

Rotary stem motion type Pneumatic cylinder actuators

MODEL: AT Series



ROTARY STEM MOTION TYPE PNEUMATIC CYLINDER ACTUATORS

Model: KAR-AT Series

General

The model **KAR-AT**,
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.

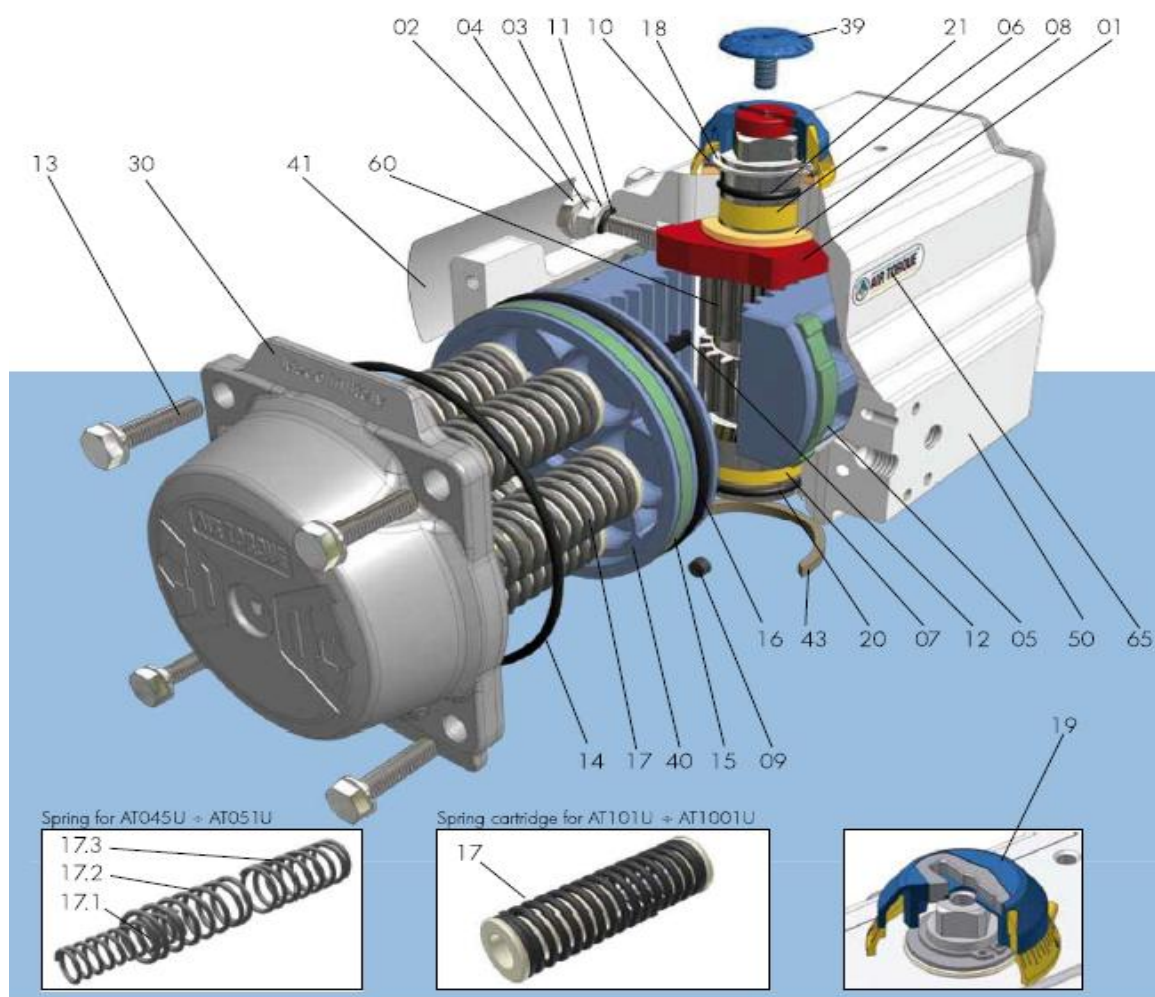


AT-XXXX Pneumatic cylinder

Standard specifications

Series	KAR-AT
Size	Double acting type : AT101U ~ AT1001U Spring return type : AT101U ~ AT1001U
Output type	Rotary stem motion type
Function	Double acting type, Spring return type
Output Torque	See Table 1.
Air supply	Double acting type : 300~500 kPa [gauge] Spring return type : 300, 400,500 kPa [gauge]
Air connection	See page 9 ~ 12
Angle rotation	90° or 60°
Performance	Hysteresis : Less than 1.5% of full stroke with positioner Linearity : Less than ±2.0% of full stroke with positioner
Ambient temperature	Standard type - 20 ~ + 60°C High temperature service (option) - 20 ~ + 100°C Low temperature service (option) - 40 ~ + 80°C
Materials	Cylinder : Aluminum alloy Piston : Aluminum alloy Drive shaft : A105 Nickel plated Piston-ring : NBR or VITON End-caps : Aluminum alloy Bolts & nuts : Stainless steel
Painting	Cylinder Alodur® (Special hard anodized) : Gray End cap Chromatized + Polyester casted : Gray
Accessories	E/P Positioner, P/P Positioner, Air-set, Booster relay, Air-valve, Limit switch, Solenoid valve, Lock-valve, Speed controller, Position transmitter, etc.
Option	Manual handwheel, Special air piping, Special air fitting, Low temperature service, High temperature service, Non-standard painting, etc.

Structure

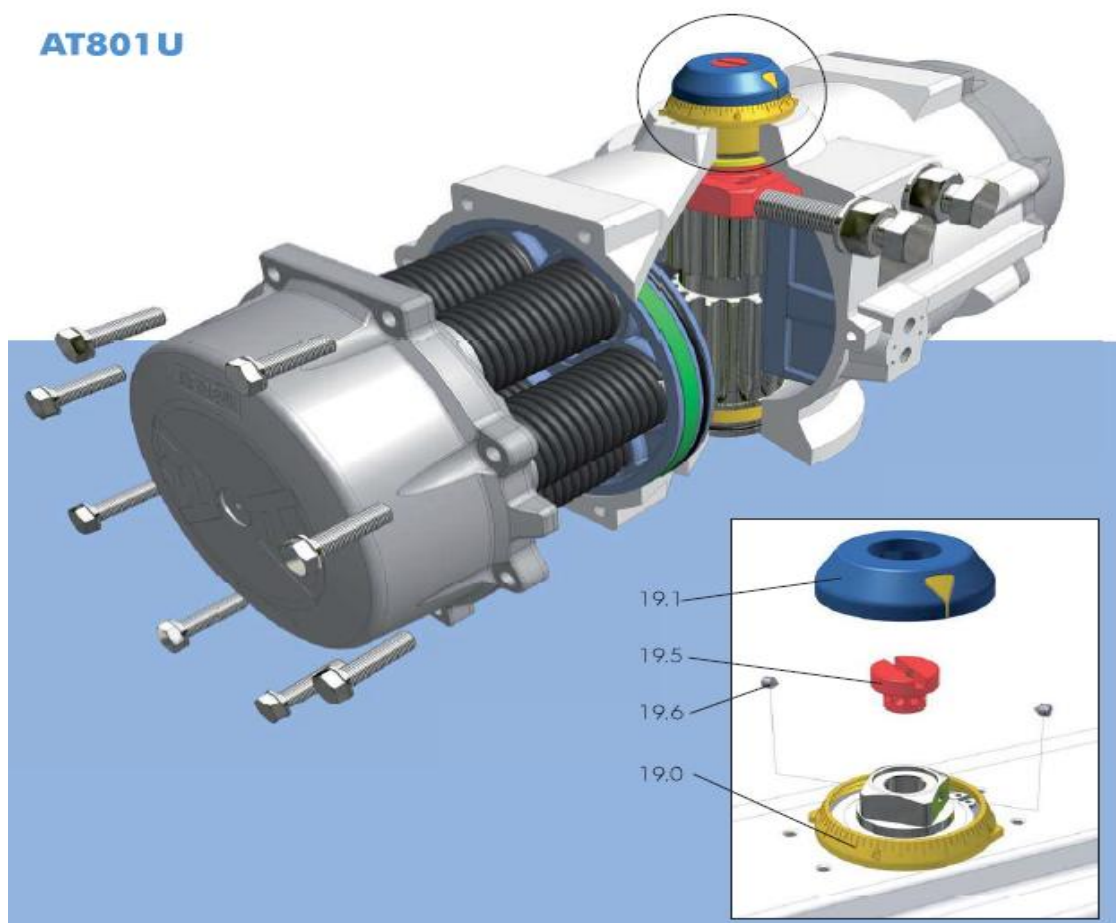


Part No.	Spare Parts	Unit q'ty / Note		Part description	Standard material
01		1	N/A for AT045U	OCTI-CAM(stop arrangement)	Stainless steel (Only for AT051U ~AT301U) Carbon steel / Nodular cast iron, zinc coated
02		2	N/A for AT045U	Stop cap screw	Stainless steel
03		2	N/A for AT045U	Washer	Stainless steel
04		2	N/A for AT045U	Nut(Stop screw)	Stainless steel
05	○	2		Bearing (Piston back)	High-grade polymers
		4	For AT1001U		
06	○	1		Bearing (Pinion top)	High-grade polymers
07	○	1		Bearing (Pinion Bottom)	High-grade polymers
08	○	2	1pc. For AT045U	Thrust bearing (Pinion)	High-grade polymers
09	○ □	2		Plug	M-NBR / silicones
09.1	○ □	2	For AT801U~AT1001U	"O"-ring plug	M-NBR / silicones
10		1		Thrust Washer (Pinion)	Stainless steel
11	○ □	2	N/A for AT045U	"O"-ring (Stop screw)	M-NBR
12		2	N/A for AT045U	Piston guide	High-grade polymers

