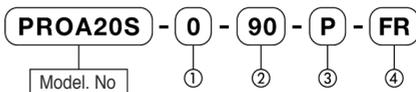


# PRO Series

Miniature HI-ROTOR/Variable oscillating angle type  
3S, 10S, 20S, 30S, 30D

## Ordering Instructions



<b>Single vane</b>	<b>Double vane</b>
PROA3S	PRO30D
PROA10S	
PROA20S	
PRO30S	

### ① Oscillating angle

0: Angle setting not specified  
Desired angle: Angle setting specified

### ② Oscillating reference point

90: 90° (PROA3S, 10S, 20S)  
45: 45° (PRO30S/D)

### ③ Mounting hardware

No mark: No mounting hardware  
P : With flange plate  
L1 : With one foot plate

### ④ Type of switch units

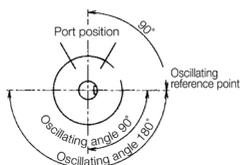
No mark: No switch  
FR : With CT-3 switch  
FU : With CT-3U switch  
(FR, FU: switch position adjustable)



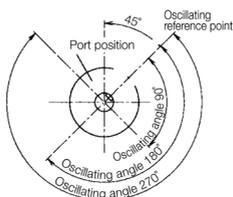
- When shipping PRO series with non-specified the angle setting, it would be fixed the reference point stopper but not the angle setting stopper. Be sure to attach the accompanying angle setting stopper before use.
- PRO series will be delivered with angle setting stopper attached to the approximate position if there is certain angle. Be sure to adjust the stopper position with the fine adjust screw before use.
- If switch unit is needed, it wouldn't be set when shipping. Please adjust angle setting stopper first, then adjust switch unit.
- Mounting hardware are included in the package.

## Oscillation Starting Point and Oscillation Angle

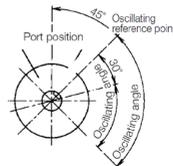
PROA3S, PROA10S, PROA20S  
Oscillating reference point at 90°



PRO30S  
Oscillating reference point at 45°



PRO30D  
Oscillating reference point at 45°



### Model Nos. of stopper unit

Applicable HI-ROTOR	Model No.
PROA3S	RO3-U
PROA10S	RO10-U
PROA20S	RO20-U
PRO30S/D	RO30-U

### Model Nos. of mounting hardware

Applicable HI-ROTOR	Flange plate	Foot plate
PROA3S	PRN3-P	PRN3-L
PROA10S	PRN10-P	PRN10-L
PROA20S	PRN20-P	PRN20-L
PRO30S/D	PRN30-P	PRN30-L

Note: Set screws are available.

**Specifications**

Model No.	Unit	PROA3S	PROA10S	PROA20S	PROA30S	PRO30D	
Vane		Single vane				Double vane	
Fluid		Non-lubricated air (Lubricated air)					
Oscillating angle	degree	30 ~ 180			30 ~ 270	30 ~ 90	
Oscillating reference point	degree	90			45	45	
Port size		M5			Rc½	Rc½	
Minimum working pressure	MPa	0.1				0.08	
Operation pressure range	MPa	0.2 ~ 0.7			0.2 ~ 1		
Proof withstanding pressure	MPa	1.05			1.5		
Temperature range	°C	- 5 ~ 80			- 5 ~ 60	- 5 ~ 60	
Maximum frequency of use	Hz	3(at 180°)	2.5(at 180°)	2(at 180°)	1(at 270°)	3(at 90°)	
Internal volume	cm <sup>3</sup>	4	12	21	43	34	
Allowable radial load	N	40	50	300	400	400	
Allowable thrust load	N	4	4	25	30	30	
Allowable energy	mJ	1	2	3	7	7	
Mass	kg	0.085	0.17	0.28	0.51	0.53	



- Maximum frequency of use at the supply pressure of 0.5 MPa (Unloaded).
- Please make sure to use the HI-ROTOR within allowable energy.
- HI-ROTORs with keyways are provided with keys.
- For HI-ROTORs other than standard, please contact FONTAL.

