

# A.P. LOCK : SAPL-R SERIES



## Structure and Material for SAPL-R Series

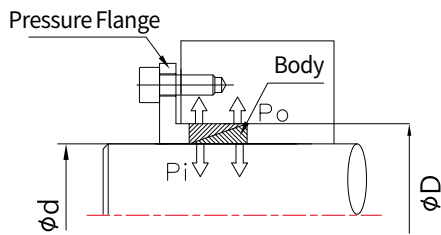
Model	Body (Inner-ring / Outer-ring)	
	Material	Surface Treatment
SAPL-R	STEEL	-

※ Please contact Sung-il Customer Service team for eletroless nickel plating surface treatment option for SAPL-R Series.

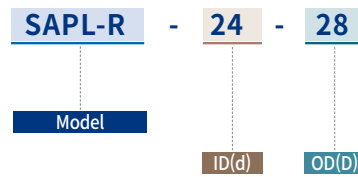
## Product Features

- Relatively lower Transmissible torque
- Compact design for limited space of Hub's OD
- Recommended tolerance for Shaft: h6 ( $\leq$  ID 40mm), h8 ( $\geq$  ID 42mm)
- Recommended tolerance for Hub: H7 ( $\leq$  40mm), H8 ( $\geq$  ID 42mm)

## Principles



## How to Order

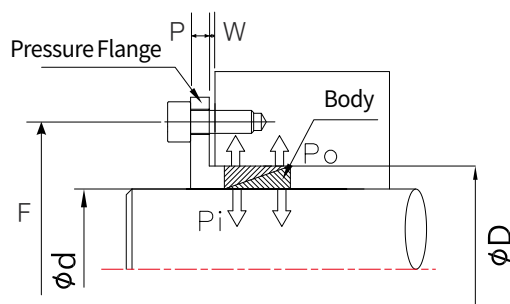


# SAPL-R SERIES : SAPL-R

## Selection and Design Guide

### Design of Pressure Flange

In general, SAPL-R series is supposed to be used along with pressure flanges whose design varies according to user's shaft/hub design. Please refer to the below design variables.



#### 1. Location of screws (locking bolts) on the pressure flange (F)

- 1) Case1: Pressure flange mounted on Hub  
 $F = D + 12 + d_b$  (screw size)
- 2) Case2: Pressure flange mounted on Shaft  
 $F = D - 12 - d_b$  (screw size)

#### 2. Thickness of pressure flange (P)

- 1) Case1: Fastened with Grade 8.8 class screw  
 $P = 1.3 \times d_b$  (screw size)
- 2) Case2: Fastened with Grade 12.9 class screw  
 $P = 1.8 \times d_b$  (screw size)

※ If more than 2pcs of SAPL-R are mounted simultaneously  
 - Distance(W) between pressure flange and hub/shaft has to be adjusted. Please refer to "Dimensions / Performance" pages for (W) values.

### Transmissible Torque Calculation (Formula)

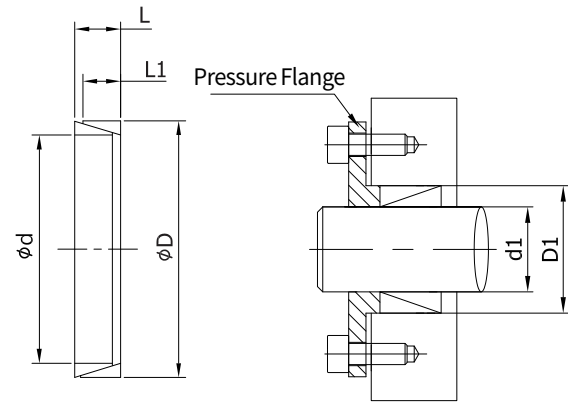
$$TC = \frac{P_{\text{total}} - P_{\text{pre-load}}}{0.54} \times 0.12 \times \frac{d}{2000}$$

Screw Size $d_b$	Pressure on each screw $P_b$ [N]		
	Grade 8.8 class	Grade 10.9 class	Grade 12.9 class
M4	3900	5450	6550
M5	6350	8950	10700
M6	9000	12600	15100
M8	16500	23200	27900
M10	26200	36900	44300
M12	38300	54000	64500

※ If more than 2pcs of SAPL-R are mounted simultaneously, the clamping force on shaft (permissible torque) becomes higher.

