

# PNEUMATIC QUARTER TURN ACTUATOR RACK & PINION HP 035-210 SCOTCH YOKE HP 211-212



## FEATURES AND BENEFITS

- Aluminium body, hard anodised, internally polished to 45-50 $\mu$  and Nickel plated to protect against wear and corrosion.
- Open/Closed indicator is standard on all models.
- Travel adjustment  $\pm 5^\circ$  via 2 external screws.
- Heavy duty die cast Aluminium end caps, Polyester coated to provide maximum resistance against corrosive elements.
- Alloy steel pinion is precision ground and nickel plated in order to reduce friction, provide maximum wear resistance and protect against corrosion.
- Self-lubricating polypropylene & GF piston guides provide high thrust and stability.
- Pistons are heavy duty die cast Aluminium fitted with seals and guides.
- NBR-70 rubber seal throughout provide trouble free operation at standard temperatures.
- Operating direction is reversible.
- Multiple high tensile spring sets for spring return (fail safe) actuator manufactured in high strength alloy steel, these provide high performance in emergency shut down situations .
- Pressure Range: 2.5 BAR - 8 BAR.
- Temperature: Standard -20°C to 80°C .
- All moving parts are factory lubricated for cycle life of the actuator.
- Cycle Life - 1,000,000 operations.
- Top mounting connections are designed in accordance with VDI/ VDE3845 NAMUR standard to allow easy installation of accessories like limit switches and positioners.
- Side mounting connections are designed in accordance with VDI/ VDE 3845 NAMUR standard to install solenoids.
- Bottom mounting connections are designed in accordance with ISO5211 standard for direct mounting with valves .

## OPTIONS:

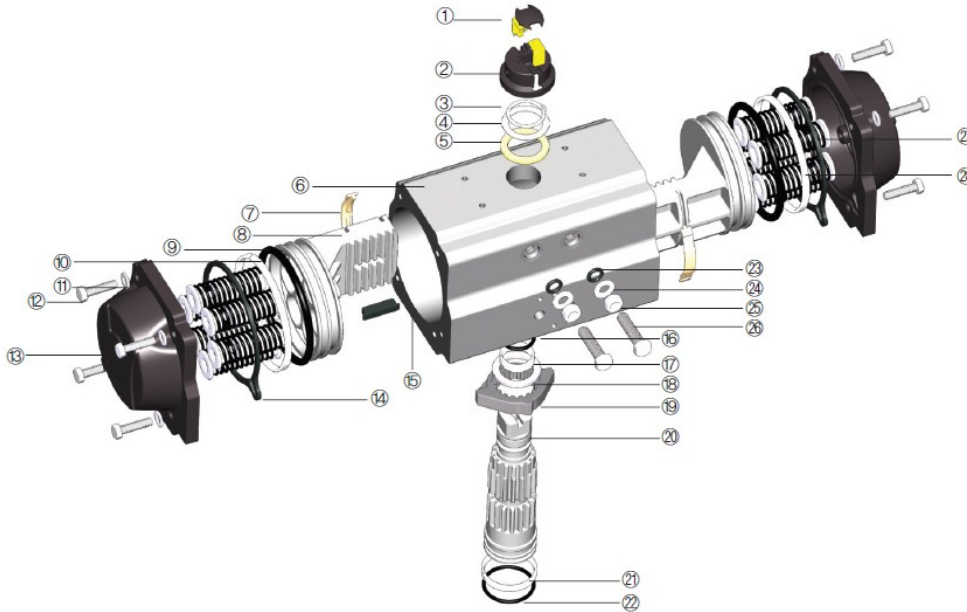
- Limit Switches:
  - Mechanical Switches
  - Proximity Sensors
  - Explosion Proof
- NAMUR Solenoids
  - Voltages
    - 12V DC, 24V DC
    - 24 VAC, 110V AC, 240V AC
- Viton seals for higher temperatures -20°C to 150°C
- Filter regulators
- Positioners
- Extensions
- Repair seal kits available



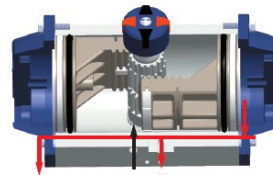
# PNEUMATIC QUARTER TURN ACTUATOR RACK & PINION HP 035-210 SCOTCH YOKE HP 211-212



