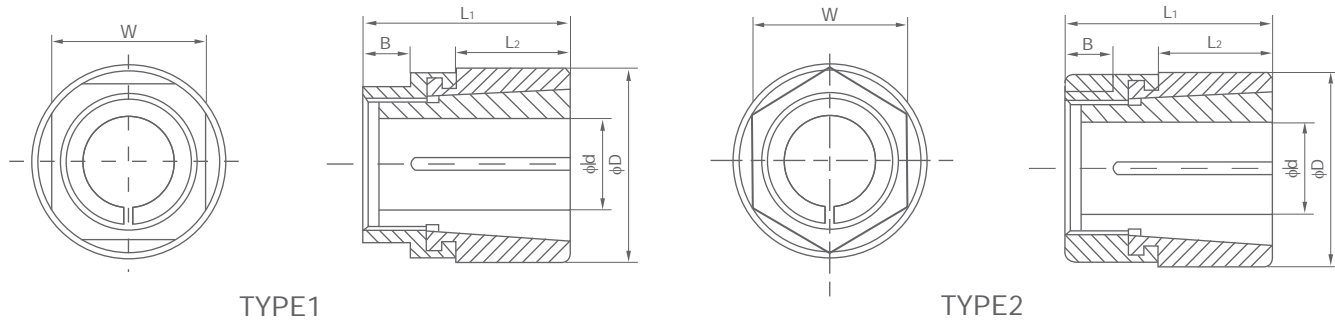


NSPT-LOCKS

Inches

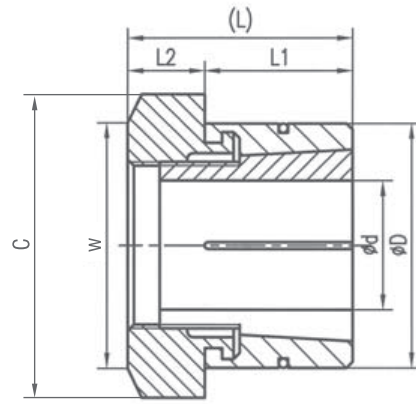
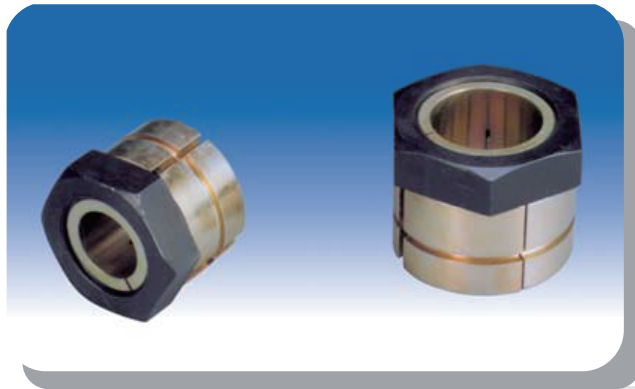


