VERSION 2020 - REV 00
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NMTG

TENSIONER NUT & TENSIONER BOLT

An ISO 9001 : 2015 Certified Group

CONTENTS

TENSIONER NUT & BOLT

❑ Introduction :

➲ Tensioner Nut & Bolt is designed for direct replacement of Conventional Hex Nut & Bolt. No need of requirement of more space, just required to replace the hex nut. Normally in medium & heavy Industries, different bolted joints / connections are to be used which requires high Clamping Force. So, these require more effort in Tightening & Untightening.

➲ Major two difficulties in Large size Bolt:

1) How to tighten the Bolt.
2) How to keep it tight.

Tightening a Bolt having an elastic stretch which keep the bolted assembly together. If the distance between Bolt head and nut is less, the elasticity will be insufficient. The better way to improve elasticity of a bolting system is by the use of our developed proven bolting system called Tensioner Nut Assembly.

➲ Standard hex nuts used in such connections are tightened by the known tightening systems such as Ordinary hand, Torque wrench, Hydraulic or Pneumatic impact wrench, Thermal tightening & Sledge hammering methods.

These systems do not allow easily to tightening bolts of large diameter, to the stress level required for maintaining safe operations. However, when it comes to untightening, such as in maintenance, often creates problems and they cannot be dismantled by the way they have been tightened with, and the only solution is to torch cut, when corrosion distorted threads makes it impossible to unload the bolts.

➲ NMTG Tensioner Nut & Bolt is simplest, Inventive & cost-effective solution in Bolted joints. This joint can be tightened without requiring heavy tooling. Also higher sizes can be Installed or removed by Ordinary tooling with minimum workers. If Proper Installed, NMTG Tensioner Nut & Bolt can provide more life as compared to Conventional Nut & Bolt. Also, If Application is Critical or Special then also NMTG can supply Customized model as per Application requirement.

➲ **Because of reducing friction on main thread as well as in bearing contact area, almost all theoretical preload can be achieved without fretting corrosion. Also main thread is Tensioned in pure Tension without any Torsion effect.**

TENSIONER NUT & BOLT

❑ Working Principle:

➲ In Tensioner Nut & Bolt, total clamping force is divided into no. of clamping screw. By tightening the clamping screws, a strong clamp force is generated. This clamping force is directed against a thrust washer and bolt having small friction diameter so it will help to create high clamping force with relatively little torque input.

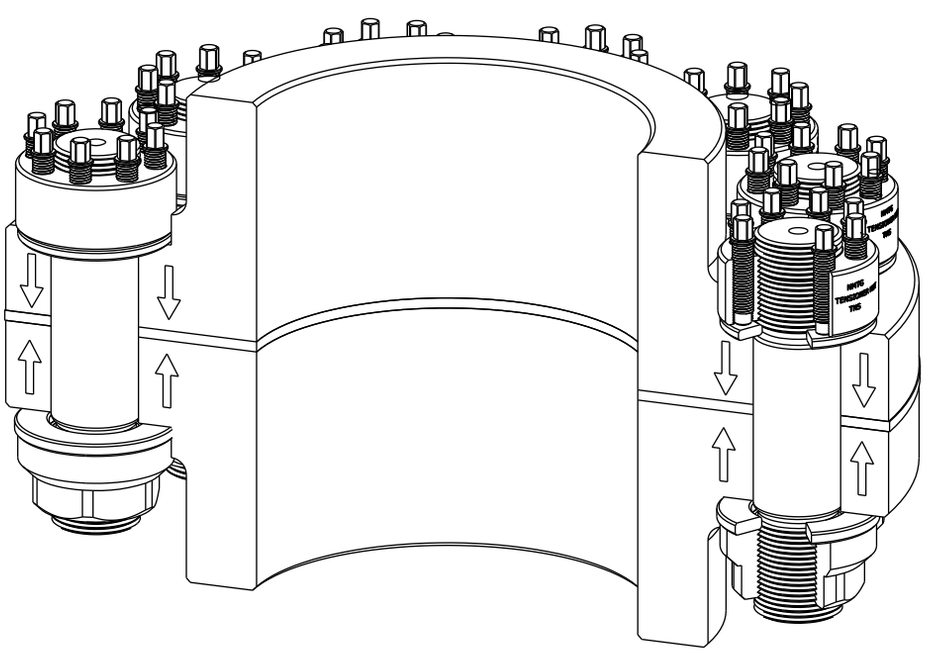
✦ The Clamp Force are transferred through nut body which is positioned on main threaded bolt or stud.

✦ A Thrust washer is hardened so it is able to transfer the force while protecting the flange face.

✦ The Clamp Force of many Clamping screws and the reaction force of the main bolt head create a Strong Clamping Force on the flange.

✦The Clamp Force from the Clamping Screw creates an equally strong Reaction Force in main Bolt.

➲



TENSIONER NUT & BOLT

❑ Advantages:

Reliability
Tensioner nut bolt help to increase fatigue life of bolt joint.

High Preload
Tightening in Pure Tension allows on higher Preload on bolt versus other Tightening method.

Reusability
Preload can be transfer to everywhere under any condition with simple hand tools.

Easy Removal
Removal process is easy so that it will help to reduce down-time with compare to standard bolting system.

Less Requirement of Stuff
Because of only hand tightened tool required, it do not require multiple worker.

Reduction in Downtime
Tensioner bolt joint will never come loose in service. So it will help to reduce downtime.

No Thread Gailing
Even tightening in pure tension method eliminates thread galling that commonly occurs with direct torque method.

Elasticity
Added elasticity help to increase fatigue life of bolted joints.

Space Restriction
Tensioner bolt with multi clamping screws are easy to install in limited space.

Eliminate Vibration Loss
Achieved Preload is higher than Separating Force which will prevent bolt from Vibration loss.

Accuracy
Even tightening will reduce the tendency of leakage or uneven loading of fasteners.

TENSIONER NUT & BOLT

❑ Advantages:

Higher Safety

There is only small hand tighten tool required for installation so safety is higher. So there will be no safety hazards from hydraulic pressure, heavy lifting, large tool, socket break etc.

Design Option

Requirement of space for tensioner bolt joint is less. So it will help to reduction in tooling size, reduction in handling size, material cost etc.

Customized Solution

Customized or Special Solution against any type of Environmental condition

❑ Applications

✦ Mining:

- Girth Gears
- Pinion Gears
- Split Gears
- Gyratory Crusher
- Hoist Motor
- Bolted Segments

✦ Gas Compression:

- Crosshead Jamnuts
- Piston end Nuts
- Connecting Road Nuts
- Compressor Cylinder
- End Plates
- Valve jack bolts

✦ Presses:

- Press Column
- Stamping Press
- Cylinder Ram Bolting
- Tie Roads
- High Pressure Piping
- Anchor Bolts
- Die Cushions

✦ Power Generation:

- Boiler Feed pump head
- Barrel Casing
- Stop valve
- Turbine Inlet Flange
- Feed water heater
- Servo Piston Nuts
- Turbine Runner
- Pelton Turbine nozzles
- Turbine wheel to Shaft Bolting
- Turbine Stop valve

✦ Steel Mills:

- Cranes
- Hydraulic Cylinders
- Pipe Mills
- Universal joints
- Tie rod Nuts
- Coupling Bolts
- Thrust Collars

✦ Oil, Gas & Petrochemical:

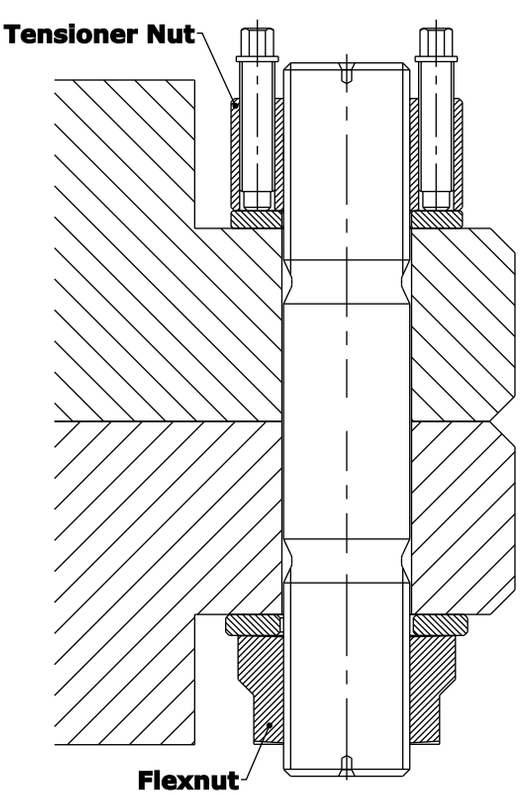
- Mud Pumps
- Reactor Covers
- Heat Exchanger Heads
- Pipe Flanges
- Turbine Control Valves
- Couplings

