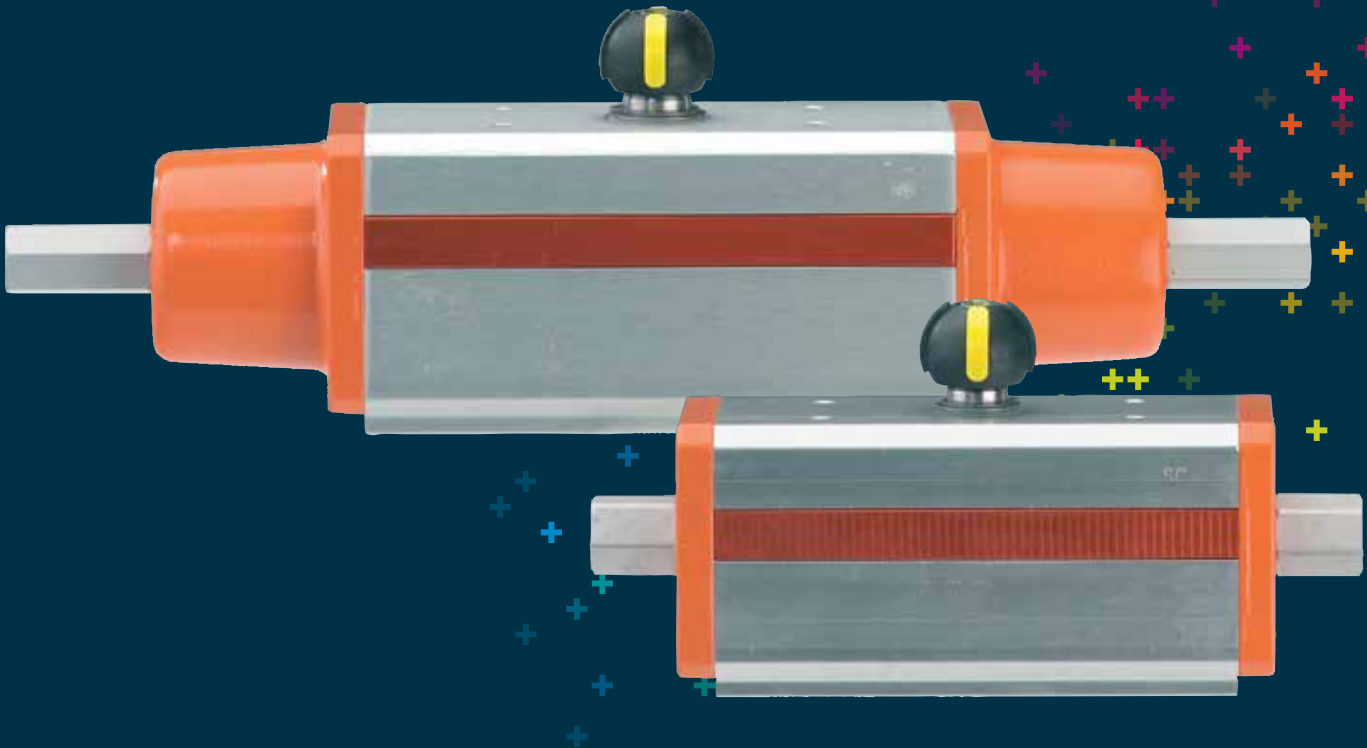


Pneumatic Actuator PA30–90



General

- **Torque Range:** 5–1,327 ft-lb
- **Action:** Fail close, fail close, double acting
- **Type:** Scotch yoke
- **Lubrication:** Self lubricating strips
- **Housing Material:** Anodized Aluminum
- **Housing:** Rolled cylinder
- **Position Indicator:** Optical, integrated
- **Stroke Limiter:** $\pm 10^\circ$

