

63D0RC 气动角行程式执行机构 Rotary Stem Motion Type Pneumatic Cylinder Actuators

概 要

该系列是一种外形小、高性能的执行机构，分为双动作和单动作两种，与角行程调节阀组合，可用于调节和开关的场合。

该系列也可用于其它回转装置的情况。

GENERAL

This Series provides double-acting and spring return pneumatic torque cylinder actuators characterized by small size and high-performance. Combined with rotary stem motion type control valves, the actuators of this Series are suited for modulating and on-off services. Uses with other rotary motion devices are also good.

标准规格 STANDARD SPECIFICATIONS

型 号 Series	63D0RC
规 格 Size	双动作型 Double acting type : AT101U~AT701U 单动作型 Spring return type : AT101U~AT701U
输 出 方 式 Output type	角行程式 Rotary stem motion type
动 作 Function	双动作型 Double acting type、单动作型 Spring return type
输 出 力 矩 Output Torque	请参见表 1。 See Table 1.
气 源 压 力 Air supply	双动作型 Double acting type : 300~500 KPa G 单动作型 Spring return type : 300、400、500 KPa G
配 管 接 口 Air connection	请参见第 9~12 页。 See page 9~12.
回 转 角 度 Angle rotation	90° or 60°
性 能 Performance	滞 后：带定位器时..... 1.5%FS 以内 直线性：带定位器时..... ±2.0%FS 以内 Hysteresis : Less than 1.5% of full stroke with positioner Linearity : Less than ±2.0% of full stroke with positioner
环 境 温 度 Ambient temperature	标准型 Standard type..... -40~+80℃ 高温型(选购) High temperature service (option)..... -15~+150℃ 低温型(选购) Low temperature service (option)..... -55~+80℃
材 质 Materials	气 缸 Cylinder : 铝合金 Aluminum alloy 活 塞 Piston : 铝合金 Aluminum alloy 输 出 轴 Drive shaft : A105 镀镍 A105 Nickel plated 活 塞 环 Piston-ring : NBR or VITON 气 缸 盖 End-caps : 铝合金 Aluminum alloy 螺栓螺母 Bolts & nuts : 不锈钢 Stainless steel
表面涂层色 Painting	气 缸 CylinderAlodur (Special hard anodized) : Gray 气 缸 盖 End capChromatized + Polyester coated : Gray
附 件 Accessories	E / P 定位器、P / P 定位器、空气过滤减压器、增速器、气控阀、限位开关、电磁阀、锁止阀、调速器、位置发送器等。 E / P Positioner, P / P Positioner, Air-set, Booster relay, Air-valve, Limit swith, Solenoid valve, Lock-valve, Speed controller, Position transmitter, etc.
选 购 设 备 Option	手动操作机构、特殊空气配管及特殊气接头、寒冷地区用、热带地区用、指定涂层色等。 Manual handwheel, Special air piping, Special air fitting, Low temperature service, High temperature service, Non-standard painting, etc.

图 1. 构造 (俯视图)

Fig. 1 CONSTRUCTION (TOP VIEW)

图 1-1 双动作型

Fig. 1-1 DOUBLE ACTING TYPE

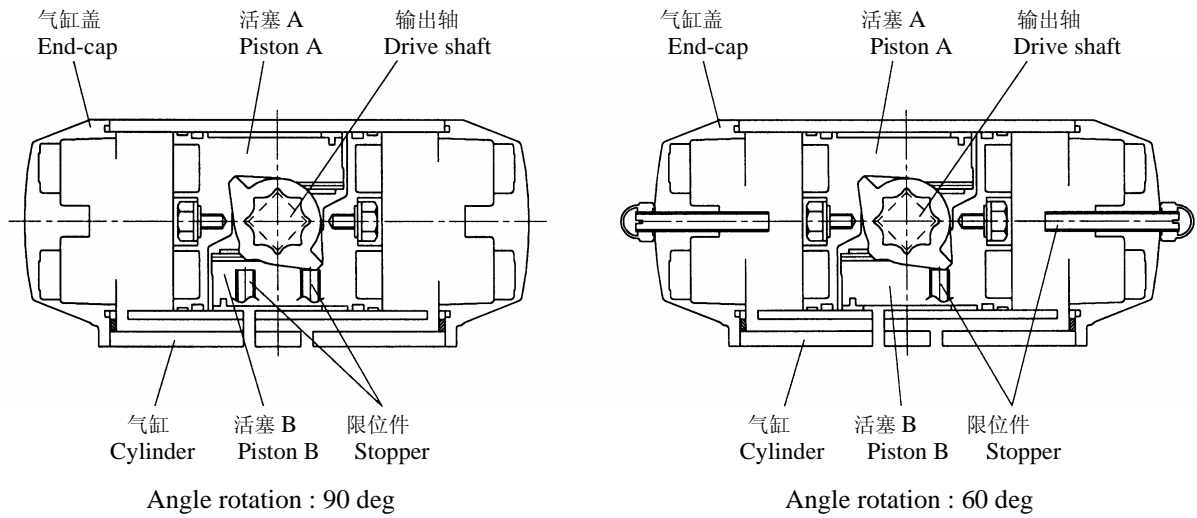


图 1-2 单动作型

Fig. 1-2 SPRING RETURN TYPE

图 1-2A 气压增加输出轴向右回转 (阀闭)

Fig. 1-2A AIR TO CLOCKWISE DRIVE SHAFT ROTATION (VALVE SHUT)

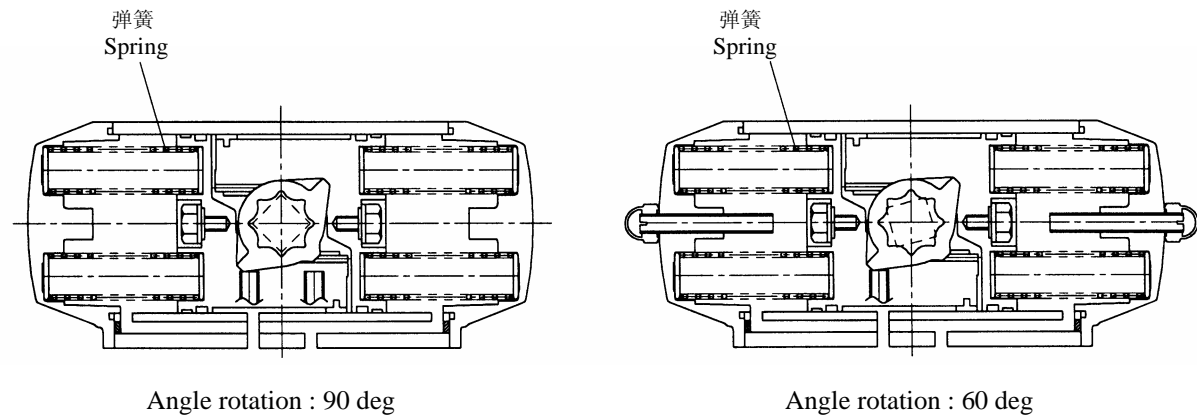


图 1-2B 气压增加输出轴向左回转 (阀开)

Fig. 1-2B AIR TO COUNTERCLOCKWISE DRIVE SHAFT ROTATION (VALVE OPEN)