TENSIONER NUT - Model TNS

◆ Features :

- Used as a Replacement of Simple Convention Hex Nut
- Suitable for all general mechanical application
- TNS can be used on Medium Strength Bolts or Studs & will be fitted in same area as Hex Nut. So, no more space required.
- Max. Preload Capacity up to 8410 kN
- Temperature Range : -40 to 250 °C
  0 to 500 °F
- Ordering Example: **TNS - M16 x 2P**
  (Please provide Pitch when Ordering)

◆ Mounting Example:



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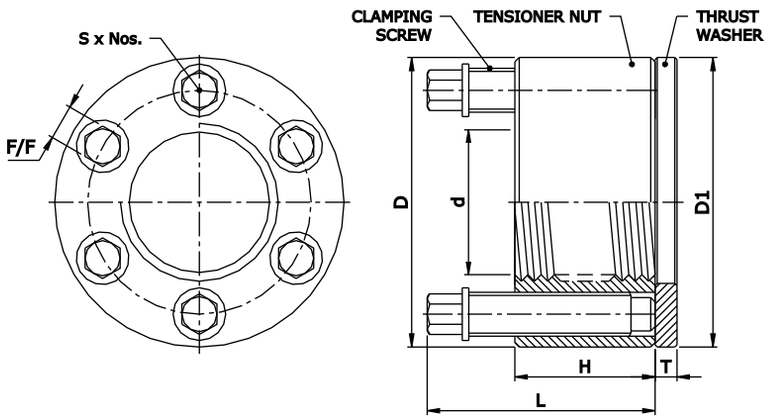
TENSIONER NUT
Model TNS



d	=	Thread Size
D	=	Outer diameter of Tensioner Nut
D1	=	Outer diameter of Thrust washer
L	=	Length of Clamping Screws
H	=	Height of Tensioner Nut
T	=	Width of Thrust Washer
P1, P2, P3	=	Available Pitch of Thread size
s	=	Clamping Screw

All dimensions are in mm
Unless otherwise specified

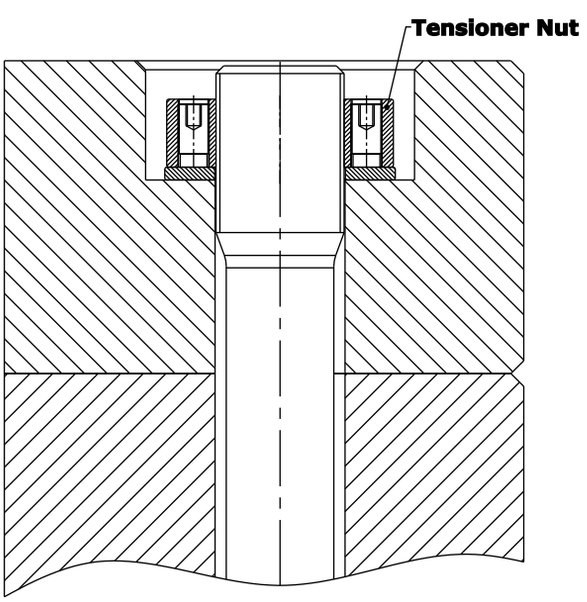
Thread	Available Pitch			Nut Body		Clamping screws			Screw Height	Washer		Total Preload F1 (Nom)	Total Preload F2 (Max)	Tightening Torque (Nom)	Tightening Torque (Max)	Weight
d	P1	P2	P3	D	H	Nos.	S	F/F	L	D1	T	kN	kN	Nm	Nm	kg
M16 x P	2	1.5	1	34	16	4	M6 x 0.75	5	30	32	3	76	95	14	18	0.11
M20 x P	2.5	1.5	1	38	16	6	M6 x 0.75	5	30	38	4	114	142	14	18	0.14
M22 x P	2.5	1.5	1	41	16	6	M6 x 0.75	5	30	41	4	114	142	14	18	0.16
M24 x P	3	2	1.5	44	16	8	M6 x 0.75	5	30	43	4	152	190	14	18	0.19
M27 x P	3	2	1.5	50	24	6	M8 x 1	6	40	50	5	219	286	36	48	0.35
M30 x P	3.5	2	1.5	53	24	6	M8 x 1	6	40	53	5	219	286	36	48	0.37
M33 x P	3.5	2	1.5	59	24	8	M8 x 1	6	40	59	5	292	382	36	48	0.48
M36 x P	4	3	1.5	66	32	6	M10 x 1.25	8	52	66	5	358	474	74	99	0.76
M39 x P	4	3	1.5	70	32	8	M10 x 1.25	8	52	70	5	477	632	74	99	0.90
M42 x P	4.5	3	1.5	75	32	8	M10 x 1.25	8	52	73	5	477	632	74	99	1.01
M45 x P	4.5	3	1.5	83	38	8	M12 x 1.25	10	62	81	6	718	951	133	176	1.48
M48 x P	5	3	1.5	85	38	8	M12 x 1.25	10	62	85	6	718	951	133	176	1.50
M52 x P	5	3	2	94	38	8	M12 x 1.25	10	62	89	6	718	951	133	176	1.80
M56 x P	5.5	4	2	100	38	8	M12 x 1.25	10	62	95	6	718	951	133	176	2.00
M60 x P	5.5	4	2	107	38	10	M12 x 1.25	10	62	100	6	898	1188	133	176	2.30
M64 x P	6	4	2	113	53	8	M16 x 1.5	14	84	112	8	1305	1727	322	426	3.65
M68 x P	6	4	2	117	53	8	M16 x 1.5	14	84	117	8	1305	1727	322	426	3.85
M72 x P	6	4	2	120	56	8	M16 x 1.5	14	84	120	8	1305	1727	322	426	4.00
M76 x P	6	4	2	132	56	12	M16 x 1.5	14	84	127	8	1957	2590	322	426	5.10
M80 x P	6	4	2	132	56	12	M16 x 1.5	14	84	127	8	1957	2590	322	426	4.80
M85 x P	6	4	2	137	56	12	M16 x 1.5	14	84	137	8	1957	2590	322	426	5.10
M90 x P	6	4	2	145	59	16	M16 x 1.5	14	91	140	8	2609	3454	322	426	6.00
M100 x P	6	4	2	164	61	16	M16 x 1.5	14	91	152	8	2609	3454	322	426	7.80
M110 x P	6	4	2	177	79	12	M20 x 1.5	17	115	172	10	3270	4205	667	857	11.40
M120 x P	6	4	2	189	81	16	M20 x 1.5	17	115	179	10	4361	5606	667	857	13.00
M125 x P	6	4	2	194	81	16	M20 x 1.5	17	115	190	10	4361	5606	667	857	13.50
M130 x P	6	4	2	205	94	18	M20 x 1.5	17	130	202	10	4906	6307	667	857	17.50
M140 x P	6	4	2	215	94	20	M20 x 1.5	17	130	215	10	5451	7008	667	857	18.70
M150 x P	6	4	2	225	94	20	M20 x 1.5	17	130	225	12	5451	7008	667	857	20.00
M160 x P	6	4	-	234	107	24	M20 x 1.5	17	150	234	12	6541	8410	667	857	24.10

TENSIONER NUT - Model TNG

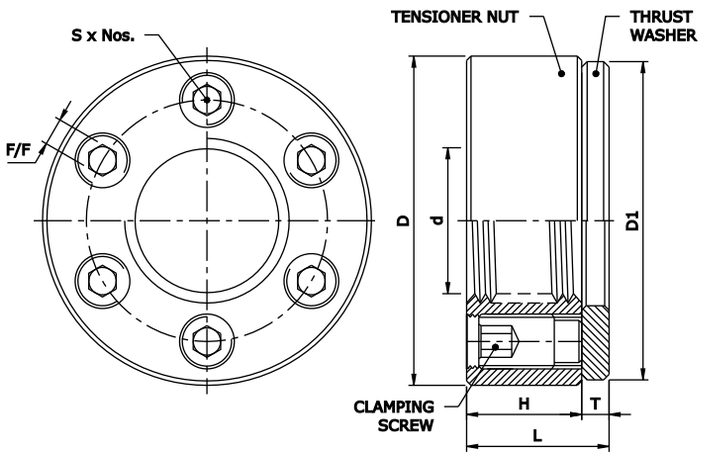
◆ Features :

