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TSUBAKI POWER-LOCK®

Keyless Locking Device

Tsubaki POWER-LOCK®

Our **POWER-LOCK** solves your problems.

Eliminate backlash damage to keyways from heavy loads ...the Tsubaki **POWER-LOCK** fits tightly without backlash around the shaft/hub and is not affected by load reversals.

End your high machining expenses for long shaft keyways, splined shafts, threads, grooves and steps...the Tsubaki **POWER-LOCK** offers exacting, slip free location.

Erase the headaches of shrink and press fits. The Tsubaki **POWER-LOCK** simplifies installation and removal.

This easy-to-install unit slides into position and offers a keyless. shaft-hub lock that will simultaneously handle both high torque and thrust while increasing your shaft strength.

The **POWER-LOCK** is easy to assemble...you only need one tool. It is ideal for locking in large or small sprockets, gears, pulleys, timing cams and rollers. Best of all. the **POWER-LOCK** is in stock for immediate shipment.

Features & Applications

High Durability Against Reversing or Impacting Loads

The POWER-LOCK connection is not affected by tortional load reversal or impact, which damages the key and keyway connection. Tsubaki's POWER-LOCK fits tightly around the shaft/hub and is free of backlash.

Easy and Precise Positioning

The POWER-LOCK offers 360 degree angular adjustment and is excellent for Indexing Tables. Cam Mechanisms, Gear Drives and Double Strand Conveyor Sprockets.

Thrust Capability

The Tsubaki POWER-LOCK can hold axial forces too. Typical applications with these forces include Indexing Tables and Bevel Gears.

Easy Assembly and Disassembly

The POWER-LOCK can be assembled and disassembled frequently, so maintenance or replacement of worn parts is simple and easy as compared to other methods (key and keyway, spline, shrink or press fits, and welding).

Increased Shaft Strength

By using the POWER-LOCK, no metal needs to be removed from the shaft(such as the cutting of a keyway). The saving can be especially noted on hollow-shaft applications.

Eliminates Costly Machining

There is no need for time-consuming machining of keyways. The POWER-LOCK offers substantial saving on long, heavy shafts.

Available stainless steel type and zinc plated bolt type

TSUBAKI POWER-LOCK®
AS Series

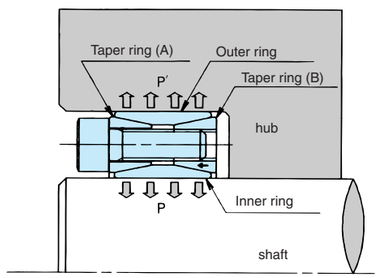
Features

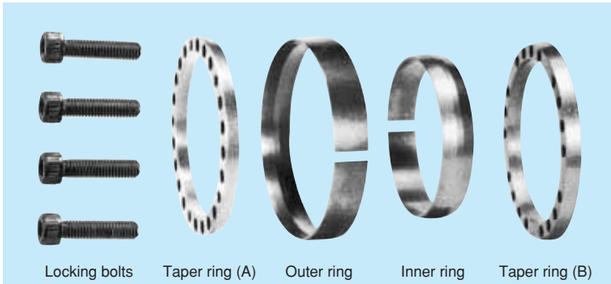
1 Standard Type
AS Series is most popular type in the world. Stainless type is also available.

2 Eliminate Costly Machining
There is no need for time-consuming machining of keyways. The POWER-LOCK offers substantial savings on long, heavy shafts.

3 Easy Assembly And Disassembly
The POWER-LOCK can be assembled and disassembled frequently, so maintenance or replacement of worn parts is simple and easy as compared to other methods (key and keyway, spline, shrink or press fits, and welding).

Construction

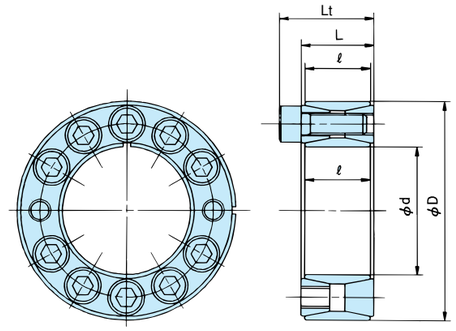




Model Number

PL 020 × 047

- 047 — Outside diameter(mm)
- 020 — Inside diameter(mm)
- PL — POWER-LOCK

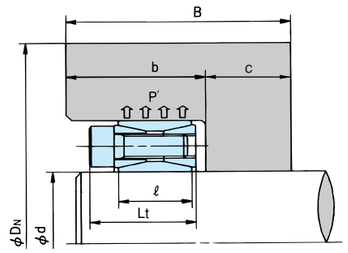


Specifications

(Conversion)
1 N·m = 0.1020 kgf·m
1 MPa = 0.1020 kgf/mm²

Model Number d × D (Inside Dia. / Outside Dia.)	Dimensions (mm) L	ℓ	Lt	Transmissible Torque Mt N·m	{kgf·m}	Transmissible Thrust Pax kN	{kgf}	Contact Pressure Shaft P MPa	{kgf/mm²}	Hub bore P' MPa	{kgf/mm²}	Locking Bolts Qty.	Size	Tightening Torque M_a N·m	{kgf·m}	Mass (kg)
PL 019 × 047	20	18	26	245	{25}	26.5	{2700}	210	{21.4}	85	{8.7}	6	M6 × 18	16.7	1.7	0.20
PL 020 × 047	20	18	26	265	{27}	26.5	{2700}	199	{20.3}	85	{8.7}	6	M6 × 18	16.7	1.7	0.20
PL 022 × 047	20	18	26	294	{30}	26.5	{2700}	181	{18.5}	85	{8.7}	6	M6 × 18	16.7	1.7	0.19
PL 024 × 050	20	18	26	402	{41}	33.3	{3400}	211	{21.5}	101	{10.3}	8	M6 × 18	16.7	1.7	0.22
PL 025 × 050	20	18	26	421	{43}	33.3	{3400}	203	{20.7}	101	{10.3}	8	M6 × 18	16.7	1.7	0.22
PL 028 × 055	20	18	26	470	{48}	33.3	{3400}	180	{18.4}	92	{9.4}	8	M6 × 18	16.7	1.7	0.25
PL 030 × 055	20	18	26	510	{52}	33.3	{3400}	169	{17.2}	92	{9.4}	8	M6 × 18	16.7	1.7	0.24
PL 032 × 060	20	18	26	676	{69}	42.1	{4300}	198	{20.2}	106	{10.8}	10	M6 × 18	16.7	1.7	0.27
PL 035 × 060	20	18	26	745	{76}	42.1	{4300}	181	{18.5}	106	{10.8}	10	M6 × 18	16.7	1.7	0.27
PL 038 × 065	20	18	26	892	{91}	47.0	{4800}	183	{18.7}	107	{10.9}	11	M6 × 18	16.7	1.7	0.30
PL 040 × 065	20	18	26	941	{96}	47.0	{4800}	174	{17.8}	107	{10.9}	11	M6 × 18	16.7	1.7	0.30
PL 042 × 075	24	21	32	1490	{152}	70.6	{7200}	214	{21.8}	121	{12.3}	9	M8 × 22	40.2	4.1	0.51
PL 045 × 075	24	21	32	1600	{163}	70.6	{7200}	200	{20.4}	121	{12.3}	9	M8 × 22	40.2	4.1	0.51
PL 048 × 080	24	21	32	1700	{173}	70.6	{7200}	188	{19.2}	113	{11.5}	9	M8 × 22	40.2	4.1	0.55
PL 050 × 080	24	21	32	1770	{181}	70.6	{7200}	180	{18.4}	113	{11.5}	9	M8 × 22	40.2	4.1	0.55
PL 055 × 085	24	21	32	2390	{244}	86.2	{8800}	201	{20.5}	130	{13.3}	11	M8 × 22	40.2	4.1	0.60
PL 060 × 090	24	21	32	2610	{266}	86.2	{8800}	184	{18.8}	123	{12.5}	11	M8 × 22	40.2	4.1	0.64
PL 065 × 095	24	21	32	3090	{315}	94.1	{9600}	184	{18.8}	126	{12.9}	12	M8 × 22	40.2	4.1	0.69
PL 070 × 110	28	25	38	4800	{490}	138	{14100}	210	{21.4}	133	{13.6}	11	M10 × 25	81.3	8.3	1.21
PL 075 × 115	28	25	38	5190	{530}	138	{14100}	196	{20.0}	127	{13.0}	11	M10 × 25	81.3	8.3	1.27
PL 080 × 120	28	25	38	5490	{560}	138	{14100}	184	{18.8}	123	{12.5}	11	M10 × 25	81.3	8.3	1.33
PL 085 × 125	28	25	38	6370	{650}	150	{15300}	189	{19.3}	128	{13.1}	12	M10 × 25	81.3	8.3	1.41
PL 090 × 130	28	25	38	6760	{690}	150	{15300}	178	{18.2}	123	{12.6}	12	M10 × 25	81.3	8.3	1.47
PL 095 × 135	28	25	38	7740	{790}	163	{16600}	183	{18.7}	129	{13.2}	13	M10 × 25	81.3	8.3	1.54
PL 100 × 145	33	29	45	10000	{1020}	201	{20500}	184	{18.8}	127	{13.0}	11	M12 × 30	142	14.5	2.09
PL 110 × 155	33	29	45	11100	{1130}	201	{20500}	168	{17.1}	120	{12.2}	11	M12 × 30	142	14.5	2.25
PL 120 × 165	33	29	45	13100	{1340}	220	{22400}	168	{17.1}	123	{12.5}	12	M12 × 30	142	14.5	2.42
PL 130 × 180	38	34	50	17800	{1820}	274	{28000}	166	{16.9}	120	{12.2}	15	M12 × 35	142	14.5	3.38
PL 140 × 190	38	34	50	20500	{2090}	292	{29800}	164	{16.7}	121	{12.3}	16	M12 × 35	142	14.5	3.59
PL 150 × 200	38	34	50	24700	{2520}	329	{33600}	172	{17.5}	129	{13.2}	18	M12 × 35	142	14.5	3.82
PL 160 × 210	38	34	50	27700	{2830}	347	{35400}	170	{17.3}	129	{13.2}	19	M12 × 35	142	14.5	4.03
PL 170 × 225	44	40	58	34100	{3480}	402	{41000}	157	{16.0}	119	{12.1}	16	M14 × 40	225	23.0	5.49
PL 180 × 235	44	40	58	38400	{3920}	426	{43500}	158	{16.1}	121	{12.3}	17	M14 × 40	225	23.0	5.78
PL 190 × 250	52	48	66	47600	{4860}	502	{51200}	147	{15.0}	112	{11.4}	20	M14 × 45	225	23.0	7.89
PL 200 × 260	52	48	66	52700	{5380}	527	{53800}	146	{14.9}	113	{11.5}	21	M14 × 45	225	23.0	8.26
PL 220 × 285	56	51	72	69100	{7050}	628	{64100}	149	{15.2}	115	{11.7}	18	M16 × 50	348	35.5	10.6
PL 240 × 305	56	51	72	83800	{8550}	698	{71200}	152	{15.5}	120	{12.2}	20	M16 × 50	348	35.5	11.5
PL 260 × 325	56	51	72	104000	{10600}	803	{81900}	161	{16.4}	129	{13.2}	23	M16 × 50	348	35.5	12.4
PL 280 × 355	66	61	84	129000	{13200}	923	{94200}	144	{14.7}	114	{11.6}	22	M18 × 60	475	48.5	18.7
PL 300 × 375	66	61	84	151000	{15400}	1000	{102000}	147	{15.0}	118	{12.0}	24	M18 × 60	475	48.5	19.9

Note :
1. Torque Mt in above table is shown in case of Pax=0 and thrust Pax is shown in case of Mt=0.
   When torque and thrust are applied, calculate composite torque and compare it with Mt. (Refer to page 23)
2. Contact pressure P and P' in the above table indicate mean value only.
   These pressures will fluctuate from –20 % to +40% due to the variable friction component forces resulting from the locking bolts. Mt and Pax are calculated as minimum values.



Minimum hub diameter Dn

When Using One POWER-LOCK®

Suggested outside hub diameter for a single POWER-LOCK.
This table shows the minimum hub diameter Dn
which can tolerate surface pressure P' based on :

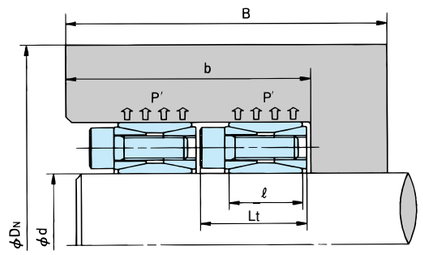
$B \geqq 2 \times \ell$

* The value, d/2 or more, is to be suggested as the guide length C.

Minimum Hub Diameter (Dn in mm) (Conversion) 1MPa = 0.1020 kgf/mm² $K_3 = 0.6$

Model Number d × D (Inside Dia. × Outside Dia.)	Contact pressure in the Hub Bore P' MPa	{kgf/mm²}	Yield Point of Hub Material Y.P. (MPa) Y.P. = $\sigma_{0.2}$ MPa	147	176	206	225	245	274	294	343	392	441
			{kgf/mm²}	{15}	{18}	{21}	{23}	{25}	{28}	{30}	{35}	{40}	{45}
PL 019 × 047	85	{ 8.7}		68	64	61	60	59	57	57	55	54	53
PL 020 × 047	85	{ 8.7}		68	64	61	60	59	57	57	55	54	53
PL 022 × 047	85	{ 8.7}		68	64	61	60	59	57	57	55	54	53
PL 024 × 050	101	{10.3}		78	72	68	66	65	63	62	60	59	58
PL 025 × 050	101	{10.3}		78	72	68	66	65	63	62	60	59	58
PL 028 × 055	92	{ 9.4}		82	77	73	71	70	68	67	65	64	63
PL 030 × 055	92	{ 9.4}		82	77	73	71	70	68	67	65	64	63
PL 032 × 060	106	{10.8}		94	88	83	81	79	76	75	73	71	70
PL 035 × 060	106	{10.8}		94	88	83	81	79	76	75	73	71	70
PL 038 × 065	107	{10.9}		104	96	90	88	85	83	82	79	77	76
PL 040 × 065	107	{10.9}		104	96	90	88	85	83	82	79	77	76
PL 042 × 075	121	{12.3}		129	116	109	105	102	99	97	93	91	89
PL 045 × 075	121	{12.3}		129	116	109	105	102	99	97	93	91	89
PL 048 × 080	113	{11.5}		132	120	113	109	107	103	102	98	96	94
PL 050 × 080	113	{11.5}		132	120	113	109	107	103	102	98	96	94
PL 055 × 085	130	{13.3}		154	137	127	123	119	114	112	108	104	102
PL 060 × 090	123	{12.5}		156	141	131	127	123	119	117	112	109	107
PL 065 × 095	126	{12.9}		169	151	140	135	131	127	124	119	116	113
PL 070 × 110	133	{13.6}		203	180	166	160	155	149	146	140	136	133
PL 075 × 115	127	{13.0}		205	183	170	164	159	154	151	145	141	137
PL 080 × 120	123	{12.5}		208	187	175	169	164	158	155	150	146	142
PL 085 × 125	128	{13.1}		224	200	186	179	174	167	164	158	153	150
PL 090 × 130	123	{12.6}		227	204	190	183	178	172	169	162	158	154
PL 095 × 135	129	{13.2}		243	217	201	194	188	181	177	170	165	162
PL 100 × 145	127	{13.0}		258	231	215	207	201	193	190	182	177	173
PL 110 × 155	120	{12.2}		263	239	223	216	210	203	199	192	187	183
PL 120 × 165	123	{12.5}		289	258	240	232	225	218	213	206	200	196
PL 130 × 180	120	{12.2}		307	278	259	251	244	236	231	223	217	213
PL 140 × 190	121	{12.3}		326	294	275	265	258	249	245	236	229	225
PL 150 × 200	129	{13.2}		360	321	298	287	278	268	263	252	245	239
PL 160 × 210	129	{13.2}		378	337	313	301	292	281	276	265	257	251
PL 170 × 225	119	{12.1}		382	346	323	312	304	294	288	278	271	265
PL 180 × 235	121	{12.3}		403	364	340	328	319	308	303	292	284	278
PL 190 × 250	112	{11.4}		409	373	351	340	331	321	316	305	298	292
PL 200 × 260	113	{11.5}		428	390	366	355	346	335	329	318	310	304
PL 220 × 285	115	{11.7}		474	431	404	391	381	369	362	350	341	334
PL 240 × 305	120	{12.2}		520	470	439	425	413	399	392	378	367	360
PL 260 × 325	129	{13.2}		585	522	484	466	452	435	426	410	398	389
PL 280 × 355	114	{11.6}		587	534	501	486	473	458	450	435	424	415
PL 300 × 375	118	{12.0}		633	573	537	519	505	488	479	462	450	441

Note :
1. The above hub dias. do not include any safty factor. When use this table, put safty factor at customer side.
2. The above hub dias. are calculated by $K_3 = 0.6$. Refer to page 23.



