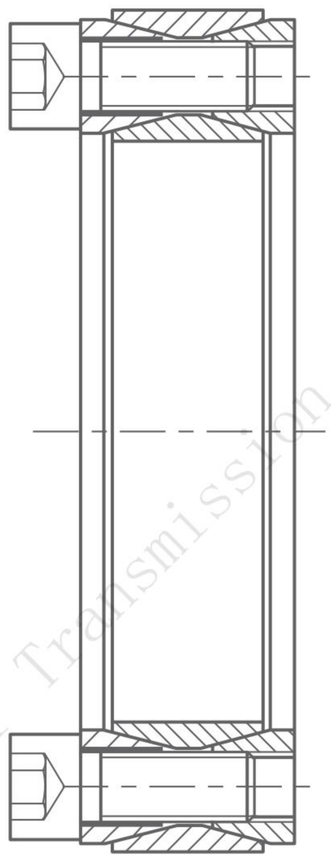
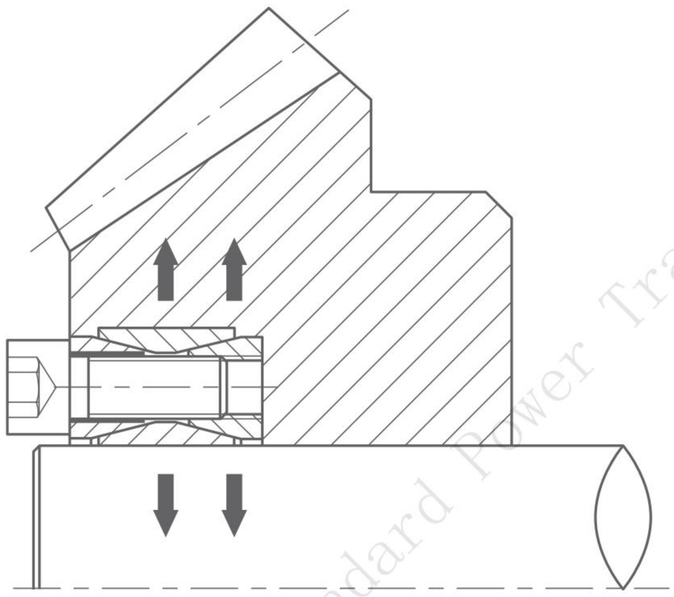
New Standard Power Transmission

NSPT-LOCKS







Suitable for Shaft:

Metric: f19～f340 (mm)

Iinch:3/4"-133/8"

B NSPT-LOCKS is a commonly used standard type locks. If this type lock is used, the machining precision of the joint components can be reduced since over-consideration of the interference and precision will make no difference in use. The reasonable reduction of the precision will further reduce the machining time and costs.

By using B NSPT-LOCKS, self-installation can be easily performed. The strength of the connection is dependent on the frictional forces between the lock, the hub and the shaft. It is one type of non-clearance joint that requires no keys. This will save even more time and costs since no key machining, pressing installation, or heat installation are required. Its great stability can greatly increase the working efficiency and the expected lifetime of mechanisms.

Expression for Type B NSPT-LOCKS

NL 60 X 90 B

- B — NSPT LOCK Type B
- 90 — Bore Diameter D
- 60 — Shaft Diameter d
- NL — NSPT-LOCKS Code