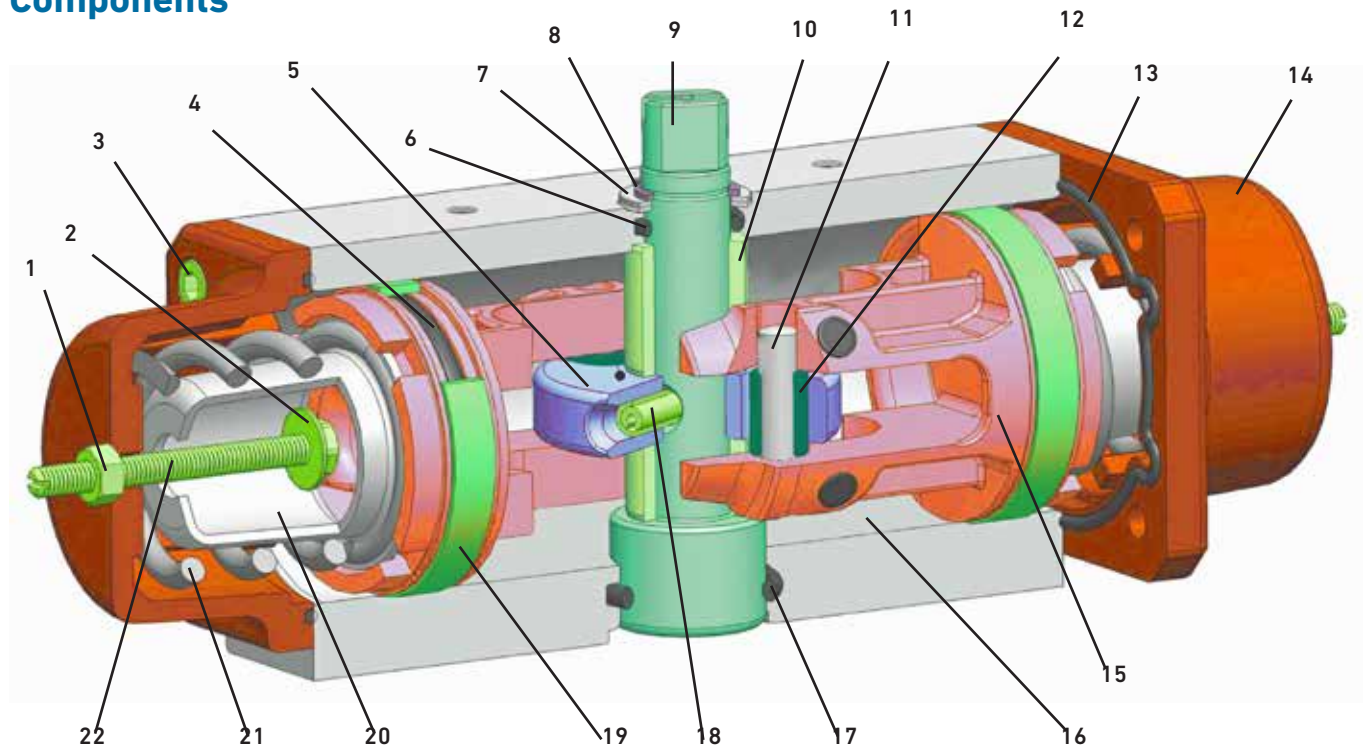
Key Compliance

- **Mount:** DIN/ISO 5211
- **Drive:** DIN 3337
- **Accessories Mount:** VDI/VDE 3845
- **Pneumatic Port Mount:** NAMUR (PA60–80 FC/FO, PA70–90 DA)
- **Pneumatic Port Threads:** ISO 228
- **Machinery Directive:** 2006/42/EC Appendix VII Part B
- **Safety in Terminology, Methodology:** DIN EN ISO 12100-1
- **Safety in Technical Principles:** DIN EN ISO 12100-2
- **Permitted Tolerance:** DIN 7168

