

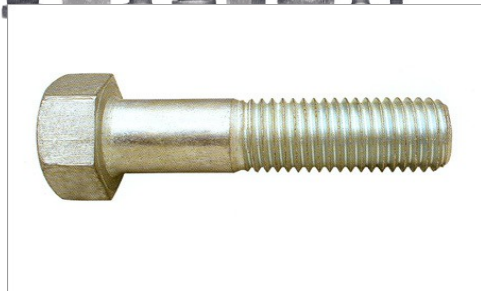
# **PANCHSHEEL FASTENERS PVT.LTD.**

**AN ISO 9001:2008 CERTIFIED COMPANY**

- ❖ **Panchsheel manufacturer and suppliers of fasteners and allied products.**
- ❖ **Panchsheel is serving the engineering industries over 38 years.**
- ❖ **Panchsheel's product range includes Hex head bolts and screws, High strength structural bolts, Hex nuts and lock nuts, Studs with two nuts as per ASTM standard, Various types of foundation bolts etc.**
- ❖ **Panchsheel is regularly manufacturing these products conforming to national as well as international standards, such as DIN,BS,ISO,ANSI,ASTM etc.**
- ❖ **Few of them shown.**

# PANCHSHEEL FASTENERS PVT.LTD.

## VARIOUS PRODUCTS



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- ❖ **Panchsheel is manufacturing self drilling tapping screws. Our products are mechanically galvanized.**
- ❖ **Panchsheel is having wide range of products.**
- ❖ **Panchsheel has state of the art manufacturing facilities. This includes in house testing laboratory, Hot dip galvanizing, electro- plating and chemical coating plant.**
- ❖ **Panchsheel's manufacturing capacities (500 MT/Month) and quality management system is assessed, witnessed and approved by, BHEL, NTPC, Power-grid corporation, METRO RAILWAYS, CIDCO and many private, semi government and government organizations.**
- ❖ **Panchsheel's products have been used by Reliance petro, NTPC, BHEL, Alstom, Andritz Hydro, DMRC, L&T ECC, pre engineered building manufacturers and many private, semi**

Panchsheel's HSFG fasteners used at various sites  
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**HISTORY OF HIGH  
STRENGTH**

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## **WHAT ARE ADVANTAGES WITH HSS BOLTS?**

- (a) *Greater strength***—This advantage has been observed not only under static loadings but also under fatigue or repeated loadings.
- (b) *Economy***—cost of the bolt to be lower than that of the same strength of ordinary low tension bolts.
- (c) *Friction gripping***—The forces in bolted structural connections are transmitted by friction between the connected parts rather than direct shear on the bolts.
- (d) *Permanent fastening***—even under extremely severe loading conditions, have shown that properly installed bolts stay tight and no lock washers or other locking devices are required to maintain this tightness.
- (f) *Faster*** - This not only affects a reduction in cost for the erection of the structure but also results in a structure being erected at a greater speed.
- (g) *Less equipment***— Fewer tools and less equipment are required to properly install these high-strength fasteners.
- (h) *Less training***—Only an hour or two is needed to train a bolting crew.
- (i) *Less inspection***—Because of the more consistent nature of high-strength bolting and the better control possible over the installation procedure, less and

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## **REFERENCE STANDARDS FOR HSS BOLTS**

- ❖ **Conforming to national standards IS 3757/ 6623/ 6649.**
- ❖ **Conforming to international standards such as DIN, (6914,6915,6916)**
- ❖ **ASTM (A-325,A-563,F-436), ISO (7412,4775,7415)**
- ❖ **ISO 14399 part 4 and 6**
- ❖ **We strongly recommend to refer IS-4000/BS-4604 or relevant standards while installation.**

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## **IMPORTANT ASPECTS OF HSFG FASTENERS**

- ❖ **Once tightened bolt should remain as it is and maintain the strength THROUGH IT'S LIFE SPAN.**
- ❖ **Life span is too large as compared to any other fastener.**
- ❖ **Bolts are in static tension condition THROUGH OUT THE LIFE even with fluctuating loads.**
- ❖ **After tightening to specified torque the nuts are further tighten to  $\frac{1}{2}$  to  $\frac{3}{4}$  turn to produce desired INDUCED LOAD in the bolt.**



