

6500RA 气动活塞式执行机构 (角行程) Rotary Stem Motion Type Pneumatic Cylinder Actuators

概要

该系列是一种大出力、高性能的气动活塞式执行机构，分为双动作型和单动作型两种。与角行程调节阀组合使用，可用于调节和开关的场合。

该系列也可用于其它回转运动的场合。

GENERAL

This Series provides double-acting and spring return pneumatic cylinder actuators characterized by large output 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

系 列 Series	6500RA
规 格 Size	双动作型 Double acting type : 170, 200, 280 单动作型 Spring return type : 200, 280, 360
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 : 400 or 500 KPa G
配 管 接 口 Air connection	请参见第 8 ~ 11 页。 See page 8 ~ 11.
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..... - 20 ~ + 60 高温型(选购) High temperature service (option)..... 0 ~ + 100 低温型(选购) Low temperature service (option)..... - 50 ~ + 60
材 质 Materials	气 缸 Cylinder : 碳钢管 Steel pipe 活 塞 Piston : 铝合金 Aluminum alloy 曲 柄 Torque lever : FCD 渗氮硬化 FCD Nitriding O 形 圈 Piston-ring : NBR or VITON 输 出 轴 Drive shaft : S45C 镀硬铬 S45C chrome plated 箱 体 Case : FC25 Cast iron 螺 栓 螺 母 Bolts & nuts : 镀锌钢材 Uni-chrome plated steel
表 面 涂 层 色 Painting color	银灰色 (环氧树脂) Mansell N-6(Epoxy resin group)
附 件 Accessories	E / P 定位器、P / P 定位器、空气过滤减压器、增压器、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 switch, Solenoid valve, Lock-valve, Speed controller, Position transmitter, etc.
选 购 设 备 Option	手动操作机构、输出轴限位装置、特殊空气配管及特殊气接头、低温环境用、高温环境用、热带地区用、防盐腐蚀型、寒冷地区用、指定涂层色等。 Manual handwheel, Rotation stopper, Special air piping, Special air fitting, Low temperature service, High temperature service, Tropical area proof, Salty environment proof, Cold area proof, 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

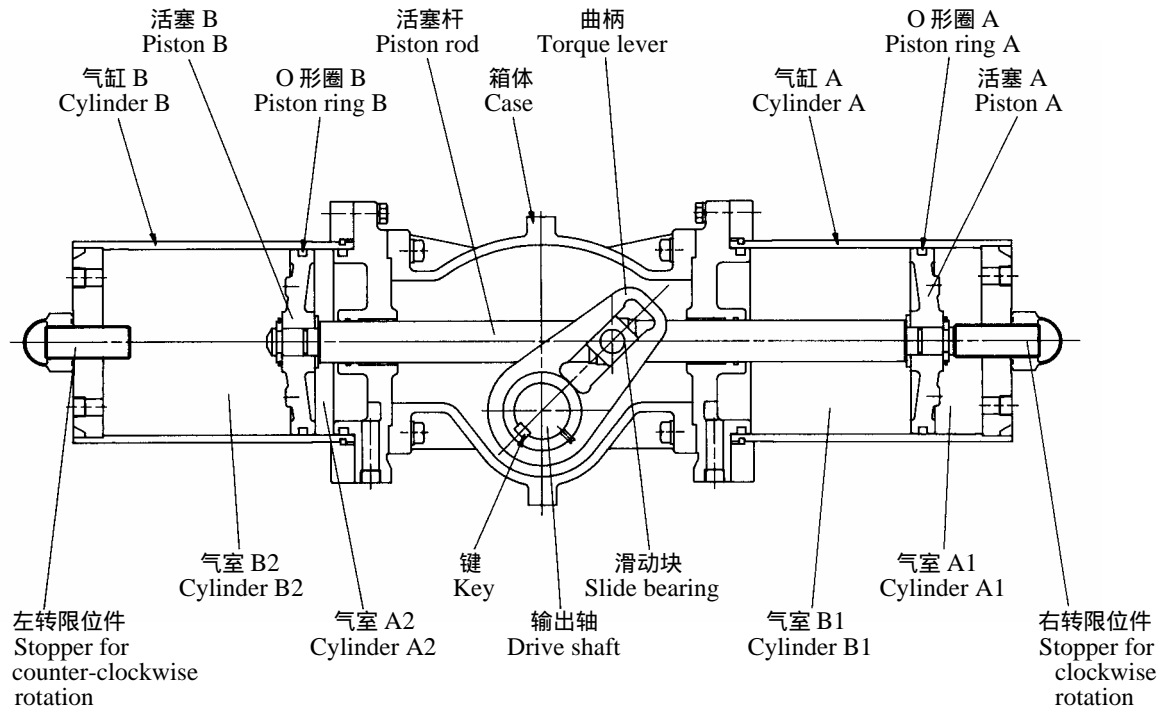


图 1-2 单动作型

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)