○ : Parts included in complete spare parts kit

□ : Parts included in "O"-ring spare parts kit

AT801U

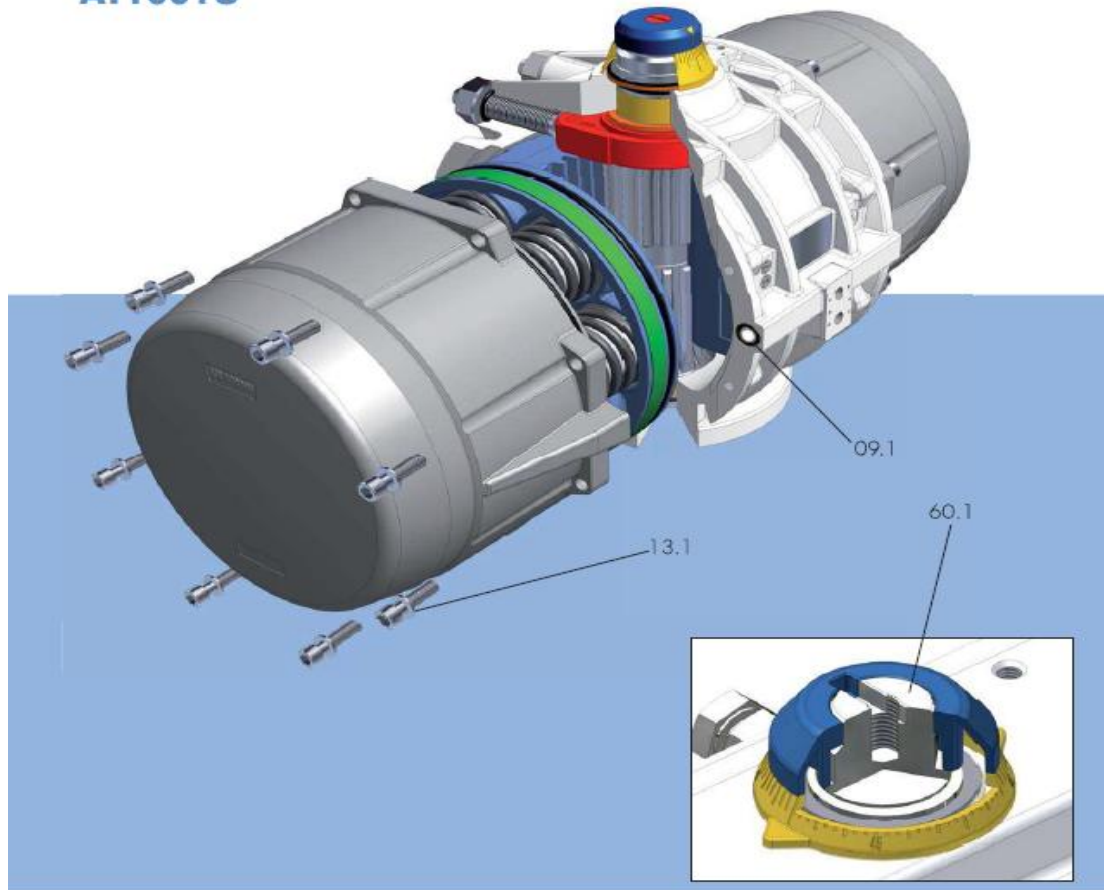


Part No.	Spare Parts	Unit q'ty / Note	Part description	Standard material
13		8	For AT045U ~AT651U	Cap screw (End cap)
		12	For AT701U ~AT751U	
		16	For AT801U ~AT1001U	
13.1		16	for AT1001U	Washer (cap screw end cap)
14	○ □	2		"O"-ring (end cap)
15	○	2		Bearing (piston head)
16	○ □	2		"O"-ring (piston)
17		Max.12	For AT101U ~AT1001U	Spring(cartridge)
17.1		Max.2	For AT045U	Spring
17.2		1Max.4	For AT045U	Spring
17.3			For AT045U	Spring
18		1		Spring clip(pinion)
19		1	For AT045U ~AT101U	Piston indicator
19.0		1		Graduated ring
19.1		1	For AT045U ~AT101U	Piston indicator
19.5		1	For AT045U ~AT101U	Top adapter
19.6		2	For AT045U ~AT101U	Hex. socket screw(Top A-adapter)

○ : Parts included in complete spart parts kit

□ : Parts included in "O"-ring spart parts kit

AT1001U



Part No.	Spare Parts	Unit q'ty / Note	Part description	Standard material
20	<input type="radio"/> <input type="checkbox"/>		"O"-ring (pinion bottom)	M-NBR
21	<input type="radio"/> <input type="checkbox"/>		"O"-ring (pinion top)	M-NBR
30			End cap	Pressure die cast Aluminum alloy, anodized and coated Cast aluminum alloy, anodized and coated (for AT1001U)
39			Cap screw(indicator)	Pressure die cast Aluminum alloy, anodized
40			Piston	Cast aluminum alloy, anodized (for AT1001U)
41			Actuator identification label	Polyester silver
42		Only for AT45U, AT751U and AT1001U	End cap label	Polyester silver
43			Spigot (only on request)	Extruded aluminum alloy, anodized
50			Body	Cast aluminum alloy, coated (for AT801U and AT1001U)
60			Drive shaft	Extruded aluminum alloy anodized (for AT45U and AT1001U)
60.1		Only for protection level "E" and "F"	Integral drive shaft	stainless steel, ENP
65			Plastic insert	High-grade polymers

☐ : Parts included in complete spare parts kit

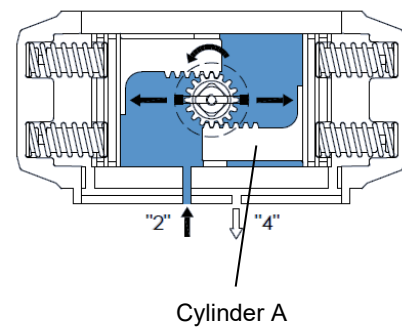
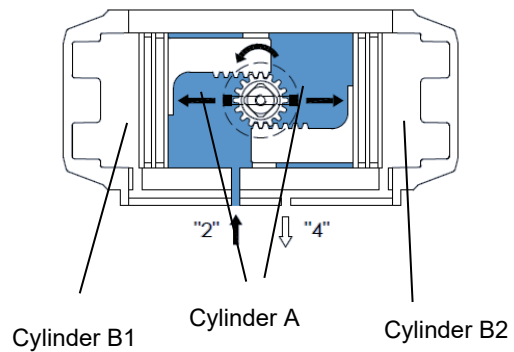
☐ : Parts included in "O"-ring spare parts kit

Output torque and approximate weight

Actuator Size code	Output Torque (Nm)				Approximate Weight (kg)			
	Double acting		Spring return		Double acting		Spring return	
	Air supply kPa(gauge)		Air supply kPa(gauge)		Without handwheel	With handwheel	Without handwheel	With handwheel
	400	500	400	500				
AT101U	23.5	29.3	8.9	11.1	1.6	9.1	1.8	9.2
AT201U	46.5	58.2	17.7	22.1	2.7	10.2	3	10.7
AT251U	73.2	91.5	27	33.8	3.8	11.3	4.4	11.9
AT301U	106	133	40.5	50.7	5.4	12.4	6	13.6
AT351U	172	215	65.6	82	8.5	15.5	9.4	16.9
AT401U	222	277	84	105	10.2	17.2	12.4	19.6
AT451U	348	435	132	165	14.5	26.5	17.1	31.1
AT501U	454	567	180	224	19.8	31.8	21.4	37
AT551U	613	766	234	292	25	47	32.7	62.6
AT601U	851	1064	340	425	35.5	57.5	43.6	76.1
AT651U	1430	1787	577	721	53	95	69	118
AT701U	1556	2594	793	1053	83	125	95.5	156
AT751U	2872	3590	1125	1843	118		150	
AT801U	3604	4504	1623	2524	127		169	
AT1001U	6671	8339	2711	4379	170		238	

Cylinder volume

Actuator Size	Double acting type			Spring return type
	Volume (ℓ)			Volume (ℓ)
	A	B	A+B	A
AT101U	0.16	0.26	0.42	0.16
AT201U	0.31	0.49	0.8	0.31
AT251U	0.51	0.78	1.29	0.51
AT301U	0.71	1.11	1.82	0.71
AT351U	1.19	1.80	2.99	1.19
AT401U	1.54	2.34	3.88	1.54
AT451U	2.41	3.78	6.19	2.41
AT501U	3.14	4.92	8.06	3.14
AT551U	4.26	6.89	11.15	4.26
AT601U	5.94	9.46	15.4	5.94
AT651U	10.0	15.2	25.2	10.0
AT701U	14.5	21.4	35.9	14.5
AT751U	20	33	53	20
AT801U	25	40	65	25
AT1001U	49	84	133	49



