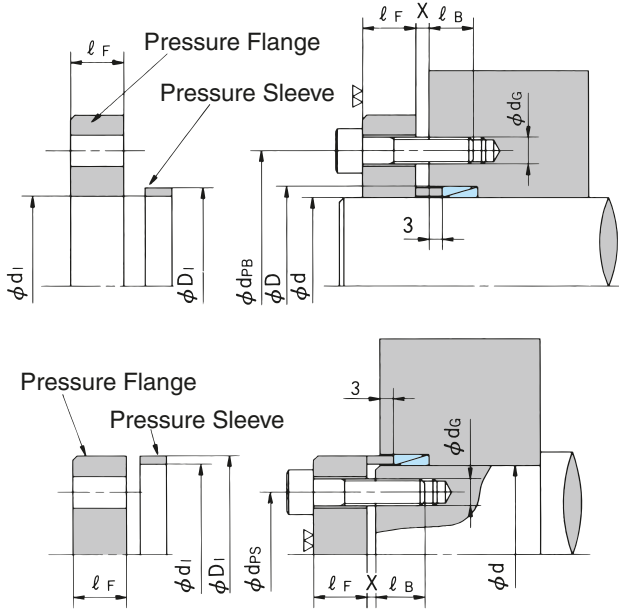


STEP4 Pressure System Designs

Unit : mm

Pressure flanges experience a great deal of stress while locking bolts are being tightened. To avoid plastic deformation, use a pressure flange with the appropriate material strength and provide enough leeway in the design to account for some stress. Provided below are example pressure system design and calculations.



See table on the right for d₁, D₁ and X dimensions.

(1) Bolt Pitch Circle Diameter d_{pb}, d_{ps} mm

(When d = φ 10 ~ φ 30)

$$d_{pb} = D + 8 + d_g$$

$$d_{ps} = d - 8 - d_g$$

(When d = φ 32 ~ φ 150)

$$d_{pb} = D + 10 + d_g$$

$$d_{ps} = d - 10 - d_g$$

However, if you are mounting a pressure flange to the hub, use 1/2 of the maximum number of bolts allowed or less, so that they may fit into the d_{pb} circumference.

(2) Thickness of Pressure Flange l_F mm

$$l_F \geq 2 \times d_g$$

(3) Strength of Pressure Flange (σ_{0.2F})

When tightening with the torque required for 8.8 bolts.

$$\sigma_{0.2F} \geq 294 \text{ MPa} \{30\text{kgf/mm}^2\} \text{ (S35C equivalent)}$$

When tightening with the torque required for 10.9 bolts.

$$\sigma_{0.2F} \geq 343 \text{ MPa} \{35\text{kgf/mm}^2\} \text{ (S45C equivalent)}$$

When tightening with the torque required for 12.9 bolts.

$$\sigma_{0.2F} \geq 392 \text{ MPa} \{40\text{kgf/mm}^2\} \text{ (S55C equivalent)}$$

σ_{0.2F} : Yield point of pressure flange

MPa {kgf/mm²}

(4) Functioning Length of the Screw l_B mm

$$l_B \geq 1.5 \times d_g$$

Model No. d X D { Shaft Diameter X Outer Diameter(P.L.) mm	Gap X Number of EL P.L.s Installed				Pressure Sleeve Diameters	
	1	2	3	4	d ₁	D ₁
PL010×013 E	2	2	3	3	10.1	12.9
PL011×014 E	2	2	3	3	11.1	13.9
PL012×015 E	2	2	3	3	12.1	14.9
PL013×016 E	2	2	3	3	13.1	15.9
PL014×018 E	3	3	4	5	14.1	17.9
PL015×019 E	3	3	4	5	15.1	18.9
PL016×020 E	3	3	4	5	16.1	19.9
PL017×021 E	3	3	4	5	17.1	20.9
PL018×022 E	3	3	4	5	18.1	21.9
PL019×024 E	3	3	4	5	19.2	23.8
PL020×025 E	3	3	4	5	20.2	24.8
PL022×026 E	3	3	4	5	22.2	25.8
PL024×028 E	3	3	4	5	24.2	27.8
PL025×030 E	3	3	4	5	25.2	29.8
PL028×032 E	3	3	4	5	28.2	31.8
PL030×035 E	3	3	4	5	30.2	34.8
PL032×036 E	3	3	4	5	32.2	35.8
PL035×040 E	3	3	4	5	35.2	39.8
PL036×042 E	3	3	4	5	36.2	41.8
PL038×044 E	3	3	4	5	38.2	43.8
PL040×045 E	3	4	5	6	40.2	44.8
PL042×048 E	3	4	5	6	42.2	47.8
PL045×052 E	3	4	5	6	45.2	51.8
PL048×055 E	3	4	5	6	48.2	54.8
PL050×057 E	3	4	5	6	50.2	56.8
PL055×062 E	3	4	5	6	55.2	61.8
PL056×064 E	3	4	5	7	56.2	63.8
PL060×068 E	3	4	5	7	60.2	67.8
PL063×071 E	3	4	5	7	63.2	70.8
PL065×073 E	3	4	5	7	65.2	72.8
PL070×079 E	3	5	6	7	70.3	78.7
PL071×080 E	3	5	6	7	71.3	79.7
PL075×084 E	3	5	6	7	75.3	83.7
PL080×091 E	4	5	6	8	80.3	90.7
PL085×096 E	4	5	6	8	85.3	95.7
PL090×101 E	4	5	6	8	90.3	100.7
PL095×106 E	4	5	6	8	95.3	105.7
PL100×114 E	4	6	7	9	100.3	113.7
PL110×124 E	4	6	7	9	110.3	123.7
PL120×134 E	4	6	7	9	120.3	133.7
PL130×148 E	5	7	9	11	130.4	147.6
PL140×158 E	5	7	9	11	140.4	157.6
PL150×168 E	5	7	9	11	150.4	167.6

X : The number of EL Series Power-Locks provided are based on the minimum space available when the ring is under pressure.

