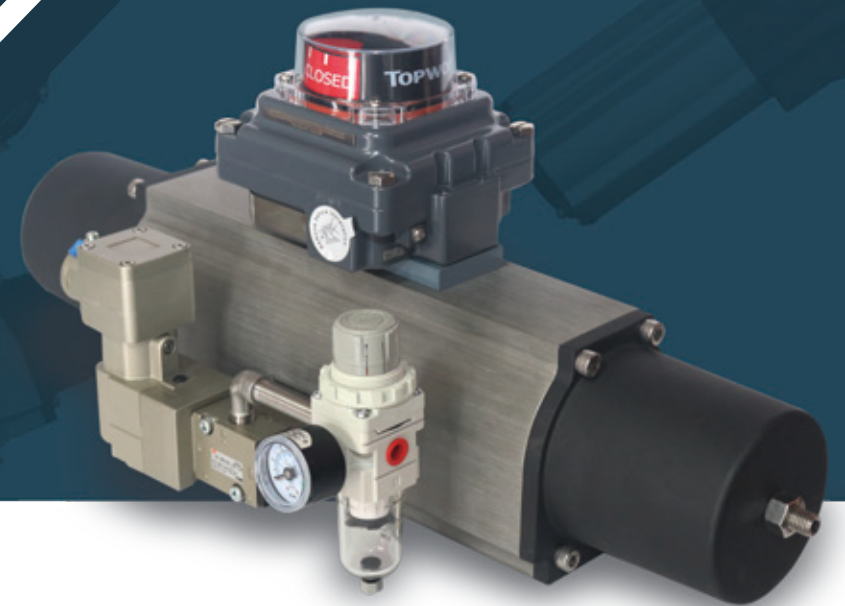


SCOTCH YOKE

PNEUMATIC ACTUATOR



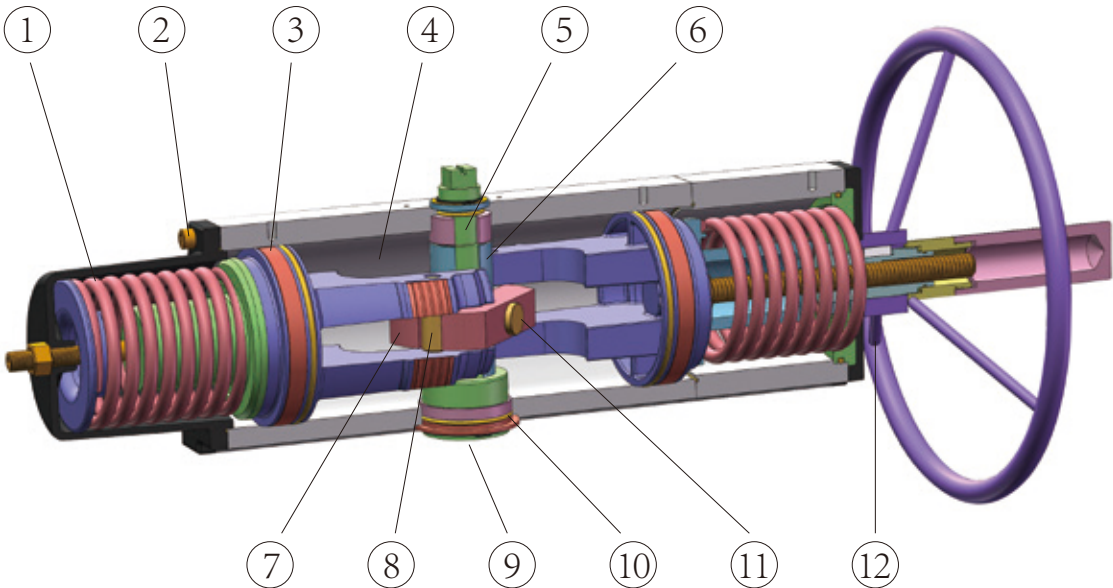
Introduction

ABOUT Valvespro Controls.

Valvespro Control. produces high quality solutions for pneumatic and electric valve automation. With 20000 M²factory base located in wenzhou city in Zhejiang province China, we manufacture and provide our customers with reliable valve actuators.

Our products have been widely applied in petrochemical, natural gas, steel metallurgy, air separation, mechanical equipment, water plants and other industry applications.Our specialty product including double-acting pneumatic scotch yoke actuators and single-acting pneumatic scotch yoke actuators with cylinder bores ranging from 40mm to 280mm and torque ranges from 22Nm to 8500Nm (5bar).For high durability pneumatic cylinders or total actuation packages, Valvespro Control can offer the most cost-effective product and services for a one stop solution to our customers.

Product Features



1. Modular spring pack	2. Corrosion-resistant connectors	3.Piston ring	4.Body
According to different air pressure with different spring combination, low stress spring design can effectively extend the service life of the spring.	All connection bolts are stainless steel with good corrosion resistance.	The piston guide ring, made of ultra high molecular polymer, has an extremely low coefficient of friction, while the material has high hardness and excellent wear resistance, providing precise guidance and long service life.	The cylinder body is processed with high precision and anodized. The thickness of the oxide layer is more than 20µm. It has low friction coefficient and excellent anti-corrosion and wear resistance.
5.Shaft bearing	6.Piston bearing	7.Scotch Yoke	8.Piston pin&bearing
Prevent direct contact between shaft and cylinder body, ensure the positioning accuracy of drive shaft, reduce friction loss, make the actuator efficient operation.	Ensure the positioning accuracy of the piston, so that the piston can be smooth and smooth operation, prevent shifting.	High-strength alloy steel material and special hardening treatment reduce wear and prolong service life.	High-strength alloy steel material and special hardening treatment reduce wear and prolong service life.
9.Connection standard	10.Shaft seal	11.Pin connection	12.Handwheel
According to ISO 5211/DIN 3337/ NAMUR.	Easy to replace design, can be replaced without removing the shaft.	The fork and the drive shaft are connected by pins to ensure that the fork and the drive shaft run synchronously. At the same time, the pins also play a role in preventing the drive shaft from flying out, which is a reliable and safe design.	The handwheel integrated on the actuator reduces the space required for installation and reduces the load on the pipeline.