ML-B NSPT-LOCKS

NSPT Catalog	d	D	Type	Dimension(inches)				Performance Max Transmissible		Installation Torque on nut In-Lbs	wt oz.
				L1	L2	W	B	Torque In-Lbs	Thrust Lbs		
ML-B 3/16	3/16	5/8	1	3/4	3/8	1/2	1/8	100	700	125	1/2
ML-B 1/4	1/4							150	788		
ML-B 5/16	5/16							200	892		
ML-B 3/8	3/8	3/4	1	7/8	7/16	5/8	1/8	250	925	150	1
ML-B 7/16	7/16							300	954		
ML-B 1/2	1/2							350	980		
ML-B 9/16	9/16	1	1	1 1/8	5/8	7/8	3/16	400	990	175	1 1/2
ML-B 5/8	5/8							450	995		
ML-B 5/8	5/8							1500	3000		
ML-B 11/16	11/16	1 1/2	2	1 1/2	3/4	11/4	5/16	1800	3500	1200	8
ML-B 3/4	3/4							2000	4000		
ML-B 13/16	13/16							2200	4500		
ML-B 7/8	7/8	1 3/4	2	1 7/8	7/8	11/2	7/16	2400	5000	1500	11
ML-B 15/16	15/16							2600	5500		
ML-B 1	1							3000	6000		
ML-B 11/16	11/16	2	2	2 1/4	1	13/4	1/2	3500	6750	1800	16
ML-B 1 1/8	1 1/8							3750	7250		
ML-B 13/16	13/16							4250	7750		
ML-B 1 1/4	1 1/4	2 3/8	2	2 3/4	1 1/2	2	9/16	4750	8300	2100	27
ML-B 15/16	15/16							5250	9000		
ML-B 13/8	13/8							5750	9500		
ML-B 17/16	17/16	2 5/8	2	3 9/16	1 11/16	2 1/4	9/16	6500	10000	2500	37
ML-B 1 1/2	1 1/2							7000	10500		
ML-B 19/16	19/16							7750	11000		
ML-B 15/8	15/8	2 7/8	2	3 9/16	2	2 1/2	5/8	8500	11750	3500	48
ML-B 1 11/16	1 11/16							9250	12250		
ML-B 13/4	13/4							10000	12750		
ML-B 1 13/16	1 13/16	3 1/8	2	3 3/4	2 1/8	2 3/4	5/8	10750	13250	4800	60
ML-B 1 7/8	1 7/8							11750	14000		
ML-B 1 15/16	1 15/16							12750	14500		
ML-B 2	2	3 3/8	2	3 7/8	2 1/4	3	11/16	14000	15000	5100	68
ML-B 2 1/16	2 1/16							14250	15100		
ML-B 2 1/8	2 1/8							14500	15200		
ML-B 2 3/16	2 3/16	3 5/8	2	4 1/16	2 3/8	3 1/4	11/16	14750	15250	5400	78
ML-B 2 1/4	2 1/4							15000	15275		
ML-B 2 5/16	2 5/16							15250	15330		
ML-B 2 3/8	2 3/8	3 7/8	2	4 1/4	2 1/2	3 1/2	3/4	15500	15550	6000	90
ML-B 2 7/16	2 7/16							15750	15480		
ML-B 2 1/2	2 1/2							16000	15550		
ML-B 2 9/16	2 9/16	3 7/8	2	4 1/4	2 1/2	3 1/2	3/4	16250	15620	6000	90
ML-B 2 5/8	2 5/8							16500	15680		
ML-B 2 11/16	2 11/16							16750	15750		
ML-B 2 3/4	2 3/4	3 7/8	2	4 1/4	2 1/2	3 1/2	3/4	17000	15800	6000	90
ML-B 2 13/16	2 13/16							17250	15900		
ML-B 2 7/8	2 7/8							17500	15950		
ML-B 2 15/16	2 15/16	3 7/8	2	4 1/4	2 1/2	3 1/2	3/4	17750	16025	6000	90
ML-B 3	3							18000	16150		

