



- PSL-K model
- PSL-G model
- PSL-D model

The permissible tolerances of size for the shaft and the mounting part are large. Besides, any special finish is not required. Phase alignment and positioning can be easily done. There is no backlash.

■ Adapted to the RoHS

Adapted to the Restriction of Hazardous Substances defined by EU that bans the use of 6 substances such as mercury or lead.

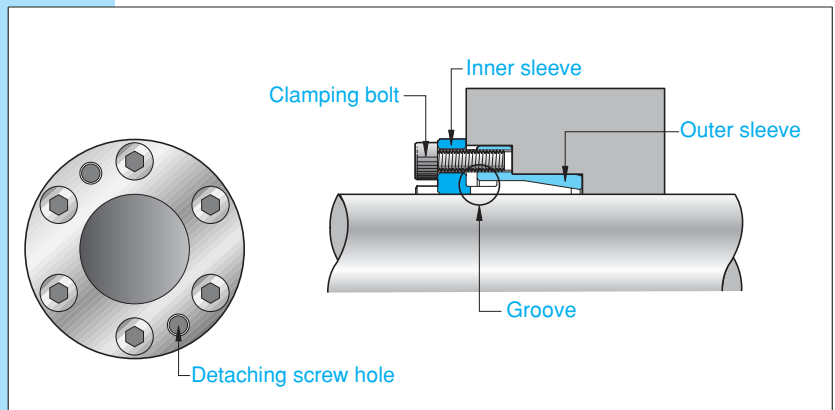
* As of June 2006

Max. permissible torque [N·m]	4.7~2810
Max. permissible thrust power [N]	1560~93600
Bore diameter [mm]	φ 6~60
Operating temp. limit [°C]	-40~+150
Backlash	Zero

Principle of Operation

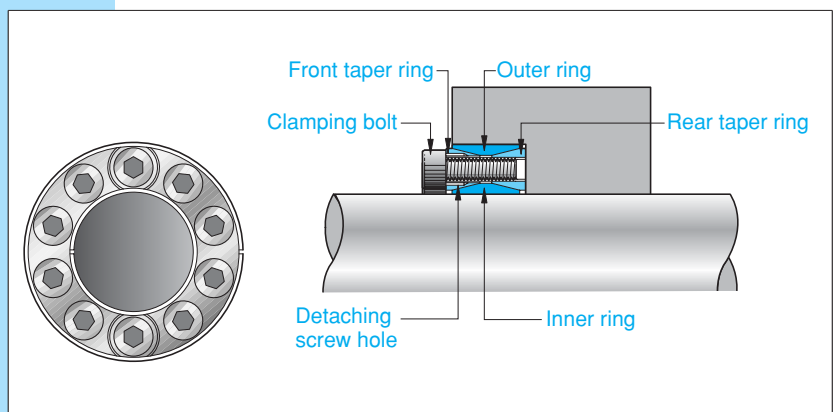
PSL-K

- By tightening the clamping bolt, the outer sleeve moves to the axial direction. At this time, a force that pushes the inside shaft and hub is generated by the wedge action on the taper surface of the inner sleeve. The shaft and hub are completely fastened by the pushing force. The wedge effect is enhanced by the groove of the inner sleeve that high transfer torque can be obtained.



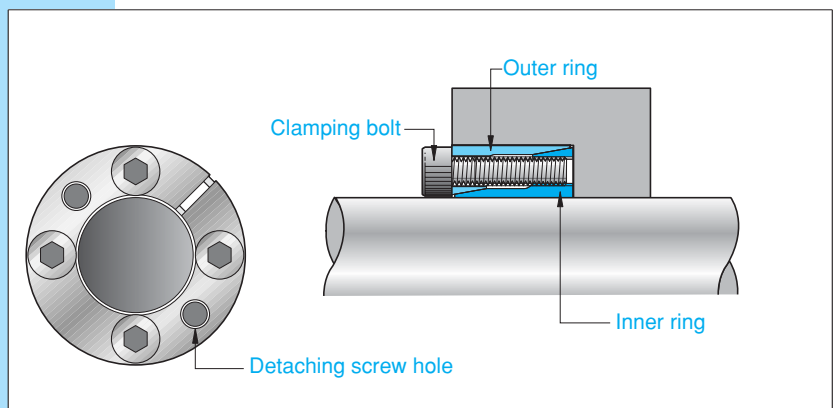
PSL-G

- By fastening the clamping bolt, two taper rings move to the axial direction. At this time, a force that pushes the inside shaft and hub is generated by the wedge action on each taper surface of the outer and inner rings. The shaft and hub are completely fastened by the pushing force.



PSL-D

- By fastening the clamping bolt, the outer ring moves to the axial direction. At this time, a force that pushes the inside shaft and hub is generated by the wedge action on the taper surface of the inner ring. The shaft and hub are completely fastened by the pushing force.



Model List

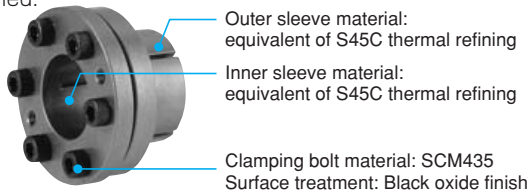
Model	Body material	Appropriate shaft dia. [mm]	Max. permissible torque [N·m]	Max. permissible thrust power [N]
PSL-K	S45C Thermal Refining or similar	6~40	5.9~720	1950~36000
PSL-K-B	S45C Thermal Refining or similar	6~40	5.9~720	1950~36000
PSL-K-C	S45C T.R. or similar (electroless nickel plate)	6~40	5.9~720	1950~36000
PSL-K-F	SUS304 Thermal Refining or similar	6~35	4.7~504	1560~28800
PSL-G	S45C Thermal Refining or similar	19~60	289~2810	30500~93600
PSL-G-C	S45C T.R. or similar (electroless nickel plate)	19~60	289~2810	30500~93600
PSL-D	S45C Thermal Refining or similar	6~50	6~1760	2100~70300
PSL-D-C	S45C T.R. or similar (electroless nickel plate)	16~50	67~1760	8400~70300

Structure and Material

PSL-K model

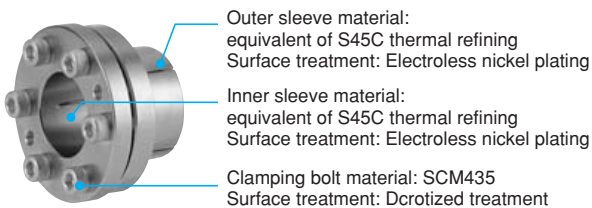
PSL-K

Because the outside-diameter ratio of the inside sleeve is small, the diameter of mounting parts and the moment of inertia can be reduced. Its mechanism is simple, and high-accuracy concentricity can be retained.



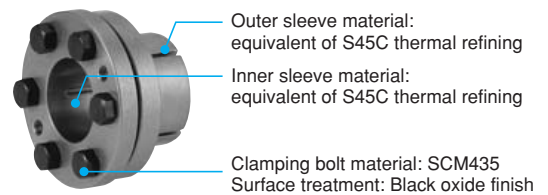
PSL-K-C (Basic antirust specification)

A basic antirust specification with electroless nickel plating coated on the body.



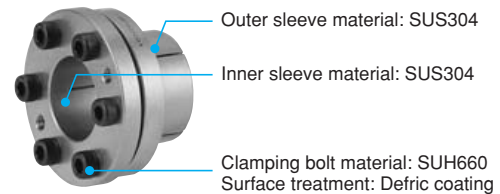
PSL-K-B (Hexagon bolt specification)

Hexagon bolt is used for the clamping bolt. The PSL-K-B can be assembled if there is not enough space in the thrust direction.



PSL-K-F (Stainless specification)

Basic antirust specification with stainless material used on the body.

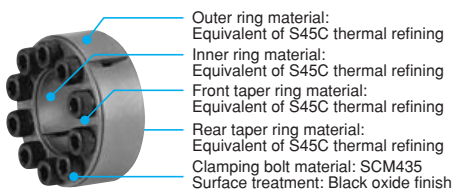


* Special coating is used for the clamping bolt to stabilize the axial force.

PSL-G model

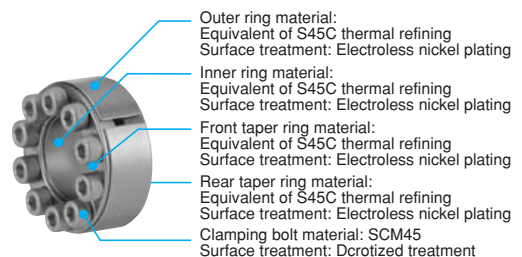
PSL-G

Homogeneous transmission ability can be obtained by the simple structure and strong component. The PSL-G also corresponds to heavy loading. It is shorter to the axial direction that space can be saved.



PSL-G-C (Basic antirust specification)

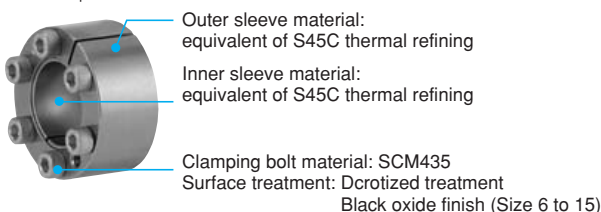
A basic antirust specification with electroless nickel plating coated on the body.



PSL-D model

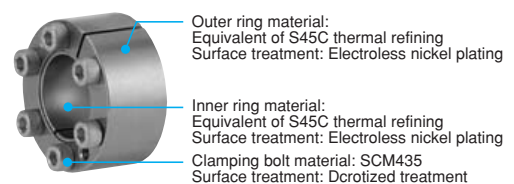
PSL-D

The PSL-D is designed for middle loading. Because its surface pressure is low, reduction in size and weight can be performed. It is shorter to the axial direction that space can be saved.



PSL-D-C (Basic antirust specification)

A basic antirust specification with electroless nickel plating coated on the body.