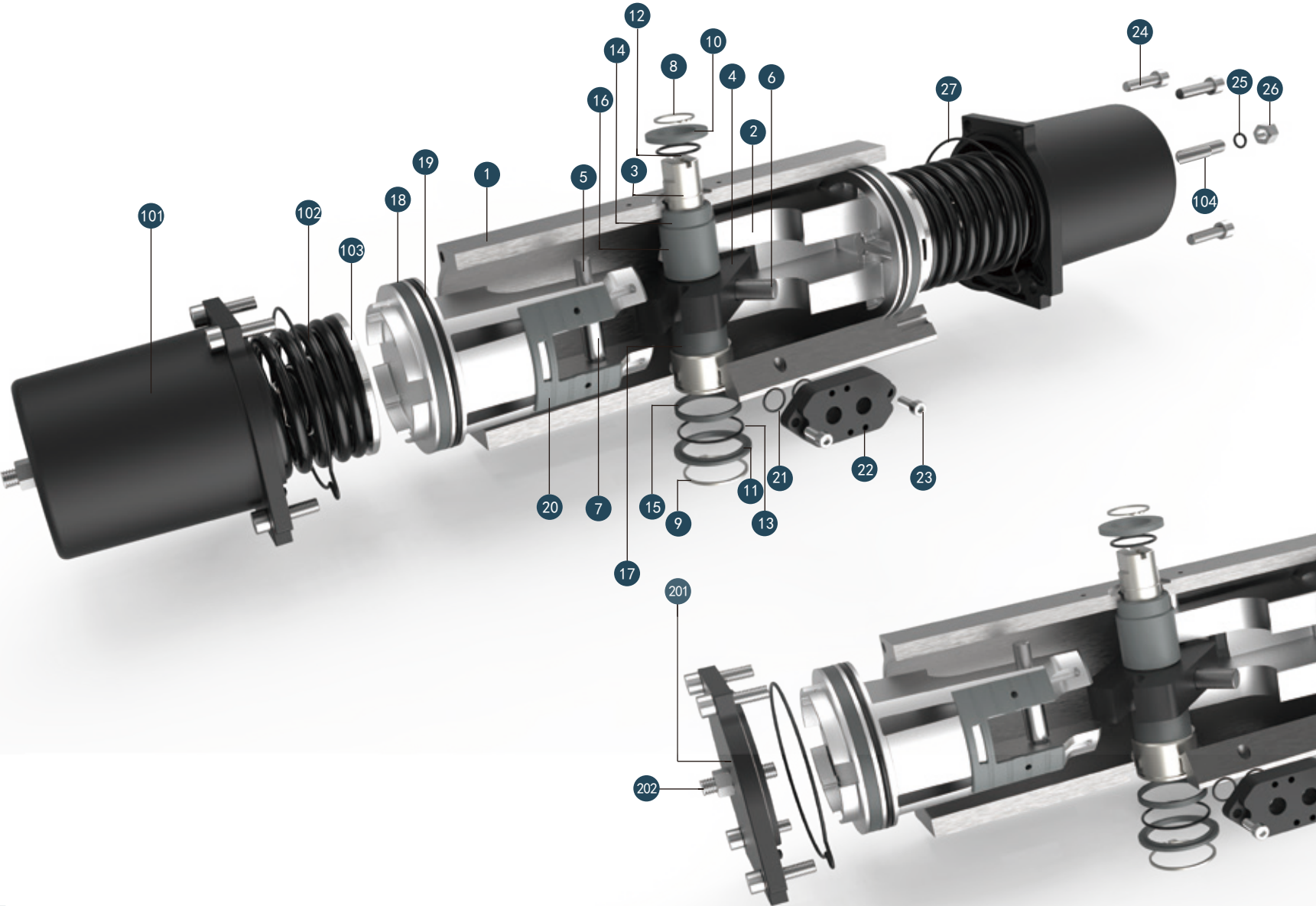
Part Number and Material

Specification

Comply to UNI EN 15714-3:2009 standard
ISO connection standard: UNI EN ISO 5211
Auxiliary connection: NAMUR
Control angle: 90°
Torque: Relative to control pressure. Please refer to torque selection table.
Coating protection: Hard anodized surface, epoxy powder coated end cap. Surface coating can be customized.

Working Condition

Operation temperature:
Standard: -20°C~+80°C
High temperature: -20°C~+120°C
Low temperature: -50°C~+60°C
Pressure: 2-8bar (Manual Control -HW: 2-6bar)
Medium: Filtered compressed air dry or lubricated.
The operating medium shall have a dew point ≤ -20°C or to be at least 10°C below the ambient temperature (ISO 8573-1, Class 3). The maximum particle size shall not exceed 40 μm (ISO 8573-1, Class 5).