Minimum hub diameter Dn

When Using Multiple POWER-LOCK®

Suggested outside hub diameter for two or more POWER-LOCK.
This table shows the minimum hub diameter Dn
which can tolerate surface pressure P' based on :

$B \geqq (Z \times Lt) + Lt$ Z : Number of POWER-LOCK ($2 \leqq Z \leqq 4$)

* The value, d/2 or more, is to be suggested as the guide length C.

Minimum Hub Diameter (Dn in mm) (Conversion) 1MPa = 0.1020 kgf/mm² $K_3 = 0.8$

Model Number d × D (Inside Dia. × Outside Dia.)	Contact pressure in the Hub Bore P' MPa	{kgf/mm²}	Yield Point of Hub Material Y.P. (MPa) Y.P. = $\sigma_{0.2}$ MPa	147	176	206	225	245	274	294	343	392	441
			{kgf/mm²}	{15}	{18}	{21}	{23}	{25}	{28}	{30}	{35}	{40}	{45}
PL 019 × 047	85	{ 8.7}		78	71	67	65	63	61	60	58	57	55
PL 020 × 047	85	{ 8.7}		78	71	67	65	63	61	60	58	57	55
PL 022 × 047	85	{ 8.7}		78	71	67	65	63	61	60	58	57	55
PL 024 × 050	101	{10.3}		93	82	76	73	71	68	67	64	62	61
PL 025 × 050	101	{10.3}		93	82	76	73	71	68	67	64	62	61
PL 028 × 055	92	{ 9.4}		96	86	80	78	76	73	72	69	67	66
PL 030 × 055	92	{ 9.4}		96	86	80	78	76	73	72	69	67	66
PL 032 × 060	106	{10.8}		116	102	93	90	86	83	81	78	75	73
PL 035 × 060	106	{10.8}		116	102	93	90	86	83	81	78	75	73
PL 038 × 065	107	{10.9}		127	111	102	97	94	90	88	84	82	80
PL 040 × 065	107	{10.9}		127	111	102	97	94	90	88	84	82	80
PL 042 × 075	121	{12.3}		165	139	125	119	114	109	106	101	97	94
PL 045 × 075	121	{12.3}		165	139	125	119	114	109	106	101	97	94
PL 048 × 080	113	{11.5}		164	141	128	123	118	113	110	105	102	99
PL 050 × 080	113	{11.5}		164	141	128	123	118	113	110	105	102	99
PL 055 × 085	130	{13.3}		207	168	149	141	134	127	124	117	112	109
PL 060 × 090	123	{12.5}		202	169	152	144	138	131	128	121	117	113
PL 065 × 095	126	{12.9}		221	183	163	154	148	140	136	129	124	120
PL 070 × 110	133	{13.6}		276	222	196	184	176	166	161	152	146	141
PL 075 × 115	127	{13.0}		271	223	198	188	180	170	166	157	151	146
PL 080 × 120	123	{12.5}		269	225	202	192	184	175	170	161	155	151
PL 085 × 125	128	{13.1}		297	244	217	205	196	186	180	171	164	159
PL 090 × 130	123	{12.6}		294	245	220	208	200	190	185	175	169	164
PL 095 × 135	129	{13.2}		324	265	235	222	212	201	195	185	177	172
PL 100 × 145	127	{13.0}		341	281	250	237	226	215	209	197	190	184
PL 110 × 155	120	{12.2}		337	285	257	244	235	223	218	207	199	194
PL 120 × 165	123	{12.5}		369	309	277	263	252	240	234	222	213	207
PL 130 × 180	120	{12.2}		392	331	298	284	272	259	253	240	231	225
PL 140 × 190	121	{12.3}		417	351	316	301	288	275	268	254	245	238
PL 150 × 200	129	{13.2}		480	392	348	329	314	298	289	274	263	254
PL 160 × 210	129	{13.2}		504	412	366	345	330	313	304	287	276	267
PL 170 × 225	119	{12.1}		485	411	371	353	339	323	315	299	288	280
PL 180 × 235	121	{12.3}		516	435	391	372	357	340	331	314	303	294
PL 190 × 250	112	{11.4}		507	437	399	381	367	351	343	327	316	307
PL 200 × 260	113	{11.5}		532	458	416	398	383	366	357	341	329	320
PL 220 × 285	115	{11.7}		593	508	461	439	423	404	394	375	362	352
PL 240 × 305	120	{12.2}		663	560	505	480	461	439	428	407	392	381
PL 260 × 325	129	{13.2}		780	637	566	534	510	484	470	444	426	413
PL 280 × 355	114	{11.6}		732	628	571	545	525	501	489	466	450	438
PL 300 × 375	118	{12.0}		801	680	615	585	563	537	523	497	479	466

Note :
1. The above hub dias. do not include any safty factor. When use this table, put safty factor at customer side.
2. The above hub dias. are calculated by $K_3 = 0.8$. Refer to page 23.

TSUBAKI POWER-LOCK®
AE Series

Features

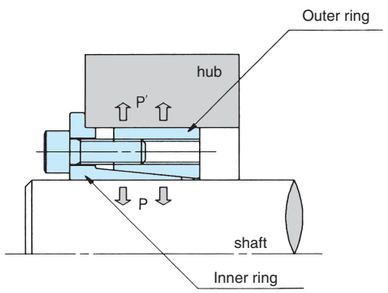
1 Self-Centering Function
Straight and narrow hubs can be used with AE Series POWER-LOCK.

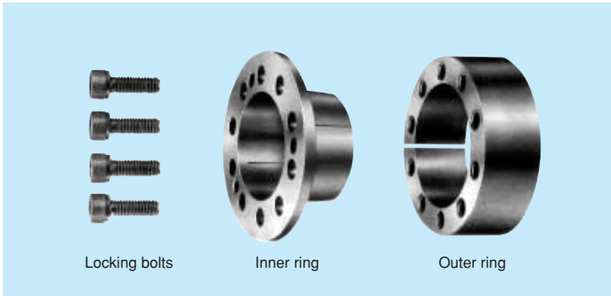
2 Interchangeable POWER-LOCK AS Series to AE Series
Have the same size inside diameter and outside diameter as POWER-LOCK AS Series.

3 Easy and Precise Positioning

4 Simple Construction

Construction

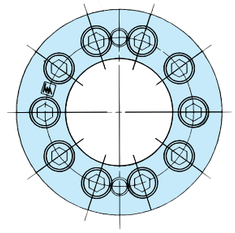


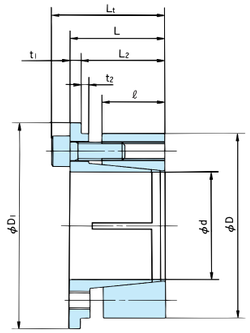


Model Number

PL 020 × 047 AE

- AE Series
- Outside diameter(mm)
- Inside diameter(mm)
- POWER-LOCK



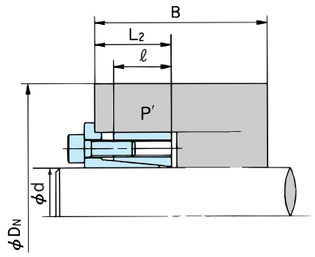


Specifications

(Conversion)
1 N·m = 0.1020 kgf·m
1 MPa = 0.1020 kgf/mm²

Model Number d × D (Inside Dia. × Outside Dia.)	Dimensions (mm) ℓ	L2	L	Lt	t1	t2	D1	Transmissible Torque Mt N·m	{kgf·m}	Transmissible Thrust Pax kN	{kgf}	Contact Pressure (Mpa) Shaft P MPa	{kgf/mm²}	Hub bore P' MPa	{kgf/mm²}	Locking Bolts Qty.	Size	Tightening Torque Ma N·m	{kgf·m}	Mass (kg)
PL 019 × 047 AE	19	24.8	27.3	33.3	2.5	3	53	265	{ 27}	28.1	{ 2870}	287	{29.3}	93	{ 9.5}	6	M6 × 18	16.7	{ 1.7}	0.28
PL 020 × 047 AE	19	24.8	27.3	33.3	2.5	3	53	274	{ 28}	28.1	{ 2870}	272	{27.8}	93	{ 9.5}	6	M6 × 18	16.7	{ 1.7}	0.27
PL 022 × 047 AE	19	24.8	27.3	33.3	2.5	3	53	304	{ 31}	28.1	{ 2870}	248	{25.3}	93	{ 9.5}	6	M6 × 18	16.7	{ 1.7}	0.26
PL 024 × 050 AE	19	25.3	27.8	33.8	2.5	3	57	392	{ 40}	32.8	{ 3350}	274	{28.0}	102	{10.4}	7	M6 × 18	16.7	{ 1.7}	0.29
PL 025 × 050 AE	19	25.3	27.8	33.8	2.5	3	57	412	{ 42}	32.8	{ 3350}	282	{28.8}	102	{10.4}	7	M6 × 18	16.7	{ 1.7}	0.29
PL 028 × 055 AE	19	25.3	28.6	34.6	3.3	3	62	519	{ 53}	37.5	{ 3830}	269	{27.4}	106	{10.8}	8	M6 × 18	16.7	{ 1.7}	0.35
PL 030 × 055 AE	19	25.3	28.6	34.6	3.3	3	62	559	{ 57}	37.5	{ 3830}	251	{25.6}	106	{10.8}	8	M6 × 18	16.7	{ 1.7}	0.34
PL 032 × 060 AE	20.5	27.3	30.9	36.9	3.6	3	67	745	{ 76}	46.9	{ 4790}	267	{27.2}	113	{11.5}	10	M6 × 18	16.7	{ 1.7}	0.44
PL 035 × 060 AE	20.5	27.3	30.9	36.9	3.6	3	67	823	{ 84}	46.9	{ 4790}	244	{24.9}	113	{11.5}	10	M6 × 18	16.7	{ 1.7}	0.41
PL 038 × 065 AE	20.5	27.5	31.1	37.1	3.6	3	73	892	{ 91}	46.9	{ 4790}	228	{23.3}	104	{10.6}	10	M6 × 18	16.7	{ 1.7}	0.48
PL 040 × 065 AE	20.5	27.5	31.1	37.1	3.6	3	73	931	{ 95}	46.9	{ 4790}	217	{22.1}	104	{10.6}	10	M6 × 18	16.7	{ 1.7}	0.45
PL 042 × 075 AE	23.5	30.8	34.8	42.8	4	3	83	1640	{ 167}	78.1	{ 7970}	285	{29.1}	130	{13.3}	9	M8 × 22	40.2	{ 4.1}	0.76
PL 045 × 075 AE	23.5	30.8	34.8	42.8	4	3	83	1750	{ 179}	78.1	{ 7970}	266	{27.1}	130	{13.3}	9	M8 × 22	40.2	{ 4.1}	0.71
PL 048 × 080 AE	23.5	31.0	35	43	4	3	88	2060	{ 210}	86.8	{ 8860}	280	{28.6}	136	{13.9}	10	M8 × 22	40.2	{ 4.1}	0.81
PL 050 × 080 AE	23.5	31.0	35	43	4	3	88	2160	{ 220}	86.8	{ 8860}	270	{27.5}	136	{13.9}	10	M8 × 22	40.2	{ 4.1}	0.77
PL 055 × 085 AE	23.5	30.8	34.8	42.8	4	3	94	2350	{ 240}	86.8	{ 8860}	242	{24.7}	128	{13.1}	10	M8 × 22	40.2	{ 4.1}	0.84
PL 060 × 090 AE	23.5	30.8	34.8	42.8	4	3	99	2550	{ 260}	86.8	{ 8860}	219	{22.3}	122	{12.4}	10	M8 × 22	40.2	{ 4.1}	0.90
PL 065 × 095 AE	23.5	30.8	34.8	42.8	4	3	104	3330	{ 340}	104	{10600}	246	{25.1}	137	{14.0}	12	M8 × 22	40.2	{ 4.1}	0.96
PL 070 × 110 AE	28	36.5	41	51	4.5	4	120	4800	{ 490}	137	{14000}	247	{25.2}	132	{13.5}	10	M10 × 25	81.3	{ 8.3}	1.70
PL 075 × 115 AE	28	36.5	41	51	4.5	4	125	5100	{ 520}	137	{14000}	230	{23.5}	126	{12.9}	10	M10 × 25	81.3	{ 8.3}	1.79
PL 080 × 120 AE	28	36.5	41	51	4.5	4	130	6570	{ 670}	165	{16800}	260	{26.5}	145	{14.8}	12	M10 × 25	81.3	{ 8.3}	1.89
PL 085 × 125 AE	28	36.5	41	51	4.5	4	135	6960	{ 710}	165	{16800}	244	{24.9}	139	{14.2}	12	M10 × 25	81.3	{ 8.3}	1.98
PL 090 × 130 AE	28	37.5	43	53	5.5	4	140	7450	{ 760}	165	{16800}	241	{24.6}	134	{13.7}	12	M10 × 25	81.3	{ 8.3}	2.15
PL 095 × 135 AE	28	37.5	43	53	5.5	4	145	9110	{ 930}	193	{19700}	267	{27.2}	151	{15.4}	14	M10 × 25	81.3	{ 8.3}	2.24
PL 100 × 145 AE	34	44.0	50	60	6	4	155	10300	{1050}	207	{21100}	218	{22.2}	123	{12.6}	15	M10 × 25	81.3	{ 8.3}	3.07
PL 110 × 155 AE	34	44.0	50	60	6	4	167	11400	{1160}	207	{21100}	198	{20.2}	116	{11.8}	15	M10 × 25	81.3	{ 8.3}	3.35
PL 120 × 165 AE	34	44.0	50	60	6	4	177	14900	{1520}	248	{25300}	218	{22.2}	130	{13.3}	18	M10 × 25	81.3	{ 8.3}	3.59
PL 130 × 180 AE	38	50.0	57	69	7	6	195	19600	{2000}	301	{30700}	214	{21.8}	129	{13.2}	15	M12 × 35	142	{14.5}	5.04
PL 140 × 190 AE	38	50.0	57	69	7	6	205	21100	{2150}	301	{30700}	198	{20.2}	123	{12.6}	15	M12 × 35	142	{14.5}	5.38
PL 150 × 200 AE	38	50.0	58	70	8	6	215	27000	{2760}	361	{36800}	221	{22.6}	140	{14.3}	18	M12 × 35	142	{14.5}	5.81

Note :
1. Torque Mt in above table is shown in case of Pax=0 and thrust Pax is shown in case of Mt=0.
   When torque and thrust are applied, calculate composite torque and compare it with Mt. (Refer to page 23)
2. Contact pressure P and P' in the above table indicate mean value only.
   These pressures will fluctuate from –20 % to +20% due to the variable friction component forces resulting from the locking bolts. Mt and Pax are calculated as minimum values.