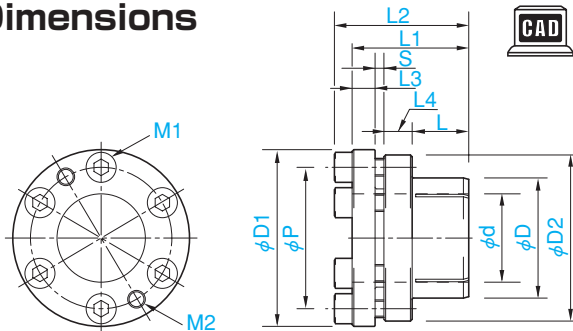
*1: See Mounting and Dismounting (P53).

Specification

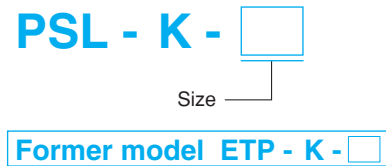
Model	Max. permissible torque [N·m]	Max. permissible thrust power [N]	Shaft-side surface pressure [N/mm ²]	Hub-side surface pressure [N/mm ²]	Bolt tightening torque [N·m]	Moment of inertia [kg·m ²]	Mass [kg]	Price
PSL-K-6	5.9	1950	160	80	2	2.5×10 ⁻⁶	0.037	—
PSL-K-6.35	6.2	1950	150	80	2	2.5×10 ⁻⁶	0.036	—
PSL-K-7	6.8	1950	130	80	2	2.5×10 ⁻⁶	0.035	—
PSL-K-8	23	5900	290	160	4	5.0×10 ⁻⁶	0.056	—
PSL-K-9	26	5900	260	160	4	5.0×10 ⁻⁶	0.053	—
PSL-K-9.525	28	5900	250	130	4	7.8×10 ⁻⁶	0.069	—
PSL-K-10	29	5900	230	130	4	7.7×10 ⁻⁶	0.068	—
PSL-K-11	32	5900	210	130	4	7.6×10 ⁻⁶	0.065	—
PSL-K-12	47	7800	260	160	4	10×10 ⁻⁶	0.076	—
PSL-K-12.7	50	7800	250	140	4	10×10 ⁻⁶	0.073	—
PSL-K-14	55	7800	220	140	4	13×10 ⁻⁶	0.083	—
PSL-K-15	95	12700	290	190	8	24×10 ⁻⁶	0.125	—
PSL-K-16	100	12700	270	180	8	27×10 ⁻⁶	0.130	—
PSL-K-17	110	12700	260	170	8	33×10 ⁻⁶	0.145	—
PSL-K-18	110	12700	240	170	8	32×10 ⁻⁶	0.140	—
PSL-K-19	120	12700	230	160	8	40×10 ⁻⁶	0.155	—
PSL-K-20	130	12700	220	160	8	39×10 ⁻⁶	0.150	—
PSL-K-22	210	19000	250	170	8	65×10 ⁻⁶	0.210	—
PSL-K-24	230	19000	230	160	8	76×10 ⁻⁶	0.220	—
PSL-K-25	240	19000	220	160	8	75×10 ⁻⁶	0.210	—
PSL-K-28	380	27000	220	160	14	203×10 ⁻⁶	0.390	—
PSL-K-30	400	27000	210	150	14	230×10 ⁻⁶	0.400	—
PSL-K-32	430	27000	190	140	14	260×10 ⁻⁶	0.425	—
PSL-K-35	630	36000	210	150	14	366×10 ⁻⁶	0.525	—
PSL-K-40	720	36000	160	120	14	511×10 ⁻⁶	0.599	—

* The maximum permissible torque is the value when the thrust power is zero, and the maximum permissible thrust power is the value when the torque is zero.

Dimensions



Ordering Information



Unit [mm]

Model	d	D	D1	D2	P	L	L1	L2	L3	L4	S	M1	M2	CAD file No.
PSL-K-6	6	12	25	23	17	10	20	24	3.5	5	1.5	2-M4×8	2-M4	PSL-K01
PSL-K-6.35	6.35	12	25	23	17	10	20	24	3.5	5	1.5	2-M4×8	2-M4	PSL-K02
PSL-K-7	7	12	25	23	17	10	20	24	3.5	5	1.5	2-M4×8	2-M4	PSL-K03
PSL-K-8	8	15	28	26	20	12	24	28	5	5	2	3-M4×10	3-M4	PSL-K04
PSL-K-9	9	15	28	26	20	12	24	28	5	5	2	3-M4×10	3-M4	PSL-K05
PSL-K-9.525	9.525	18	31	29	23	12	24	28	5	5	2	3-M4×10	3-M4	PSL-K06
PSL-K-10	10	18	31	29	23	12	24	28	5	5	2	3-M4×10	3-M4	PSL-K07
PSL-K-11	11	18	31	29	23	12	24	28	5	5	2	3-M4×10	3-M4	PSL-K08
PSL-K-12	12	20	33	31	25	12	24	28	5	5	2	4-M4×10	2-M4	PSL-K09
PSL-K-12.7	12.7	20	33	31	25	12	24	28	5	5	2	4-M4×10	2-M4	PSL-K10
PSL-K-14	14	22	35	33	27	12	24	28	5	5	2	4-M4×10	2-M4	PSL-K11
PSL-K-15	15	23	39	36	29	14	29	34	6	7	2	4-M5×12	2-M5	PSL-K12
PSL-K-16	16	24	40	37	30	14	29	34	6	7	2	4-M5×12	2-M5	PSL-K13
PSL-K-17	17	26	42	39	32	14	29	34	6	7	2	4-M5×12	2-M5	PSL-K14
PSL-K-18	18	26	42	39	32	14	29	34	6	7	2	4-M5×12	2-M5	PSL-K15
PSL-K-19	19	28	44	41	34	14	29	34	6	7	2	4-M5×12	2-M5	PSL-K16
PSL-K-20	20	28	44	41	34	14	29	34	6	7	2	4-M5×12	2-M5	PSL-K17
PSL-K-22	22	32	48	45	38	16	33	38	6.5	8	2.5	6-M5×14	2-M5	PSL-K18
PSL-K-24	24	34	50	47	40	16	33	38	6.5	8	2.5	6-M5×14	2-M5	PSL-K19
PSL-K-25	25	34	50	47	40	16	33	38	6.5	8	2.5	6-M5×14	2-M5	PSL-K20
PSL-K-28	28	39	62	59	47	20	39	45	7.5	9	2.5	6-M6×16	2-M6	PSL-K21
PSL-K-30	30	41	64	61	49	20	39	45	7.5	9	2.5	6-M6×16	2-M6	PSL-K22
PSL-K-32	32	43	66	63	51	20	39	45	7.5	9	2.5	6-M6×16	2-M6	PSL-K23
PSL-K-35	35	47	70	67	55	22	43	49	8	10	3	8-M6×18	2-M6	PSL-K24
PSL-K-40	40	53	76	73	61	22	43	49	8	10	3	8-M6×18	2-M6	PSL-K25

* L1, L2 and S are the measurements before the POSI LOCK is fixed.

PSL-K-B



*1

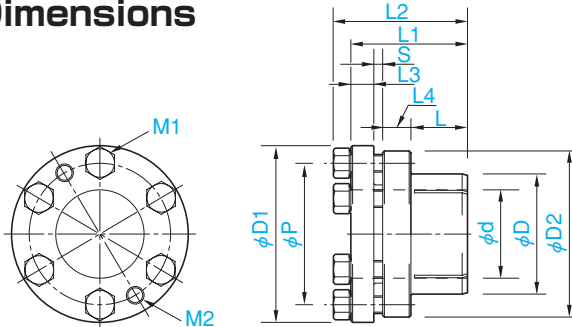
**1: See Mounting and Dismounting (P53).

Specification

Model	Max. permissible torque [N·m]	Max. permissible thrust power [N]	Shaft-side surface pressure [N/mm ²]	Hub-side surface pressure [N/mm ²]	Bolt tightening torque [N·m]	Moment of inertia [kg·m ²]	Mass [kg]	Price
PSL-K-6-B	5.9	1950	160	80	2	2.5×10 ⁻⁶	0.037	—
PSL-K-6.35-B	6.2	1950	150	80	2	2.5×10 ⁻⁶	0.036	—
PSL-K-7-B	6.8	1950	130	80	2	2.5×10 ⁻⁶	0.035	—
PSL-K-8-B	23	5900	290	160	4	5.0×10 ⁻⁶	0.056	—
PSL-K-9-B	26	5900	260	160	4	5.0×10 ⁻⁶	0.053	—
PSL-K-9.525-B	28	5900	250	130	4	7.8×10 ⁻⁶	0.069	—
PSL-K-10-B	29	5900	230	130	4	7.7×10 ⁻⁶	0.068	—
PSL-K-11-B	32	5900	210	130	4	7.6×10 ⁻⁶	0.065	—
PSL-K-12-B	47	7800	260	160	4	10×10 ⁻⁶	0.076	—
PSL-K-12.7-B	50	7800	250	140	4	10×10 ⁻⁶	0.073	—
PSL-K-14-B	55	7800	220	140	4	13×10 ⁻⁶	0.083	—
PSL-K-15-B	95	12700	290	190	8	24×10 ⁻⁶	0.125	—
PSL-K-16-B	100	12700	270	180	8	27×10 ⁻⁶	0.130	—
PSL-K-17-B	110	12700	260	170	8	33×10 ⁻⁶	0.145	—
PSL-K-18-B	110	12700	240	170	8	32×10 ⁻⁶	0.140	—
PSL-K-19-B	120	12700	230	160	8	40×10 ⁻⁶	0.155	—
PSL-K-20-B	130	12700	220	160	8	39×10 ⁻⁶	0.150	—
PSL-K-22-B	210	19000	250	170	8	65×10 ⁻⁶	0.210	—
PSL-K-24-B	230	19000	230	160	8	76×10 ⁻⁶	0.220	—
PSL-K-25-B	240	19000	220	160	8	75×10 ⁻⁶	0.210	—
PSL-K-28-B	380	27000	220	160	14	203×10 ⁻⁶	0.390	—
PSL-K-30-B	400	27000	210	150	14	230×10 ⁻⁶	0.400	—
PSL-K-32-B	430	27000	190	140	14	260×10 ⁻⁶	0.425	—
PSL-K-35-B	630	36000	210	150	14	366×10 ⁻⁶	0.525	—
PSL-K-40-B	720	36000	160	120	14	511×10 ⁻⁶	0.599	—

* The maximum permissible torque is the value when the thrust power is zero, and the maximum permissible thrust power is the value when the torque is zero.