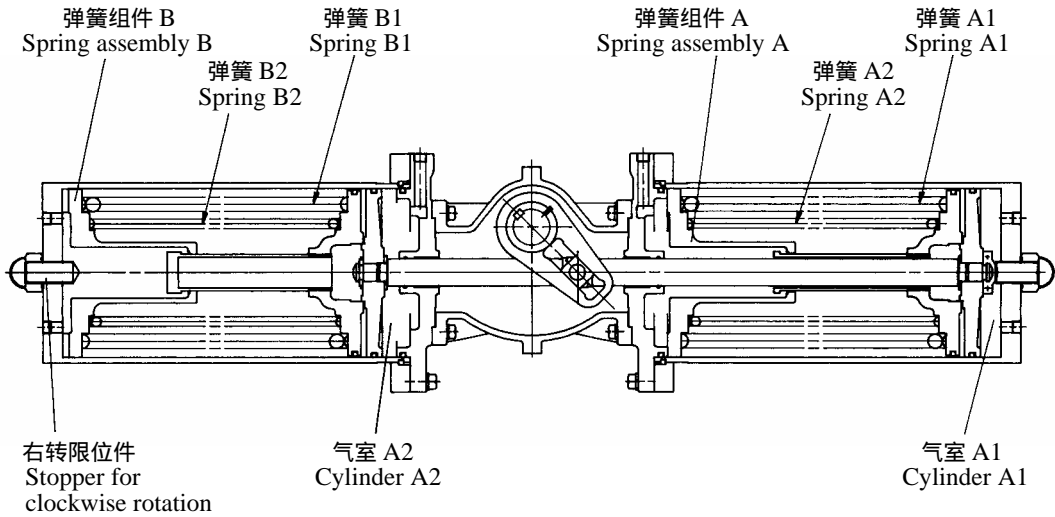


图 1-2B 气压增加输出轴向左回转 (阀开)

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

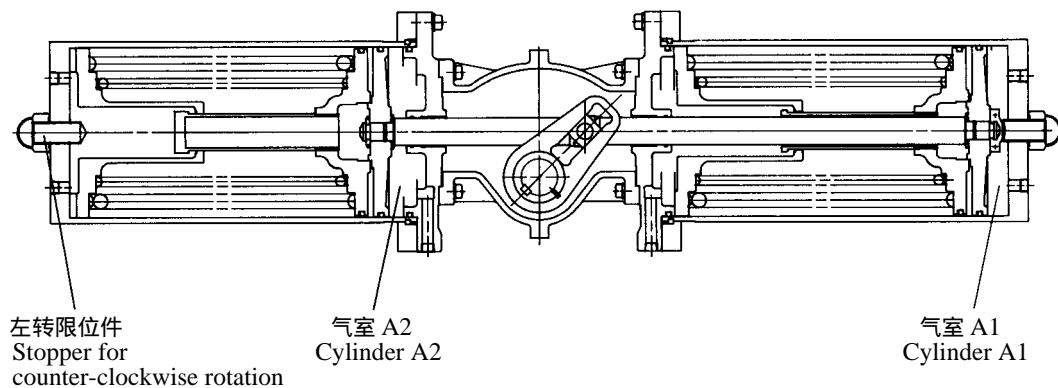


表 1 输出力矩及概重

Table 1 OUTPUT TORQUE AND WEIGHT

执行机构动作 Actuator action	执行机构尺寸 Actuator size	输出力矩 Output Torque (N·m)			概重(kg) Approximate Weight	
		气源压力 Air supply KPa G			Without handwheel	With handwheel
		300	400	500		
双动作型 Double acting type	170	1100	1460	1850	140	170
	200	1900	2500	3200	180	245
	280	4500	6000	7500	345	475
单动作型 Spring return type	200	—	740	925	230	260
	280	—	1820	2275	430	500
	360	—	3600	4500	800	930

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 Fig. 2-1 DOUBLE ACTING TYPE 图 2-2 单动作型 Fig. 2-2 SPRING RETURN TYPE
——: 气压产生的力矩 Air to -----: 弹簧产生的力矩 Spring return

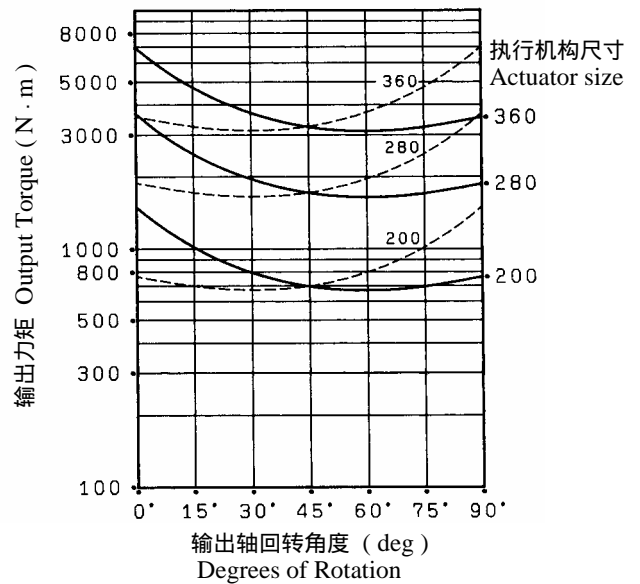
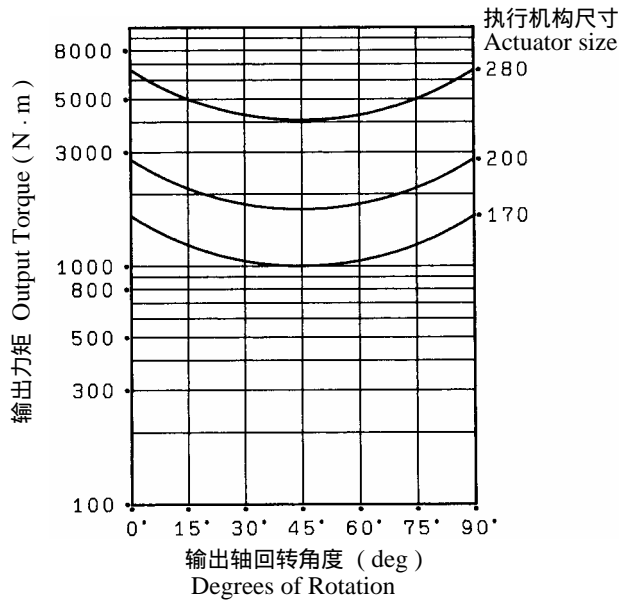