Minimum hub diameter Dn

1) When Using Hub with Guide

This table shows the minimum hub diameter Dn which can tolerate surface pressure P' based on :

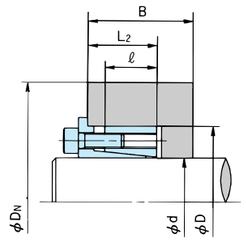
$B \geqq 2 \times \ell$

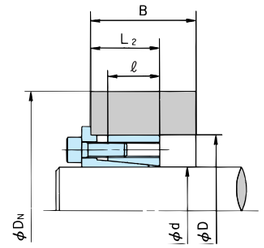
Minimum Hub Diameter (Dn in mm)

(Conversion)
1MPa = 0.1020 kgf/mm² $K_3 = 0.8$

Model Number d × D (Inside Dia. / Outside Dia.)	Contact pressure in the Hub Bore P' MPa	{kgf/mm²}	Yield Point of Hub Material Y.P. (MPa) Y.P. = $\sigma_{0.2}$ MPa 147	176	206	225	245	274	294	343	392	441
			{15}	{18}	{21}	{23}	{25}	{28}	{30}	{35}	{40}	{45}
PL 019 × 047 AE	93	{ 9.5}	83	74	69	67	65	63	61	59	57	56
PL 020 × 047 AE	93	{ 9.5}	83	74	69	67	65	63	61	59	57	56
PL 022 × 047 AE	93	{ 9.5}	83	74	69	67	65	63	61	59	57	56
PL 024 × 050 AE	102	{10.4}	94	83	77	74	71	68	67	64	62	61
PL 025 × 050 AE	102	{10.4}	94	83	77	74	71	68	67	64	62	61
PL 028 × 055 AE	106	{10.8}	106	93	86	82	79	76	74	71	69	67
PL 030 × 055 AE	106	{10.8}	106	93	86	82	79	76	74	71	69	67
PL 032 × 060 AE	113	{11.5}	123	106	96	92	89	85	83	79	76	74
PL 035 × 060 AE	113	{11.5}	123	106	96	92	89	85	83	79	76	74
PL 038 × 065 AE	104	{10.6}	124	109	100	96	93	89	87	84	81	79
PL 040 × 065 AE	104	{10.6}	124	109	100	96	93	89	87	84	81	79
PL 042 × 075 AE	130	{13.3}	182	148	132	124	119	112	109	103	99	96
PL 045 × 075 AE	130	{13.3}	182	148	132	124	119	112	109	103	99	96
PL 048 × 080 AE	136	{13.9}	208	165	145	136	130	122	119	112	107	103
PL 050 × 080 AE	136	{13.9}	208	165	145	136	130	122	119	112	107	103
PL 055 × 085 AE	128	{13.1}	202	166	148	139	133	126	123	116	112	108
PL 060 × 090 AE	122	{12.4}	200	168	151	143	137	131	127	121	116	113
PL 065 × 095 AE	137	{14.0}	250	197	173	162	154	146	141	133	127	123
PL 070 × 110 AE	132	{13.5}	273	220	195	184	175	166	161	152	146	141
PL 075 × 115 AE	126	{12.9}	268	221	197	187	179	170	165	156	150	146
PL 080 × 120 AE	145	{14.8}	350	265	228	213	201	189	183	171	163	158
PL 085 × 125 AE	139	{14.2}	337	263	230	215	205	193	187	176	168	162
PL 090 × 130 AE	134	{13.7}	330	264	232	219	209	197	191	180	173	167
PL 095 × 135 AE	151	{15.4}	431	312	265	246	232	217	209	195	186	179
PL 100 × 145 AE	123	{12.6}	328	274	245	233	223	212	206	196	188	183
PL 110 × 155 AE	116	{11.8}	325	278	252	240	231	221	215	205	198	192
PL 120 × 165 AE	130	{13.3}	401	326	289	273	260	247	240	226	217	210
PL 130 × 180 AE	129	{13.2}	432	353	313	296	283	268	260	246	236	229
PL 140 × 190 AE	123	{12.6}	429	358	321	305	292	277	270	256	246	239
PL 150 × 200 AE	140	{14.3}	546	424	369	346	328	309	299	281	269	260

Note :
1. The above hub dias. do not include any safty factor. When use this table, put safty factor at customer side.
2. The above hub dias. are calculated by $K_3 = 0.8$. Refer to page 23.





Minimum hub diameter Dn

2) When Using Hub with Guide
based on : $L_2 < B < 2 \times \ell$

OR

3) When Using Hub without Guide

This table shows the minimum hub diameter Dn which can tolerate surface pressure P'.

Minimum Hub Diameter (Dn in mm)

(Conversion)
1MPa = 0.1020 kgf/mm² $K_3 = 1.0$

Model Number d × D (Inside Dia. / Outside Dia.)	Contact pressure in the Hub Bore P' MPa	{kgf/mm²}	Yield Point of Hub Material Y.P. (MPa) Y.P. = $\sigma_{0.2}$ MPa 176	206	225	245	274	294	343	392	441
			{18}	{21}	{23}	{25}	{28}	{30}	{35}	{40}	{45}
PL 019 × 047 AE	93	{ 9.5}	85	77	73	71	67	66	63	60	59
PL 020 × 047 AE	93	{ 9.5}	85	77	73	71	67	66	63	60	59
PL 022 × 047 AE	93	{ 9.5}	85	77	73	71	67	66	63	60	59
PL 024 × 050 AE	102	{10.4}	97	87	82	78	74	72	68	66	64
PL 025 × 050 AE	102	{10.4}	97	87	82	78	74	72	68	66	64
PL 028 × 055 AE	106	{10.8}	110	98	92	88	83	81	76	73	71
PL 030 × 055 AE	106	{10.8}	110	98	92	88	83	81	76	73	71
PL 032 × 060 AE	113	{11.5}	128	111	104	99	93	90	85	81	78
PL 035 × 060 AE	113	{11.5}	128	111	104	99	93	90	85	81	78
PL 038 × 065 AE	104	{10.6}	128	114	107	103	97	95	89	86	83
PL 040 × 065 AE	104	{10.6}	128	114	107	103	97	95	89	86	83
PL 042 × 075 AE	130	{13.3}	194	159	146	136	126	121	112	106	102
PL 045 × 075 AE	130	{13.3}	194	159	146	136	126	121	112	106	102
PL 048 × 080 AE	136	{13.9}	224	178	162	150	138	133	122	115	111
PL 050 × 080 AE	136	{13.9}	224	178	162	150	138	133	122	115	111
PL 055 × 085 AE	128	{13.1}	215	177	163	153	142	136	126	120	115
PL 060 × 090 AE	122	{12.4}	210	178	165	156	145	140	131	125	120
PL 065 × 095 AE	137	{14.0}	269	213	193	179	165	158	146	137	132
PL 070 × 110 AE	132	{13.5}	292	236	216	202	187	179	166	157	150
PL 075 × 115 AE	126	{12.9}	284	236	217	204	190	183	170	161	155
PL 080 × 120 AE	145	{14.8}	385	289	258	238	217	207	189	177	169
PL 085 × 125 AE	139	{14.2}	364	285	258	239	219	210	193	182	174
PL 090 × 130 AE	134	{13.7}	353	284	259	241	222	213	197	186	179
PL 095 × 135 AE	151	{15.4}	484	345	304	277	251	239	217	203	193
PL 100 × 145 AE	123	{12.6}	346	290	269	253	236	227	212	201	194
PL 110 × 155 AE	116	{11.8}	340	293	274	259	243	235	221	211	203
PL 120 × 165 AE	130	{13.3}	426	349	320	299	277	266	247	234	224
PL 130 × 180 AE	129	{13.2}	459	377	346	324	301	289	268	254	244
PL 140 × 190 AE	123	{12.6}	453	380	352	331	309	298	277	264	254
PL 150 × 200 AE	140	{14.3}	591	460	415	384	352	336	309	291	278

Note :
1. The above hub dias. do not include any safty factor. When use this table, put safty factor at customer side.
2. The above hub dias. are calculated by $K_3 = 1.0$. Refer to page 23.

TSUBAKI POWER-LOCK®
KE Series

Features

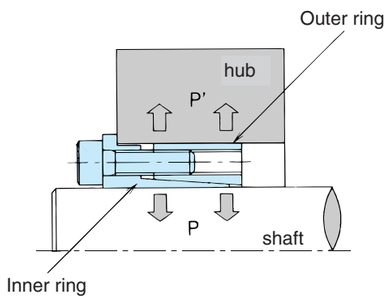
1 Range of Sizes Available
Available in a variety of sizes for smaller motors or sensors

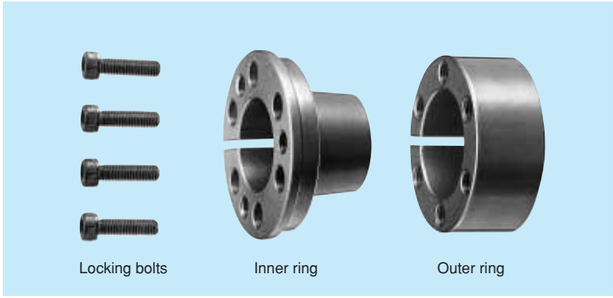
2 Wide Tolerance for Shafts
POWER-LOCK KE Series is designed with a slit construction and special taper angle to cover a wider tolerance of shaft sizes, such as motor shafts

3 Self- Centering

4 Compact construction
Compact design is possible, because the ratio of inside and outside diameter is small.

Construction





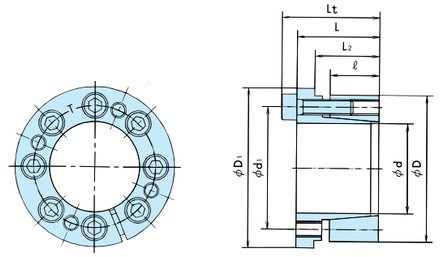
Model Number

PL 020 × 038 KE

- KE Series
- Outside diameter(mm)
- Inside diameter(mm)
- POWER-LOCK

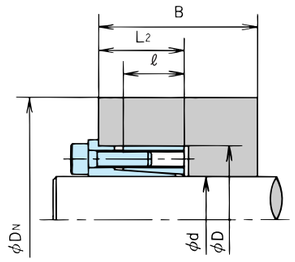
Specifications

(Conversion)
1 N·m = 0.1020 kgf·m
1 MPa = 0.1020 kgf/mm²



Model Number d × D (Inside Dia. / Outside Dia.)	Dimensions (mm) ℓ	L2	L	Lt	d1	D1	Transmissible Torque Mt N·m	Mt {kgf·m}	Transmissible Thrust Pax kN	Pax {kgf}	Contact Pressure (Mpa) Shaft P MPa	P {kgf/mm²}	Hub bore P' MPa	P' {kgf/mm²}	Locking Bolts Qty.	Size	Tightening Torque Ma N·m	Ma {kgf·m}	Mass (kg)
PL005 × 016 KE	8	12	13.5	16.5	11.5	18.5	7.5	{0.77}	2.86	{292}	223	{22.8}	70	{7.1}	3	M 3 × 10	1.9	{0.19}	0.02
PL006 × 017 KE	8	12	13.5	16.5	12.5	19.5	9.0	{0.92}	2.86	{292}	186	{19.0}	66	{6.7}	3	M 3 × 10	1.9	{0.19}	0.02
PL008 × 021 KE	10	14.5	16.5	20.5	15.6	23.5	24.5	{2.5}	5.96	{608}	232	{23.7}	88	{9.0}	3	M 4 × 12	4.8	{0.49}	0.03
PL010 × 023 KE	10	14.5	16.5	20.5	17.6	25.5	31.4	{3.2}	5.96	{608}	186	{19.0}	80	{8.2}	3	M 4 × 12	4.8	{0.49}	0.04
PL011 × 024 KE	10	14.5	16.5	20.5	18.6	26.5	34.3	{3.5}	5.96	{608}	169	{17.2}	77	{7.9}	3	M 4 × 12	4.8	{0.49}	0.04
PL012 × 026 KE	10	14.5	16.5	20.5	20	28.5	50.0	{5.1}	7.94	{810}	207	{21.1}	95	{9.7}	4	M 4 × 12	4.8	{0.49}	0.05
PL014 × 028 KE	12	17.5	20	24	22	30.5	73.5	{7.5}	9.90	{1010}	184	{18.8}	92	{9.4}	5	M 4 × 14	4.8	{0.49}	0.06
PL015 × 029 KE	12	17.5	20	24	23	31.5	94.1	{9.6}	11.9	{1210}	207	{21.1}	107	{10.9}	6	M 4 × 14	4.8	{0.49}	0.07
PL016 × 030 KE	12	17.5	20	24	24	32.5	101	{10.3}	11.9	{1210}	194	{19.8}	103	{10.5}	6	M 4 × 14	4.8	{0.49}	0.07
PL017 × 031 KE	12	17.5	20	24	25	33.5	107	{10.9}	11.9	{1210}	182	{18.6}	100	{10.2}	6	M 4 × 14	4.8	{0.49}	0.07
PL018 × 032 KE	12	17.5	20	24	26	34.5	113	{11.5}	11.9	{1210}	172	{17.6}	97	{9.9}	6	M 4 × 14	4.8	{0.49}	0.08
PL019 × 033 KE	12	17.5	20	24	27	35.5	120	{12.2}	11.9	{1210}	163	{16.6}	94	{9.6}	6	M 4 × 14	4.8	{0.49}	0.08
PL020 × 038 KE	15	20.5	25	30	30	42	206	{21.0}	19.4	{1980}	203	{20.7}	107	{10.9}	6	M 5 × 18	9.8	{1.0}	0.14
PL022 × 040 KE	15	20.5	25	30	32	44	226	{23.1}	19.4	{1980}	184	{18.8}	101	{10.3}	6	M 5 × 18	9.8	{1.0}	0.15
PL024 × 042 KE	15	20.5	25	30	34	46	329	{33.6}	25.9	{2640}	225	{23.0}	128	{13.1}	8	M 5 × 18	9.8	{1.0}	0.16
PL025 × 043 KE	15	20.5	25	30	35	47	343	{35.0}	25.9	{2640}	216	{22.0}	125	{12.8}	8	M 5 × 18	9.8	{1.0}	0.17
PL028 × 046 KE	17	22.5	28	33	38.5	50	432	{44.1}	29.2	{2980}	191	{19.5}	117	{11.9}	9	M 5 × 18	9.8	{1.0}	0.21
PL030 × 048 KE	17	22.5	28	33	40.5	52	515	{52.5}	32.4	{3310}	199	{20.3}	124	{12.7}	10	M 5 × 18	9.8	{1.0}	0.22
PL032 × 050 KE	17	22.5	28	33	42.5	54	549	{56.0}	32.4	{3310}	186	{19.0}	120	{12.2}	10	M 5 × 18	9.8	{1.0}	0.23
PL035 × 057 KE	19	25	32	38	47.5	62	678	{69.2}	36.6	{3730}	172	{17.5}	106	{10.8}	8	M 6 × 22	16.7	{1.7}	0.36
PL038 × 060 KE	19	25	32	38	50.5	65	921	{94.0}	45.8	{4670}	198	{20.2}	125	{12.8}	10	M 6 × 22	16.7	{1.7}	0.39
PL040 × 062 KE	19	25	32	38	52.5	67	969	{98.9}	45.8	{4670}	188	{19.2}	122	{12.4}	10	M 6 × 22	16.7	{1.7}	0.40
PL042 × 064 KE	19	25	32	38	54.5	69	1010	{103}	45.8	{4670}	179	{18.3}	118	{12.0}	10	M 6 × 22	16.7	{1.7}	0.42
PL045 × 067 KE	19	25	32	38	57.5	72	1090	{111}	45.8	{4670}	168	{17.1}	113	{11.5}	10	M 6 × 22	16.7	{1.7}	0.44
PL048 × 070 KE	19	25	32	38	60.5	75	1390	{142}	54.9	{5600}	188	{19.2}	129	{13.2}	12	M 6 × 22	16.7	{1.7}	0.46
PL050 × 072 KE	19	26	34.5	40.5	63.5	77	1700	{173}	64.1	{6540}	211	{21.5}	146	{14.9}	14	M 6 × 25	16.7	{1.7}	0.50
PL055 × 077 KE	19	26	34.5	40.5	67.5	82	1860	{190}	64.1	{6540}	191	{19.5}	137	{14.0}	14	M 6 × 25	16.7	{1.7}	0.55
PL060 × 082 KE	19	26	34.5	40.5	72.5	87	2180	{222}	68.6	{7000}	188	{19.2}	137	{14.0}	15	M 6 × 25	16.7	{1.7}	0.59
PL065 × 087 KE	19	26	34.5	40.5	77.5	92	2360	{241}	68.6	{7000}	173	{17.7}	129	{13.2}	15	M 6 × 25	16.7	{1.7}	0.63
PL070 × 097 KE	22	31.5	40.5	48.5	85.5	102	3750	{383}	101	{10300}	206	{21.0}	148	{15.1}	12	M 8 × 30	40.2	{4.1}	0.99
PL075 × 102 KE	22	31.5	40.5	48.5	90.5	107	4030	{411}	101	{10300}	192	{19.6}	141	{14.4}	12	M 8 × 30	40.2	{4.1}	1.05
PL080 × 107 KE	22	31.5	41.5	49.5	95.5	112	5010	{511}	118	{12000}	210	{21.4}	157	{16.0}	14	M 8 × 30	40.2	{4.1}	1.14
PL085 × 112 KE	22	31.5	41.5	49.5	100.5	117	5320	{543}	118	{12000}	198	{20.2}	150	{15.3}	14	M 8 × 30	40.2	{4.1}	1.20
PL090 × 123 KE	29	41.5	54	64	109.5	128	8960	{914}	187	{19100}	224	{22.9}	165	{16.8}	14	M10 × 40	81.3	{8.3}	2.08
PL095 × 128 KE	29	41.5	54	64	114.5	133	9460	{965}	187	{19100}	213	{21.7}	158	{16.1}	14	M10 × 40	81.3	{8.3}	2.18
PL100 × 133 KE	29	41.5	54	64	119.5	138	9900	{1010}	187	{19100}	203	{20.7}	152	{15.5}	14	M10 × 40	81.3	{8.3}	2.28