Dimensions



Ordering Information

PSL - K - - B

Size

Type (B: Hexagon specification)

Former model ETP - K - - B

Unit [mm]

Model	d	D	D1	D2	P	L	L1	L2	L3	L4	S	M1	M2	CAD file No.
PSL-K-6-B	6	12	25	23	17	10	20	24	3.5	5	1.5	2-M4×8	2-M4	PSL-KB01
PSL-K-6.35-B	6.35	12	25	23	17	10	20	24	3.5	5	1.5	2-M4×8	2-M4	PSL-KB02
PSL-K-7-B	7	12	25	23	17	10	20	24	3.5	5	1.5	2-M4×8	2-M4	PSL-KB03
PSL-K-8-B	8	15	28	26	20	12	24	28	5	5	2	3-M4×10	3-M4	PSL-KB04
PSL-K-9-B	9	15	28	26	20	12	24	28	5	5	2	3-M4×10	3-M4	PSL-KB05
PSL-K-9.525-B	9.525	18	31	29	23	12	24	28	5	5	2	3-M4×10	3-M4	PSL-KB06
PSL-K-10-B	10	18	31	29	23	12	24	28	5	5	2	3-M4×10	3-M4	PSL-KB07
PSL-K-11-B	11	18	31	29	23	12	24	28	5	5	2	3-M4×10	3-M4	PSL-KB08
PSL-K-12-B	12	20	33	31	25	12	24	28	5	5	2	4-M4×10	2-M4	PSL-KB09
PSL-K-12.7-B	12.7	20	33	31	25	12	24	28	5	5	2	4-M4×10	2-M4	PSL-KB10
PSL-K-14-B	14	22	35	33	27	12	24	28	5	5	2	4-M4×10	2-M4	PSL-KB11
PSL-K-15-B	15	23	39	36	29	14	29	33.5	6	7	2	4-M5×12	2-M5	PSL-KB12
PSL-K-16-B	16	24	40	37	30	14	29	33.5	6	7	2	4-M5×12	2-M5	PSL-KB13
PSL-K-17-B	17	26	42	39	32	14	29	33.5	6	7	2	4-M5×12	2-M5	PSL-KB14
PSL-K-18-B	18	26	42	39	32	14	29	33.5	6	7	2	4-M5×12	2-M5	PSL-KB15
PSL-K-19-B	19	28	44	41	34	14	29	33.5	6	7	2	4-M5×12	2-M5	PSL-KB16
PSL-K-20-B	20	28	44	41	34	14	29	33.5	6	7	2	4-M5×12	2-M5	PSL-KB17
PSL-K-22-B	22	32	48	45	38	16	33	37.5	6.5	8	2.5	6-M5×14	2-M5	PSL-KB18
PSL-K-24-B	24	34	50	47	40	16	33	37.5	6.5	8	2.5	6-M5×14	2-M5	PSL-KB19
PSL-K-25-B	25	34	50	47	40	16	33	37.5	6.5	8	2.5	6-M5×14	2-M5	PSL-KB20
PSL-K-28-B	28	39	62	59	47	20	39	44	7.5	9	2.5	6-M6×16	2-M6	PSL-KB21
PSL-K-30-B	30	41	64	61	49	20	39	44	7.5	9	2.5	6-M6×16	2-M6	PSL-KB22
PSL-K-32-B	32	43	66	63	51	20	39	44	7.5	9	2.5	6-M6×16	2-M6	PSL-KB23
PSL-K-35-B	35	47	70	67	55	22	43	48	8	10	3	8-M6×18	2-M6	PSL-KB24
PSL-K-40-B	40	53	76	73	61	22	43	48	8	10	3	8-M6×18	2-M6	PSL-KB25

* L1, L2 and S are the measurements before the POSI LOCK is fixed.

PSL-K-C



*1

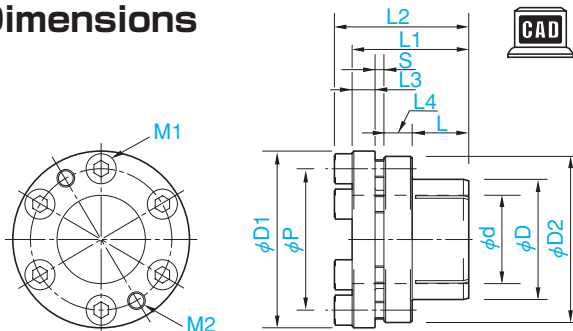
*1: See Mounting and Dismounting (P53).

Specification

Model	Max. permissible torque [N·m]	Max. permissible thrust power [N]	Shaft-side surface pressure [N/mm ²]	Hub-side surface pressure [N/mm ²]	Bolt tightening torque [N·m]	Moment of inertia [kg·m ²]	Mass [kg]	Price
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PSL-K-6.35-C	6.2	1950	150	80	2	2.5×10 ⁻⁶	0.036	—
PSL-K-7-C	6.8	1950	130	80	2	2.5×10 ⁻⁶	0.035	—
PSL-K-8-C	23	5900	290	160	4	5.0×10 ⁻⁶	0.056	—
PSL-K-9-C	26	5900	260	160	4	5.0×10 ⁻⁶	0.053	—
PSL-K-9.525-C	28	5900	250	130	4	7.8×10 ⁻⁶	0.069	—
PSL-K-10-C	29	5900	230	130	4	7.7×10 ⁻⁶	0.068	—
PSL-K-11-C	32	5900	210	130	4	7.6×10 ⁻⁶	0.065	—
PSL-K-12-C	47	7800	260	160	4	10×10 ⁻⁶	0.076	—
PSL-K-12.7-C	50	7800	250	140	4	10×10 ⁻⁶	0.073	—
PSL-K-14-C	55	7800	220	140	4	13×10 ⁻⁶	0.083	—
PSL-K-15-C	95	12700	290	190	8	24×10 ⁻⁶	0.125	—
PSL-K-16-C	100	12700	270	180	8	27×10 ⁻⁶	0.130	—
PSL-K-17-C	110	12700	260	170	8	33×10 ⁻⁶	0.145	—
PSL-K-18-C	110	12700	240	170	8	32×10 ⁻⁶	0.140	—
PSL-K-19-C	120	12700	230	160	8	40×10 ⁻⁶	0.155	—
PSL-K-20-C	130	12700	220	160	8	39×10 ⁻⁶	0.150	—
PSL-K-22-C	210	19000	250	170	8	65×10 ⁻⁶	0.210	—
PSL-K-24-C	230	19000	230	160	8	76×10 ⁻⁶	0.220	—
PSL-K-25-C	240	19000	220	160	8	75×10 ⁻⁶	0.210	—
PSL-K-28-C	380	27000	220	160	14	203×10 ⁻⁶	0.390	—
PSL-K-30-C	400	27000	210	150	14	230×10 ⁻⁶	0.400	—
PSL-K-32-C	430	27000	190	140	14	260×10 ⁻⁶	0.425	—
PSL-K-35-C	630	36000	210	150	14	366×10 ⁻⁶	0.525	—
PSL-K-40-C	720	36000	160	120	14	511×10 ⁻⁶	0.599	—

* The maximum permissible torque is the value when the thrust power is zero, and the maximum permissible thrust power is the value when the torque is zero.

Dimensions



Ordering Information

PSL - K - - C

Size

Type (C: Basic antirust specification)

Former model ETP - K - - C

Unit [mm]

Model	d	D	D1	D2	P	L	L1	L2	L3	L4	S	M1	M2	CAD file No.
PSL-K-6-C	6	12	25	23	17	10	20	24	3.5	5	1.5	2-M4×8	2-M4	PSL-K01
PSL-K-6.35-C	6.35	12	25	23	17	10	20	24	3.5	5	1.5	2-M4×8	2-M4	PSL-K02
PSL-K-7-C	7	12	25	23	17	10	20	24	3.5	5	1.5	2-M4×8	2-M4	PSL-K03
PSL-K-8-C	8	15	28	26	20	12	24	28	5	5	2	3-M4×10	3-M4	PSL-K04
PSL-K-9-C	9	15	28	26	20	12	24	28	5	5	2	3-M4×10	3-M4	PSL-K05
PSL-K-9.525-C	9.525	18	31	29	23	12	24	28	5	5	2	3-M4×10	3-M4	PSL-K06
PSL-K-10-C	10	18	31	29	23	12	24	28	5	5	2	3-M4×10	3-M4	PSL-K07
PSL-K-11-C	11	18	31	29	23	12	24	28	5	5	2	3-M4×10	3-M4	PSL-K08
PSL-K-12-C	12	20	33	31	25	12	24	28	5	5	2	4-M4×10	2-M4	PSL-K09
PSL-K-12.7-C	12.7	20	33	31	25	12	24	28	5	5	2	4-M4×10	2-M4	PSL-K10
PSL-K-14-C	14	22	35	33	27	12	24	28	5	5	2	4-M4×10	2-M4	PSL-K11
PSL-K-15-C	15	23	39	36	29	14	29	34	6	7	2	4-M5×12	2-M5	PSL-K12
PSL-K-16-C	16	24	40	37	30	14	29	34	6	7	2	4-M5×12	2-M5	PSL-K13
PSL-K-17-C	17	26	42	39	32	14	29	34	6	7	2	4-M5×12	2-M5	PSL-K14
PSL-K-18-C	18	26	42	39	32	14	29	34	6	7	2	4-M5×12	2-M5	PSL-K15
PSL-K-19-C	19	28	44	41	34	14	29	34	6	7	2	4-M5×12	2-M5	PSL-K16
PSL-K-20-C	20	28	44	41	34	14	29	34	6	7	2	4-M5×12	2-M5	PSL-K17
PSL-K-22-C	22	32	48	45	38	16	33	38	6.5	8	2.5	6-M5×14	2-M5	PSL-K18
PSL-K-24-C	24	34	50	47	40	16	33	38	6.5	8	2.5	6-M5×14	2-M5	PSL-K19
PSL-K-25-C	25	34	50	47	40	16	33	38	6.5	8	2.5	6-M5×14	2-M5	PSL-K20
PSL-K-28-C	28	39	62	59	47	20	39	45	7.5	9	2.5	6-M6×16	2-M6	PSL-K21
PSL-K-30-C	30	41	64	61	49	20	39	45	7.5	9	2.5	6-M6×16	2-M6	PSL-K22
PSL-K-32-C	32	43	66	63	51	20	39	45	7.5	9	2.5	6-M6×16	2-M6	PSL-K23
PSL-K-35-C	35	47	70	67	55	22	43	49	8	10	3	8-M6×18	2-M6	PSL-K24
PSL-K-40-C	40	53	76	73	61	22	43	49	8	10	3	8-M6×18	2-M6	PSL-K25

* L1, L2 and S are the measurements before the POSI LOCK is fixed.

