



# CONTROL VALVE STANDARD SPECIFICATION

## DIAPHRAGM ROTARY ACTUATOR SINGLE ACTING TYPE



DB240~DB520 Series



<http://www.proval.co.kr>



**PROVAL Co., Ltd.**

[E-5]

PROVAL

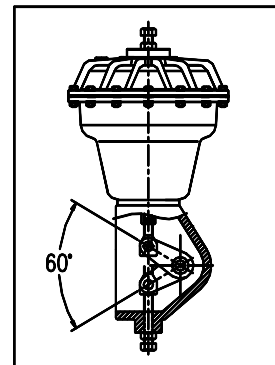
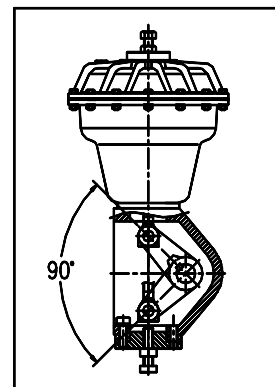
**PNEUMATIC DIAPHRAGM ROTARY ACTUATOR****SINGLE ACTING TYPE****GENERAL**

The "DB" rotary stem motion type diaphragm actuator, with single-spring design, offers dependable, high thrust performance in a compact, lightweight package. It obtains a required rotary output by converting a linear output into a rotation force through the scotch yoke construction. The linear output is created by balancing two forces.

The type "DB" is a yokeless, direct-acting diaphragm actuator for either throttling or on-off service. Principle applications include operation of butterfly and segmental ball valves, damper, and other similar equipment.

**FEATURES**

- **Application flexibility** – Actuator is available with fail-open or fail-closed construction and can be mounted in any of four actuator-valve mounting positions. Actuator can be mounted on a broad range of control valves or on other equipment.
- **Mounting versatility** – Four tapped holes in the actuator base permits either bracket or plate mounting.
- **Long stroke** – Deep casings provide up to 95mm or maximum travel (in a size DB520 actuator).
- **Application versatility** – Wide spring selection is available for nearly any control application. Spring selection procedure is quick and accurate.
- **Safety** – Actuator-valve linkage is completely enclosed, yet the valve packing adjustment remains accessible without removing any parts.

**60° OPERATED CONTROL****90° OPERATED CONTROL**

 STANDARD SPECIFICATION

Type		Single acting (Spring return)			
Action		Rotating direction of the driving shaft is shown in the direction facing the actuated part from the actuator part.			
Actuator Model		DB270	DB360	DB430	DB520
Effective Diaphragm Area (cm <sup>2</sup> )		238	373	660.5	1320
Materials	Case	AL. Alloy (casting)			
	Diaphragm	Cloth reinforced chloroprene rubber, N.B.R. or ※EPDM			
	Shaft (output rod)	SUS304 (Hcr plated)			
	Linkage	AL. Alloy (casting)			
Supply Air Pressure kPa (kgf/cm <sup>2</sup> G)		160 (1.6), 320 (3.2)			
Spring Range kPa (kgf/cm <sup>2</sup> G)		60 ~ 100 (0.6 ~ 1.0) 120 ~ 200 (1.2 ~ 2.0)			
Output shaft rotation		0° ~ 60°, 0° ~ 90°			
Air Connection		Rc 1/4			Rc 3/8
Ambient Temperature		-20°C ~ +70°C (※ -50°C ~ -20°C, +70°C ~ +100°C)			
Additional Options	Mechanisms	Top-mounted H/W, Top worm-mounted H/W, Travel stopper.			
	Accessories	E/P Positioner, P/P Positioner, Pressure regulator, Limit S/W, Solenoid valve, Booster relay, Speed controller, Lock-up valve, etc.			

[Notes] (1) ※ : Manufactured and attached as according to customer's order.

(2) Without positioner, the performance may vary according to the combination with valve body and kind of packing.

(3) Please consent in advance that approval drawing and other documents may represent with old material designation.