- Compact Jamnut
- TNG is used for applications where limited headroom or space & limited thread engagement are required.
- Max. Preload Capacity up to 2100 kN.
- Temperature Range : -10 to 250 °C
  0 to 500 °F
- Ordering Example: **TNG - M20 x 1.5P**
  (Please provide Pitch when Ordering)

◆ Mounting Example:



TENSIONER NUT
Model TNG



d = Thread size
D = Outer diameter of Tensioner Nut
D1 = Outer diameter of Thrust washer
L = Total height of Nut
H = Height of Tensioner Nut
T = Width of Thrust Washer
P1, P2, P3 = Available Pitch on Thread size
s = Clamping Screw

All dimensions are in mm
Unless otherwise specified

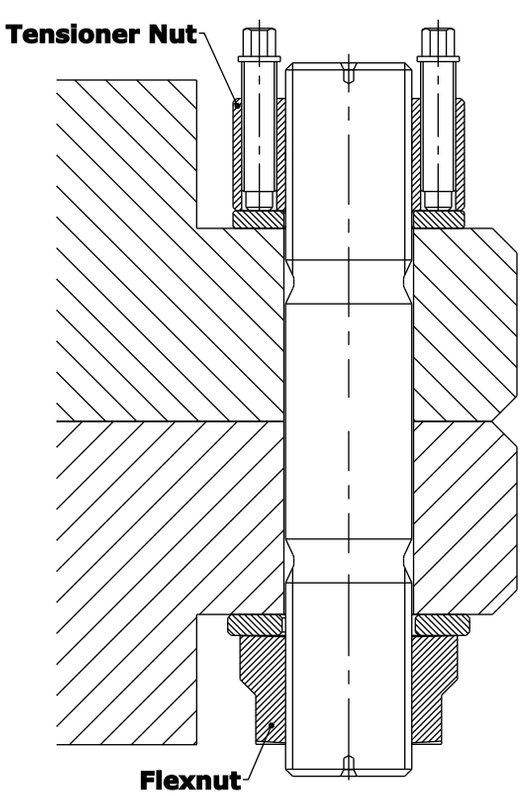
Thread	Available Pitch			Nut Body		Clamping screws			Total Height	Washer		Total Preload F1 (Nom)	Total Preload F2 (Max)	Tightening Torque (Nom)	Tightening Torque (Max)	Weight
d	P1	P2	P3	D	H	Nos.	S	F/F	L	D1	T	kN	kN	Nm	Nm	kg
M20 x P	2.5	1.5	1	43	15	6	M8 x 1	4	19	43	4	67	94	11	16	0.15
M22 x P	2.5	1.5	1	47	16	8	M8 x 1	4	21	45	5	82	107	10	13	0.20
M24 x P	3	2	1.5	50	16	8	M8 x 1	4	21	48	5	89	125	11	16	0.20
M27 x P	3	2	1.5	53	16	10	M8 x 1	4	21	50	5	103	134	10	13	0.25
M30 x P	3.5	2	1.5	60	21	8	M10 x 1.25	5	26	59	5	134	184	21	29	0.40
M33 x P	3.5	2	1.5	63	22	10	M10 x 1.25	5	27	63	5	160	209	20	26	0.40
M36 x P	4	3	1.5	69	28	8	M12 x 1.25	6	33	69	5	193	251	36	47	0.65
M39 x P	4	3	1.5	75	28	10	M12 x 1.25	6	33	75	5	262	346	39	51	0.80
M42 x P	4.5	3	1.5	81	28	12	M12 x 1.25	6	33	78	5	327	427	40	53	0.90
M45 x P	4.5	3	1.5	88	28	12	M12 x 1.25	6	34	81	6	327	427	40	53	1.00
M48 x P	5	3	1.5	101	31	8	M16 x 1.5	8	37	94	6	381	502	94	124	1.65
M52 x P	5	3	2	101	33	8	M16 x 1.5	8	39	94	6	381	502	94	124	1.65
M56 x P	5.5	4	2	113	33	12	M16 x 1.5	8	39	100	6	571	777	94	128	2.05
M60 x P	5.5	4	2	117	33	12	M16 x 1.5	8	39	106	6	571	777	94	128	2.15
M64 x P	6	4	2	119	33	12	M16 x 1.5	8	41	120	8	571	777	94	128	2.45
M68 x P	6	4	2	138	38	12	M20 x 1.5	10	46	125	8	742	1001	151	204	3.60
M72 x P	6	4	2	151	38	12	M20 x 1.5	10	46	125	8	927	1224	189	249	4.50
M76 x P	6	4	2	151	38	12	M20 x 1.5	10	46	138	8	890	1149	181	234	4.35
M80 x P	6	4	2	158	38	12	M20 x 1.5	10	48	145	10	927	1224	189	249	4.95
M90 x P	6	4	2	170	51	12	M24 x 2	12	61	160	10	1207	1575	296	387	7.20
M100 x P	6	4	2	177	53	12	M24 x 2	12	63	180	10	1207	1575	296	387	7.75
M110 x P	6	4	2	190	59	16	M24 x 2	12	69	190	10	1610	2100	296	387	9.25
M120 x P	6	4	2	202	59	16	M24 x 2	12	69	202	10	1610	2100	296	387	10.25
M125 x P	6	4	2	205	59	16	M24 x 2	12	69	202	10	1610	2100	296	387	10.25
M130 x P	6	4	2	210	59	16	M24 x 2	12	69	202	10	1610	2100	296	387	10.50
M140 x P	6	4	2	221	59	16	M24 x 2	12	71	215	12	1610	2100	296	387	11.75
M150 x P	6	4	2	230	59	16	M24 x 2	12	71	225	12	1610	2100	296	387	12.25
M160 x P	6	4	-	240	59	16	M24 x 2	12	71	240	12	1610	2100	296	387	13.25

TENSIONER NUT - Model TNM

◆ Features :

- TNM Tensioner Nuts are used as a Replacement of Standard Hex Nuts.
- Medium Temperature Tensioner Nut
- Temperature range : -10° to 350 °C
  -50° to 650 °F
- Max. Preload Capacity up to 3503 kN.
- Commonly used in Presser vessel designs.
- Ordering Example: **TNM - M24 x 3P**
  (Please provide Pitch when Ordering)

◆ Mounting Example:



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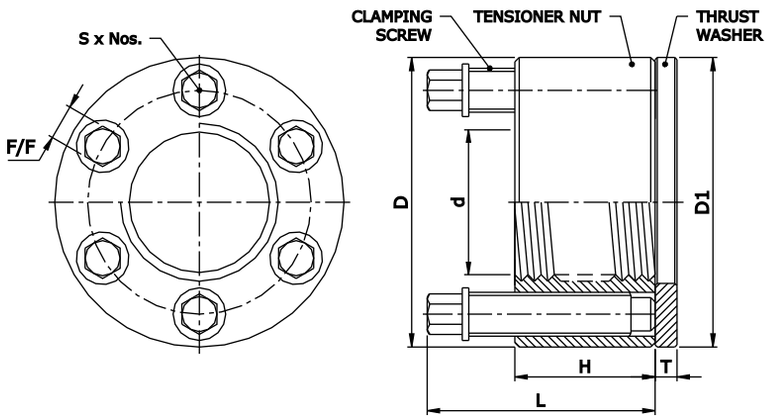
TENSIONER NUT
Model TNM



d = Thread Size
D = Outer diameter of Tensioner Nut
D1 = Outer diameter of Thrust washer
L = Length of Clamping Screws
H = Height of Tensioner Nut
T = Width of Thrust Washer
P1, P2, P3 = Available Pitch of Thread size
s = Clamping Screw