PSL-K-F



*1

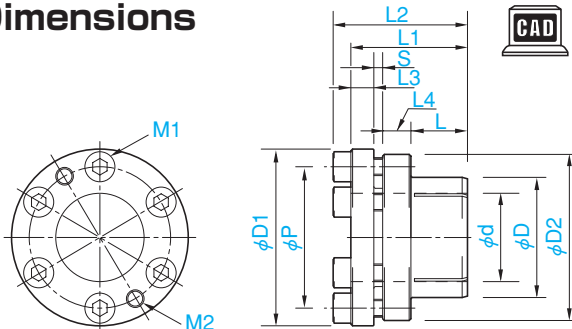
**1: See Mounting and Dismounting (P53).

Specification

Model	Max. permissible torque [N·m]	Max. permissible thrust power [N]	Shaft-side surface pressure [N/mm ²]	Hub-side surface pressure [N/mm ²]	Bolt tightening torque [N·m]	Moment of inertia [kg·m ²]	Mass [kg]	Price
PSL-K-6-F	4.7	1560	120	60	2	2.5×10 ⁻⁶	0.037	—
PSL-K-6.35-F	4.9	1560	120	60	2	2.5×10 ⁻⁶	0.036	—
PSL-K-7-F	5.4	1560	100	60	2	2.5×10 ⁻⁶	0.035	—
PSL-K-8-F	18	4720	230	120	3.5	5.0×10 ⁻⁶	0.056	—
PSL-K-9-F	20	4720	200	120	3.5	5.0×10 ⁻⁶	0.053	—
PSL-K-9.525-F	22	4720	200	100	3.5	7.8×10 ⁻⁶	0.069	—
PSL-K-10-F	23	4720	180	100	3.5	7.7×10 ⁻⁶	0.068	—
PSL-K-11-F	25	4720	160	100	3.5	7.6×10 ⁻⁶	0.065	—
PSL-K-12-F	37	6240	200	120	3.5	10×10 ⁻⁶	0.076	—
PSL-K-12.7-F	40	6240	200	110	3.5	10×10 ⁻⁶	0.073	—
PSL-K-14-F	44	6240	170	110	3.5	13×10 ⁻⁶	0.083	—
PSL-K-15-F	76	10160	230	150	7	24×10 ⁻⁶	0.125	—
PSL-K-16-F	80	10160	210	140	7	27×10 ⁻⁶	0.130	—
PSL-K-17-F	88	10160	200	130	7	33×10 ⁻⁶	0.145	—
PSL-K-18-F	88	10160	190	130	7	32×10 ⁻⁶	0.140	—
PSL-K-19-F	96	10160	180	120	7	40×10 ⁻⁶	0.155	—
PSL-K-20-F	104	10160	170	120	7	39×10 ⁻⁶	0.150	—
PSL-K-22-F	168	15200	200	130	7	65×10 ⁻⁶	0.210	—
PSL-K-24-F	184	15200	180	120	7	76×10 ⁻⁶	0.220	—
PSL-K-25-F	192	15200	170	120	7	75×10 ⁻⁶	0.210	—
PSL-K-28-F	304	21600	170	120	12	203×10 ⁻⁶	0.390	—
PSL-K-30-F	320	21600	160	120	12	230×10 ⁻⁶	0.400	—
PSL-K-32-F	344	21600	150	110	12	260×10 ⁻⁶	0.425	—
PSL-K-35-F	504	28800	160	120	12	366×10 ⁻⁶	0.525	—

* The maximum permissible torque is the value when the thrust power is zero, and the maximum permissible thrust power is the value when the torque is zero.

Dimensions



Ordering Information

PSL - K - - F

Size

Type (F: Stainless specification)

Former model ETP - K - - F

Unit [mm]

Model	d	D	D1	D2	P	L	L1	L2	L3	L4	S	M1	M2	CAD file No.
PSL-K-6-F	6	12	25	23	17	10	20	24	3.5	5	1.5	2-M4×8	2-M4	PSL-K01
PSL-K-6.35-F	6.35	12	25	23	17	10	20	24	3.5	5	1.5	2-M4×8	2-M4	PSL-K02
PSL-K-7-F	7	12	25	23	17	10	20	24	3.5	5	1.5	2-M4×8	2-M4	PSL-K03
PSL-K-8-F	8	15	28	26	20	12	24	28	5	5	2	3-M4×10	3-M4	PSL-K04
PSL-K-9-F	9	15	28	26	20	12	24	28	5	5	2	3-M4×10	3-M4	PSL-K05
PSL-K-9.525-F	9.525	18	31	29	23	12	24	28	5	5	2	3-M4×10	3-M4	PSL-K06
PSL-K-10-F	10	18	31	29	23	12	24	28	5	5	2	3-M4×10	3-M4	PSL-K07
PSL-K-11-F	11	18	31	29	23	12	24	28	5	5	2	3-M4×10	3-M4	PSL-K08
PSL-K-12-F	12	20	33	31	25	12	24	28	5	5	2	4-M4×10	2-M4	PSL-K09
PSL-K-12.7-F	12.7	20	33	31	25	12	24	28	5	5	2	4-M4×10	2-M4	PSL-K10
PSL-K-14-F	14	22	35	33	27	12	24	28	5	5	2	4-M4×10	2-M4	PSL-K11
PSL-K-15-F	15	23	39	36	29	14	29	34	6	7	2	4-M5×12	2-M5	PSL-K12
PSL-K-16-F	16	24	40	37	30	14	29	34	6	7	2	4-M5×12	2-M5	PSL-K13
PSL-K-17-F	17	26	42	39	32	14	29	34	6	7	2	4-M5×12	2-M5	PSL-K14
PSL-K-18-F	18	26	42	39	32	14	29	34	6	7	2	4-M5×12	2-M5	PSL-K15
PSL-K-19-F	19	28	44	41	34	14	29	34	6	7	2	4-M5×12	2-M5	PSL-K16
PSL-K-20-F	20	28	44	41	34	14	29	34	6	7	2	4-M5×12	2-M5	PSL-K17
PSL-K-22-F	22	32	48	45	38	16	33	38	6.5	8	2.5	6-M5×14	2-M5	PSL-K18
PSL-K-24-F	24	34	50	47	40	16	33	38	6.5	8	2.5	6-M5×14	2-M5	PSL-K19
PSL-K-25-F	25	34	50	47	40	16	33	38	6.5	8	2.5	6-M5×14	2-M5	PSL-K20
PSL-K-28-F	28	39	62	59	47	20	39	45	7.5	9	2.5	6-M6×16	2-M6	PSL-K21
PSL-K-30-F	30	41	64	61	49	20	39	45	7.5	9	2.5	6-M6×16	2-M6	PSL-K22
PSL-K-32-F	32	43	66	63	51	20	39	45	7.5	9	2.5	6-M6×16	2-M6	PSL-K23
PSL-K-35-F	35	47	70	67	55	22	43	49	8	10	3	8-M6×18	2-M6	PSL-K24

* L1, L2 and S are the measurements before the POSI LOCK is fixed.

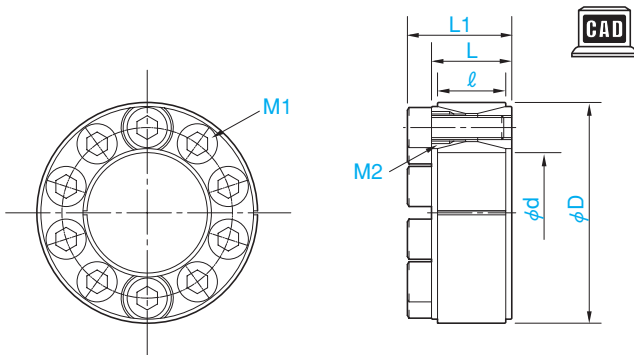


Specification

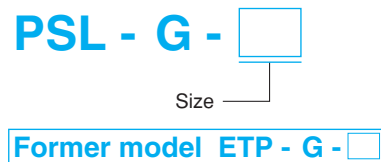
Model	Max. permissible torque [N·m]	Max. permissible thrust power [N]	Shaft-side surface pressure [N/mm ²]	Hub-side surface pressure [N/mm ²]	Bolt tightening torque [N·m]	Moment of inertia [kg·m ²]	Mass [kg]	Price
PSL-G-19	289	30500	250	101	17	0.70×10 ⁻⁴	0.22	—
PSL-G-20	305	30500	238	101	17	0.70×10 ⁻⁴	0.21	—
PSL-G-22	335	30500	216	101	17	0.69×10 ⁻⁴	0.20	—
PSL-G-24	411	34300	223	107	17	0.89×10 ⁻⁴	0.23	—
PSL-G-25	428	34300	214	107	17	0.88×10 ⁻⁴	0.22	—
PSL-G-28	533	38100	212	108	17	1.28×10 ⁻⁴	0.26	—
PSL-G-30	571	38100	198	108	17	1.25×10 ⁻⁴	0.25	—
PSL-G-32	731	45700	223	119	17	1.80×10 ⁻⁴	0.30	—
PSL-G-35	800	45700	204	119	17	1.74×10 ⁻⁴	0.28	—
PSL-G-38	1020	53500	220	129	17	2.43×10 ⁻⁴	0.34	—
PSL-G-40	1070	53500	209	129	17	2.37×10 ⁻⁴	0.32	—
PSL-G-42	1680	80200	253	142	41	5.26×10 ⁻⁴	0.56	—
PSL-G-45	1800	80200	236	142	41	5.11×10 ⁻⁴	0.53	—
PSL-G-48	1920	80200	222	133	41	6.51×10 ⁻⁴	0.59	—
PSL-G-50	2010	80200	213	133	41	6.36×10 ⁻⁴	0.56	—
PSL-G-55	2570	93600	226	146	41	8.01×10 ⁻⁴	0.62	—
PSL-G-60	2810	93600	207	138	41	9.68×10 ⁻⁴	0.65	—

* The maximum permissible torque is the value when the thrust power is zero, and the maximum permissible thrust power is the value when the torque is zero.