B NSPT-LOCKS

Conversion: 1 inch= 25.40mm

Conversion

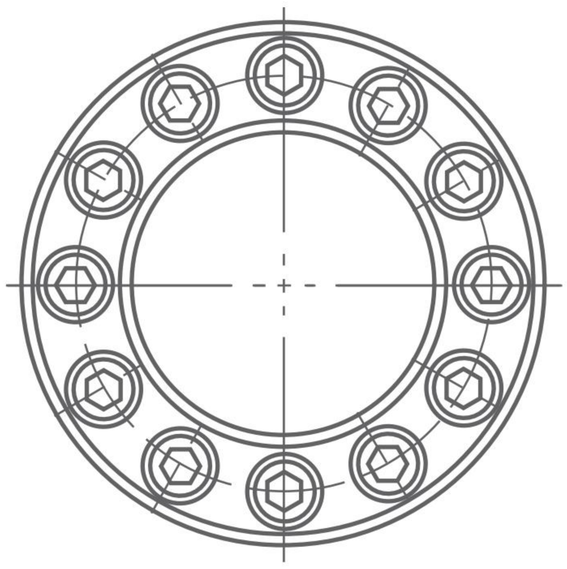
1 ft-lbs. = 0.1382 kgf.m = 1.3550 N.m

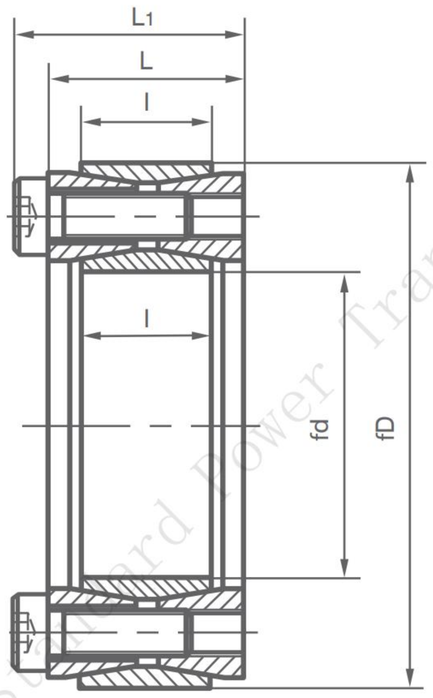
1 Psi = 0.0007 kgf/mm^2 = 0.0069 Mpa

NSPT-LOCKS

Inches







B NSPT-LOCKS

Conversion:1 inch = 25.40mm

NSPT Catalog	INCH SERIES			INCHES			Mt ft-lb	Axial force lb	pw psi	pn psi	LOCKING SCREW	
	Size	d	D	l	L	L1					No.x Type	Ms ft-lb
NL0.34B	3/4	0.750	1.850	0.669	0.787	1.083	202	6525	32010	13520	8xM6	11
NL0.78B				0.669	0.787	1.083	267	7200	29880	14230	8xM6	11
NL1.00B	1	1.000	1969	0.669	0.787	1.083	289	7200	28450	14230	8xM6	11
NL1.18B	1 1/8	1.125	2.165	0.669	0.787	1.083	361	8100	28450	14230	10xM6	11
NL1.316B	1 3/16	1.188	2.159	0.669	0.787	1.083	383	8100	26320	14230	10xM6	11
NL1.14B	1 1/4	1.250	2.362	0.669	0.787	1.083	492	9450	29170	15650	12xM6	11
NL1.38B	1 3/8	1.375	2.365	0.669	0.787	1.083	542	9675	27030	15650	12xM6	11
NL1.716B	1 7/16	1.4375	2.559	0.669	0.787	1.083	672	11025	28450	16360	14xM6	11
NL1.12B	1/2	1.500	2.559	0.669	0.787	1.083	709	11025	27030	16360	14xM6	11
NL1.58B	1 5/8	1.625	2.953	0.787	0.945	1.319	1143	16875	33430	18500	12xM8	27
NL1.1116B	1 11/16	1.688	2.953	0.787	0.945	1.319	1166	16875	32720	18500	12xM8	27
NL1.34B	1 3/4	1.750	2.953	0.787	0.945	1.319	1230	17100	31300	18500	12xM8	27
NL1.78B	1 7/8	1.875	3.150	0.787	0.945	1.319	1295	16650	29880	17070	12xM8	27
NL1.1516B	1 15/16	1.9375	3.150	0.787	0.945	1.319	1353	16875	28450	17070	12xM8	27
NL2.00B	2	2.000	3.346	0.787	0.945	1.319	1597	16875	32300	19210	14xM8	27
NL2.18B	2 1/8	2.125	3.346	0.787	0.945	1.319	1729	19800	29880	19210	14xM8	27
NL2.316B	2 3/16	2.188	3.543	0.787	0.945	1.319	1748	19800	29170	17790	14xM8	27
NL2.14B	2 1/4	2.250	3.543	0.787	0.945	1.319	1798	19800	28450	17790	14xM8	27
NL2.38B	2 3/8	2.375	3.531	0.787	0.945	1.319	1888	19800	27030	17790	14xM8	27
NL2.716B	2 7/16	2.4375	3.740	0.787	0.945	1.319	2212	19800	29800	19210	16xM8	27
NL2.12B	2 1/2	2.500	3.740	0.787	0.945	1.319	2269	19800	29170	19210	16xM8	27
NL2.916B	2 9/16	2.562	3.737	0.787	0.945	1.319	2322	22050	28450	19210	16xM8	27
NL2.58B	2 5/8	2.625	4.331	0.945	1.102	1.555	3169	22050	31300	18500	14xM10	51
NL2.1116B	2 11/16	2.6875	4.331	0.945	1.102	1.555	3241	22050	30590	18500	14xM10	51
NL2.34B	2 3/4	2.750	4.337	0.945	1.102	1.555	3328	29700	29880	18500	14xM10	51
NL2.78B	2 7/8	2.875	4.528	0.945	1.102	1.555	3451	29700	28450	17790	14xM10	51
NL2.1516B	2 15/16	2.9375	4.528	0.945	1.102	1.555	3545	29475	27740	17790	14xM10	51
NL3.00B	3	3.000	4.724	0.945	1.102	1.555	3581	29475	27030	17070	14xM10	51
NL3.18B	3 /8	3.125	4.724	0.945	1.102	1.555	3762	29475	25610	17070	14xM10	51
NL3.14B	3 1/4	3.250	4.921	0.945	1.102	1.555	4421	29475	29170	18500	16xM10	51
NL3.38B	3 3/8	3.375	4.921	0.945	1.102	1.555	4558	33300	27740	18500	16xM10	51
NL3.716B	3 7/16	3.4375	5.118	0.945	1.102	1.555	4630	33300	26320	17790	16xM10	51
NL3.12B	3 1/2	3.500	5.118	0.945	1.102	1.555	4775	33075	25610	17790	16xM10	51
NL3.34B	3 3/4	3.750	5.305	0.945	1.102	1.555	5716	37575	27740	19210	18xM10	51
NL3.1516B	3 15/16	3.9375	5.709	1.024	1.299	1.850	7054	43875	27740	19210	14xM12	92
NL4.00B	4	4.000	5.843	1.024	1.299	1.850	7112	43875	27740	18500	14xM12	92
NL4.716B	4 7/16	4.4375	6.496	1.024	1.299	1.850	9044	43650	28450	19210	16xM12	92
NL4.12B	4 1/2	4.500	6.496	1.024	1.299	1.850	9623	49725	26320	19210	16xM12	92
NL4.1516B	4 15/16	4.9375	7.087	1.339	1.436	2.047	12445	49725	24900	16360	20xM12	92
NL5.00B	5	5.000	7.087	1.339	1.436	2.047	12916	62100	23480	16360	20xM12	92