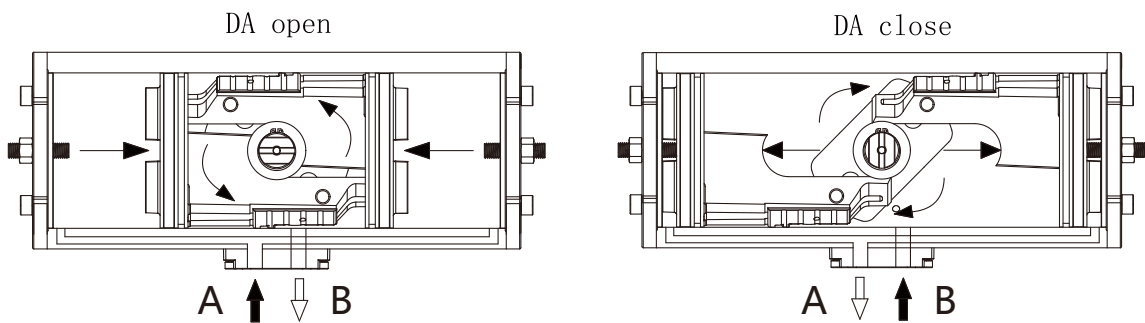
Pos	Denomination	Material
1	Cylinder ¹	Aluminium Alloy
2	Piston	Aluminium Alloy
3	Shaft	Alloy Steel
4	Yoke	Alloy Steel
5	Piston pin	Alloy Steel
6	Yoke pin	Alloy Steel
7	Bearing	Alloy Steel
8	Upper circlip	Stainless Steel
9	Lower circlip	Stainless Steel
10	Upper washer	Crystalline Polymer
11	Lower washer	Crystalline Polymer
12	Upper shaft O-ring	NBR
13	Lower shaft O-ring	NBR
14	Upper shaft bearing	Crystalline Polymer/Graphite Copper Bushing
15	Lower shaft bearing	Crystalline Polymer/Graphite Copper Bushing
16	Upper piston bearing	Crystalline Polymer
17	Lower piston bearing	Crystalline Polymer
18	Piston ring	Crystalline Polymer
19	Piston O-ring	NBR
20	Piston support chip	Crystalline Polymer
21	Connection plate O-ring ²	NBR
22	Connection plate ²	Aluminium Alloy
23	Plate socket screw ²	Stainless Steel
24	Cover socket screw	Stainless Steel
25	Nut O-ring	NBR
26	screws	Stainless Steel
27	End Cover Seal Ring	NBR
101	Cover ³	Aluminium Alloy
102	Spring ⁴	Spring Steels
103	Lower Spring Washer ⁴	Aluminium Alloy
104	Spring Shaft ⁴	Stainless Steel
201	Double Acting End Cover	Aluminium Alloy
202	Set Screw ⁵	Stainless Steel

1)180-220 body is split type
2)140-260 not included
3)180-260 same end cap for single or double acting
4)For single acting, not double acting.
5)For double acting, not single acting.
Above illustration for internal structure demonstration only, not for all model and parts.

Double Acting



Open and close demonstration

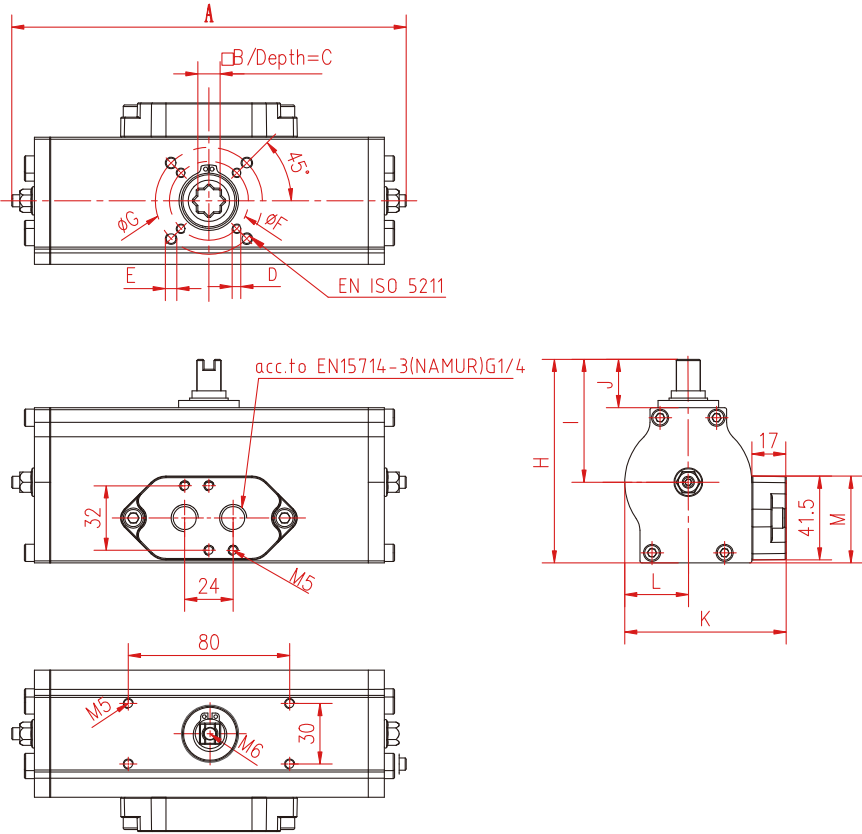


© Air to Port A forces the pistons inwards, causing the shaft to turn counterclockwise while the air is being exhausted from Port B.
© Air to Port B forces the pistons outwards, causing the shaft to turn clockwise while the air is being exhausted from Port A.

Double Acting - DA Torque Table

Pressure	3bar			4bar			5bar			5.6bar			6bar			7bar			8bar		
Model	$\alpha = 0^\circ$	$\alpha = 45^\circ$	$\alpha = 90^\circ$	$\alpha = 0^\circ$	$\alpha = 45^\circ$	$\alpha = 90^\circ$	$\alpha = 0^\circ$	$\alpha = 45^\circ$	$\alpha = 90^\circ$	$\alpha = 0^\circ$	$\alpha = 45^\circ$	$\alpha = 90^\circ$	$\alpha = 0^\circ$	$\alpha = 45^\circ$	$\alpha = 90^\circ$	$\alpha = 0^\circ$	$\alpha = 45^\circ$	$\alpha = 90^\circ$	$\alpha = 0^\circ$	$\alpha = 45^\circ$	$\alpha = 90^\circ$
DA40	15	8	12	20	10	16	25	13	20	28	14	22	30	15	24	35	18	28	40	20	32
DA60	44	23	36	59	30	48	74	38	60	83	42	68	89	45	72	104	53	84	118	60	96
DA70	86	44	70	114	58	93	143	73	116	160	81	130	171	87	140	200	102	163	228	116	186
DA80	138	70	113	184	94	150	230	117	188	258	131	210	276	141	225	322	164	263	368	188	300
DA90	206	105	168	274	140	224	343	175	280	384	196	313	412	210	336	480	245	392	549	280	448
DA100	303	154	247	404	206	329	505	257	411	565	288	461	605	309	494	706	360	576	807	411	658
DA125	494	252	403	659	336	537	823	420	671	922	470	752	988	504	806	1153	588	940	1317	672	1074
DA140	690	352	563	920	469	750	1150	586	938	1288	657	1050	1380	704	1125	1610	821	1313	1840	938	1501
DA160	1044	532	851	1392	709	1135	1740	887	1418	1948	993	1589	2088	1064	1702	2435	1241	1986	2783	1419	2269
DA180	1456	742	1187	1941	989	1583	2426	1237	1978	2718	1385	2216	2912	1484	2374	3397	1731	2770	3882	1979	3165
DA220	2485	1299	1878	3314	1732	2504	4142	2165	3130	4639	2425	3506	4971	2598	3756	5799	3031	4382	6627	3464	5008
DA260	5107	2669	3859	6810	3559	5146	8512	4449	6432	9534	4983	7204	10215	5339	7719	11917	6228	9005	13619	7118	10292