Dimensions



Ordering Information



Unit [mm]

Model	d	D	L	ℓ	L1	M1	M2	CAD file No.
PSL-G-19	19	47	20	17	26	8-M6×18	2-M8	PSL-G01
PSL-G-20	20	47	20	17	26	8-M6×18	2-M8	PSL-G02
PSL-G-22	22	47	20	17	26	8-M6×18	2-M8	PSL-G03
PSL-G-24	24	50	20	17	26	8-M6×18	2-M8	PSL-G04
PSL-G-25	25	50	20	17	26	8-M6×18	2-M8	PSL-G05
PSL-G-28	28	55	20	17	26	10-M6×18	2-M8	PSL-G06
PSL-G-30	30	55	20	17	26	10-M6×18	2-M8	PSL-G07
PSL-G-32	32	60	20	17	26	12-M6×18	2-M8	PSL-G08
PSL-G-35	35	60	20	17	26	12-M6×18	2-M8	PSL-G09
PSL-G-38	38	65	20	17	26	14-M6×18	2-M8	PSL-G10
PSL-G-40	40	65	20	17	26	14-M6×18	2-M8	PSL-G11
PSL-G-42	42	75	24	20	32	12-M8×22	2-M10	PSL-G12
PSL-G-45	45	75	24	20	32	12-M8×22	2-M10	PSL-G13
PSL-G-48	48	80	24	20	32	12-M8×22	2-M10	PSL-G14
PSL-G-50	50	80	24	20	32	12-M8×22	2-M10	PSL-G15
PSL-G-55	55	85	24	20	32	14-M8×22	2-M10	PSL-G16
PSL-G-60	60	90	24	20	32	14-M8×22	2-M10	PSL-G17

* L and L1 are the measurements before the POSI LOCK is fixed.
 * M2 indicates a detaching screw hole.

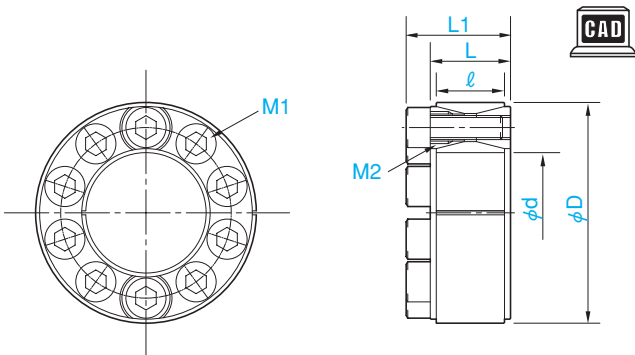


Specification

Model	Max. permissible torque [N·m]	Max. permissible thrust power [N]	Shaft-side surface pressure [N/mm ²]	Hub-side surface pressure [N/mm ²]	Bolt tightening torque [N·m]	Moment of inertia [kg·m ²]	Mass [kg]	Price
PSL-G-19-C	289	30500	250	101	17	0.70×10 ⁻⁴	0.22	—
PSL-G-20-C	305	30500	238	101	17	0.70×10 ⁻⁴	0.21	—
PSL-G-22-C	335	30500	216	101	17	0.69×10 ⁻⁴	0.20	—
PSL-G-24-C	411	34300	223	107	17	0.89×10 ⁻⁴	0.23	—
PSL-G-25-C	428	34300	214	107	17	0.88×10 ⁻⁴	0.22	—
PSL-G-28-C	533	38100	212	108	17	1.28×10 ⁻⁴	0.26	—
PSL-G-30-C	571	38100	198	108	17	1.25×10 ⁻⁴	0.25	—
PSL-G-32-C	731	45700	223	119	17	1.80×10 ⁻⁴	0.30	—
PSL-G-35-C	800	45700	204	119	17	1.74×10 ⁻⁴	0.28	—
PSL-G-38-C	1020	53500	220	129	17	2.43×10 ⁻⁴	0.34	—
PSL-G-40-C	1070	53500	209	129	17	2.37×10 ⁻⁴	0.32	—
PSL-G-42-C	1680	80200	253	142	41	5.26×10 ⁻⁴	0.56	—
PSL-G-45-C	1800	80200	236	142	41	5.11×10 ⁻⁴	0.53	—
PSL-G-48-C	1920	80200	222	133	41	6.51×10 ⁻⁴	0.59	—
PSL-G-50-C	2010	80200	213	133	41	6.36×10 ⁻⁴	0.56	—
PSL-G-55-C	2570	93600	226	146	41	8.01×10 ⁻⁴	0.62	—
PSL-G-60-C	2810	93600	207	138	41	9.68×10 ⁻⁴	0.65	—

* The maximum permissible torque is the value when the thrust power is zero, and the maximum permissible thrust power is the value when the torque is zero.

Dimensions



Ordering Information

PSL - G - - C

Size

Type (C: Basic antirust specification)

Former model ETP - G - - C

Unit [mm]

Model	d	D	L	ℓ	L1	M1	M2	CAD file No.
PSL-G-19-C	19	47	20	17	26	8-M6×18	2-M8	PSL-G01
PSL-G-20-C	20	47	20	17	26	8-M6×18	2-M8	PSL-G02
PSL-G-22-C	22	47	20	17	26	8-M6×18	2-M8	PSL-G03
PSL-G-24-C	24	50	20	17	26	8-M6×18	2-M8	PSL-G04
PSL-G-25-C	25	50	20	17	26	8-M6×18	2-M8	PSL-G05
PSL-G-28-C	28	55	20	17	26	10-M6×18	2-M8	PSL-G06
PSL-G-30-C	30	55	20	17	26	10-M6×18	2-M8	PSL-G07
PSL-G-32-C	32	60	20	17	26	12-M6×18	2-M8	PSL-G08
PSL-G-35-C	35	60	20	17	26	12-M6×18	2-M8	PSL-G09
PSL-G-38-C	38	65	20	17	26	14-M6×18	2-M8	PSL-G10
PSL-G-40-C	40	65	20	17	26	14-M6×18	2-M8	PSL-G11
PSL-G-42-C	42	75	24	20	32	12-M8×22	2-M10	PSL-G12
PSL-G-45-C	45	75	24	20	32	12-M8×22	2-M10	PSL-G13
PSL-G-48-C	48	80	24	20	32	12-M8×22	2-M10	PSL-G14
PSL-G-50-C	50	80	24	20	32	12-M8×22	2-M10	PSL-G15
PSL-G-55-C	55	85	24	20	32	14-M8×22	2-M10	PSL-G16
PSL-G-60-C	60	90	24	20	32	14-M8×22	2-M10	PSL-G17

* L and L1 are the measurements before the POSI LOCK is fixed.
 * M2 indicates a detaching screw hole.

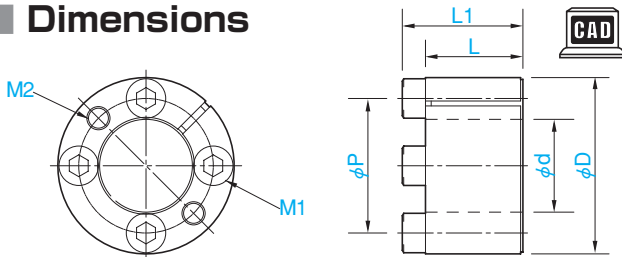


Specification

Model	Max. permissible torque [N·m]	Max. permissible thrust power [N]	Shaft-side surface pressure [N/mm ²]	Hub-side surface pressure [N/mm ²]	Bolt tightening torque [N·m]	Moment of inertia [kg·m ²]	Mass [kg]	Price
PSL-D-6	6	2100	150	60	1	0.48×10 ⁻⁶	0.012	—
PSL-D-7	8	2100	140	60	1	0.52×10 ⁻⁶	0.013	—
PSL-D-8	10	2600	110	50	1	0.77×10 ⁻⁶	0.015	—
PSL-D-9	15	3200	130	60	1	1.1×10 ⁻⁶	0.020	—
PSL-D-10	16	3200	110	60	1	1.2×10 ⁻⁶	0.019	—
PSL-D-11	17	3200	100	50	1	1.8×10 ⁻⁶	0.024	—
PSL-D-12	19	3200	100	50	1	1.7×10 ⁻⁶	0.022	—
PSL-D-14	34	4800	100	50	2	4.3×10 ⁻⁶	0.039	—
PSL-D-15	36	4800	90	50	2	5.7×10 ⁻⁶	0.044	—
PSL-D-16	67	8400	130	60	4	10×10 ⁻⁶	0.068	—
PSL-D-17	70	8400	120	60	4	18×10 ⁻⁶	0.093	—
PSL-D-18	75	8400	110	60	4	17×10 ⁻⁶	0.090	—
PSL-D-19	80	8400	110	60	4	16×10 ⁻⁶	0.085	—
PSL-D-20	140	13600	150	80	8	24×10 ⁻⁶	0.120	—
PSL-D-22	150	13600	140	80	8	29×10 ⁻⁶	0.130	—
PSL-D-24	230	19300	150	80	14	70×10 ⁻⁶	0.220	—
PSL-D-25	240	19300	140	80	14	69×10 ⁻⁶	0.210	—
PSL-D-28	400	28900	190	110	14	86×10 ⁻⁶	0.240	—
PSL-D-30	430	28900	180	100	14	128×10 ⁻⁶	0.270	—
PSL-D-32	460	28900	170	100	14	123×10 ⁻⁶	0.260	—
PSL-D-35	670	38600	160	90	14	215×10 ⁻⁶	0.370	—
PSL-D-38	730	38600	150	90	14	298×10 ⁻⁶	0.420	—
PSL-D-40	770	38600	140	90	14	286×10 ⁻⁶	0.410	—
PSL-D-42	1110	52700	150	80	34	682×10 ⁻⁶	0.700	—
PSL-D-45	1200	52700	140	80	34	609×10 ⁻⁶	0.630	—
PSL-D-48	1690	70300	190	110	34	769×10 ⁻⁶	0.730	—
PSL-D-50	1760	70300	180	110	34	742×10 ⁻⁶	0.710	—

* The maximum permissible torque is the value when the thrust power is zero, and the maximum permissible thrust power is the value when the torque is zero.