All dimensions are in mm
Unless otherwise specified

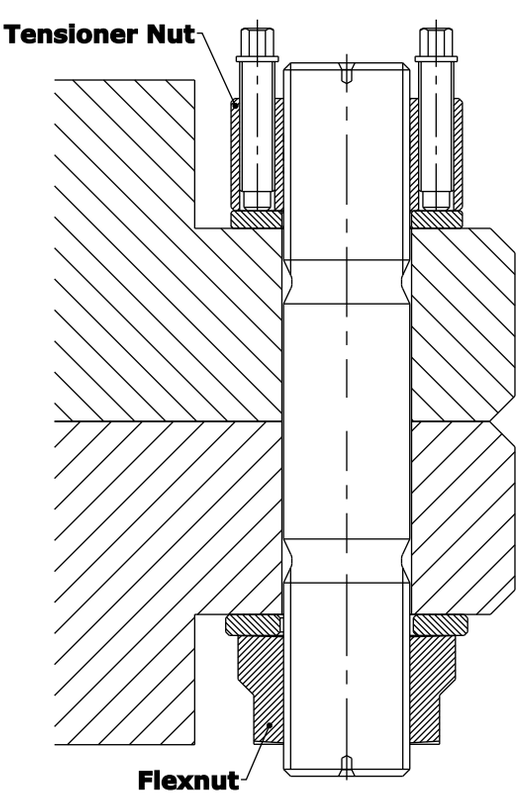
Thread	Available Pitch			Nut Body		Clamping screws			Screw Height	Washer		Total Preload F	Tightening Torque	Weight
d	P1	P2	P3	D	H	Nos.	S	F/F	L	D1	T	kN	Nm	kg
M20 x P	2.5	1.5	1	38	16	6	M6 x 0.75	5	30	38	4	77	10	0.14
M22 x P	2.5	1.5	1	41	16	6	M6 x 0.75	5	30	41	4	95	12	0.16
M24 x P	3	2	1.5	44	16	8	M6 x 0.75	5	30	43	4	111	10	0.19
M27 x P	3	2	1.5	50	24	6	M8 x 1	6	40	50	5	147	25	0.35
M30 x P	3.5	2	1.5	53	24	6	M8 x 1	6	40	53	5	179	30	0.37
M33 x P	3.5	2	1.5	59	24	8	M8 x 1	6	40	59	5	225	28	0.48
M36 x P	4	3	1.5	66	32	6	M10 x 1.25	8	52	66	5	263	55	0.76
M39 x P	4	3	1.5	70	32	8	M10 x 1.25	8	52	70	5	307	48	0.90
M42 x P	4.5	3	1.5	75	32	8	M10 x 1.25	8	52	73	5	351	55	1.01
M45 x P	4.5	3	1.5	83	38	8	M12 x 1.25	10	62	81	6	429	80	1.48
M48 x P	5	3	1.5	85	38	8	M12 x 1.25	10	62	85	6	462	86	1.50
M52 x P	5	3	2	94	38	8	M12 x 1.25	10	62	89	6	561	104	1.80
M56 x P	5.5	4	2	100	38	8	M12 x 1.25	10	62	95	6	594	110	2.00
M60 x P	5.5	4	2	107	38	10	M12 x 1.25	10	62	100	6	742	110	2.30
M64 x P	6	4	2	113	53	8	M16 x 1.5	14	84	112	8	839	207	3.65
M72 x P	6	4	2	120	56	8	M16 x 1.5	14	84	120	8	1079	266	4.00
M76 x P	6	4	2	132	56	12	M16 x 1.5	14	84	127	8	1259	207	5.10
M80 x P	6	4	2	132	56	12	M16 x 1.5	14	84	127	8	1349	222	4.80
M90 x P	6	4	2	145	59	16	M16 x 1.5	14	91	140	8	1798	222	6.00
M100 x P	6	4	2	164	61	16	M16 x 1.5	14	91	152	8	2158	266	7.80
M110 x P	6	4	2	177	79	12	M20 x 1.5	17	115	172	10	2627	535	11.40
M120 x P	6	4	2	189	81	16	M20 x 1.5	17	115	179	10	3308	506	13.00
M125 x P	6	4	2	194	81	16	M20 x 1.5	17	115	190	10	3503	535	13.50

TENSIONER NUT - Model TNMT

◆ Features :

- TNMT Tensioner Nuts are intended for use where space is limited and as a Replacement of Castle Nuts
- Also used where space is limited in terms of diameter
- Medium Temperature Tensioner Nut
- Temperature range : -10° to 350 °C
- -50° to 650 °F
- Max. Preload Capacity up to 2158 kN.
- Ordering Example: **TNMT - M24 x 3P**
  (Please provide Pitch when Ordering)

◆ Mounting Example:



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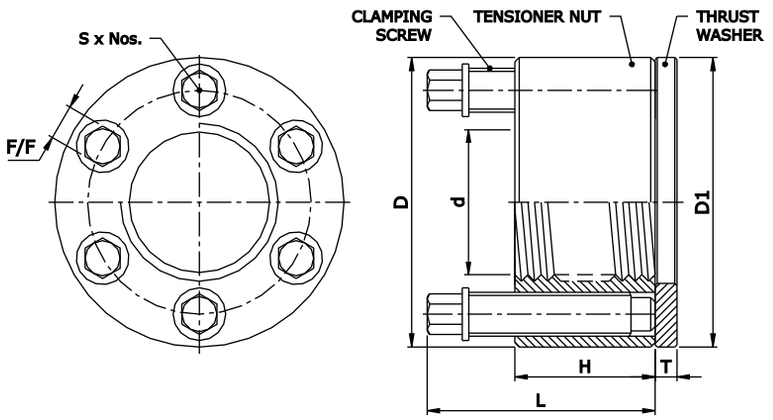
TENSIONER NUT
Model TNMT



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L = Length of Clamping Screws
H = Height of Tensioner Nut
T = Width of Thrust Washer
P1, P2, P3 = Available Pitch of Thread size
s = Clamping Screw

All dimensions are in mm
Unless otherwise specified

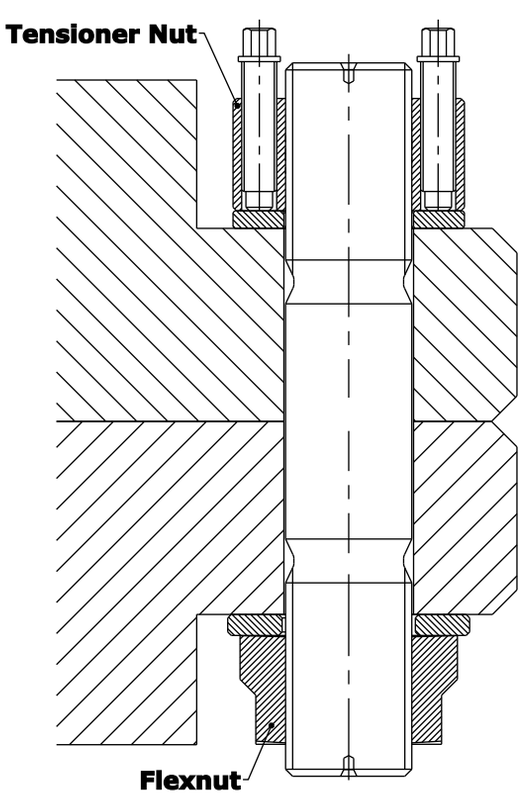
Thread	Available Pitch			Nut Body		Clamping screws			Screw Height	Washer		Total Preload F	Tightening Torque	Weight
d	P1	P2	P3	D	H	Nos.	S	F/F	L	D1	T	kN	Nm	kg
M24 x P	3	2	1.5	41	28	8	M6 x 0.75	5	40	40	3	115	11	0.20
M27 x P	3	2	1.5	43	28	10	M6 x 0.75	5	40	43	3	144	11	0.25
M30 x P	3.5	2	1.5	46	28	12	M6 x 0.75	5	40	46	3	178	11	0.25
M33 x P	3.5	2	1.5	49	28	14	M6 x 0.75	5	40	49	3	216	12	0.30
M36 x P	4	3	1.5	53	28	16	M6 x 0.75	5	40	53	6	256	12	0.35
M39 x P	4	3	1.5	61	38	10	M8 x 1	6	53	61	4	302	30	0.60
M42 x P	4.5	3	1.5	64	38	12	M8 x 1	6	53	64	4	362	30	0.65
M45 x P	4.5	3	1.5	67	38	14	M8 x 1	6	53	67	6	423	30	0.75
M48 x P	5	3	1.5	72	38	14	M8 x 1	6	53	70	10	442	32	0.90
M52 x P	5	3	2	79	46	12	M10 x 1.25	8	64	78	5	559	58	1.25
M56 x P	5.5	4	2	84	46	14	M10 x 1.25	8	64	82	10	653	58	1.45
M60 x P	5.5	4	2	90	46	16	M10 x 1.25	8	64	86	14	746	58	1.75
M64 x P	6	4	2	96	62	12	M12 x 1.25	10	84	96	18	841	104	2.75
M72 x P	6	4	2	106	62	16	M12 x 1.25	10	84	105	6	1122	104	2.80
M76 x P	6	4	2	114	62	16	M12 x 1.25	10	84	112	12	1188	110	3.50
M80 x P	6	4	2	118	62	18	M12 x 1.25	10	84	112	15	1336	110	3.70
M90 x P	6	4	2	135	80	14	M16 x 1.5	14	108	135	9	1783	251	6.10
M100 x P	6	4	2	149	80	16	M16 x 1.5	14	108	144	19	2158	266	7.85