NSPT-LOCKS

Metric



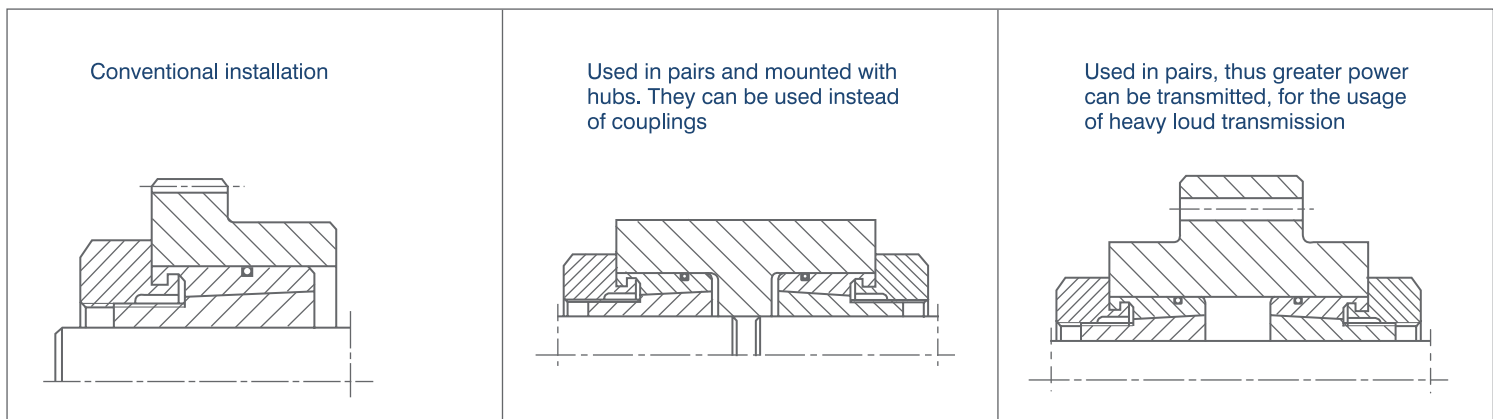
Conversion

1 ft-lbs. = 0.1382 kgf·m = 1.3550 N.m
1 Psi = 0.0007 kgf/mm² = 0.0069 Mpa

ML NSPT-LOCKS

Catalog dxD	Fundamental Dimensions					Rated Load		Pf N/mm ²	MA N.M	G kg
	L	L ₁	L ₂	W	C	Mt N.M	Ft KN			
CL5x16ML	15	10	5	17	19.6	7	2.65	181	9.1	0.02
CL6x16ML						8		161		0.02
CL7x21ML	21	14	7	22	25.4	15	6.57	179	19.9	0.049
CL8x21ML						18		163		0.047
CL9x21ML						20		150		0.045
CL10x24ML	22	14	8	24	27.7	26	8.43	180	25.5	0.061
CL11x24ML						28		172		0.058
CL12x24ML						31		164		0.055
CL14x31ML						83		186		0.13
CL15x31ML	27	17	10	32	37	90	16.1	179	80.0	0.13
CL16x31ML						96		173		0.12
CL17x36ML						145		181		0.2
CL18x36ML	33	21	12	36	41.6	155	22.8	175	136	0.19
CL19x36ML						163		171		0.19
CL20x41ML						245		156		0.27
CL22x41ML	35	23	12	41	47.3	274	24.9	149	230	0.27
CL24x41ML						294		144		0.24
CL25x46ML						365		138		0.33
CL28x46ML	37	25	12	46	53.1	408	30.1	131	300	0.30
CL30x50ML						446		111		0.41
CL32x50ML						475		104		0.37

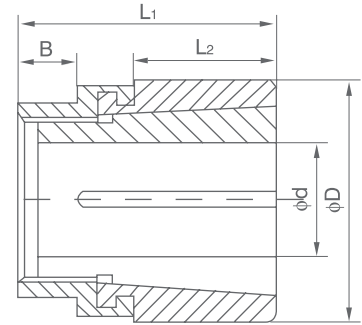
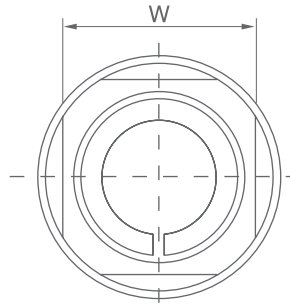
Conventional installation of ML NSPT-LOCKS



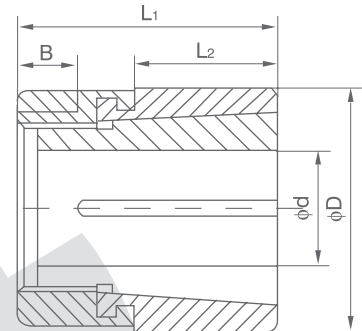
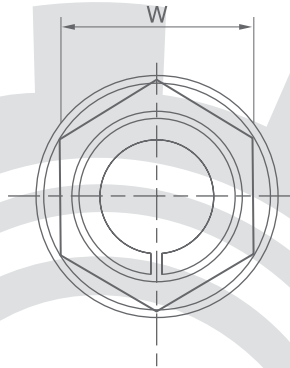
Conversion: 1 inch= 25.40mm

