

Series ¹⁰⁻21-**CRB1** Vane Type Rotary Actuator

Size: 10, 15, 20, 30

How to Order



Clean series

10	Relief type
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Mounting

B	Basic
F	Flange

Rotating angle

Vane type	Symbol	Rotating angle
Single vane	90	90°
	180	180°
	270	270°
Double vane	90	90°
	100	100°

Vane type

S	Single vane
D	Double vane

* Double vane is not available for size 10.

10 - C D R B 1 F W 10 - 180 S - 90 L

21 - C D R B 1 F W 10 - 180 S - 90 L

Auto switch

Nil	Without switch unit
D	With switch unit

Copper, fluorine and silicone-free + Low particle generation

21	Relief type
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Size

10
15
20
30

Auto switch

Reed switch	90	Size: 10, 15
Solid state	S99	
	T99	
Reed switch	R73	Size: 20, 30
Solid state	S79	
	T79	

Electrical entry / Lead wire length

Nil	Grommet / Lead wire 0.5 m
L	Grommet / Lead wire 3 m
C *	Connector / Lead wire 0.5 m
CL *	Connector / Lead wire 3 m
CN *	Connector / Without lead wire

* Connectors are available only for auto switch types R73, T79.

Specifications

Single vane

Model		10-/21-CRB1BW10-□S	10-/21-CRB1BW15-□S	10-/21-CRB1BW20-□S	10-/21-CRB1BW30-□S
Rotating angle		90°, 180°, 270°			
Proof pressure (MPa)		1.05			1.5
Maximum operating pressure (MPa)		0.7			1.0
Minimum operating pressure (MPa)		0.2	0.15		
Ambient and fluid temperature (°C)		5 to 60			
Adjustable speed range (s/90°) ^{Note 1)}		0.03 to 0.3			0.04 to 0.3
Allowable kinetic energy (J) ^{Note 2)}		0.00015	0.001	0.003	0.0087
Shaft load (N)	Allowable radial load	14.7	14.7	24.5	29.4
	Allowable thrust load	9.8	9.8	19.6	24.5
Bearing type		Bearing			
Port location		Side ported or Axial ported			
Port size	Side ported	M3 x 0.5		M5 x 0.8	
	Axial ported	M3 x 0.5		M5 x 0.8	
Shaft type		Double shaft (Double shaft with single flat on both shafts)			
Mounting		Basic, Flange			
Auto switch		Mountable (Side ported only)			
Grease		10-: Fluorine grease 21-: Lithium soap based grease			
Cleanliness class (ISO class)		10-: Class 4 21-: Class 4			

Note 1) Make sure to use the actuator within the adjustable speed range. Exceeding the maximum speed (0.3 s/90°) can cause the unit to stick or not operate.

Note 2) The numbers in the table indicate the energy factor when the rubber bumper is used (at the end of the rotation).

Double vane

Model	10-/21-CRB1BW15-□D	10-/21-CRB1BW20-□D	10-/21-CRB1BW30-□D
Rotating angle	90°, 100°		
Proof pressure (MPa)	1.05		1.5
Maximum operating pressure (MPa)	0.7		1.0
Minimum operating pressure (MPa)	0.15		
Ambient and fluid temperature (°C)	5 to 60		
Adjustable speed range (s/90°) ^{Note 1)}	0.03 to 0.3		0.04 to 0.3
Allowable kinetic energy (J) ^{Note 2)}	0.001	0.003	0.0087
Shaft load (N)	Allowable radial load	14.7	29.4
	Allowable thrust load	9.8	19.6
Bearing type	Bearing		
Port location	Side ported or Axial ported		
Port size: Side ported, Axial ported	M3 x 0.5	M5 x 0.8	
Shaft type	Double shaft (Double shaft with single flat on both shafts)		
Mounting	Basic, Flange		
Auto switch	Mountable (Side ported only)		
Grease	10-: Fluorine grease		
	21-: Lithium soap based grease		
Cleanliness class (ISO class)	10-: Class 4		
	21-: Class 4		

Note 1) Make sure to use the actuator within the adjustable speed range. Exceeding the maximum speed (0.3 s/90°) can cause the unit to stick or not operate.

Note 2) The numbers in the table indicate the energy factor when the rubber bumper is used (at the end of the rotation).

Auto Switch Specifications (Refer to the **WEB catalog** for further information on auto switches.)