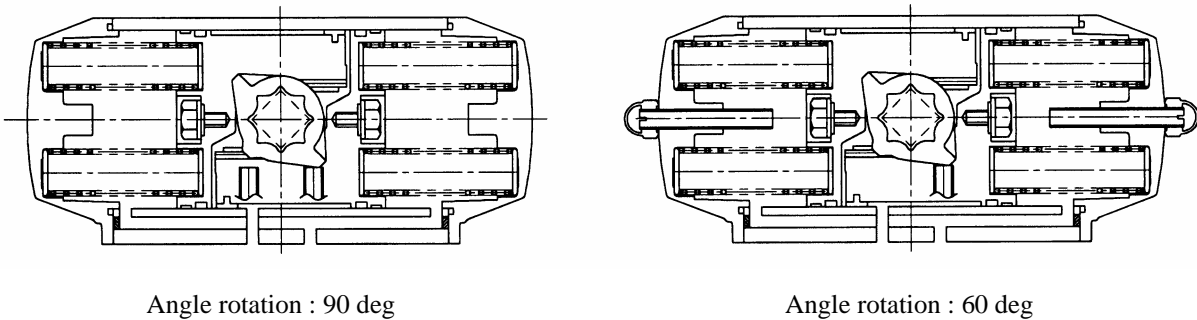


表 1. 输出力矩及重量

Table 1. OUTPUT TORQUE AND APPROXIMATE WEIGHT (WITHOUT ACCESSORIES)

执行机构 型号及尺寸 Actuator size and code	输出力矩 Output Torque (N · m)						重量 Approximate Weight (kg)			
	双动作型 Double acting type			单动作型 Spring return type			双动作型 Double acting type		单动作型 Spring return type	
	Air supply kPa G			Air supply kPa G			Without handwheel	With handwheel	Without handwheel	With handwheel
	300	400	500	300	400	500				
AT101U 63D1RC	17.6	23.5	29.3	6.7	8.9	11.1	1.6	9.1	1.8	9.3
AT201U 63D2RC	34.9	46.5	58.2	13.3	17.7	22.1	2.7	10.2	2.9	10.4
AT251U 63DARC	54.9	73.2	91.5	20.3	27.0	33.8	3.8	11.3	4.2	11.7
AT301U 63D3RC	79.8	106	133	30.4	40.5	50.7	5.2	12.2	5.7	12.7
AT351U 63DBRC	129	172	215	49.2	65.6	82	8.1	15.1	9.0	16.0
AT401U 63D4RC	166	222	277	63	84	105	10.0	17.0	11.6	18.6
AT451U 63DCRC	261	348	435	99	132	165	14.2	26.2	16.1	29.1
AT501U 63D5RC	340	454	567	135	180	224	17.8	29.8	20.2	33.2
AT551U 63DDRC	459	613	766	175	234	292	24.3	46.3	29.9	60.9
AT601U 63D6RC	638	851	1064	255	340	425	34.3	56.3	40.5	71.5
AT651U 63DERC	1072	1430	1787	433	577	721	54.6	96.6	64.2	118.2
AT701U 63D7RC	1556	2075	2594	595	793	992	76.3	118.3	89.1	143.1

图 2. 输出力矩特性 (气源压力 400 KPa G 时)

Fig. 2 TORQUE EXERTED WHEN AIR SUPPLY IS 400 KPa G

图 2-1 双动作型

图 2-2 单动作型

Fig. 2-1 DOUBLE ACTING TYPE

Fig. 2-2 SPRING RETURN TYPE

—— : 气压产生的力矩 Air to - - - - - : 弹簧产生的力矩 Spring return

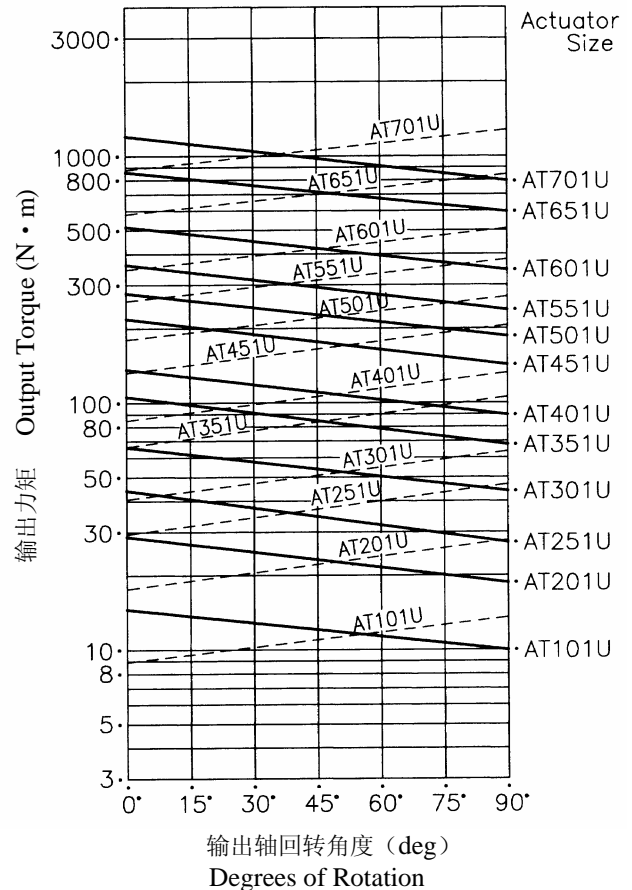
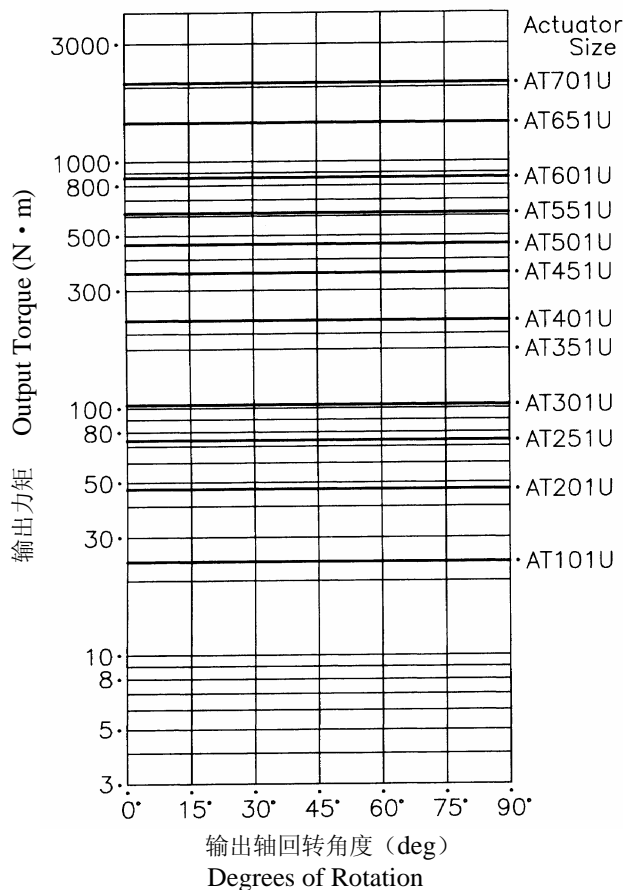