TENSIONER NUT - Model TNY

◆ Features :

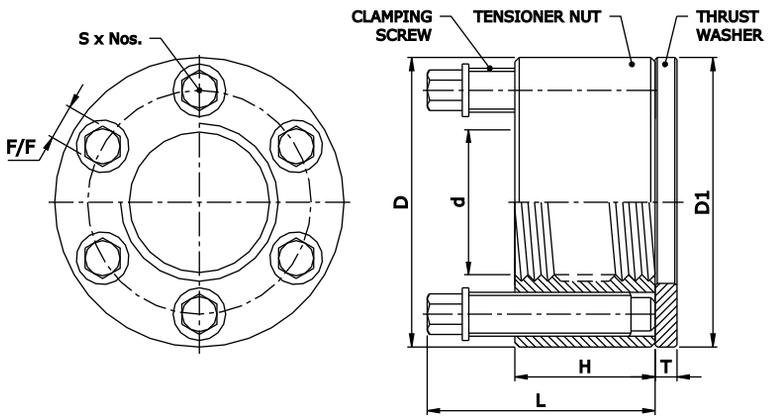
- TNY Tensioner Nuts are used as Replacement of Standard Hex Nut, similar to TNS but for Higher Strength.
- Suitable for High Strength Bolts & Studs.
- Medium Temperature Tensioner Nut
- Temperature range : -40° to 250 °C
- -50° to 500 °F
- Lower Temperature on demand
- Max. Preload Capacity up to 8005 kN.
- Ordering Example: **TNY - M16 x 2P**
  (Please provide Pitch when Ordering)

◆ Mounting Example:



NMTG

TENSIONER NUT
Model TNY

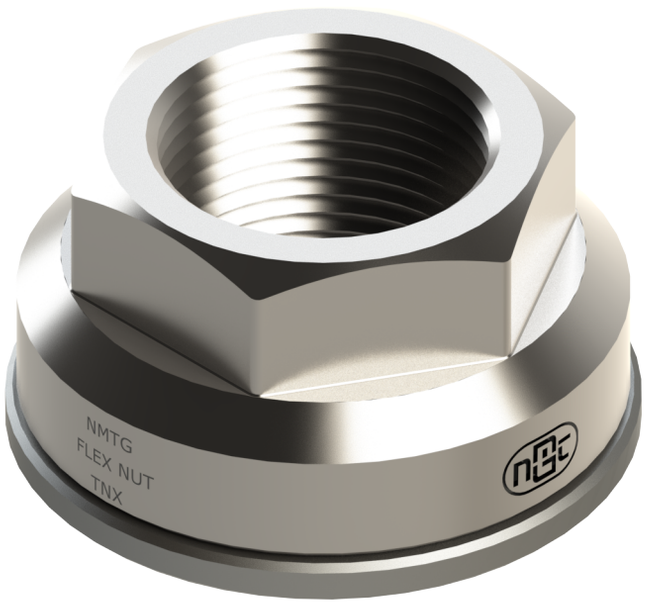


d = Thread Size
D = Outer diameter of Tensioner Nut
D1 = Outer diameter of Thrust washer
L = Length of Clamping Screws
H = Height of Tensioner Nut
T = Width of Thrust Washer
P1, P2, P3 = Available Pitch of Thread size
s = Clamping Screw

All dimensions are in mm
Unless otherwise specified

Thread	Available Pitch			Nut Body		Clamping screws			Screw Height	Washer		Total Preload F1 (Nom)	Total Preload F2 (Max)	Tightening Torque (Nom)	Tightening Torque (Max)	Weight
d	P1	P2	P3	D	H	Nos.	S	F/F	L	D1	T	kN	kN	Nm	Nm	kg
M16 x P	2	1.5	1	34	16	6	M6x0.75	5	30	32	3	114	144	14	18	0.12
M20 x P	2.5	1.5	1	38	17	8	M6x0.75	5	30	38	4	152	192	14	18	0.15
M22 x P	2.5	1.5	1	41	17	8	M6x0.75	5	30	41	4	152	192	14	18	0.17
M24 x P	3	2	1.5	47	24	6	M8x1	6	40	47	4	225	289	37	48	0.30
M27 x P	3	2	1.5	51	24	8	M8x1	6	40	50	5	299	385	37	48	0.37
M30 x P	3.5	2	1.5	54	24	8	M8x1	6	40	53	5	299	385	37	48	0.38
M33 x P	3.5	2	1.5	62	32	6	M10x1.25	8	52	61	5	351	451	73	94	0.70
M36 x P	4	3	1.5	66	32	8	M10x1.25	8	52	66	5	468	601	73	94	0.79
M39 x P	4	3	1.5	72	32	10	M10x1.25	8	52	70	5	585	752	73	94	0.97
M42 x P	4.5	3	1.5	76	32	12	M10x1.25	8	52	73	5	702	902	73	94	1.10
M45 x P	4.5	3	1.5	81	38	8	M12x1.25	10	62	80	6	704	905	131	168	1.40
M48 x P	5	3	1.5	85	38	10	M12x1.25	10	62	85	6	880	1131	131	168	1.54
M52 x P	5	3	2	94	38	12	M12x1.25	10	62	90	6	1056	1357	131	168	1.80
M56 x P	5.5	4	2	98	38	12	M12x1.25	10	62	94	6	1056	1357	131	168	1.93
M60 x P	5.5	4	2	107	59	8	M16x1.5	14	91	106	8	1278	1644	315	405	3.70
M64 x P	6	4	2	113	59	10	M16x1.5	14	91	112	8	1598	2055	315	405	4.10
M68 x P	6	4	2	117	59	12	M16x1.5	14	91	117	8	1918	2466	315	405	4.30
M72 x P	6	4	2	121	59	12	M16x1.5	14	91	120	8	1918	2466	315	405	4.50
M76 x P	6	4	2	132	61	16	M16x1.5	14	91	127	8	2557	3287	315	405	5.60
M80 x P	6	4	2	133	61	16	M16x1.5	14	91	127	8	2557	3287	315	405	5.40
M85 x P	6	4	2	139	61	16	M16x1.5	14	91	137	8	2557	3287	315	405	5.80
M90 x P	6	4	2	145	61	16	M16x1.5	14	91	140	8	2557	3287	315	405	6.30
M100 x P	6	4	2	157	61	16	M16x1.5	14	91	152	8	2557	3287	315	405	7.00
M110 x P	6	4	2	177	61	20	M16x1.5	14	91	163	8	3196	4109	315	405	9.00
M120 x P	6	4	2	189	81	18	M20x1.5	17	115	179	10	4803	6004	653	816	13.10
M125 x P	6	4	2	194	81	18	M20x1.5	17	115	190	10	4803	6004	653	816	13.70
M130 x P	6	4	2	205	94	20	M20x1.5	17	130	202	10	5337	6671	653	816	17.60
M140 x P	6	4	2	215	94	22	M20x1.5	17	130	215	10	5870	7338	653	816	18.89
M150 x P	6	4	2	225	94	22	M20x1.5	17	130	225	12	5870	7338	653	816	20.10
M160 x P	6	4	-	226	107	24	M20x1.5	17	150	220	10	6404	8005	653	816	20.80

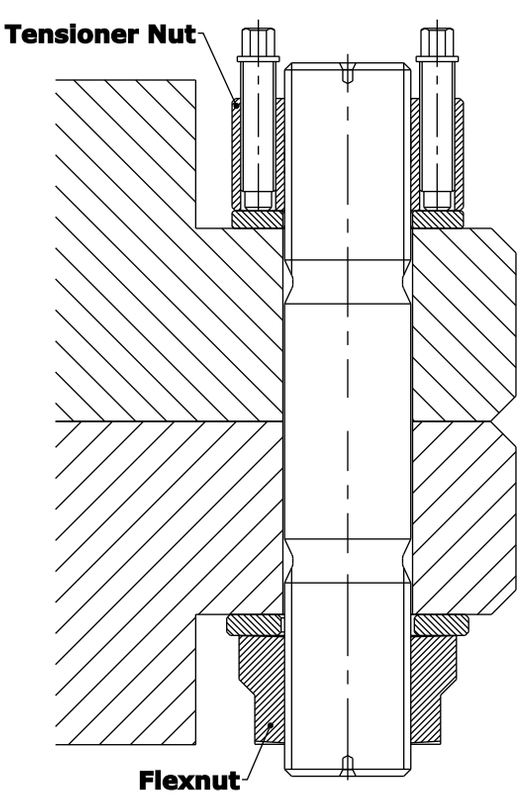
TENSIONER NUT - Model TNX



◆ Features :