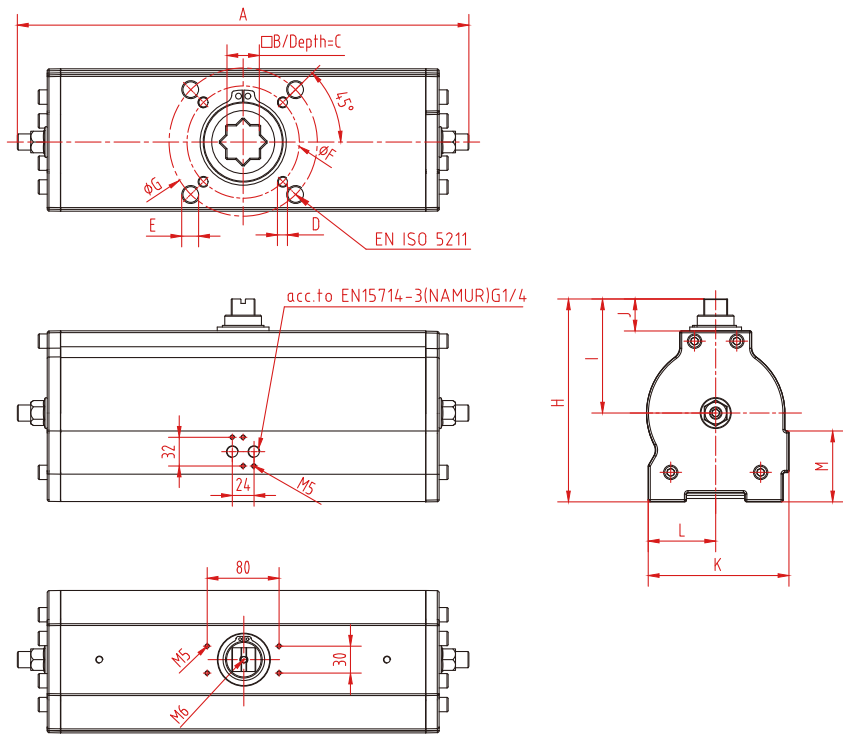
Dimension and coding-DA40-DA125



Dimension Table

Code	DA0401101	DA0601401	DA0701701	DA0801701	DA0902201	DA1002201	DA1252701
Model	DA40	DA60	DA70	DA80	DA90	DA100	DA125
ISO	F03/F05	F05/F07	F05/F07	F05/F07	F07/F10	F07/F10	F10/F12
A	170	208	271	295	341	389	445
B	11	14	17	17	22	22	27
C	16	16	18	22	26	26	30
D x Depth	M5x8	M6x9	M6x9	M6x9	M8x12	M8x12	M10x15
E x Depth	M6x9	M8x12	M8x12	M8x12	M10x15	M10x15	M12x18
F	36	50	50	50	70	70	102
G	50	70	70	70	102	102	125
H	86	97	111	128	140	149	186
I	48	57	65	72	76	83	106
J	20	20	20	20	20	20	30
K	69	80	96	108	121	131	156
L	25	31.5	40	45.5	51	57	70
M	45	43	46	53	54.5	59	60
Weight (g)	1.0	1.5	2.7	3.8	6.8	6.95	12.05
Air consumption(NL/Cycle)	0.19	0.47	0.93	1.50	2.36	3.26	5.83
Open time (seconds)	0.1	0.2	0.3	0.4	0.6	0.9	1.6
Close time (seconds)	0.2	0.2	0.4	0.5	0.6	1	1.7

