

Linear stem motion type Diaphragm actuators

MODEL: KAL-D Series



LINEAR STEM MOTION TYPE PNEUMATIC DIAPHRAGM ACTUATORS

Model: KAL-D Series

General

The model **KAL-D**,

This Series provides high-performance, high-power diaphragm actuators of multi-spring type that are compact and light.

Receiving pneumatic or electric signals, the unit balances the force created when diaphragm is air-pressured through positioner and the force of compressed spring, so that the output shaft is controlled and placed at a set position.

Control of position by pneumatic signals(20~100kPa) directly applied on diaphragm is also possible.

Combination with Positioner provides high accuracy position control.



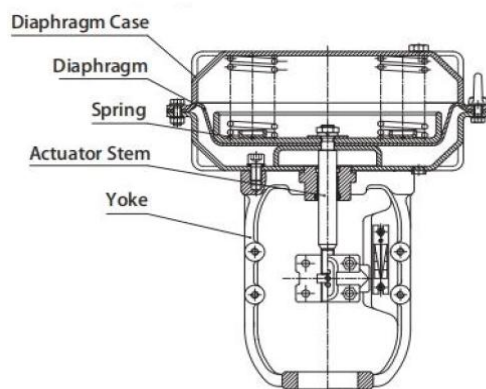
KAL Pneumatic Actuator (KAL-D & KAL-C)

Standard specifications

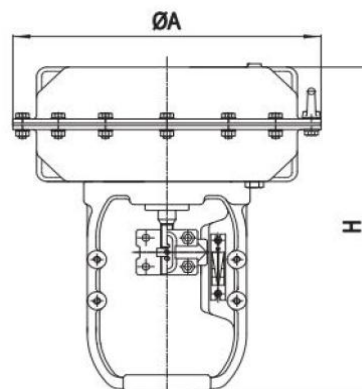
Series	KAL-D, KAL-C
Size	220, 270, 350, 450, 560, 650
Output type	Linear stem motion type
Function	DA : Air to output shaft down RA : Air to output shaft Up
Output Torque	See Table 1.
Stroke & Volume	See Table 1
Air supply	Diaphragm type : 0.35 ~ 4.0 Mpa(G) Linear Cylinder : 0.4~0.5 MPa(G)
Air connection	1/4" PT, 1/2", 3.8"
Performance	See Table 2
Ambient temperature	Standard type - 10 ~ + 70°C High temperature service (option) 0 ~ + 100°C Low temperature service (option) - 40 ~ + 40°C
Materials	Diaphragm Case : Q235(Equivalent SS400) Diaphragm : EPDM Spring : SWOCS-V Actuator Stem : SS304 Yoke : Ductile iron
Painting	Standard : Green
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

KAL-D series



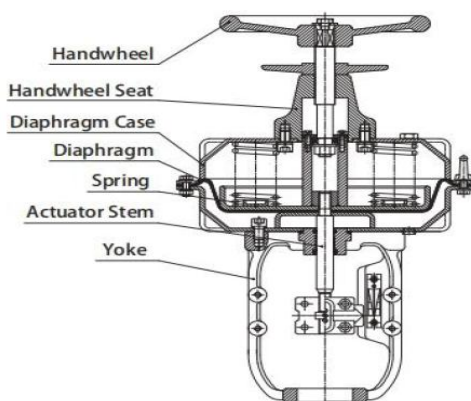
RA(Reverse Action)



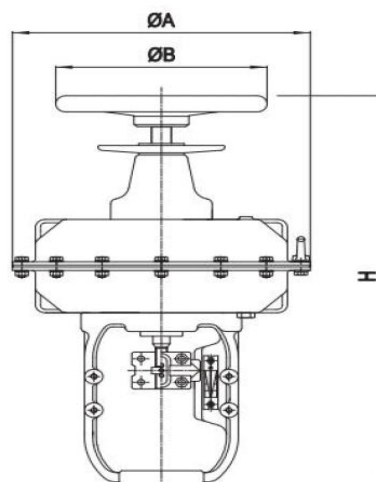
DA(Direct Action)

Model	Travel(mm)	ΦA (mm)	H (mm)	Active Area(cm ²)	Weight (kg)
KALD 220	15	220	295	160	7.5
KALD 270	25	267	345	241	13.5
KALD 350	38	350	415	491	24
KALD 450	50	450	520	780	50
	75	470	530	855	64
KALD 560	100	560	710	1453	72

KAL-D series (with handle)



RA(Reverse Action)



DA(Direct Action)

