

AT PNEUMATIC ACTUATOR



Technical Specification

- ✓ Pressure Range
 - Max Working Pressure: 10bar
 - Double acting: 2.5bar~8bar
 - Single acting: 4.5bar~8bar
- ✓ Temperature Range
 - Standard: -20℃~80℃
 - Option: -35℃~80℃ / -20℃~150℃
- ✓ Rotate Angle: 90°±5%
- ✓ Lubrication: All the kinetic components are coated with lubricants, make it have a long service life.
- ✓ Life Time: One million time

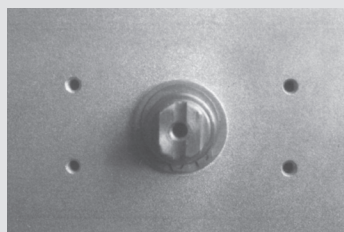
Product Introduction

AT series actuators which compact design, long life service, high quality, gear and gear rack.

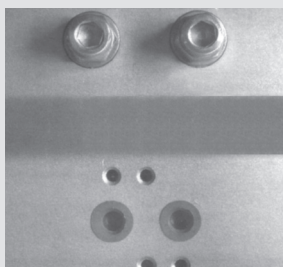
This product is used for 90° rotationally valves, such as: ball valves, butterfly valves, plug valves etc. My company put product quality as the first task, adopts the most advance production and technology, stronger than similar product on both product quality and performance.

At series air operated actuator is the design is compact, the life is long, the quality is high, rack,s-like air operated actuator.

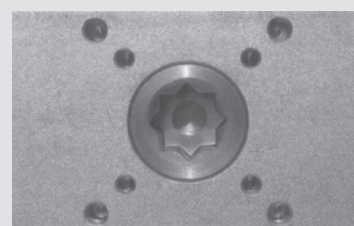
Accessory Connection



Top connections size meet with VDI/VDE3845NAMUR/standard, easy to install limit switches box, positioner and other accessories.



Flank connected size meet with VDI/VDE3845NAMUR standard, suitable for install solenoid valves.



Bottom connection size meet with ISO5211 and DIN3337 standard, with square and star holes can be connected with the valve directly.

Double Acting Actuator Output Torque

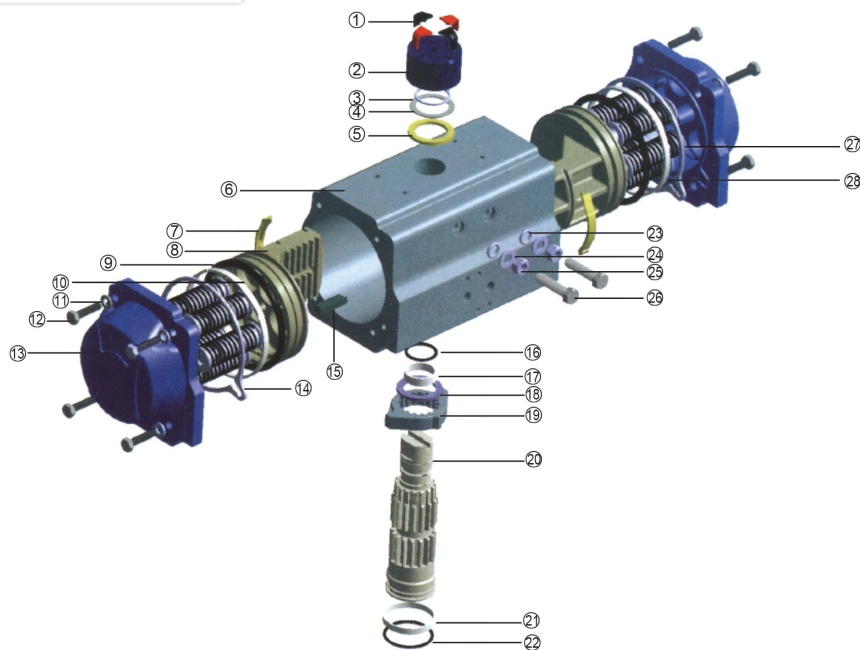
		3bar	3.5bar	4bar	4.5bar	5bar	5.5bar	6bar	7bar	8bar
AT-32	3.6	4.3	5	5.7	6.4	7.3	8	8.7	10	11.6
AT-50	8.4	10.1	11.7	13.5	15.1	16.7	18.4	20	23.4	26.7
AT-63	14.8	17.7	20.6	23.6	26.5	29.4	32.3	35.3	41.1	47
AT-75	29.2	35	40.8	46.6	52.5	58.3	64.1	69.9	81.5	93.2
AT-88	45.9	55	64.2	73.3	82.5	91.6	101.1	110.1	128.1	146.1
AT-100	66.8	80.1	93.4	106.3	120.3	133.3	146.3	160.3	186.3	213.3
AT-125	139	167	195	223	250	278	303	333	389	444
AT-145	217	261	304	348	391	434	478	521	608	695
AT-160	285	341	398	455	512	577	625	682	795	909
AT-190	533	639	746	852	976	1065	1171	1277	1490	1703
AT-240	893	1072	1250	1430	1608	1787	1965	2144	2502	2859
AT-270	1306	1565	1824	2084	2343	2603	2862	3121	3640	4159