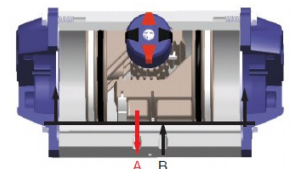
## MATERIALS



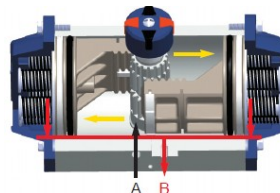
Part	Unit Qty	Part Description	Standard Material
1	4	Position Indicator	Polypropylene + GF
2	1	Position Indicator Holder	Polypropylene + GF
3	1	Spring Clip (Pinion)	Stainless Steel
4	1	Thrust Washer	Stainless Steel
5	1	Thrust Bearing (Pinion)	Polyphthalamide
6	1	Body	Extruded Aluminium Alloy
7	2	Bearing (Piston Back)	Polyphthalamide
8	2	Piston	Die Cast Aluminium
9	2	O-Ring	Nitrile (NBR70)
10	2	Bearing (Piston Head)	Polyphthalamide
11	8	Cap Bolt Washer	Stainless Steel
12	2	Cap Bolt (End Cap)	Stainless Steel
13	2	Right & Left End Cap	Die Cast Aluminium
14	2	O-Ring (End Cap)	Nitrile (NBR70)
15	2	Piston Guide	Polypropylene + GF
16	1	O-Ring (Pinion Top)	Nitrile (NBR70)
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
21	1	Bearing (Piston Bottom)	Nylon 46
22	1	O-Ring (Pinion Bottom)	Nitrile (NBR70)
23	1	O-Ring (Stop Screw)	Nitrile (NBR70)
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 (Cartridge)	High Alloy Spring Steel
28	1	Spring Holder	Polypropylene + GF



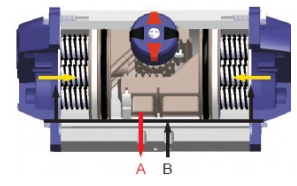
**DOUBLE ACTING OPERATION**  
Air pressure to Port ,  
"A" Counter clockwise (Open)  
\*Pistons must be inverted to reverse actuator operation



Air to Port "B" (Clockwise close)



**SPRING RETURN OPERATION**  
Air to Port "A" Counter clockwise (Open)  
\*Spring force makes the actuator turn clockwise when air is exhausted through port "A"  
\*When air fail to counter clockwise is required, the pistons must be inverted.



Air fail to Port "A" Clockwise (Close)

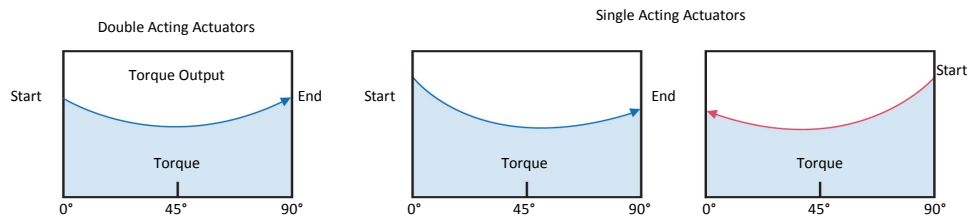
# PNEUMATIC QUARTER TURN ACTUATOR RACK & PINION HP 035-210 SCOTCH YOKE HP 211-212



MODEL	AIR VOLUME—LITRES				OPERATING TIME—SECONDS*			
	DOUBLE ACTING		SPRING RETURN		DOUBLE ACTING		SPRING RETURN	
	OPEN	CLOSE	OPEN	CLOSE	OPEN	CLOSE	OPEN	CLOSE
HP-035	0.1	0.1	-	-	0.15	0.15	-	-
HP-050	0.1	0.2	0.1	-	0.2	0.25	0.25	0.3
HP-063	0.2	0.3	0.2	-	0.25	0.3	0.3	0.35
HP-075	0.3	0.5	0.3	-	0.3	0.4	0.35	0.5
HP-088	0.5	0.8	0.5	-	0.4	0.5	0.5	0.6
HP-100	0.7	1.1	0.7	-	0.5	0.7	0.6	0.9
HP-115	1.2	1.8	1.2	-	0.7	0.9	0.8	1.1
HP-125	1.5	2.3	1.5	-	0.9	1.2	1.1	1.4
HP-145	2.4	3.8	2.4	-	1.2	1.5	1.4	1.8
HP-160	3.1	4.2	3.1	-	1.5	1.8	1.7	2.1
HP-200	5.9	9.5	5.9	-	2.7	3.5	3.2	4
HP-210	7.8	8.2	7.8	-	3.1	4	3.5	4.5
HP-211	5.1	8.6	5.1	-	2.7	4.3	3.2	4.3
HP-212	9.6	10.7	9.6	-	3.5	5	4	5.5