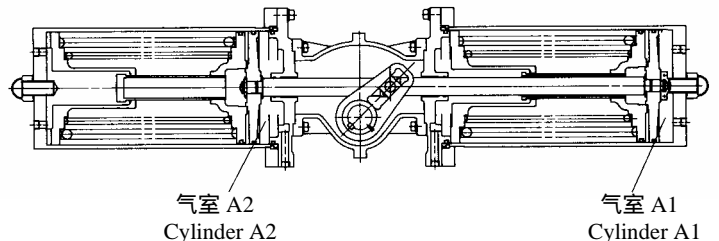
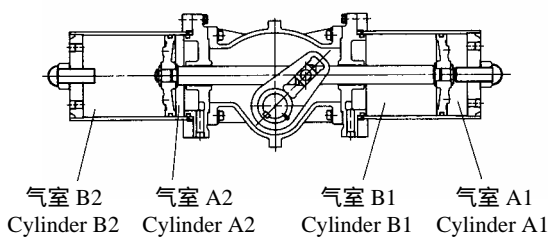
表 2 气缸容量 Table 2 CYLINDER VOLUME

双动作型 Double acting type				单动作型 Spring return type	
执行机构尺寸 Actuator size	气缸容量 Cylinder volume (l)			执行机构尺寸 Actuator size	气缸容量 Cylinder volume (l)
	A	B	A+B		A
170	7.5	7.5	15	200	9
200	12	12	24	280	23.5
280	18	18	36	360	42

*A = 气室 Cylinder A1 + 气室 Cylinder A2 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 阀开 Valve Open 阀闭 Valve Shut 阀开 Valve Open



气缸的耗气量 AIR CONSUMPTION

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

双动作型 Double acting type ...V = (A+B){(P+101.2) ÷ 98}M
单动作型 Spring return type ...V = A{(P+101.2) ÷ 98}M

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

图 3-1 定位器自动控制 : 气源压力降低 任意位置

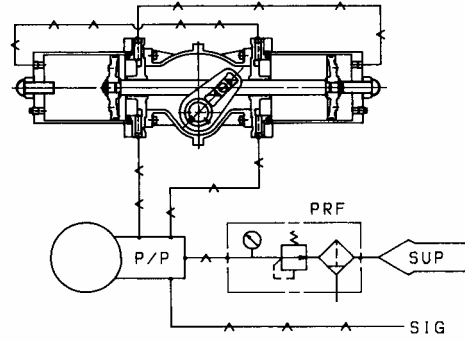
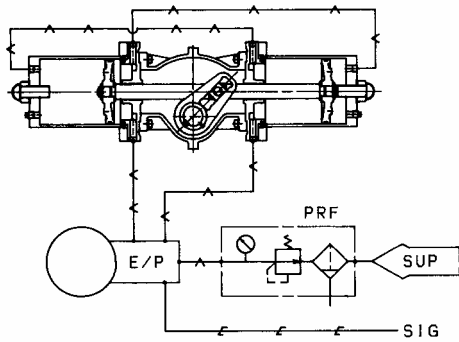
Fig. 3-1 MODULATION BY POSITIONER : AIR FAILURE FREE POSITION

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, 输出轴的回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

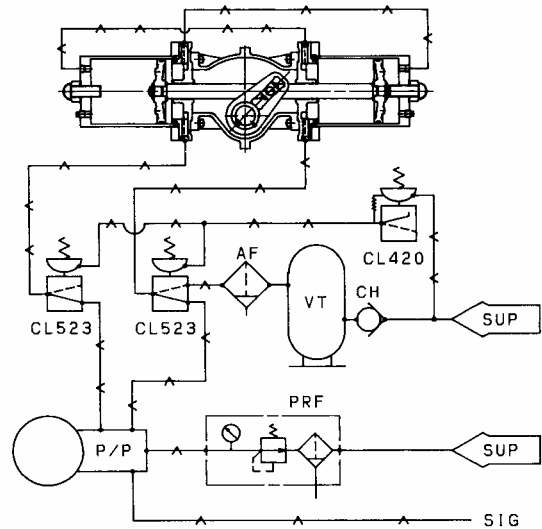
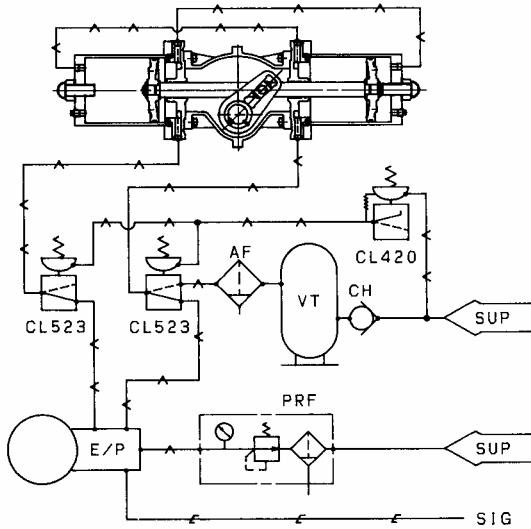
Fig. 3-2 MODULATION BY POSITIONER : AIR FAILURE CLOCKWISE DRIVE SHAFT ROTATION