表 2. 气缸容量

Table 2. CYLINDER VOLUME

执行机构 型号及尺寸 Actuator size and code	双动作型 Double acting type			单动作型 Spring return type
	容量 Volume (l)			容量 Volume (l)
	A	B	A+B	A
AT101U 63D1RC	0.16	0.26	0.42	0.16
AT201U 63D2RC	0.31	0.49	0.80	0.31
AT251U 63DARC	0.51	0.78	1.29	0.51
AT301U 63D3RC	0.71	1.11	1.82	0.71
AT351U 63DBRC	1.19	1.80	2.99	1.19
AT401U 63D4RC	1.54	2.34	3.88	1.54
AT451U 63DCRC	2.41	3.78	6.19	2.41
AT501U 63D5RC	3.14	4.92	8.06	3.14
AT551U 63DDRC	4.26	6.89	11.15	4.26
AT601U 63D6RC	5.94	9.46	15.40	5.94
AT651U 63DERC	10.0	15.2	25.2	10.0
AT701U 63D7RC	14.5	21.4	35.9	14.5

*B = 气室 Cylinder B1 + 气室 Cylinder B2

A+B...活塞往复一次的容量 One Cycle for Piston

阀闭 Valve Shut → 阀开 Valve Open → 阀闭 Valve Shut 或 or
 阀开 Valve Open → 阀闭 Valve Shut → 阀开 Valve Open

气缸的耗气量 AIR CONSUMPTION

双动作型 Double acting type

$$V = (A+B) \{ (P+101.3) \div 101.3 \} M$$

单动作型 Spring return type

$$V = A \{ (P+101.3) \div 101.3 \} M$$

V : 耗气量 Air consumption NI / min
 P : 供给气源压力 Air supply KPa G
 M : 动作次数 / 分 Action cycle / min

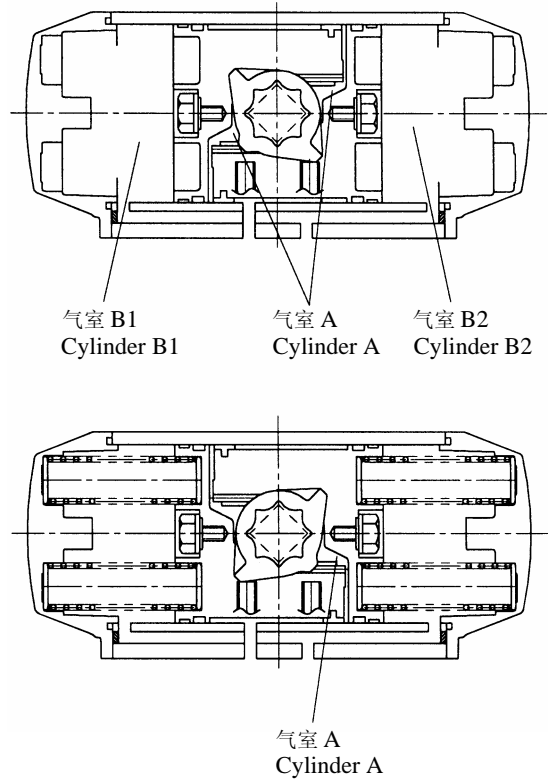


图 3. 标准配管回路 (俯视图) Fig. 3 SCHEMATIC DIAGRAM (ACTUATOR IS TOP VIEW)

图 3-1 定位器自动控制: 气源压力降低.....任意位置

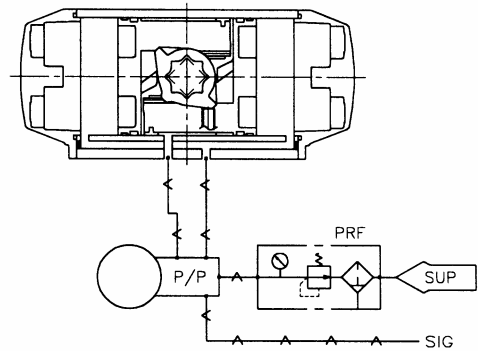
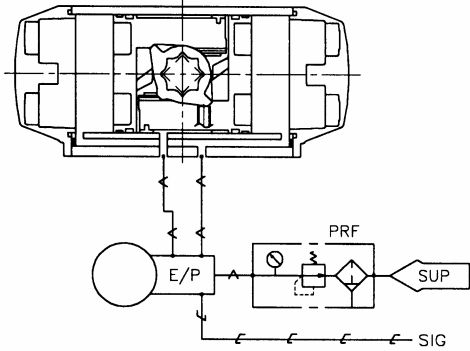
Fig. 3-1 MODULATION BY POSITIONER: AIR FAILURE.....FREE POSITION

图 3-1A 双动作型: E/P

图 3-1B 双动作型: P/P

Fig. 3-1A DOUBLE ACTING TYPE WITH E/P

Fig. 3-1B DOUBLE ACTING TYPE WITH P/P



*当输入定位器的调节信号增加时, 输出轴的旋转方向可以用定位器出口空气配管的连接方式来进行改变。

Direction of drive shaft rotation against control signal increase can be changed by reversing positioner's output port connection.

图 3-2 定位器自动控制: 气源压力降低.....输出轴向右回转

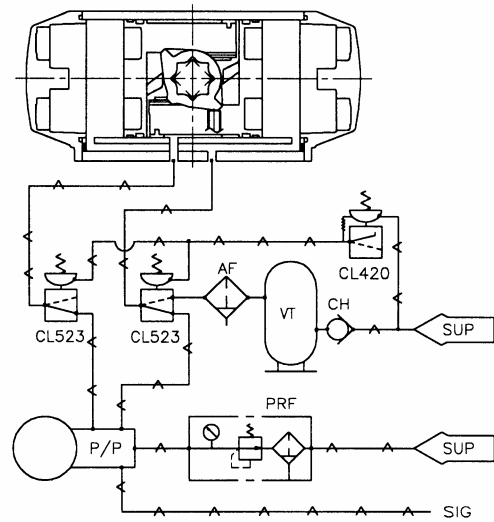
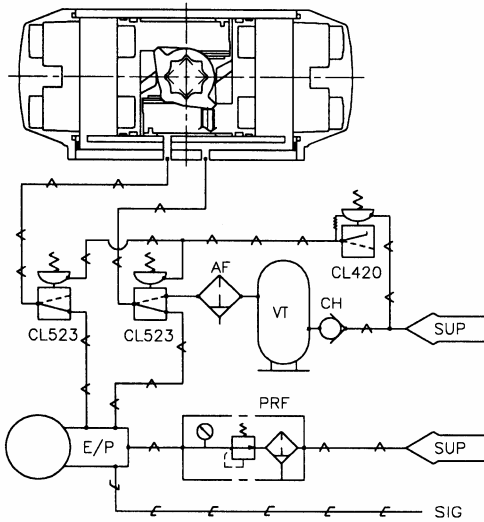
Fig. 3-2 MODULATION BY POSITIONER: AIR FAILURE.....CLOCKWISE DRIVE SHAFT ROTATION

图 3-2A 双动作型: E/P

图 3-2B 双动作型: P/P

Fig. 3-2A DOUBLE ACTING TYPE WITH E/P

Fig. 3-2B DOUBLE ACTING TYPE WITH P/P



*①当输入定位器的调节信号增加时, 输出轴的旋转方向可以用定位器出口空气配管的连接方式来进行改变。

Direction of drive shaft rotation against control signal increase can be changed by reversing positioner's output port connection.