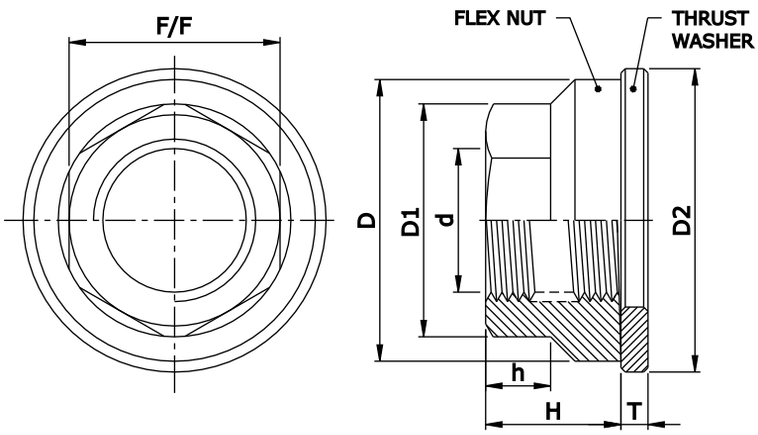
- TNX is Reactive type of Flex Nut used for Through hole Application
- Flex Nuts are used Opposite to Tensioner Nuts. They are never Torqued directly to achieve Preload.
- They are ideal for reducing Stress Concentration on High Strength Bolts and for adding Flexibility to Bolted or Gasketed Joints.
- They are suitable in Combination with TNS or TB8.
- Temperature range : -10 to 250 °C
  0 to 500 °F
- Max. Preload Capacity up to 8400 kN.
- Ordering Example: **TNX - M20 x 1.5P**
  (Please provide Pitch when Ordering)

◆ Mounting Example:



NMTG

TENSIONER NUT
Model TNX

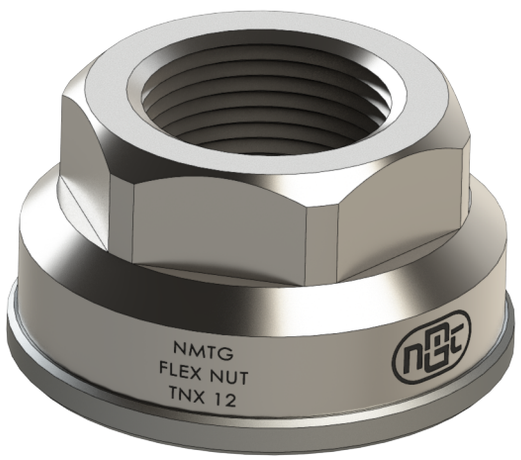


d = Thread Size
D = Outer diameter of Tensioner Nut
D2 = Diameter of Thrust Washer
H = Height of Nutbody
T = Width of Thrust Washer
P1, P2, P3 = Available Pitch of Thread size
SW = F/F distance

- All dimensions are in mm Unless otherwise specified
- * Round shape instead of Hex

Thread d	Available Pitch			Nut body					Washer		Preload Capacity kN	Weight kg
	P1	P2	P3	D	D1	H	h	SW	D2	T		
M20 x P	2.5	1.5	1	35	30	17	8	27	38	4	138	0.10
M24 x P	3	2	1.5	42	37	20	10	33	45	4	184	0.15
M27 x P	3	2	1.5	47	40	23	11	36	50	5	281	0.20
M30 x P	3.5	2	1.5	52	43	25	12	39	56	5	282	0.25
M33 x P	3.5	2	1.5	57	47	28	13	42	63	6	374	0.40
M36 x P	4	3	1.5	62	53	31	14	48	69	6	453	0.50
M39 x P	4	3	1.5	66	56	33	15	51	72	6	601	0.60
M42 x P	4.5	3	1.5	73	62	36	17	56	76	6	601	0.75
M45 x P	4.5	3	1.5	77	64	38	18	57	81	6	921	0.85
M48 x P	5	3	1.5	83	71	41	19	64	86	6	921	1.10
M52 x P	5	3	2	88	74	44	21	67	94	6	955	1.25
M56 x P	5.5	4	2	97	80	48	22	72	100	6	1103	1.60
M60 x P	5.5	4	2	105	84	51	23	76	110	8	1290	2.05
M64 x P	6	4	2	111	88	54	26	80	120	8	1665	2.35
M72 x P	6	4	2	125	98	61	29	90	130	8	1665	3.15
M76 x P	6	4	2	132	109	64	30	*	138	10	2492	4.20
M80 x P	6	4	2	139	120	68	32	*	145	10	2492	5.20
M90 x P	6	4	2	156	135	76	36	*	160	10	3329	7.10
M100 x P	6	4	2	173	150	85	40	*	180	10	3329	9.00
M110 x P	6	4	2	191	165	94	44	*	202	10	4137	13.00
M120 x P	6	4	2	208	180	102	48	*	215	12	5516	16.75
M125 x P	6	4	2	218	188	108	51	*	227	12	5516	19.50
M130 x P	6	4	2	226	195	111	52	*	234	12	6206	21.25
M140 x P	6	4	2	243	210	119	56	*	253	12	6895	26.25
M150 x P	6	4	2	260	225	127	60	*	271	12	6895	31.75
M160 x P	6	4	-	278	240	136	64	*	290	12	8274	38.75

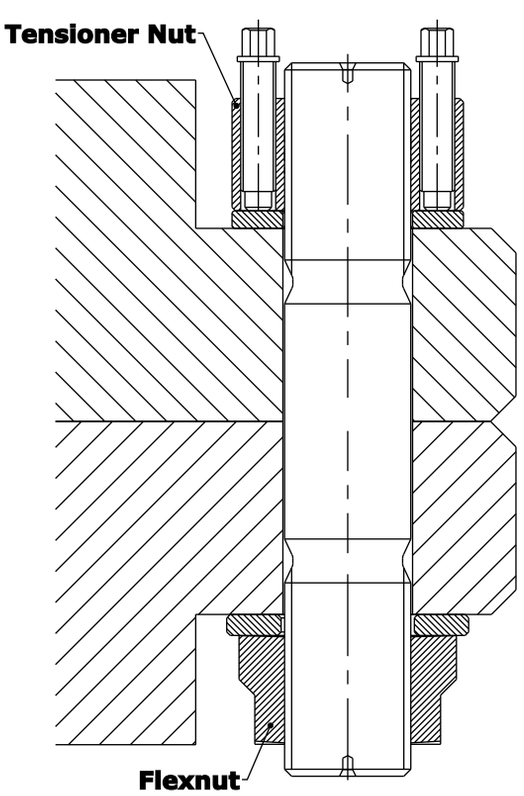
TENSIONER NUT - Model TNX12



◆ Features :

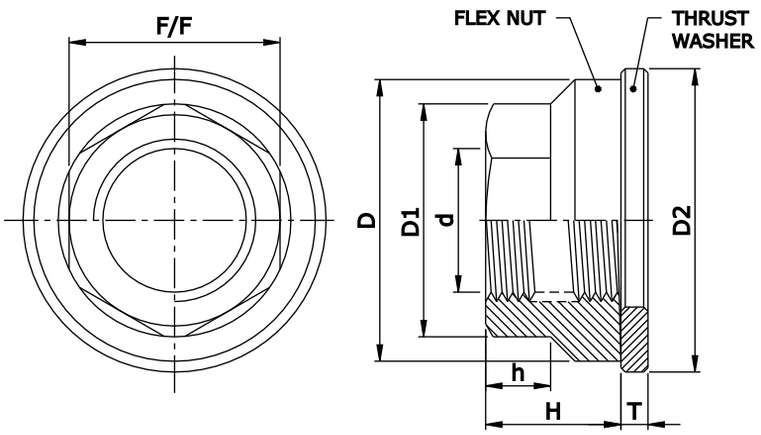
- TNX12 is Reactive type of Flex Nut used for Through hole Application same as TNX but for Higher Strength.
- Flex Nuts are used Opposite to Tensioner Nuts. They are never Torqued directly to achieve Preload.
- They are ideal for reducing Stress Concentration on High Strength Bolts and for adding Flexibility to Bolted or Gasketed Joints.
- They are suitable in Combination with TNY or TB12.
- Temperature range : -40 to 250 °C
  -50 to 500 °F
- Max. Preload Capacity up to 8400 kN.
- Ordering Example: **TNX12 - M20 x 1.5P**
  (Please provide Pitch when Ordering)

◆ Mounting Example:



NMTG

TENSIONER NUT
Model TNX12



d = Thread Size
D = Outer diameter of Tensioner Nut
D2 = Diameter of Thrust Washer
H = Height of Nutbody
T = Width of Thrust Washer
P1, P2, P3 = Available Pitch of Thread size
SW = F/F distance