Type	Auto switch model	Load voltage	Load current range	Indicator light	Applicable load
Size 10/15	Reed auto switch	D-90	24 VAC/DC or less	50 mA	No
	Solid state auto switch	D-T991/T992	24 VDC	5 to 150 mA	Yes
	3-wire	D-S991/S992	28 VDC or less	150 mA or less	Yes
Size 20/30	Reed auto switch	D-R731/R732	100 VAC	5 to 20 mA	Yes
	Solid state auto switch	D-T791/T792	24 VDC	5 to 150 mA	Yes
	3-wire	D-S791/S792	28 VDC or less	150 mA or less	Yes

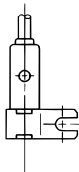
Refer to page 920 for the applicable auto switch list.

PLC: Programmable Logic Controller

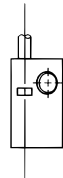
Classification of Auto Switches: Right-handed and Left-handed (includes one of each)

Right-handed

D-□□□1

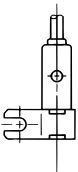


D-□991

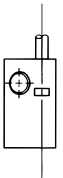


Left-handed

D-□□□2

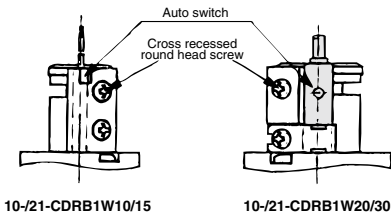


D-□992



How to Change the Auto Switch Detecting Position

When setting the detecting position, loosen the cross recessed round head screw a bit and move the auto switch to the preferred position and then tighten again and fix it. At this time, if tightened too much, screw can become damaged and unable to fix position. Be sure to set the tightening torque around 0.5 N·m.



Operating Range and Hysteresis of Auto Switch

Model	Operating range	Hysteresis range
10-/21-CDRB1BW10/15	110°	10°
10-/21-CDRB1BW20/30	90°	10°

Option

Flange assembly

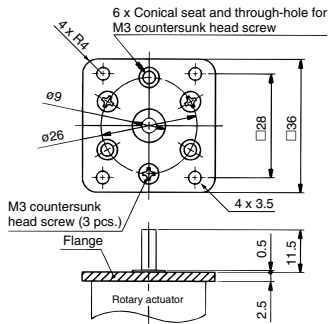
* The flange (with countersunk head screws) is not mounted on the actuator at the time of shipment.

* The flange can be mounted on the rotary actuator at 60-degree intervals.

Type		Flange assembly part no.
Basic	With auto switch	
10-/21-CRB1FW10	10-/21-CDRB1FW10	P414070-2
10-/21-CRB1FW15	10-/21-CDRB1FW15	P414090-2
10-/21-CRB1FW20	10-/21-CDRB1FW20	P414060-2
10-/21-CRB1FW30	10-/21-CDRB1FW30	P414080-2

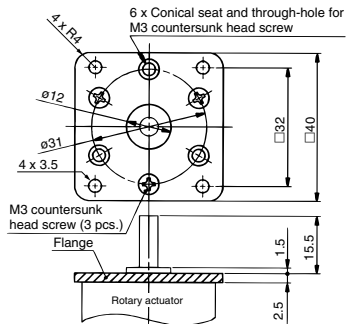
Assembly part no:

P414070-2 (for 10-/21-CRB1FW□10)



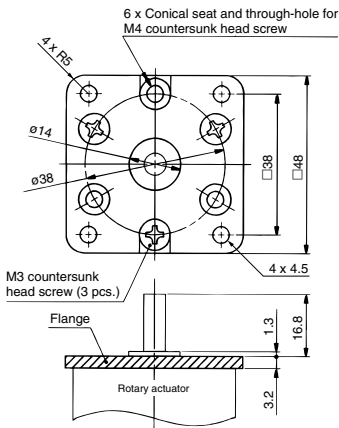
Assembly part no:

P414090-2 (for 10-/21-CRB1FW□15)



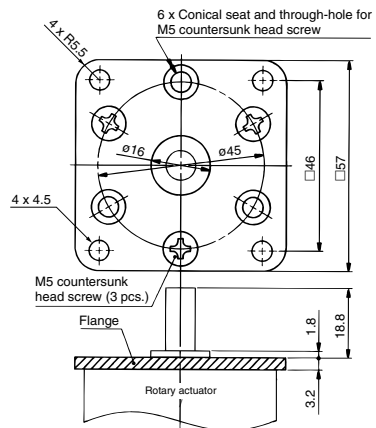
Assembly part no:

P414060-2 (for 10-/21-CRB1FW□20)



Assembly part no:

P414080-2 (for 10-/21-CRB1FW□30)

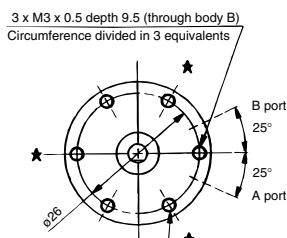
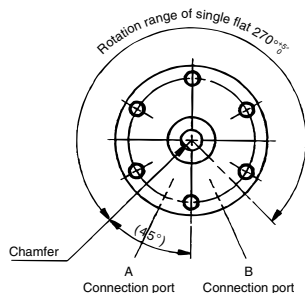
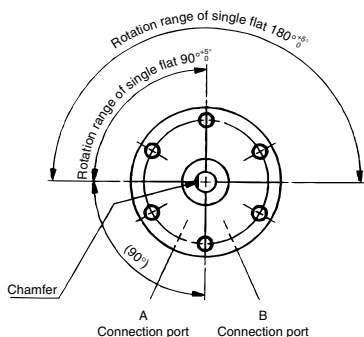


Without Auto Switch: 10-21-**CRB1BW10**

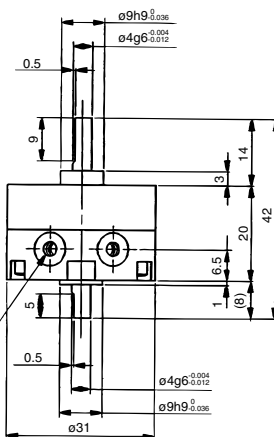
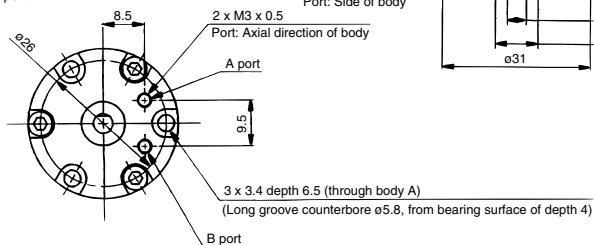
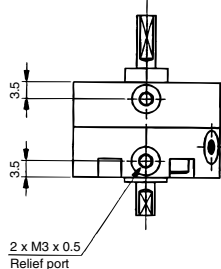
* Double vane is not available for size 10.

Size 10

Rotation range (Chamfered positions shown below illustrate the conditions of actuators when B port is pressurized.)