Sample Specification

The PA30–PA90 Pneumatic Actuators shall be of scotch yoke design with options for fail-safe to close, fail-safe to open and double acting functionalities. The actuator housing shall be anodized aluminum with aluminum end caps that are bolted to the actuator housing to create a pressure tight seal and secure any spring packs. All variants shall feature a stroke limiter of $\pm 10^\circ$. The actuator top mount shall be NAMUR compliant with an optical position indicator utilizing colored tabs with four insert positions stationed 90° apart. The pneumatic connection ports shall be threaded BSP and fail-safe variants shall utilize a pneumatic exhaust port insert. The actuator base mount shall be of standard F0 pattern per DIN ISO 5211 and the drive shall be a metric double square. Actuator information shall be laser engraved onto a name plate mounted on the side of the actuator. All actuators shall be manufactured under ISO 9001 for Quality and ISO14001 for Environmental Management.

Components



Components

Part	Description	Material	Part	Description	Material
1	Stroke limiter nut	Stainless steel	12	Sleeve bushing	Polyurethane
2	Stroke limiter washer	Stainless steel	13	Housing o-ring	NBR
3	Body bolt	Stainless steel	14	Housing cap	Aluminum alloy
4	Piston seal backing o-ring	NBR	15	Piston	Aluminum alloy
5	Scotch yoke	Steel alloy	16	Housing	Anodized aluminum
6	Upper shaft o-ring	FKM	17	Lower shaft o-ring	NBR
7	Shaft washer	Stainless steel	18	Scotch yoke pin	Steel alloy
8	Retaining clip	Stainless steel	19	Piston seal	Polyurethane
9	Shaft	Stainless steel	20	Spring cap	Steel alloy
10	Spacer bushing	Acetalic resins	21	Spring	Steel alloy
11	Piston sleeve	Steel alloy	22	Stroke limiter bolt	Stainless steel

Key Design Features

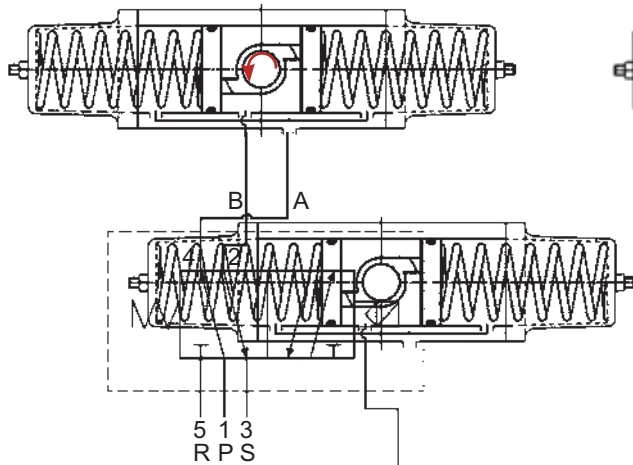
The PA30-90 Pneumatic Actuator Family offers several design features to improve performance and benefit end users. The piston seal (19. above) is self-lubricating to prevent the piston from sticking to the actuator housing even in extremely low cycle count applications. The scotch yoke design reduces friction between internal components and required piston surface area, reducing the overall footprint and weight of the actuator when compared to rack and pinion style actuators of similar size. The housing (16. above) is manufactured with rolled aluminum, reducing the surface roughness resulting in smooth actuation cycles and further preventing the piston from sticking.

Technical Data

Control Diagrams

Red arrow indicating rotation direction when actuated.
Spring return versions shown in fail position. Double acting version shown in closed position. Actuator top shown.