Single Acting Actuator Output Torque

	Quantity of Springs	4.5bar		5bar		5.5bar		6bar		7bar		8bar		Spring torque	
		0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	90°	0°
		start	end	start	end	start	end	start	end	start	end	start	end	start	end
AT-50S	6	10.6	7.8	12.2	9.4	13.9	11.1	-	-	-	-	-	-	7.2	4.4
	8	9.1	5.4	10.7	7	12.4	8.7	14.1	10.4	17.4	13.7	-	-	9.6	5.9
	10	7.6	3	9.2	4.6	10.9	6.3	12.6	8	15.9	11.3	19.2	14.6	12	7.4
	12	-	-	-	-	9.4	3.9	11.1	5.6	14.4	8.9	17.7	12.2	14.4	8.9
AT-63S	6	18.6	13.7	21.5	16.6	24.4	19.5	-	-	-	-	-	-	12.7	7.8
	8	16	9.4	18.9	12.3	21.8	15.2	24.8	18.2	30.6	24	-	-	17	10.4
	10	13.4	5.2	16.3	8.1	19.2	11	22.2	14	28	19.8	34	25.8	21.2	13
	12	-	-	-	-	16.6	6.8	19.6	9.8	25.4	15.6	31.4	21.6	25.4	15.6
AT-75S	6	36.8	27.1	42.6	32.9	48.5	38.8	-	-	-	-	-	-	25.2	15.5
	8	31.7	18.7	37.5	24.5	43.4	30.4	49.1	36.1	60.8	47.8	-	-	33.6	20.6
	10	26.5	10.3	32.3	16.1	38.2	22	43.9	27.7	55.6	39.4	67.2	51	42	25.8
	12	-	-	-	-	33.1	13.6	38.8	19.3	50.5	31	62.1	42.6	50.4	30.9
AT-88S	6	58	42.7	67.1	51.8	76.7	61.4	-	-	-	-	-	-	39.6	24.3
	8	49.9	29.4	59	38.5	68.6	48.1	77.6	57.1	95.6	75.1	-	-	52.9	32.4
	10	41.8	16.3	50.9	25.4	60.5	35	69.5	44	87.5	62	106	80	66	40.5
	12	-	-	-	-	52.4	21.7	61.4	30.7	79.4	48.7	97.4	66.7	79.3	48.6
AT-100S	6	84.7	62.3	97.7	75.3	111	88.3	-	-	-	-	-	-	57.7	35.3
	8	73	43.1	86	56.1	99	69.1	112	82.1	139	109	-	-	76.9	47
	10	61.1	24	74.1	37	87.1	50	100	63	127	90	154	117	96	58.9
	12	-	-	-	-	75.4	31	88.4	44	115	71	142	98	115	70.6
AT-125S	6	175	129	203	157	230	184	-	-	-	-	-	-	120	73.6
	8	151	89	179	117	206	144	234	172	289	227	-	-	160	98
	10	126	49	154	77	181	104	209	132	264	187	320	243	200	123
	12	-	-	-	-	157	64	185	92	240	147	296	203	240	147
AT-145S	6	275	203	318	246	362	290	-	-	-	-	-	-	188	116
	8	237	140	280	183	324	227	367	270	454	357	-	-	251	154
	10	198	77	241	120	285	164	328	207	415	294	502	381	314	193
	12	-	-	-	-	247	101	290	144	377	231	464	318	377	231
AT-160S	6	360	264	427	331	473	377	-	-	-	-	-	-	246	150
	8	310	182	377	249	423	295	480	352	593	465	-	-	328	200
	10	259	100	326	167	372	213	429	270	542	383	656	497	410	251
	12	-	-	-	-	322	131	379	188	492	301	606	415	492	301
AT-190S	6	591	434	684	527	778	621	-	-	-	-	-	-	405	248
	8	509	299	602	392	696	486	789	579	975	765	-	-	540	330
	10	426	165	519	258	613	352	706	445	892	631	1079	818	674	413
	12	-	-	-	-	530	217	623	310	809	496	996	683	809	496
AT-210S	6	866	637	1003	774	1139	910	-	-	-	-	-	-	593	364
	8	745	440	882	577	1018	713	1155	850	1428	1123	-	-	790	485
	10	624	241	761	378	897	514	1034	651	1307	924	1581	1198	989	606
	12	-	-	-	-	776	317	913	454	1186	727	1460	1001	1186	727
AT-240S	6	1293	951	1497	1155	1701	1359	-	-	-	-	-	-	885	543
	8	1113	656	1317	860	1521	1064	1725	1268	2133	1676	-	-	1180	723
	10	932	360	1136	564	1340	768	1544	972	1952	1380	2360	1788	1476	904
	12	-	-	-	-	1159	474	1363	678	1771	1086	2179	1494	1770	1085
AT-270S	6	1841	1354	2132	1645	2422	1935	-	-	-	-	-	-	1260	773
	8	1584	934	1875	1225	2165	1515	2456	1806	3037	2387	-	-	1680	1030
	10	1326	514	1617	805	1907	1095	2198	1386	2779	1967	3360	2548	2100	1288
	12	-	-	-	-	1650	675	1941	966	2522	1547	3103	2128	2520	1545