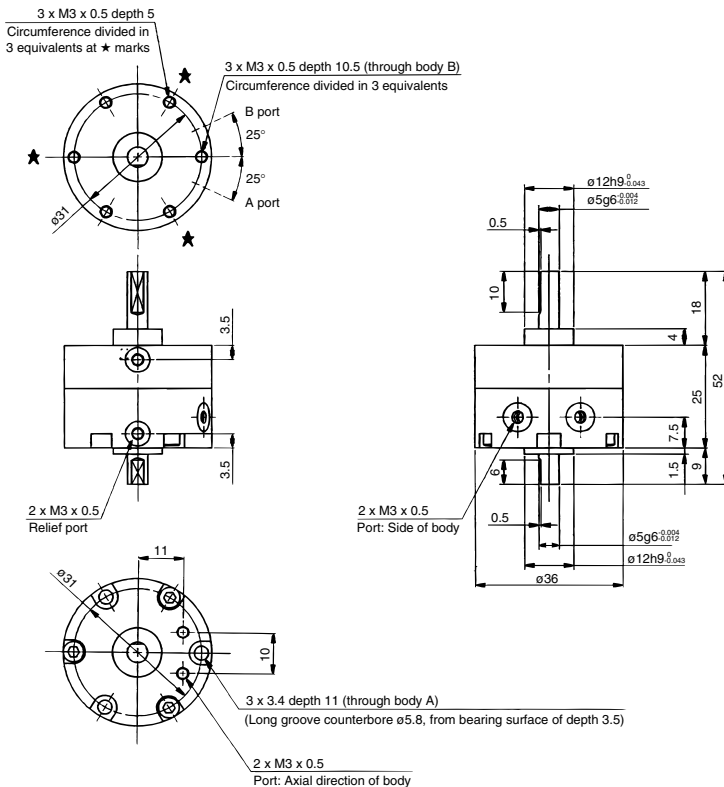
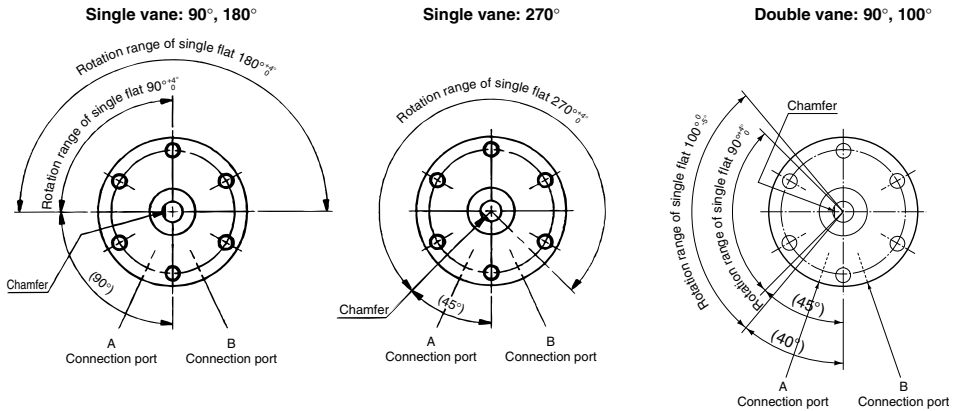
3 x M3 x 0.5 depth 5
 Circumference divided in 3 equivalents at ★ marks



Without Auto Switch: ¹⁰⁻₂₁₋CRB1BW15 (Dimensions are common to both single vane and double vane)
Size 15

Rotation range of single vane type (Chamfered positions shown below illustrate the conditions of actuators when B port is pressurized.)

Rotation range of double vane type (Chamfered positions shown below illustrate the intermediate rotation position when A or B port is pressurized.)

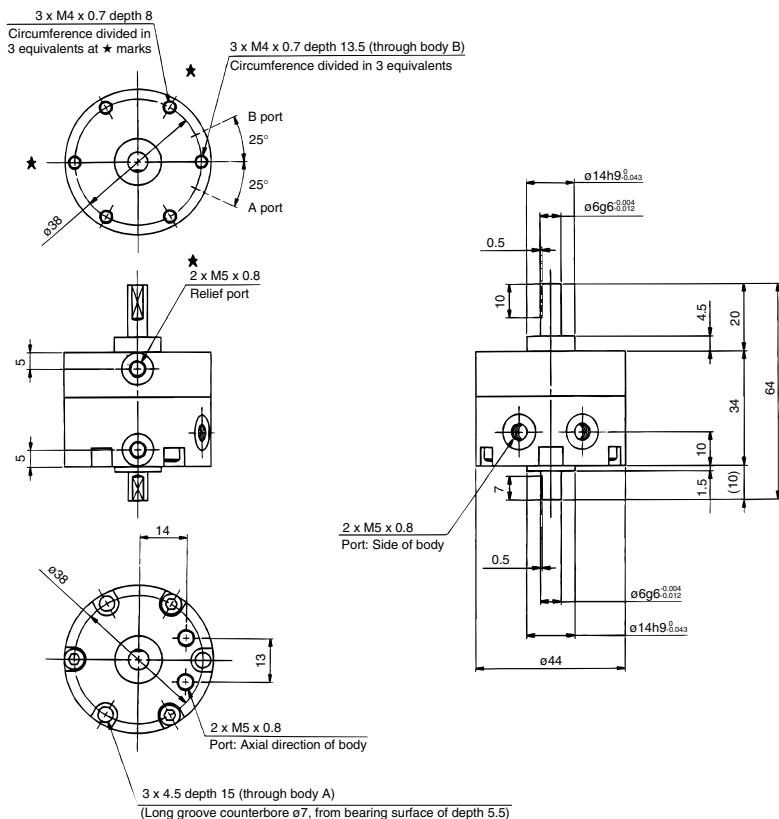
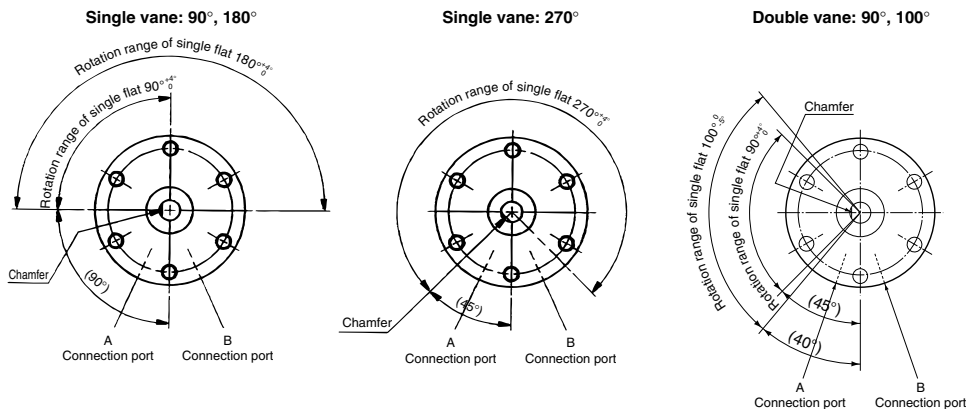