NSPT-LOCKS

Inches

Conversion

1 ft-lbs. = 0.1382 kgf.m = 1.3550 N.m

1 Psi = 0.0007 kgf/mm² = 0.0069 Mpa

B NSPT-LOCKS

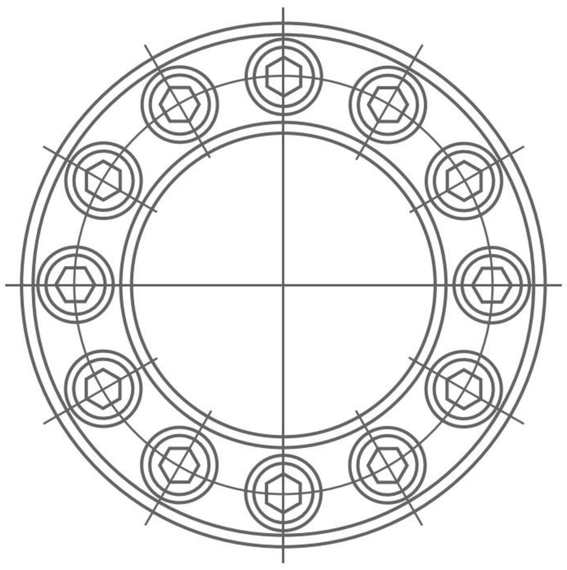
Conversion: 1 inch= 25.40mm

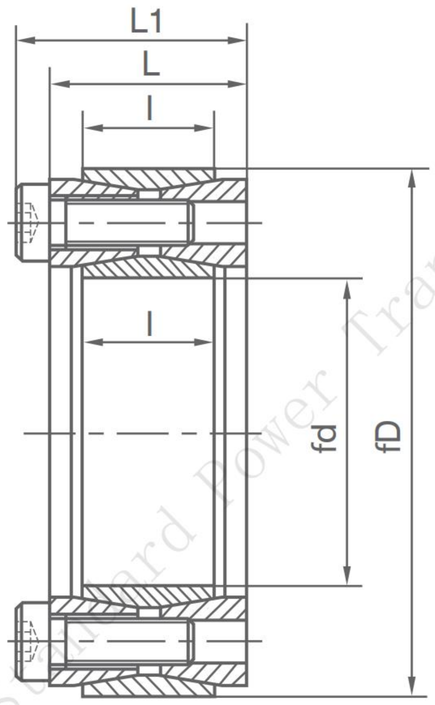
METRIC INCHES			INCH SERIES			INCHES			Mt ft-lb	Axial force lb	pw psi	pn psi	LOCKING SCREW	
Size	d	D	Size	d	D	l	L	L1					No.x type	Ms ft-lb
20x47	0.787	1.850	3/4	0.750	1.850	0.669	0.787	1.024	202	6525	32010	13520	8xM6	11
22x47	0.866	1.850				0.669	0.787	1.024	224	6525	29880	13520	8xM6	11
24x50	0.945	1.969				0.669	0.787	1.024	267	7200	29880	14230	9xM6	11
25x50	0.984	1.969	1	1.000	1.969	0.669	0.787	1.024	289	7200	28450	14230	9xM6	11
28x55	1.102	2.165	11/8	1.125	2.165	0.669	0.787	1.024	361	8100	28450	14230	10xM6	11
30x55	1.181	2.165	1 3/16	1.188	2.159	0.669	0.787	1.024	383	8100	26320	14230	10xM6	11
32x60	1.260	2.362	1 1/4	1.250	2.362	0.669	0.787	1.024	492	9450	29170	15650	12xM6	11
35x60	1.378	2.362	1 3/8	1.375	2.365	0.669	0.787	1.024	542	9675	27030	15650	12xM6	11
38x65	1.496	2.559	1 7/16	1.4375	2.559	0.669	0.787	1.024	672	11025	28450	16360	14xM6	11
40x65	1.575	2.559	1 1/2	1.500	2.559	0.669	0.787	1.024	709	11025	27030	16360	14xM6	11
42x75	1.654	2.953	1 5/8	1.625	2.953	0.787	0.945	1.26	1143	16875	33430	18500	12xM8	27
			1 11/16	1.688	2.953	0.787	0.945	1.26	1166	16875	32720	18500	12xM8	27
45x75	1.772	2.953	1 3/4	1.750	2.953	0.787	0.945	1.26	1230	17100	31300	18500	12xM8	27
48x80	1.890	3.150	1 7/8	1.875	3.150	0.787	0.945	1.26	1295	16650	29880	17070	12xM8	27
50x80	1.969	3.150	1 15/16	1.9375	3.150	0.787	0.945	1.26	1353	16875	28450	17070	12xM8	27
			2	2.000	3.346	0.787	0.945	1.26	1597	16875	32300	19210	14xM8	27
55x85	2.165	3.346	2 1/8	2.125	3.346	0.787	0.945	1.26	1729	19800	29880	19210	14xM8	27
			2 3/16	2.188	3.543	0.787	0.945	1.26	1748	19800	29170	17790	14xM8	27
			2 1/4	2.250	3.543	0.787	0.945	1.26	1798	19800	28450	17790	14xM8	27
60x90	2.362	3.543	2 3/8	2.375	3.531	0.787	0.945	1.26	1888	19800	27030	17790	14xM8	27
			2 7/16	2.4375	3.740	0.787	0.945	1.26	2212	19800	29800	19210	16xM8	27
			2 1/2	2.500	3.740	0.787	0.945	1.26	2269	19800	29170	19210	16xM8	27
65x95	2.559	3.740	2 9/16	2.562	3.737	0.787	0.945	1.26	2322	22050	28450	19210	16xM8	27
			2 5/8	2.625	4.331	0.945	1.102	1.496	3169	22050	31300	18500	14xM10	51
