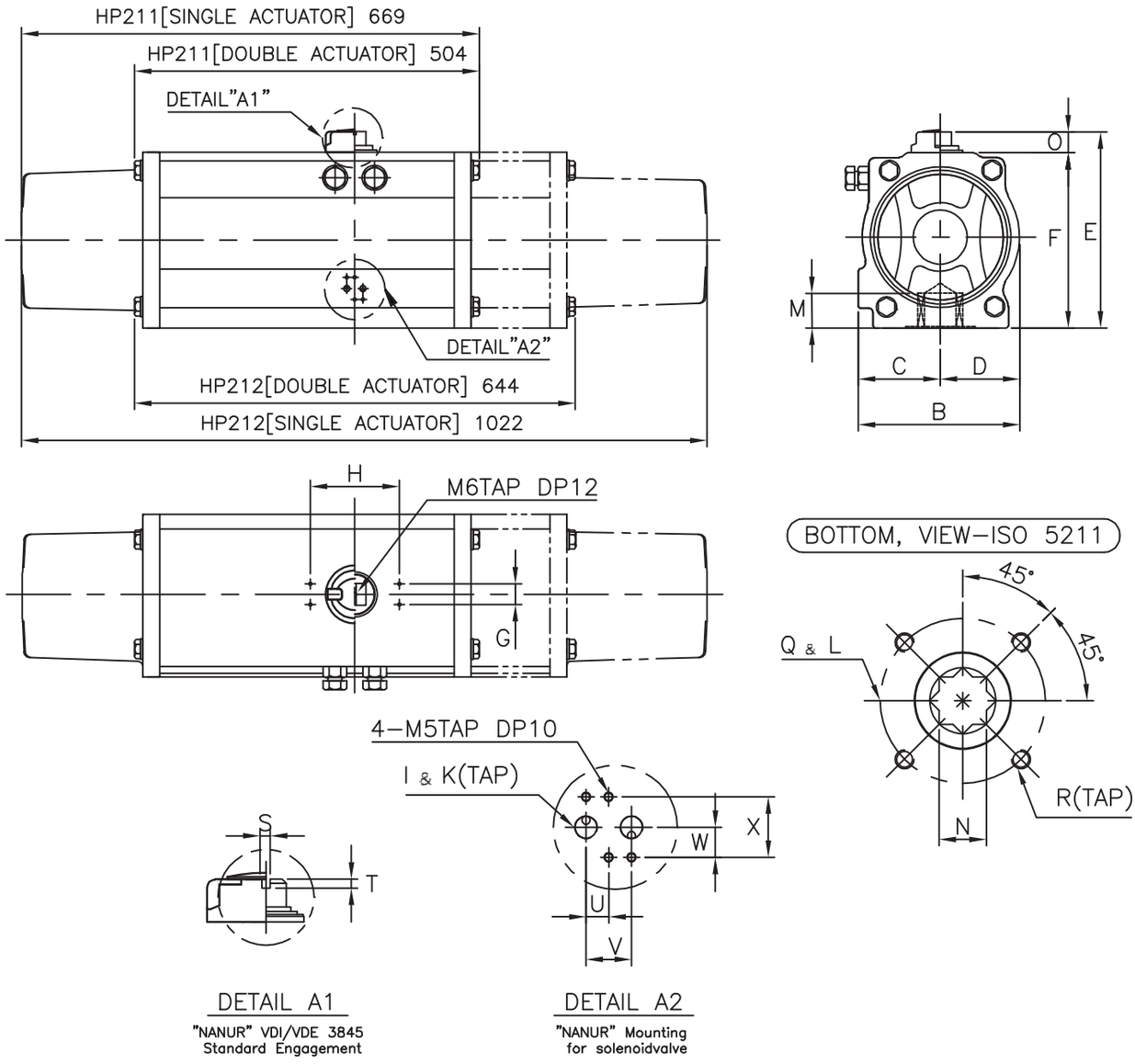
Model	Flange L (ISO5211)	R	A	B	C	D	E	F	G	H	I	K	O	S	T	U	V	W	X
	Q	M/N (min)																	
HP - 35	F03/F05	M5/M6	126	54	30	24	69	49	25	50	PF	1/8"	20	4	4	12	24	16	32
	Φ36/Φ50	10/9																	