Without Auto Switch: ¹⁰⁻~~21-~~CRB1BW20 (Dimensions are common to both single vane and double vane)

Size 20

Rotation range of single vane type (Chamfered positions shown below illustrate the conditions of actuators when B port is pressurized.)

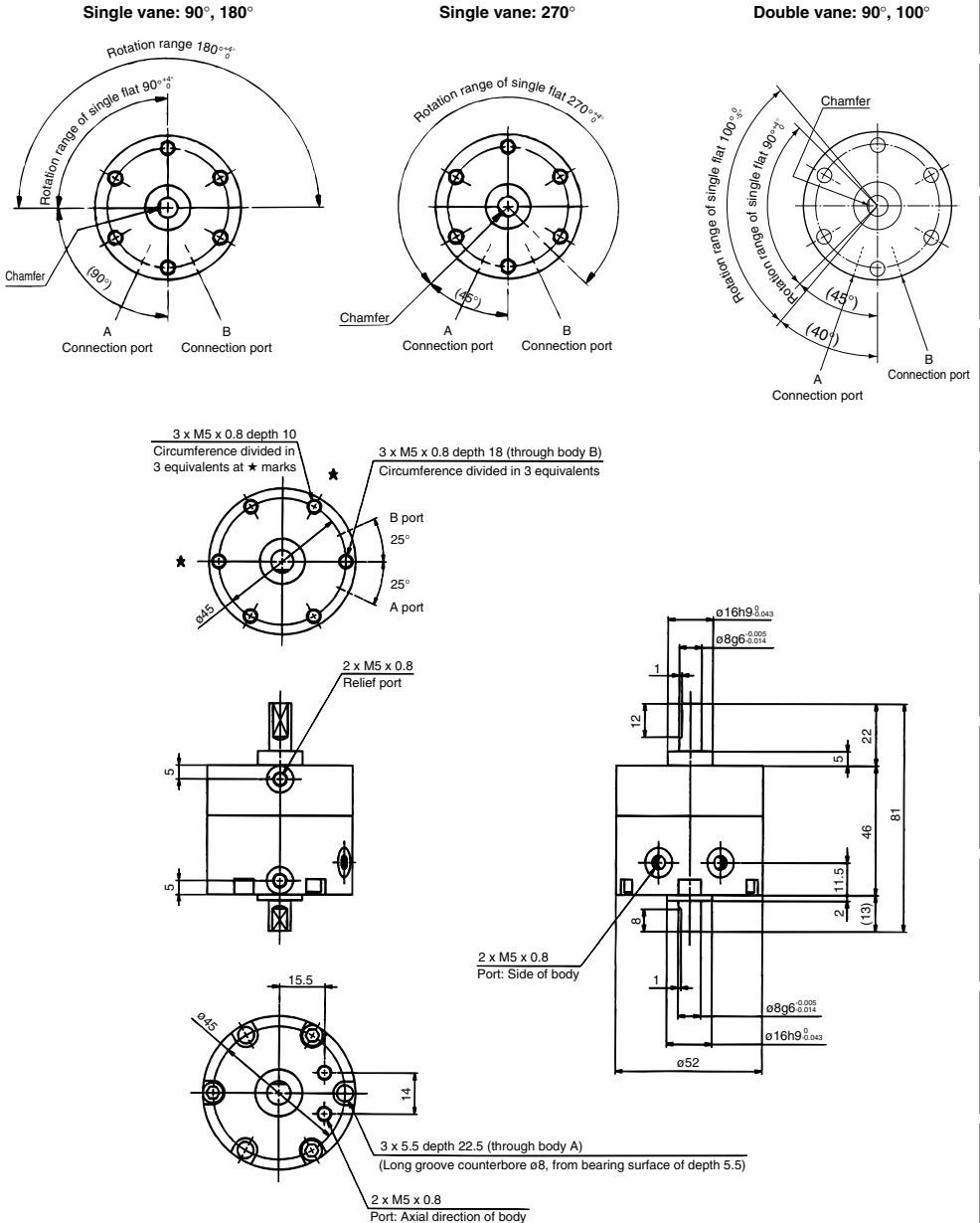
Rotation range of double vane type (Chamfered positions shown below illustrate the intermediate rotation position when A or B port is pressurized.)