Note :
1. Torque Mt in above table is shown in case of Pax=0 and thrust Pax is shown in case of Mt=0.
   When torque and thrust are applied, calculate composite torque and compare it with Mt. (Refer to page 23)
2. Contact pressure P and P' in the above table indicate mean value only.
   These pressures will fluctuate from –20 % to +20% due to the variable friction component forces resulting from the locking bolts. Mt and Pax are calculated as minimum values.



Minimum hub diameter Dn

1) When Using Hub with Guide

This table shows the minimum hub diameter Dn which can tolerate surface pressure P' based on :

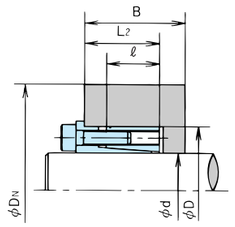
$B \geqq 2 \times \ell$

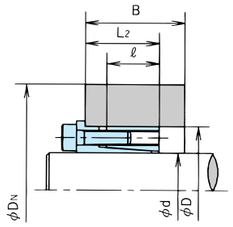
Minimum Hub Diameter (Dn in mm)

(Conversion)
1 MPa = 0.1020 kgf/mm² K_3 = 0.8

Model Number d × D (Inside Dia. / Outside Dia.)	Contact pressure in the Hub Bore P' MPa	{kgf/mm²}	Yield Point of Hub Material Y.P. (MPa) Y.P. = $\sigma_{0.2}$									
		MPa	147	176	206	225	245	274	294	343	392	441
		{kgf/mm²}	{15}	{18}	{21}	{23}	{25}	{28}	{30}	{35}	{40}	{45}
PL005 × 016 KE	70	{ 7.1}	24	23	22	21	21	20	20	19	19	19
PL006 × 017 KE	66	{ 6.7}	25	24	23	22	22	21	21	20	20	20
PL008 × 021 KE	88	{ 9.0}	36	33	31	30	29	28	27	26	26	25
PL010 × 023 KE	80	{ 8.2}	37	34	32	31	31	30	29	28	28	27
PL011 × 024 KE	77	{ 7.9}	38	35	33	32	32	31	30	29	29	28
PL012 × 026 KE	95	{ 9.7}	47	42	39	37	36	35	34	33	32	31
PL014 × 028 KE	92	{ 9.4}	49	44	41	40	39	37	37	35	34	34
PL015 × 029 KE	107	{10.9}	57	50	46	44	42	41	40	38	37	36
PL016 × 030 KE	103	{10.5}	57	50	46	44	43	41	41	39	38	37
PL017 × 031 KE	100	{10.2}	58	51	47	45	44	42	41	40	39	38
PL018 × 032 KE	97	{ 9.9}	58	52	48	46	45	43	42	41	40	39
PL019 × 033 KE	94	{ 9.6}	59	53	49	47	46	44	43	42	41	40
PL020 × 038 KE	107	{10.9}	74	65	60	57	55	53	52	50	48	47
PL022 × 040 KE	101	{10.3}	75	66	61	59	57	55	54	51	50	49
PL024 × 042 KE	128	{13.1}	–	82	73	69	66	63	61	58	55	54
PL025 × 043 KE	125	{12.8}	–	83	74	70	67	64	62	59	56	55
PL028 × 046 KE	117	{11.9}	98	83	76	72	69	66	64	61	59	58
PL030 × 048 KE	124	{12.7}	–	91	82	78	74	71	69	65	63	61
PL032 × 050 KE	120	{12.2}	109	92	83	79	76	72	71	67	65	63
PL035 × 057 KE	106	{10.8}	110	97	89	85	82	79	77	74	71	70
PL038 × 060 KE	125	{12.8}	–	115	103	97	93	89	86	82	78	76
PL040 × 062 KE	122	{12.4}	138	116	104	99	95	90	88	83	80	78
PL042 × 064 KE	118	{12.0}	137	117	105	100	96	92	90	85	82	80
PL045 × 067 KE	113	{11.5}	137	118	108	103	99	95	92	88	85	83
PL048 × 070 KE	129	{13.2}	–	138	122	115	110	105	102	96	92	89
PL050 × 072 KE	146	{14.9}	–	160	138	128	121	114	110	103	98	95
PL055 × 077 KE	137	{14.0}	–	160	140	132	125	118	114	108	103	100
PL060 × 082 KE	137	{14.0}	–	170	149	140	133	126	122	115	110	106
PL065 × 087 KE	129	{13.2}	–	171	152	143	137	130	126	119	115	111
PL070 × 097 KE	148	{15.1}	–	–	187	174	165	154	149	140	133	128
PL075 × 102 KE	141	{14.4}	–	218	189	177	168	158	153	144	138	133
PL080 × 107 KE	157	{16.0}	–	–	218	201	189	176	169	158	150	144
PL085 × 112 KE	150	{15.3}	–	–	219	203	192	179	173	162	154	149
PL090 × 123 KE	165	{16.8}	–	–	263	241	225	208	200	185	175	168
PL095 × 128 KE	158	{16.1}	–	–	262	242	227	211	203	189	179	172
PL100 × 133 KE	152	{15.5}	–	–	263	244	230	215	207	193	184	177

Note :
1. The above hub dias. do not include any safty factor. When use this table, put safty factor at customer side.
2. The above hub dias. are calculated by K_3 = 0.8. Refer to page 23.





Minimum hub diameter Dn

2) When Using Hub with Guide

based on : $L_2 < B < 2 \times \ell$

OR

3) When Using Hub without Guide

This table shows the minimum hub diameter Dn which can tolerate surface pressure P'.

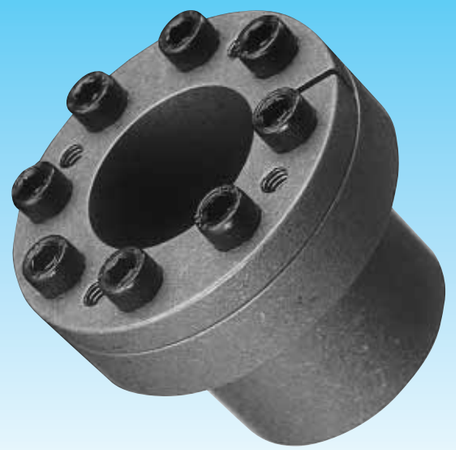
Minimum Hub Diameter (Dn in mm)

(Conversion)
1 MPa = 0.1020 kgf/mm² K_3 = 1.0

Model Number d × D (Inside Dia. / Outside Dia.)	Contact pressure in the Hub Bore P' MPa	{kgf/mm²}	Yield Point of Hub Material Y.P. (MPa) Y.P. = $\sigma_{0.2}$									
		MPa	147	176	206	225	245	274	294	343	392	441
		{kgf/mm²}	{15}	{18}	{21}	{23}	{25}	{28}	{30}	{35}	{40}	{45}
PL005 × 016 KE	70	{ 7.1}	27	25	23	23	22	21	21	20	20	19
PL006 × 017 KE	66	{ 6.7}	28	26	24	23	23	22	22	21	21	20
PL008 × 021 KE	88	{ 9.0}	43	37	34	32	31	30	29	28	27	26
PL010 × 023 KE	80	{ 8.2}	43	38	35	34	33	32	31	30	29	28
PL011 × 024 KE	77	{ 7.9}	44	39	36	35	34	33	32	31	30	29
PL012 × 026 KE	95	{ 9.7}	57	48	43	41	40	38	37	35	34	33
PL014 × 028 KE	92	{ 9.4}	59	50	46	44	42	40	39	37	36	35
PL015 × 029 KE	107	{10.9}	73	59	52	49	47	44	43	41	39	38
PL016 × 030 KE	103	{10.5}	72	59	52	50	47	45	44	41	40	39
PL017 × 031 KE	100	{10.2}	72	59	53	50	48	46	45	42	41	40
PL018 × 032 KE	97	{ 9.9}	71	60	54	51	49	47	46	43	42	41
PL019 × 033 KE	94	{ 9.6}	71	60	55	52	50	48	46	44	43	41
PL020 × 038 KE	107	{10.9}	96	77	68	64	61	58	56	53	51	49
PL022 × 040 KE	101	{10.3}	93	77	69	65	62	59	58	55	53	51
PL024 × 042 KE	128	{13.1}	–	106	88	81	76	70	68	63	60	57
PL025 × 043 KE	125	{12.8}	–	105	88	81	76	71	68	64	60	58
PL028 × 046 KE	117	{11.9}	136	102	88	82	78	73	70	66	63	61
PL030 × 048 KE	124	{12.7}	–	116	97	90	85	79	76	71	67	65
PL032 × 050 KE	120	{12.2}	156	115	98	91	86	80	77	72	69	67
PL035 × 057 KE	106	{10.8}	142	115	101	95	91	86	84	79	76	73
PL038 × 060 KE	125	{12.8}	–	147	122	113	106	99	95	89	84	81
PL040 × 062 KE	122	{12.4}	202	145	123	114	107	100	97	90	86	83
PL042 × 064 KE	118	{12.0}	193	144	123	115	108	102	98	92	88	85
PL045 × 067 KE	113	{11.5}	185	143	124	117	111	104	101	95	91	88
PL048 × 070 KE	129	{13.2}	–	179	147	135	126	117	113	105	99	95
PL050 × 072 KE	146	{14.9}	–	235	175	156	144	131	125	114	107	102
PL055 × 077 KE	137	{14.0}	–	218	173	157	145	134	128	118	111	107
PL060 × 082 KE	137	{14.0}	–	232	184	167	155	143	136	126	119	114
PL065 × 087 KE	129	{13.2}	–	222	183	168	157	146	140	130	123	118
PL070 × 097 KE	148	{15.1}	–	–	240	214	196	178	169	154	145	138
PL075 × 102 KE	141	{14.4}	–	307	237	213	197	181	173	158	149	143
PL080 × 107 KE	157	{16.0}	–	–	292	253	229	205	194	176	164	156
PL085 × 112 KE	150	{15.3}	–	–	283	250	229	207	197	179	168	160
PL090 × 123 KE	165	{16.8}	–	–	370	312	278	247	232	208	193	183
PL095 × 128 KE	158	{16.1}	–	–	353	305	276	247	234	211	197	187
PL100 × 133 KE	152	{15.5}	–	–	343	302	275	249	236	215	201	191

Note :
1. The above hub dias. do not include any safty factor. When use this table, put safty factor at customer side.
2. The above hub dias. are calculated by K_3 = 1.0. Refer to page 23.

TSUBAKI POWER-LOCK®
TF Series



Features

1 Small-diameter hub can be connected

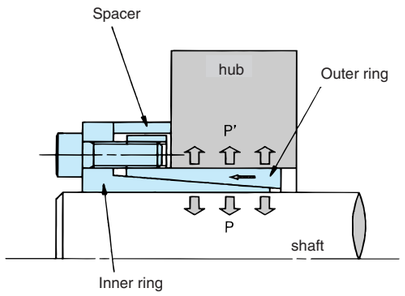
POWER-LOCK TF is designed for small diameter hub. Outside diameter of POWER-LOCK and contact pressure in the hub bore are small

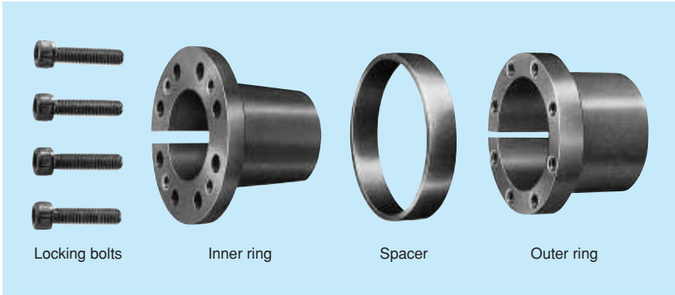
2 Self- Centering

The TF Series has excellent centering function. Pre-centering (guide) is not required.

