

7300RA/RB 气动角行程式执行机构

Rotary Stem Motion Type Pneumatic Cylinder Actuators

概要

KOSO TORK 系列是一种中等输出力、高性能的气动执行机构，分为双动作和单动作两种，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(90°)的场合。

GENERAL

KOSO TORK double acting and spring return pneumatic cylinder actuators are powerful, high-performance actuators that provide positive modulation or on-off operation for rotary stem motion type control valves and many other quarter-turn (90°) rotating mechanisms.

标准规格 STANDARD SPECIFICATIONS

系 列 Series	7300RA/RB
规 格 Size	双动作型 Double acting type : RA : 170, 235; RB : 170, 235, 280, 375 单动作型 Spring return type : RA : 170, 235; RB : 170, 235, 280, 375
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 8~12 页。 See page 8~12.
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..... -20~+60°C 高温型(选购) High temperature service (option)..... 0~+100°C 低温型(选购) Low temperature service (option)..... -50~+60°C
材 质 Materials	气 缸 Cylinder : FC250 活 塞 Piston : FCD 齿 轮 Pinion gear : S45C 热处理 Heat treatment 输 出 轴 Drive shaft : S45C 镀硬铬 Hard chrome plated 螺 栓 螺 母 Bolts & nuts : 镀锌钢材 Uni-chrome plated
表 面 涂 层 Painting	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、增速器、气控阀、限位开关、电磁阀 (可选用直连式规格)、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 (Conformance with NAMUR specification), 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.

特 点

- 单动作型及双动作型执行机构均以输出轴为中心呈左右对称结构，因此可以稳定地安装在阀体上。
- 单动作型执行机构的动作变更时，因传动轴两端的连接尺寸相同，根据需要可以方便地选择在通气 的情况下输出轴左转或右转。
- 单作用型执行机构的弹簧被安装在固定的气缸盖内 内，并被预压至设定位置，所以可方便、安全地进 行拆卸或组装。

FEATURES

- For both double acting and spring return types, the unit is symmetrically structured around the drive shaft. This allows easy and stable mounting of the actuated part.
- Spring return type's action direction change is easy, since both ends of the drive shaft have the same dimensions and the top and bottom mounting seats are dimensionally identical. Direction can be changed by simply switching the side on which the actuated part is mounted.
- Spring-return's springs are multi-spring type and each spring is pre-compressed. This makes disassembly and assembly easy and safe.

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

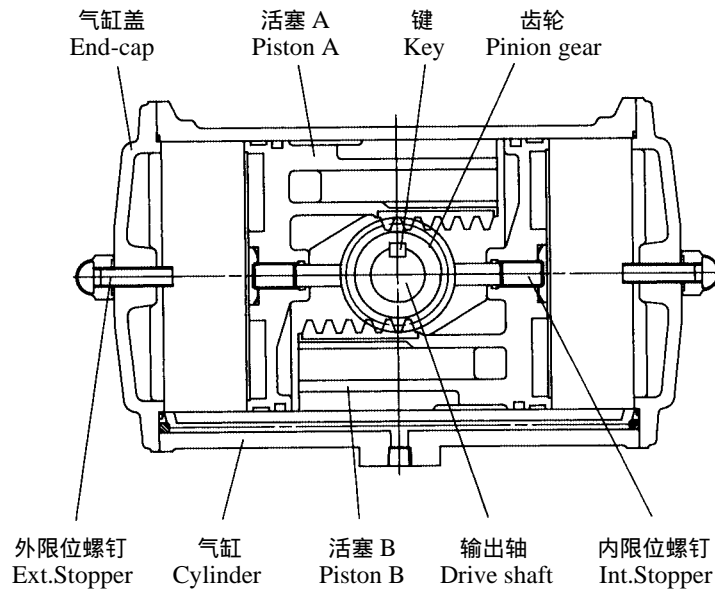


图 1-2 单动作型

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)

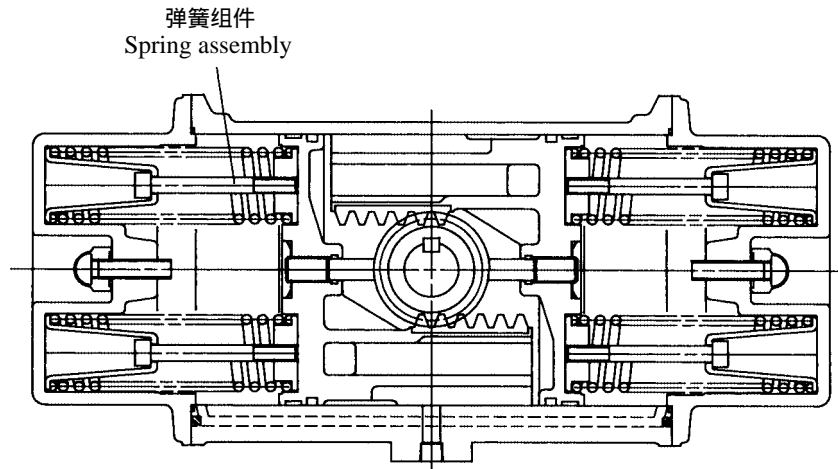


图 1-2B 气压增加输出轴向左回转 (阀开)

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

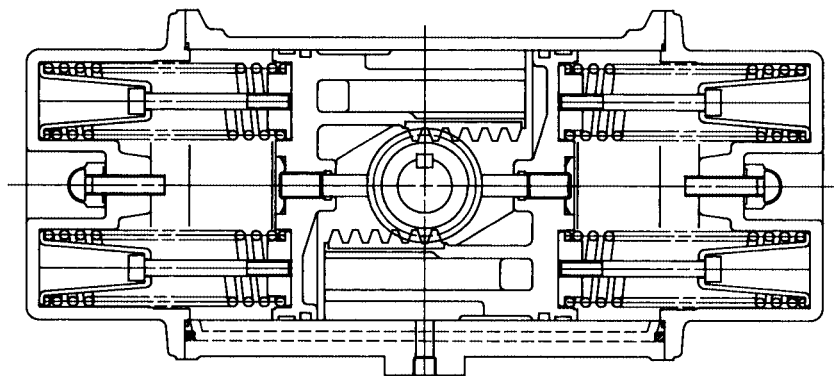


表 1. 输出力矩及重量 (不包括附件)