*②气源压力降低使输出轴向左回转时, 请把 VT (贮气罐) 出口的空气配管接到左侧的 CL523 上。

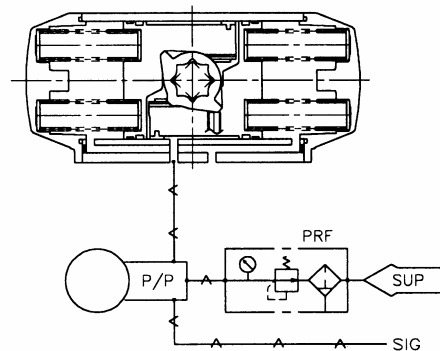
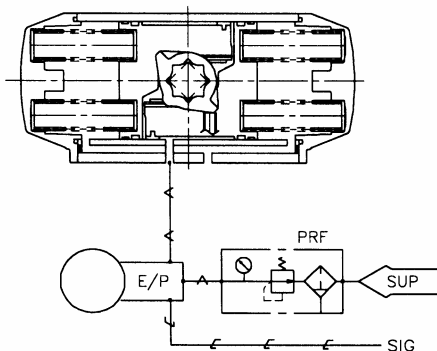
For air failure to counterclockwise rotation, piping from VT is to be connected to CL523 on the left.

图 3-2C 单动作型: E/P

图 3-2D 单动作型: P/P

Fig. 3-2C SPRING RETURN TYPE WITH E/P

Fig. 3-2D SPRING RETURN TYPE WITH P/P



*①气源压力降低使输出轴向左回转时, 活塞的齿条部分应重新安装在齿轮轴的另一侧。

For air failure to counterclockwise rotation, please rearrange the direction of piston as opposite side.

图 3-3 定位器自动控制：气源压力降低.....保持原位

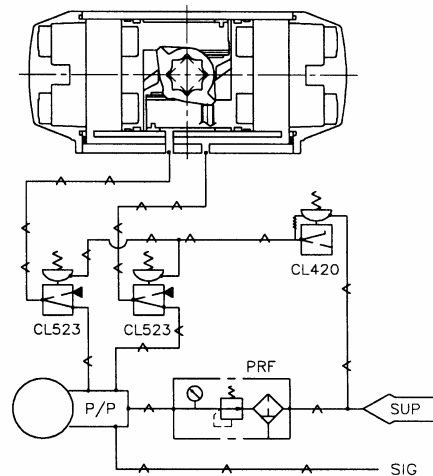
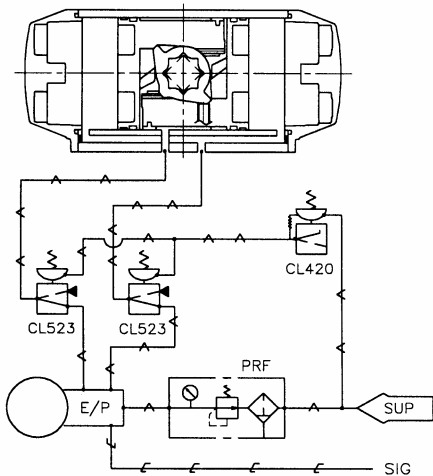
Fig. 3-3 MODULATION BY POSITIONER ; AIR FAILURE.....AIR FAILURE POSITION LOCK

图 3-3A 双动作型：E/P

图 3-3B 双动作型：P/P

Fig. 3-3A DOUBLE ACTING TYPE WITH E/P

Fig. 3-3B DOUBLE ACTING TYPE WITH P/P



*当输入定位器的调节信号增加时，输出轴的旋转方向可以用定位器出口空气配管的连接方式来进行改变。

Direction of drive shaft rotation against control signal increase can be changed by reversing positioner's output port connection.

图 3-4 电磁阀 ON-OFF 控制：气源压力降低.....任意位置

Fig. 3-4 ON-OFF CONTROL BY SOLENOID VALVE ; AIR FAILURE.....FREE POSITION

图 3-4A 双动作型：电磁阀励磁输出轴向右回转

图 3-4B 双动作型：电磁阀励磁输出轴向左回转

Fig. 3-4A DOUBLE ACTING TYPE

Fig. 3-4B DOUBLE ACTING TYPE

SOV ENERGIZED: CLOCKWISE DRIVE SHAFT ROTATION

SOV ENERGIZED: COUNTERCLOCKWISE DRIVE SHAFT ROTATION

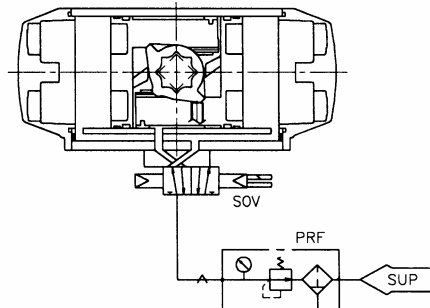
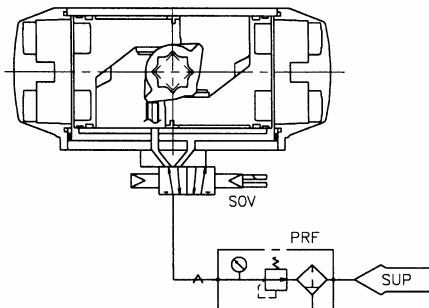


图 3-5 电磁阀 ON-OFF 控制：气源压力降低.....输出轴向右回转

Fig. 3-5 ON-OFF CONTROL BY SOLENOID VALVE ; AIR FAILURE.....CLOCKWISE DRIVE SHAFT ROTATION

图 3-5A 双动作型：电磁阀励磁输出轴向右回转

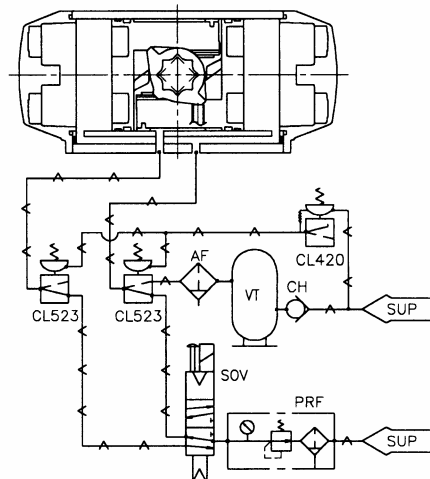
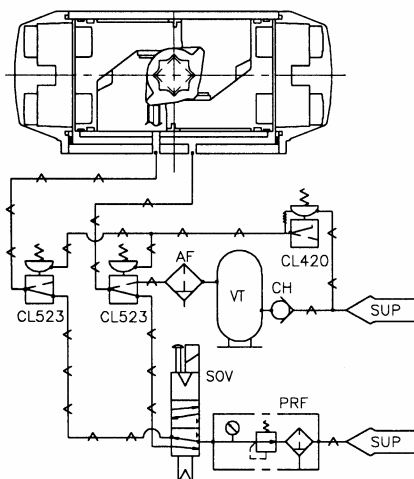
图 3-5B 双动作型：电磁阀励磁输出轴向左回转

Fig. 3-5A DOUBLE ACTING TYPE

Fig. 3-5B DOUBLE ACTING TYPE

SOV ENERGIZED: CLOCKWISE DRIVE SHAFT ROTATION

SOV ENERGIZED: COUNTERCLOCKWISE DRIVE SHAFT ROTATION



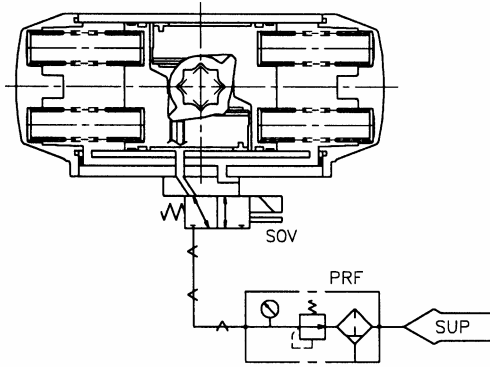
*气源压力降低使输出轴向左回转时，请把 VT（贮气罐）出口的空气配管接到左侧的 CL523 上。

For air failure to counterclockwise rotation, piping from VT is to be connected to CL523 on the left.