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



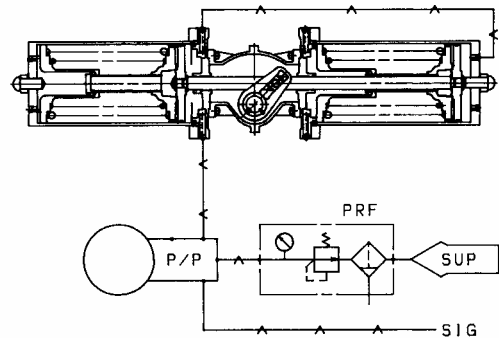
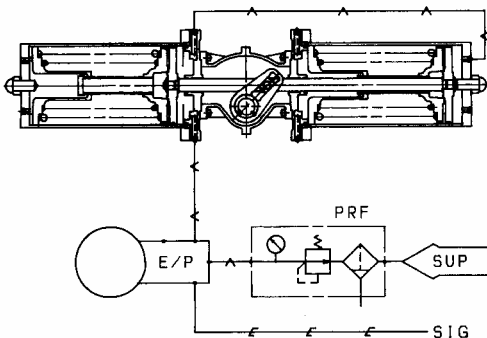
* 当输入定位器的调节信号增加时, 输出轴的回转方向可以用定位器出口空气配管的连接方式来进行改变。
Direction of drive shaft rotation against control signal increase can be changed by reversing positioner's output port connection.
* 气源压力降低使输出轴向左回转时, 请把 VT (贮气罐) 出口的空气配管接到左侧的 CL523 上。
For air failure to counter-clockwise rotation, piping from VT is to 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



* 当气源压力降低, 需要使输出轴向左回转时, 只要把输出轴的另一端与被驱动体连接即可。
For air failure to counter-clockwise rotation, reconnect the actuated part to the other end of the drive shaft.

图 3-3 定位器自动控制：气源压力降低.....保持原位

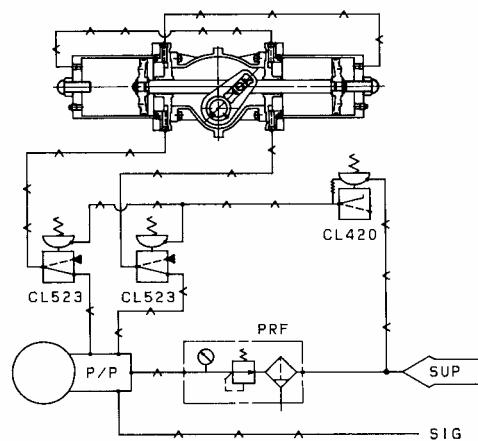
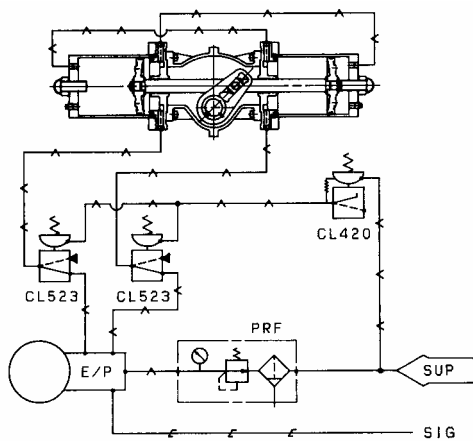
Fig. 3-3 MODULATION BY POSITIONER : AIR FAILURE . . . AIR FAILURE POSITION LOCK

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: COUNTER-CLOCKWISE DRIVE SHAFT ROTATION

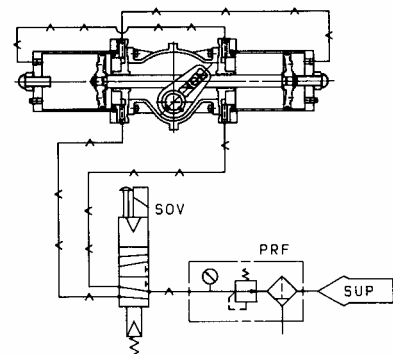
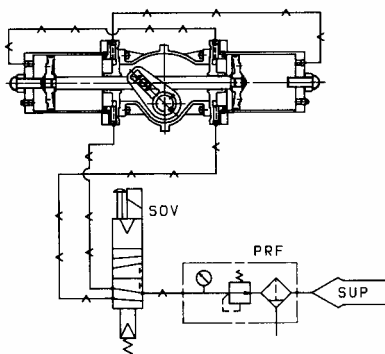


图 3-5 电磁阀 ON—OFF 控制：气源压力降低.....输出轴向右回转

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

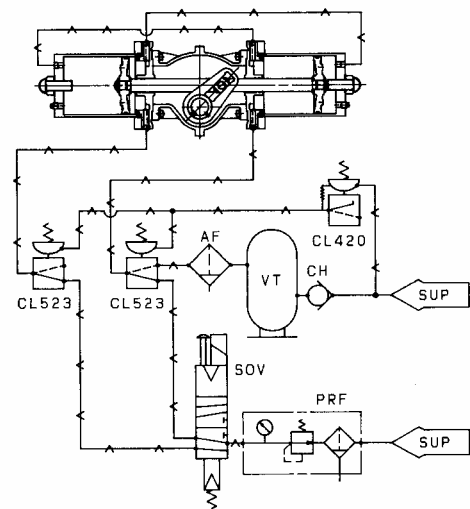
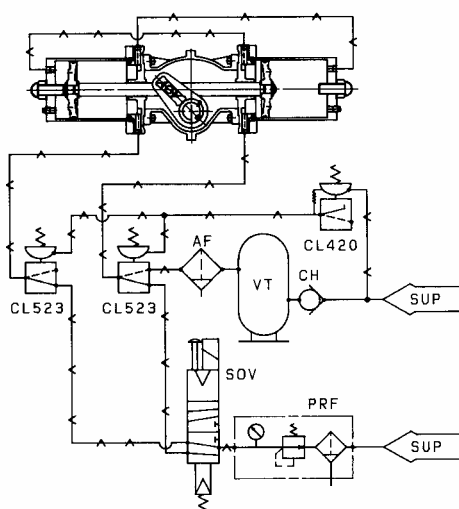
图 3-5B 双动作型：电磁阀励磁输出轴向左回转