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

执行机构尺寸及型号 Actuator size & code	输出力矩 Output Torque (N · m)						重量 Net 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				
170 7317RA/RB	382	510	637	127	170	212	38	47	53	70
235 7323RA/RB	1028	1370	1712	341	455	589	83	100	110	139
280 7328RB	1778	2370	2962	597	796	995	146	175	202	272
375 7337RB	4192	5590	6987	1400	1866	2332	270	340	405	495

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

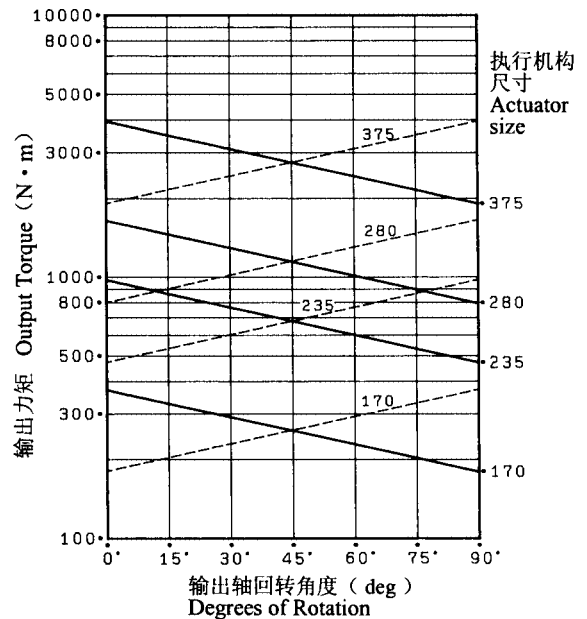
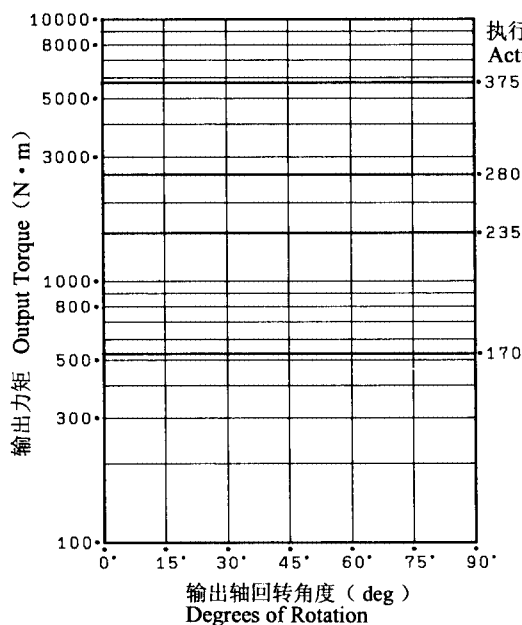


表 2. 气缸容量 Table 2. CYLINDER VOLUME

执行机构尺寸 Actuator size	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
170	4.0	3.3	7.3	4.0
235	10.0	9.2	19.2	10.0
280	18.0	16.4	34.4	18.0
375	42.0	38.0	80.0	42.0

*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

双动作型 Double acting type

$$V = (A+B) \{ (P+101.2) \div 98 \} M$$

单动作型 Spring return type

$$V = A \{ (P+101.2) \div 98 \} M$$

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

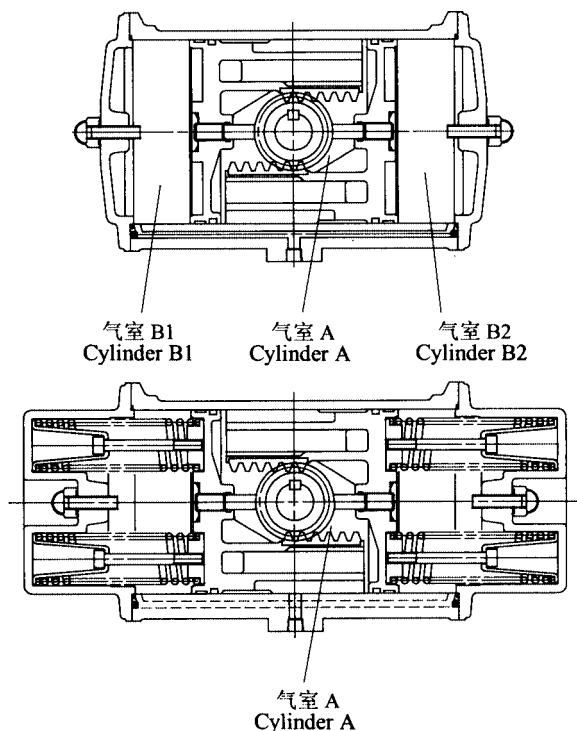


图 3. 标准配管回路 (俯视图) Fig. 3 SCHEMATIC DIAGRAM (ACTUATOR IS TOP VIEW)