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Parts Assembly Drawing



Materials

Item	Quantity	Name	Standard material	Antiseptic treatment	Option material
1	4	Indicator	Polypropylene+GF	-----	-----
2	1	Indicator Plate	Polypropylene+GF	-----	-----
3	1	Jump Ring	Stainless Steel	Nickel	-----
4	1	Bearing	Stainless Steel	-----	-----
5	1	Bearing	Polyphthalamide	-----	-----
6	1	Body	Extruded Aluminium alloy	Hard anodizing	-----
7	2	Bearing	Polyphthalamide	-----	-----
8	2	Piston	Die Cast Aluminium	Hard anodizing	-----
9	2	O-ring	Nitrile(NBR70)	-----	Viton/Silicone rubber
10	2	Bearing	Polyphthalamide	-----	-----
11	8	Bolt and Backstraps	Stainless Steel	-----	-----
12	2	Bolts	Stainless Steel	-----	-----
13	2	End-cup	Die Cast Aluminium	Chromium + polyester coating	-----
14	2	O-ring	Nitrile(NBR70)	-----	Viton/Silicone rubber
15	2	Guide	Polypropylene+GF	-----	-----
16	1	O-ring	Nitrile(NBR70)	-----	Viton/Silicone rubber
17	1	Bearing	Nylon46	-----	-----
18	1	Bearing	Polyphthalamide	-----	-----
19	1	Cam	Stainless Steel	-----	-----
20	1	Drive shaft	Steel alloy	Nickel	-----
21	1	Bearing	Nylon46	-----	-----
22	1	O-ring	Nitrile(NBR70)	-----	Viton/Silicone rubber
23	1	O-ring	Nitrile(NBR70)	-----	Viton/Silicone rubber
24	2	Bolt&washer	Stainless Steel	-----	-----
25	2	Nut	Stainless Steel	-----	-----
26	2	Bolt	Stainless Steel	-----	-----
27	min.5/max.12	Spring	High alloy Spring Steel	Epoxy resin coating	-----
28	1	Spring Plate	Polypropylene+GF	-----	-----

AT PNEUMATIC ACTUATOR

■ Design Features

Pneumatic actuator are integrated of new technologies, new materials, new innovative ideas based on the research, development, design, has the following characteristics:

- ✓ Comply with the standards of: ISO5211, DIN3337 and VDE-3845, NAMUR standards.
- ✓ Extruded high-strength aluminum cylinder body, the inner surface of fine grinding and hard anodized, long service life, low friction coefficient, fast action.
- ✓ Beautiful compact, modern styling, multi-standard products make the selection more economical.
- ✓ All active surfaces are made of high quality bearings, low friction, long life, no noise.
- ✓ Two independent stroke adjustment mechanism for easy adjustment of ± 5 deg and fully open or closed position.
- ✓ They are available in double-acting and single-acting (spring return) , single-acting with normally closed and normally open.
- ✓ The NAMUR standard multi-function position indicator visualizes the installation and output of all accessories.
- ✓ Pre-compression load spring, installation, demolition of safe and convenient.
- ✓ Piston and end caps using die-cast aluminum alloy, high strength, light weight.
- ✓ Change the seal material can be used in high temperature or low temperature applications.
- ✓ Solenoid valve can be installed directly without connection plate.

■ Parts Introduction

✓ Indicator

NAMUR standard indicator for easy installation of position switches, locators and other accessories.

✓ Output Shaft

Nickel-plated steel, high-precision integrated output shaft at the same time meet NAMUR, ISO5211, DIN3337 standards. Can be customized according to customer size and stainless steel materials.

✓ Cylinder Body

ASTM6005 extruded aluminum alloy cylinder body can be hard oxidation, oxidation, epoxy spray paint (blue, orange, yellow sprayed on request), PTFE coating or nickel to meet different requirements.

✓ End Cap

Die-cast aluminum alloy metal powder coating of various colors, PTFE coating or nickel plating.

✓ Piston

Double-piston rack, with die-cast aluminum oxide or cast steel galvanized, the installation position symmetrical, rapid operation, long service life, simply reverse the piston can

change direction.

✓ Stroke Adjustment

Two independent stroke adjustment screw can be convenient, accurate $\pm 5^\circ$ regulation on, off position.

✓ High-performance spring

Imported high-quality materials, coating pretreatment combined type assembly, demolition simple and safe.

Using high quality materials, coating treatment, pre-press assembly. Has strong corrosion resistance and service life. It is safe and easy to disassemble the single-acting actuator and change the number of springs to satisfy different torque output range.

✓ Bearings, guides

Low friction, long life composite materials, to avoid direct contact with metal and metal, maintenance and replacement is simple and convenient.

✓ Sealing

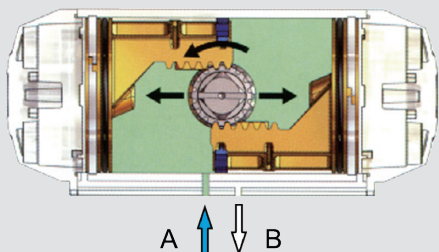
At room temperature working conditions using NBR, In high temperature or low temperature with viton or silicone rubber.

■ Working principle and direction of rotation

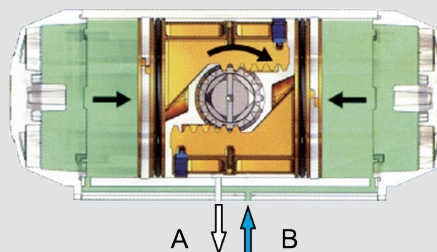
Standard rotation direction is clockwise closed, counterclockwise open.

AT PNEUMATIC ACTUATOR

Double-acting Principle of Operation (Standard Steering) Looking Down

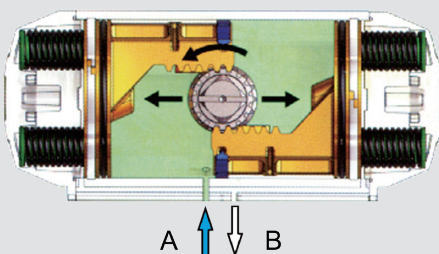


When the air pressure from the A port to force the piston to move separately toward the end cap direction, the air is discharged from the B port to obtain counterclockwise rotation.

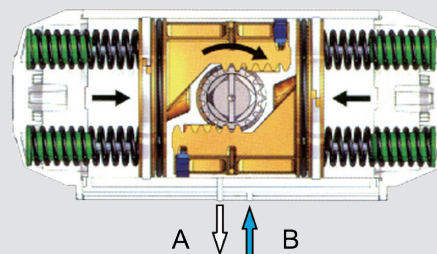


When the air pressure from B port to force the piston closed, the air from the A port discharge, so as to obtain clockwise rotation.