			2 11/16	2.6875	4.331	0.945	1.102	1.496	3241	22050	30590	18500	14xM10	51
70x110	2.756	4.331	2 3/4	2.750	4.337	0.945	1.102	1.496	3328	29700	29880	18500	14xM10	51
			2 7/8	2.875	4.528	0.945	1.102	1.496	3451	29700	28450	17790	14xM10	51
75x115	2.953	4.528	2 15/16	2.9375	4.528	0.945	1.102	1.496	3545	29475	27740	17790	14xM10	51
			3	3.000	4.724	0.945	1.102	1.496	3581	29475	27030	17070	14xM10	51
80x120	3.150	4.724	3 1/8	3.125	4.724	0.945	1.102	1.496	3762	29475	25610	17070	14xM10	51
			3 1/4	3.250	4.921	0.945	1.102	1.496	4421	29475	29170	18500	16xM10	51
85x125	3.346	4.921	3 3/8	3.375	4.921	0.945	1.102	1.496	4558	33300	27740	18500	16xM10	51
			3 7/16	3.4375	5.118	0.945	1.102	1.496	4630	33300	26320	17790	16xM10	51
90x130	3.543	5.118	3 1/2	3.500	5.118	0.945	1.102	1.496	4775	33075	25610	17790	16xM10	51
95x135	3.740	5.315	3 3/4	3.750	5.305	0.945	1.102	1.496	5716	37575	27740	19210	18xM10	51
100x145	3.937	5.709	3 15/16	3.9375	5.709	1.024	1.299	1.772	7054	43875	27740	19210	14xM12	92
			4	4.000	5.843	1.024	1.299	1.772	7112	43875	27740	18500	14xM12	92
110x155	4.331	6.102				1.024	1.299	1.772	7706	43650	25610	17790	14xM12	92
			4 7/16	4.4375	6.496	1.024	1.299	1.772	9044	43650	28450	19210	16xM12	92
120x165	4.724	6.496	4 1/2	4.500	6.496	1.024	1.299	1.772	9623	49725	26320	19210	16xM12	92
			4 15/16	4.9375	7.087	1.339	1.436	1.969	12445	49725	24900	16360	20xM12	92
130x180	5.118	7.087	5	5.000	7.087	1.339	1.436	1.969	12916	62100	23480	16360	20xM12	92
			5 7/16	5.4375	7.480	1.339	1.436	1.969	15123	62100	24190	17790	22xM12	92
140x190	5.512	7.480	5 1/2	5.500	7.492	1.339	1.436	1.969	15340	67950	23480	17790	22xM12	92
150x200	5.906	7.874				1.339	1.436	1.969	17727	74025	24190	17790	24xM12	92
160x210	6.299	8.268	6	6.000	8.268	1.339	1.436	1.969	20549	79875	24190	18500	26xM12	92
			6 7/16	6.4375	8.858	1.496	1.732	2.283	23371	79875	24900	17070	22xM14	142
170x225	6.693	8.858	6 1/2	6.500	8.858	1.496	1.732	2.283	24312	89100	23480	17070	22xM14	142
			6 15/16	6.9375	9.252	1.496	1.732	2.283	27351	89100	24900	18500	24xM14	142
180x235	7.087	9.252	7	7.000	9.252	1.496	1.732	2.283	28002	96975	24190	18500	24xM14	142
190x250	7.480	9.843	7 1/2	7.500	9.823	1.811	2.047	2.598	32344	112950	22050	17070	28xM14	142
200x260	7.874	10.236	7 7/8	7.875	10.236	1.811	2.047	2.598	38712	121050	22050	17070	30xM14	142