(4) For ambient temperature, denoted the extended temperature range as option.

## PERFORMANCE

### 1. Hysteresis & Linearity

	Spring range	With positioner
Hysteresis	0.6 ~ 1.0 kgf/cm <sup>2</sup>	Less than 1.0% of F.S.
	1.2 ~ 2.0 kgf/cm <sup>2</sup>	1.2%
Linearity	0.6 ~ 1.0 kgf/cm <sup>2</sup>	±1.5
	1.2 ~ 2.0 kgf/cm <sup>2</sup>	±2.0

[Notes] The above hysteresis vary depending on the gland packing material of the control valve.

### 2. Air consumption

-Max, stroke

[ Unit: N. ℓ ]

Air Supply (kgf/cm <sup>2</sup> G)	Actuator Model			
	DB 270	DB 360	DB 430	DB 520
1.6	2.1	4.3	10.6	29.4
3.2	4.2	8.6	21.2	58.7

### 3. Output force

[ Unit: kgf ]

Off Balance (kgf/cm <sup>2</sup> )	Spring Range (kgf/cm <sup>2</sup> )	Air Supply (kgf/cm <sup>2</sup> G)	Actuator Model							
			DB 270		DB 360		DB 430		DB 520	
			60°	90°	60°	90°	60°	90°	60°	90°
0.6	0.6 ~ 1.0	1.6	7.5	4.7	15	10	34	24	52	35
1.2	1.2 ~ 2.0	3.2	15	9.5	30	21	68	49	105	70

