PRN Series

Miniature HI-ROTOR/Standard type
1S, 3S, 10S, 20S, 30S, 30D

Ordering Instructions

PRNA20S - 90 - 90 S - P - FR

Model. No ① ② ③ ④ ⑤

Single vane
PRNA1S
PRNA3S
PRNA10S
PRNA20S
PRN30S

Double vane
PRN30D

① Oscillating angle
90 : 90°
180 : 180°
270 : 270°

② Oscillating reference point
90 : 90°
45 : 45°

③ Port position
No mark : Standard
S : On the rear cover
Note: S is not available for Models PRN30S and 30D.

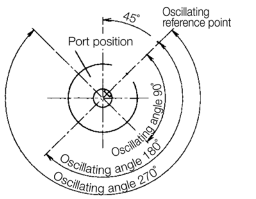
④ Cushion
No mark : No mounting hardware
P : With flange plate
L1 : With one foot plate
L2 : With two foot plates

⑤ Type of switch units
No mark : No switch
FR : With CT-3 switch
FU : With CT-3U switch
(FR, FU : switch position adjustable)
SR : With SR switch
SU : With SU switch
(SR, SU: Switch position fixed)
Note : Two switches are provided. Only FR and FU are available for PRNA1.

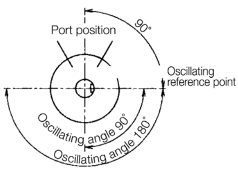
- Switch units and mounts with two foot plate are not supplied to "S"(Ports on the rear cover) model.
- Switch units cannot be used on HI-ROTORs with two foot plates (L2).
- Mounting hardware comes being not fabricated.

Oscillation Starting Point and Oscillation Angle

PRNA1S,PRNA3S,PRNA10S,
PRNA20S,PRN30S/D
Oscillating reference point at 45°



PRNA1S,PRNA3S,PRNA10S,
PRNA20S
Oscillating reference point at 90°



Model Nos. of mounting hardware

Applicable HI-ROTOR	Flange plate	Foot plate
PRNA1S	PRN1-P	PRN1-L
PRNA3S	PRN3-P	PRN3-L
PRNA10S	PRN10-P	PRN10-L
PRNA20S	PRN20-P	PRN20-L
PRN30S/D	PRN30-P	PRN30-L

Note : Set screws are available.

Specifications

Model No.	Unit	PRNA1S			PRNA3S			PRNA10S			PRNA20S			PRN30S			PRN30D
Vane		Single vane															Double vane
Fluid		Non-lubricated air (Lubricated air)															
Oscillating angle	degree	90^{+4}_{0}	180^{+4}_{0}	270^{+4}_{0}	90^{+4}_{0}	180^{+4}_{0}	270^{+4}_{0}	90^{+4}_{0}	180^{+4}_{0}	270^{+4}_{0}	90^{+4}_{0}	180^{+4}_{0}	270^{+4}_{0}	90^{+3}_{0}	180^{+3}_{0}	270^{+3}_{0}	90^{+3}_{0}
Oscillating reference point	degree	45 , 90		45	45 , 90		45	90		45	45 , 90		45	45			45
Port size		M5												Rc⅛			Rc⅛
Minimum working pressure	MPa	0.1									0.08			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	℃	-5～80												-5～60			
Maximum frequency of use	Hz	5	3	1.6	4	2.5	1	4	2.5	1.5	3.5	2	1	3	1.5	1	3
Internal volume	cm^3	1.4	1.4	1.5	3.4	3.4	4	9.8	9.8	12	17	17	21	37	37	43	34
Allowable radial load	N	30			40			50			300			400			
Allowable thrust load	N	3			4			4			25			30			
Allowable energy	mJ	0.6			1.5			3			15			25			
Mass	kg	0.036			0.07			0.14			0.25			0.47		0.46	0.48

- 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	PRNA1S	4.9	7.6	10.1	12.9	15.6	18.5	—	—	—
	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