Without Auto Switch: 10-21-CRB1BW30 (Dimensions are common to both single vane and double vane)
Size 30

Rotation range of single vane type (Chamfered positions shown below illustrate the conditions of actuators when B port is pressurized.)

Rotation range of double vane type (Chamfered positions shown below illustrate the intermediate rotation position when A or B port is pressurized.)

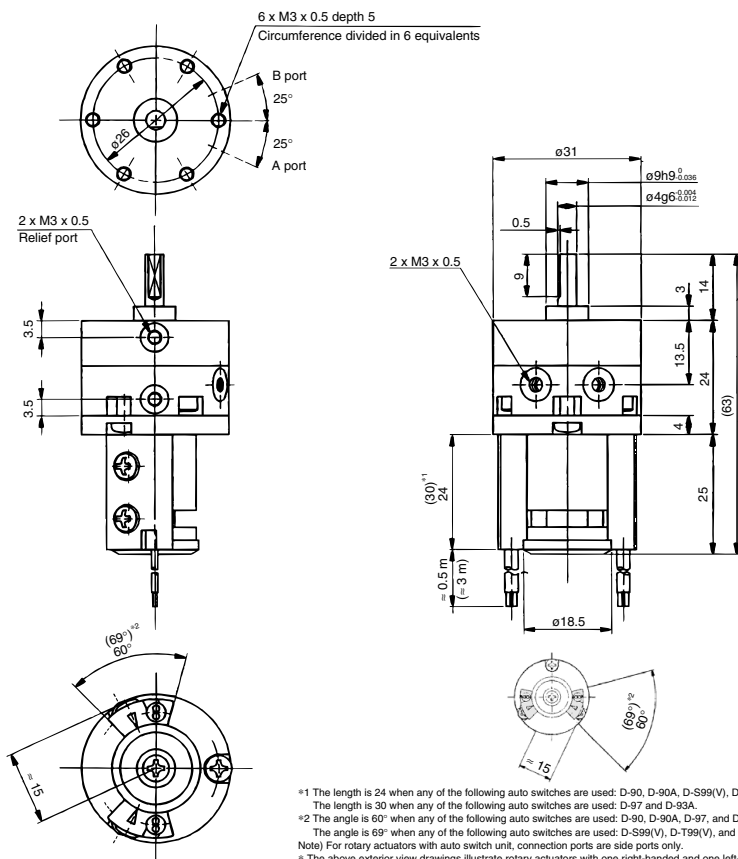
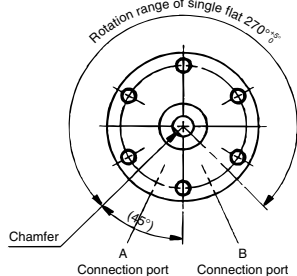
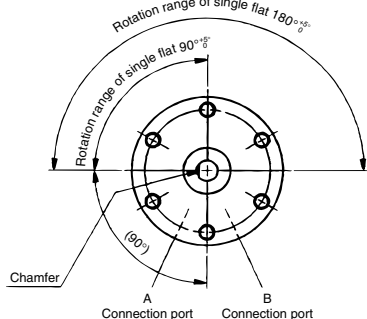


With Auto Switch: 10-²¹-CDRB1BW10

* Double vane is not available for size 10.