**Output (Effective torque)**

(Unit : N•cm)

Model No.		Supply pressure (MPa)								
		0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
Single vane	PRNA3S	10	17	24	31	38	45	—	—	—
	PRNA10S	35	56	75	98	120	139	—	—	—
	PRNA20S	59	95	133	170	210	249	287	326	368
	PRN30S	110	180	250	319	410	480	580	650	720
Double vane	PRN30D	270	440	600	770	950	1120	1299	1480	1660

### External Stopper Specifications

Model No.	PROA3S	PROA10S	PROA20S	PROA30S	PROA30D
Minimum angel setting	30				
Maximum angle setting	180			270	90
Pitch for angle setting	15				
Angle fine adjustment range	-9 ~ +6				
Oscillating reference poit fine adjust range	±3				
Fine adjust range at maximumangle setting	-9 ~ +6			-9 ~ +3	

### Oscillating Angle Setting Range and Reference Point

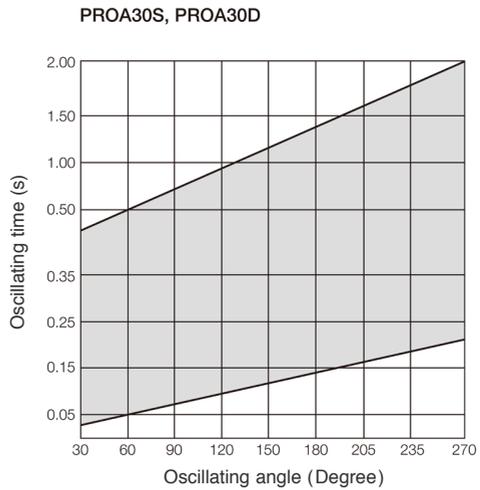
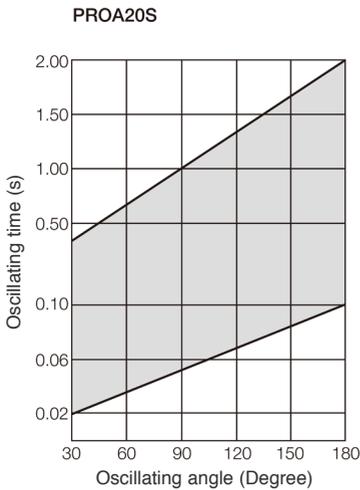
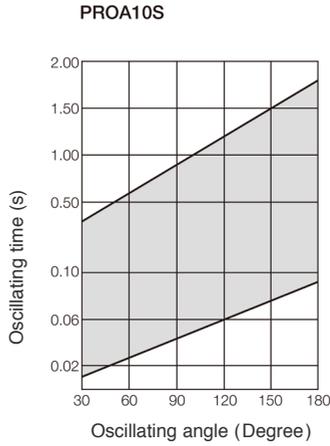
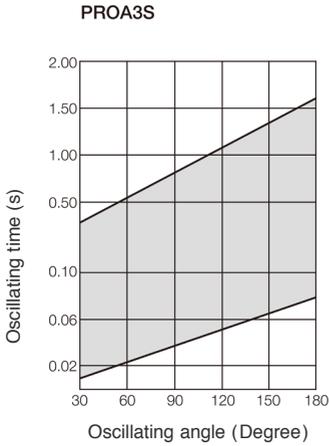
Model No.		Oscillating angle	Oscillating starting point
Single vane	PROA3S	30 ~ 180°	90°
	PROA10S		
	PRO30S		
	PRO30S	30 ~ 270°	45°
Double vane	PRO30D	30 ~ 90°	45°