Fig. 3-5A DOUBLE ACTING TYPE

Fig. 3-5B DOUBLE ACTING TYPE

SOV ENERGIZED: CLOCKWISE DRIVE SHAFT ROTATION

SOV ENERGIZED: COUNTER-CLOCKWISE DRIVE SHAFT ROTATION



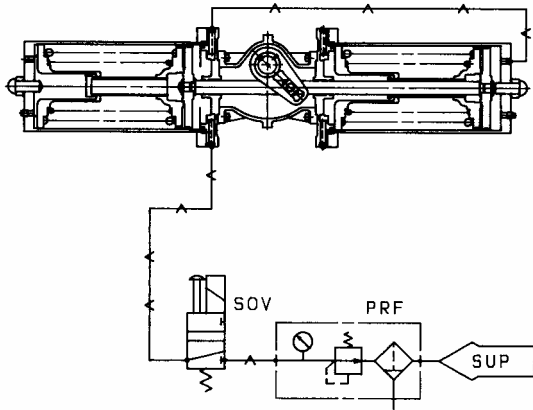
*气源压力降低使输出轴向左回转时，请把 VT（贮气罐）出口的空气配管接到左侧的 CL523 上。

For air failure to counter-clockwise 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（气压增加）输出轴向右回转

Fig. 3-5C SPRING RETURN TYPE

SOV ENERGIZED: CLOCKWISE DRIVE SHAFT ROTATION



* 当电磁阀励磁（气压增加），需要使输出轴向左回转时，只要把输出轴的另一端与被驱动体连接即可。

* For Solenoid valve energized to counter-clockwise drive shaft rotation, reconnect the actuated part to the other end of the drive shaft.

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

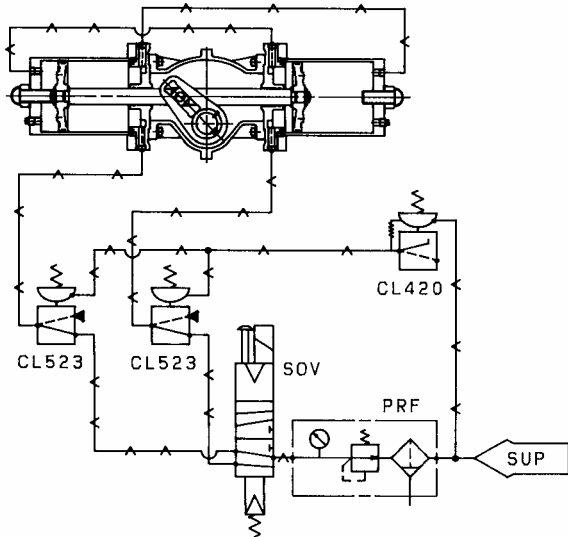


图 3-6B 双动作型：电磁阀励磁输出轴向左回转

Fig. 3-6B DOUBLE ACTING TYPE

SOV ENERGIZED: COUNTER-CLOCKWISE DRIVE SHAFT ROTATION

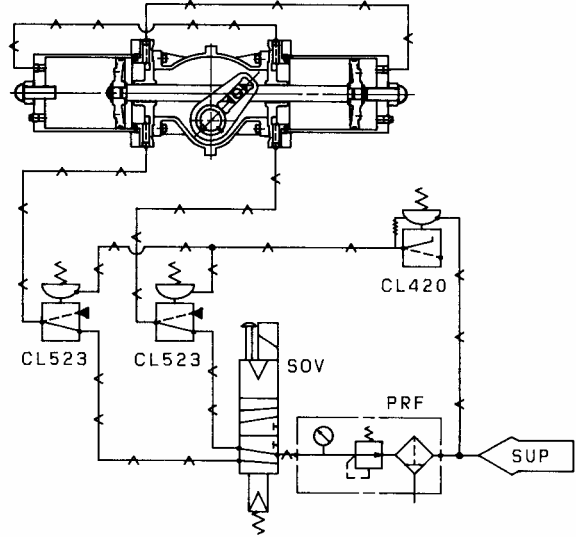


图 3-7 定位器与增压器自动控制：气源压力降低.....任意位置

Fig. 3-7 MODULATION BY POSITIONER & BOOSTER : AIR FAILURE FREE POSITION

图 3-7A 双动作型：E/P+增压器

Fig. 3-7A DOUBLE ACTING TYPE : E/P+ BOOSTER

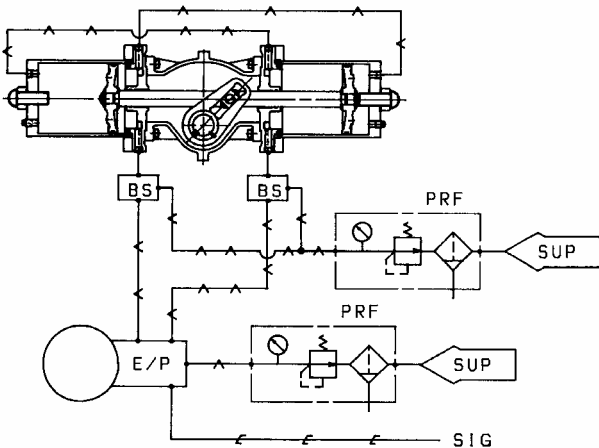
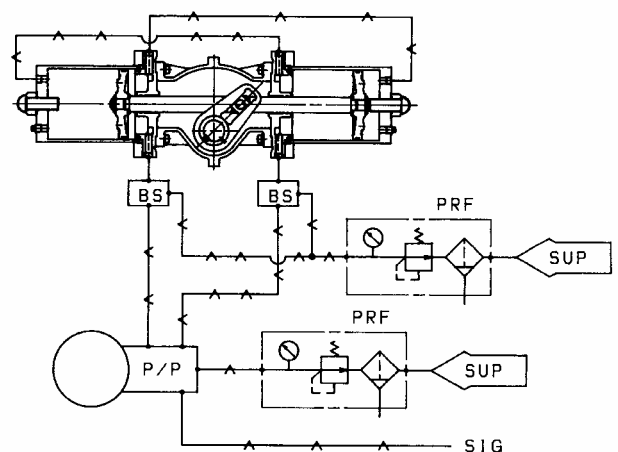