Model	Travel(mm)	ΦA (mm)	ΦB (mm)	H (mm)	Active Area(cm ²)	Weight (kg)
KALD 220	20	220	200	451	160	11
KALD 270	20~30	267	250	535	241	19
KALD 350	20~40	350	300	655	491	31
KALD 450	50~80	450	400	840	780	65
		470	400	860	855	79
KALD 560	100	560	400	1175	1453	104

Table 1 Output force & Actuator Volume, Stroke

Model	Spring Range (Mpa)	Air supply (Mpa)	Travel (mm)	Volume (cm3)	Force (N)
KALD 220	0.08 ~ 0.36	0.4	20	700	1,480
KALD 270	0.14~0.28	0.4	20	1,000	3,155
	0.14~0.35	0.4	30		
KALD 350	0.12~0.21	0.3	20	3,000	5,390
	0.12~0.26	0.3	30		
	0.12~0.30	0.35	40		
KALD 450	0.10~0.23	0.3	50	6,000	8,486
	0.10~0.26	0.3	60		
	0.10~0.30	0.35	80	10,000	
KALD 560	0.08~0.24	0.3	100	16,000	11,858

Table 2 Performance (Hysteresis, Linearity)

Performance		Spring range (Mpa)	
		0.02~0.1	0.12 ~ 0.3
Hysteresis Error	Without positioner	3.0%	5.0%
	With positioner	1.0%	1.0%
Linearity	Without positioner	±4.0%	±2.0%
	With positioner	±1.0%	±1.5%

Note) When no positioner provided, performance varies by the packing used.

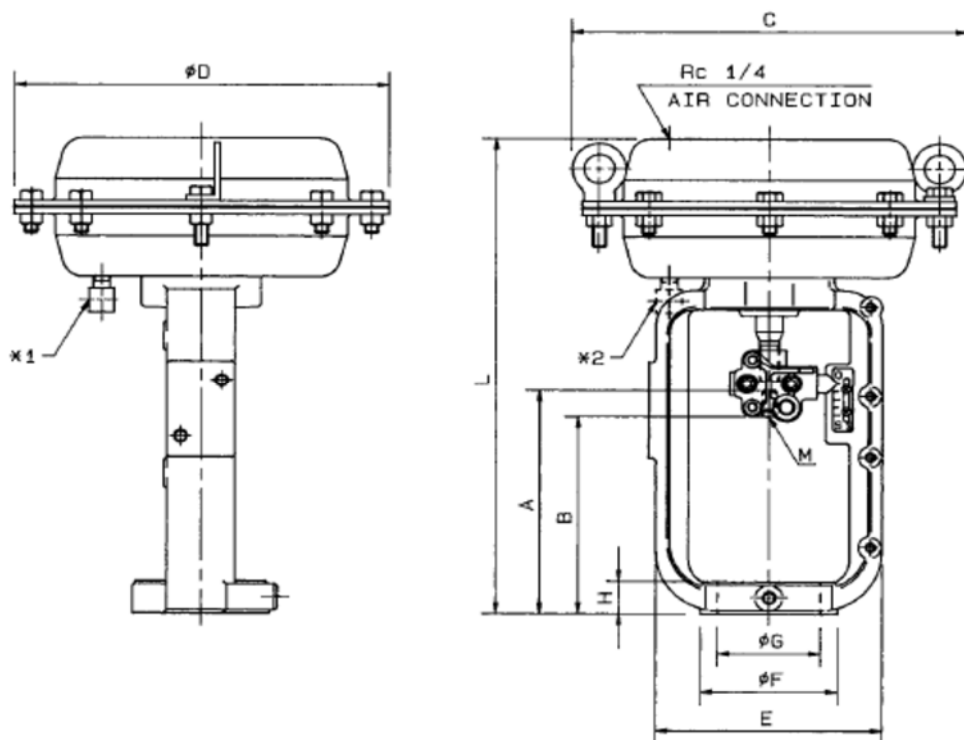
KAL Linear diaphragm actuator code numbering