- SAPL-R/ 1pc mounted: Tc (Max. Permissible Torque)
- SAPL-R/ 2pcs mounted: Tc (Max. Permissible Torque) x 1.55
- SAPL-R/ 3pcs mounted: Tc (Max. Permissible Torque) x 1.85
- SAPL-R/ 4pcs mounted: Tc (Max. Permissible Torque) x 2.02

# SAPL-R SERIES : SAPL-R



## Dimensions / Performance

Model d x D	Size( $\pm 0.3\text{mm}$ )		Initial Clamping Force $P_{\text{pre-load}}$ (N)	$W^*$ (mm)				Pressure Flange		Surface Pressure (Mpa)		Mass(g)
	$L_1$	L		1 set	2 set	3 set	4 set	$d_1$	$D_2$	Shaft(Pi)	Hub(Po)	
SAPL-R-6 x 9	3.7	4.5	8400	2.5	2.5	3	4	6.1	8.9	115	75	2
SAPL-R-7 x 10	3.7	4.5	8200	2.5	2.5	3	4	7.1	9.9	105	70	2
SAPL-R-8 x 11	3.7	4.5	7700	2.5	2.5	3	4	8.1	10.9	120	90	2
SAPL-R-9 x 12	3.7	4.5	7650	2.5	2.5	3	4	9.1	11.9	140	105	2
SAPL-R-10 x 13	3.7	4.5	7000	2.5	2.5	3	4	10.1	12.9	135	105	2
SAPL-R-11 x 14	3.7	4.5	7000	2.5	2.5	3	4	11.1	13.9	115	90	2
SAPL-R-12 x 15	3.7	4.5	7000	2.5	2.5	3	4	12.1	14.9	115	90	2
SAPL-R-13 x 16	3.7	4.5	6500	2.5	2.5	3	4	13.1	15.9	110	90	2
SAPL-R-14 x 18	5.3	6.3	11000	3.5	3.5	4.5	5.5	14.1	17.9	115	85	5
SAPL-R-15 x 19	5.3	6.3	10800	3.5	3.5	4.5	5.5	15.1	18.9	110	85	5
SAPL-R-16 x 20	5.3	6.3	10000	3.5	3.5	4.5	5.5	16.1	19.9	105	85	6
SAPL-R-17 x 21	5.3	6.3	9600	3.5	3.5	4.5	5.5	17.1	20.9	105	80	6
SAPL-R-18 x 22	5.3	6.3	9150	3.5	3.5	4.5	5.5	18.1	21.9	100	110	7
SAPL-R-19 x 24	5.3	6.3	12500	3.5	3.5	4.5	5.5	19.2	23.8	140	105	7
SAPL-R-20 x 25	5.3	6.3	12000	3.5	3.5	4.5	5.5	20.2	24.8	135	115	9
SAPL-R-22 x 26	5.3	6.3	9000	3.5	3.5	4.5	5.5	22.2	25.8	135	110	7
SAPL-R-24 x 28	5.3	6.3	8400	3.5	3.5	4.5	5.5	24.2	27.8	130	95	8
SAPL-R-25 x 30	5.3	6.3	10000	3.5	3.5	4.5	5.5	25.2	29.8	115	100	9
SAPL-R-28 x 32	5.3	6.3	7500	3.5	3.5	4.5	5.5	28.2	31.8	115	85	10
SAPL-R-30 x 35	5.3	6.3	8600	3.5	3.5	4.5	5.5	30.2	34.8	100	115	11
SAPL-R-32 x 36	5.3	6.3	7900	3.5	3.5	4.5	5.5	32.2	35.8	130	110	11
SAPL-R-35 x 40	6	7	10000	3.5	3.5	4.5	5.5	35.2	39.8	125	100	16
SAPL-R-36 x 42	6	7	11700	3.5	3.5	4.5	5.5	36.2	41.8	115	95	19
SAPL-R-38 x 44	6	7	11000	3.5	3.5	4.5	5.5	38.2	43.8	110	105	21
SAPL-R-40 x 45	6.6	8	13900	3.5	4.5	5.5	6.5	40.2	44.8	115	95	21
SAPL-R-42 x 48	6.6	8	15550	3.5	4.5	5.5	6.5	42.2	47.8	110	95	26
SAPL-R-45 x 52	8.6	10	28300	3.5	4.5	5.5	6.5	45.2	51.8	105	135	45
SAPL-R-48 x 55	8.6	10	24700	3.5	4.5	5.5	6.5	48.2	54.8	155	130	43
SAPL-R-50 x 57	8.6	10	23600	3.5	4.5	5.5	6.5	50.2	56.8	150	125	45

- Pt(Max. Permissible Thrust Load) indicates values at the zero(0) torque, and Tc(Max. Permissible Torque) at the zero(0) thrust load respectively. In case torque and thrust load occur simultaneously, please refer to the formula in the [Selection guide] page for combined load calculation.
- For the best performance, make sure all foreign substances e.g. corrosion, dust etc. are removed from each surface of shaft, hub, and A.P. Lock's inner and outer ring.
- $W^*$ : Distance(W) between pressure flange and hub/shaft when several pieces of SAPL-R are mounted simultaneously.