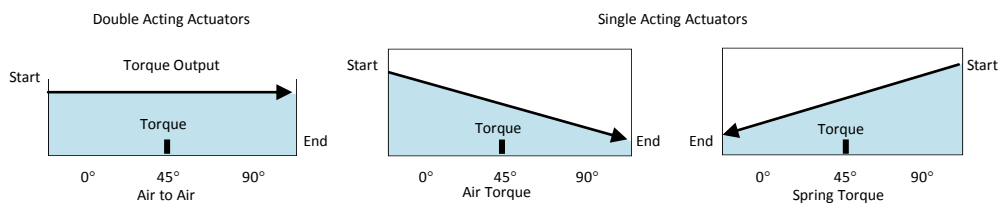
\*For reference only, other factors will effect actual results.

## TORQUE DATA—SCOTCH YOKE DESIGN



Model	Air Supply	DOUBLE ACTING TORQUE			SINGLE ACTING TORQUE					
		Start	Run	End	AIR TORQUE			SPRING TORQUE		
					Start	Run	End	Start	Run	End
HP-211	5.6 Bar	2009	1005	1750	1385	537	724	1026	446	624
HP-212	5.6 Bar	4017	2006	3498	2769	1074	1446	2045	883	1343

## TORQUE DATA—RACK & PINION



Unit: Nm

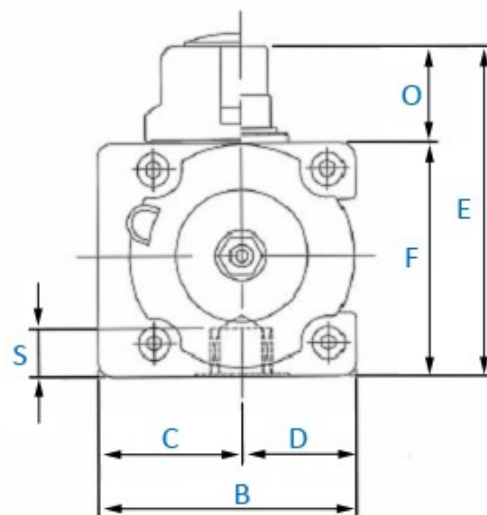
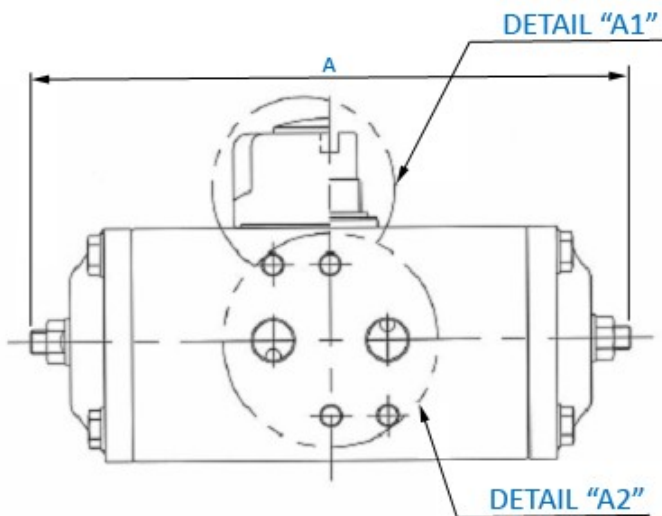
MODEL	DOUBLE ACTING TORQUE									
	2.5 BAR	3 BAR	3.5 BAR	4 BAR	4.5 BAR	5 BAR	5.5 BAR	6 BAR	7 BAR	8 BAR
HP-DA035	3.8	4.5	5.3	6	6.8	7.5	8.3	9	10.5	12
HP-DA050	8.3	10	11.7	13.3	15	16.6	18.3	20	23.3	26.6
HP-DA063	15	17.9	20.9	23.9	26.9	29.9	32.9	35.9	41.9	47
HP-DA075	28.7	34.5	40.2	45.9	51.7	57.4	63.2	68.9	80.4	92
HP-DA088	46.1	55.3	64.5	73.7	83	92.2	101.4	110.6	129	147
HP-DA100	68.2	81.9	95.5	109.2	122.8	136.5	150.1	163.8	191.1	214
HP-DA115	107.5	129	150.5	172	193.5	215	236.5	258	301	344
HP-DA125	138.5	166.2	194	221.7	249.4	277.1	304.8	332.5	387.9	443.3
DP-DA145	217.5	261	304.5	348	391.5	435	478.5	522	609	696
HP-DA160	283.7	340.5	397.2	454	510.7	567.4	624.2	680.9	794.4	908
HP-DA200	531.7	638	744.4	850.7	957.1	1063.4	1169.8	1276.1	1488.8	1701.5
HP-DA210	586.9	704.3	821.6	939	1056.4	1173.8	1291.2	1408.5	1643.3	1878.1