图 3-7B 双动作型：P/P+增压器

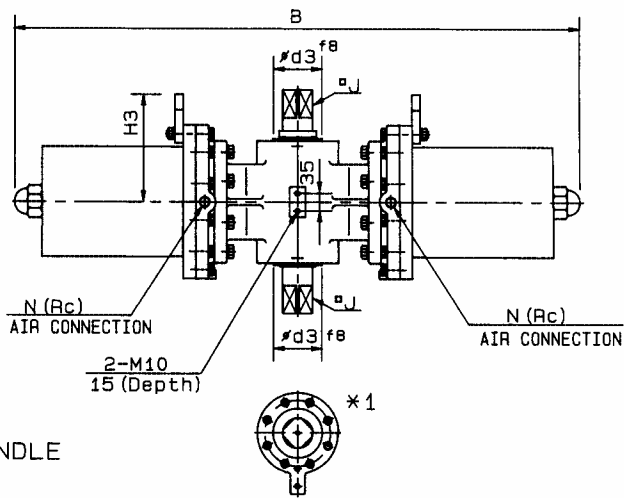
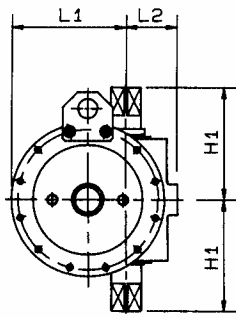
Fig. 3-7B DOUBLE ACTING TYPE : P/P+ BOOSTER



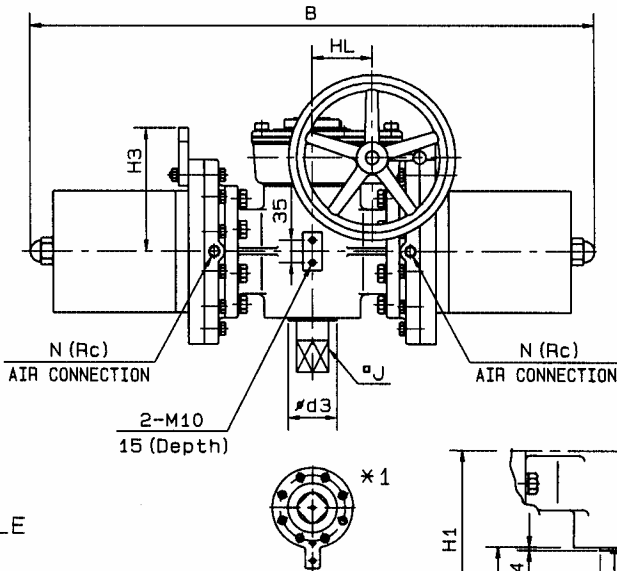
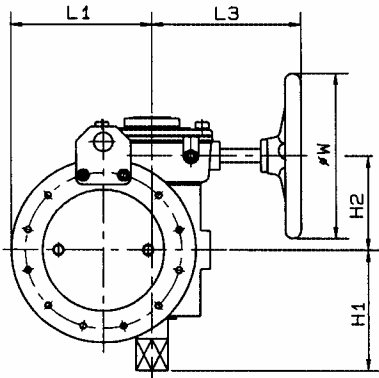
*当输入定位器的调节信号增加时，输出轴的回转方向可以用定位器出口空气配管的连接方式来进行改变。

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

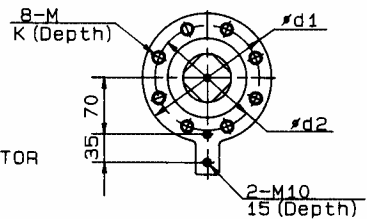
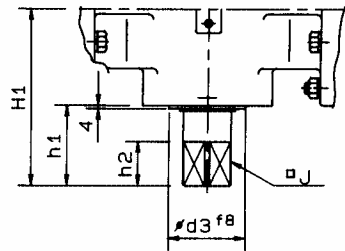
PNEUMATIC CYLINDER ACTUATOR *Double acting cylinder*



□ WITHOUT MANUAL HANDLE



□ WITH MANUAL HANDLE



*1 DETAIL OF ACTUATOR
STEM CONNECTION

DIMENSIONS

UNIT: mm

SIZE CODE	SIZE	B	H1	H3	L1	h1	h2	d1	d2	d3	J	N	M	K	WITH MANUAL HANDLE			
															H2	L3	HL	W
□ 6517R	170	880	188	206	205	85	50	150	125	76	41	RC3/8	M12	18	150	270	93	300
□ 6520R	200	1110	220	210	230	100	55	160	130	96	50	RC1/2	M16	24	170	315	108	400

NOTE :

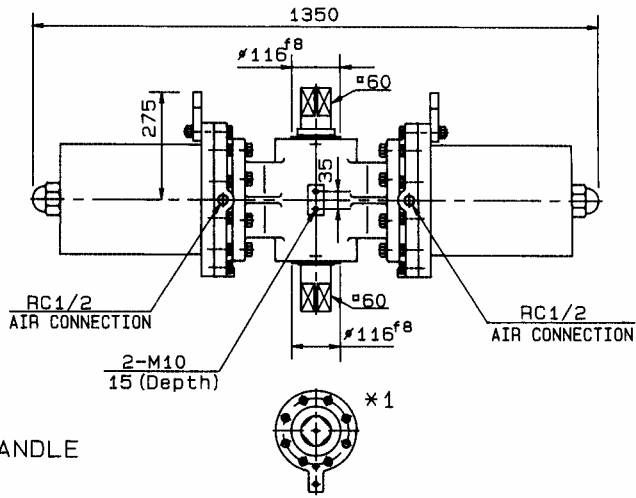
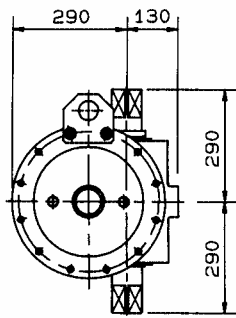
DRAWING No.