Oscillating time range

(Unit : s)

Model No.	Oscillating angle		
	90°	180°	270°
PRNA1S	0.03～0.6	0.06～1.2	0.09～1.8
PRNA3S	0.04～0.8	0.08～1.6	0.12～2.4
PRNA10S	0.045～0.9	0.09～1.8	0.135～2.7
PRNA20S	0.05～1.0	0.1～2.0	0.15～3.0
PRN30S/D	0.07～0.7	0.14～1.4	0.21～2.1

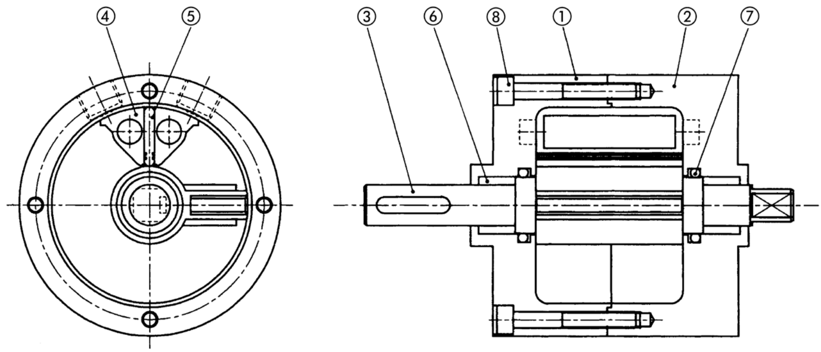
● Use HI-ROTORs within the range of the oscillating time range. Otherwise, the HI-ROTOR will tend to occur in a stick-slip motion.

HI-ROTOR with switch
CT and SR type proximity switch

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

Construction

PRNA1S, PRNA3S, PRNA10S, PRNA20S, PRN30S



Main Components

No.	Description	Material	
		PRN30S	PRNA1S, PRNA3S, PRNA10S, PRNA20S
1	Body A	Aluminum alloy	
2	Body B	Aluminum alloy	
3	Vane shaft	Steel + Resin + NBR	Steel + Resin + HNBR
4	Shoe	Resin	
5	Shoe seal	NBR	HNBR
6	Bearing bush	—	
7	O-ring	NBR	HNBR
8	Screws group	Steel	

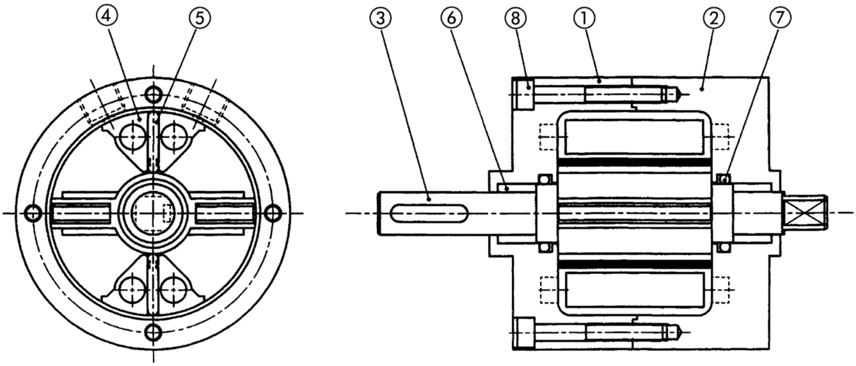
Model No. of Packing Kit

Applicable HI-ROTOR	Model No.
PRNA1S	PRNA1S-PS
PRNA3S, PROA3S	PRNA3S-PS
PRNA10S, PROA10S	PRNA10S-PS
PRNA20S, PROA20S	PRNA20S-PS
PRNA30S, PRO30S	PRN30S-PS

Note : A set of packings consists of part No. 3, 5 and 7.