NSPT-LOCKS

Metric







B NSPT-LOCKS ®

Conversion:1 inch = 25.40mm

Table:1

Catalog dxD	Fundamental Dimensions l	L	L1	Internal Hexagon Headed Bolt SIZES	QTY	Rated Load Ft KN	Mt KN.M	Pf Mpa	MA N.M	G kg
CL19x47B	17	20	26	M6x18	8	26	0.27	210	14	0.2
CL20x47B	17	20	26	M6x18	8	27	0.27	210	14	0.24
CL22x47B	17	20	26	M6x18	8	27	0.30	195	14	0.23
CL25x50B	17	20	26	M6x18	9	30	0.38	190	14	0.25
CL28x55B	17	20	26	M6x18	10	33	0.47	185	14	0.30
CL30x55B	17	20	26	M6x18	10	33	0.50	175	14	0.29
CL35x60B	17	20	26	M6x18	12	40	0.70	180	14	0.32
CL38x63B	17	20	26	M6x18	14	46	0.88	185	14	0.33
CL40x65B	17	20	26	M6x18	14	46	0.92	180	14	0.34
CL42x75B	20	24	32	M8x22	12	65	1.36	200	35	0.48
CL45x75B	20	24	32	M8x22	12	72	1.62	210	35	0.57
CL50x80B	20	24	32	M8x22	12	71	1.77	190	35	0.60
CL55x85B	20	24	32	M8x22	14	83	2.27	200	35	0.63
CL60x90B	20	24	32	M8x22	14	83	2.47	180	35	0.69
CL65x95B	20	24	32	M8x22	16	93	3.04	190	35	0.73
CL70x110B	24	28	38	M10x25	14	132	4.60	210	70	1.26
CL75x115B	24	28	38	M10x25	14	131	4.90	195	70	1.33
CL80x120B	24	28	38	M10x25	14	131	5.20	180	70	1.40
CL85x125B	24	28	38	M10x25	16	148	6.30	195	70	1.49
CL90x130B	24	28	38	M10x25	16	147	6.30	180	70	1.53
CL95x135B	24	28	38	M10x25	18	167	7.90	195	70	1.62
CL100x145B	29	33	45	M12x30	14	192	9.60	195	125	2.01
CL105x150B	29	33	45	M12x30	14	190	9.98	185	125	2.10
CL110x155B	29	33	45	M12x30	14	191	10.50	180	125	2.15
CL120x165B	29	33	45	M12x30	16	218	13.10	185	125	2.35
CL125x170B	29	33	45	M12x30	18	220	13.78	180	125	2.95
CL130x180B	34	38	50	M12x35	20	272	17.60	165	125	3.51
CL140x190B	34	38	50	M12x35	22	298	20.90	165	125	3.85
CL150x200B	34	38	50	M12x35	24	324	24.20	170	125	4.07
CL160x210B	34	38	50	M12x35	26	350	28.0	170	125	4.30
CL170x225B	38	44	58	M14x40	22	386	32.90	160	190	5.78
CL180x235B	38	44	58	M14x40	24	420	37.80	165	190	6.05
CL190x250B	46	52	66	M14x45	28	490	46.50	150	190	8.25
CL200x260B	46	52	66	M14x45	30	525	52.50	150	190	8.65
CL210x275B	50	56	72	M16x50	24	599	62.89	151	295	10.10

The products in table are in stock items for immediate delivery.

NSPT-LOCKS

Conversion

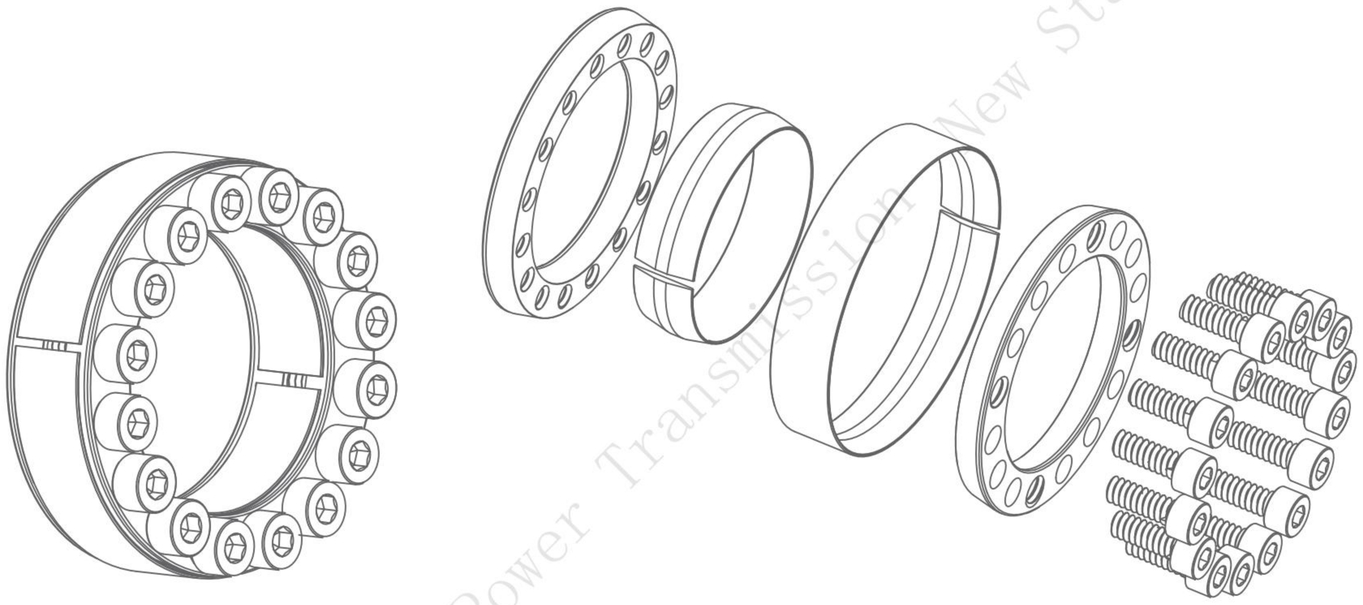
1 ft-lbs. = 0.1382 kgf.m = 1.3550 N.m
1 Psi = 0.0007 kgf/mm^2 = 0.0069 Mpa