图 3-5C 单动作型：电磁阀励磁输出轴向右回转

Fig. 3-5C SPRING RETURN TYPE

SOV ENERGIZED: CLOCKWISE DRIVE SHAFT ROTATION



*电磁阀励磁使输出轴向左回转时，活塞的齿条部分应重新安装在齿轮轴的另一侧。

*For SOV energized to counterclockwise drive shaft rotation, please rearrange the direction of piston as opposite side.

图 3-6 电磁阀 ON-OFF 控制：气源压力降低.....保持原位

Fig. 3-6 ON-OFF CONTROL BY SOLENOID VALVE : AIR FAILURE.....AIR FAILURE POSITION LOCK

图 3-6A 双动作型：电磁阀励磁输出轴向右回转

Fig. 3-6A DOUBLE ACTING TYPE

SOV ENERGIZED: CLOCKWISE DRIVE SHAFT ROTATION

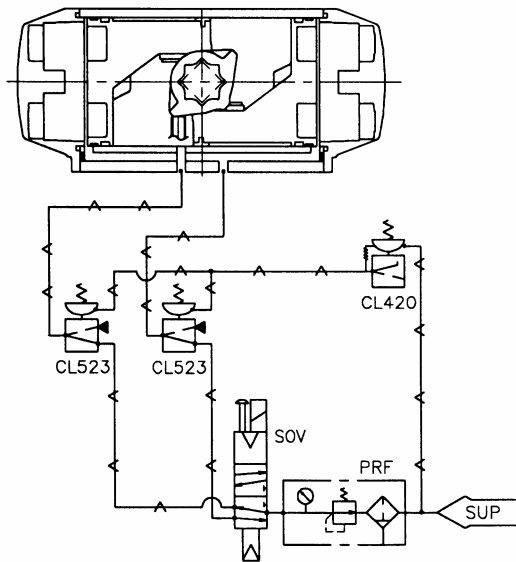
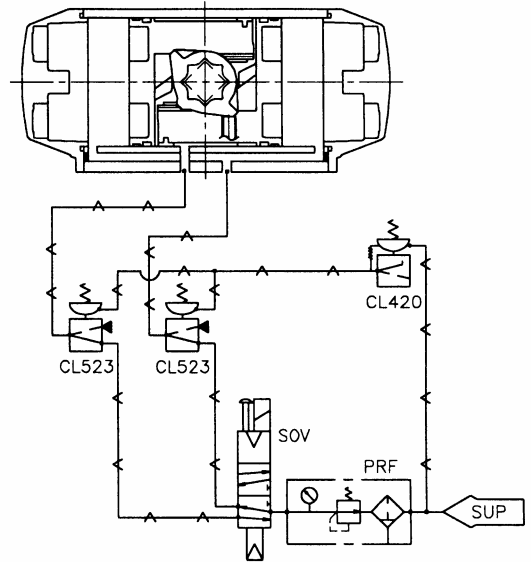


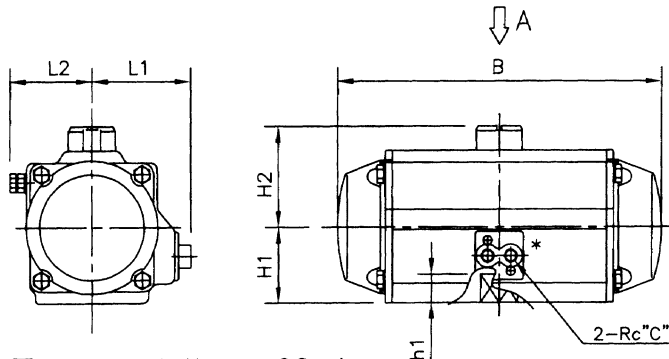
图 3-6B 双动作型：电磁阀励磁输出轴向左回转

Fig. 3-6B DOUBLE ACTING TYPE

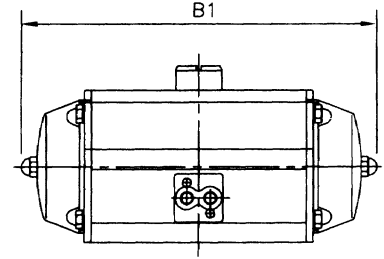
SOV ENERGIZED: COUNTERCLOCKWISE DRIVE SHAFT ROTATION



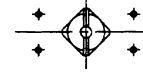
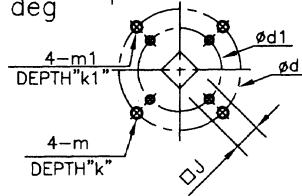
PNEUMATIC CYLINDER ACTUATOR 63D0RC Double acting cylinder



Angle rotation : 90 deg



Angle rotation : 60 deg



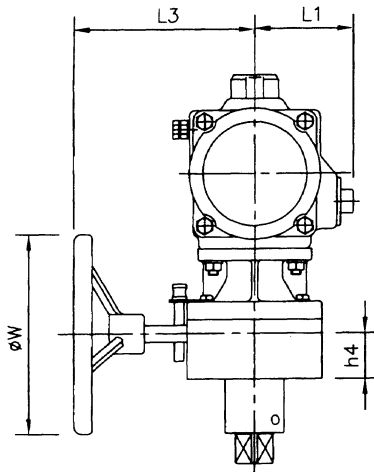
63D3RC(AT301U)
AND BELOW



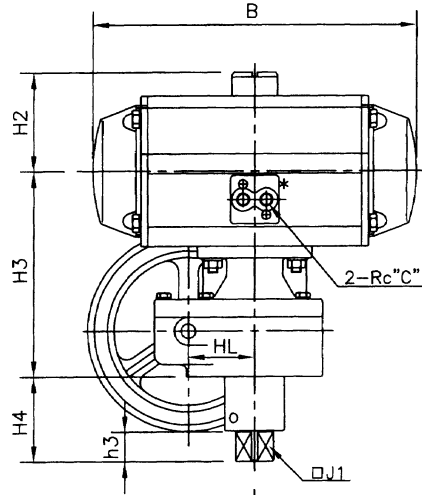
63D6RC(AT351U)
AND OVER

WITHOUT MANUAL OVERRIDE

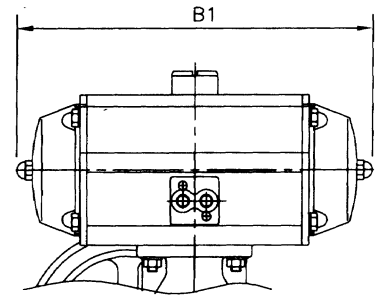
See A



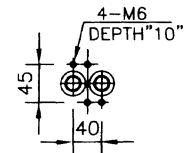
Angle rotation : 90 deg



WITH MANUAL OVERRIDE



Angle rotation : 60 deg



DETAIL OF *

63DERC(AT651U)