图 3-1 定位器自动控制: 气源压力降低.....任意位置

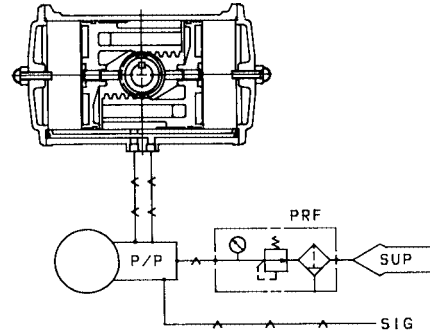
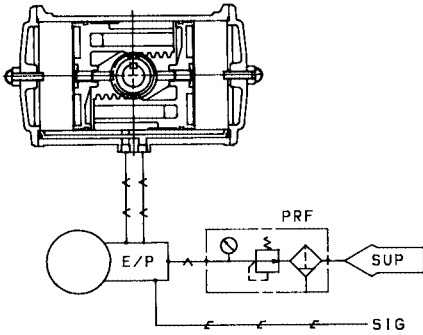
Fig. 3-1 MODULATION BY POSITIONER: AIR FAILURE.....FREE POSITION

图 3-1A 双动作型: E/P

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

图 3-1B 双动作型: P/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

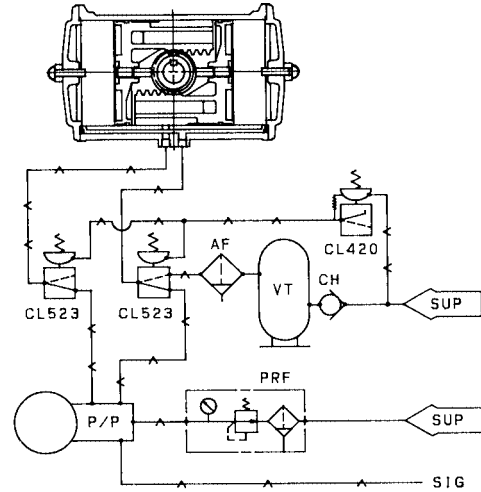
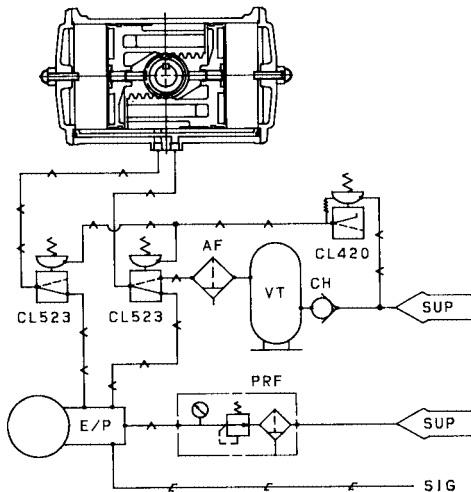
Fig. 3-2 MODULATION BY POSITIONER: AIR FAILURE.....CLOCKWISE DRIVE SHAFT ROTATION

图 3-2A 双动作型: E/P

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

图 3-2B 双动作型: P/P

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



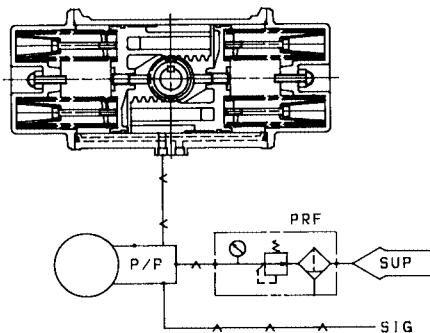
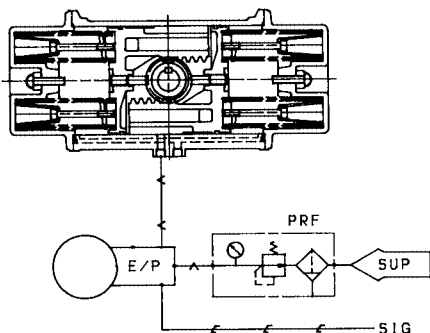
*①当输入定位器的调节信号增加时, 输出轴的回转方向可以用定位器出口空气配管的连接方式来进行改变。
Direction of drive shaft rotation against control signal increase can be changed by reversing positioner's output port connection.
*②气源压力降低使输出轴向左回转时, 请把 VT (贮气罐) 出口的空气配管接到左侧的 CL523 上。
For air failure to counterclockwise rotation, piping from VT is to be connected to CL523 on the left.

图 3-2C 单动作型: E/P

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

图 3-2D 单动作型: P/P

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



*①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 counterclockwise 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

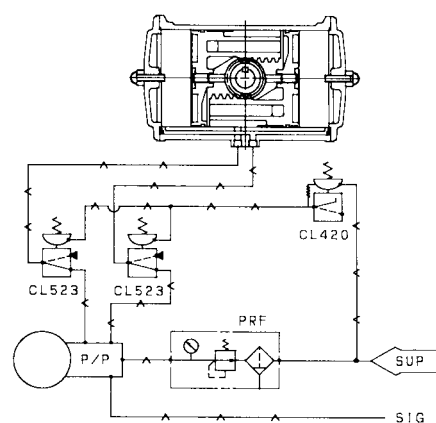
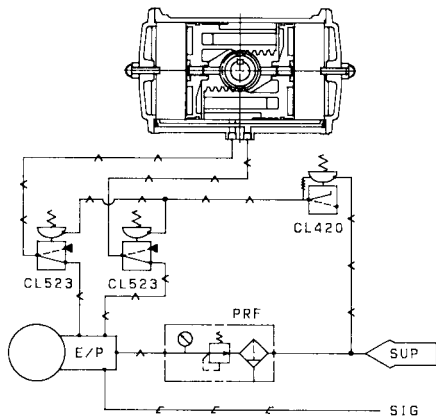
Fig. 3-3 MODULATION BY POSITIONER: AIR FAILURE.....AIR FAILURE POSITION LOCK

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: COUNTERCLOCKWISE DRIVE SHAFT ROTATION