3 Simple construction

Construction

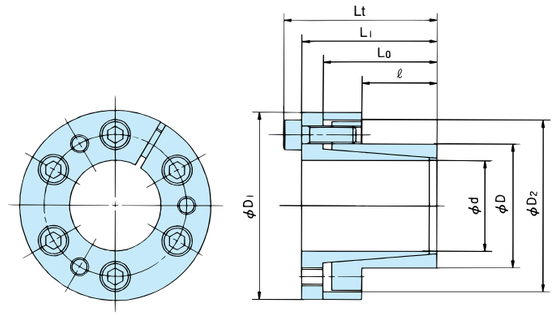




Model Number

PL 020 × 028 TF

- TF Series
- Outside diameter(mm)
- Inside diameter(mm)
- POWER-LOCK



Specifications

(Conversion)
1 N·m = 0.1020 kgf·m
1 MPa = 0.1020 kgf/mm²

Model Number d × D (Inside Dia. × Outside Dia.)	Dimensions (mm) ℓ	L_0	L_1	Lt	D_1	D_2	Transmissible Torque Mt N·m	{kgf·m}	Transmissible Thrust Pax kN	{kgf}	Contact Pressure Shaft P MPa	{kgf/mm²}	Hub bore P' MPa	{kgf/mm²}	Locking Bolts Qty.	Size	Tightening Torque M_a N·m	{kgf·m}	Mass (kg)
PL 006 × 012 TF	10	19	21	24	25	23.0	11	{ 1.2}	3.78	{ 386}	186	{19.0}	93	{ 9.5}	3	M3 × 10	2.25	{0.23}	0.05
PL 008 × 015 TF	12	22	25	29	27	24.0	26	{ 2.7}	6.53	{ 666}	200	{20.4}	107	{10.9}	3	M4 × 10	4.80	{0.49}	0.07
PL 010 × 018 TF	14	23	26	30	32	28.0	44	{ 4.4}	8.70	{ 888}	183	{18.7}	102	{10.4}	4	M4 × 10	4.80	{0.49}	0.09
PL 011 × 018 TF	14	23	26	30	32	28.0	48	{ 4.9}	8.70	{ 888}	167	{17.0}	102	{10.4}	4	M4 × 10	4.80	{0.49}	0.08
PL 012 × 020 TF	14	23	26	30	34	30.0	52	{ 5.3}	8.70	{ 888}	153	{15.6}	92	{ 9.3}	4	M4 × 10	4.80	{0.49}	0.10
PL 014 × 022 TF	14	23	26	30	38	33.0	61	{ 6.2}	8.70	{ 888}	131	{13.4}	83	{ 8.5}	4	M4 × 10	4.80	{0.49}	0.12
PL 015 × 023 TF	14	24	30	35	39	35.5	107	{10.9}	14.2	{ 1450}	199	{20.4}	130	{13.3}	4	M5 × 14	9.80	{1.00}	0.15
PL 016 × 024 TF	14	24	30	35	40	36.5	114	{11.6}	14.2	{ 1450}	187	{19.1}	125	{12.7}	4	M5 × 14	9.80	{1.00}	0.16
PL 018 × 026 TF	18	31	38	44	47	42	196	{ 20}	21.6	{ 2200}	217	{22.1}	126	{12.9}	4	M6 × 18	16.7	{1.70}	0.27
PL 019 × 027 TF	18	31	38	44	49	43	206	{ 21}	21.6	{ 2200}	205	{20.9}	122	{12.4}	4	M6 × 18	16.7	{1.70}	0.29
PL 020 × 028 TF	18	31	38	44	50	44	216	{ 22}	21.6	{ 2200}	195	{19.9}	118	{12.0}	4	M6 × 18	16.7	{1.70}	0.30
PL 022 × 032 TF	25	38	45	51	54	48	245	{ 25}	21.6	{ 2200}	121	{12.3}	74	{ 7.5}	4	M6 × 18	16.7	{1.70}	0.38
PL 024 × 034 TF	25	38	45	51	56	50	265	{ 27}	21.6	{ 2200}	111	{11.3}	70	{ 7.1}	4	M6 × 18	16.7	{1.70}	0.41
PL 025 × 034 TF	25	38	45	51	56	50	274	{ 28}	21.6	{ 2200}	107	{10.9}	70	{ 7.1}	4	M6 × 18	16.7	{1.70}	0.39
PL 028 × 039 TF	25	38	45	51	61	55	461	{ 47}	32.3	{ 3300}	142	{14.5}	91	{ 9.3}	6	M6 × 18	16.7	{1.70}	0.47
PL 030 × 041 TF	25	38	45	51	62	57	500	{ 51}	32.3	{ 3300}	133	{13.6}	86	{ 8.8}	6	M6 × 18	16.7	{1.70}	0.48
PL 032 × 043 TF	25	38	45	51	65	59	529	{ 54}	32.3	{ 3300}	124	{12.7}	82	{ 8.4}	6	M6 × 18	16.7	{1.70}	0.52
PL 035 × 047 TF	32	45	52	58	69	62	774	{ 79}	44.1	{ 4500}	116	{11.8}	78	{ 8.0}	8	M6 × 18	16.7	{1.70}	0.63
PL 038 × 050 TF	32	45	52	58	72	66	843	{ 86}	44.1	{ 4500}	107	{10.9}	74	{ 7.5}	8	M6 × 18	16.7	{1.70}	0.67
PL 040 × 053 TF	32	45	52	58	75	69	882	{ 90}	44.1	{ 4500}	101	{10.3}	70	{ 7.1}	8	M6 × 18	16.7	{1.70}	0.73
PL 042 × 055 TF	32	45	52	58	78	71	931	{ 95}	44.1	{ 4500}	96	{ 9.8}	68	{ 6.9}	8	M6 × 18	16.7	{1.70}	0.78
PL 045 × 059 TF	45	62	70	78	86	80	1850	{189}	82.3	{ 8400}	119	{12.1}	82	{ 8.4}	8	M8 × 22	40.2	{4.10}	1.23
PL 048 × 062 TF	45	62	70	78	87	81	1970	{201}	82.3	{ 8400}	111	{11.3}	78	{ 8.0}	8	M8 × 22	40.2	{4.10}	1.24
PL 050 × 065 TF	45	62	70	78	92	86	2060	{210}	82.3	{ 8400}	107	{10.9}	74	{ 7.6}	8	M8 × 22	40.2	{4.10}	1.40
PL 055 × 071 TF	55	72	80	88	98	92	2550	{260}	92.1	{ 9400}	87	{ 8.9}	63	{ 6.4}	9	M8 × 22	40.2	{4.10}	1.70
PL 060 × 077 TF	55	72	80	88	104	98	2770	{283}	92.1	{ 9400}	80	{ 8.2}	58	{ 5.9}	9	M8 × 22	40.2	{4.10}	1.90
PL 065 × 084 TF	55	72	80	88	111	105	3010	{307}	92.1	{ 9400}	74	{ 7.6}	53	{ 5.4}	9	M8 × 22	40.2	{4.10}	2.21
PL 070 × 090 TF	65	86	96	106	119	113	5150	{525}	147	{15000}	92	{ 9.4}	67	{ 6.8}	9	M10 × 25	81.3	{8.30}	3.05
PL 075 × 095 TF	65	86	96	106	126	119	5490	{560}	147	{15000}	86	{ 8.8}	63	{ 6.4}	9	M10 × 25	81.3	{8.30}	3.32
PL 080 × 100 TF	65	86	96	106	131	125	7840	{800}	196	{20000}	108	{11.0}	79	{ 8.1}	12	M10 × 25	81.3	{8.30}	3.50
PL 085 × 106 TF	65	86	96	106	137	131	8330	{850}	196	{20000}	101	{10.3}	75	{ 7.7}	12	M10 × 25	81.3	{8.30}	3.81
PL 090 × 112 TF	65	86	96	106	144	137	8820	{900}	196	{20000}	96	{ 9.8}	72	{ 7.3}	12	M10 × 25	81.3	{8.30}	4.20

Note :

1. Torque Mt in above table is shown in case of Pax=0 and thrust Pax is shown in case of Mt=0.
   When torque and thrust are applied, calculate composite torque and compare it with Mt. (Refer to page 23)
2. Contact pressure P and P' in the above table indicate mean value only.
   These pressures will fluctuate from –20 % to +40% due to the variable friction component forces resulting from the locking bolts. Mt and Pax are calculated as minimum values.

Minimum hub diameter Dn

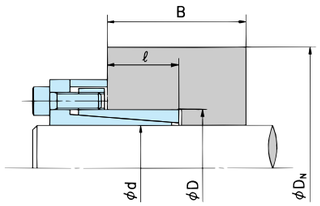
1) When Using Hub with Guide

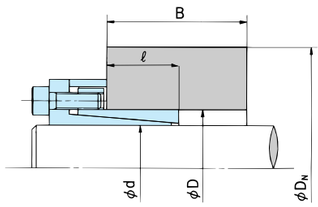
based on : B ≧ 2 × ℓ

OR

2) When Using Hub without Guide

based on : B ≧ 2 × ℓ





This table shows the minimum hub diameter Dn which can tolerate surface pressure P'.

Minimum Hub Diameter (Dn in mm)

(Conversion)
1 MPa = 0.1020 kgf/mm² K_3 = 0.8

Model Number d × D (Inside Dia. / Outside Dia.)	Contact pressure in the Hub Bore P' MPa	{kgf/mm²}	Yield Point of Hub Material Y.P. (MPa) Y.P. = $\sigma_{0.2}$									
		MPa	147	176	206	225	245	274	294	343	392	441
		{kgf/mm²}	{15}	{18}	{21}	{23}	{25}	{28}	{30}	{35}	{40}	{45}
PL 006 × 012 TF	93	{ 9.5}	25	25	25	25	25	25	25	25	25	25
PL 008 × 015 TF	107	{10.9}	30	27	27	27	27	27	27	27	27	27
PL 010 × 018 TF	102	{10.4}	34	32	32	32	32	32	32	32	32	32
PL 011 × 018 TF	102	{10.4}	34	32	32	32	32	32	32	32	32	32
PL 012 × 020 TF	92	{ 9.3}	35	34	34	34	34	34	34	34	34	34
PL 014 × 022 TF	83	{ 8.5}	38	38	38	38	38	38	38	38	38	38
PL 015 × 023 TF	130	{13.3}	56	46	41	39	39	39	39	39	39	39
PL 016 × 024 TF	125	{12.7}	55	46	41	40	40	40	40	40	40	40
PL 018 × 026 TF	126	{12.9}	61	50	47	47	47	47	47	47	47	47
PL 019 × 027 TF	122	{12.4}	60	51	49	49	49	49	49	49	49	49
PL 020 × 028 TF	118	{12.0}	60	51	50	50	50	50	50	50	50	50
PL 022 × 032 TF	74	{ 7.5}	54	54	54	54	54	54	54	54	54	54
PL 024 × 034 TF	70	{ 7.1}	56	56	56	56	56	56	56	56	56	56
PL 025 × 034 TF	70	{ 7.1}	56	56	56	56	56	56	56	56	56	56
PL 028 × 039 TF	91	{ 9.3}	68	61	61	61	61	61	61	61	61	61
PL 030 × 041 TF	86	{ 8.8}	69	63	62	62	62	62	62	62	62	62
PL 032 × 043 TF	82	{ 8.4}	70	65	65	65	65	65	65	65	65	65
PL 035 × 047 TF	78	{ 8.0}	75	69	69	69	69	69	69	69	69	69
PL 038 × 050 TF	74	{ 7.5}	77	72	72	72	72	72	72	72	72	72
PL 040 × 053 TF	70	{ 7.1}	80	75	75	75	75	75	75	75	75	75
PL 042 × 055 TF	68	{ 6.9}	81	78	78	78	78	78	78	78	78	78
PL 045 × 059 TF	82	{ 8.4}	96	88	86	86	86	86	86	86	86	86
PL 048 × 062 TF	78	{ 8.0}	98	90	87	87	87	87	87	87	87	87
PL 050 × 065 TF	74	{ 7.6}	101	93	92	92	92	92	92	92	92	92
PL 055 × 071 TF	63	{ 6.4}	102	98	98	98	98	98	98	98	98	98
PL 060 × 077 TF	58	{ 5.9}	107	104	104	104	104	104	104	104	104	104
PL 065 × 084 TF	53	{ 5.4}	114	111	111	111	111	111	111	111	111	111
PL 070 × 090 TF	67	{ 6.8}	132	123	119	119	119	119	119	119	119	119
PL 075 × 095 TF	63	{ 6.4}	136	128	126	126	126	126	126	126	126	126
PL 080 × 100 TF	79	{ 8.1}	160	147	138	134	131	131	131	131	131	131
PL 085 × 106 TF	75	{ 7.7}	165	152	144	140	137	137	137	137	137	137
PL 090 × 112 TF	72	{ 7.3}	169	157	149	146	144	144	144	144	144	144

Note :
1. The above hub dias. do not include any safty factor. When use this table, put safty factor at customer side.
2. The above hub dias. are calculated by K3 = 0.8. Refer to page 23.

Minimum hub diameter Dn

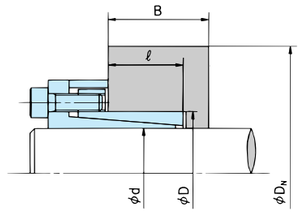
3) When Using Hub with Guide

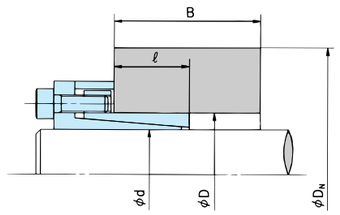
based on : ℓ ≦ B < 2 × ℓ

OR

4) When Using Hub without Guide

based on : ℓ ≦ B < 2 × ℓ





This table shows the minimum hub diameter Dn which can tolerate surface pressure P'.

Minimum Hub Diameter (Dn in mm)

(Conversion)
1 MPa = 0.1020 kgf/mm² K_3 = 1.0

Model Number d × D (Inside Dia. / Outside Dia.)	Contact pressure in the Hub Bore P' MPa	{kgf/mm²}	Yield Point of Hub Material Y.P. (MPa) Y.P. = $\sigma_{0.2}$									
		MPa	147	176	206	225	245	274	294	343	392	441
		{kgf/mm²}	{15}	{18}	{21}	{23}	{25}	{28}	{30}	{35}	{40}	{45}
PL 006 × 012 TF	93	{ 9.5}	26	25	25	25	25	25	25	25	25	25
PL 008 × 015 TF	107	{10.9}	38	31	27	27	27	27	27	27	27	27
PL 010 × 018 TF	102	{10.4}	43	35	32	32	32	32	32	32	32	32
PL 011 × 018 TF	102	{10.4}	43	35	32	32	32	32	32	32	32	32
PL 012 × 020 TF	92	{ 9.3}	42	36	34	34	34	34	34	34	34	34
PL 014 × 022 TF	83	{ 8.5}	42	38	38	38	38	38	38	38	38	38
PL 015 × 023 TF	130	{13.3}	94	60	49	45	42	39	39	39	39	39
PL 016 × 024 TF	125	{12.7}	84	58	49	45	43	40	40	40	40	40
PL 018 × 026 TF	126	{12.9}	95	64	54	49	47	47	47	47	47	47
PL 019 × 027 TF	122	{12.4}	88	63	54	50	49	49	49	49	49	49
PL 020 × 028 TF	118	{12.0}	84	63	54	50	50	50	50	50	50	50
PL 022 × 032 TF	74	{ 7.5}	56	54	54	54	54	54	54	54	54	54
PL 024 × 034 TF	70	{ 7.1}	57	56	56	56	56	56	56	56	56	56
PL 025 × 034 TF	70	{ 7.1}	57	56	56	56	56	56	56	56	56	56
PL 028 × 039 TF	91	{ 9.3}	81	69	63	61	61	61	61	61	61	61
PL 030 × 041 TF	86	{ 8.8}	81	71	65	62	62	62	62	62	62	62
PL 032 × 043 TF	82	{ 8.4}	82	72	66	65	65	65	65	65	65	65
PL 035 × 047 TF	78	{ 8.0}	86	76	71	69	69	69	69	69	69	69
PL 038 × 050 TF	74	{ 7.5}	87	79	73	72	72	72	72	72	72	72
PL 040 × 053 TF	70	{ 7.1}	89	81	76	75	75	75	75	75	75	75
PL 042 × 055 TF	68	{ 6.9}	91	83	78	78	78	78	78	78	78	78
PL 045 × 059 TF	82	{ 8.4}	112	98	91	87	86	86	86	86	86	86
PL 048 × 062 TF	78	{ 8.0}	113	100	93	90	87	87	87	87	87	87
PL 050 × 065 TF	74	{ 7.6}	114	103	96	92	92	92	92	92	92	92
PL 055 × 071 TF	63	{ 6.4}	113	104	98	98	98	98	98	98	98	98
PL 060 × 077 TF	58	{ 5.9}	117	109	104	104	104	104	104	104	104	104
PL 065 × 084 TF	53	{ 5.4}	123	115	111	111	111	111	111	111	111	111
PL 070 × 090 TF	67	{ 6.8}	147	134	126	123	120	119	119	119	119	119
PL 075 × 095 TF	63	{ 6.4}	151	139	131	127	126	126	126	126	126	126
PL 080 × 100 TF	79	{ 8.1}	185	164	151	145	141	136	133	131	131	131
PL 085 × 106 TF	75	{ 7.7}	188	168	156	151	146	141	138	137	137	137
PL 090 × 112 TF	72	{ 7.3}	191	173	161	156	152	147	144	144	144	144

Note :
1. The above hub dias. do not include any safty factor. When use this table, put safty factor at customer side.
2. The above hub dias. are calculated by K_3 = 1.0. Refer to page 23.