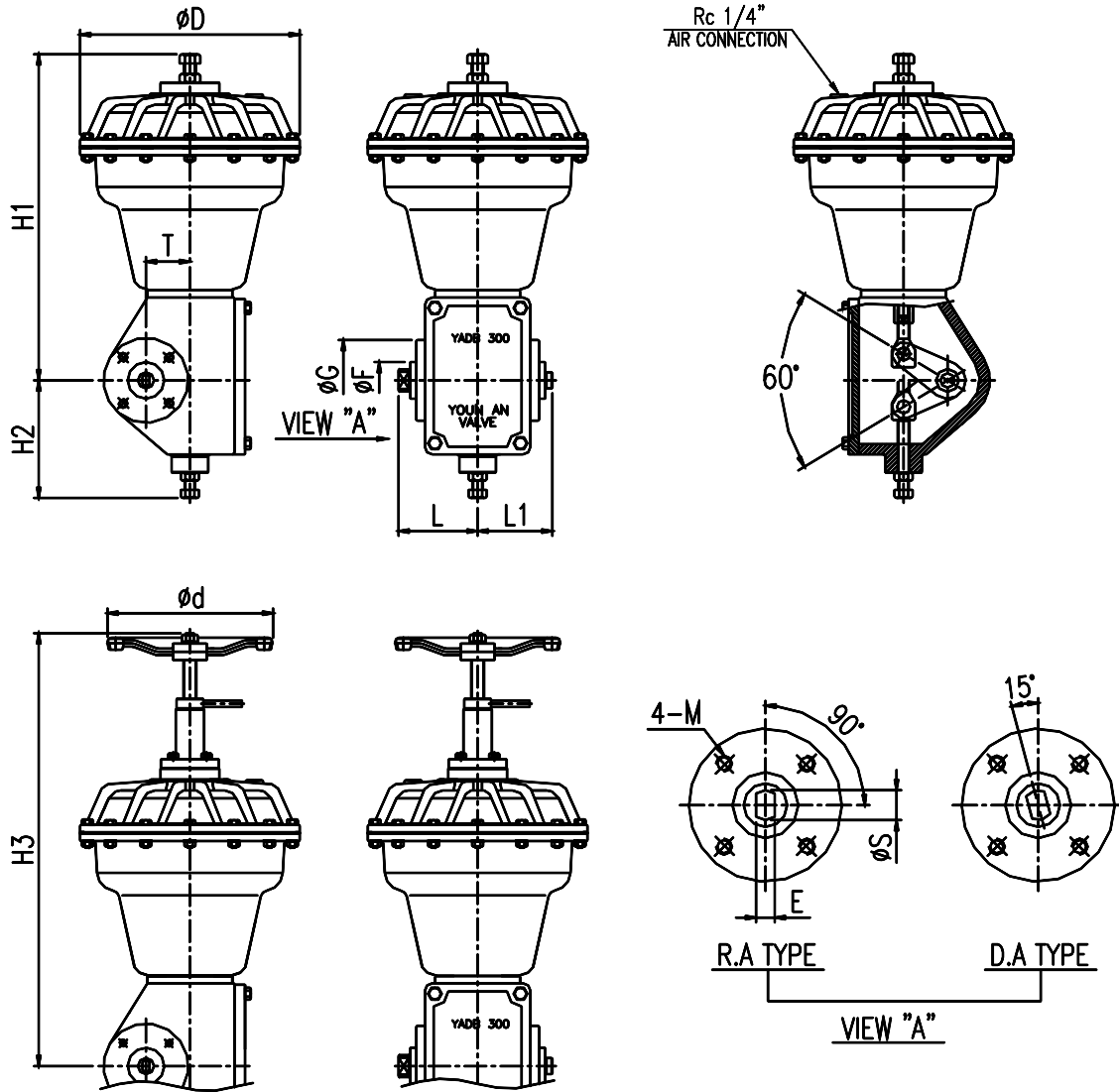
## WEIGHT

[ Unit: kg ]

	Actuator Model			
	DB 270	DB 360	DB 430	DB520
Without Manual H/W	13	30	64	98
With Manual H/W	16	36	73	