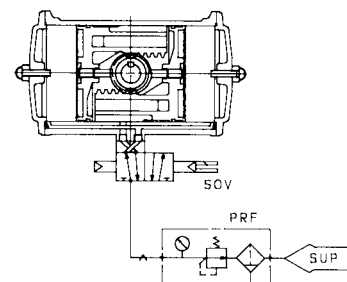
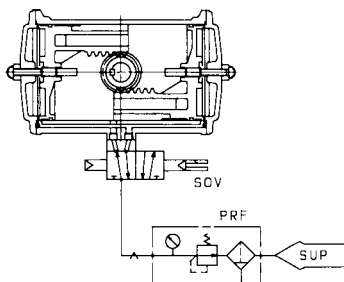


图 3-5 电磁阀 ON—OFF 控制：气源压力降低.....输出轴向右回转

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

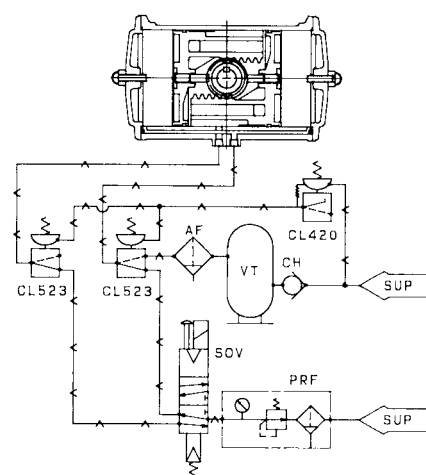
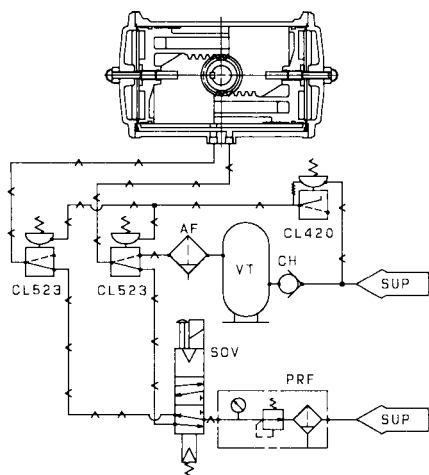
图 3-5B 双动作型：电磁阀励磁输出轴向左回转

Fig. 3-5A DOUBLE ACTING TYPE

Fig. 3-5B DOUBLE ACTING TYPE

SOV ENERGIZED: CLOCKWISE DRIVE SHAFT ROTATION

SOV ENERGIZED: COUNTERCLOCKWISE DRIVE SHAFT ROTATION



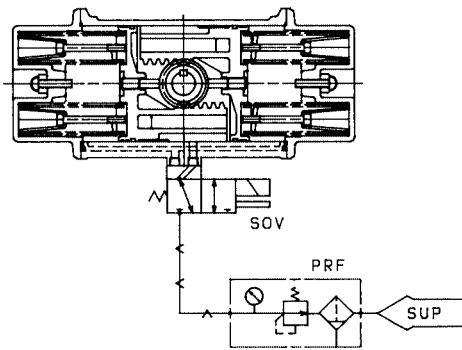
*气源压力降低使输出轴向左回转时，请把 VT（贮气罐）出口的空气配管接到左侧的 CL523 上。

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



*①当电磁阀励磁，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 SOV energized to counterclockwise 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: COUNTERCLOCKWISE DRIVE SHAFT ROTATION

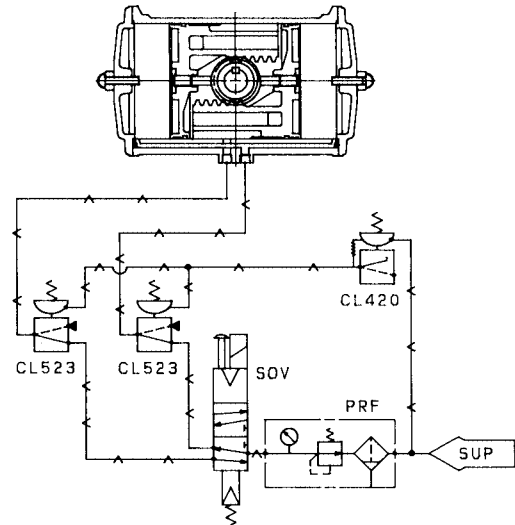
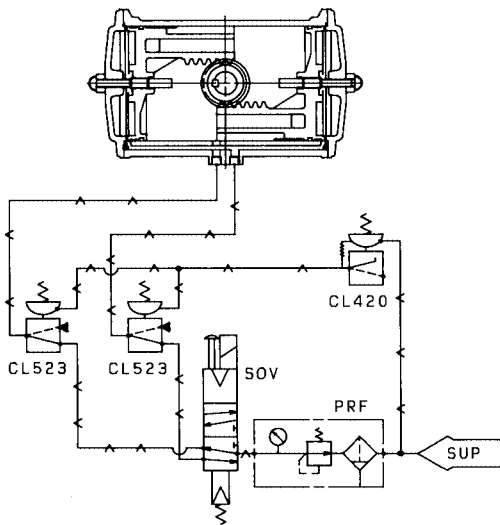
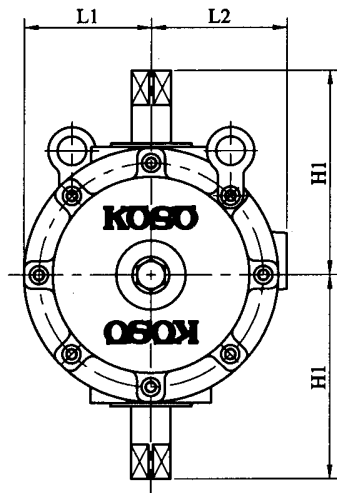