DIMENSIONS

Approximate Weight : _____ kg. UNIT : mm

SIZE CODE	B	B1	H1	H2	L1	L2	h1	d	m	k	d1	m1	k1	J	C	WITH MANUAL OVERRIDE										
																H3	H4	L3	h3	h4	d2	m2	k2	J1	HL	W
<input type="checkbox"/> 63D1RC (AT101U)	155	—	43	63	70	50	16	—	—	—	50	M6	9	14	1/4	168	72	140	20	38	90	M12	12	12	56	155
<input type="checkbox"/> 63D2RC (AT201U)	205	230	51	71	70	60	19	70	M8	12	50	M6	9	17	1/4	176	72	140	20	38	90	M12	12	16	56	155
<input type="checkbox"/> 63DARC (AT251U)	245	270	58	78	75	65	19	70	M8	12	50	M6	9	17	1/4	183	72	140	20	38	90	M12	12	16	56	155
<input type="checkbox"/> 63D3RC (AT301U)	260	295	64	84	80	75	24	102	M10	15	70	M8	12	22	1/4	174	72	140	25	38	90	M12	12	21	56	155
<input type="checkbox"/> 63DBRC (AT351U)	305	345	73	103	90	90	24	102	M10	15	70	M8	12	22	1/4	183	72	140	25	38	90	M12	12	21	56	155
<input type="checkbox"/> 63D4RC (AT401U)	335	375	79	109	100	90	29	102	M10	15	70	M8	12	27	1/4	189	72	140	25	38	90	M12	12	26	56	155
<input type="checkbox"/> 63DCRC (AT451U)	395	440	89	119	110	105	29	125	M12	18	102	M10	15	27	1/4	217	87	155	32	43	110	M16	19	26	69	205
<input type="checkbox"/> 63D5RC (AT501U)	425	470	98	128	120	110	29	125	M12	18	102	M10	15	27	1/4	226	87	155	32	43	110	M16	19	26	69	205
<input type="checkbox"/> 63DDRC (AT551U)	475	525	112	159	125	125	38	140	M16	24	—	—	—	36	1/4	258	102	225	38	53	125	M16	22	36	90	305
<input type="checkbox"/> 63D6RC (AT601U)	530	590	122	173	130	140	38	140	M16	24	—	—	—	36	1/4	268	102	225	38	53	125	M16	22	36	90	305
<input type="checkbox"/> 63DERC (AT651U)	605	665	151	198	150	160	48	165	M20	30	—	—	—	46	3/8	317	127	355	50	62	180	M20	30	50	106	400

NOTE:

For AT101U~AT251U, a spacer is inserted between the actuator and the manual override gearbox.

DRAWING No.

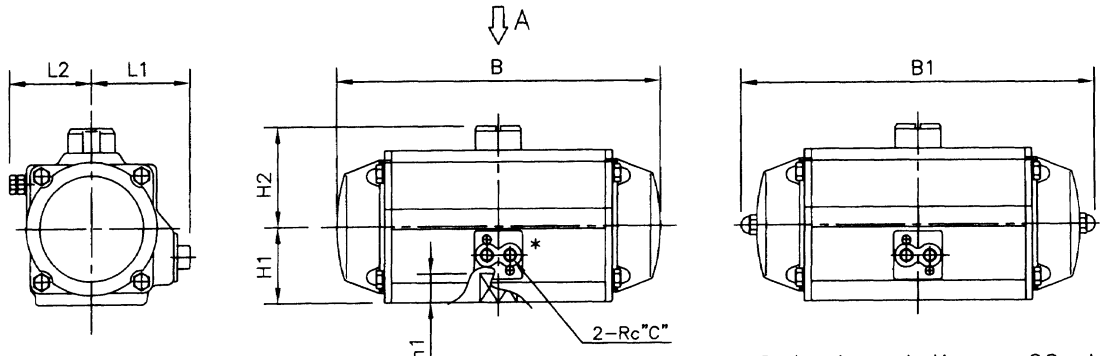
E-63D0RC-W-^N_S

REV.

A

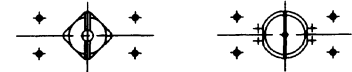
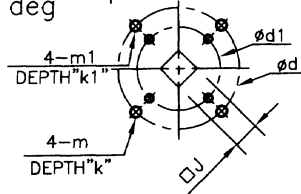
KOSO

PNEUMATIC CYLINDER ACTUATOR 63D0RC Spring return cylinder



Angle rotation : 90 deg

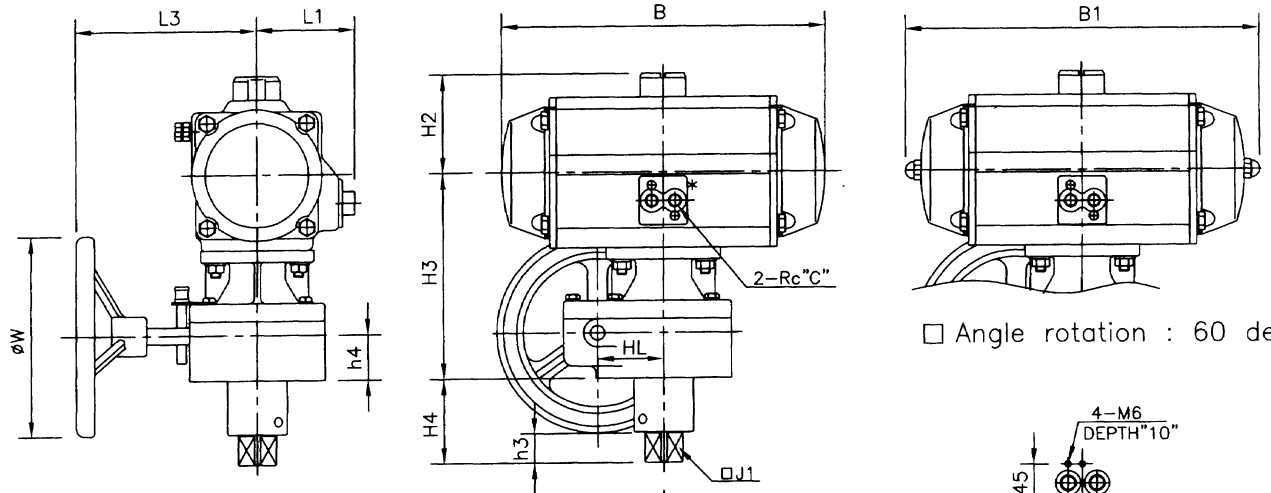
Angle rotation : 60 deg



63D3RC(AT301U) AND BELOW
63DBRC(AT351U) AND OVER

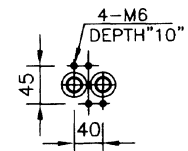
See A

WITHOUT MANUAL OVERRIDE



Angle rotation : 90 deg

Angle rotation : 60 deg



DETAIL OF *
 63DERC(AT651U)