E - 6517RA - N
6520RA - W - H

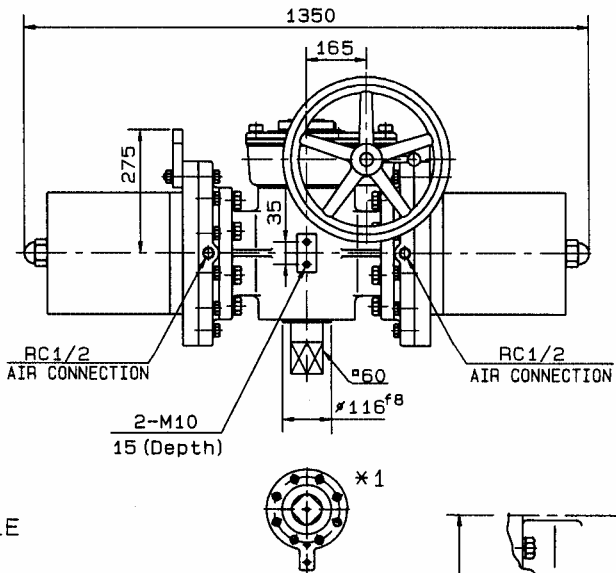
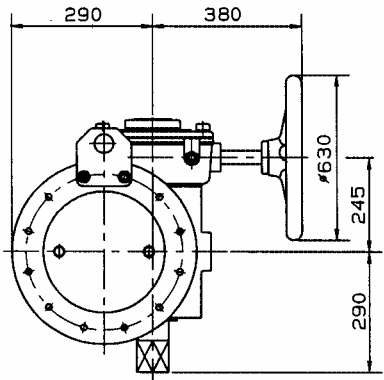
REV

B

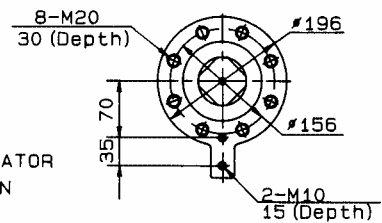
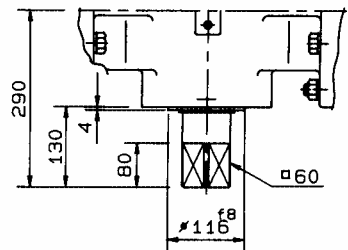
PNEUMATIC CYLINDER ACTUATOR *Double acting cylinder*



□ WITHOUT MANUAL HANDLE



□ WITH MANUAL HANDLE



*1 DETAIL OF ACTUATOR STEM CONNECTION

NOTE :

DRAWING No.

E - 6528RA - W - N
H

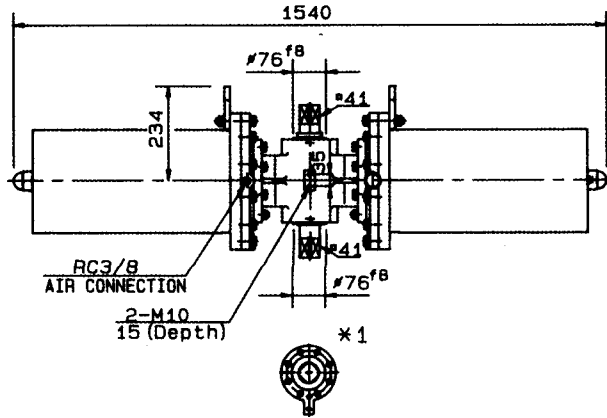
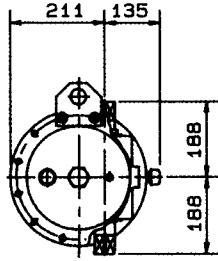
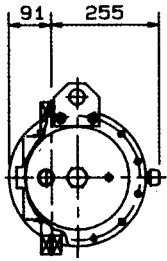
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B

PNEUMATIC CYLINDER ACTUATOR *Spring return cylinder*

DIRECT ACTION

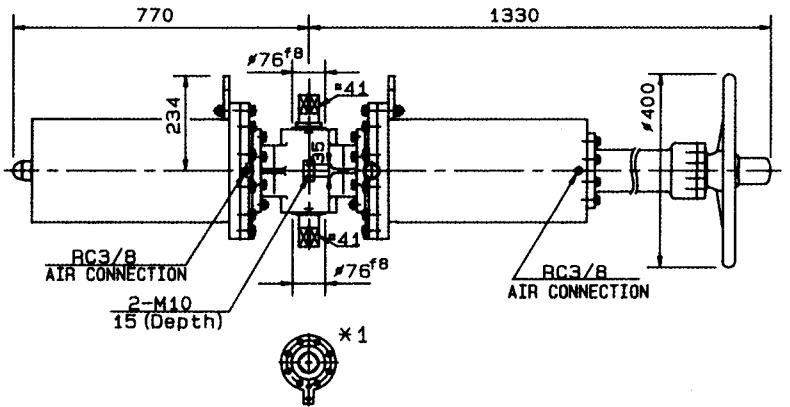
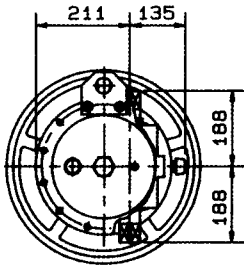
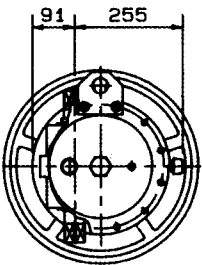
REVERSE ACTION