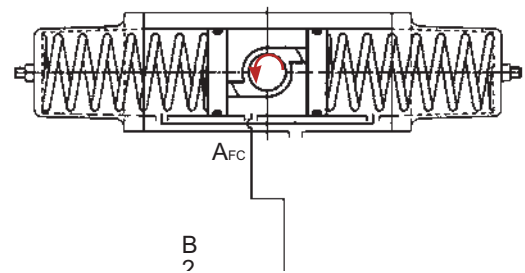
Double Acting: 5/2 Solenoid



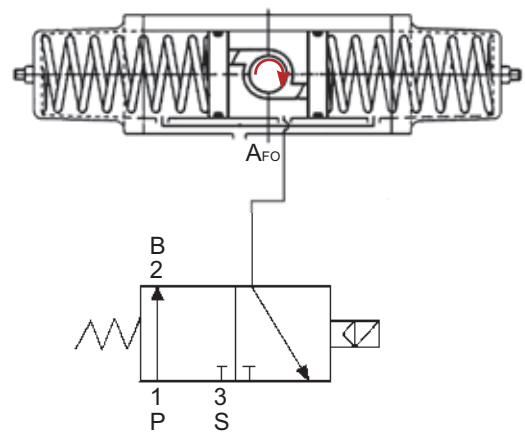
Control Media Volume and Weight

Size	Action	Volume (dm ³)	Weight (lb)
PA30	FC/FO	0.16	4.4
PA35	FC/FO	0.25	5.3
PA40	FC/FO	0.33	7.7
PA45	FC/FO	0.51	10.1
PA50	FC/FO	0.7	14.7
PA55	FC/FO	1.02	20.7
PA60	FC/FO	1.38	24.2
PA65	FC/FO	2.02	35
PA70	FC/FO	2.69	42.2
PA75	FC/FO	4.21	58.7
PA80	FC/FO	5.58	75.7
PA30	DA	0.15	2.2
PA35	DA	0.22	2.8
PA40	DA	0.28	3.4
PA45	DA	0.43	4.1
PA50	DA	0.59	6.2
PA55	DA	0.87	7.5
PA60	DA	1.18	11.7
PA65	DA	1.74	15.8
PA70	DA	2.38	18.5
PA75	DA	3.51	26.4
PA80	DA	4.67	30.8
PA85	DA	7.56	43.3
PA90	DA	10.01	55.9