HP-50 ~ HP-210 - Rack & Pinion Design



Model	Flange L (ISO5211) / Q	R / M / N (min)	A	B	C	D	E	F	G	H	I	K	O	S	T	U	V	W	X
HP - 50	F03/F05	M5/M6	144	72	42	30	93	73	30	80	PF	1/8"	20	4	4	12	24	16	32
	Φ36/Φ50	14/11																	
HP - 63	F05/F07	M6/M8	163	85	47	38	107	87	30	80	PF	1/8"	20	4	4	12	24	16	32
	Φ36/Φ50	18/14																	
HP - 66	F05/F07	M6/M8	202	85	47	38	107	87	30	80	PF	1/8"	20	4	4	12	24	16	32
	Φ50/Φ70	18/14																	
HP - 75	F05/F07	M6/M8	210	96	53.5	42.5	124	104	30	80	PF	1/8"	20	4	4	12	24	16	32
	Φ50/Φ70	22/17																	
HP - 88	F05/F07/F10	M6/M8/M10	247	108	58.5	49.5	136	116	30	80	PF	1/8"	20	4	4	12	24	16	32
	Φ50/Φ70/Φ102	22/17																	
HP - 100	F05/F07/F10	M8/M10	268	123	67	56	148	128	30	80	PF	1/4"	20	4	4	12	24	16	32
	Φ70/Φ102	22/17																	
HP - 115	F07/F10	M8/M10	316	141	77	64	166	146	30	80	PF	1/4"	20	4	4	12	24	16	32
	Φ70/Φ102	32/22																	
HP - 125	F07/F10/F12	M8/M10/M12	347	151	82	69	179	159	30	80	PF	1/4"	20	4	4	12	24	16	32
	Φ70/Φ102/Φ125	32/22																	
HP - 145	F10/F12	M10/M12	414	172	92	80	209	179	30	80/130	PF	1/4"	30	4	4	12	24	16	32
	Φ102/Φ125	36/27																	
HP - 160	F10/F12	M10/M12	467	190	101	89	226	196	30	80/130	PF	1/4"	30	4	4	12	24	16	32
	Φ102/Φ125	36/27																	
HP - 180	F10/F12	M10/M12	497	206	107	99	251	221	30	130	PF	1/4"	30	4	4	12	24	16	32
	Φ102/Φ125	39/36																	
HP - 200	F14	M16	555	227	116	111	277	247	30	80/130	PF	1/4"	30	4	4	12	24	16	32
	Φ140	39/36																	
HP - 210	F14	M16	628	236	120	116	286	256	30	130	PF	1/4"	30	4	4	12	24	16	32
	Φ140	43/36																	