TSUBAKI POWER-LOCK®
EF Series

Features

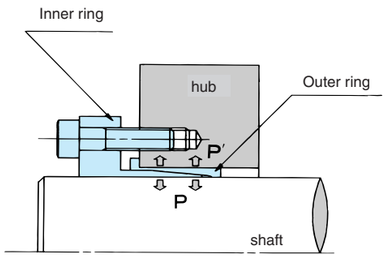
1 Small-diameter hub can be connected
POWER-LOCK EF is designed for small diameter hub.

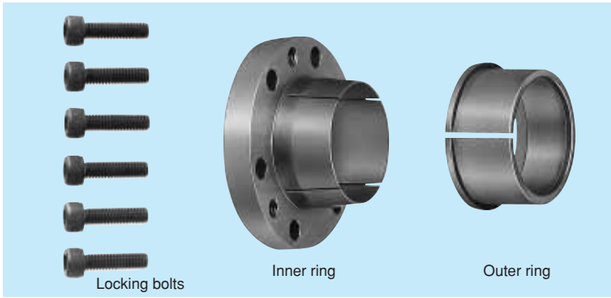
2 Same inner and outer diameters as the EL Series
POWER-LOCK EF Series is designed for easy installation compare with EL Series, which is OEM type.

3 Self- Centering
The TF Series has excellent centering function. Pre-centering (guide) is not required.

4 Simple construction

Construction

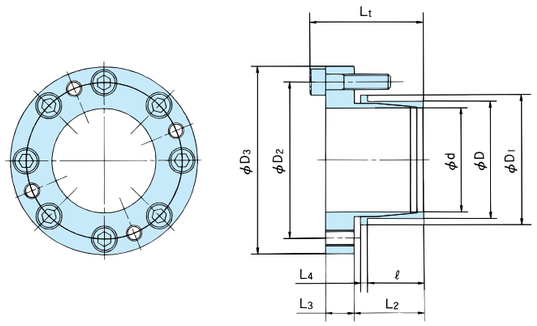




Model Number

PL 020 × 025 EF

- EF Series
- Outside diameter(mm)
- Inside diameter(mm)
- POWER-LOCK



Specifications

Model Number d × D (Inside Dia. / Outside Dia.)	Dimensions (mm) ℓ	L2	L3	L4	Lt	D1	D2	D3	Transmissible Torque Mt N·m	{kgf·m}	Transmissible Thrust Pax kN	{kgf}	Contact Pressure Shaft P MPa	{kgf/mm²}	Hub bore P' MPa	{kgf/mm²}	Locking Bolts Qty.	Size	Tightening Torque Ma N·m	{kgf·m}	Mass (kg)
PL 010 × 013 EF	11.5	14.5	5	1.5	23.5	16	22	30	39	{4.0}	7.79	{795}	292	{29.8}	224	22.9	3	M 4 × 16	4.0	{0.41}	0.04
PL 011 × 014 EF	11.5	14.5	5	1.5	23.5	17	23	31	43	{4.4}	7.79	{795}	266	{27.1}	209	21.3	3	M 4 × 16	4.0	{0.41}	0.04
PL 012 × 015 EF	11.5	14.5	5	1.5	23.5	18	24	32	47	{4.8}	7.79	{795}	243	{24.8}	195	19.9	3	M 4 × 16	4.0	{0.41}	0.04
PL 014 × 018 EF	16.0	20.0	6	2.0	30.0	22	27	35	73	{7.4}	10.4	{1060}	209	{21.3}	163	16.6	4	M 4 × 18	4.0	{0.41}	0.06
PL 015 × 019 EF	16.0	20.0	6	2.0	30.0	23	28	36	78	{8.0}	10.4	{1060}	195	{19.9}	154	15.7	4	M 4 × 18	4.0	{0.41}	0.07
PL 016 × 020 EF	16.0	20.0	7	2.0	31.0	24	29	37	124	{12.7}	15.6	{1590}	273	{27.9}	219	22.3	6	M 4 × 18	4.0	{0.41}	0.08
PL 017 × 021 EF	16.0	20.0	7	2.0	31.0	25	30	38	132	{13.5}	15.6	{1590}	258	{26.3}	209	21.3	6	M 4 × 18	4.0	{0.41}	0.08
PL 018 × 022 EF	16.0	20.0	7	2.0	32.0	26	33	43	154	{15.7}	17.1	{1740}	267	{27.2}	218	22.2	4	M 5 × 20	8.3	{0.85}	0.10
PL 019 × 024 EF	16.0	20.0	7	2.0	32.0	28	35	45	163	{16.6}	17.1	{1740}	252	{25.7}	200	20.4	4	M 5 × 20	8.3	{0.85}	0.11
PL 020 × 025 EF	16.0	20.0	7	2.0	32.0	29	36	46	171	{17.4}	17.1	{1740}	240	{24.5}	192	19.6	4	M 5 × 20	8.3	{0.85}	0.12
PL 022 × 026 EF	16.0	20.0	7	2.0	32.0	30	38	48	186	{19.0}	17.1	{1740}	218	{22.2}	184	18.8	4	M 5 × 20	8.3	{0.85}	0.12
PL 024 × 028 EF	16.0	20.0	7	2.0	32.0	32	40	50	206	{21.0}	17.1	{1740}	200	{20.4}	172	17.5	4	M 5 × 20	8.3	{0.85}	0.12
PL 025 × 030 EF	16.0	20.0	7	2.0	32.0	34	42	52	216	{22.0}	17.1	{1740}	192	{19.6}	160	16.3	4	M 5 × 20	8.3	{0.85}	0.16
PL 028 × 032 EF	16.0	20.5	8	2.0	33.5	36	44	54	353	{36.0}	25.6	{2610}	257	{26.2}	224	22.9	6	M 5 × 25	8.3	{0.85}	0.16
PL 030 × 035 EF	16.0	20.5	8	2.0	33.5	39	47	57	382	{39.0}	25.6	{2610}	240	{24.5}	206	21.0	6	M 5 × 25	8.3	{0.85	0.19
PL 032 × 036 EF	16.0	21.0	9	2.5	35.0	41	49	59	412	{42.0}	25.6	{2610}	224	{22.9}	200	20.4	6	M 5 × 25	8.3	{0.85}	0.20
PL 035 × 040 EF	17.5	22.5	9	2.5	36.5	45	53	63	451	{46.0}	25.6	{2610}	178	{18.2}	157	16.0	6	M 5 × 25	8.3	{0.85}	0.23
PL 038 × 044 EF	17.5	23.0	10	2.5	39.0	49	58	70	686	{70.0}	36.1	{3680}	231	{23.6}	200	20.4	6	M 6 × 28	13.7	{1.40}	0.33
PL 040 × 045 EF	20.0	25.5	10	2.5	41.5	50	59	71	725	{74.0}	36.1	{3680}	180	{18.4}	161	16.4	6	M 6 × 28	13.7	{1.40}	0.33
PL 042 × 048 EF	20.0	25.5	11	2.5	42.5	53	62	74	1010	{103}	48.0	{4900}	229	{23.4}	201	20.5	8	M 6 × 28	13.7	{1.40}	0.40
PL 045 × 052 EF	25.0	31.5	13	3.0	52.5	58	69	84	1490	{152}	66.3	{6770}	244	{24.9}	211	21.5	6	M 8 × 35	34.3	{3.50}	0.65
PL 048 × 055 EF	25.0	31.5	13	3.0	52.5	61	72	87	1600	{163}	66.3	{6770}	228	{23.3}	199	20.3	6	M 8 × 35	34.3	{3.50}	0.68
PL 050 × 057 EF	25.0	31.5	13	3.0	52.5	63	74	89	1660	{169}	66.3	{6770}	220	{22.4}	192	19.6	6	M 8 × 35	34.3	{3.50}	0.69
PL 055 × 062 EF	25.0	31.5	13	3.0	52.5	69	79	94	1820	{186}	66.3	{6770}	199	{20.3}	176	18.0	6	M 8 × 35	34.3	{3.50}	0.74
PL 060 × 068 EF	27.0	34.0	13	3.5	55.0	75	86	101	1990	{203}	66.3	{6770}	164	{16.7}	144	14.7	6	M 8 × 35	34.3	{3.50}	0.86
PL 065 × 073 EF	27.0	34.0	15	3.5	57.0	80	91	106	2870	{293}	88.5	{9030}	201	{20.5}	179	18.3	8	M 8 × 40	34.3	{3.50}	1.1
PL 070 × 079 EF	31.0	38.0	15	3.5	61.0	86	97	112	3100	{316}	88.5	{9030}	177	{18.1}	158	16.1	8	M 8 × 40	34.3	{3.50}	1.2
PL 075 × 084 EF	31.0	38.5	16	3.5	62.5	91	102	117	4150	{423}	111	{11290}	207	{21.1}	185	18.9	10	M 8 × 40	34.3	{3.50}	1.3
PL 080 × 091 EF	34.0	42.0	17	4.0	67.0	99	110	125	4420	{451}	111	{11290}	176	{18.0}	155	15.8	10	M 8 × 40	34.3	{3.50}	1.7
PL 085 × 096 EF	34.0	42.5	19	4.0	71.5	104	118	137	5980	{610}	141	{14360}	212	{21.6}	187	19.1	8	M10 × 45	67.6	{6.90}	2.2
PL 090 × 101 EF	34.0	42.5	19	4.0	71.5	109	123	142	6330	{646}	141	{14360}	200	{20.4}	178	18.2	8	M10 × 45	67.6	{6.90}	2.3
PL 095 × 106 EF	34.0	42.5	19	4.0	71.5	114	128	147	6680	{682}	141	{14360}	189	{19.3}	170	17.3	8	M10 × 45	67.6	{6.90}	2.4
PL 100 × 114 EF	42.0	50.5	20	4.0	80.5	122	136	155	8790	{897}	176	{17950}	165	{16.8}	144	14.7	10	M10 × 45	67.6	{6.90}	3.0
PL 110 × 124 EF	42.0	50.5	20	4.0	80.5	132	146	165	9670	{987}	176	{17950}	150	{15.3}	133	13.6	10	M10 × 45	67.6	{6.90}	3.3
PL 120 × 134 EF	42.0	50.5	22	4.0	82.5	142	156	175	12600	{1290}	211	{21540}	165	{16.8}	148	15.1	12	M10 × 50	67.6	{6.90}	3.8

Note :
1. Torque Mt in above table is shown in case of Pax=0 and thrust Pax is shown in case of Mt=0.
   When torque and thrust are applied, calculate composite torque and compare it with Mt. (Refer to page 23)
2. Contact pressure P and P' in the above table indicate mean value only.
   These pressures will fluctuate from –20 % to +20% due to the variable friction component forces resulting from the locking bolts. Mt and Pax are calculated as minimum values.

Minimum hub diameter Dn

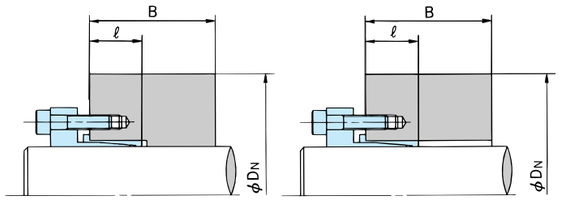
1) When Using Hub with Guide

based on : B ≧ 2 × ℓ

OR

2) When Using Hub without Guide

based on : B ≧ 2 × ℓ



This table shows the minimum hub diameter Dn which can tolerate surface pressure P'.

Minimum Hub Diameter (Dn in mm)

(Conversion)
1 MPa = 0.1020 kgf/mm² K_3 = 0.8

Model Number d × D (Inside Dia. / Outside Dia.)	Contact pressure in the Hub Bore P' MPa	{kgf/mm²}	Yield Point of Hub Material Y.P. (MPa) Y.P. = $\sigma_{0.2}$ 245	274	294	343	392	441
		{kgf/mm²}	{25}	{28}	{30}	{35}	{40}	{45}
PL 010 × 013 EF	224	22.9	38	33	31	31	31	31
PL 011 × 014 EF	209	21.3	37	33	31	31	31	31
PL 012 × 015 EF	195	19.9	36	33	32	32	32	32
PL 014 × 018 EF	163	16.6	37	35	35	35	35	35
PL 015 × 019 EF	154	15.7	38	38	38	38	38	38
PL 016 × 020 EF	219	22.3	53	47	44	40	37	37
PL 017 × 021 EF	209	21.3	53	47	45	40	38	38
PL 018 × 022 EF	218	22.2	59	52	49	44	44	44
PL 019 × 024 EF	200	20.4	58	52	50	45	45	45
PL 020 × 025 EF	192	19.6	58	53	50	46	46	46
PL 022 × 026 EF	184	18.8	58	53	51	50	50	50
PL 024 × 028 EF	172	17.5	58	54	52	52	52	52
PL 025 × 030 EF	160	16.3	59	55	53	53	53	53
PL 028 × 032 EF	224	22.9	87	75	71	63	58	55
PL 030 × 035 EF	206	21.0	85	76	71	65	60	57
PL 032 × 036 EF	200	20.4	84	76	72	65	61	60
PL 035 × 040 EF	157	16.0	76	71	69	64	64	64
PL 038 × 044 EF	200	20.4	103	92	87	79	74	71
PL 040 × 045 EF	161	16.4	87	81	78	73	73	73
PL 042 × 048 EF	201	20.5	112	100	95	86	81	77
PL 045 × 052 EF	211	21.5	129	115	108	98	91	86
PL 048 × 055 EF	199	20.3	128	115	109	99	93	89
PL 050 × 057 EF	192	19.6	128	116	110	101	95	91
PL 055 × 062 EF	176	18.0	128	118	113	105	99	95
PL 060 × 068 EF	144	14.7	122	115	111	105	101	101
PL 065 × 073 EF	179	18.3	151	139	133	122	116	111
PL 070 × 079 EF	158	16.1	148	138	134	125	119	115
PL 075 × 084 EF	185	18.9	178	162	155	142	134	128
PL 080 × 091 EF	155	15.8	167	157	151	141	135	130
PL 085 × 096 EF	187	19.1	206	188	179	164	154	147
PL 090 × 101 EF	178	18.2	207	190	182	168	158	152
PL 095 × 106 EF	170	17.3	208	193	185	172	163	156
PL 100 × 114 EF	144	14.7	200	189	183	172	165	159
PL 110 × 124 EF	133	13.6	208	197	192	182	174	169
PL 120 × 134 EF	148	15.1	238	223	216	203	194	187

Note :
1. The above hub dias. do not include any safty factor. When use this table, put safty factor at customer side.
2. The above hub dias. are calculated by K3 = 0.8. Refer to page 23.