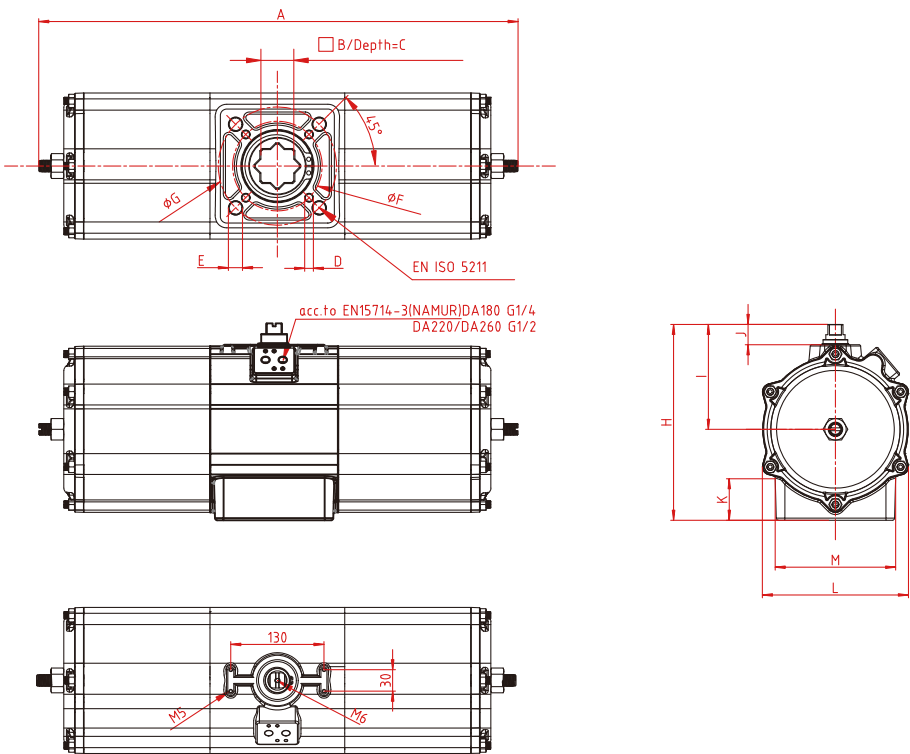
➤ Dimension and coding-DA140-DA160



◆ Dimension Table

Code	DA1403601	DA1403602	DA1604601	DA1604602
Model	DA140		DA160	
ISO	F12/F16	F14	F12/F16	F14
A	520		575	
B	36		46	
C	40		46	
D x Depth	M12x20	M16x24	M12x20	M16x24
E x Depth	M20x30	-	M20x30	-
F	125	140	125	140
G	165	-	165	-
H	220		242.5	
I	122		129	
J	30		30	
K	156.5		175	
L	75		85	
M	79		93.5	
Weight (g)	20.05		27.7	
Air consumption(NL/Cycle)	7.5		11.1	
Open time (seconds)	2		3.6	
Close time (seconds)	2.2		3.4	

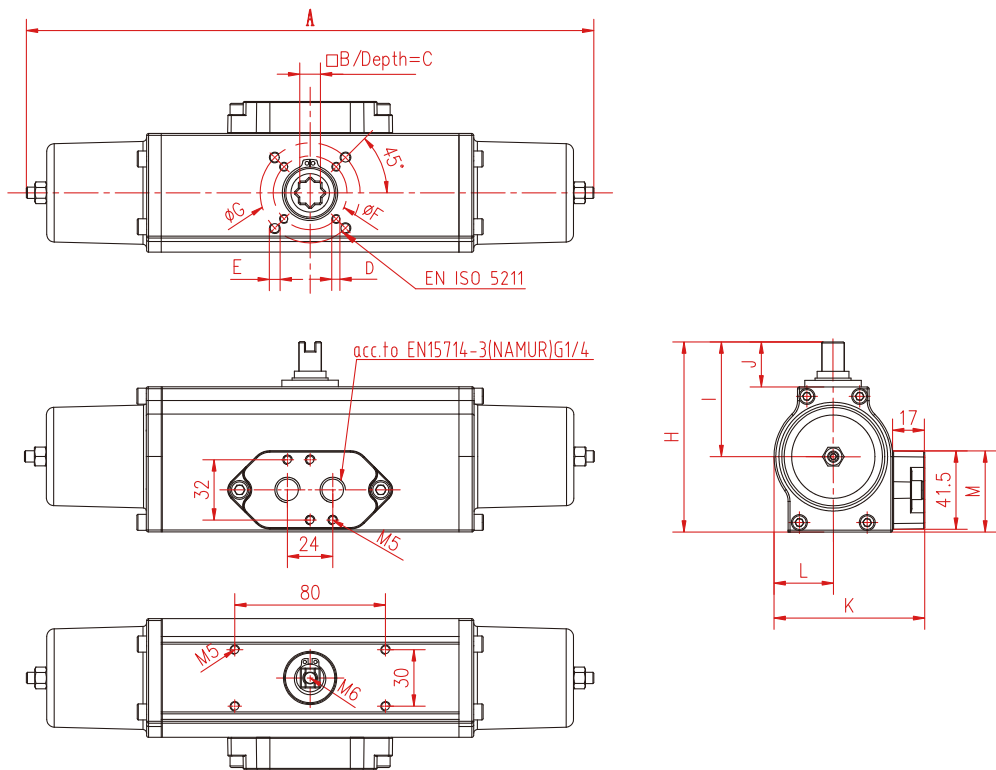
➤ Dimension and coding-DA180-DA260



◆ Dimension Table

Code	DA1804601	DA1804602	DA2205501	DA2605501
Model	DA180		DA220	DA260
ISO	F12/F16	F14	F16	F25
A	656		810	1005
B	46		55	55
C	50		57	57
D	M12x18	M16x24	M20x30	M16x30
E	M20x30	-	-	-
F	125	140	165	254
G	165	-	-	-
H	275		314	380
I	148		171	202
J	30		30	30
K	62		71	66
L	206		271	342
M	168		200	300
Weight (g)	37.45		65.5	114
Air consumption(NL/Cycle)	16.58		29.8	62.1
Open time (seconds)	4.4		3.8	6.7
Close time (seconds)	4.3		4.3	7