## DIMENSION DRAWING

MODEL : DB270, DB360, DB430, DB520 (60° Operating Type)



### DIMENSIONS

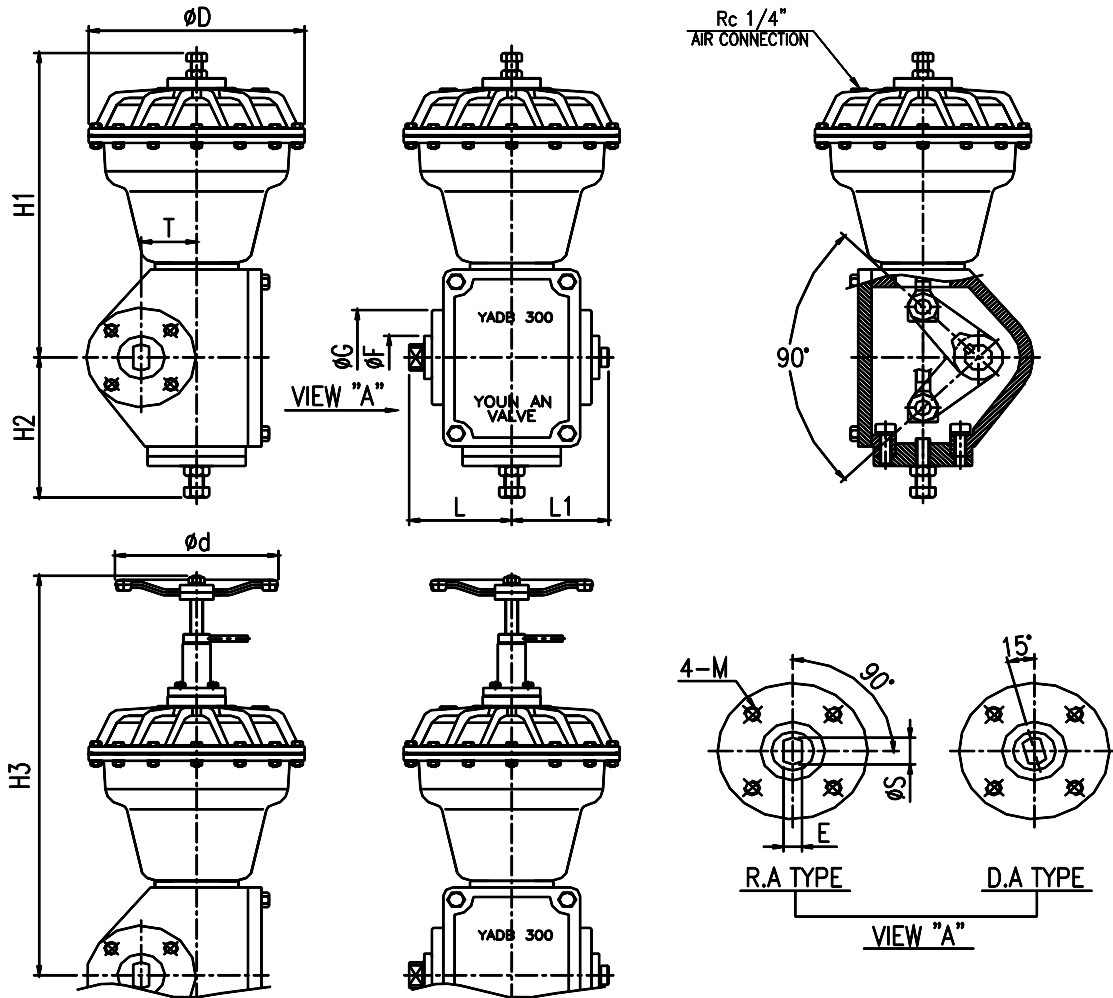
[Unit: mm]