Minimum hub diameter Dn

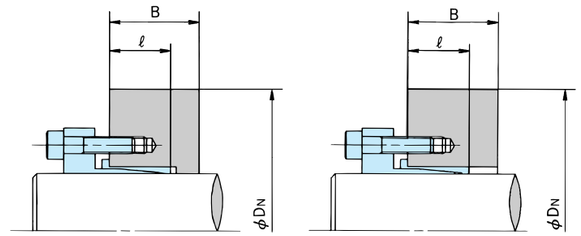
3) When Using Hub with Guide

based on : ℓ < B < 2 × ℓ

OR

4) When Using Hub without Guide

based on : ℓ < B < 2 × ℓ



This table shows the minimum hub diameter Dn which can tolerate surface pressure P'.

Minimum Hub Diameter (Dn in mm)

(Conversion)
1 MPa = 0.1020 kgf/mm² K_3 = 1.0

Model Number d × D (Inside Dia. / Outside Dia.)	Contact pressure in the Hub Bore P' MPa	{kgf/mm²}	Yield Point of Hub Material Y.P. (MPa) Y.P. = $\sigma_{0.2}$ 245	274	294	343	392	441
		{kgf/mm²}	{25}	{28}	{30}	{35}	{40}	{45}
PL 010 × 013 EF	224	22.9	67	46	40	33	31	33
PL 011 × 014 EF	209	21.3	54	42	38	33	31	33
PL 012 × 015 EF	195	19.9	49	41	38	33	32	33
PL 014 × 018 EF	163	16.6	45	40	38	35	35	35
PL 015 × 019 EF	154	15.7	44	40	38	38	38	38
PL 016 × 020 EF	219	22.3	88	64	57	47	42	39
PL 017 × 021 EF	209	21.3	79	61	55	47	43	40
PL 018 × 022 EF	218	22.2	96	70	62	52	47	43
PL 019 × 024 EF	200	20.4	81	66	60	52	48	45
PL 020 × 025 EF	192	19.6	77	65	60	53	48	46
PL 022 × 026 EF	184	18.8	75	64	60	53	50	50
PL 024 × 028 EF	172	17.5	72	64	60	54	52	52
PL 025 × 030 EF	160	16.3	71	64	61	55	53	53
PL 028 × 032 EF	224	22.9	158	107	93	75	67	62
PL 030 × 035 EF	206	21.0	124	98	89	76	68	64
PL 032 × 036 EF	200	20.4	119	96	88	76	69	64
PL 035 × 040 EF	157	16.0	91	82	78	71	67	64
PL 038 × 044 EF	200	20.4	145	118	107	92	84	78
PL 040 × 045 EF	161	16.4	105	95	90	81	76	72
PL 042 × 048 EF	201	20.5	159	129	117	100	91	85
PL 045 × 052 EF	211	21.5	198	152	136	115	103	96
PL 048 × 055 EF	199	20.3	179	146	134	115	105	98
PL 050 × 057 EF	192	19.6	172	144	133	116	106	99
PL 055 × 062 EF	176	18.0	162	141	133	118	109	103
PL 060 × 068 EF	144	14.7	142	130	125	115	108	104
PL 065 × 073 EF	179	18.3	194	168	157	139	128	121
PL 070 × 079 EF	158	16.1	178	161	152	138	130	123
PL 075 × 084 EF	185	18.9	234	199	185	162	149	140
PL 080 × 091 EF	155	15.8	200	181	172	157	147	140
PL 085 × 096 EF	187	19.1	273	231	214	188	172	162
PL 090 × 101 EF	178	18.2	265	230	215	190	176	166
PL 095 × 106 EF	170	17.3	259	229	215	193	179	169
PL 100 × 114 EF	144	14.7	234	215	205	189	178	171
PL 110 × 124 EF	133	13.6	239	221	213	197	187	180
PL 120 × 134 EF	148	15.1	280	255	244	223	210	200

Note :
1. The above hub dias. do not include any safty factor. When use this table, put safty factor at customer side.
2. The above hub dias. are calculated by K3 = 1.0. Refer to page 23.

Selection Guide and Specifications

1. Determination of Maximum Torque and Thrust Load

Maximum torque and thrust load should be calculated or determined with safety factor.

- $T\max = \dfrac{30000 \times H}{\pi \times n} \times s.f.$
- $P\max = \mathrm{Pax} \times s.f.$

Tmax : Maximum torque (N·m)
Pmax : Maximum thrust load (N)
H : Transmitting capacity (kW)
n : Revolution at the POWER-LOCK shaft (r/min)
s.f. : safety factor (Refer to the table below)

Condition of load		Safety Factor
No shock load	Low inertia	1.5 – 2.5
Moderate shock load	Medium inertia	2.0 – 4.0
Heavy shock load	Big inertia	3.0 – 5.0

When torque and thrust are applied at same time:
Compare (Mt) with composite torque (Mr)

- $Mr = \sqrt{T^2\max + (P\max \times \frac{d}{2})^2}$

d : Outside diameter of shaft (m)

Compare the maximum transmitting torque (Tmax) or composite torque (Mr) of the devices to be driven with the transmissible torque (Mt) of the POWER-LOCK listed on page of selected series.

- $Mt \geqq T\max$ *or* $Mr \rightarrow$ Good
- $Mt < T\max$ *or* $Mr \rightarrow$ No Good
  Select a larger POWER-LOCK or use two or more POWER-LOCKs

Use multiple POWER-LOCK is available depend on the series of POWER-LOCK. The transmissible torque Mt of multiple POWER-LOCKs is obtained by multiplying Mt by the multiplier in the below table. Peak torque expected should be regarded as Tmax.

Table 1 Multiplier for multiple use by series

Quantity	1	2	3	4
AS Series	1	2	3	4
TF Series	1	2	NG	NG
AE, KE, EF Series	1	NG	NG	NG

2. Selection of POWER-LOCK by Series

STEP 1 **Confirm for shaft and hub**

(1) Confirm the material strength

When locking, big contact pressure will occur on shaft and hub. Confirm the yield point of shaft and hub using the following formula.

- $\sigma_{0.2S} \geqq K_2 \times P, \quad \sigma_{0.2B} \geqq K_2 \times P'$

P : Contact pressure on shaft (Mpa)
P' : Contact pressure on hub (MPa)
$\sigma_{0.2S}$: Yield point of shaft material (MPa)
$\sigma_{0.2B}$: Yield point of hub material (MPa)
K_2 : Series factor (Refer below table)

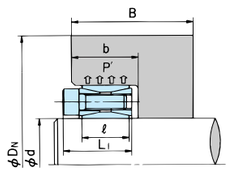
Name of Series	Series Factor
AS, TF	1.4
AE, KE, EF	1.2

(2) Confirm hub diameter

Refer the table for minimum hub diameter in each series. If the yield point is not shown in the table, calculate hub diameter using the following formula (not applicable to non-ferrous metals).

- $Dn \geqq D \times \sqrt{\dfrac{\sigma_{0.2B} + K_3 \times P'}{\sigma_{0.2B} - K_3 \times P'}} \; (+d_G)$

Dn : Minimum hub diameter (mm)
D : Inside diameter of hub bore (mm)
K_3 : Hub geometry factor (Refer the table for minimum hub diameter in each series)
d_G : Applicable for EF Series only
Nominal diameter of locking bolt (mm)



(3) Confirm inside diameter of hollow shaft

When using hollow shaft, calculate inside diameter of the hollow shaft using the following formula.

- $d_B \leqq d \times \sqrt{\dfrac{\sigma_{0.2S} - 2 \times K_3 \times P'}{\sigma_{0.2S}}}$

dB : Inside diameter of the hollow shaft (mm)
d : Outside diameter of shaft (mm)

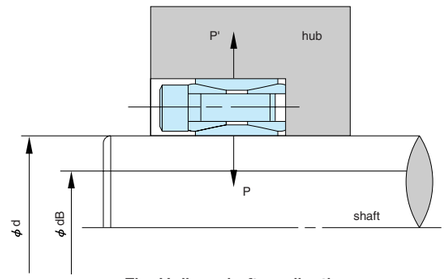
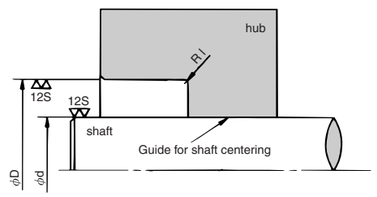


Fig. Hollow shaft application

STEP 2 **Confirm for centering guide for AS series**

The AS series POWER-LOCK is not self-aligning. Thus centering portion must be performed. Suggested "guide length" is to be equal to or greater than one half of the shaft diameter
If precise centering is required, design to have longer guide length and tight tolerance between shaft and hub.



STEP 3 **Confirm machining tolerance and surface roughness**

Machining tolerance for counter bore diameter of hub "D" and shaft diameter "d" are listed on below table. Required surface roughness of 3.2 Ra. Determine the tolerance of the guide according to the centering accuracy required.

Standard tolerance table

Size of shaft or bore	For Shaft	For Bore
3 < (d or D) ≦ 6	+0 –0.018	+0.018 –0
6 < (d or D) ≦ 10	+0 –0.022	+0.022 –0
10 < (d or D) ≦ 18	+0 –0.027	+0.027 –0
18 < (d or D) ≦ 30	+0 –0.033	+0.033 –0
30 < (d or D) ≦ 50	+0 –0.039	+0.039 –0
50 < (d or D) ≦ 80	+0 –0.046	+0.046 –0
80 < (d or D) ≦ 120	+0 –0.054	+0.054 –0
120 < (d or D) ≦ 180	+0 –0.063	+0.063 –0
180 < (d or D) ≦ 250	+0 –0.072	+0.072 –0
250 < (d or D) ≦ 315	+0 –0.081	+0.081 –0
315 < (d or D) ≦ 400	+0 –0.089	+0.089 –0
400 < (d or D) ≦ 500	+0 –0.097	+0.097 –0

*** Special tolerance for KE series**

Only KE series can be used for wider tolerance of shaft as below. When you apply special tolerance, transmissible toque Mt and thrust Pax will be 90 % of the rating in the KE series specification table (page12).

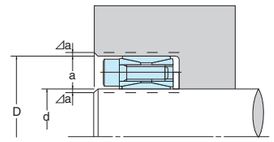
Machining tolerance of the shaft for KE series

Size of shaft	For Shaft	For Bore
3 < (d or D) ≦ 6	+0.012 –0.018	–0.018 –0.048
6 < (d or D) ≦ 10	+0.015 –0.022	–0.022 –0.048
10 < (d or D) ≦ 18	+0.018 –0.027	–0.027 –0.070
18 < (d or D) ≦ 30	+0.021 –0.033	–0.033 –0.084
30 < (d or D) ≦ 50	+0.025 –0.039	–0.039 –0.100
50 < (d or D) ≦ 80	+0.030 –0.046	–0.046 –0.120
80 < (d or D) ≦ 120	+0.035 –0.054	–0.054 –0.140

Bore size must be within the number listed on standard tolerance table

*** Special tolerance for AS series**

In cases where a slightly larger tolerance is required, the table below can be used. To use this table, it is important to understand that the goal is to have the POWER-LOCK centered in the middle of machined opening (i.e. : Δa=Δa).
Under these conditions the POWER-LOCK will transmit the published torque figures.



d = nominal I.D.
D = nominal O.D.
Δa = deviation increment from nominal size

Note: When you specify shaft dimension,
d – Δa must be considered with D + Δa
d + Δa must be considered with D – Δa

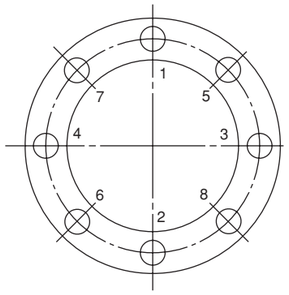
Special tolerance for AS series

Size of shaft	For Shaft	For Bore
PL019X047 ↕ PL030X050	+0 –0.052	+0.052 –0
PL032X060 ↕ PL050X080	+0 –0.062	+0.062 –0
PL055X085 ↕ PL080X120	+0 –0.074	+0.074 –0
PL085X125 ↕ PL120X165	+0 –0.087	+0.087 –0
PL130X180 ↕ PL180X235	+0 –0.100	+0.100 –0
PL190X250 ↕ PL240X305	+0 –0.115	+0.115 –0
PL260X325 ↕ PL300X375	+0 –0.130	+0.130 –0

Mounting and Removal

Mounting

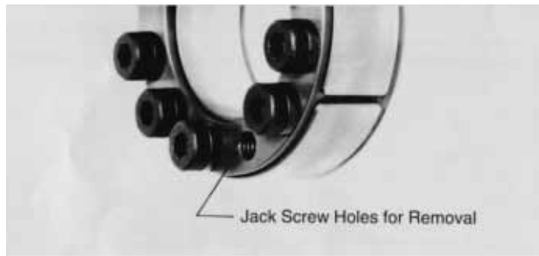
1. Clean the inner surface of the hub bore and the shaft, and apply a slight amount of oil to both surfaces. (Do not use lubricants containing silicone or molybdenum disulfide.)
2. Remove the locking bolts from the POWER-LOCK and clean and lightly oil, or grease the contact surfaces. Thread and seats of the tightening bolts must be sufficiently lubricated.
3. Slip the POWER-LOCK and hub onto the shaft, tighten the locking bolts by hand until a slight positive contact is obtained and bring them to desired position. (Do not strike the POWER-LOCK with a hammer or other such tool during the mounting.)
4. Set a torque wrench to approximately 1/4 of the torque Ma (refer to the table given in each series specification) and tighten the locking bolts diagonally by torque wrench (in the numerical order illustrated below).

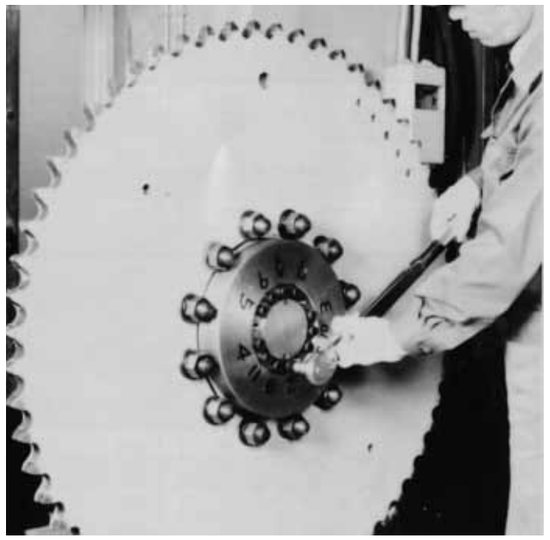


5. Raise the torque wrench setting to 1/2 of the torque Ma and repeat the procedure given in item 4 above.
6. Raise the torque wrench setting to the full torque Ma and repeat the procedure given in step 4 above.
7. Finally confirm that all locking bolts have been tightening to torque Ma. To do this, moving clockwise across the bolts, tighten each one until cannot be turned by the torque Ma.