Single Acting Principle of Operation (Standard Steering) Looking Down



When the air pressure from the A port to force the piston to move separately toward the end cap while compressing the spring, the air is discharged from the B port to obtain counterclockwise rotation.

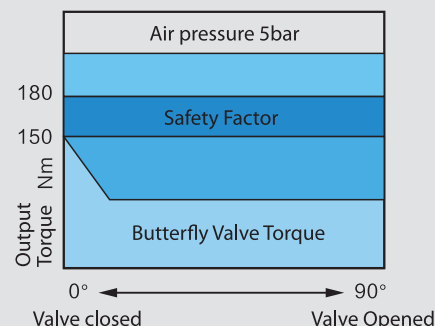


Loss of air or loss of electric, the spring closed the piston, the air discharge from the A, to obtain a clockwise rotation.

Double-acting Actuator Selection Example

When using the actuator, determine the valve torque plus safety factor, the valve safety factor with different media, temperature, pressure, the friction between the valve core and the valve and many other factors, affecting the operating torque.

Known butterfly valve torque = 130Nm, the use of water for the medium: room temperature, on-site gas source pressure of 5bar, to a safety factor of 20% Calculation: Safe Torque: $130 + 20\% = 156\text{Nm}$. In the control double-acting actuator torque meter, check the pressure in the column of 5bar. Find the data equal to or similar to 156Nm along this column, select 162.9Nm, look for the model left, and then select the XM-AT105 model.



Single Acting Actuator Selection Example

In the selection of the first consideration of air pressure under the action of the moment and spring elongation under the torque.

Known butterfly valve torque = 200Nm, the use of medium for the steam: the use of temperature 160°C, on-site gas source pressure of 5.5bar, to a safety factor of 25% Calculation: Safety torque: $200 + 25\% = 250\text{Nm}$. Control Single Action Actuator Torque Meter: Check the column pressure at 5 bar, look for torque along the column (beginning and end), and then check to the right for the moment at which the spring stroke begins and ends. Check the results of the actuator model XM-AT160, spring 10, resulting in the following values:

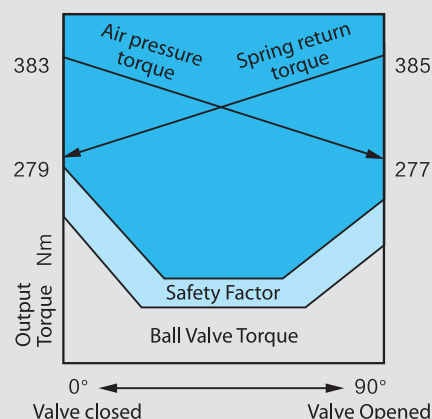
Air pressure 0°= 383Nm

Air pressure 90°= 277Nm

Spring stroke 0°= 279Nm

Spring stroke 90°= 385Nm

Note: Selected torque should be equal to or close to the safety torque!