1) Cylinder Volume

B = Cylinder B1 + Cylinder B2

A+B ---- One Cycle for Piston

Valve Shut → Valve Open → Valve Shut or

Valve Open → Valve Shut → Valve Open

2) Air consumption

Double acting type

$$V = (A+B) [(P+101.3)] \div 98]M$$

Spring return type

$$V = A[(P+101.3) \div 98]M$$

V : Air consumption Nℓ / min

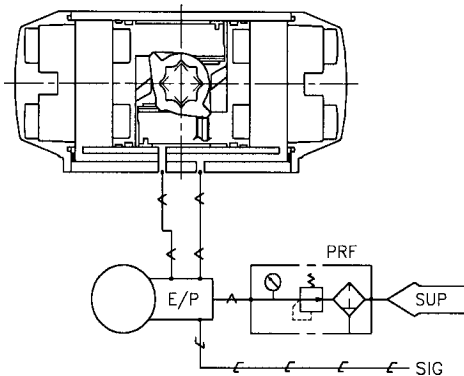
P : Air supply kPa [gauge]

M : Action cycle / min

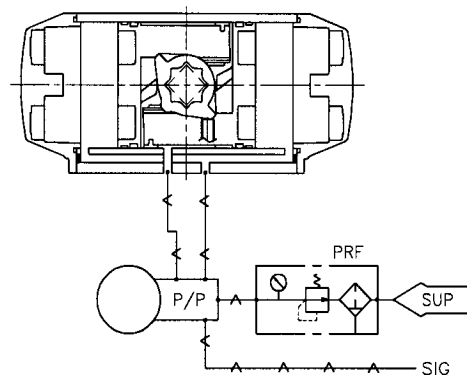
Schematic diagram (actuator is tip view)

1. Modulation by positioner : Air Failure ---- Free position

1A. Double acting type with E/P

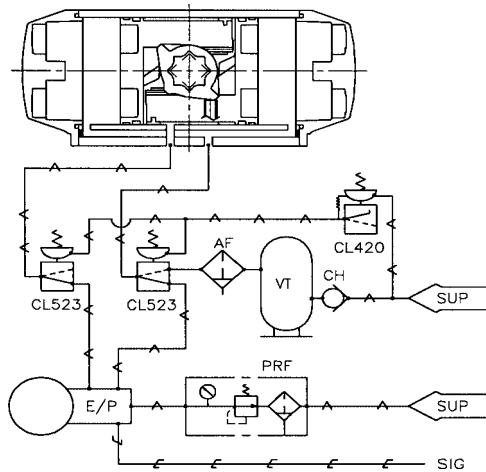


1B Double acting type with P/P

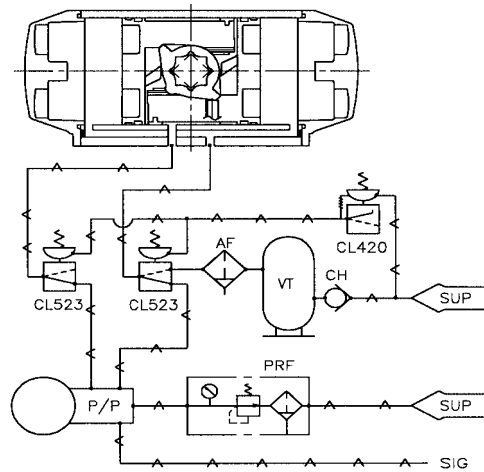


2. Modulation by positioner : Air Failure ---- Clockwise Drive shaft Rotation

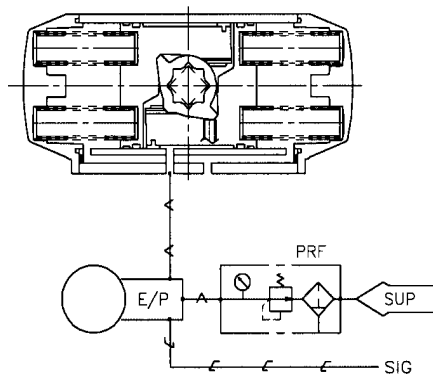
2A. Double acting type with E/P



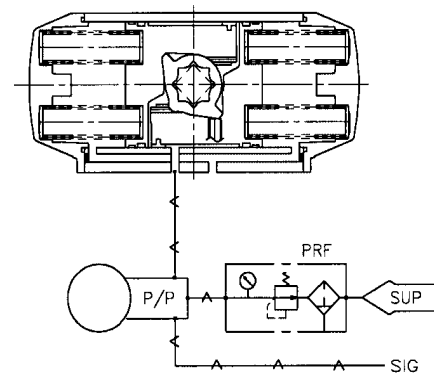
2B Double acting type with P/P



2C. Spring return type with E/P

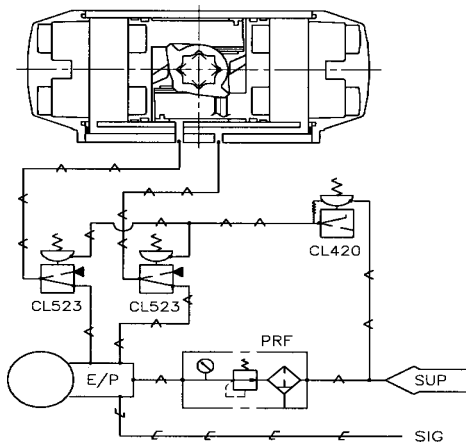


2D Spring return type with P/P

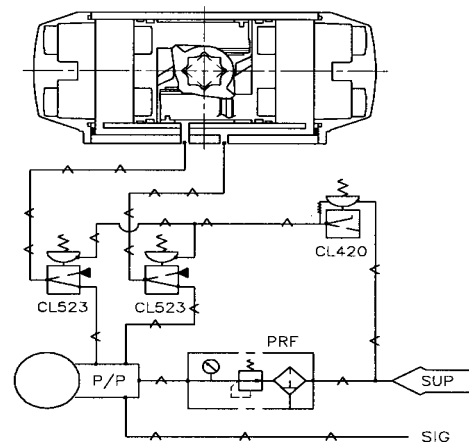


3. Modulation by positioner : Air Failure ---- Air failure **Lock**

3A. Double acting type with E/P



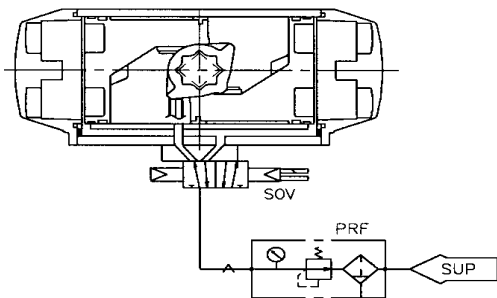
3B Double acting type with P/P



4. On-Off control by solenoid valve : Air Failure ---- Air failure **Free**

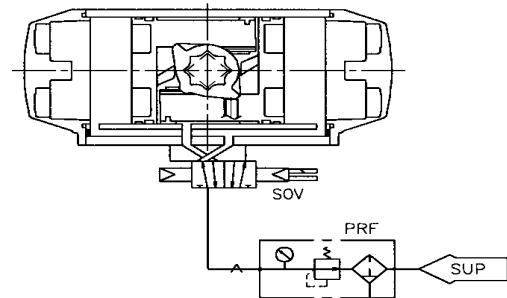
4A. Double acting type

* SOV. Energized : **Clockwise** drive shaft rotation rotation



4B Double acting type

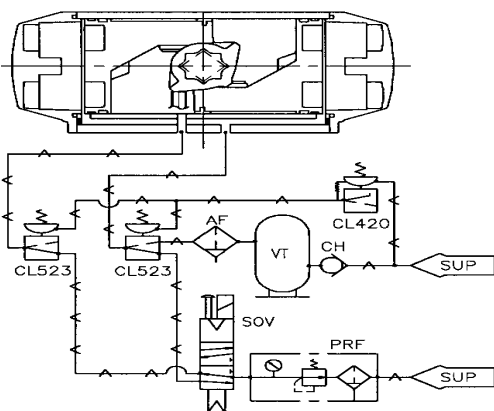
* SOV. Energized : **Counterclockwise** drive shaft rotation



5. On-Off control by solenoid valve : Air Failure ---- Clockwise drive shaft rotation

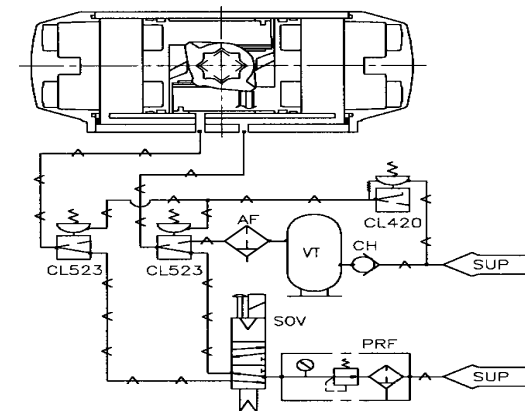
5A. Double acting type

* SOV. Energized : **Clockwise** drive shaft rotation



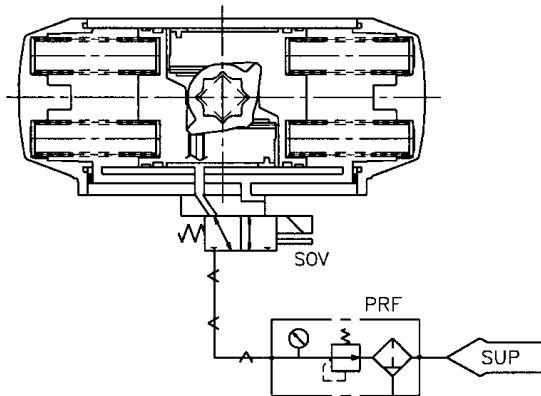
5B Double acting type

* SOV. Energized : **Counterclockwise** drive shaft rotation



5C. Spring return type

* SOV. Energized : **Clockwise** drive shaft rotation

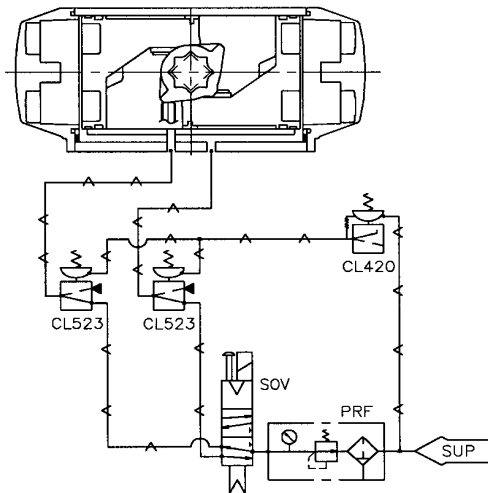


- For SOV. Energized to **counterclockwise** drive shaft rotation. Please rearrange the direction of piston as opposite side