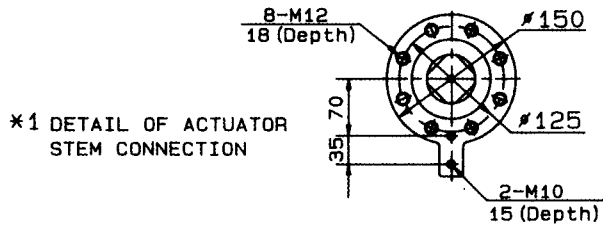
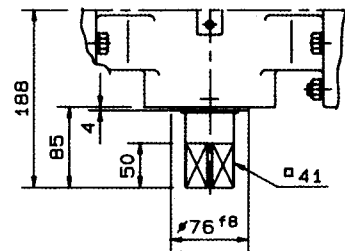
□ WITHOUT MANUAL HANDLE

DIRECT ACTION

REVERSE ACTION



□ WITH MANUAL HANDLE



*1 DETAIL OF ACTUATOR STEM CONNECTION

NOTE :

DRAWING No.

E-6520RA-D-N
R-S

REV

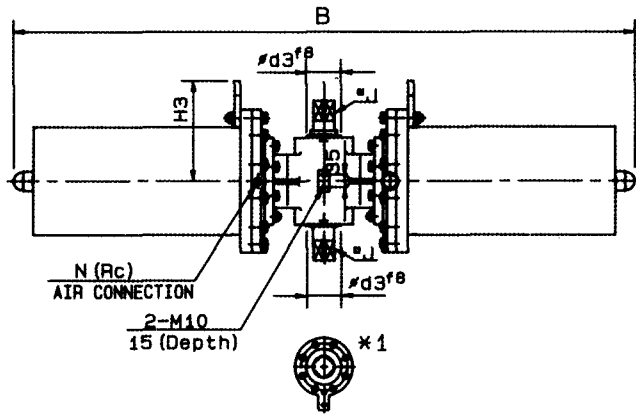
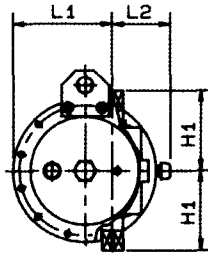
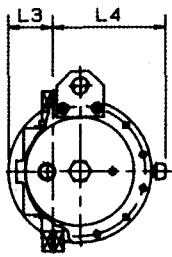
B

KOSO

PNEUMATIC CYLINDER ACTUATOR *Spring return cylinder*

DIRECT ACTION

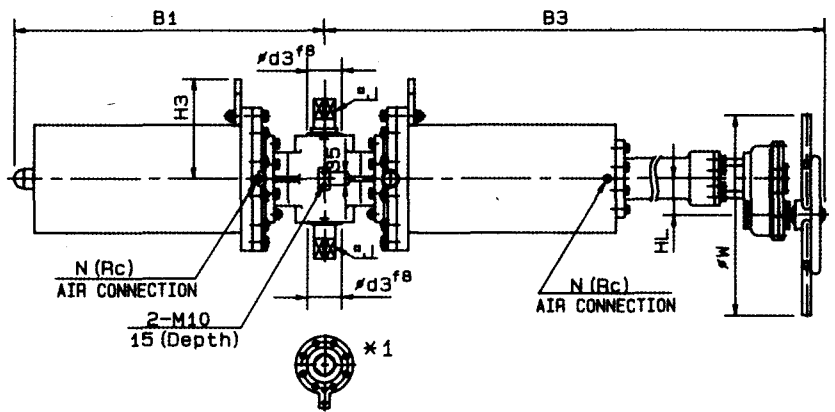
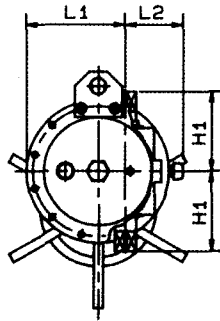
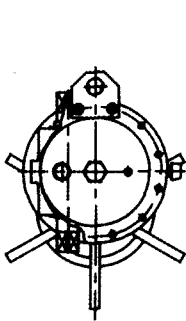
REVERSE ACTION



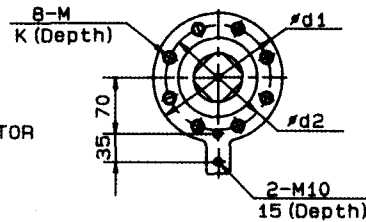
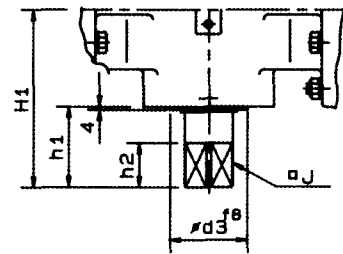
□ WITHOUT MANUAL HANDLE

DIRECT ACTION

REVERSE ACTION



□ WITH MANUAL HANDLE



*1 DETAIL OF ACTUATOR STEM CONNECTION

DIMENSIONS

UNIT: mm

SIZE CODE	SIZE	B	B1	H1	H3	L1	L2	L3	L4	h1	h2	d1	d2	d3	J	N	M	K	WITH MANUAL HANDLE		
																			B3	HL	W
□ 6528R	280	1730	865	220	275	275	165	122	315	100	55	160	130	96	50	RC1/2	M16	24	1615	108	590
□ 6536R	360	2140	1070	290	330	315	265	135	355	130	80	196	156	116	60	RC1/2	M20	30	1990	196	590

NOTE :

DRAWING No.

E-6528RA_D_N
6536RA_R_S

REV

B

KOSO