WITH MANUAL OVERRIDE

DIMENSIONS

Approximate Weight : _____ kg. UNIT : mm

SIZE CODE	B	B1	H1	H2	L1	L2	h1	d	m	k	d1	m1	k1	J	C	WITH MANUAL OVERRIDE										
																H3	H4	L3	h3	h4	d2	m2	k2	J1	HL	W
<input type="checkbox"/> 63D1RC (AT101U)	155	—	43	63	70	50	16	—	—	—	50	M6	9	14	1/4	168	72	140	20	38	90	M12	12	12	56	155
<input type="checkbox"/> 63D2RC (AT201U)	205	230	51	71	70	60	19	70	M8	12	50	M6	9	17	1/4	176	72	140	20	38	90	M12	12	16	56	155
<input type="checkbox"/> 63DARC (AT251U)	245	270	58	78	75	65	19	70	M8	12	50	M6	9	17	1/4	183	72	140	20	38	90	M12	12	16	56	155
<input type="checkbox"/> 63D3RC (AT301U)	260	295	64	84	80	75	24	102	M10	15	70	M8	12	22	1/4	174	72	140	25	38	90	M12	12	21	56	155
<input type="checkbox"/> 63DBRC (AT351U)	305	345	73	103	90	90	24	102	M10	15	70	M8	12	22	1/4	183	72	140	25	38	90	M12	12	21	56	155
<input type="checkbox"/> 63D4RC (AT401U)	335	375	79	109	100	90	29	102	M10	15	70	M8	12	27	1/4	189	72	140	25	38	90	M12	12	26	56	155
<input type="checkbox"/> 63DCRC (AT451U)	395	440	89	119	110	105	29	125	M12	18	102	M10	15	27	1/4	217	87	155	32	43	110	M16	19	26	69	305
<input type="checkbox"/> 63D5RC (AT501U)	425	470	98	128	120	110	29	125	M12	18	102	M10	15	27	1/4	226	87	155	32	43	110	M16	19	26	69	305
<input type="checkbox"/> 63DDRC (AT551U)	475	525	112	159	125	125	38	140	M16	24	—	—	—	36	1/4	258	102	235	38	53	125	M16	22	36	90	400
<input type="checkbox"/> 63D6RC (AT601U)	530	590	122	173	130	140	38	140	M16	24	—	—	—	36	1/4	268	102	235	38	53	125	M16	22	36	90	400
<input type="checkbox"/> 63DERC (AT651U)	605	665	151	198	150	160	48	165	M20	30	—	—	—	46	3/8	317	127	355	50	62	180	M20	30	50	106	630

NOTE:

For AT101U~AT251U, a spacer is inserted between the actuator and the manual override gearbox.

DRAWING No.

E-63D0RC-S-^N_S

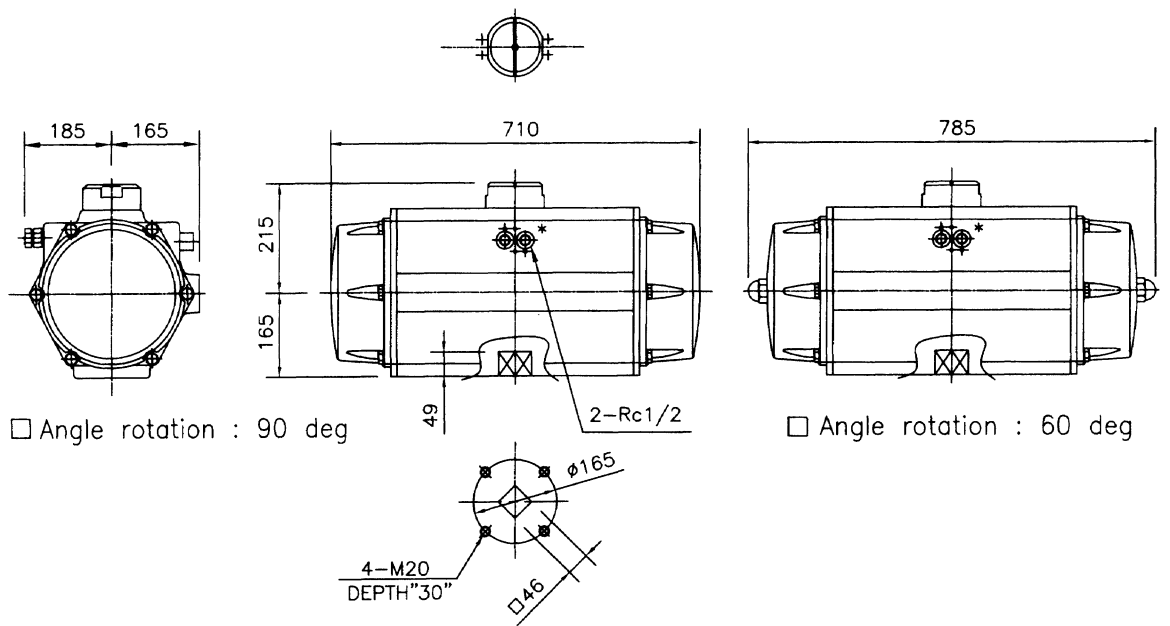
REV.