Removal

1. Make sure that there is no torque or thrust loads on the hub or shaft. Moreover, if the weight of the hub or shaft is very heavy or if a chain is installed, the removal procedure may become quite difficult. Remove the POWER-LOCK, only after preventing any problems that may occur due to these points. (When the tightening bolts are loosened, the POWER-LOCK may suddenly release and allow the device to spin or come off.)
2. After ensuring safety, slowly loosen and remove the locking bolts.
3. Remove hub and the POWER-LOCK from shaft.
4. If the POWER-LOCK still locks even after loosening bolts, apply a coat of oil to the threads of locking bolts and screw one bolt into each of the tapped holes for removal.





General Information

1. Shafts with existing keyways

Transmissible torque and thrust capacities of the POWER-LOCK must be decreased by 10% when used with a shaft with keyway such as a motor shaft.

Transmissible torque : Mt X 0.9
Transmissible thrust : Pax X 0.9

2. Expected run-out tolerance

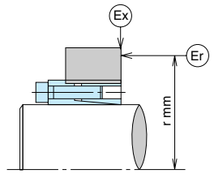
When POWER-LOCK is installed into straight hub bore without guide, expected run-out tolerance is as follows.

In the case of hub length (B) as below

Run-out tolerance of end surface Ex : Ex ≦0.002 X r
Circular run-out tolerance Er : Er ≦0.05 mm

Series name	Hub length (B)
AE, KE	L_2
TF, EF	ℓ

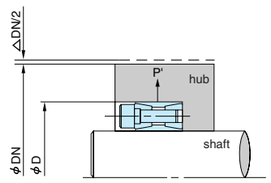
No centering function for AS series



3. Deformation of outside hub

Inside of hub bore will have contact pressure (P') when using POWER-LOCK. Due to this, outside of hub will have elastic deformation. It is hard to calculate the amount of deformation cause of variation of P', hub geometry, and so on. However the amount can be estimated by following formula.

- $$\Delta Dn \cong \frac{Dn}{E} \times \frac{2 \times K_3 \times P'}{\left(\frac{Dn}{D}\right)^2 - 1}$$



E : Young's modulus
E=205800 (MPa) (for steel)
ΔDn : Amount of deformation (mm)

4. Axial movement of hub (For EF Series)

When locking shaft and hub by POWER-LOCK EF series, the hub moves to the direction of bolt head.
This is cause by the elastic deformation of shaft and hub and the amount of movement is depended on the ratio of inside and outside diameter of hub.

a_N=Dn/D, D : Inside hub diameter (mm)
Dn : Outside hub diameter (mm)

Table: Amount of Movement for EF series

Model Number d × D (Inside Dia. / Outside Dia.)	Amount of Movement (mm) In case of a_N = 1.5	In case of a_N = 2.0	In case of a_N = 3.0
PL010 × 013 EF	0.29	0.22	0.18
PL011 × 014 EF	0.29	0.22	0.18
PL012 × 015 EF	0.29	0.22	0.18
PL014 × 018 EF	0.29	0.22	0.18
PL015 × 019 EF	0.29	0.22	0.18
PL016 × 020 EF	0.44	0.32	0.27
PL017 × 021 EF	0.44	0.32	0.27
PL018 × 022 EF	0.48	0.35	0.30
PL019 × 024 EF	0.48	0.36	0.30
PL020 × 025 EF	0.48	0.36	0.30
PL022 × 026 EF	0.48	0.35	0.30
PL024 × 028 EF	0.48	0.36	0.30
PL025 × 030 EF	0.48	0.36	0.30
PL028 × 032 EF	0.72	0.53	0.45
PL030 × 035 EF	0.72	0.53	0.45
PL032 × 036 EF	0.62	0.46	0.39
PL035 × 040 EF	0.63	0.46	0.39
PL038 × 044 EF	0.88	0.65	0.55
PL040 × 045 EF	0.72	0.54	0.45
PL042 × 048 EF	0.96	0.71	0.60
PL045 × 052 EF	1.10	0.81	0.69
PL048 × 055 EF	1.09	0.81	0.68
PL050 × 057 EF	1.10	0.81	0.68
PL055 × 062 EF	1.09	0.81	0.68
PL060 × 068 EF	0.98	0.73	0.61
PL065 × 073 EF	1.31	0.97	0.82
PL070 × 079 EF	1.25	0.92	0.78
PL075 × 084 EF	1.55	1.15	0.97
PL080 × 091 EF	1.41	1.04	0.88
PL085 × 096 EF	1.80	1.33	1.12
PL090 × 101 EF	1.80	1.33	1.13
PL095 × 106 EF	1.80	1.33	1.12
PL100 × 114 EF	1.64	1.22	1.03
PL110 × 124 EF	1.65	1.22	1.03
PL120 × 134 EF	1.98	1.47	1.24

5. Surface pressure (P) and (P')

Contact pressure values of shaft (P) and hub bore (P') listed on each series section indicate mean values only. These rated surface pressures will fluctuate due to the variable friction component forces resulting from the locking bolts. Transmissible torque (Mt) and thrust (Pax) are calculated as minimum values, provided that POWER-LOCKs are to be used under the listed surface pressures, (P) and (P'). Transmissible torque (Mt) and thrust (Pax) may increase by approximately 70% above the listed ratings in actual applications.

6. Radial load applications

Should POWER-LOCK be subjected to heavy radial loads (Pr) in such applications as wheel drives, calculate surface pressure (Prad) on the shaft and (P'rad) on the hub as follows:

POWER-LOCKS may be used if the surface pressure on the shaft (Prad) and the surface pressure on the hub (P'rad) is equal to or less than the value in the below table.

$$Prad = \frac{1.3 \times Pr}{d \times \ell} \qquad P'rad = \frac{1.3 \times Pr}{D \times \ell}$$

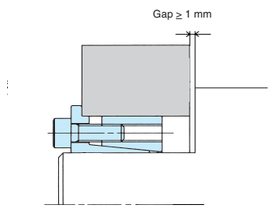
Name of Series	Prad	P'rad
AS, TF	Prad ≦ 0.5 × P	P'rad ≦ 0.5 × P'
AE, KE, EF	Prad ≦ 0.2 × P	P'rad ≦ 0.2 × P'

Pr : Radial load (N)
ℓ : Width of contact surface (mm)

When radial load is applied to POWER-LOCK, the above values of (Prad) and (P'rad) should be added to (P) and (P') respectively in order to calculate the hub outside diameter (Dn) or hollow shaft inside diameter (d_B).

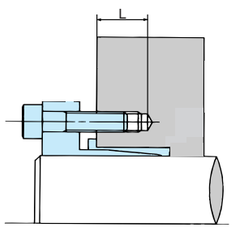
7. Suggested Designs for AE and EF Series

AE Series
When POWER-LOCK is installed into straight hub bore without guide, expected run-out tolerance is as follows.



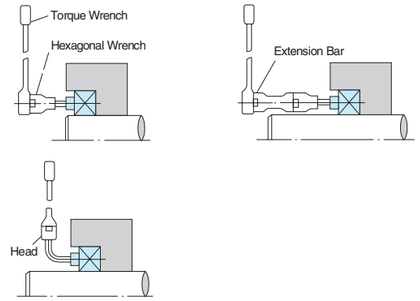
EF Series
The depth of tap hole (L) in the hub as follows.

L ≧(Bolt length) – (L_3 + L_4) (Refer to page 20 for L_3, L_4)



8. Allowable value of tightening torque (Ma)

Transmissible torque (Mt) and thrust (Pax) values are based on the correct tightening torque of the locking bolts. Acceptable range of the tightening torque (Ma) is ±5% of the listed value. Use an accurate torque wrench to tighten the locking bolts.



9. Loosening of locking bolts

Manufactured of special high-tensile steel and tightened with correct torque, the locking bolts will not loosen due to vibration.

10. Influence of temperature

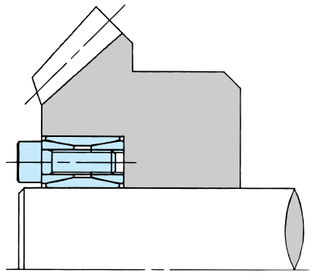
The use of POWER-LOCK at temperatures in the range of –30°C ~ 200°C is acceptable.

11. Outdoor use

When a standard POWER-LOCK is to be used outdoors, it should be lubricated with grease and a cover should be installed to protect against corrosion. If this is not practical, stainless steel POWER-LOCK(AS-SS) and special coating POWER-LOCK (AS-SW) are available.

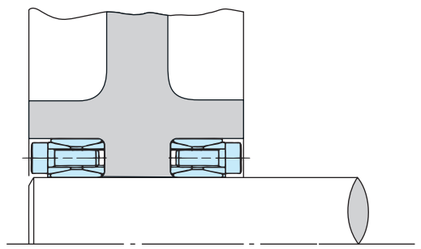
Design Examples

1. Hub mounting utilizing one POWER-LOCK

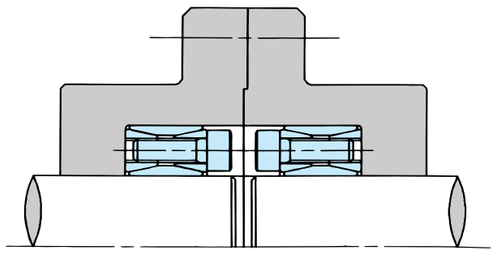


2. Hub mounting with two POWER-LOCK located on opposite sides of hub

With this arrangement, twice the torque will be transmitted.

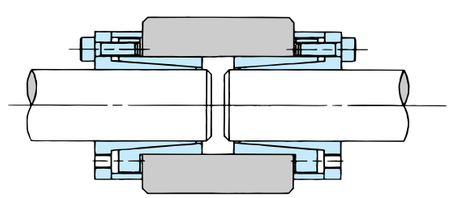


3. Rigid shaft coupling mounting with two POWER-LOCK (1)



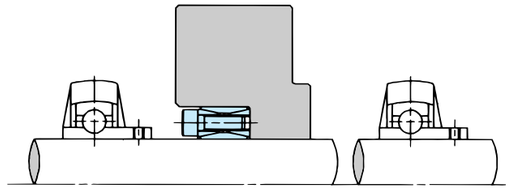
4. Rigid shaft coupling mounting with two POWER-LOCK (2)

Positioning and adjustment are extremely easy.



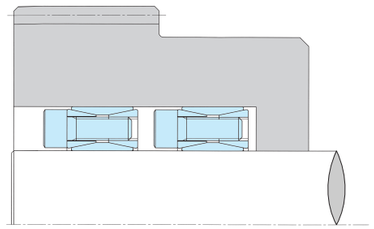
5. Hub mounting in the middle of a shaft

POWER-LOCK can be used at any place on the shaft without keyway.



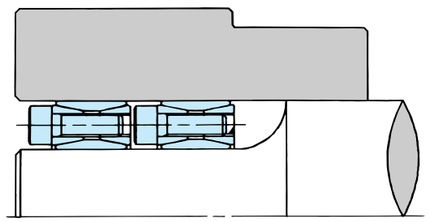
6. Hub mounting utilizing two POWER-LOCK

With this arrangement, twice the torque will be transmitted.

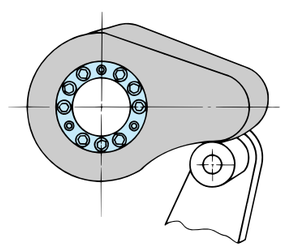


7. Hub mounted on a stepped shaft

This arrangement is often used in conjunction with thin hub wall applications, for hubs with a straight through bore.



8. Lever or cam mounting



NOTICE FOR SAFETY

- Read instruction manual we deliver with product and other attached documents thoroughly before installing and using the POWER-LOCK.
- Use the POWER-LOCK only after having full knowledge of the equipment and all applicable safety procedures.

⚠ WARNING

Death or serious injury may result if the POWER-LOCK is used incorrectly.

(Overall)

- If the device is used on equipment for transporting people, install the appropriate protection devices to the transportation equipment to provide the required safety.
- If the device is used on elevation equipment, install the appropriate safety devices to the elevation equipment to prevent the falling of materials. The falling of materials may cause injury to personnel or damage to the equipment.
- Comply with all applicable safety standards of the country where the device is used. When revisions are published, those updated revisions shall apply.

⚠ CAUTION

Injury or physical damage to equipment may result if the POWER-LOCK is installed correctly.

Note: Even if an item is marked CAUTION, there is a possibility of serious injury depending on the situation.

(Delivery)

- Verify that you received exactly what you ordered. Use of the incorrect equipment may cause injury or equipment damage.

(Installation)

- Always use a torque wrench when installing the tightening bolts and adhere to the procedure and torque values listed in this instruction manual. If the bolts are tightened without the use of a torque wrench, the correct torque may not be obtained causing slippage or deformation of the POWER-LOCK and result in an accident.
- Never use oils containing silicone or molybdenum disulfide lubricants when lubricating the connecting surfaces (e.g. shaft or hub inner surface) for the ADN series POWER-LOCK. Using such oils will prevent the specified torque from being obtained.
- Only use the bolts that came with the POWER-LOCK. If bolts are missing or damaged, contact a sales office of Tsubakimoto Chain Co. for replacement. Use of other bolts may result in breakage of the bolt and cause an accident.
- Never strike the POWER-LOCK with a hammer or other such tool when mounting the POWER-LOCK to the shaft and hub. Doing so may deform the POWER-LOCK and cause an accident.

(Removal)

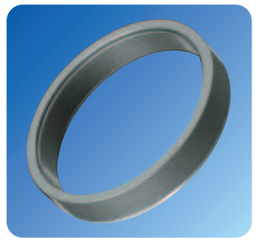
- Always confirm that there are no torque or thrust loads on the hub or shaft before removing the POWER-LOCK. If torque or thrust loads are present, the POWER-LOCK may suddenly release and allow the device to spin or come off when the tightening bolts are loosened.
- Especially for elevator applications, never loosen the tightening bolts while a load is being held. Doing so may cause the load to drop.

(Repeated use)

- Completely inspect each part of the POWER-LOCK prior to reusing. If any damage is found, replace the unit.

TSUBAKI POWER-LOCK WIDE VARIATION

EL Series



1. Compact
2. Well balanced
3. Facilitates optimal design

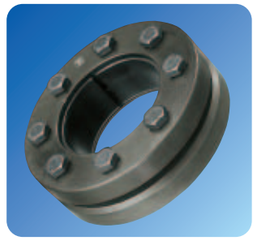
Applicable shaft size
10 - 150 mm

ADN Series

1. Over two times larger transmissible torque than that of AS series
2. Interchangeable AS series to ADN series

Applicable shaft size
19 - 300 mm

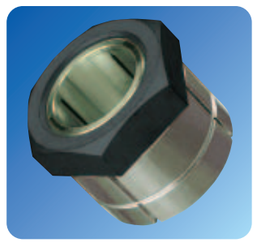
SL Series



1. Connected on outside the hub
2. Well fitted with hollow shaft

Applicable shaft size
24 - 300 mm

ML Series



1. One nut type
2. Easy installation
3. No grease is required

Applicable shaft size
5 - 75 mm

RE Series

1. Stainless steel type
2. Changeable with flange and without flange

Applicable shaft size
5 - 50 mm