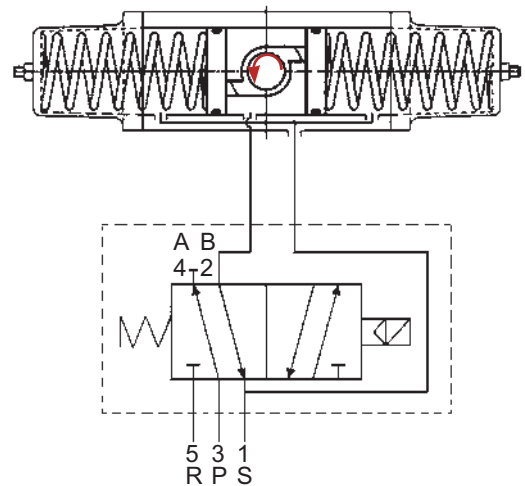
Fail Close: 3/2 Solenoid



Fail Open: 3/2 Solenoid



Spring Return: 5/2 Solenoid Fail close version shown



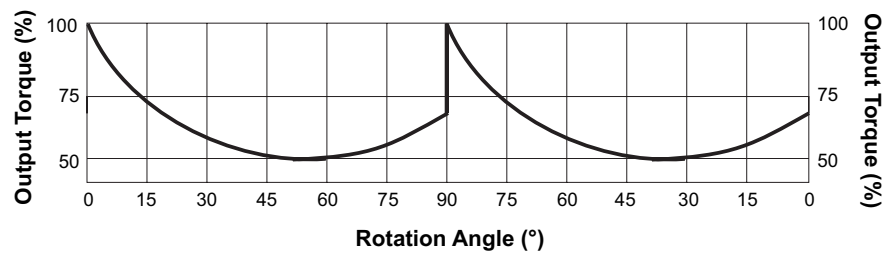
Spring Return Torque Specification

The following tables are shown in foot-pounds unless otherwise specified

Output Torque

Type	Operating Angle	40 psi Control Pressure		60 psi Control Pressure		80 psi Control Pressure	
		Air	Spring	Air	Spring	Air	Spring
PA30	0°	11.1	7.4	16.6	11.1	22.1	14.8
	45°	5.5	5.5	8.3	8.3	11.1	11.1
	90°	7.4	11.1	11.1	16.6	14.8	22.1
PA35	0°	16.6	11.1	25	16.6	33.2	22.1
	45°	8.2	8.2	12.4	12.4	16.6	16.6
	90°	11.1	16.6	16.6	25	22.1	33.2
PA40	0°	22.1	14.8	33.2	22.1	44.3	29.5
	45°	11.1	11.1	16.6	16.6	22.1	22.1
	90°	14.8	22.1	22.1	33.2	29.5	44.3
PA45	0°	33.2	22.1	49.8	33.2	66.4	44.3
	45°	16.6	16.6	25	25	33.2	33.2
	90°	22.1	33.2	33.2	49.8	44.3	66.4
PA50	0°	44.3	29.5	66.4	44.3	88.5	59
	45°	22.1	22.1	33.2	33.2	44.3	44.3
	90°	29.5	44.3	44.3	66.4	59	88.5
PA55	0°	66.4	44.3	99.6	66.4	132.8	88.5
	45°	33.2	33.2	49.8	49.8	66.4	66.4
	90°	44.3	66.4	66.4	99.6	88.5	132.8
PA60	0°	88.5	59	132.8	88.5	177	118
	45°	44.3	44.3	66.4	66.4	88.5	88.5
	90°	59	88.5	132.8	132.8	118	177
PA65	0°	132.8	88.5	132.8	132.8	265.5	177
	45°	66.4	66.4	99.6	99.6	132.8	132.8
	90°	88.5	132.8	132.8	199.1	177	265.5
PA70	0°	177	118	265.5	177	354	236
	45°	88.5	88.5	132.8	132.8	177	177
	90°	118	177	177	265.5	236	354
PA75	0°	265.5	177	398.3	265.5	531	354
	45°	132.8	132.8	199.1	199.1	265.5	265.5
	90°	177	265.5	265.5	398.3	354	531
PA80	0°	354	236	531	354	708.1	472
	45°	177	177	265.5	265.5	354	354
	90°	236	354	354	531	472	708.1