Size 10

Rotation range (Chamfered positions shown below illustrate the conditions of actuators when B port is pressurized.)



*1 The length is 24 when any of the following auto switches are used: D-90, D-90A, D-S99(V), D-T99(V), and D-S9P(V). The length is 30 when any of the following auto switches are used: D-97 and D-93A.

*2 The angle is 60° when any of the following auto switches are used: D-90, D-90A, D-97, and D-93A.

The angle is 69° when any of the following auto switches are used: D-S99(V), D-T99(V), and D-S9P(V).

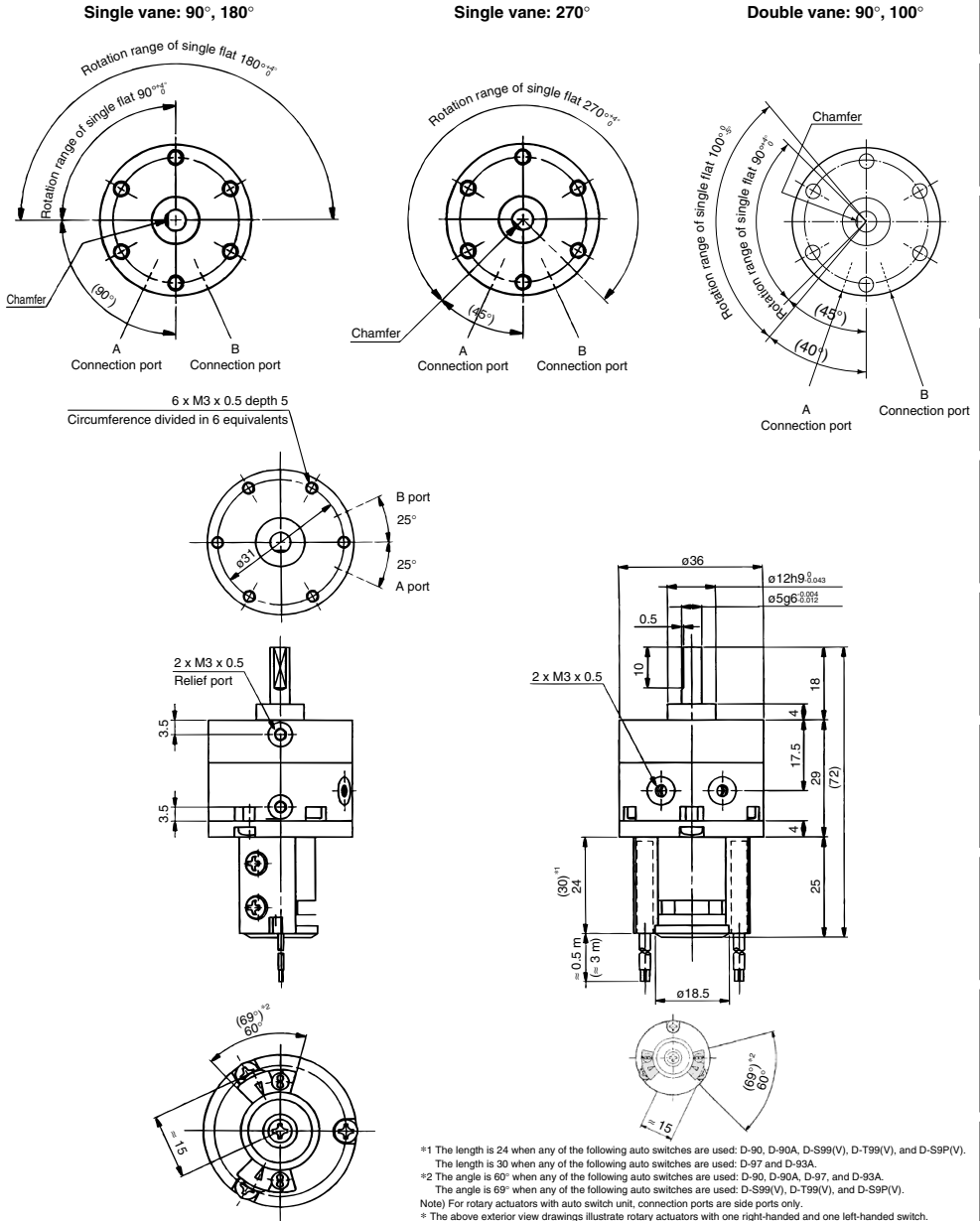
Note) For rotary actuators with auto switch unit, connection ports are side ports only.