Dimensions



Ordering Information

PSL - D -
 Size
 Former model ETP - D -

Unit [mm]

Model	d	D	P	L	L1	M1	M2	CAD file No.
PSL-D-6	6	16	11	11	13.5	3-M2.5×10	2-M2.5	PSL-D01
PSL-D-7	7	17	12	11	13.5	3-M2.5×10	2-M2.5	PSL-D02
PSL-D-8	8	18	13	11	13.5	3-M2.5×10	2-M2.5	PSL-D03
PSL-D-9	9	20	15	13	15.5	4-M2.5×12	2-M2.5	PSL-D04
PSL-D-10	10	20	15	13	15.5	4-M2.5×12	2-M2.5	PSL-D05
PSL-D-11	11	22	17	13	15.5	4-M2.5×12	2-M2.5	PSL-D06
PSL-D-12	12	22	17	13	15.5	4-M2.5×12	2-M2.5	PSL-D07
PSL-D-14	14	26	20	17	20	4-M3×16	2-M3	PSL-D08
PSL-D-15	15	28	21.5	17	20	4-M3×16	2-M3	PSL-D09
PSL-D-16	16	32	24	17	21	4-M4×16	2-M4	PSL-D10
PSL-D-17	17	35	27	21	25	4-M4×20	2-M4	PSL-D11
PSL-D-18	18	35	27	21	25	4-M4×20	2-M4	PSL-D12
PSL-D-19	19	35	27	21	25	4-M4×20	2-M4	PSL-D13
PSL-D-20	20	38	29	21	26	4-M5×20	2-M5	PSL-D14
PSL-D-22	22	40	31	21	26	4-M5×20	2-M5	PSL-D15
PSL-D-24	24	47	36	26	32	4-M6×25	2-M6	PSL-D16
PSL-D-25	25	47	36	26	32	4-M6×25	2-M6	PSL-D17
PSL-D-28	28	50	39	26	32	6-M6×25	2-M6	PSL-D18
PSL-D-30	30	55	43.5	26	32	6-M6×25	2-M6	PSL-D19
PSL-D-32	32	55	43.5	26	32	6-M6×25	2-M6	PSL-D20
PSL-D-35	35	60	47.5	31	37	8-M6×30	2-M6	PSL-D21
PSL-D-38	38	65	52.5	31	37	8-M6×30	2-M6	PSL-D22
PSL-D-40	40	65	52.5	31	37	8-M6×30	2-M6	PSL-D23
PSL-D-42	42	75	60	36	44	6-M8×35	2-M8	PSL-D24
PSL-D-45	45	75	60	36	44	6-M8×35	2-M8	PSL-D25
PSL-D-48	48	80	65	36	44	8-M8×35	2-M8	PSL-D26
PSL-D-50	50	80	65	36	44	8-M8×35	2-M8	PSL-D27

* L and L1 are the measurements before the POSI LOCK is fixed.

PSL-D-C

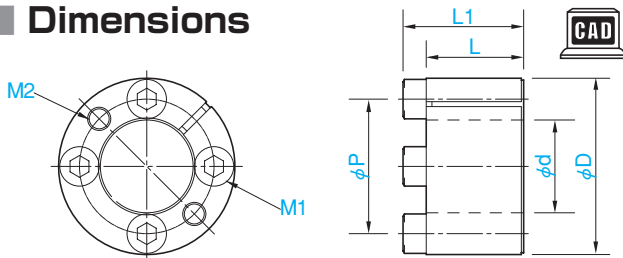


Specification

Model	Max. permissible torque [N·m]	Max. permissible thrust power [N]	Shaft-side surface pressure [N/mm ²]	Hub-side surface pressure [N/mm ²]	Bolt tightening torque [N·m]	Moment of inertia [kg·m ²]	Mass [kg]	Price
PSL-D-16-C	67	8400	130	60	4	10×10 ⁻⁶	0.068	—
PSL-D-17-C	70	8400	120	60	4	18×10 ⁻⁶	0.093	—
PSL-D-18-C	75	8400	110	60	4	17×10 ⁻⁶	0.090	—
PSL-D-19-C	80	8400	110	60	4	16×10 ⁻⁶	0.085	—
PSL-D-20-C	140	13600	150	80	8	24×10 ⁻⁶	0.120	—
PSL-D-22-C	150	13600	140	80	8	29×10 ⁻⁶	0.130	—
PSL-D-24-C	230	19300	150	80	14	70×10 ⁻⁶	0.220	—
PSL-D-25-C	240	19300	140	80	14	69×10 ⁻⁶	0.210	—
PSL-D-28-C	400	28900	190	110	14	86×10 ⁻⁶	0.240	—
PSL-D-30-C	430	28900	180	100	14	128×10 ⁻⁶	0.270	—
PSL-D-32-C	460	28900	170	100	14	123×10 ⁻⁶	0.260	—
PSL-D-35-C	670	38600	160	90	14	215×10 ⁻⁶	0.370	—
PSL-D-38-C	730	38600	150	90	14	298×10 ⁻⁶	0.420	—
PSL-D-40-C	770	38600	140	90	14	286×10 ⁻⁶	0.410	—
PSL-D-42-C	1110	52700	180	110	34	682×10 ⁻⁶	0.700	—
PSL-D-45-C	1200	52700	140	80	34	609×10 ⁻⁶	0.630	—
PSL-D-48-C	1690	70300	190	110	34	769×10 ⁻⁶	0.730	—
PSL-D-50-C	1760	70300	180	110	34	742×10 ⁻⁶	0.710	—

* The maximum permissible torque is the value when the thrust power is zero, and the maximum permissible thrust power is the value when the torque is zero.

Dimensions



Ordering Information

PSL - D - - C

Size

Type (C: Basic antirust specification)

Former model ETP - D - - C

Unit [mm]

Model	d	D	P	L	L1	M1	M2	CAD file No.
PSL-D-16-C	16	32	24	17	21	4-M4×16	2-M4	PSL-D10
PSL-D-17-C	17	35	27	21	25	4-M4×20	2-M4	PSL-D11
PSL-D-18-C	18	35	27	21	25	4-M4×20	2-M4	PSL-D12
PSL-D-19-C	19	35	27	21	25	4-M4×20	2-M4	PSL-D13
PSL-D-20-C	20	38	29	21	26	4-M5×20	2-M5	PSL-D14
PSL-D-22-C	22	40	31	21	26	4-M5×20	2-M5	PSL-D15
PSL-D-24-C	24	47	36	26	32	4-M6×25	2-M6	PSL-D16
PSL-D-25-C	25	47	36	26	32	4-M6×25	2-M6	PSL-D17
PSL-D-28-C	28	50	39	26	32	6-M6×25	2-M6	PSL-D18
PSL-D-30-C	30	55	43.5	26	32	6-M6×25	2-M6	PSL-D19
PSL-D-32-C	32	55	43.5	26	32	6-M6×25	2-M6	PSL-D20
PSL-D-35-C	35	60	47.5	31	37	8-M6×30	2-M6	PSL-D21
PSL-D-38-C	38	65	52.5	31	37	8-M6×30	2-M6	PSL-D22
PSL-D-40-C	40	65	52.5	31	37	8-M6×30	2-M6	PSL-D23
PSL-D-42-C	42	75	60	36	44	6-M8×35	2-M8	PSL-D24
PSL-D-45-C	45	75	60	36	44	6-M8×35	2-M8	PSL-D25
PSL-D-48-C	48	80	65	36	44	8-M8×35	2-M8	PSL-D26
PSL-D-50-C	50	80	65	36	44	8-M8×35	2-M8	PSL-D27

* L and L1 are the measurements before the POSI LOCK is fixed.

Selection

Selection Procedure

- The torque T_a is determined by the shaft diameter to be used, however, evaluate the torque T_a basically from the output of the power driver P and the revolution speed of the fastening element n .

$$T_a \text{ [N}\cdot\text{m]} = \frac{9550 \times P[\text{kW}]}{n[\text{min}^{-1}]}$$

T_a : Torque added to the fastening element [N·m]

P : Output of the power driver [kW]

n : Revolution speed of the fastening element [min⁻¹]

F_a : Thrust power added to the fastening element [N]

Evaluate the thrust power F_a .

- Determine the service factor K_1 from the loading character, and evaluate the corrective torque T_d and the corrective thrust power F_d that are added to the fastening element.

$$T_d = T_a \times K_1$$

T_d : Corrective torque added to the fastening element [N·m]

$$F_d = F_a \times K_1$$

F_d : Corrective thrust power added to the fastening element [N]

K_1 : Service factor by loading character

- Perform the corrections by loading type.

(1) In the case of torque only

Compare the maximum permissible torque T of the fastening element and the evaluated corrective torque T_d , by the shaft diameter to be used.

$$T \geq T_d$$

T : Max. permissible torque of fastening element [N·m]

(2) In the case of thrust power only

Compare the maximum permissible thrust power F of the fastening element and the evaluated corrective thrust power F_d , by the shaft diameter to be used.

$$F \geq F_d$$

F : Max. permissible thrust power of fastening element [N]

(3) In case that both torque and thrust power are applied.

Evaluate the combined load M_r to compare with the maximum permissible torque T .

$$M_r = \sqrt{T_d^2 + (F_d \times \frac{d}{2})^2}$$

$$T \geq M_r$$

M_r : Combined load added to the fastening element [N·m]

d : shaft diameter [N]

- Evaluate the minimum outside diameter of the hub and the maximum inside diameter of the quill.

(1) Evaluate the minimum outside diameter of the hub by the material strength of the hub to be used.

$$DO \geq D \sqrt{\frac{\delta_{0.2N} + CP_2}{\delta_{0.2N} - CP_2}}$$

$C=1$ $B=L$

$C=0.8$ $L < B < 2L$

$C=0.6$ $B \geq 2L$

DO : Min. hub outside dia. [mm] B : Hub length [mm]

D : Hub inside dia. [mm] L : Effective contact length [mm]

P_2 : Hub side surface pressure [N/mm²] C : Coefficient

$\delta_{0.2N}$: Yield point stress of the hub material [N/mm²]

If yield point stress of the hub material is high, the ratio of the min. hub outside dia. and the hub inside dia. must be 1.3 times bigger or more, concerning the deformation of hub.