### Construction and dimensions

#### CT Type Proximity Switches

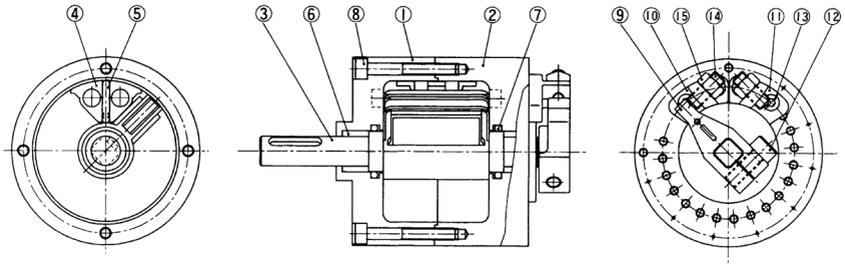
Type of switch	Mounting	Load voltage (V)	Load current (mA)	Indicating lamp (Lights up at ON)	Applications
CT-3 CT-3U	Switch position adjustable	DC5 ~ 30	5 ~ 200	○	Relay PLC IC circuit

# Axial foot mounting/L

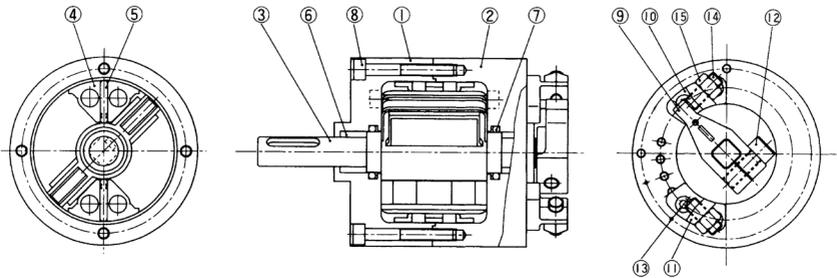


Note: Operate HI-ROTORS within the range of duration shown in above charts. Otherwise, the HI-ROTOR will tend to move in stick-slip motion.

PROA3S, PROA10S, PROA20S, PROA30S



PRO30D



Parts List

No.	Description	Material	
		PROA3, PROA10, PROA20	PRO30S/D
1	Body A	Aluminium alloy	
2	Body B	Aluminium alloy	
3	Vane shaft	Steel+Resin +Hydrogenated nitrile rubber	Steel+Resin +Nitrile rubber
4	Shoe	Resin	
5	Shoe seal	Hydrogenated nitrile rubber	Nitrile rubber
6	Bushing	-	
7	O-ring	Hydrogenated nitrile rubber	Nitrile rubber
8	Set screw	Steel	
9	Claw	Steel	
10	Stopper L	Steel	
11	Stopper R	Steel	
12	Claw set screw	Steel	
13	Stopper set screw	Steel	
14	Fin-adjust screw	Steel	
15	Locknut	Steel	

**Components of Stopper Unit**

A stopper unit consists of 9, 10, 11, 12, 13, 14 and 15 shown in the above list.

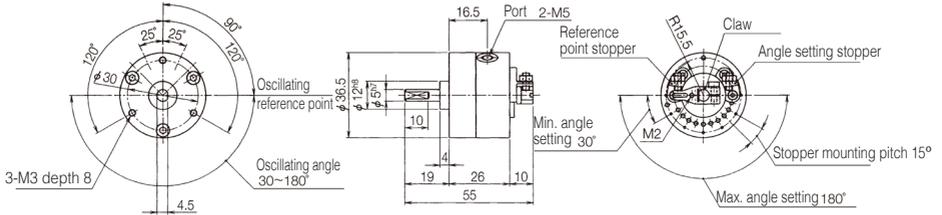
**Model Nos. of Packing Kit**

Same as those for standard type HI-ROTOR (PRN series).

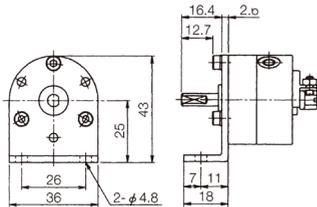
A packing kit consists of 3, 5 and 7 shown in the above list.