Construction

PRNA1S, PRNA3S, PRNA10S, PRNA20S, PRN30S



Main Components

No.	Description	Material
		PRN30D
1	Body A	Aluminum alloy
2	Body B	Aluminum alloy
3	Vane shaft	Steel + Resin + NBR
4	Shoe	Resin
5	Shoe seal	NBR
6	Bearing bush	—
7	O-ring	NBR
8	Screws group	Steel

Model No. of Packing Kit

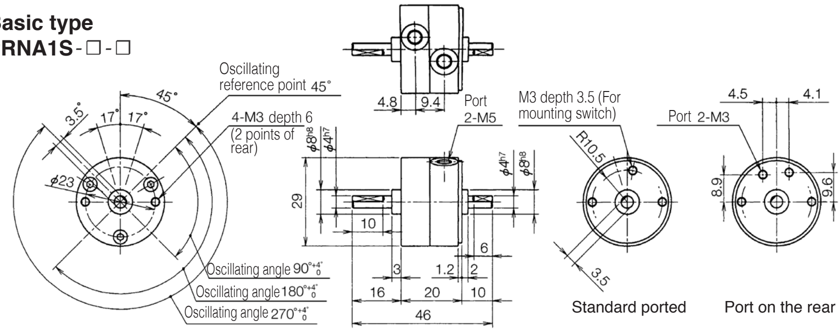
Applicable HI-ROTOR	Model No.
PRN30D , PRO30D	PRN30D-PS

Note : A set of packings consists of part No.3, 5 and 7.

FONTAL

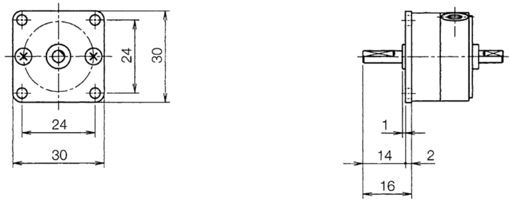
(Unit: mm)

Basic type
PRNA1S-□-□

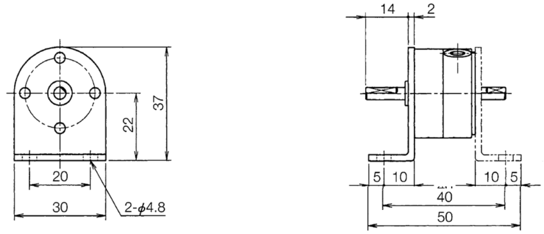


Standard ported　　Port on the rear

With flange plate
PRNA1S-□-□-P

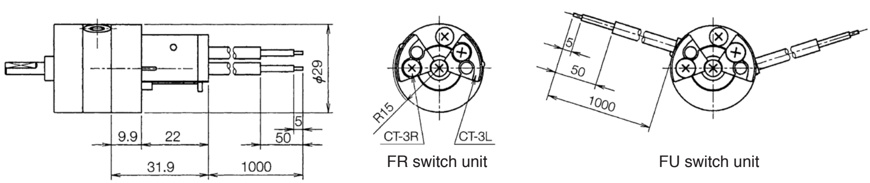


With foot plate
PRNA1S-□-□-L1(L2)



Short shaft side : Example with L2

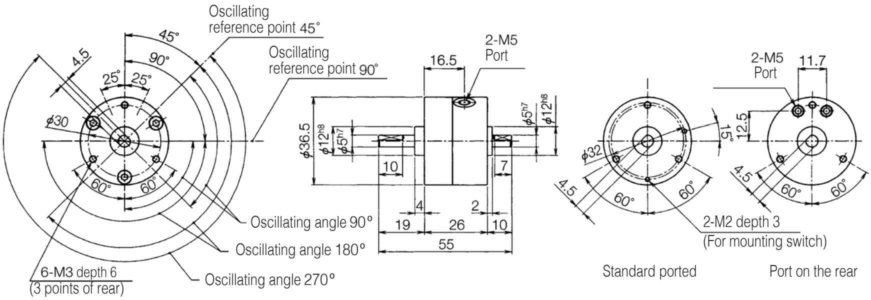
With switch unit
(Switch position adjustable type)
PRNA1S-□-□-□-FR(FU)