B NSPT-LOCKS

Table:2

Catalog dxD	Fundamental Dimensions			Internal Hexagon Headed Bolt		Rated Load		Pf Mpa	MA N.M	G kg
	e	L	L1	SIZES	QTY	Ft KN	Mt KN.M			
CL220x285B	50	56	72	M16x50	26	620	68.0	150	295	11.22
CL240x305B	50	56	72	M16x50	30	715	85.5	160	295	12.2
CL250x315B	50	56	72	M16x50	32	768	96.0	162	295	12.7
CL260x325B	50	56	72	M16x50	34	800	104.0	165	295	13.2
CL280x355B	60	66	84	M18x60	32	915	128.0	145	405	19.2
CL300x375B	60	66	84	M18x60	36	1020	153.0	150	405	20.5
CL320x405B	72	78	98	M20x70	36	1310	210.0	150	580	29.6
CL340x425B	72	78	98	M20x70	36	1310	224.0	145	580	31.3
CL360x455B	84	90	112	M22x80	36	1630	294.0	145	780	42.2
CL380x475B	84	90	112	M22x80	36	1620	308.0	135	780	44.0
CL400x495B	84	90	112	M22x80	36	1610	322.0	130	780	46.0
CL420x515B	84	90	112	M22x80	40	1780	374.0	135	780	50.0
CL450x555B	96	102	126	M24x90	40	2050	461.3	124	1000	65.0
CL480x585B	96	102	126	M24x90	42	2160	518.4	124	1000	71.0
CL500x605B	96	102	126	M24x90	44	2240	560.0	123	1000	72.4
CL530x640B	96	102	126	M24x90	45	2330	617	121	1000	83.6
CL560x670B	96	102	126	M24x90	48	2440	680	120	1000	85.0
CL600x710B	96	102	126	M24x90	50	2580	775	118	1000	91.0
CL630x740B	96	102	126	M24x90	52	2680	844	117	1000	94.0
CL670x780B	96	102	126	M24x90	56	2820	944	116	1000	101.0
CL710x820B	96	102	126	M24x90	60	2970	1054	115	1000	106.4
CL750x860B	96	102	126	M24x90	62	3130	1173	115	1000	112.0
CL800x910B	96	102	126	M24x90	66	3260	1300	112	1000	118.0
CL850x960B	96	102	126	M24x90	70	3500	1487	113	1000	125.0
CL900x1010B	96	102	126	M24x90	75	3680	1650	112	1000	132.0
CL950x1060B	96	102	126	M24x90	80	3870	1838	112	1000	139.0
CL1000x1110B	96	102	126	M24x90	82	4000	2000	110	1000	146.0

The items in table 2 will be produced made-to-order.



Key Elements for Designing and Calculation of B NSPT-LOCKS

1. Determine max torque and max axial load

$$Mmax = \frac{30000\ H}{p.n} \cdot K(N\ m)$$

$$Fmax = F \cdot K$$

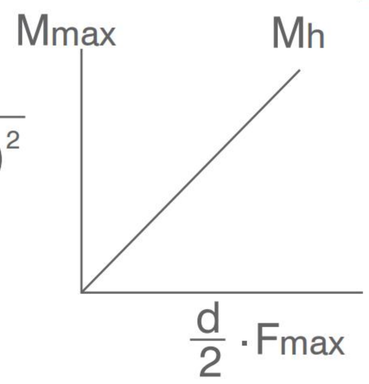
H--Transmission power KW
n--Rotational speed r/min
F--nominal axial force N
K--coefficient needed

Used coefficient sheet for K

No shock load, transmitting with little inertia	1.5–2.5
Slight shock load,transmitting with middle inertia	2.0–4.0
Big shock load, transmitting with heavy inertia	3.0–5.0

2. Calculate synthetic load and transmitted torque

$$Mh = \sqrt{M^2max + (\frac{d}{2} xFmax)^2}$$



M_{max}--Required transmitted torque Nm
F_{max}--Required transmitted axial force N
M_h--synthetic transmitted torque Nm
d--Transmission shaft diameter mm
M_t--NSPT LOCK rated transmitted torque Nm

$M_t \geqslant Mh$ can be used
$M_t < Mh$ need bigger type of NSPT lock or to be install by two NSPT locks or more together