Torque Characteristics



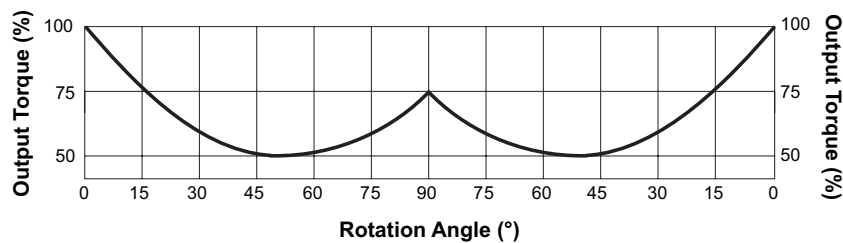
Double Acting Torque Specification

The following tables are shown in foot-pounds unless otherwise specified

Output Torque

Type	Operating Angle	Control Pressure					
		44 psi	58 psi	73 psi	80 psi	87 psi	101 psi
PA30	0°	11.9	15.8	19.8	22.1	23.7	27.7
	45°	5.9	7.9	9.9	11.1	11.9	13.9
	90°	8.9	11.9	14.8	16.6	17.8	20.7
PA35	0°	17.7	23.7	29.6	33.2	35.6	41.6
	45°	8.9	11.9	14.8	16.6	17.7	20.8
	90°	13.3	17.9	22.3	25.1	26.8	31.2
PA40	0°	23.7	31.6	39.5	44.3	47.4	55.3
	45°	11.9	15.8	19.8	22.1	23.7	27.7
	90°	17.8	23.7	29.6	33.2	35.6	41.5
PA45	0°	35.4	47.4	59.3	66.4	71.2	83.2
	45°	17.7	23.9	29.6	33.2	35.4	41.6
	90°	26.6	35.8	44.7	50.2	53.5	62.4
PA50	0°	47.4	63.2	79	88.5	94.9	110.6
	45°	23.7	31.6	39.5	44.3	47.4	55.3
	90°	35.5	47.4	59.3	66.4	71.1	83
PA55	0°	70.8	94.7	118.6	132.8	142.5	166.4
	45°	35.4	47.8	59.3	66.4	70.8	83.2
	90°	53.1	71.7	89.4	99.6	107.1	124.8
PA60	0°	94.5	126.4	158.1	177	189.6	221.3
	45°	47.4	63.2	79	88.5	94.9	110.6
	90°	71.1	94.9	118.5	132.8	142.3	166
PA65	0°	141.6	189.4	237.2	265.5	285	332.8
	45°	70.8	95.6	118.6	132.8	141.6	166.4
	90°	106.2	143.4	178.8	199.1	214.2	249.6
PA70	0°	189.6	252.9	316.1	354	379.3	442.5
	45°	94.9	126.4	158.1	177	189.6	221.3
	90°	142.3	189.6	237.1	265.5	284.5	331.9
PA75	0°	283.2	378.8	474.4	531	570	665.6
	45°	141.6	191.2	237.2	265.5	283.2	332.8
	90°	212.4	286.8	357.6	398.3	428.4	499.2
PA80	0°	379.3	505.7	632.2	708.1	758.7	885.1
	45°	189.6	252.9	316.1	354	379.3	442.5
	90°	284.5	379.3	474.2	531	569	663.8
PA85	0°	566.4	757.6	948.8	1062.1	1140	1331.2
	45°	283.2	382.4	474.4	531	566.4	665.6
	90°	424.8	573.5	715.4	796.6	856.8	998.4
PA90	0°	758.7	1011.5	1264.4	1416.1	1517.2	1770.1
	45°	379.3	505.8	632.2	708.1	758.7	885.1
	90°	569	758.7	948.3	1062.1	1138	1327.6

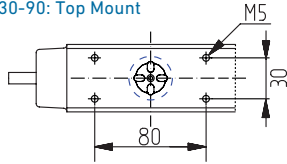
Torque Characteristics



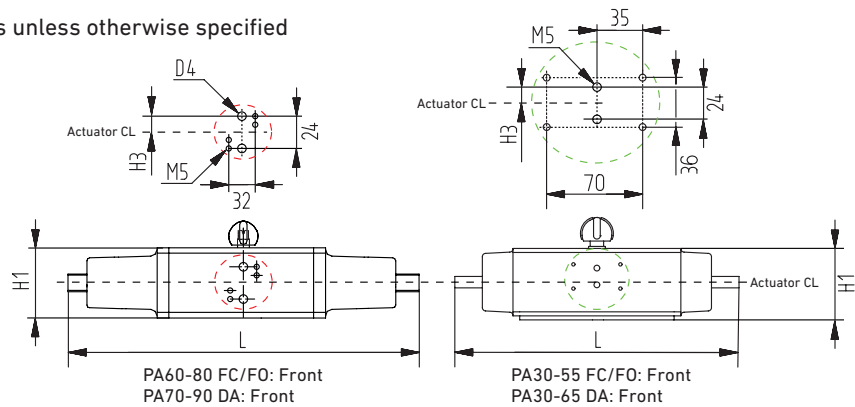
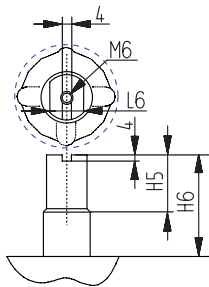
Dimensions