(Unit: mm)

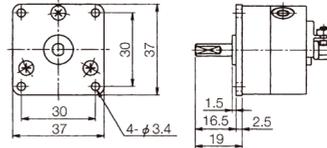
**Basic type**  
PROA3S-□-□



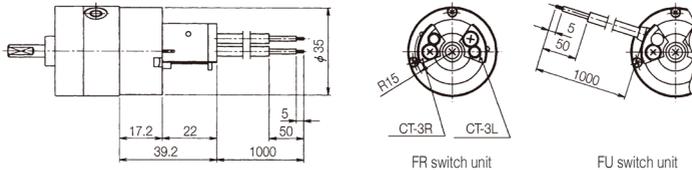
**With foot plate**  
PROA3S-□-□- L1



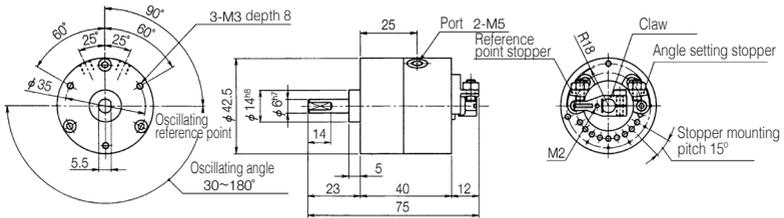
**With flange plate**  
PROA3S-□-□- P



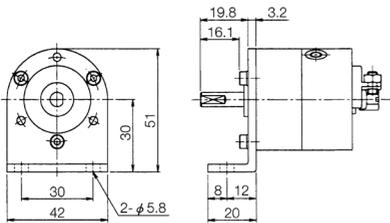
**With switch unit**  
(Switch position adjustable type)  
PROA3S-□-□-□- FR (FU)



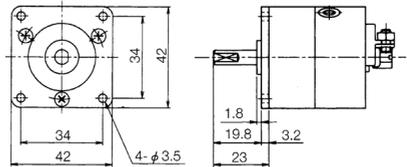
**Basic type**  
PROA10S-□-□



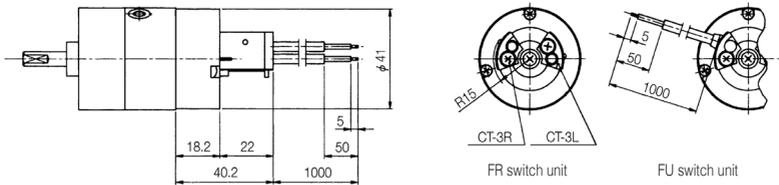
**With flange plate**  
PRO10S-□-□-L1



**With foot plate**  
PROA10S-□-□-P



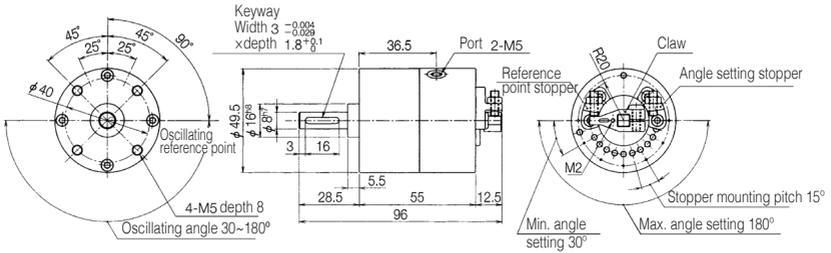
**With switch unit**  
(Switch position adjustable type)  
PROA10S-□-□-□-FR(FU)



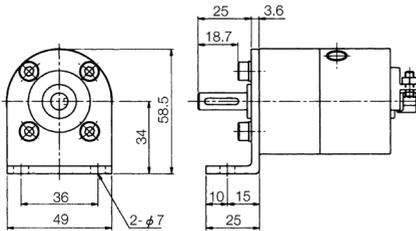
PRN Series

(Unit: mm)