3. Calculation for the hub diameter

$$Da \geqslant D\sqrt{\frac{\sigma b + Ka \cdot Ph}{\sigma b - Ka \cdot Ph}}$$

Da--outside diameter of hub mm
D--inside diameter of hub mm
Ph--suface pressures on hub Mpa
σb--tensile strength of material
Ka--It should be 0.6 for single NSPT lock, it will be 0.8 when two NSPT locks or more are installed together

4. Calculation for the inside diameter of cannon

$$dB \leqslant d\sqrt{\frac{\sigma b - 2xPs.K3}{\sigma b}}$$

dB--inside diameter of cannon mm
d--outside diameter of cannon mm
6b--tensile strength of shaft material Mpa
Ps--pressure on the surface of shaft Mpa
K3--coefficient=0.6

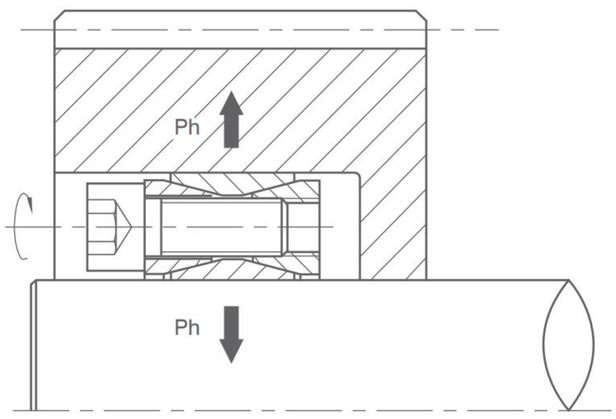
5. Settlement for the surface roughness and dimension tolerance

Fittng Section	Ra(um) Surface Roughness	Dimension Precision
Shaft Diameter d	1.6	h8–H9
Bore Diameter D	1.6	H8–H9

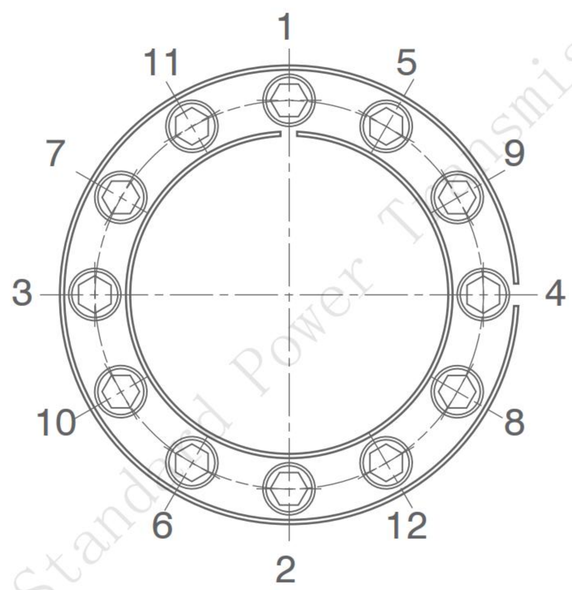
6. Installation for NSPT-LOCKS

Clean the NSPT-LOCKS and install it into corresponding position of hub and shaft (Ref Drawing A). Tighten the bolts according to the order in Drawing B. The bolts should be tightened 3 to 4 times up to specified rated torque. After correct installation, NSPT-LOCKS should be inspected radially and axially for runouts as per Ⓐ ⩽ 0.05mm, Ⓑ ⩽ 0.002Rmm in C.