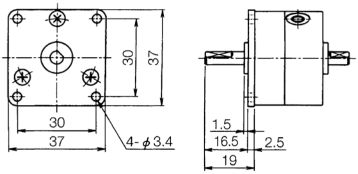
FR switch unit　　FU switch unit

(Unit: mm)

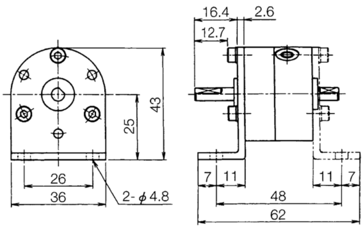
Basic type
PRNA3S-□-□□



With flange plate
PRNA3S-□-□□-P

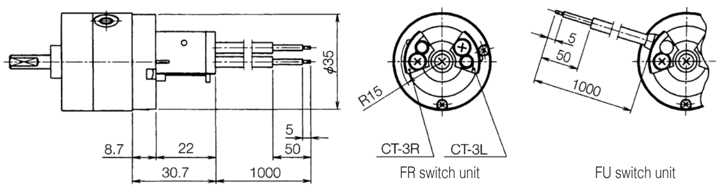


With foot plate
PRNA3S-□-□□-L1(L2)

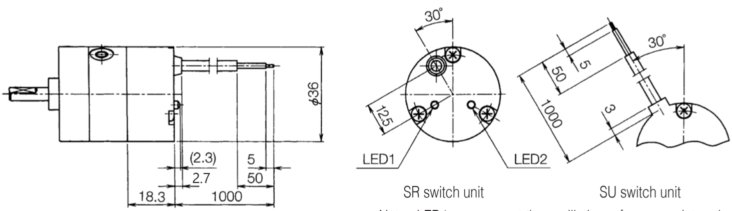


Short shaft side : Example with L2

With switch unit
(Switch position adjustable type)
PRNA3S-□-□-□-FR(FU)



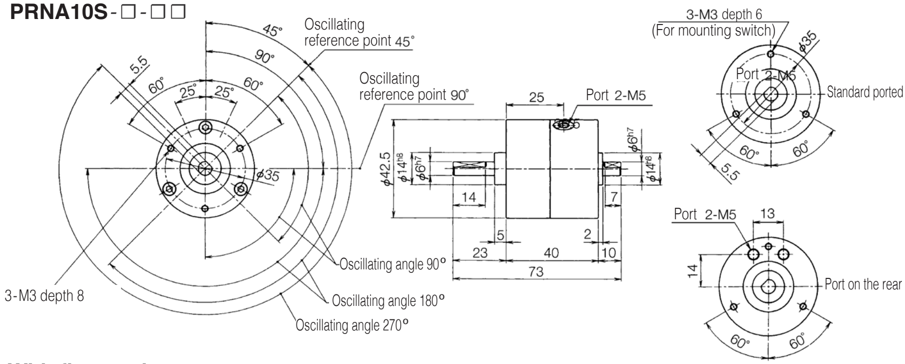
With switch unit
(Switch position fixed type)
PRNA3S-□-□-□-SR(SU)



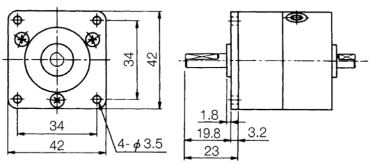
Note: LED1 comes on at the oscillating reference point and LED2 at the end of oscillation.