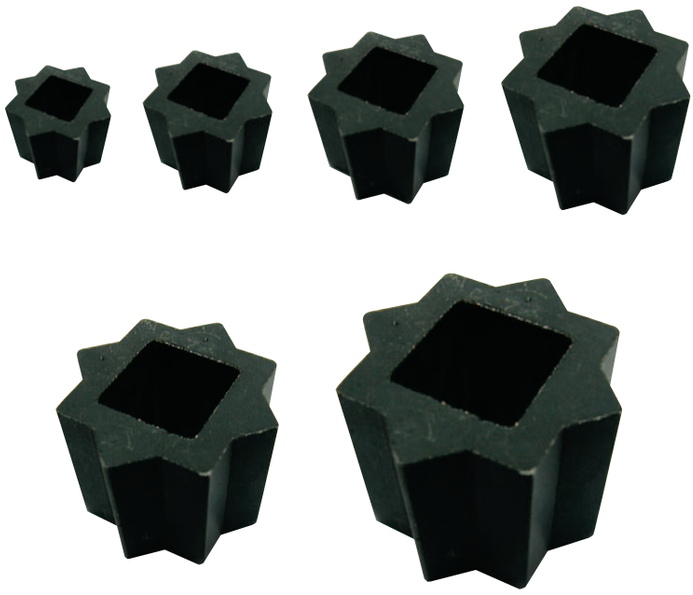
HP-211 ~ HP-212 - Scotch yoke Design

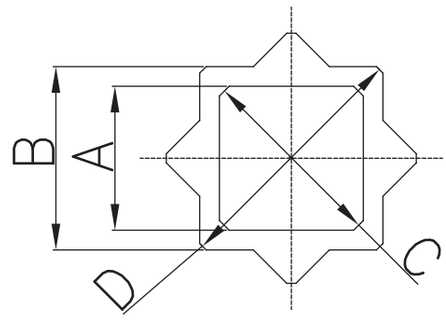


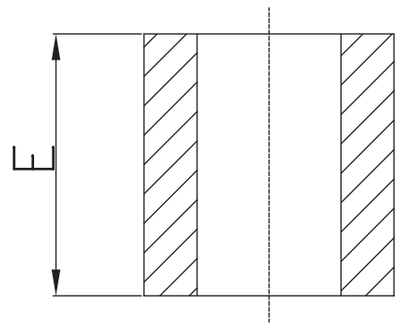
※"F14" for Flange L is option. If customer want it, Please contact factory in advance.

Model	Flange L (ISO5211)	R	A	B	C	D	E	F	G	H	I	K	O	S	T	U	V	W	X
	Q	M/N (min)																	
HP - 211	F16	M16		236	120	116	286	256	30	130	PF	1/4"	30	4	4	12	24	16	32
	Φ165	54/46																	
HP - 212	F16	M16		236	120	116	286	256	30	130	PF	1/4"	30	4	4	12	24	16	32
	Φ165	54/46																	

Dimension - Pinion Shaft Star Adapter







Model	A	B	C	D	E
HP - 50	9	11	13	15	14
HP - 63	11	14	14	19.1	18
HP - 66	11	14	14	19.1	18
HP - 75	14	17	19	23.1	22
HP - 88	14	17	19	23.1	22
HP - 100	14	17	19	23.1	22
HP - 115	17	22	23	29.6	32
HP - 125	17	22	23	29.6	32
HP - 145	22	27	30	36	36
HP - 160	22	27	30	36	36
HP - 180	27	36	37	48	39
HP - 200	27	36	37	48	39
HP - 210	27	36	37	48	43

Declutch Gear Operator

Features

HGO Series is newly designed and invented for small size valve automation like ball, butterfly, plug and even dampers.

Small, light and compact design, high torque will meet your various speciftic requirements.

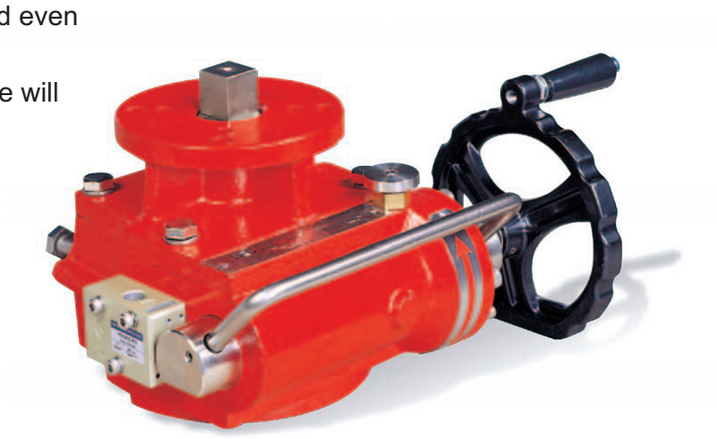
Compact and light due to high grade aluminum alloy housing. (HGO 010A)

Mounting base standard to ISO5211

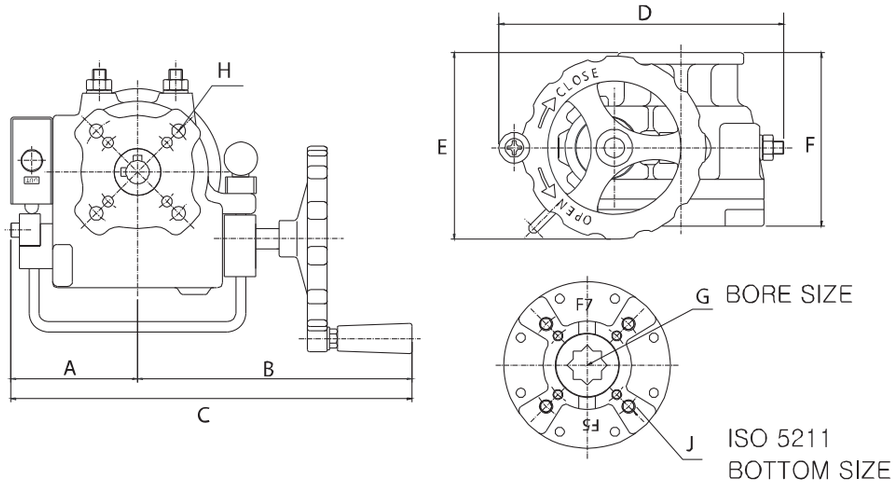
Solid with O-ring system giving Weatherproof(IP67)