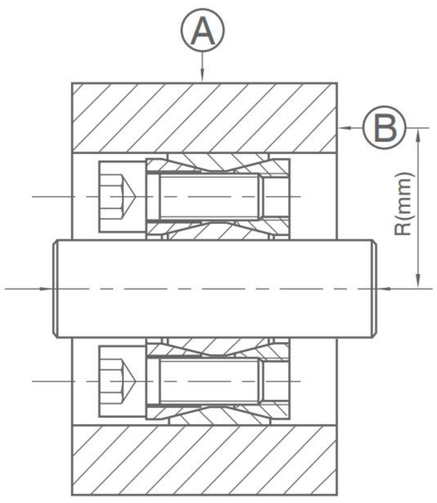
A



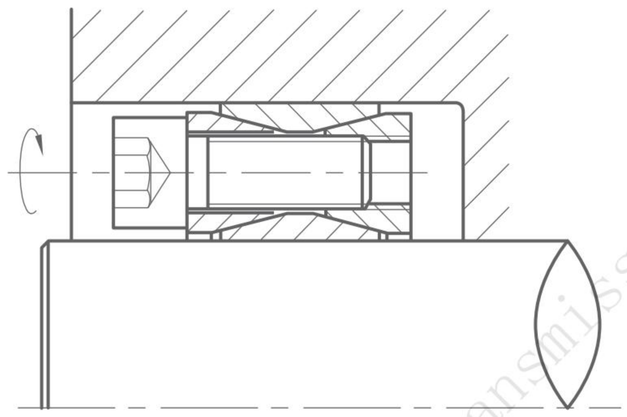
B



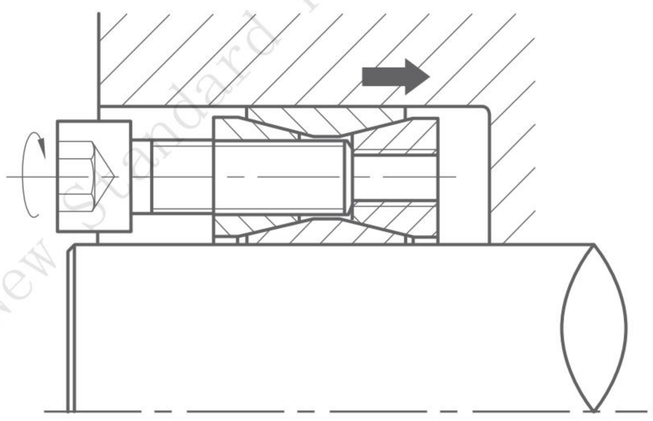
C



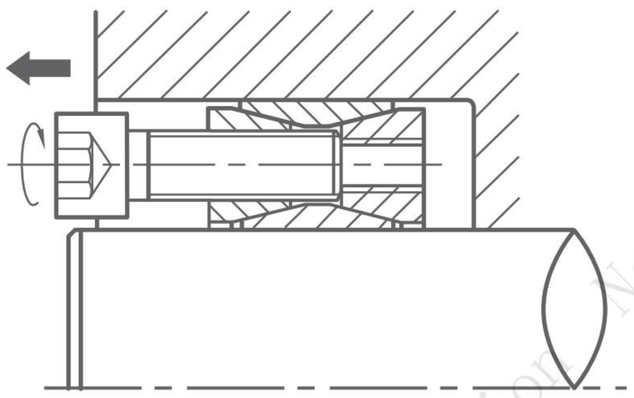
7 Disassembling NSPT-LOCKS



Loosen and remove all tightening bolts.



Put unloading bolts into the corresponding tap holes. Turning the bolts in clockwise direction and loosen the inner taper rings.



Pull out the bolts and then, loosen and remove outer taper rings

Conversion:1 inch = 25.40mm

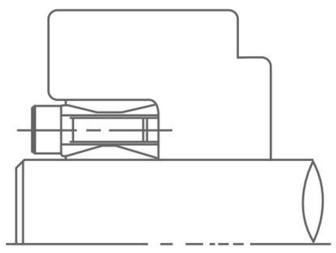
Conversion

1 ft-lbs. = 0.1382 kgf·m = 1.3550 N.m

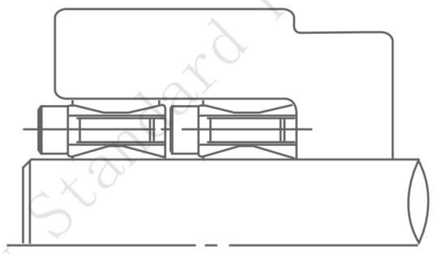
1 Psi = 0.0007 kgf/mm² = 0.0069 Mpa

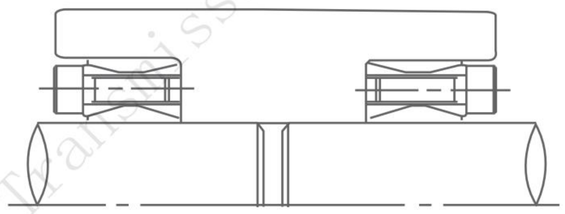
To disassemble, loosen and remove all tightening bolts. Place the unloading bolts in corresponding unloading tap holes (ie, tap holes with bolts zinc plated) and tighten them in turn. Taper rings on both sides of the NSPT lock can then be gradually separated. NSPT lock can then be disassembled.

Conventional installation for general power transmission.



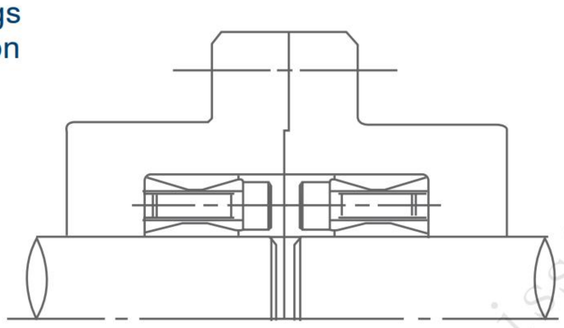
Used in pairs for the usage of greater power transmission

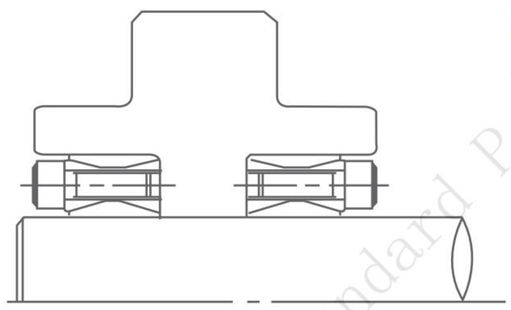




Mounted with shaft sleeves to connect transmission between two shafts. They can replace couplings in some cases.

Mounted with couplings to connect transmission between two shafts





Installed on both sides for the usage of greater power transmission

When installed with cams, the position and angle of the cams can be adjusted accordingly