表 3. 配用手动操作机构型号

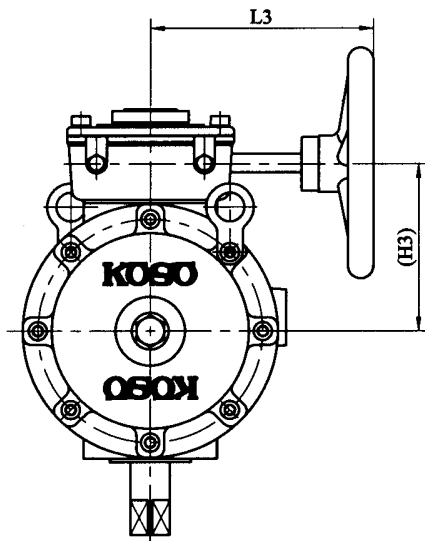
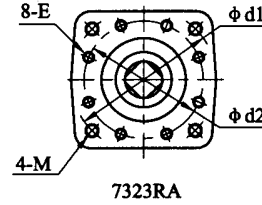
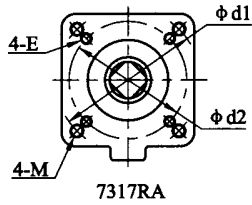
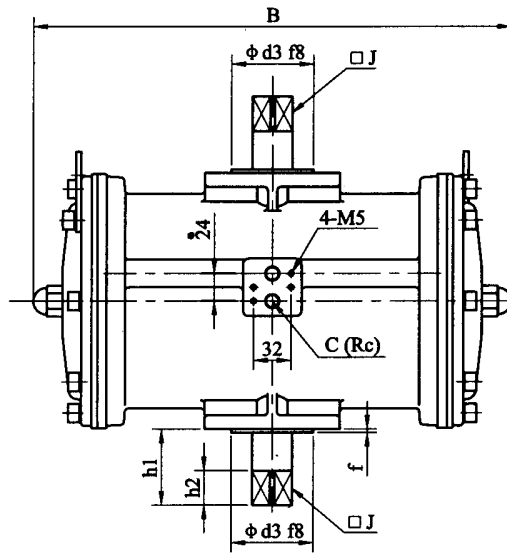
Table 3. MANUAL OVERRIDE CODE NO.

执行机构型号 Actuator code	动作方式 Action	型号 Code No.
7317RA/RB	双动作型 Double acting	MA10
	单动作型 Spring return	MA18
7323RA/RB	双动作型 Double acting	MA18
	单动作型 Spring return	MA28
7328RB	双动作型 Double acting	MA28
	单动作型 Spring return	MA64
7337RB	双动作型 Double acting	MA64
	单动作型 Spring return	MA37S

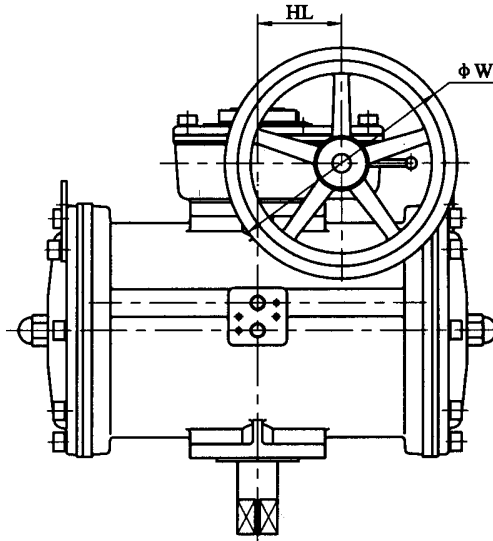
PNEUMATIC CYLINDER ACTUATOR Double acting cylinder



□ WITHOUT MANUAL HAND



□ WITH MANUAL HAND



DIMENSIONS

UNIT:mm

SIZE CODE	SIZE	B	H1	L1	L2	h1	h2	d1	d2	d3	f	J	C	M	E	WITH MANUAL HANDLE			
																HL	H3	L3	W
□ 7317RA	170	400	177	110	120	68	30	125	102	70	4	26	Rc1/4	M12	M10	75	145	235	200
□ 7323RA	235	515	234	150	160	85	50	140	125	85	4	41	Rc1/4	M16	M12	93	195	270	300

NOTE:

DRAWING NO.