The following tables are shown in millimeters unless otherwise specified

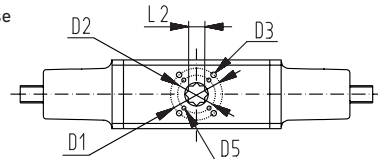
PA30-90: Top Mount



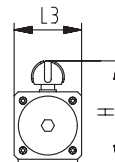
PA30-90: Position Indicator



PA30-90: Base



PA30-90: Right



Dimensions

Size	Action	ISO	D1	D2	D3	D4	D5	H	H1	H3	H5	H6	L	L2	L3	L6
PA30	FC/F0	F04	-	42	-	G $\frac{1}{8}$ "	M5x9	102	70	17.9	13	20	240	11	65	10
PA35	FC/F0	F05/F07	70	50	M8x15	G $\frac{1}{8}$ "	M5x9	111	77.5	17.9	13	20	294	14	72	12
PA40	FC/F0	F05/F07	70	50	M8x15	G $\frac{1}{8}$ "	M6x11	129	86	21	13	30	320	14	80	12
PA45	FC/F0	F05/F07	70	50	M8x15	G $\frac{1}{8}$ "	M6x11	139	96	21	16	30	357	17	90	15
PA50	FC/F0	F05/F07	70	50	M8x15	G $\frac{1}{8}$ "	M6x11	149	106	21	17	30	368	17	100	15
PA55	FC/F0	F07/F10	102	70	M10x17	G $\frac{1}{8}$ "	M8x15	161	118	25	19	30	436	22	112	19
PA60	FC/F0	F07/F10	102	70	M10x17	G $\frac{1}{4}$ "	M8x15	173	130	26	19	30	456	22	124.7	19
PA65	FC/F0	F10/F12	125	102	M12x21	G $\frac{1}{4}$ "	M10x17	191	148	34	19.5	30	565.5	27	136.5	22
PA70	FC/F0	F12	-	125	-	G $\frac{1}{4}$ "	M12x21	196	153.2	38	19.5	30	602	27	145	24
PA75	FC/F0	F14	-	140	-	G $\frac{1}{4}$ "	M16x25	229	186	43	19.5	30	712	36	165.5	27
PA80	FC/F0	F14	-	140	-	G $\frac{1}{4}$ "	M16x25	241	198	44	24.5	30	767	36	180	32
PA30	DA	F03/F05	50	36	M6x11	G $\frac{1}{8}$ "	M5x9	92	60	12	10	20	168	9	55	9
PA35	DA	F04	-	42	-	G $\frac{1}{8}$ "	M5x9	98	65.7	12.5	13	20	182	11	60	10
PA40	DA	F04	-	42	-	G $\frac{1}{8}$ "	M5x9	102	70	17.9	13	20	190	11	65	10
PA45	DA	F05/F07	70	50	M8x15	G $\frac{1}{8}$ "	M6x11	111	77.5	17.9	13	20	225	14	72	12
PA50	DA	F05/F07	70	50	M8x15	G $\frac{1}{8}$ "	M6x11	129	86	21	13	30	240	14	80	12
PA55	DA	F05/F07	70	50	M8x15	G $\frac{1}{8}$ "	M6x11	139	96	21	16	30	268	17	90	15
PA60	DA	F05/F07	70	50	M8x15	G $\frac{1}{8}$ "	M6x11	149	106	21	17	30	314	17	100	15
PA65	DA	F07/F10	102	70	M10x17	G $\frac{1}{8}$ "	M8x15	161	118	25	19	30	336	22	112	19
PA70	DA	F07/F10	102	70	M10x17	G $\frac{1}{4}$ "	M8x15	173	130	26	19	30	365	22	124.7	19
PA75	DA	F10/F12	125	102	M12x21	G $\frac{1}{4}$ "	M10x17	191	148	34	19.5	30	401.5	27	136.5	22
PA80	DA	F12	-	125	-	G $\frac{1}{4}$ "	M12x21	196.5	153	38	19.5	30	445	27	145	24
PA85	DA	F14	-	140	-	G $\frac{1}{4}$ "	M16x25	229	186	43	19.5	30	529	36	165.5	27
PA90	DA	F14	-	140	-	G $\frac{1}{4}$ "	M16x25	241	198	44	24.5	30	581	36	180	32