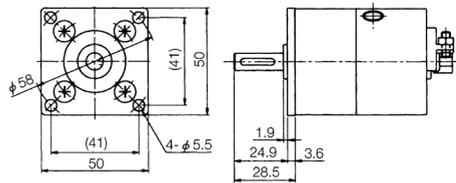
**Basic type**  
PROA20S-□-□



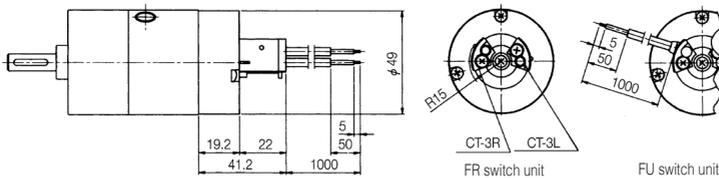
**With flange plate**  
PROA20S-□-□-L1



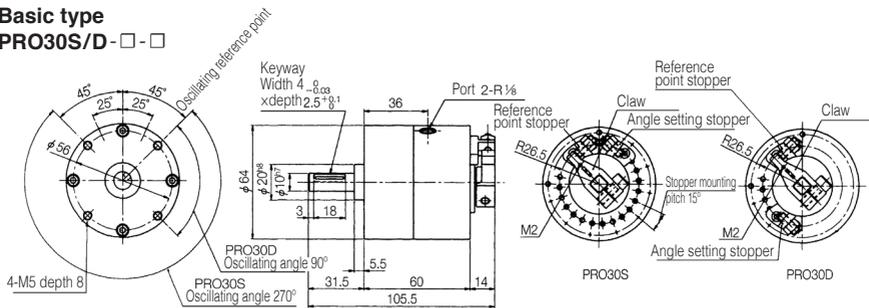
**With foot plate**  
PROA20S-□-□-P



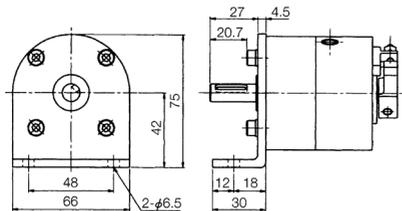
**With switch unit**  
**(Switch position adjustable type)**  
PROA20S-□-□-□-FR(FU)



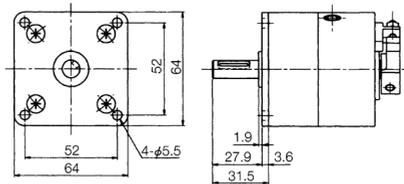
**Basic type**  
**PRO30S/D-□-□**



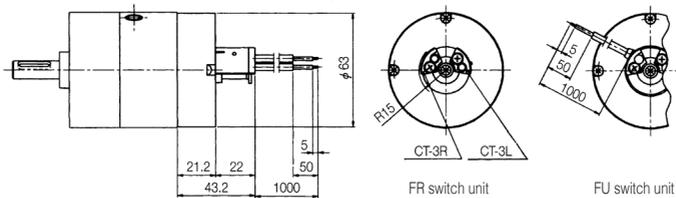
**With foot plate**  
**PRO30S/D-□-□- L1**



**With flange plate**  
**PRO30S/D-□-□- P**



**With switch unit**  
**(Switch position adjustable type)**  
**PRO30S/D-□-□-□- FR (FU)**



## ⚠ Individual instruction

Be sure to read the following instructions before use.  
Please also refer to "For Safety Use".

### Angle Setting

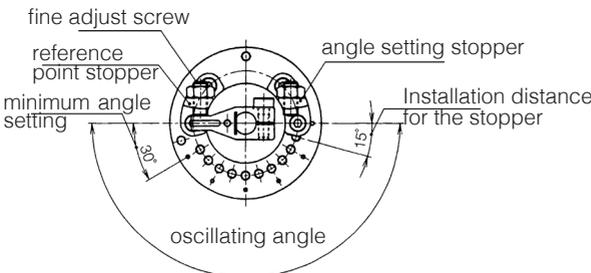


Warning

- Be sure to have the reference point stopper and angle setting stopper in place before operation.
- When setting the stoppers at the starting point and at the maximum oscillating angle, be mindful not to set them outside the adjustable range. Otherwise, the vane will collide against the internal stopper thus causing damage. Adjust the angle properly so that the claw will stop when it touches the external stopper.
- The reference point stopper is fixed and cannot be moved.
- The oscillation angle is determined by the claw when it hits the fine adjust screw of each stopper. Wear from operation is not taken into consideration for adjustment. When the oscillation angle has changed due to wear, readjust it with the fine adjust screw.