Self lubrication Worm shaft guides provide high trust, stability

Block and bleed valve to exhaust air



Dimension



MODEL		A	B	C	D	E	F	G	H/J	Weight (kg)	Max Torque	Applicable actuators
HGO 010A	mm	81	159	240	158	112	104	14	F05,F07	3,2	12Kgf.m	HP 35~75
	inch	3.19	6.26	9.45	6.22	4.4	4.09	0.56			104 Lb.in	
HGO 010C	mm	81	159	240	158	112	104	14	F05,F07	5,1	12Kgf.m	HP 35~75
	inch	3.19	6.26	9.45	6.22	4.4	4.09	0.56			104 Lb.in	
HGO 050C	mm	104	212	316	229	469	148	22	F10,F12	16,1	50Kgf.m	HP 88~125
	inch	4.1	8.35	12.44	9.01	6.65	5.82	0.87			4340 Lb.in	
HGO 080C	mm	104	220	324	261	204	154	27	F10,F12	17,1	80Kgf.m	HP 125~160
	inch	4.1	8.67	12.76	10.28	8.03	6.06	1.06			6943 Lb.in	
HGO 150C	mm	128	274	402	346	300	190	36	F10,F14	42,8	150Kgf.m	HP 160~200
	inch	5.03	10.79	15.83	13.62	11.81	6.3	1.42			13019 Lb.in	

※ Last alphabet in model, A means Aluminum housing, C means cast iron.

Ordering Code

Double Acting Actuator

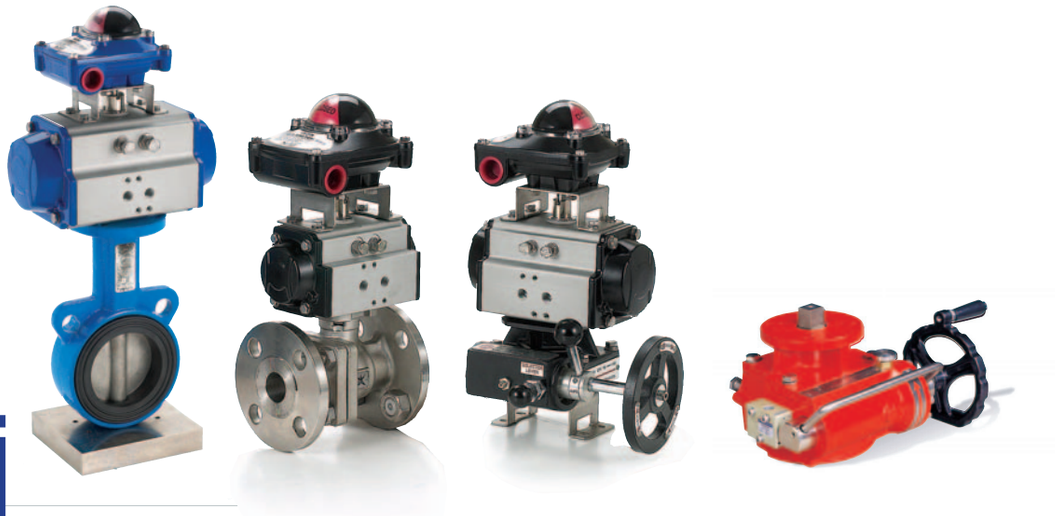
HP 050 – DA

- DA : Double Acting Configuration
- 050 : Cylinder Diameter

Single Acting Actuator

HP 075 – S8 – C

- C : Fail Position (C : Closed, O : Open)
- S8 : Spring set (S8, S9, S10...)
- 075 : Cylinder Diameter



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Ex II 2 GD c IIC ATEX CE 0036 PED