6. On-Off control by solenoid valve : Air Failure ---- Air failure position **Lock**

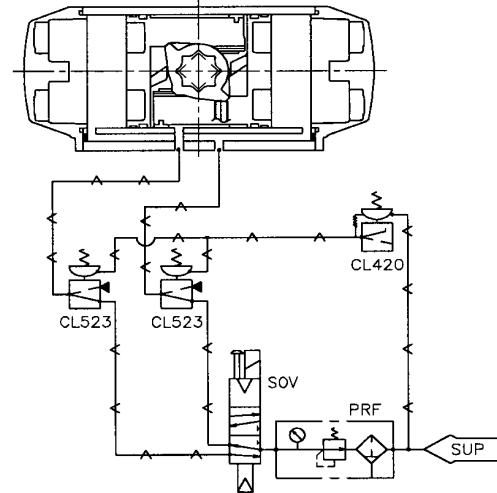
6A. Double acting type

* SOV. Energized : **Clockwise** drive shaft rotation



6B Double acting type

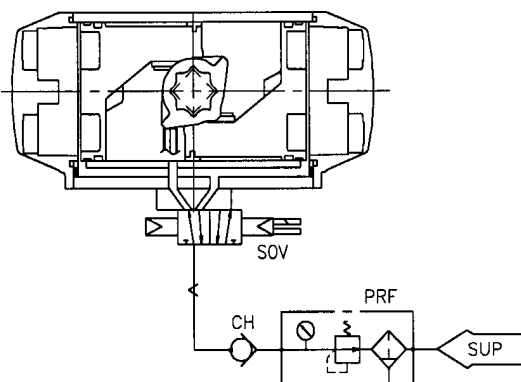
* SOV. Energized : **Counterclockwise** drive shaft rotation



7. On-Off control by solenoid valve : Air Failure ---- Air failure position **Lock**

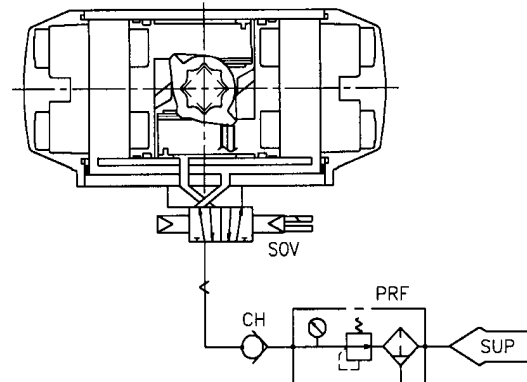
7A. Double acting type

* SOV. Energized : **Clockwise** drive shaft rotation



7B Double acting type

* SOV. Energized : **Counterclockwise** drive shaft rotation

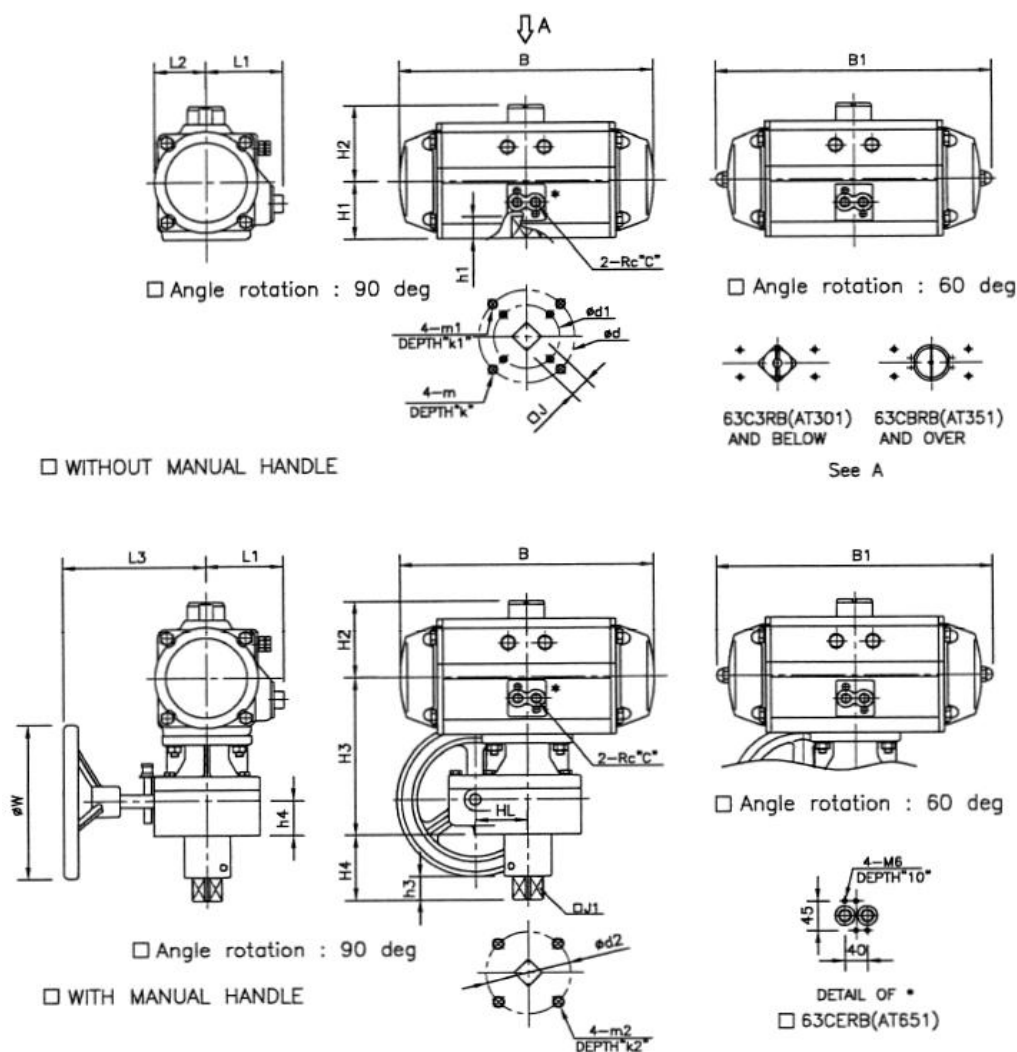


KAR Cylinder Code numbering

CODE NO.

[illegible]

Pneumatic cylinder Actuator – Double acting Cylinder



unit : mm

Size	B	B1	H1	H2	L1	L2	h1	d	m	k	d1	m1	k1	J	C	With manual handle											
																H3	H4	L3	h3	h4	d2	m2	k2	J1	HL	W	
AT101	160	180	43	63	65	36	16	-	-	-	50	M6	9	14	1/4	168	72	140	20	38	90	M12	12	12	56	155	
AT201	215	240	51	71	70	43	19	70	M8	12	50	M6	9	17	1/4	175	72	140	20	38	90	M12	12	16	56	155	
AT251	250	275	58	78	75	50	19	70	M8	12	50	M6	9	17	1/4	183	72	140	20	38	90	M12	12	16	56	155	
AT301	270	305	64	84	85	56	24	102	M10	15	70	M8	12	22	1/4	174	72	140	25	38	90	M12	12	21	56	155	
AT351	315	355	73	103	95	64	24	102	M10	15	70	M8	12	22	1/4	183	72	140	25	38	90	M12	12	21	56	155	
AT401	345	385	79	109	100	70	29	102	M10	15	70	M8	12	27	1/4	189	72	140	25	38	90	M12	12	26	56	155	
AT451	410	455	89	119	110	80	29	125	M12	18	102	M10	15	27	1/4	217	87	155	32	43	110	M16	19	26	69	205	
AT501	440	485	98	128	120	88	29	125	M12	18	102	M10	15	27	1/4	226	87	155	32	43	110	M16	19	26	69	205	
AT551	490	540	112	159	125	99	38	140	M16	24	-	-	-	36	1/4	258	102	225	38	53	125	M16	22	36	90	305	
AT601	545	600	122	173	130	110	38	140	M16	24	-	-	-	36	1/4	268	102	225	38	53	125	M16	22	36	90	305	
AT651	625	685	151	198	150	131	38	165	M20	30	-	-	-	46	3/8	317	127	355	50	62	180	M20	30	50	106	400	

Note :
For AT101~AT251, a spacer is inserted between the actuator and the manual override gearbox.

DRAWING No.