NSPT-LOCKS

Metric



TYPE 1



TYPE 2

Conversion

1 ft.-lbs. = 0.1382 kgf-m = 1.3550 N.m
1 Psi = 0.0007 kgf/mm² = 0.0069 Mpa

ML-B NSPT-LOCKS

Catalog	d	D	TYPE	Fundamental Dimensions				Rated Load		Pf N/mm ²	MA N.M	kg
				L1	L2	W	B	Mt KN.M	Ft KN			
CL5x16ML-B	5	16	1	19	9.5	13	3	0.01	3.18	36	14.1	0.014
CL6x16ML-B	6	16	1	19	9.5	13	3	0.013	3.58	36	14.1	0.014
CL8x19ML-B	8	19	1	22	11	16	3	0.015	4.05	26	17.0	0.028
CL9x19ML-B	9	19	1	22	11	16	3	0.018	4.18	26	17.0	0.028
CL10x22.5ML-B	10	22.5	1	25.5	12.5	19	5	0.023	4.25	19	23.1	0.042
CL11x22.5ML-8	11	22.5	1	25.5	12.5	19	5	0.025	4.33	19	23.1	0.042
CL12x22.5ML-B	12	22.5	1	25.5	12.5	19	5	0.028	4.39	19	23.1	0.042
CL14x25.5ML-B	14	25.5	1	28.5	16	22	5	0.046	4.49	13	38.0	0.056
CL15x25.5ML-B	15	25.5	1	28.5	16	22	5	0.049	4.51	13	38.0	0.056
CL16x25.5ML-B	16	25.5	1	28.5	16	22	5	0.053	4.53	13	38.0	0.056
CL15x38ML-B	15	38	2	38	19	32	8	0.12	12.70	76	136	0.23
CL18x38ML-B	18	38	2	38	19	32	8	0.15	14.60	76	136	0.23
CL20x38ML-B	20	38	2	38	19	32	8	0.23	19.8	76	136	0.23
CL22x45ML-B	22	45	2	47.5	21.5	38	11	0.26	22.5	65	230	0.31
CL24x25ML-B	24	45	2	47.5	21.5	38	11	0.29	25.30	65	230	0.31
CL25x45ML-B	25	45	2	47.5	21.5	38	11	0.30	27.25	65	230	0.31
CL28x51ML-B	28	51	2	57	25.5	46	13	0.41	32.25	54	330	0.45
CL30x51ML-B	30	51	2	57	25.5	46	13	0.44	35.0	54	330	0.45
CL32x51ML-B	32	51	2	57	25.5	46	13	0.47	37.7	54	330	0.45
CL34x60.5ML-B	34	60.5	2	70	38	50	14	0.49	43.0	45	390	0.77
CL35x60.5ML-B	35	60.5	2	70	38	50	14	0.51	44.0	45	390	0.77
CL36x60.5ML-B	36	60.5	2	70	38	50	14	0.52	44.8	45	390	0.77
CL38x60.5ML-B	38	60.5	2	70	38	50	14	0.55	47.7	45	390	0.77
CL40x67ML-B	40	67	2	79.5	43	60	14.5	0.63	51.7	38	460	1.05
CL42x67ML-B	42	67	2	79.5	43	60	14.5	0.65	54.5	38	460	1.05
CL45x73ML-B	45	73	2	90.5	51	65	16	0.71	58.6	29	540	1.36
CL48x73ML-B	48	73	2	90.5	51	65	16	0.75	64.4	29	540	1.36
CL50x73ML-B	50	73	2	90.5	51	65	16	0.82	67.0	29	540	1.36
CL55x80ML-B	55	80	2	95	54	70	16	1.24	67.5	24	810	2.13
CL60x86ML-B	60	86	2	98.5	57	75	17.5	1.41	69.4	20	910	2.27
CL65x92ML-B	65	92	2	103	60.5	80	17.5	1.51	70.9	17	980	2.68
CL70x92ML-B	70	92	2	103	60.5	80	17.5	1.62	71.9	17	980	2.68
CL75x100ML-B	75	100	2	108	63.5	90	19	1.63	73.3	16	990	2.72