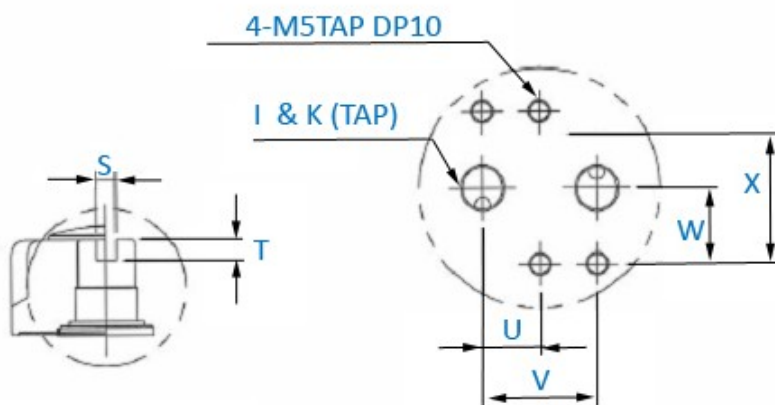
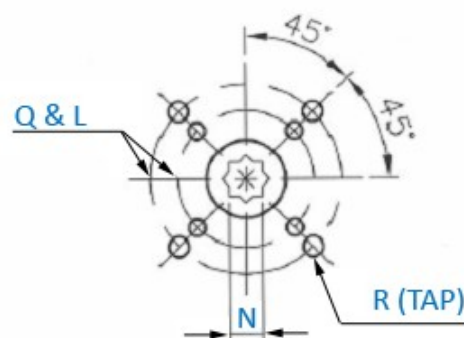
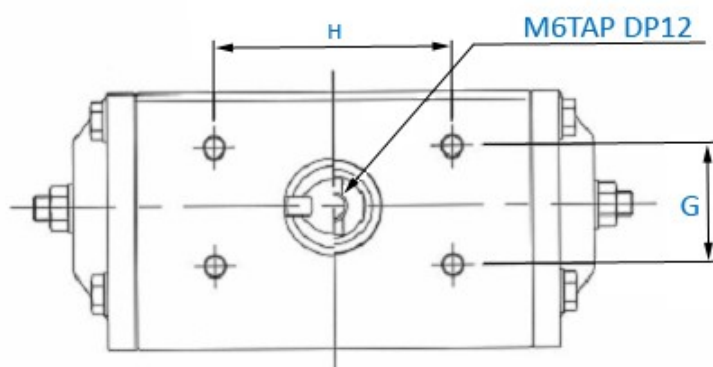
# PNEUMATIC QUARTER TURN ACTUATOR RACK & PINION HP 035-210 SCOTCH YOKE HP 211-212