(Unit: mm)

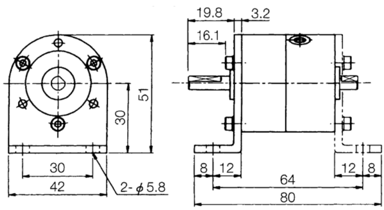
Basic type
PRNA10S-□-□□



With flange plate
PRNA10S-□-□□-P

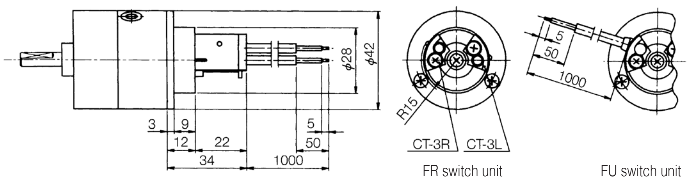


With foot plate
PRNA10S-□-□□-L1(L2)



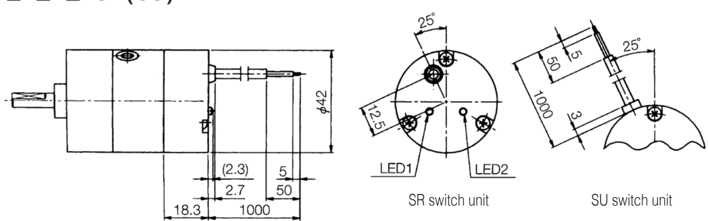
Short shaft side : Example with L2

With switch unit
(Switch position adjustable type)
PRNA10S-□-□-□-FR(FU)



FR switch unit FU switch unit

With switch unit
(Switch position fixed type)
PRNA10S-□-□-□-SR(SU)

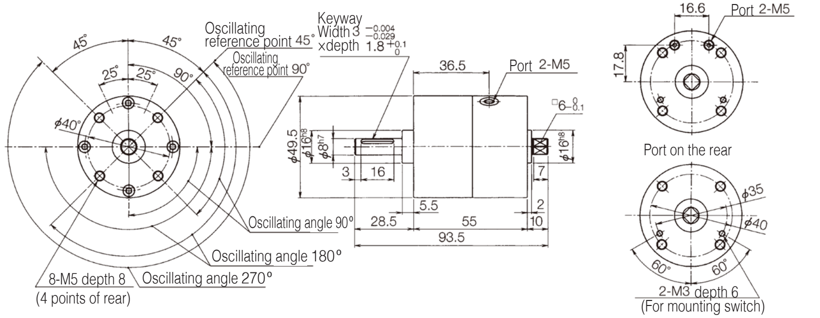


SR switch unit SU switch unit

Note: LED1 comes on at the oscillating reference point and LED2 at the end of oscillation.
Note: SR and SU switch cannot be mouted on PRNA10S-270-45

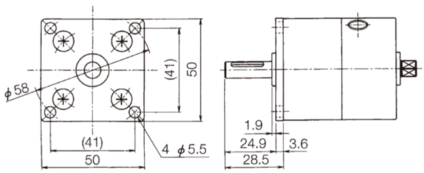
(Unit: mm)

Basic type
PRNA20S-□-□□

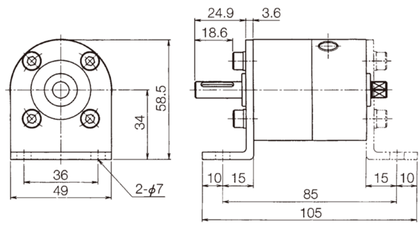


Standard ported

With flange plate
PRNA20S-□-□□-P

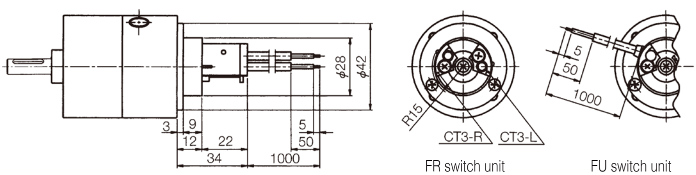


With foot plate
PRNA20S-□-□□-L1(L2)