(2) Evaluate the maximum inside diameter of the quill by the material strength of the quill to be used.

$$di \leq d \sqrt{\frac{\delta_{0.2N} - 2P_1C}{\delta_{0.2N}}}$$

$C=0.6$ when singular number is used

$C=0.8$ When plural number is used

di : Max. inside dia. of the quill [mm]


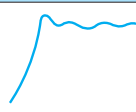
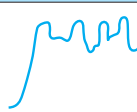
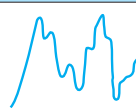
$\delta_{0.2N}$: Yield point stress of the quill material [N/mm²]

d : Shaft dia. [mm] C : Coefficient

P_1 : Shaft side surface pressure [N/mm²]

Service factor

Use factor of the loading character: K_1

Loading character			
Constant	Variation: small	Variation: medium	Variation: large
			
1.0	1.25	1.75	2.25

Points to be checked in design

Mating shaft tolerance, mating hub tolerance and surface roughness

Model	Mating shaft tolerance	Mating hub tolerance	Surface roughness
PSL-K	h8	H7	12.5S (Ave. roughness of center line 3.2a) or less
PSL-K-B			
PSL-K-C			
PSL-K-F			
PSL-G	h9	H8	
PSL-G-C			
PSL-D	h9	H9	
PSL-D-C			

Operating temperature limit

Model	Operating temp. limit [°C]
PSL-K	-40~+150
PSL-K-B	
PSL-K-C	
PSL-K-F	
PSL-G	
PSL-G-C	
PSL-D	
PSL-D-C	

The No. of mounting and dismounting

Model	Mounting/dismounting [times]
PSL-K	100
PSL-K-B	
PSL-K-C	
PSL-K-F	50
PSL-G	100
PSL-G-C	
PSL-D	100
PSL-D-C	

Shaft with Keyway

Although there is a keyway in the shaft such as a motor or reducer, it can be used if the keyway width is about the JIS standards. However, the permissible torque and thrust power are reduced by 10~15 %.

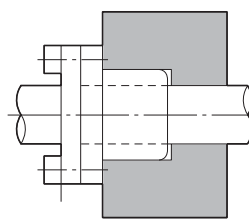
Bending moment

A bending moment is not basically allowable for the POSI LOCK.

Centering feature

There is no centering control for the POSI LOCK. Therefore, if high accuracy of concentricity or runout is required, set up a centering device which controls the concentricity and runout amount by contacting a portion of the hub directly with the shaft as shown in Figure A. The accuracy of centering is defined by the centering length (contact length of the shaft and hub) and the fit tolerance. It is commonly considered that the centering length (contact length of the shaft and hub) should be longer than its shaft diameter. (Refer to the figure B)

Fig. A: Centering device



PSL dimension signs

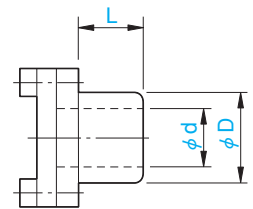
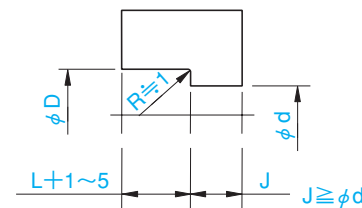


Fig. B: Processing measurements of hub



The concentricity and the runout accuracy of a centering device are defined by the processing measurements of the shaft and hub. That is, the hub may incline by the gap between the shaft outside diameter and the hub inside diameter of the centering part. Therefore, the shaft and hub should be processed by the tolerance within the desired concentricity and runout accuracy. The concentricity and runout accuracy of a centering device can be evaluated by the formula below.

- The maximum value of the runout accuracy: E_a (measured at the radius r position.)

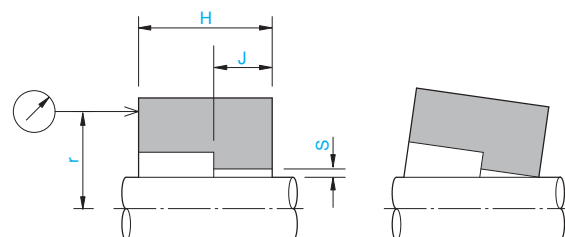
$$E_a \doteq 2 \times r \times S / J$$

$$S = \frac{[(\text{processing measurement of the hub})] - [(\text{processing measurement of the shaft})]}{2}$$

- The maximum value of the runout amount for concentricity: E_b

$$E_b \doteq H \times S / J$$

Runout of a centering device



J: Centering length (Contacted part length of the hub and shaft)

R: Measurement position for the runout accuracy

H: Entire length of the hub

■ Mounting and Dismounting

● Mounting

1 Cleaning the shaft and hub

Wipe off the rust and dust sit on the inside shaft and hub completely, and apply a thin coating of oil or grease.

2 Cleaning the POSI LOCK

Dismount each clamping bolt from the POSI LOCK. Clean the contacted surface of each part, and apply a thin coating of oil or grease including the screw and flange surface of the clamping bolt. When the above process is finished, perform a trial fitting of the POSI LOCK. Fasten each clamping bolt lightly by hand for not to change the diameters of inner and outer rings.

Notice

Do not use the molybdenum-containing oil. It effects a change in the coefficient of friction.

3 Mounting on the shaft and hub

Set the POSI LOCK to the shaft and hub. Perform a positioning after fastening each clamping bolt lightly to contact respective parts.

Notice

Do not fasten the clamping bolt until the POSI LOCK is completely set to the shaft and hub.

4 Fastening the clamping bolt

■ For the PSL-K, PSL-K-B, PSL-K-C, PSL-K-F, PSL-D, and PSL-D-C

Apply lock tight equally to each clamping bolt by tightening them diagonally from each other. Then, tighten all of the clamping bolts with the predefined torque by using a torque wrench.

The material used for the clamping bolt of the PSL-K-F is stainless steel, which is easily scratched that it requires careful handling, especially when fastening the bolt.

■ For the PSL-G and PSL-G-C

Equally tighten the clamping bolts diagonally with 1/4 force of the specified torque.

(Increase by 25% until it reaches the predetermined torque.) Fasten the clamping bolts again with the specified torque. As a measure for the initial slack of the bolt, reconfirm the tightening torque after running for a certain period of operation.

● Points of concern when mounting

The performance of the POSI LOCK is defined when the shaft and hub act over the entire length for the shaft-side basic dimension L_s and the hub-side basic dimension L_h . Therefore, set out the shaft and hub to act over the entire length for the basic dimension.

■ Basic dimension signs for the POSI LOCK

Model	Nominal basic dimension	Dimensional sign
PSL-K	Shaft-side basic dimension L_s	L1
	Hub-side basic dimension L_h	L
PSL-G	Shaft-side basic dimension L_s	l
	Hub-side basic dimension L_h	l
PSL-D	Shaft-side basic dimension L_s	L
	Hub-side basic dimension L_h	L

■ For the PSL-K

If the hub is put as shown in the figure 1, it (outer sleeve) will slightly move to the axial direction when tightening. If the hub is put as shown in the figure 2, the outer sleeve doesn't move, however, the torque, thrust power and contact pressure will drop to approximately 70% of the values indicated in the catalog.

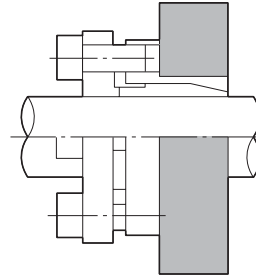


Figure 1

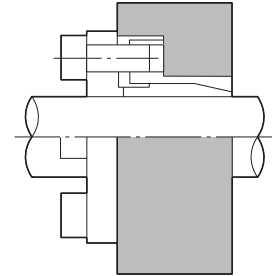


Figure 2

● Dismounting

1 Confirming safe conditions

Confirm if no torque or thrust power is applied to the POSI LOCK before to start dismounting. Also, make sure if there is any danger of fall due to the empty weight of the shaft and hub. There is no self-locking mechanism for the POSI LOCK. By loosening the pressure screw, its fastening power is quickly released.

2 Dismounting

■ For the PSL-K, PSL-K-B, PSL-K-C, PSL-K-F, PSL-D, and PSL-D-C

Since they lock automatically under certain conditions, they may not be able to be removed by loosening the clamping bolts. In this case, do not forcibly remove them. It may cause damage to the shaft • hub and body.

First, loosen the clamping bolts to open a gap between the flange and the bearing surface of the clamping bolt. (2mm is enough.) Then, screw the bolt into the detaching screw hole. By this action, the fastening power is released. One detaching screw is enough in general. Otherwise, use two screws.

■ For the PSL-G / G-C

After confirming safe conditions, loosen the clamping bolts. Each part will automatically separate. They may not be able to be removed by loosening the clamping bolts under certain conditions, however, do not forcibly remove them. It may cause damage to the shaft • hub and body. If the rear taper ring doesn't come loose automatically by loosening the clamping bolt, tap the bolt head. By the spring action of each part, the rear taper ring will move to rearward.

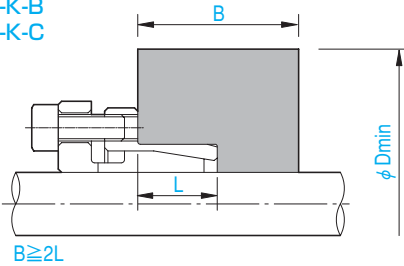
In case the front taper ring doesn't come loose, screw the bolt into the detaching screw hole (one size bigger than the clamping bolt). It should be released by tapping the bolt head with a hammer.

■ A list of the minimum outside diameter for a hub

A hub may be deformed if the stress value applied to it is high.

Refer to the list below to find the appropriate outside diameter.