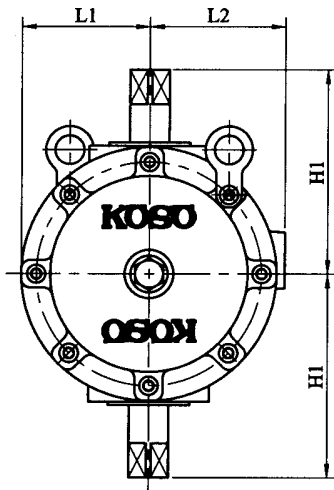
E-7300RA-W- $\frac{N}{H}$

REV

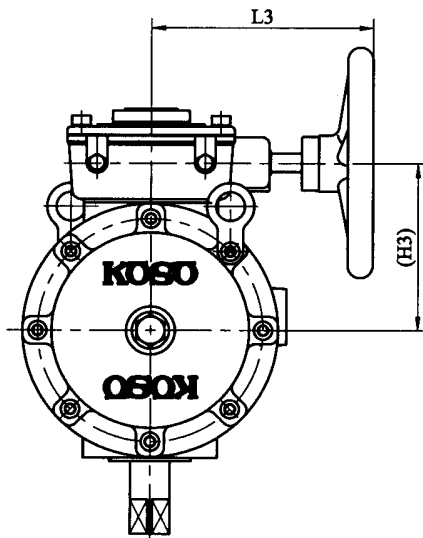
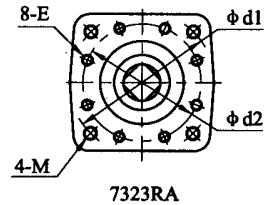
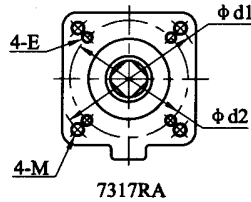
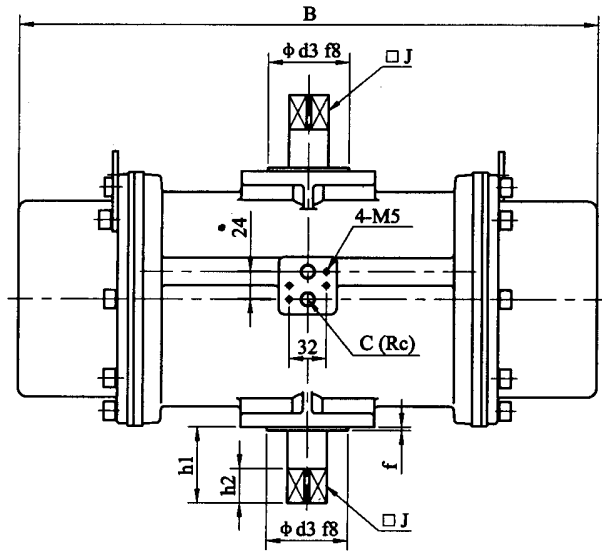
A

KOSO

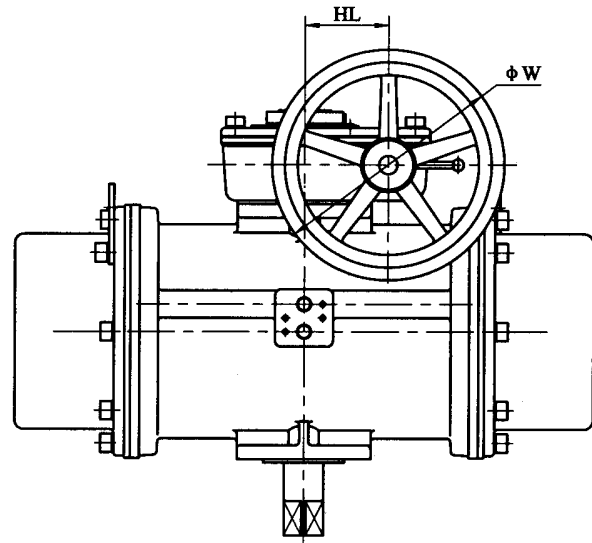
PNEUMATIC CYLINDER ACTUATOR Spring return cylinder



□ WITHOUT MANUAL HAND



□ WITH MANUAL HAND



DIMENSIONS

UNIT:mm

SIZE CODE	SIZE	B	H1	L1	L2	h1	h2	d1	d2	d3	f	J	C	M	E	WITH MANUAL HANDLE			
																HL	H3	L3	W
□ 7317RA	170	500	177	110	120	68	30	125	102	70	4	26	Rc1/4	M12	M10	93	155	235	300
□ 7323RA	235	635	234	150	160	85	50	140	125	85	4	41	Rc1/4	M16	M12	108	200	315	400

NOTE:

DRAWING NO.

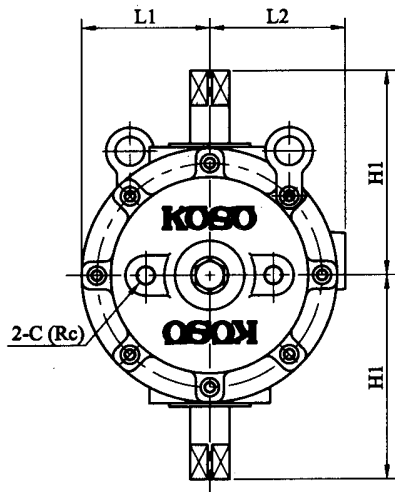
E-7300RA- $\frac{D}{R}$ - $\frac{N}{H}$

REV

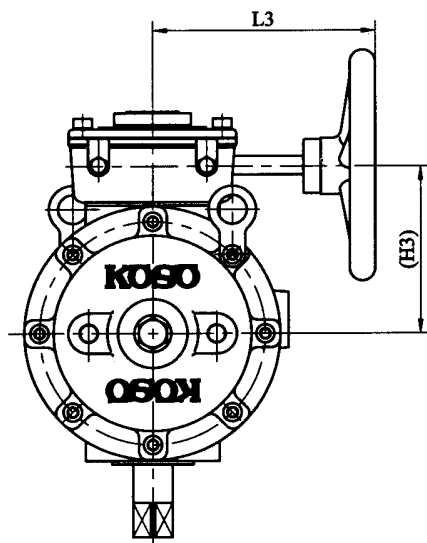
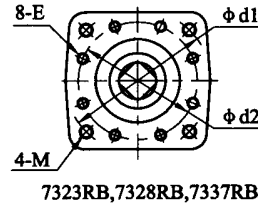
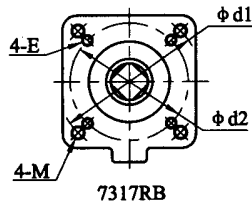
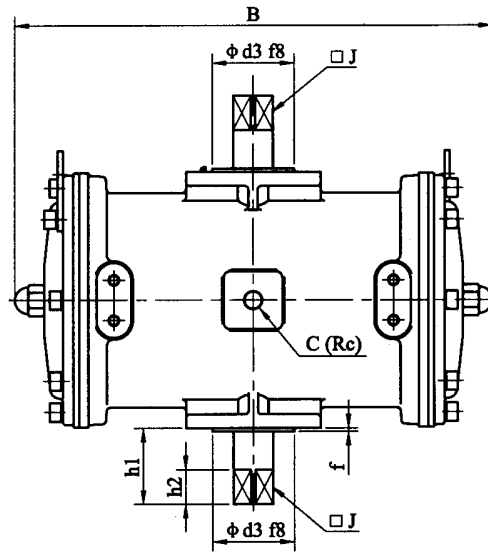
A