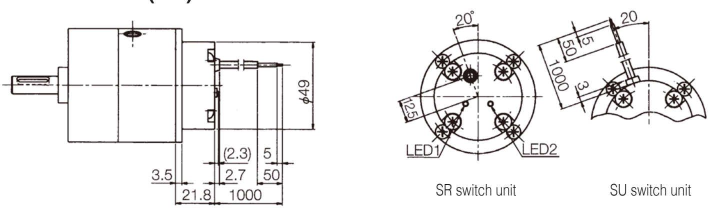
Short shaft side : Example with L2

With switch unit (Switch position adjustable type)
PRNA20S-□-□-□-FR(FU)



FR switch unit FU switch unit

With switch unit (Switch position fixed type)
PRNA20S-□-□-□-SR(SU)

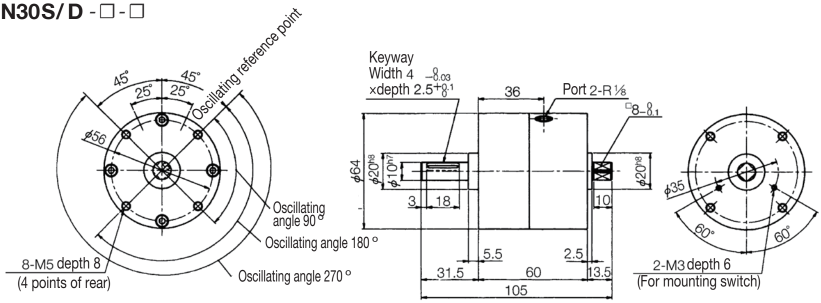


SR switch unit SU switch unit

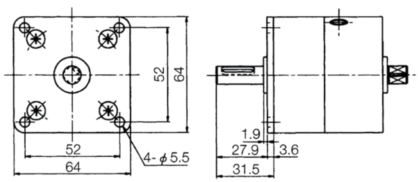
Note: LED1 comes on at the oscillating reference point and LED2 at the end of oscillation.

(Unit: mm)

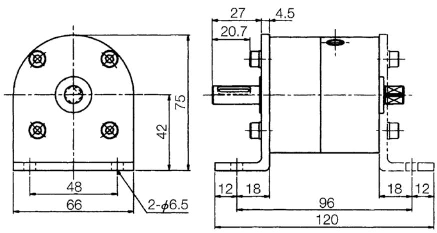
Basic type
PRN30S/ D -□-□



With flange plate
PRN30S/ D -□-□-P

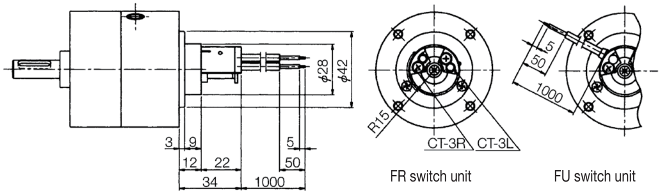


With foot plate
PRN30S/ D -□-□-L1 (L2)



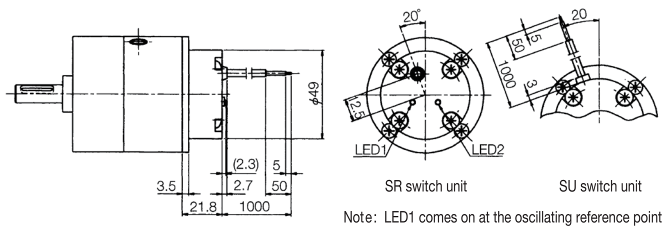
Short shaft side : Example with L2

With switch unit
(Switch position adjustable type)
PRN30S/ D -□-□-□-FR (FU)



FR switch unit FU switch unit

With switch unit
(Switch position fixed type)
PRN30S/ D -□-□-□-SR (SU)



SR switch unit SU switch unit

Note: LED1 comes on at the oscillating reference point and LED2 at the end of oscillation.