Conversion : 1 inch = 25.40mm

Key Elements for Designing and Calculation of ML NSPT-LOCKS

1. Determine max torque and max axial load

$$M_{max} = \frac{30000 H}{\pi \cdot n} \cdot K \text{ (N m)}$$

$$F_{max} = F \cdot K$$

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

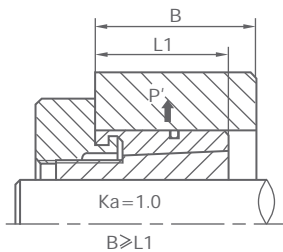
$$M_h = \sqrt{M_{max}^2 + \left(\frac{d}{2} \times F_{max}\right)^2}$$

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

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

3. Calculation for the hub diameter

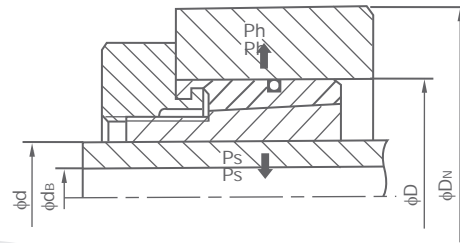
$$D_a \geq D \sqrt{\frac{O_b + K_a \cdot P_h}{O_b - K_a \cdot P_h}}$$



D_a --outside diameter of hub mm
 D --inside diameter of hub mm
 P_h --surface pressures on hub Mpa
 O_b --tensile strength of material
 K_a --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

$$d_B \leq d \sqrt{\frac{O_b - 2 \times P_s \cdot K_3}{O_b}}$$

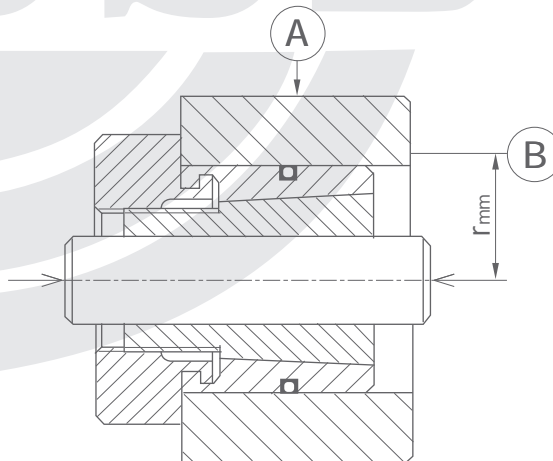


d_B --inside diameter of cannon mm
 d --outside diameter of cannon mm
 O_b --tensile strength of shaft material Mpa
 P_s --pressure on the surface of shaft Mpa
 K_3 --coefficient=0.6

5. Settlement for the surface roughness and dimension tolerance

Fitting Section	Ra(um) Surface Roughness	Dimension Precision
Shaft Diameter d	1.6/	h8-H9
Bore Diameter D	1.6/	H8-H9

6. Installation and disassembling for NSPT lock type ML.



After installing the NSPT locks correctly, the radial and axial run out should be inspected according to $\textcircled{A} \leq 0.05\text{mm}$ and $\textcircled{B} \leq 0.002R$.

Conversion: 1 inch=25.40mm

Conversion

$$1 \text{ ft-lbs.} = 0.1382 \text{ kgf}\cdot\text{m} = 1.3550 \text{ N}\cdot\text{m}$$

$$1 \text{ Psi} = 0.0007 \text{ kgf/mm}^2 = 0.0069 \text{ Mpa}$$