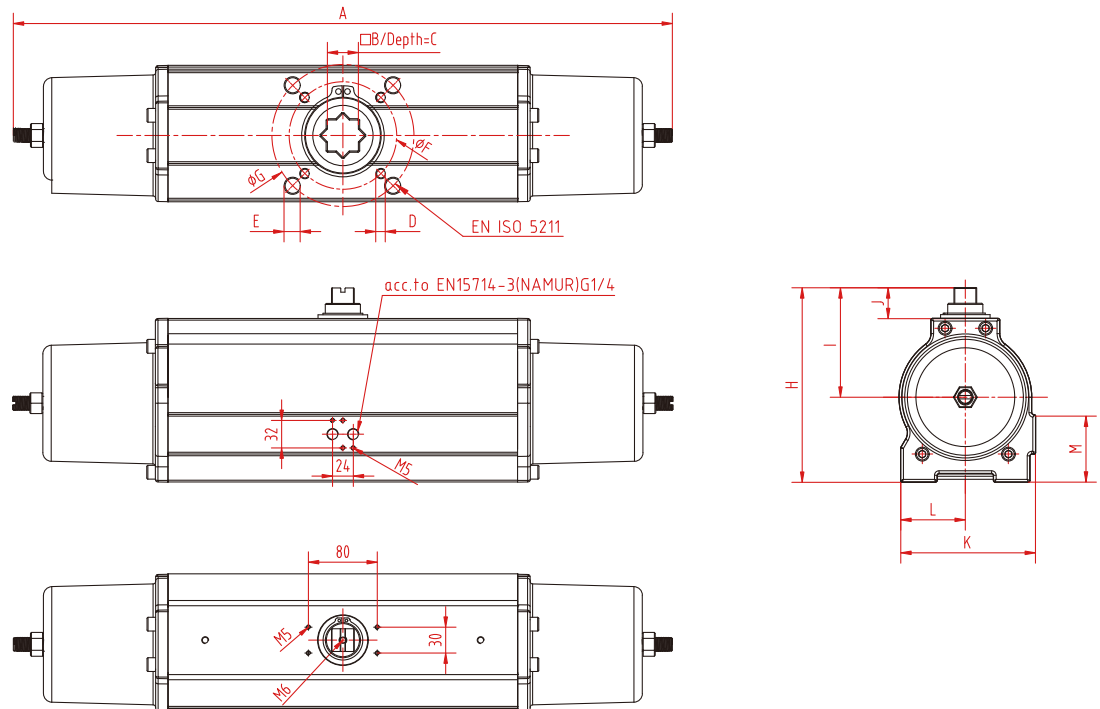
➤ Dimension and coding-SA60-SA125



◆ Dimension Table

Code	SA0601401	SA0701701	SA0801701	SA0902201	SA1002201	SA1252701
Model	SA60	SA70	SA80	SA90	SA100	SA125
ISO	F05	F05/F07	F05/F07	F07/F10	F07/F10	F10/F12
A	310	410	457	510	596	720
B	14	17	17	22	22	27
C	16	18	22	26	26	30
D x Depth	M6x9	M6x9	M6x9	M8x12	M8x12	M10x15
E x Depth	-	M8x12	M8x12	M10x15	M10x15	M12x18
F	50	50	50	70	70	102
G	-	70	70	102	102	125
H	97	111	128	140	149	186
I	57	65	72	76	83	106
J	20	20	20	20	20	30
K	80	96	108	121	131	156
L	31.5	40	45.5	51	57	70
M	43	46	53	54.5	59	60
Weight (g)	2.1	4.1	5.9	8.9	12.3	20.8
consumption(NL/Cycle)	0.28	0.6	0.95	1.44	1.97	3.41
Open time (seconds)	0.29	0.34	0.5	0.78	1.05	1.8
Close time (seconds)	0.25	0.31	0.46	0.65	0.82	1.18

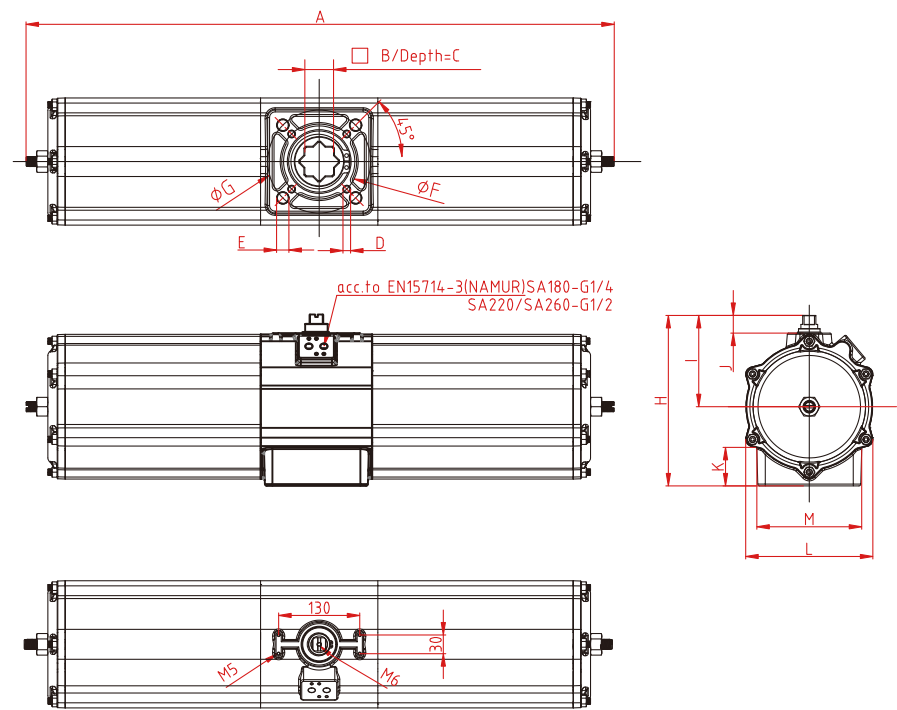
➤ Dimension and coding-SA140-SA160



◆ Dimension Table

Code	SA1403601	SA1403602	SA1604601	SA1604602
Model	SA140		SA160	
ISO	F12/F16	F14	F12/F16	F14
A	780		880	
B	36		46	
C	40		46	
D x Depth	M12x20	M16x24	M12x20	M16x24
E x Depth	M20x30	-	M20x30	-
F	125	140	125	140
G	165	-	165	-
H	220		242.5	
I	122		129	
J	30		30	
K	156.5		175	
L	75		85	
M	79		93.5	
Weight (g)	32.1		47.6	
Air consumption(NL/Cycle)	4.51		6.49	
Open time (seconds)	2.51		4.14	
Close time (seconds)	1.68		2.47	