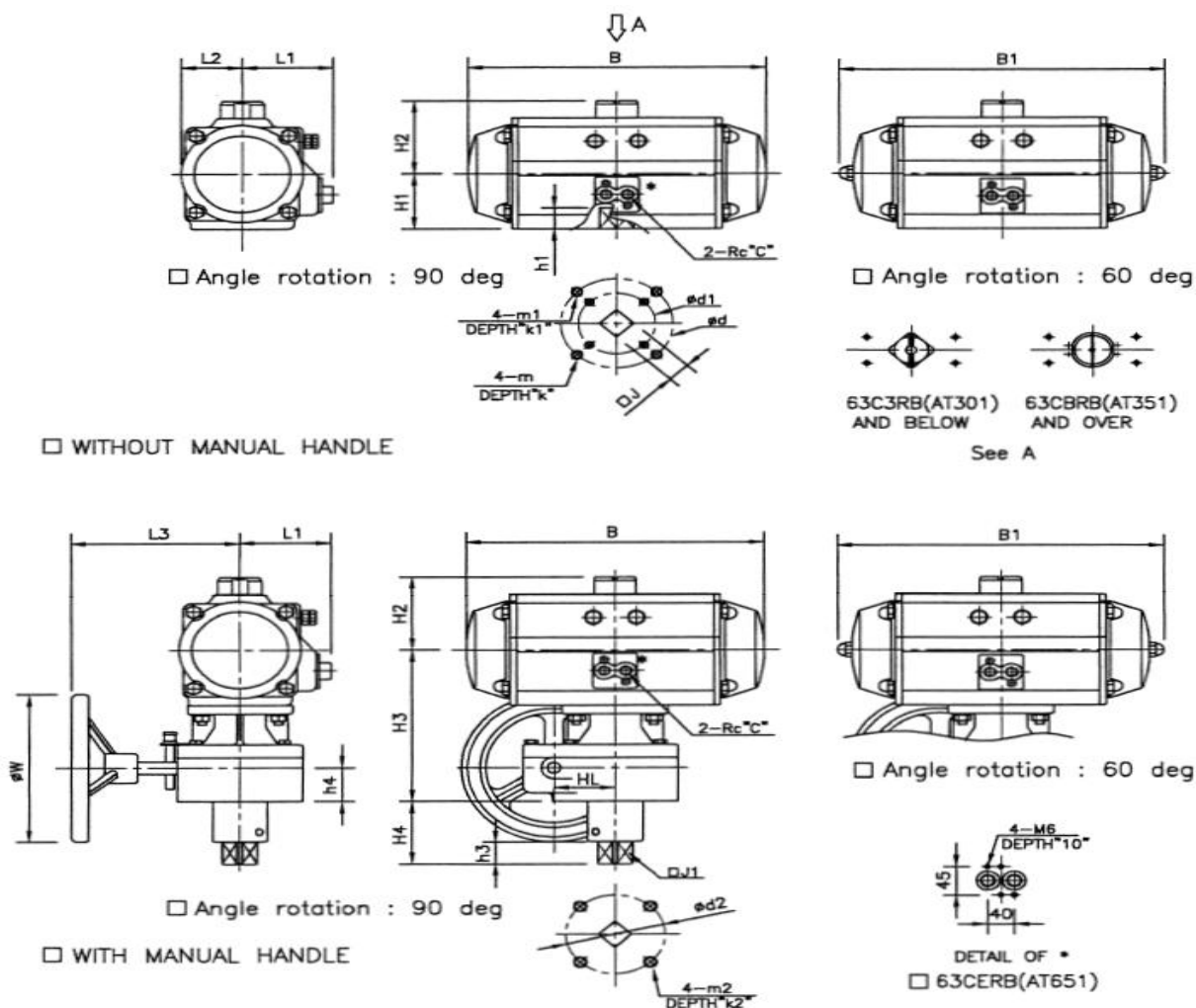
KAR-AT-W-01

REV.

A

KOCON

Pneumatic cylinder Actuator – Spring return Cylinder



unit : mm

Size	B	B1	H1	H2	L1	L2	h1	d	m	k	d1	m1	k1	J	C	With manual handle										
																H3	H4	L3	h3	h4	d2	m2	k2	J1	HL	W
AT101	160	180	43	63	65	36	16	-	-	-	50	M6	9	14	1/4	168	72	140	20	38	90	M12	12	12	56	155
AT201	215	240	51	71	70	43	19	70	M8	12	50	M6	9	17	1/4	175	72	140	20	38	90	M12	12	16	56	155
AT251	250	275	58	78	75	50	19	70	M8	12	50	M6	9	17	1/4	183	72	140	20	38	90	M12	12	16	56	155
AT301	270	305	64	84	85	56	24	102	M10	15	70	M8	12	22	1/4	174	72	140	25	38	90	M12	12	21	56	155
AT351	315	355	73	103	95	64	24	102	M10	15	70	M8	12	22	1/4	183	72	140	25	38	90	M12	12	21	56	155
AT401	345	385	79	109	100	70	29	102	M10	15	70	M8	12	27	1/4	189	72	140	25	38	90	M12	12	26	56	155
AT451	410	455	89	119	110	80	29	125	M12	18	102	M10	15	27	1/4	217	87	155	32	43	110	M16	19	26	69	305
AT501	440	485	98	128	120	88	29	125	M12	18	102	M10	15	27	1/4	226	87	155	32	43	110	M16	19	26	69	305
AT551	490	540	112	159	125	99	38	140	M16	24	-	-	-	36	1/4	258	102	225	38	53	125	M16	22	36	90	400
AT601	545	600	122	173	130	110	38	140	M16	24	-	-	-	36	1/4	268	102	225	38	53	125	M16	22	36	90	400
AT651	625	685	151	198	150	131	38	165	M20	30	-	-	-	46	3/8	317	127	355	50	62	180	M20	30	50	106	630

Note :
For AT101~AT251, a spacer is inserted between the actuator and the manual override gearbox.

DRAWING No.

KAR-AT-SR-01

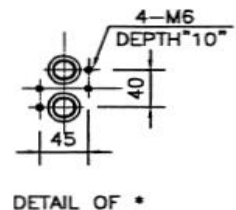
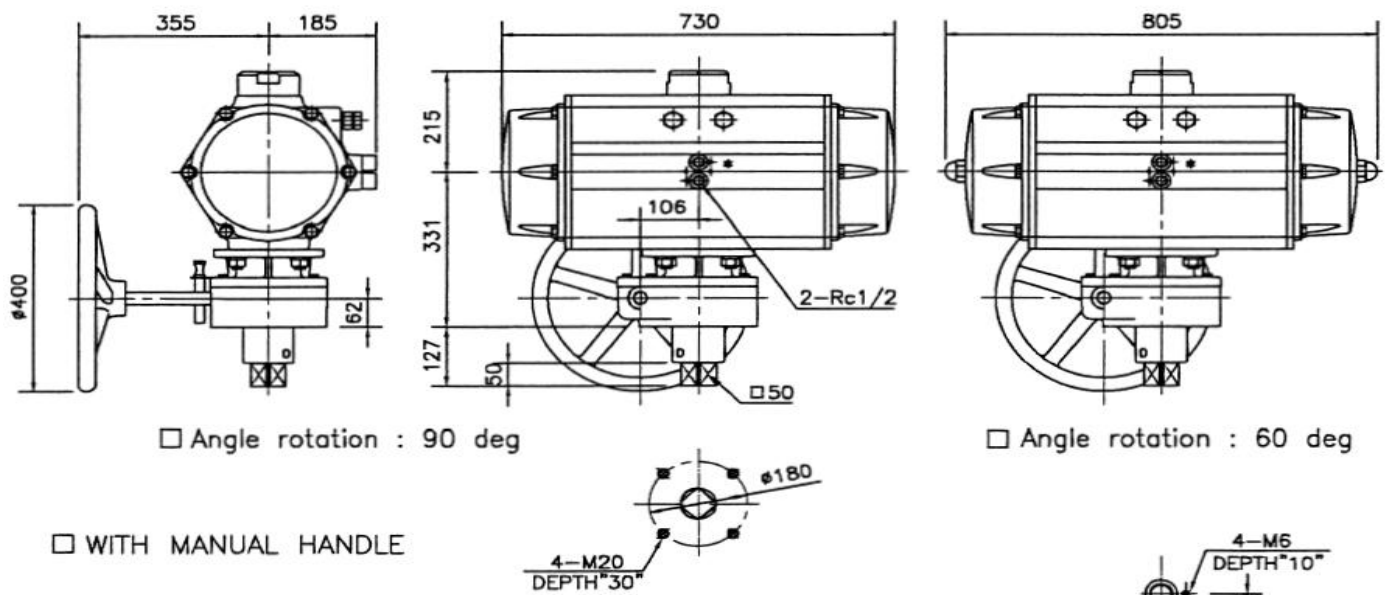
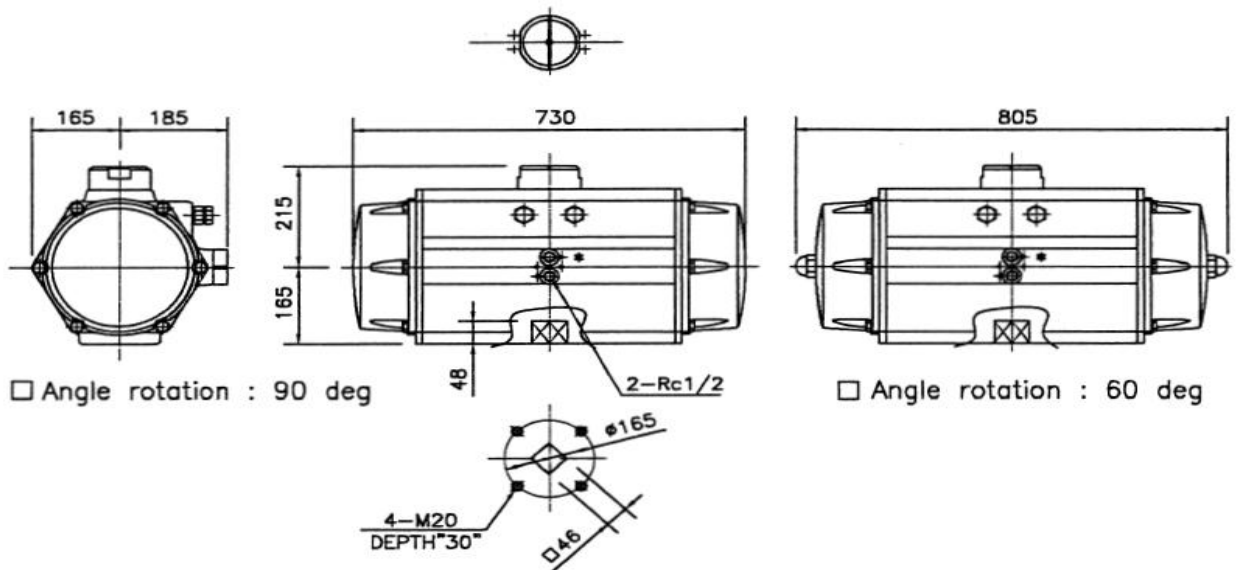
REV.