KOSO

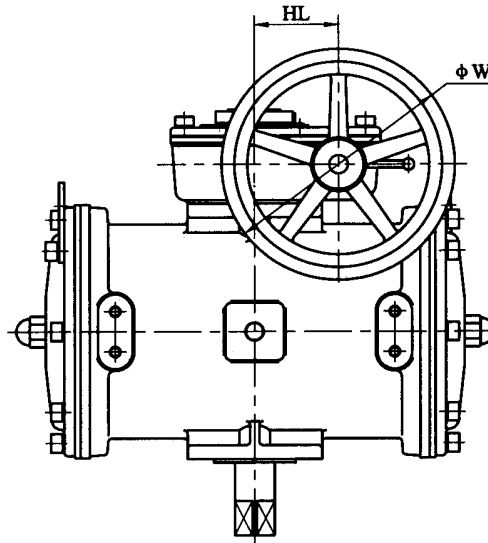
PNEUMATIC CYLINDER ACTUATOR Double acting cylinder



□ WITHOUT MANUAL HAND



□ WITH MANUAL HAND



DIMENSIONS

UNIT:mm

SIZE CODE	SIZE	B	H1	L1	L2	h1	h2	d1	d2	d3	f	J	C	M	E	WITH MANUAL HANDLE			
																HL	H3	L3	W
□ 7317RB	170	400	177	110	120	68	30	125	102	70	4	26	Rc3/8	M12	M10	75	145	235	200
□ 7323RB	235	515	234	150	160	85	50	140	125	85	4	41	Rc1/2	M16	M12	93	195	270	300
□ 7328RB	280	630	285	185	185	100	55	165	140	100	4	50	Rc1/2	M20	M16	108	235	315	400
□ 7337RB	375	815	368	240	240	131	80	210	165	130	5	60	Rc3/4	M20	M20	165	300	380	630

NOTE:

DRAWING NO.

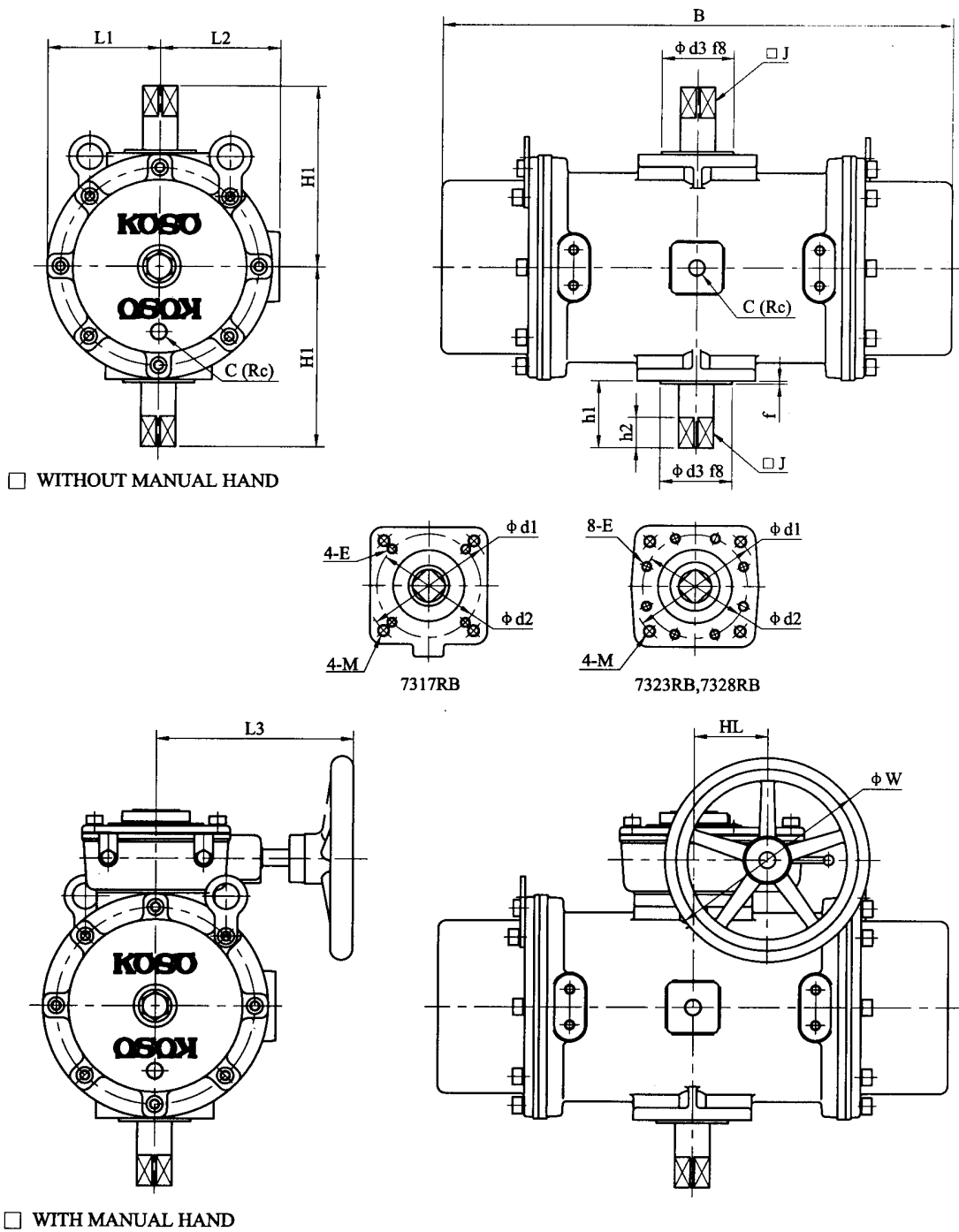
E-7300RB-W-^N/_H

REV

A

KOSO

PNEUMATIC CYLINDER ACTUATOR Spring return cylinder



DIMENSIONS

UNIT:mm

SIZE CODE	SIZE	B	H1	L1	L2	h1	h2	d1	d2	d3	f	J	C	M	E	WITH MANUAL HANDLE			
																HL	H3	L3	W
□ 7317RB	170	500	177	110	120	68	30	125	102	70	4	26	Rc3/8	M12	M10	93	155	235	300
□ 7323RB	235	635	234	150	160	85	50	140	125	85	4	41	Rc1/2	M16	M12	108	200	315	400
□ 7328RB	280	810	285	185	185	100	55	165	140	100	4	50	Rc1/2	M20	M16	165	245	380	630

NOTE:

DRAWING NO.