Actuator size (ØD)	H1	H2	H3	L	L1	T	ØF	ØG	E	ØS	4 - M	Ød
270	360	130	518	89	85	48	40	100	14	24	M10 TAP	200
360	451	164	667	108	102	60	50	110	19	30	M12 TAP	315
430	556	195	812	144	132	78	70	150	27	45	M14 TAP	430
520	620	195	830	144	143	78	70	150	27	45	M14 TAP	430

MODEL	DB270, DB360, DB430, DB520 (60°)	SIZE	Ø270, Ø360, Ø430, Ø520
PROVAL Co., Ltd.			

## DIMENSION DRAWING

MODEL : DB270, DB360, DB430, DB520 (90° Operating Type)



### DIMENSIONS

[ Unit: mm ]

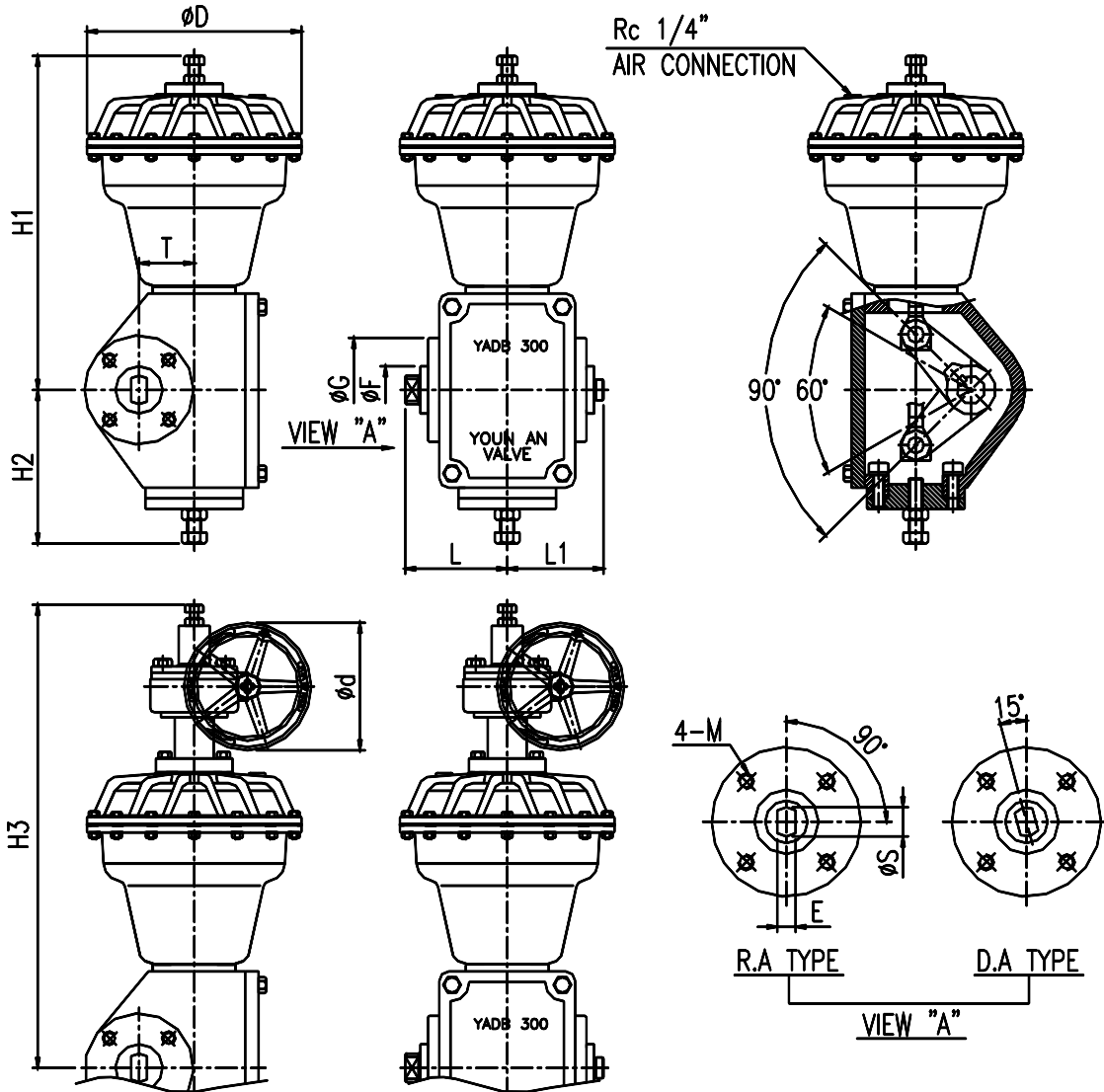
Actuator size (ØD)	H1	H2	H3	L	L1	T	ØF	ØG	E	ØS	4 - M	Ød
270	400	170	558	89	85	48	40	100	14	24	M10 TAP	200
360	511	224	727	108	102	60	50	110	19	30	M12 TAP	315
430	636	275	892	144	132	78	70	150	27	45	M14 TAP	430
520	620	195	830	144	143	78	70	150	27	45	M14 TAP	430

MODEL	DB270, DB360, DB430, DB520 (90°)	SIZE	Ø270, Ø360, Ø430, Ø520
-------	----------------------------------	------	------------------------

v

## DIMENSION DRAWING

MODEL : DB270, DB360, DB430, DB520 (Worm H/W Type)



### DIMENSIONS

[ Unit: mm ]

Actuator size ( $\phi D$ )	H1	H2	H3	L	L1	T	$\phi F$	$\phi G$	E	$\phi S$	4 - M	$\phi d$
270	400	170	668	89	85	48	40	100	14	24	M10 TAP	200
360	511	224	746	108	102	60	50	110	19	30	M12 TAP	200
430	636	275	845	144	132	78	70	150	27	45	M14 TAP	315
520	700	275	900	144	132	78	70	150	27	45	M14 TAP	315

MODEL	DB270, DB360, DB420, DB520 (Worm H/W)	SIZE	$\phi 270, \phi 360, \phi 430, \phi 520$
-------	---------------------------------------	------	--