A

KOCON

Pneumatic cylinder Actuator – Double acting Cylinder

Unit : mm



Note :

DRAWING No.

KAR-AT701U-W-02

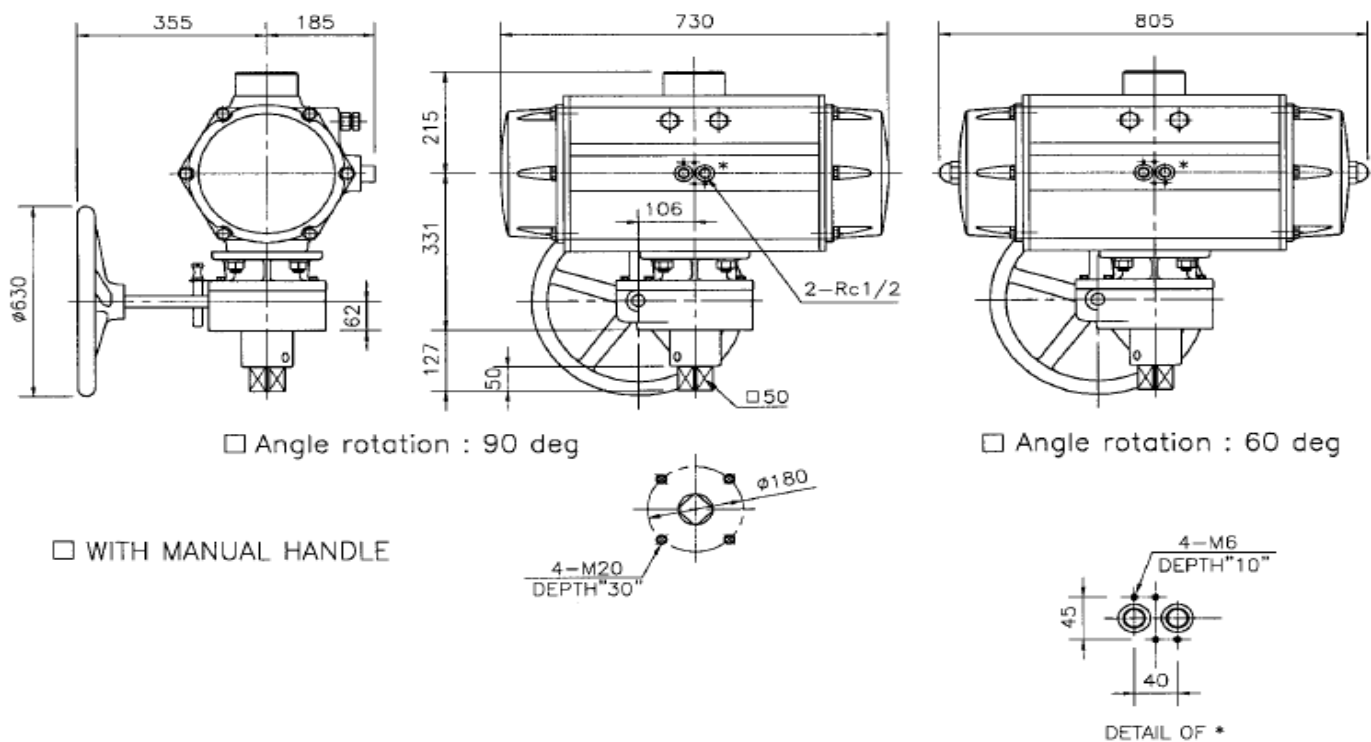
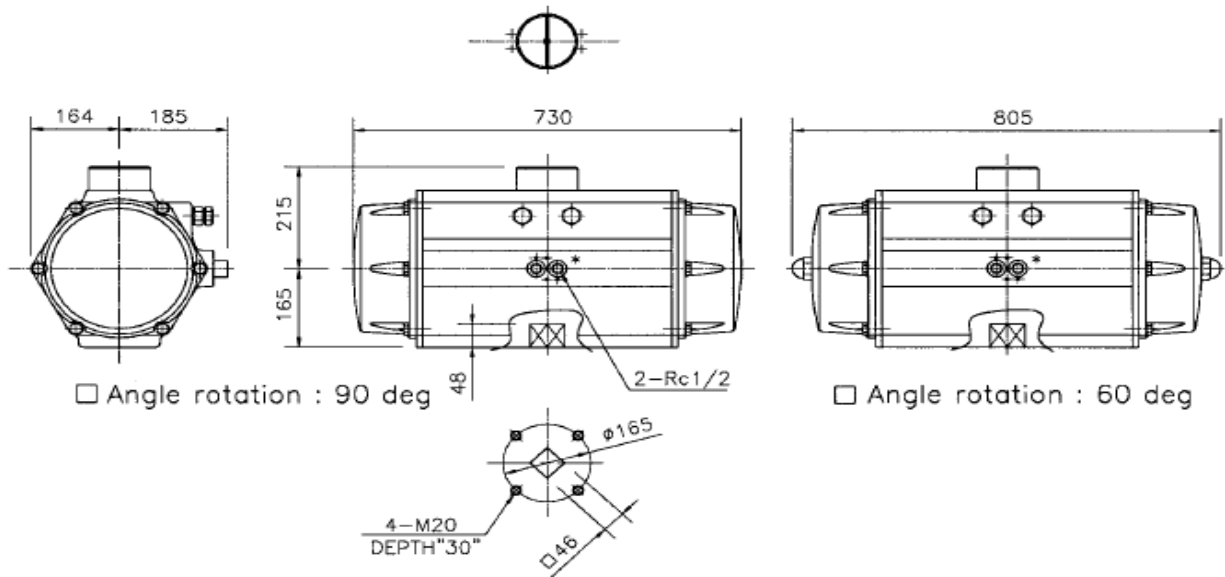
REV.

A

KOCON

Pneumatic cylinder Actuator – Spring return Cylinder

Unit : mm



Note :

DRAWING No.

KAR-AT701U-SR-02

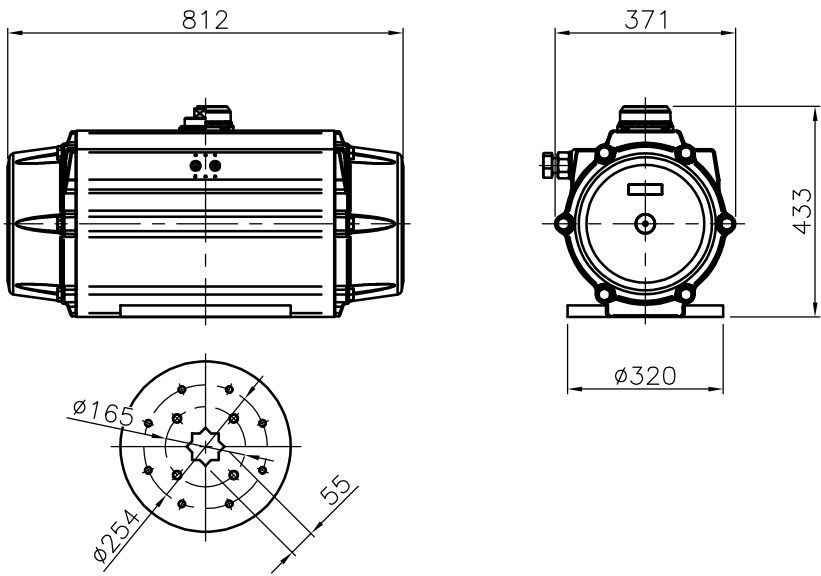
REV.