- All dimensions are in mm Unless otherwise specified
- * Round shape instead of Hex

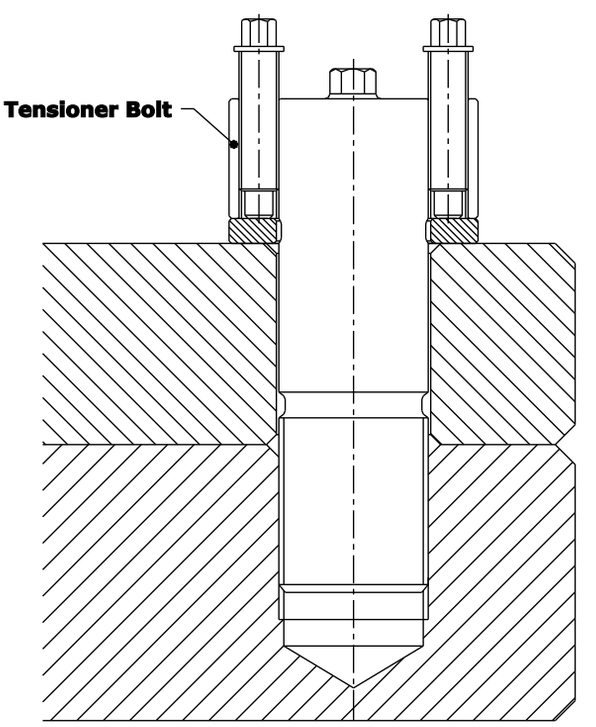
Thread d	Available Pitch			Nut body					Washer		Preload Capacity kN	Weight kg
	P1	P2	P3	D	D1	H	h	SW	D2	T		
M20 x P	2.5	1.5	1	35	30	20	8	27	38	4	184	0.10
M24 x P	3	2	1.5	42	37	24	10	33	45	4	281	0.20
M27 x P	3	2	1.5	47	40	27	11	36	50	5	374	0.25
M30 x P	3.5	2	1.5	52	43	30	12	39	56	5	421	0.35
M33 x P	3.5	2	1.5	57	47	33	13	42	63	6	601	0.45
M36 x P	4	3	1.5	62	53	36	14	48	69	6	665	0.60
M39 x P	4	3	1.5	66	56	39	15	51	72	6	749	0.70
M42 x P	4.5	3	1.5	73	62	42	17	56	76	6	901	0.90
M45 x P	4.5	3	1.5	77	64	45	18	57	81	6	1152	1.00
M48 x P	5	3	1.5	83	71	48	19	64	86	6	1152	1.30
M52 x P	5	3	2	88	74	52	21	67	94	6	1379	1.50
M56 x P	5.5	4	2	97	80	56	22	72	100	6	1379	1.95
M60 x P	5.5	4	2	105	84	60	23	76	106	8	2069	2.45
M64 x P	6	4	2	111	88	64	26	80	120	8	2069	2.85
M72 x P	6	4	2	125	98	72	29	90	130	8	2492	3.90
M76 x P	6	4	2	132	109	76	30	*	138	10	3329	5.05
M80 x P	6	4	2	139	120	80	32	*	145	10	3329	6.15
M90 x P	6	4	2	156	135	90	36	*	160	10	4137	8.50
M100 x P	6	4	2	173	150	100	40	*	180	10	4827	12.50
M110 x P	6	4	2	191	165	110	44	*	202	10	5516	15.50
M120 x P	6	4	2	208	180	120	48	*	215	12	6206	20.00
M125 x P	6	4	2	218	188	125	51	*	227	12	6206	22.75
M130 x P	6	4	2	226	195	111	52	*	234	12	6895	21.25
M140 x P	6	4	2	243	210	119	56	*	253	12	7585	26.25
M150 x P	6	4	2	260	225	127	60	*	271	12	7585	31.75
M160 x P	6	4	-	278	240	136	64	*	290	12	8274	38.75

TENSIONER BOLT - Model TB8

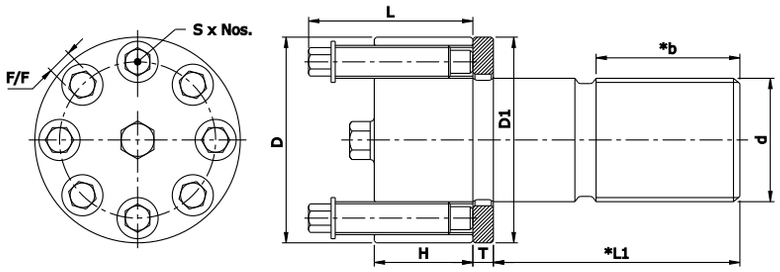
◆ Features :

- TB8 Tensioner Bolts most often used for applications with tapped holes.
- Additionally, the diameter of the Tensioner Nut head is smaller than a nut type Tensioner, allowing it to fit tighter areas.
- Temperature range :-10 to 250 °C
  0 to 500 °F
- Max. Preload Capacity up to 7008 kN.
- Equivalent nut-style tensioner: TNS
- Bolting applications in demanding industries.
- b = 2 x d
- Ordering Example: **TB8 - M16 x 2P**
  (Please provide Pitch & L1 when Ordering)

◆ Mounting Example:



TENSIONER BOLT
Model TB8



d = Thread Size
D = Outer diameter of Tensioner Nut
D1 = Outer diameter of Thrust washer
L = Length of Clamping Screws with washer
H = Height of Tensioner Nut
T = Width of Thrust Washer
P1, P2, P3 = Available Pitch of Thread size
S = Clamping Screw

All dimensions are in mm
Unless otherwise specified

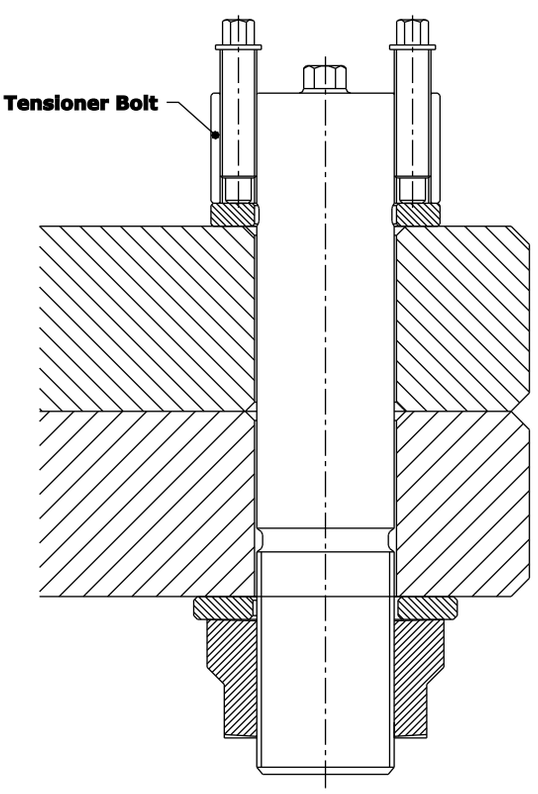
Thread	Available Pitch			Bolt Body		Clamping screws			Screw Height	Washer		Total Preload		Tightening Torque	
d	P1	P2	P3	D	H	Nos.	S	F/F	L	D1	T	F1 (Nom) kN	F2 (Max) kN	(Nom) Nm	(Max) Nm
M16 x P	2	1.5	1	31	18	4	M6x0.75	5	29	30	3	76	101	14	19
M20 x P	2.5	1.5	1	35	18	6	M6x0.75	5	29	35	4	114	152	14	19
M24 x P	3	2	1.5	41	18	8	M6x0.75	5	29	41	4	152	202	14	19
M27 x P	3	2	1.5	45	23	6	M8x1	6	40	45	5	202	270	34	45
M30 x P	3.5	2	1.5	50	23	6	M8x1	6	40	50	5	219	286	36	48
M33 x P	3.5	2	1.5	57	28	6	M10x1.25	8	47	57	5	290	395	60	82
M36 x P	4	3	1.5	60	28	6	M10x1.25	8	47	60	5	342	448	71	93
M39 x P	4	3	1.5	63	28	8	M10x1.25	8	47	63	5	421	562	66	88
M42 x P	4.5	3	1.5	66	28	8	M10x1.25	8	47	66	5	491	618	77	96
M45 x P	4.5	3	1.5	75	37	8	M12x1.25	10	58	75	6	548	632	85	99
M48 x P	5	3	1.5	78	37	8	M12x1.25	10	58	78	6	634	845	118	157
M52 x P	5	3	2	82	37	10	M12x1.25	10	58	82	6	792	1056	118	157
M56 x P	5.5	4	2	86	37	10	M12x1.25	10	58	86	6	858	1122	127	167
M60 x P	5.5	4	2	90	37	12	M12x1.25	10	58	90	6	1030	1347	127	167
M64 x P	6	4	2	103	46	8	M16x1.5	14	75	103	8	959	1343	236	331
M68 x P	6	4	2	107	46	8	M16x1.5	14	75	107	8	1151	1535	284	378
M72 x P	6	4	2	111	46	10	M16x1.5	14	75	111	8	1319	1679	260	331
M76 x P	6	4	2	116	46	12	M16x1.5	14	75	116	8	1439	2015	236	331
M80 x P	6	4	2	120	56	12	M16x1.5	14	84	120	8	1583	2159	260	355
M90 x P	6	4	2	130	56	16	M16x1.5	14	84	130	8	2111	2878	260	355
M100 x P	6	4	2	148	60	12	M20x1.5	17	89	148	10	2570	3504	524	714
M110 x P	6	4	2	158	60	14	M20x1.5	17	89	158	10	2998	3815	524	667
M120 x P	6	4	2	170	64	16	M20x1.5	17	95	170	10	3426	4672	524	714
M125 x P	6	4	2	175	64	16	M20x1.5	17	95	175	10	3738	4984	571	762
M130 x P	6	4	2	180	76	18	M20x1.5	17	108	180	10	4205	5606	571	762
M140 x P	6	4	2	190	76	20	M20x1.5	17	108	190	10	4672	6229	571	762
M150 x P	6	4	2	200	76	20	M20x1.5	17	108	200	10	5061	6619	619	809
M160 x P	6	4	-	210	76	20	M20x1.5	17	108	210	10	5451	7008	667	857