## HP - 35 RACK & PINION DESIGN



BOTTOM, VIEW - ISO 5211



**DETAIL A1**  
"NANUR" VDI/VDE 3845  
Standard Engagement

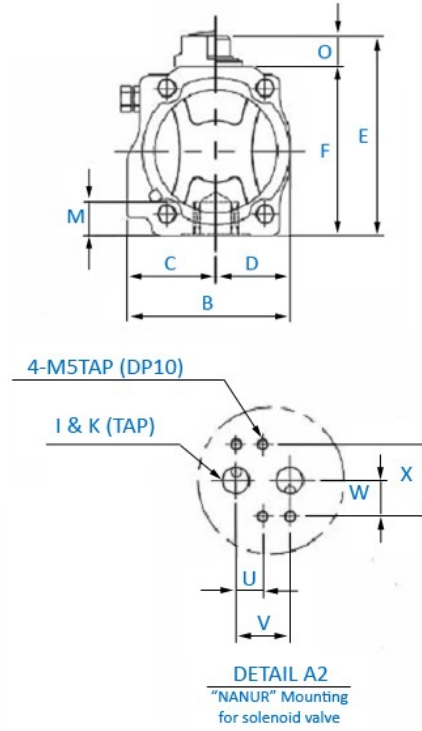
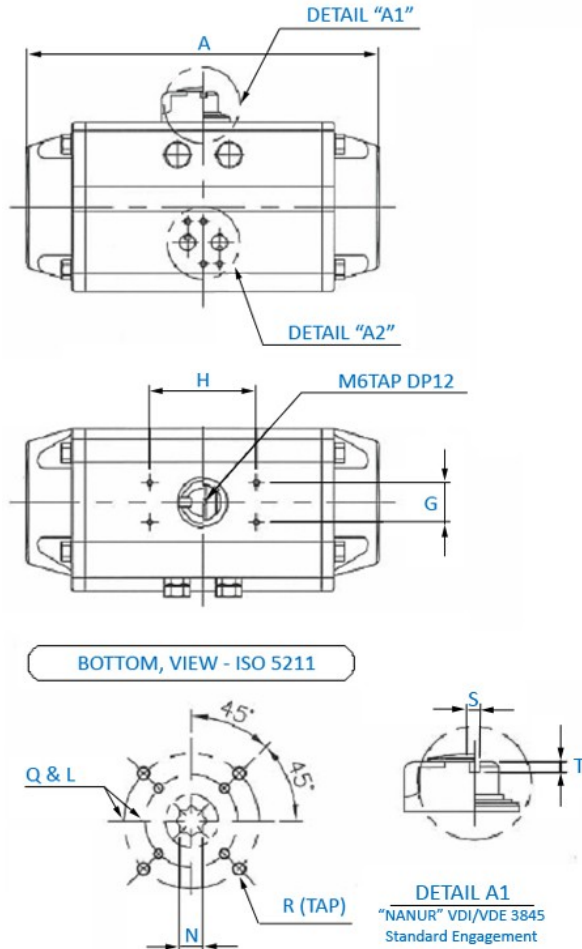
**DETAIL A2**  
"NANUR" Mounting  
for solenoid valve

MODEL	Flange L (ISO5211)	R	A	B	C	D	E	F	G	H	I	K	O	S	T	U	V	W	X	Weight (Kg)
	Q	M/N																		
HP-35	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	0.5