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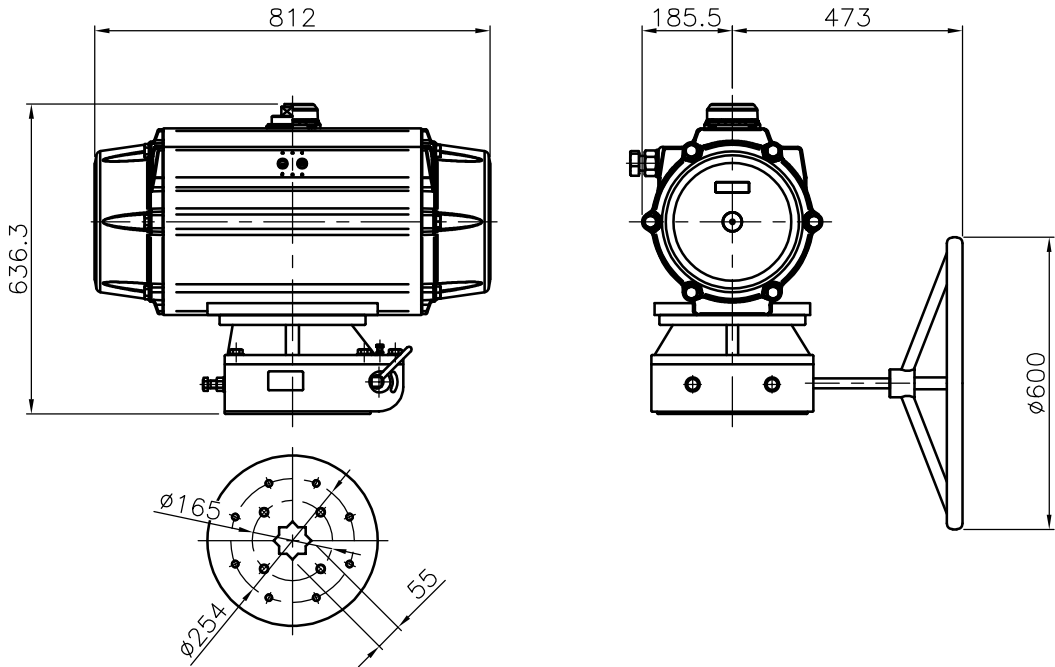
KOCON

Pneumatic cylinder Actuator

Unit : mm



□ WITHOUT MANUAL HANDLE

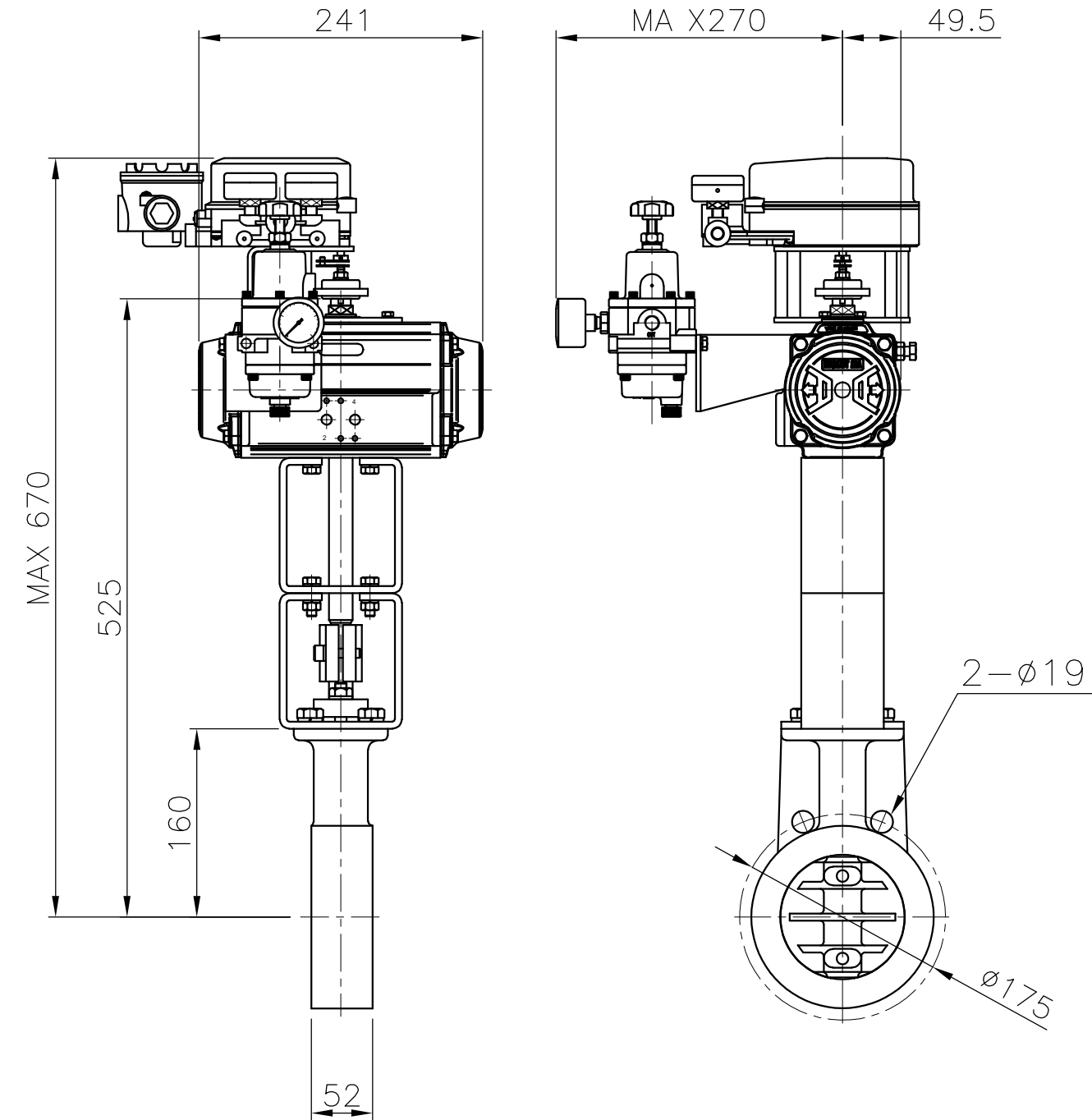


□ WITH MANUAL HANDLE

NOTE

DRAWING NO	
KAR-AT751U-W-02	
REV	KOCON
A	

BUTTERFLY—VALVE

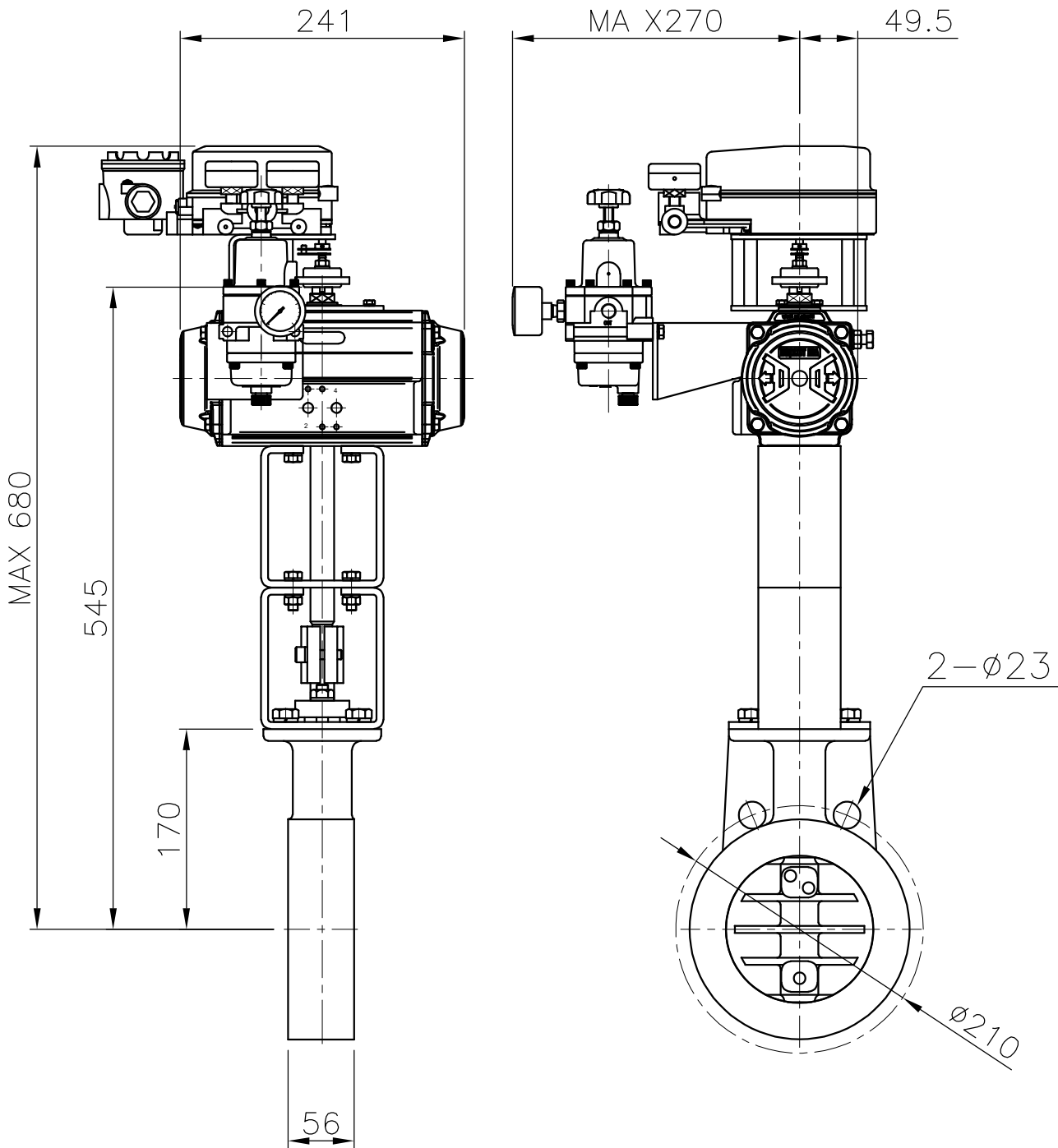


NOTE

	2025.06.17	FOR APPROVAL				
REV	DATE	DESCRIPTION	R'BY	CH	APP	

DRAWING NAME	4" JIS 10KRF ASSEMBLY DWG
DRAWING NO	KAR-AT251U-0001
KOCON KOCON CO., LTD.	