A

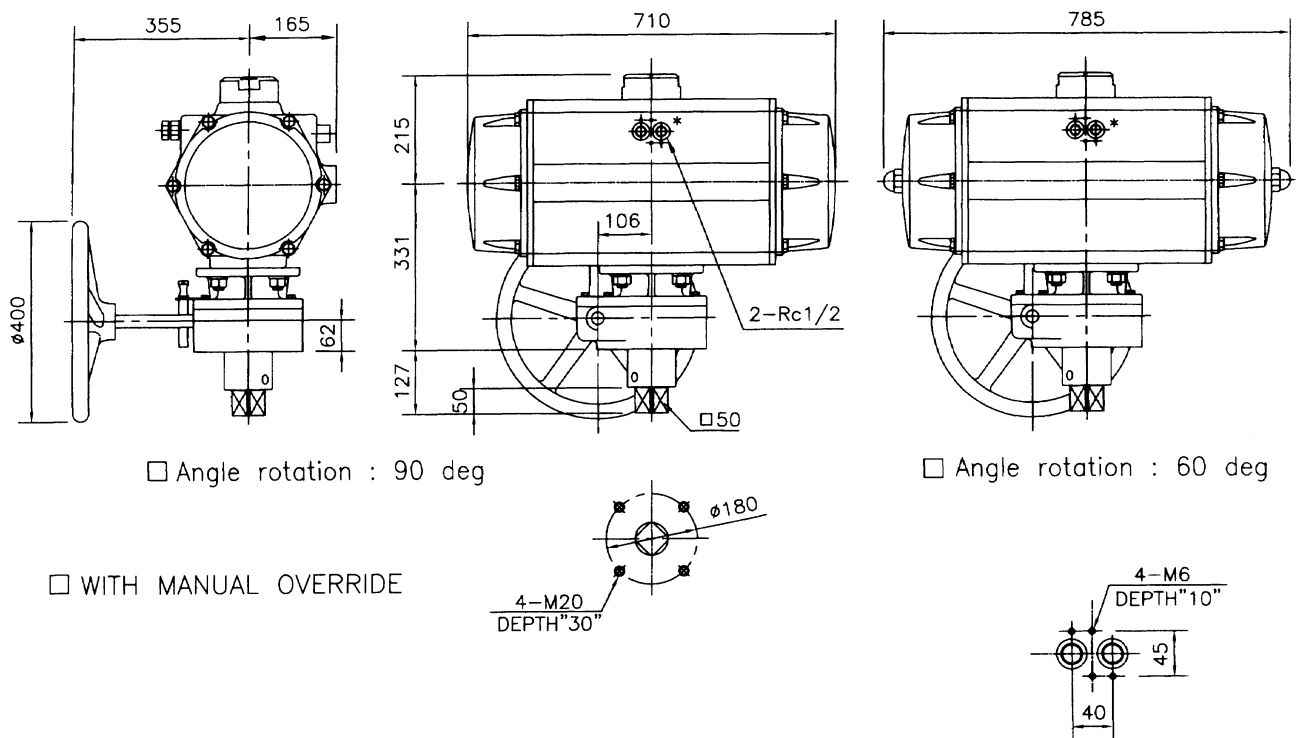
KOSO

PNEUMATIC CYLINDER ACTUATOR 63D7RC Double acting cylinder

UNIT : mm



□ WITHOUT MANUAL OVERRIIDE



□ WITH MANUAL OVERRIDE

DETAIL OF *

NOTE:

DRAWING No.

E-63D7RC-W-^N_S

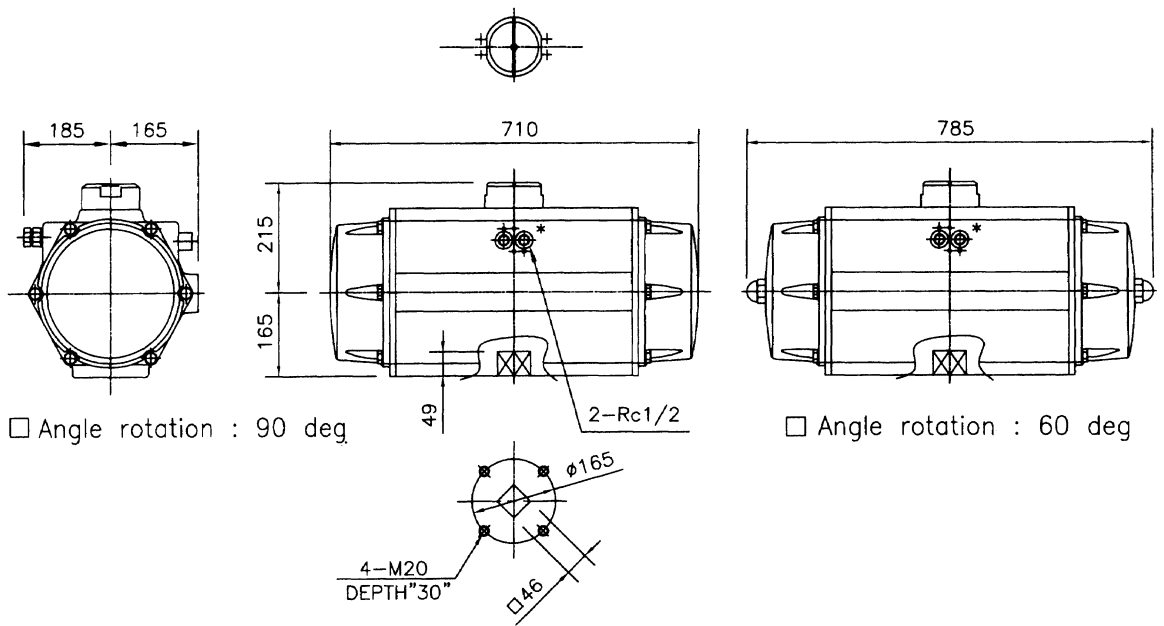
REV.

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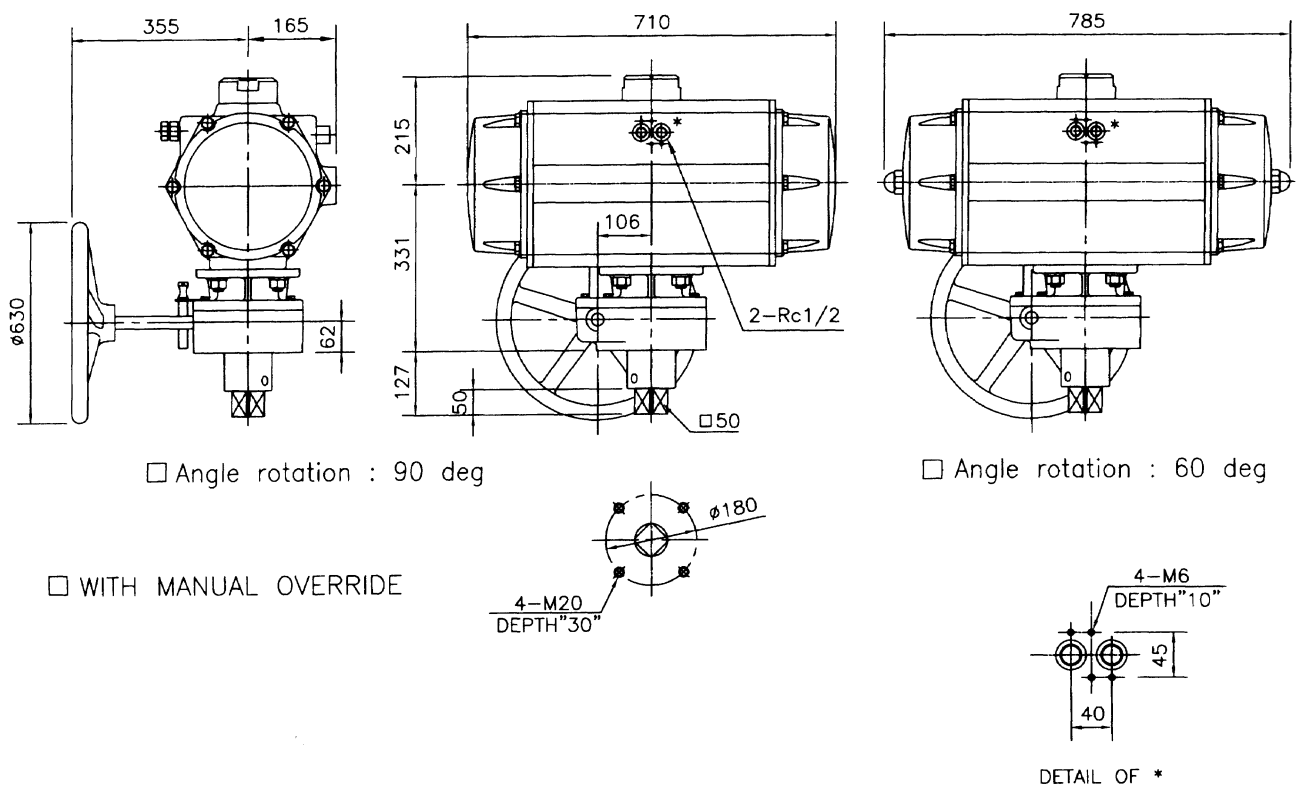
KOSO

PNEUMATIC CYLINDER ACTUATOR 63D7RC Spring return cylinder

UNIT : mm



□ WITHOUT MANUAL OVERRIIDE



□ WITH MANUAL OVERRIDE

NOTE:

DRAWING No.

E-63D7RC-S-^N_S

REV.

A

KOSO