➤ Dimension and coding-SA180-SA260

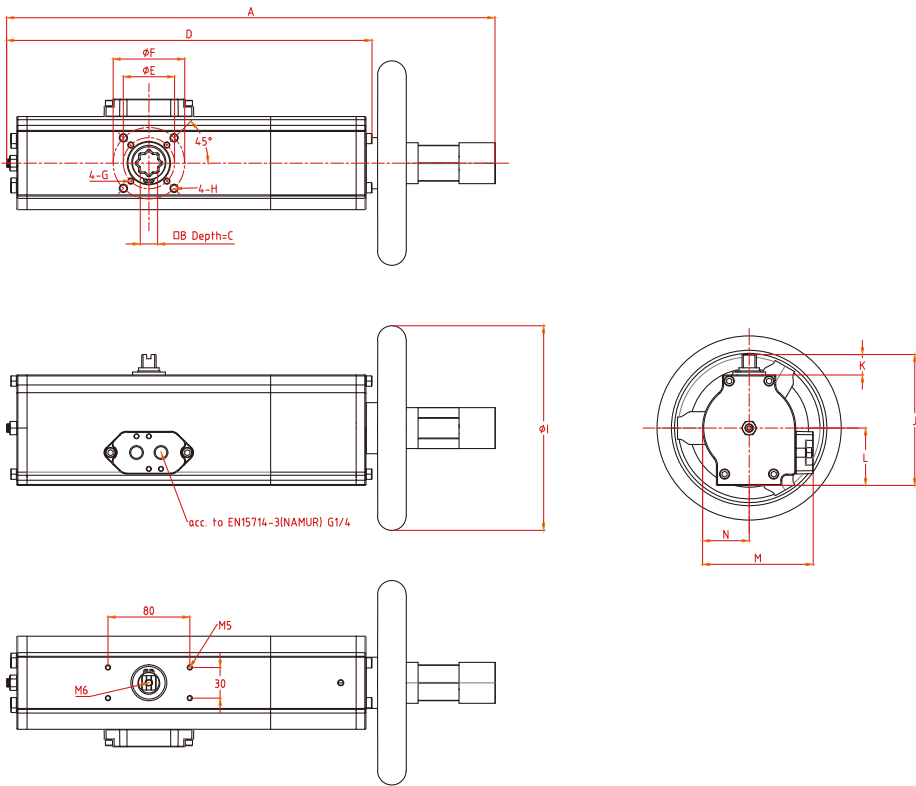


◆ Dimension Table

Code	SA1804601	SA1804602	SA2205501	SA2605501
Model	SA180		SA220	SA260
ISO	F12/F16	F14	F16	F25
A	965		1199	1543
B	46		55	55
C	50		57	57
D	M12x18	M16x24	M20x30	M16x30
E	M20x30	-	-	-
F	125	140	165	254
G	165	-	-	-
H	275		314	380
I	148		171	202
J	30		30	30
K	62		71	66
L	206		271	342
M	168		206	300
Weight (g)	60.1		108.7	211.9
Air consumption(NL/Cycle)	10.22		17.6	36.4
Open time (seconds)	9.6		4.92	9.82
Close time (seconds)	6.07		3.11	6.2

Open time test:
DA/SA (40-180) : Entry G1/4,Φ8mm air tube, without load
DA/SA (220-260) : Entry G1/2,Φ12mm air tube, without load

➤ Dimension and coding-DA70HW-DA160HW

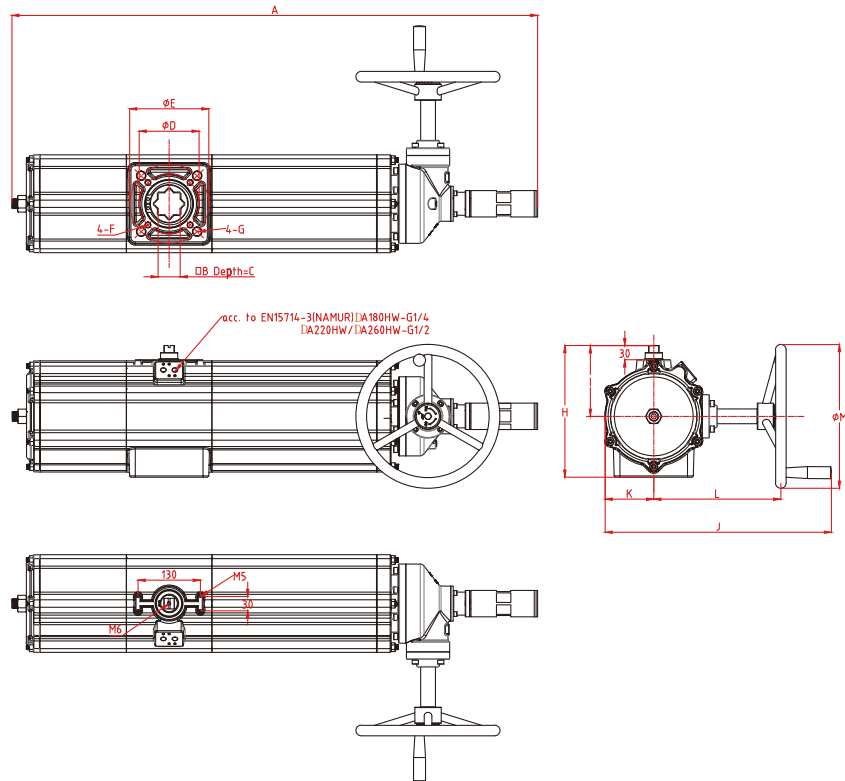


◆ Dimension Table

Model	DA70HW	DA80HW	DA90HW	DA100HW	DA125HW	DA140HW	DA160HW
A	418	478	571	629	752	834	968
B	17	17	22	22	27	36	46
C	18	22	26	26	30	40	46
D	311	357	425	469	565	612	729
E	Φ50 F05	Φ50 F05	Φ70 F07	Φ70 F07	Φ102 F10	Φ125 F12	Φ125 F12
F	Φ70 F07	Φ70 F07	Φ102 F10	Φ102 F10	Φ125 F12	Φ165 F16	Φ165 F16
G	M6*9	M6*9	M8*12	M8*12	M10*15	M12*20	M12*20
H	M8*12	M8*12	M10*15	M10*15	M12*18	M20*30	M20*30
I	Φ200	Φ200	Φ250	Φ250	Φ315	Φ400	Φ400
J	111	128	139	148	186	220	242
K	20	20	20	20	30	30	30
L	47	56	63	66	80	99	113
M	100	108	120	131	155	156	176
N	40	46	52	57	69	75	86