■ PSL-K
PSL-K-B
PSL-K-C



φ Dmin Unit [mm]

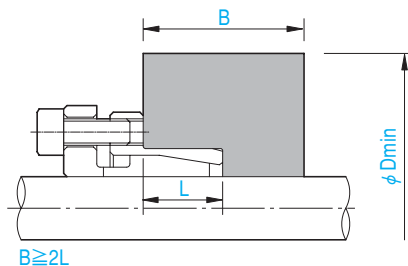
PSL-K PSL-K-B PSL-K-C	Hub-side surface pressure [N/mm ²]	Yield point stress of the material $\delta_{0.2}$ [N/mm ²]												
		150	180	210	230	250	280	300	350	400	450			
		FC250	FC300 SS330 SC360 FCMB310	FC350 SS400 SC410 FCMB360 SUS304	SC450 S15C SF440	FCD400 SS490 SC480 S20C SF490	S30C SF540 SUS201	FCD450 S35C SF590	S45C SUS410	S55C SUS403	FCD600	FCD700		
6	80	17	16	16	16	16	16	16	16	16	16	16	16	16
6.35	80	17	16	16	16	16	16	16	16	16	16	16	16	16
7	80	17	16	16	16	16	16	16	16	16	16	16	16	16
8	160	32	27	25	23	22	21	21	20	20	20	20	20	20
9	160	32	27	25	23	22	21	21	20	20	20	20	20	20
9.525	130	32	29	27	26	25	24	24	24	24	24	24	24	24
10	130	32	29	27	26	25	24	24	24	24	24	24	24	24
11	130	32	29	27	26	25	24	24	24	24	24	24	24	24
12	160	43	36	33	31	30	29	28	27	26	26	26	26	26
12.7	140	38	33	31	29	28	27	27	26	26	26	26	26	26
14	140	41	36	34	32	31	30	29	29	29	29	29	29	29
15	190	62	49	42	40	38	35	34	32	31	30	30	30	30
16	180	59	48	42	40	38	36	35	33	32	31	31	31	31
17	170	60	49	44	42	40	38	37	35	34	33	33	33	33
18	170	60	49	44	42	40	38	37	35	34	33	33	33	33
19	160	60	51	46	44	42	40	39	37	36	35	35	35	35
20	160	60	51	46	44	42	40	39	37	36	35	35	35	35
22	170	73	61	54	52	49	47	46	43	42	41	41	41	41
24	160	73	62	56	53	51	49	47	45	44	43	43	43	43
25	160	73	62	56	53	51	49	47	45	44	43	43	43	43
28	160	83	71	64	61	58	56	54	52	51	50	50	50	50
30	150	82	71	65	62	60	57	56	54	53	52	52	52	52
32	140	81	71	66	63	61	59	57	56	55	54	54	54	54
35	150	94	81	74	71	69	66	64	62	61	60	60	60	60
40	120	89	81	76	73	71	69	69	69	69	69	69	69	69

- * The value of the minimum outside diameter is evaluated by C=0.6 of the selection procedure on page 51.
- * A list of the PSL-K-F is described on page 55.
- * The above SUS values indicate their bearing force [N/mm²] after thermal refining (quenched and tempered).

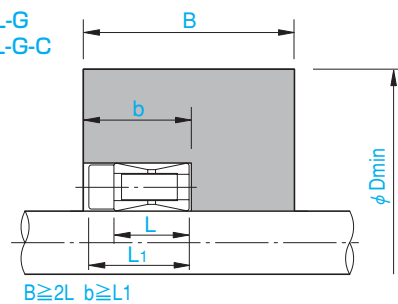
A list of the minimum outside diameter for a hub

A hub may be deformed if the stress value applied to it is high. Refer to the list below to find the appropriate outside diameter.

■ PSL-K-F



■ PSL-G
■ PSL-G-C



φ Dmin Unit [mm]

PSL-K-F Size	Hub-side surface pressure [N/mm ²]	Yield point stress of the material $\delta_{0.2}$ [N/mm ²]									
		150 FC250	180 FC300 SS330 SC360 FCMB310	210 FC350 SS400 SC410 FCMB360 SUS304	230 SC450 S15C SF440	250 FCD400 SS490 SC480 S20C SF490	280 S30C SF540 SUS201	300 FCD450 S35C SF590	350 FCD500 S45C SUS410	400 FCD600 S55C SUS403	450 FCD700 SUS420
6	60	16	16	16	16	16	16	16	16	16	16
6.35	60	16	16	16	16	16	16	16	16	16	16
7	60	16	16	16	16	16	16	16	16	16	16
8	120	25	23	21	21	20	20	20	20	20	20
9	120	25	23	21	21	20	20	20	20	20	20
9.525	100	27	25	24	24	24	24	24	24	24	24
10	100	27	25	24	24	24	24	24	24	24	24
11	100	27	25	24	24	24	24	24	24	24	24
12	120	34	31	29	28	27	26	26	26	26	26
12.7	110	32	29	28	27	26	26	26	26	26	26
14	110	35	32	30	30	29	29	29	29	29	29
15	150	46	40	36	35	34	32	31	30	30	30
16	140	45	40	37	35	34	33	32	32	32	32
17	130	46	41	38	37	36	35	34	34	34	34
18	130	46	41	38	37	36	35	34	34	34	34
19	120	47	43	40	39	38	37	37	37	37	37
20	120	47	43	40	39	38	37	37	37	37	37
22	130	57	51	47	46	44	43	42	42	42	42
24	120	57	52	49	47	46	45	45	45	45	45
25	120	57	52	49	47	46	45	45	45	45	45
28	120	66	60	56	54	52	51	51	51	51	51
30	120	69	63	59	57	55	54	54	54	54	54
32	110	69	63	60	58	56	56	56	56	56	56
35	120	79	72	67	65	63	62	62	62	62	62

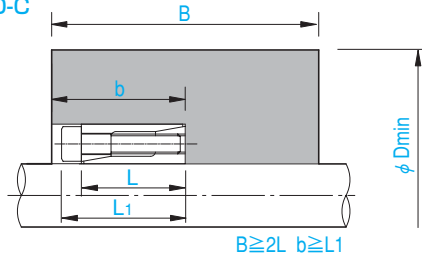
* The value of the minimum outside diameter is evaluated by C=0.6 of the selection procedure on page 51.
* The above SUS values indicate their bearing force [N/mm²] after thermal refining (quenched and tempered).

φ Dmin Unit [mm]

PSL-G PSL-G-C Size	Hub-side surface pressure [N/mm ²]	Yield point stress of the material $\delta_{0.2}$ [N/mm ²]									
		150 FC250	180 FC300 SS330 SC360 FCMB310	210 FC350 SS400 SC410 FCMB360 SUS304	230 SC450 S15C SF440	250 FCD400 SS490 SC480 S20C SF490	280 S30C SF540 SUS201	300 FCD450 S35C SF590	350 FCD500 S45C SUS410	400 FCD600 S55C SUS403	450 FCD700 SUS420
19	101	72	67	63	62	62	62	62	62	62	62
20	101	72	67	63	62	62	62	62	62	62	62
22	101	72	67	63	62	62	62	62	62	62	62
24	107	79	73	69	67	65	65	65	65	65	65
25	107	79	73	69	67	65	65	65	65	65	65
28	108	87	80	76	73	72	72	72	72	72	72
30	108	87	80	76	73	72	72	72	72	72	72
32	119	101	91	85	83	80	78	78	78	78	78
35	119	101	91	85	83	80	78	78	78	78	78
38	129	115	103	96	92	90	86	85	85	85	85
40	129	115	103	96	92	90	86	85	85	85	85
42	142	143	125	115	111	107	103	100	98	98	98
45	142	143	125	115	111	107	103	100	98	98	98
48	133	145	129	119	115	111	107	105	104	104	104
50	133	145	129	119	115	111	107	105	104	104	104
55	146	166	145	133	127	123	117	117	117	117	117
60	138	168	148	137	131	127	122	119	117	117	117

* The value of the minimum outside diameter is evaluated by C=0.6 of the selection procedure on page 51.
* The above SUS values indicate their bearing force [N/mm²] after thermal refining (quenched and tempered).

■ PSL-D
PSL-D-C



φ Dmin Unit [mm]

PSL-D PSL-D-C Size	Hub-side surface pressure [N/mm ²]	Yield point stress of the material $\delta_{0.2}$ [N/mm ²]										
		150	180	210	230	250	280	300	350	400	450	
		FC250	FC300 SS330 SC360 FCMB310	FC350 SS400 SC410 FCMB360 SUS304	SC450 S15C SF440	FCD400 SS490 SC480 S20C SF490	S30C SF540 SUS201	S35C SF590	S45C SUS410	S55C SUS403	FCD600 SUS420	FCD700
6	60	21	21	21	21	21	21	21	21	21	21	21
7	60	23	23	23	23	23	23	23	23	23	23	23
8	50	24	24	24	24	24	24	24	24	24	24	24
9	60	26	26	26	26	26	26	26	26	26	26	26
10	60	26	26	26	26	26	26	26	26	26	26	26
11	50	29	29	29	29	29	29	29	29	29	29	29
12	50	29	29	29	29	29	29	29	29	29	29	29
14	50	34	34	34	34	34	34	34	34	34	34	34
15	50	37	37	37	37	37	37	37	37	37	37	37
16	60	42	42	42	42	42	42	42	42	42	42	42
17	60	46	46	46	46	46	46	46	46	46	46	46
18	60	46	46	46	46	46	46	46	46	46	46	46
19	60	46	46	46	46	46	46	46	46	46	46	46
20	80	53	50	50	50	50	50	50	50	50	50	50
22	80	56	53	52	52	52	52	52	52	52	52	52
24	80	65	62	62	62	62	62	62	62	62	62	62
25	80	65	62	62	62	62	62	62	62	62	62	62
28	110	80	73	69	67	66	65	65	65	65	65	65
30	100	84	78	74	72	72	72	72	72	72	72	72
32	100	84	78	74	72	72	72	72	72	72	72	72
35	90	87	82	78	78	78	78	78	78	78	78	78
38	90	95	89	85	85	85	85	85	85	85	85	85
40	90	95	89	85	85	85	85	85	85	85	85	85
42	80	105	99	98	98	98	98	98	98	98	98	98
45	80	105	99	98	98	98	98	98	98	98	98	98
48	110	128	118	111	107	105	104	104	104	104	104	104
50	110	128	118	111	107	105	104	104	104	104	104	104

- * The value of the minimum outside diameter is evaluated by C=0.6 of the selection procedure on page 51.
- * The above SUS values indicate their bearing force [N/mm²] after thermal refining (quenched and tempered).