CODE NO.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

Series No	K	A	L													
Size				D	1											220
				D	2											270
				D	3											350
				D	4											450
				D	5											560
				D	6											650
				D	Z											Other
Output type				L												Linear Stem Motion type
Style code					A											Model change code
Action						S										Spring return (Standard type) - 10~ + 70°C
						H										Spring return (High Temp. type) 0~ + 100°C
						L										Spring return (Low Temp. type) - 40~ + 40°C
Air supply							1									Set pressure : 0.3 Mpa [A, Gauge]
							2									Set pressure : 0.35 Mpa [A, Gauge]
							3									Set pressure : 0.4 Mpa [A, Gauge]
Manual override							N									None
							T									Top handle type
							S									Side handle type
Option							N									None
							I									Adjustable travel stopper 0 ~ 100%
							A									Adjustable travel stopper 100 ~ 0%
							X									Special
Control signal							1									0.2 ~ 1.0 kgf/cm2G
							4									4 ~ 20 mA DC
							E									20 ~ 100 kPa [A, Gauge]
							Z									None
Drive shaft rotation							1									Air to shaft down
							2									SOV energized : Shaft down
							3									Air to Shaft up
							4									SOV energized : Shaft up
							X									Special
Emergency action							1									No requirement
R : Clockwise turn							2									Spring return lto shaft down
L : Counter-clockwise turn							3									Spring return lto shaft up
SOV : Solenoid valve							4									Air fail shaft lock
PS/CUT : Air valve signal out							5									Power fail shaft lock
Units of customer air supply							1			kgf/cm2G	2		bar G	X		Special
							3			kp G	4		Psi G			
Stroke							1			20mm	4		50mm	7		100mm
							2			30mm	5		60mm	Z		Special
							3			40mm	6		80mm			

Diaphragm Actuator – Direct action



*1 Air exhaust position for $\phi 220$ & $\phi 270$

*2 Air exhaust position for $\phi 350$ & $\phi 450$

Dimensions

unit : mm

Size	ϕD	C	ϕF	L	A	B	E	ϕG	H	M
220	220	231	80	297	139	120	130	60	20	M9 x 1 M12 x 1
270	270	283	80	395	149	130	160	60	20	M9 x 1 M12 x 1
350	350	367	80	430	160	140	160	60	20	M12 x 1
450	450	472	100	495	205	175	190	80	3000	M16 x 1.5

Note :

DRAWING No.

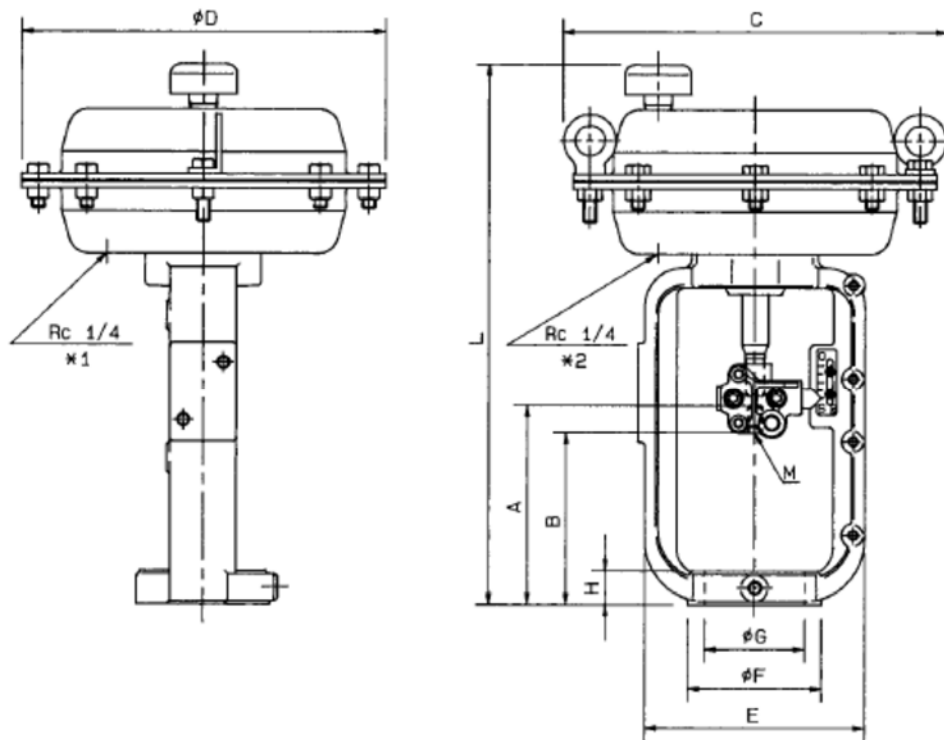
KAL-D-DN-01

REV.

A

KOCON

Diaphragm Actuator – Reverse action



*1 Air exhaust position for $\phi 220$ & $\phi 270$

*2 Air exhaust position for $\phi 350$ & $\phi 450$

Dimensions

unit : mm

Size	ϕD	C	ϕF	L	A	B	E	ϕG	H	M
220	220	231	80	337	119	100	130	60	20	M9 x 1 M12 x 1
270	270	283	80	435	119	100	160	60	20	M9 x 1 M12 x 1
350	350	367	80	470	120	100	160	60	20	M12 x 1
450	450	472	100	535	165	135	190	80	30	M16 x 1.5

Note :

DRAWING No.

KAL-D-RN-01

REV.

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MEMO :

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Specifications are subject to change without notice.

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