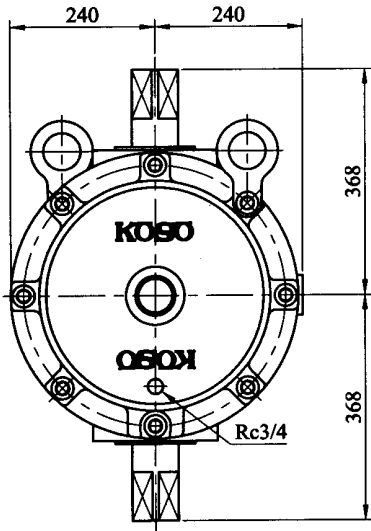
E-7300RB-
D N
R H

REV

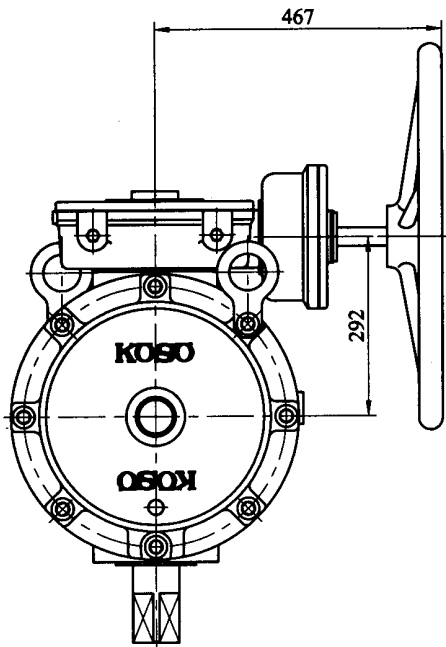
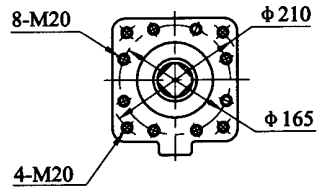
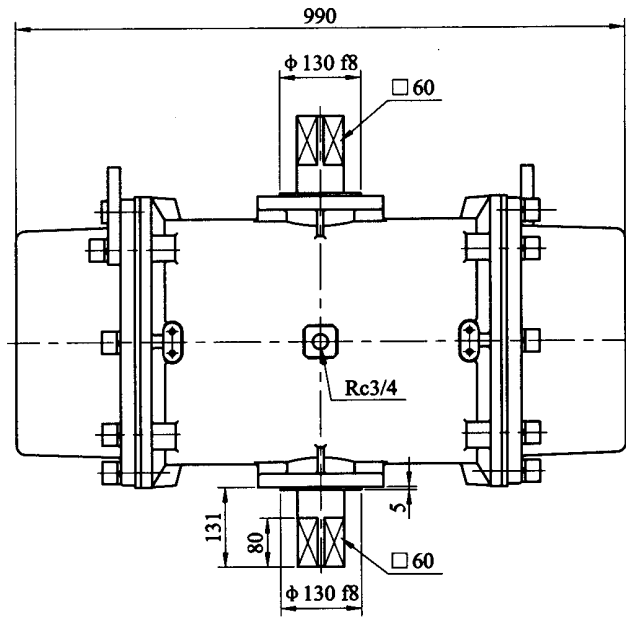
A

KOSO

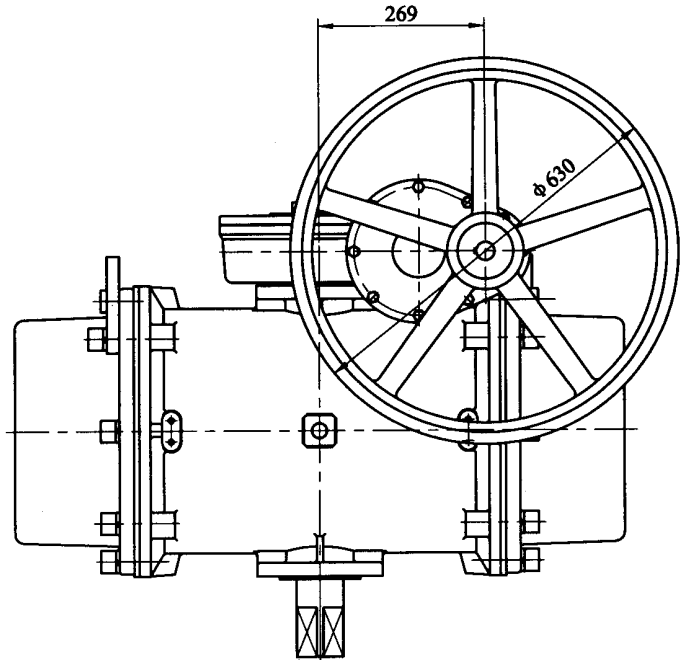
PNEUMATIC CYLINDER ACTUATOR Spring return cylinder



WITHOUT MANUAL HAND



WITH MANUAL HAND



NOTE:

DRAWING NO.

E-7337RB- $\frac{D}{R}$ $\frac{N}{H}$

REV

A

KOSO