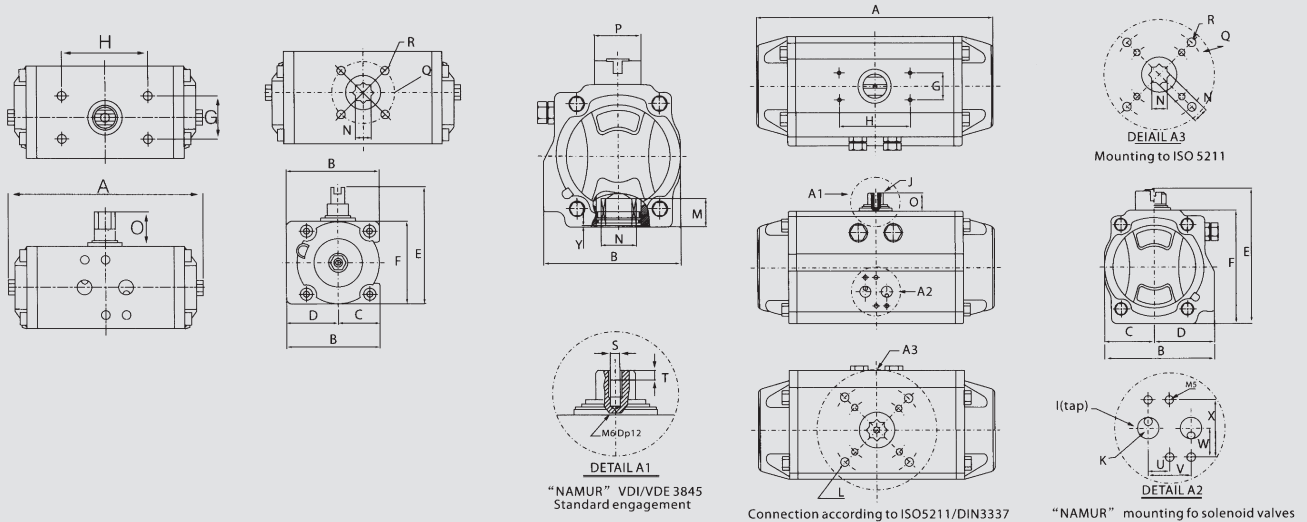


AT PNEUMATIC ACTUATOR

Overall Dimension

AT032

AT050, AT063, AT075, AT088, AT100, AT115, AT145, AT160, AT190,
AT210, AT240, AT270, AT300



Dimension Sheet

Model	Flange L (ISO 5211)	R	A	B	C	D	E	F	G	H	I	J	K	O	P	S	T	U	V	W	X
	Q	M/N(Min)																			
AT32	F03	M5	108	54	24	30	68	48	25	50	PF	M6	1/8"	20	40.5	4	4	12	24	16	32
	Φ36	11/9																			
AT50	F03/F05	M5/M6	146	70	30	40	96	69	30	80	PF	M6	1/8"	20	40.5	4	4	12	24	16	32
	Φ36/Φ50	14/11																			
AT63	F03/F05	M5/M6	167	82	35	47	113	85	30	80	PF	M6	1/4"	20	40.5	4	4	12	24	16	32
	Φ36/Φ50	17/14																			
AT75	F05/F07	M6/M8	213	93	42.5	50.5	130	102	30	80	PF	M6	1/4"	20	40.5	4	4	12	24	16	32
	Φ50/Φ70	20/17																			
AT88	F05/F07	M6/M8	250	105	49.5	55.5	145	115	30	80	PF	M6	1/4"	20	40.5	4	4	12	24	16	32
	Φ50/Φ70	20/17																			
AT100	F07/F10	M8/M10	268	120	55	65	157	125	30	80	PF	M6	1/4"	20	40.5	4	4	12	24	16	32
	Φ70/Φ102	25/22																			
AT115	F07/F10	M8/M10	316	139	64.5	74.5	185	145	30	80	PF	M6	1/4"	30	62	4	4	12	24	16	32
	Φ70/Φ102	24/22																			
AT125	F7/F10	M8/M10	349	147	67	80	189	159	30	80	PF	M6	1/4"	30	56.5	4	4	12	24	16	32
	Φ70/Φ102	30/27																			
AT145	F10/F12	M10/M12	418	167	80	87	218	178	30	80	PF	M6	1/4"	30	62	4	4	12	24	16	32
	Φ102/Φ125	30/27																			
AT160	F10/F12	M10/M12	450	193	89	104	226	197	30	80	PF	M6	1/4"	30	80	4	4	12	24	16	32
	Φ102/Φ125	30/27																			
AT190	F10/F14	M10/M16	518	208	103	105	272	232	30	130	PF	M6	1/4"	30	80	4	4	12	24	16	32
	Φ102/Φ140	40/36																			
AT210	F14	M16	530	226	113	113	297	257	30	130	PF	M6	1/4"	30	90	4	4	12	24	16	32
	Φ140	40/36																			
AT240	F16	M20	660	258	129	129	331	291	30	130	PF	M6	3/8"	90	62	4	4	20	40	22.5	45
	Φ165	50/46																			
AT270	F16	M20	730	294	147	147	372	332	30	130	PF	M6	1/2"	90	62	4	4	20	40	22.5	45
	Φ165	50/46																			
AT300	F16	M20	880	333	161	172	394	354	30	130	PF	M6	1/2"	90	62	4	4	20	40	22.5	45
	Φ165	50/46																			