TENSIONER BOLT - Model TB12

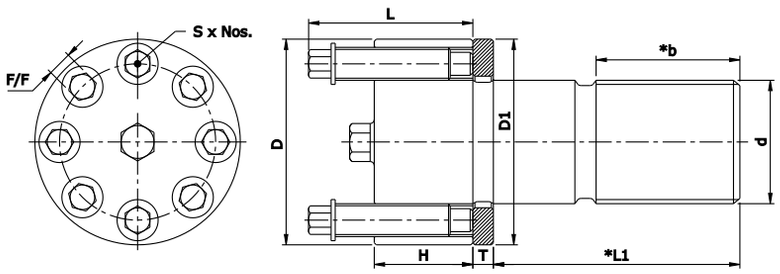
◆ Features :

- TB12 Tensioner Bolts offer higher strength and are more suitable for low temperatures.
- Other features are the same as Tb8.
- Temperature range : -10 to 250 °C
  0 to 500 °F
- Lower Temp. on demand
- Max. Preload Capacity up to 3738 kN.
- Equivalent nut-style tensioner: TNY
- Bolting applications in demanding industries.
- b = 2 x d
- Ordering Example: **TB12 - M20 x 2.5P**
  (Please provide Pitch & L1 when Ordering)

◆ Mounting Example:



TENSIONER BOLT
Model TB12



d = Thread Size
D = Outer diameter of Tensioner Nut
D1 = Outer diameter of Thrust washer
L = Length of Clamping Screws with washer
H = Height of Tensioner Nut
T = Width of Thrust Washer
P1, P2, P3 = Available Pitch of Thread size
S = Clamping Screw

All dimensions are in mm
Unless otherwise specified

Thread	Available Pitch			Bolt Body		Clamping screws			Screw Height	Washer		Total Preload F1 (Nom.)	Total Preload F2 (Max.)	Tightening Torque (Nom.)	Tightening Torque (Max.)
d	P1	P2	P3	D	H	Nos.	S	F/F	L	D1	T	kN	kN	Nm	Nm
M20 x P	2.5	1.5	1	35	18	8	M6 x 0.75	5	29	35	4	152	190	14	18
M24 x P	3	2	1.5	43	24	6	M8 x 1	6	40	43	4	202	270	34	45
M27 x P	3	2	1.5	47	24	8	M8 x 1	6	40	47	5	270	359	34	45
M30 x P	3.5	2	1.5	50	24	10	M8 x 1	6	40	50	5	337	449	34	45
M33 x P	3.5	2	1.5	57	28	8	M10 x 1.25	8	47	57	5	421	562	66	88
M36 x P	4	3	1.5	60	28	10	M10 x 1.25	8	47	60	5	483	658	60	82
M39 x P	4	3	1.5	63	28	12	M10 x 1.25	8	47	63	5	579	790	60	82
M42 x P	4.5	3	1.5	66	28	12	M10 x 1.25	8	47	66	5	685	895	71	93
M45 x P	4.5	3	1.5	75	37	10	M12 x 1.25	10	58	75	6	792	1056	118	157
M48 x P	5	3	1.5	78	37	10	M12 x 1.25	10	58	78	6	858	1188	127	176
M52 x P	5	3	2	82	37	12	M12 x 1.25	10	58	82	6	1030	1347	127	167
M56 x P	5.5	4	2	86	37	12	M12 x 1.25	10	58	86	6	1030	1347	127	167
M60 x P	5.5	4	2	90	37	14	M12 x 1.25	10	58	90	6	1201	1571	127	167
M64 x P	6	4	2	103	46	10	M16 x 1.5	14	75	103	8	1319	1799	260	355
M68 x P	6	4	2	107	46	10	M16 x 1.5	14	75	107	8	1559	2039	307	402
M72 x P	6	4	2	111	56	12	M16 x 1.5	14	84	111	8	1727	2302	284	378
M76 x P	6	4	2	116	56	14	M16 x 1.5	14	84	116	8	2015	2686	284	378
M80 x P	6	4	2	120	56	14	M16 x 1.5	14	84	120	8	2182	2854	307	402
M90 x P	6	4	2	139	61	12	M20 x 1.5	17	89	139	10	2803	3738	571	762

TENSIONER NUT & BOLT

❑ Lubrication :

➲ Clamping Screws of Tensioner Nut & Bolts are Factory Lubricated with OKS 200 or Equivalent anti-seize lubricant.

➲ For Main Stud / Bolt, any Standard Anti-seize lubricant can be used.

NMTG Tensioner Nut Lubrication		
Manufacturer	**Lubricant**	**Service Temperature**
OKS	OKS 200	35° C to 350°C
Klueber	Klueber HEL 46-450	-40°C to 350°C
Molykote	Molykote G-Rapid Plus	-35°C to 350°C
BP	ASV GP 50 / ASV Moly 65	-25°C to 350°C

NMTG Mechtrans Techniques Pvt. Ltd.

NMTG is an engineering set up situated at Naroda, GIDC, Ahmedabad, Gujarat, since last two and half decades and engaged in manufacturing of high precision products in modern CNC environment. These products are mainly used for the purpose of drive transmission and are available in wide range of sizes and applications. Depending upon specific applications there are four verities of products namely (1) Free Wheel – one way –Clutches used as Hold Back / Back-stop, Overrunning Clutch and Indexing Clutch (2) Keyless Transmission Elements (3) Tensioner Nut & Bolts and (4) Cam follower / Track Rollers.

Keyless Transmission Elements: These are available in mainly two verities (1) Locking Assembly and (2) Shrink Disks and are offered in different types. These are versatile in nature, can with stand high fatigue stresses under alternating tensional stresses. These are most suitable and economical for fixing on shaft or on hub or between shaft and hub offering easy mounting and removal, wear free operation, perfect alignment and adjustable also. For mounting no key way is necessary in shaft and hub as they are shrunk fit and thus minimizes notch effect. Widely used for drive applications like Shaft mounted gear arrangement, Gear Wheels, Chain Sprocket, Lever, Cams, Break Drums and at many other places.

Tensioner Nuts & Bolts: These units offer great benefit in application where ordinary hexagonal nuts on stud or bolt require very high tightening force for full tightening. For this unit very low tightening force (torque) is required for each clamping screws provided, with the help of standard torque wrench, to achieve the same or better results. Hence they are widely used for general mechanical fitment in heavy and medium duty equipment. Loosening under full load conditions is eliminated as there is no play between male and female threads of multiple Tensioner Bolts and Nuts assembly. However, standard torque Wrench has to be used for tightening purpose.

Cam Followers / Stud type Track Rollers: Standard as well as eccentric designs of Stud and Cage Guide are available ready to fit condition for applications like heavy loads and medium speeds.

All NMTG Products are versatile in nature, offer great economy is use hence extensively used in almost all industries and thus rule the market.