BUTTERFLY—VALVE



NOTE

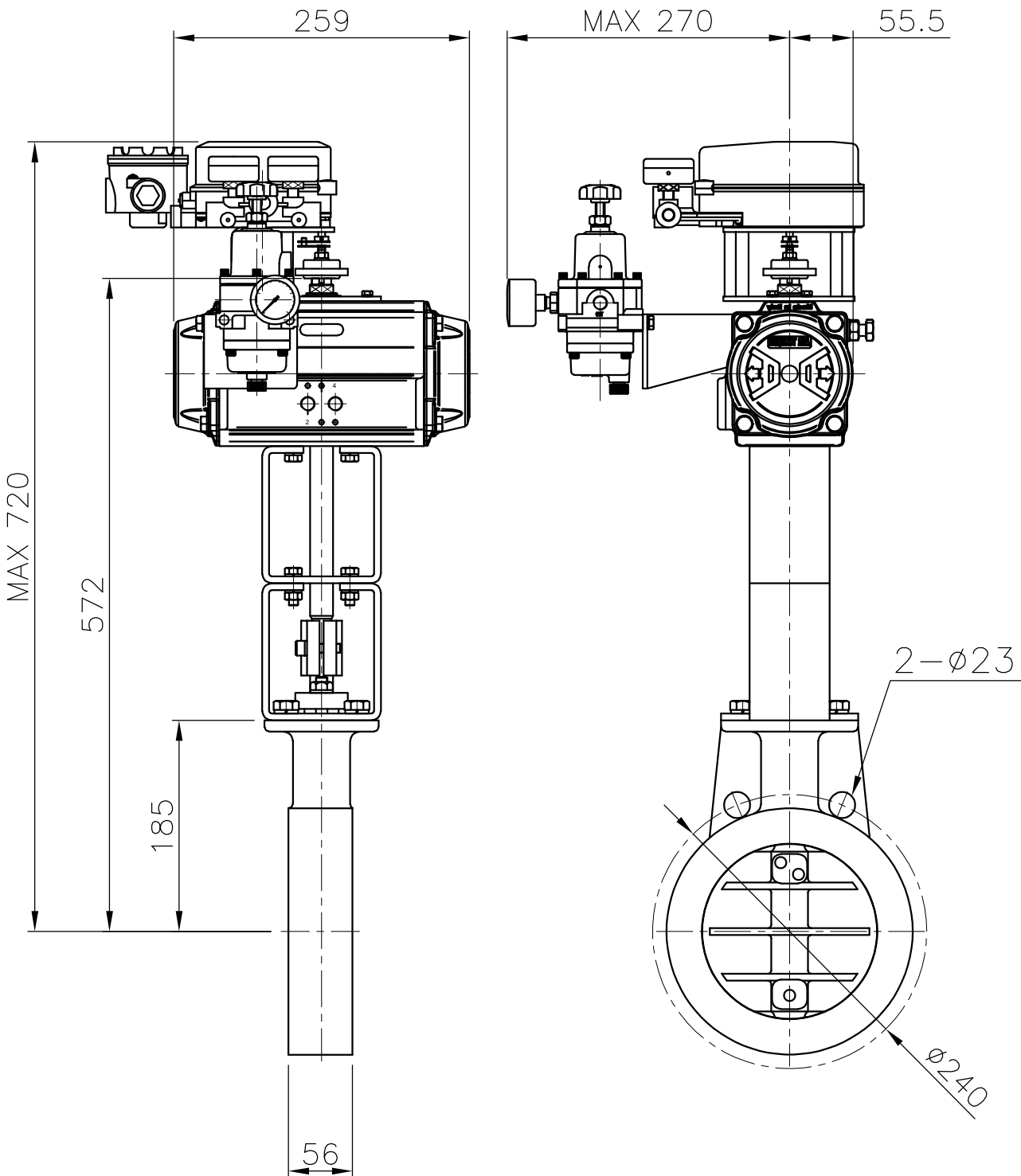
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REV	DATE	DESCRIPTION	R'BY	CH	APP

DRAWING NAME 5" JIS 10KRF ASSEMBLY DWG

DRAWING NO KAR-AT251U-0002

KOCON KOCON CO., LTD.

BUTTERFLY—VALVE



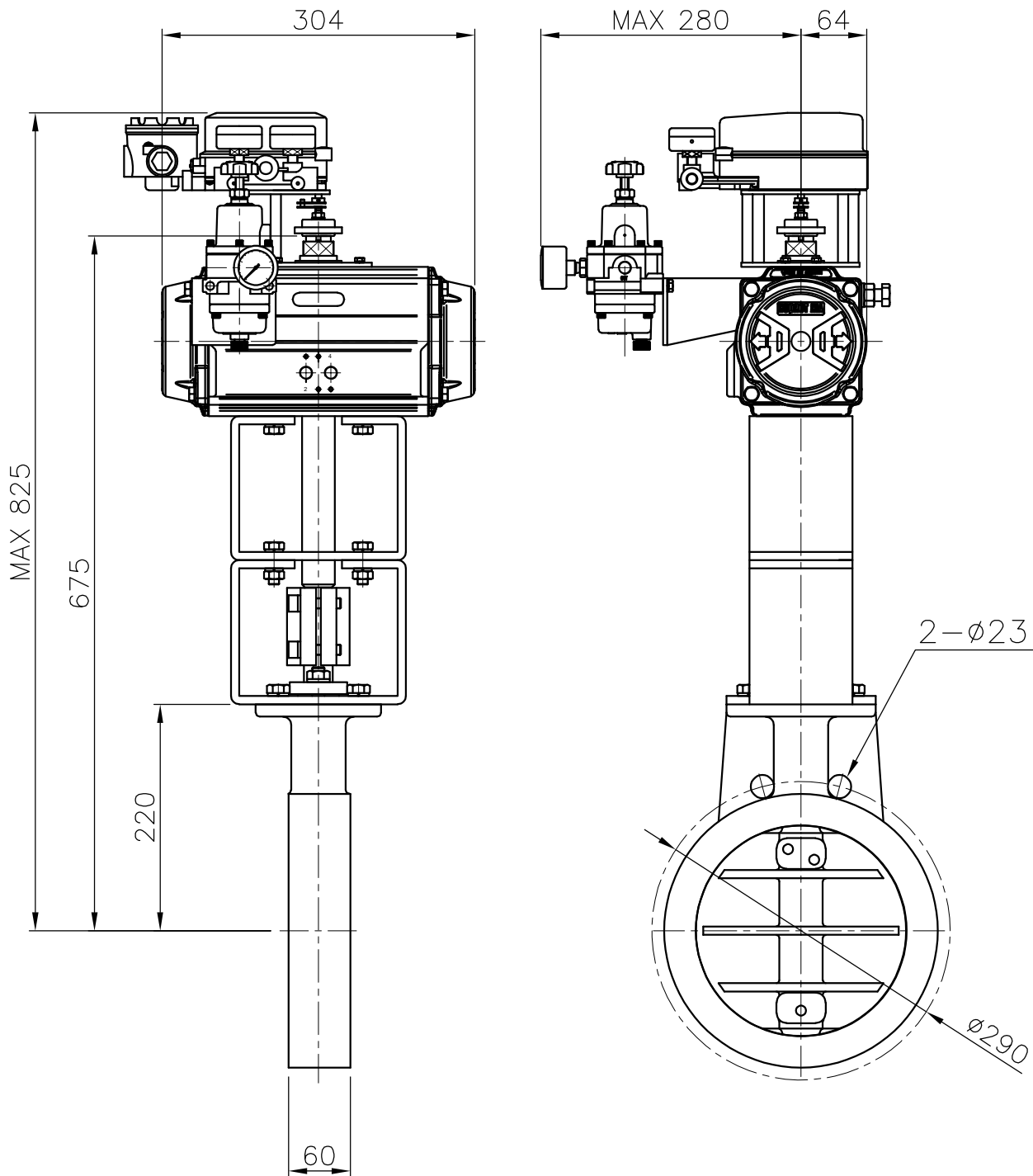
NOTE

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△	2025.06.17	FOR APPROVAL	<i>M</i>		<i>MM</i>
REV	DATE	DESCRIPTION	R'BY	CH	APP

DRAWING NAME 6" JIS 10KRF ASSEMBLY DWG
DRAWING NO KAR-AT301U-0001

KOCON KOCON CO., LTD.

BUTTERFLY—VALVE



NOTE

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△					
△	2025.06.17	FOR APPROVAL	<i>[Signature]</i>		<i>[Signature]</i>
REV	DATE	DESCRIPTION	R'BY	CH	APP

DRAWING NAME 8" JIS 10KRF ASSEMBLY DWG
DRAWING NO KAR-AT351U-0001

KOCON KOCON CO., LTD.

MEMO :

KOCON

Specifications are subject to change without notice.

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