# PNEUMATIC QUARTER TURN ACTUATOR RACK & PINION HP 035-210 SCOTCH YOKE HP 211-212



## HP - 50 to HP - 210 RACK & PINION DESIGN

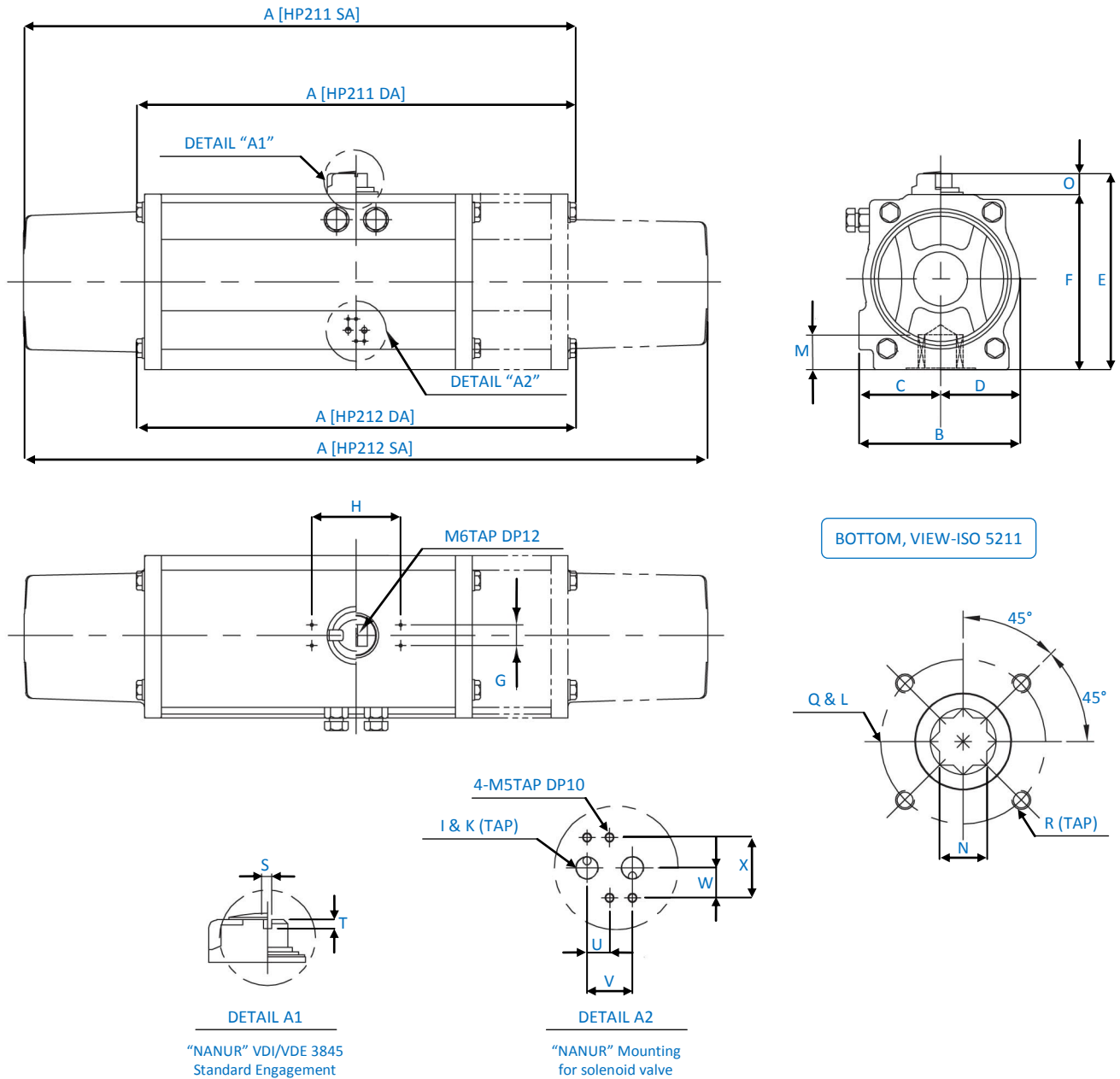


MODEL	Flange L (ISO5211) Q	R M/N	A	B	C	D	E	F	G	H	I	K	O	S	T	U	V	W	X	Weight (Kg)
HP-50	F03/F05 ø36/ø50	M5/M6 14/11	144	72	42	30	93	73	30	80	PF	1/8"	20	4	4	12	24	16	32	1
HP-63	F05/F07 ø50/ø70	M6/M8 18/14	163	85	47	38	107	87	30	80	PF	1/8"	20	4	4	12	24	16	32	1.5
HP-75	F05/F07 ø50/ø70	M6/M8 22/17	210	96	53.5	42.5	124	104	30	80	PF	1/8"	20	4	4	12	24	16	32	3
HP-88	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	4.5
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	6
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	9
HP-125	F07/F10/F12 ø70/ø102/ø125	M8/M10/M12 32/22	347	15	82	69	179	159	30	80	PF	1/4"	20	4	4	12	24	16	32	12
HP-145	F10/F12 ø102/ø125	M10/M12 36/27	414	172	92	80	209	179	30	80 130	PF	1/4"	30	4	4	12	24	16	32	14
HP-160	F10/F12 ø102/ø125	M10/M12 36/27	467	190	101	89	226	196	30	80 130	PF	1/4"	30	4	4	12	24	16	32	22
HP-200	F14 ø140	M16 39/36	555	227	116	111	277	247	30	80 130	PF	1/4"	30	4	4	12	24	16	32	35
HP-210	F14 ø140	M16 43/36	628	236	120	116	286	256	30	130	PF	1/4"	30	4	4	12	22	16	32	38.5

# PNEUMATIC QUARTER TURN ACTUATOR RACK & PINION HP 035-210 SCOTCH YOKE HP 211-212



## HP - 211 to HP - 212 SCOTCH YOKE DESIGN



MODEL	FLANGE L (ISO5211)	R M/N (min)	A		B	C	D	E	F	G	H	I	K	O	S	T	U	V	W	X	Weight (KG)
	Q		DA	SA																	
HP-211	F16	M16	504	669	236	120	116	286	256	30	130	PF	1/4"	30	4	4	12	24	16	32	46 (DA)
	Ø165	54/46																			55 (SR)
HP-212	F16	M16	644	1022	236	120	116	286	256	30	130	PF	1/4"	30	4	4	12	24	16	32	71 (DA)
	Ø165	54/46																			91 (SR)