### Structure for Variable Oscillating Angle Mechanism

Attach external stoppers to the tapped hole of the body. There are two types of stoppers—a reference point stopper and an angle setting stopper. The oscillating reference point stopper has been attached to the fixed position, and the angle setting stopper is attached in a way so that the desired angle can be set. In case of fine adjustment, use adjust screw on the stopper.



### Oscillating Angle Setting



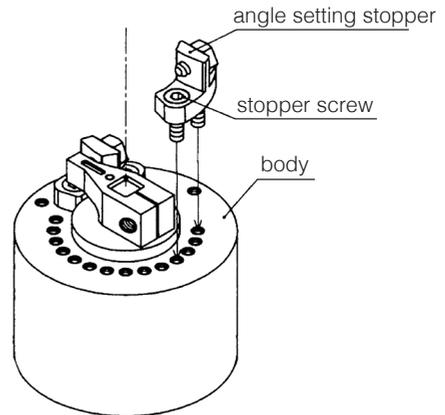
Caution

#### 1. Without angle setting (standard)

Only the position of oscillating reference point is fixed, and the angle setting stopper is provided to help clients set the desired angle. With regard to installation, please refer to "How to set oscillating angle."

#### 2. Specified angle setting

Reference point stopper and angle setting stopper should be mounted at the specified angle and double check the angle is specified as intended. Customers can also use fine adjust the screw to make an adjustment.



# ⚠ Individual instruction

Be sure to read the following instructions before use.  
Please also refer to "For Safety Use".

## How to set oscillating angle



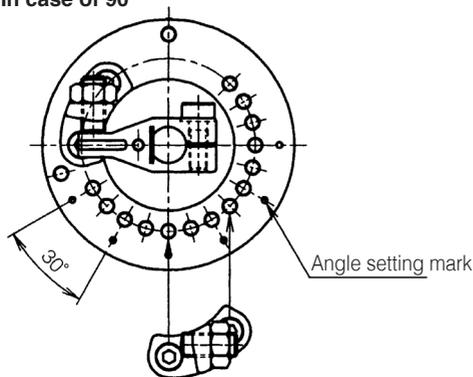
### 1. When the angle setting equals the stopper mounting distance (15°)

Place the stopper at the tapped hole with intended angle, and then mount it. When installing stopper, please refer to the setting mark labeled on the body at an interval of 30°. For more details, please refer to the table in the following.

### Angle fine adjustment range

Model No.	Angle setting (at an interval of 15°)
PROA3S	30°, 45°, 60°, 75°, 90°, 105°, 120°, 135°, 150°, 165°, 180°
PROA10S	
PROA20S	
PRO30S	30°, 45°, 60°, 75°, 90°, 105°, 120°, 135°, 150°, 165°, 180°, 195°, 210°, 225°, 240°, 255°, 270°

### In case of 90°



### 2. Then, make sure the angle is correct and fasten the screw to prevent an unintended change in angle.

### Angle fine adjustment range

Reference point stopper fine adjustment range	±3°
Angle setting stopper fine adjustment range	-9°~+6°
Angle setting stopper fine adjustment range for maximum angle setting	-9°~+3°

## How to set oscillating angle



### • When the need for angle setting is not within the interval of 15°

1. When the need for angle setting is not within the interval of 15°, mount the stopper at tapped hole with the utmost approximate intended angle. For more details, please refer to the diagram in the following.

2. Then, use fine adjust screw for fine tuning until it reaches the angle intended and fasten the screw to prevent unintended change.