DA140HW、DA160HW, Φ140 F14 (M16*24) connection size selectable

➤ Dimension and coding-DA180HW-DA260HW

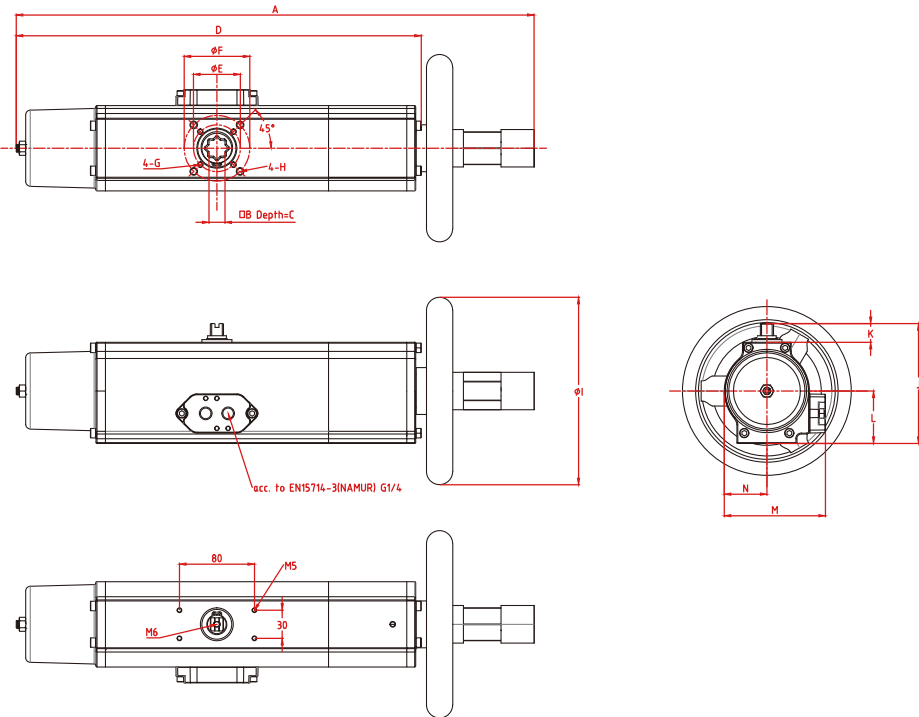


◆ Dimension Table

Model	DA180HW	DA220HW	DA260HW
A	1097	1372	1715
B	46	55	55
C	50	57	57
D	Φ125 F12	Φ165 F16	Φ254 F25
E	Φ165 F16	—	—
F	M12*18	M20*30	M16*30
G	M20*30	—	—
H	275	314	380
I	148	171	202
J	472	526	575
K	101	142	173
L	265	271	296
M	Φ400	Φ500	Φ600

DA180HW, Φ140 F14 (M16*24) connection size selectable

➤ Dimension and coding-SA70HW-SA160HW

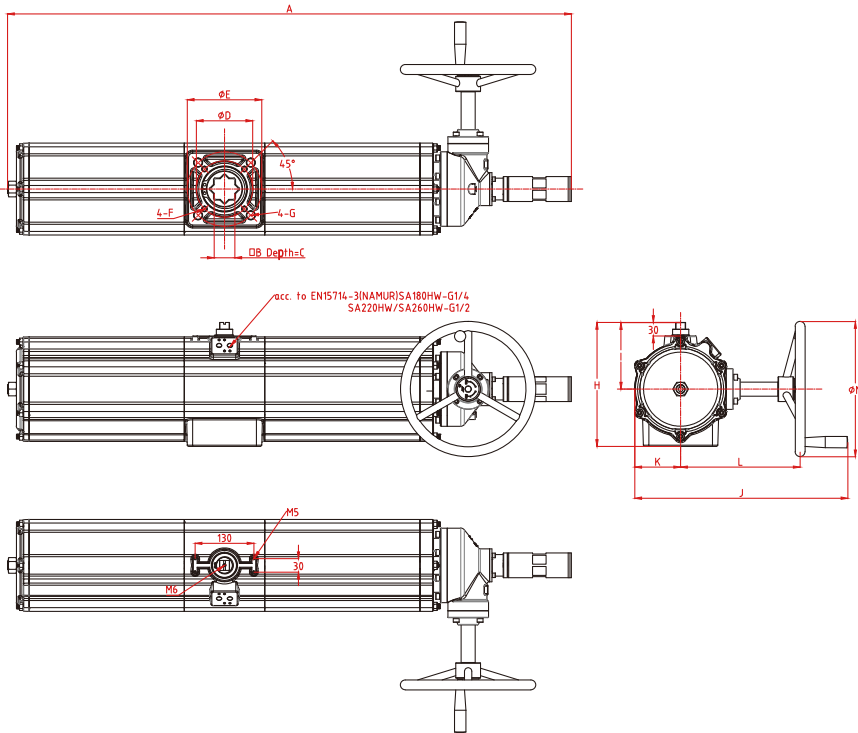


◆ Dimension Table

Model	SA70HW	SA80HW	SA90HW	SA100HW	SA125HW	SA140HW	SA160HW
A	472	552	652	731	882	960	1113
B	17	17	22	22	27	36	46
C	18	22	26	26	30	40	46
D	374	432	506	571	694	739	874
E	Φ50 F05	Φ50 F05	Φ70 F07	Φ70 F07	Φ102 F10	Φ125 F12	Φ125 F12
F	Φ70 F07	Φ70 F07	Φ102 F10	Φ102 F10	Φ125 F12	Φ165 F16	Φ165 F16
G	M6*9	M6*9	M8*12	M8*12	M10*15	M12*20	M12*20
H	M8*12	M8*12	M10*15	M10*15	M12*18	M20*30	M20*30
I	Φ200	Φ200	Φ250	Φ250	Φ315	Φ400	Φ400
J	111	128	139	148	186	220	242
K	20	20	20	20	30	30	30
L	47	56	63	66	80	99	113
M	100	108	120	131	155	156	176
N	40	46	52	57	69	75	86

SA140HW、SA160HW, Φ140 F14 (M16*24) connection size selectable

➤ Dimension and coding-SA180HW-SA260HW



◆ Dimension Table

Model	SA180HW	SA220HW	SA260HW
A	1250	1555	1972
B	46	55	55
C	50	57	57
D	Φ125 F12	Φ165 F16	Φ254 F25
E	Φ165 F16	—	—
F	M12*18	M20*30	M16*30
G	M20*30	—	—
H	275	314	380
I	148	171	202
J	472	526	575
K	101	142	173
L	265	271	296
M	Φ400	Φ500	Φ600

SA180HW, Φ140 F14 (M16*24) connection size selectable

➤ Optional Accessories