* The above exterior view drawings illustrate rotary actuators with one right-handed and one left-handed switch.

With Auto Switch: ¹⁰⁻₂₁₋CDRB1BW15 (Dimensions are common to both single vane and double vane)
Size 15

Rotation range of single vane type (Chamfered positions shown below illustrate the conditions of actuators when B port is pressurized.)

Rotation range of double vane type (Chamfered positions shown below illustrate the intermediate rotation position when A or B port is pressurized.)



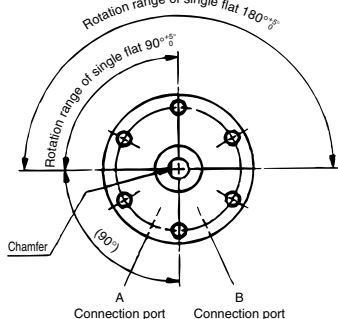
With Auto Switch: 10-21-CDRB1BW20 (Dimensions are common to both single vane and double vane)

Size 20

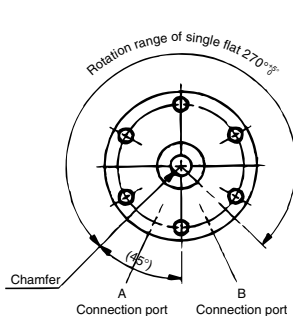
Rotation range of single vane type (Chamfered positions shown below illustrate the conditions of actuators when B port is pressurized.)

Rotation range of double vane type (Chamfered positions shown below illustrate the intermediate rotation position when A or B port is pressurized.)

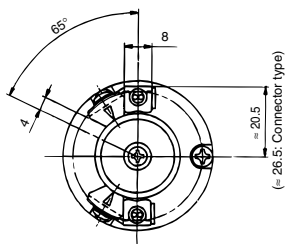
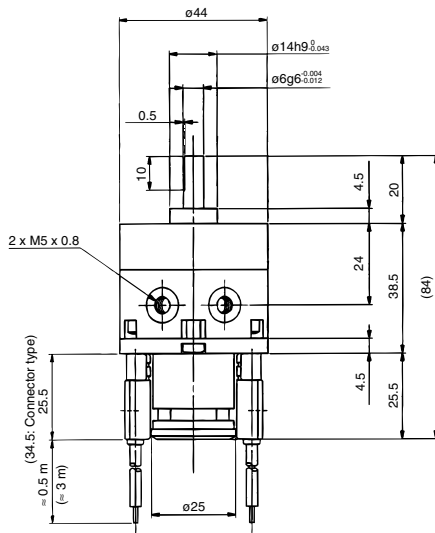
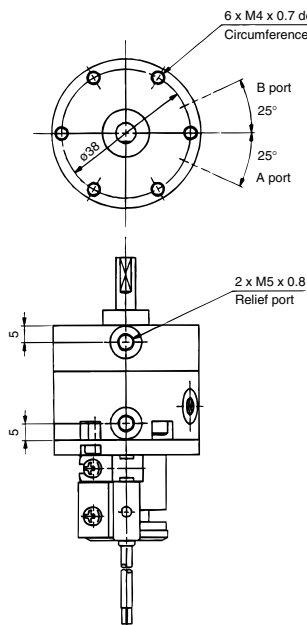
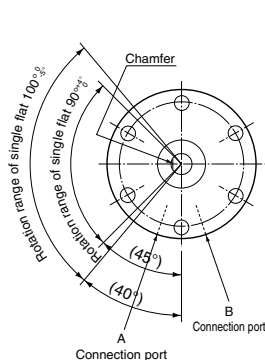
Single vane: 90°, 180°



Single vane: 270°



Double vane: 90°, 100°



With Auto Switch: ¹⁰⁻₂₁₋CDRB1BW30 (Dimensions are common to both single vane and double vane)
Size 30

Rotation range of single vane type (Chamfered positions shown below illustrate the conditions of actuators when B port is pressurized.)

Rotation range of double vane type (Chamfered positions shown below illustrate the intermediate rotation position when A or B port is pressurized.)