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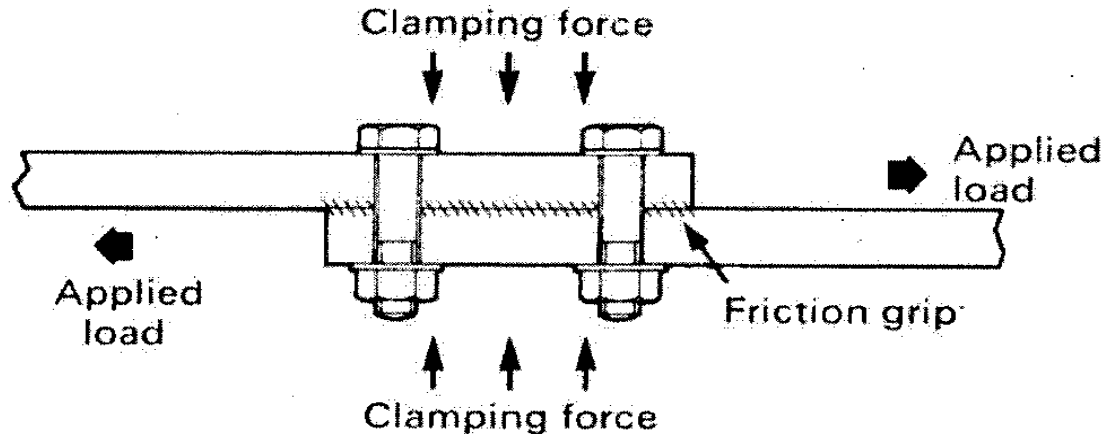
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## HIGH STRENGTH FRICTION GRIP BOLTING

### The Theory

The friction grip principle depends on tightening each High Strength Friction Grip Bolt to a minimum shank tension, so that the specified clamping force on the components being joined may be induced.

This enables the applied load to be carried by friction between the joint faces rather than relying on the shear strength of the bolts that would fail to make use of the friction grip principle.



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- ❖ **We at Panchsheel fasteners understand the critical requirements of the HSS fasteners and take utmost care during the manufacturing process.**
- ❖ **The raw material is selected based on our long experience. We have decided our own raw material quality parameters are communicated to approved steel mills. Raw material is tested at our laboratory.**
- ❖ **Strict inspection is carried out at every stage of manufacturing process.**
- ❖ **We have installed controlled atmosphere furnaces at our plant.**
- ❖ **Products are tested at our laboratory and confirmed that it is meeting all the required mechanical properties.**
- ❖ **Products are inspected for dimensions, geometrical parameters and released for dispatch.**
- ❖ **Panchsheel accepts third party inspection.**

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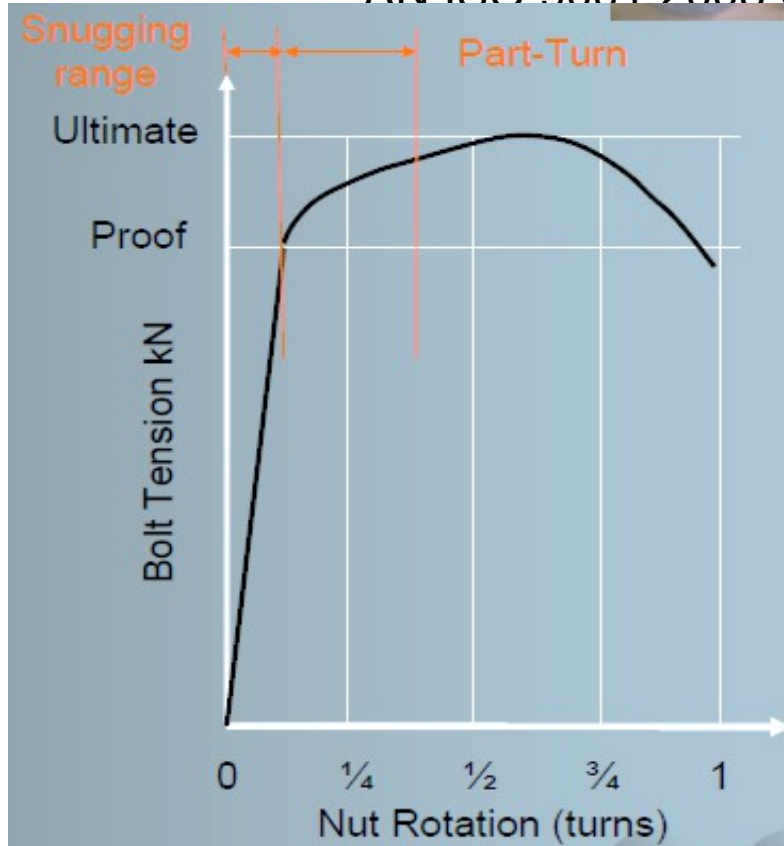
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## **PROCEDURE FOR INSTALLATION OF HSS BOLTS PART TURN METHOD**

- ❖ **Align the holes of mating parts.**
- ❖ **Insert the bolt, without damaging the treads.**
- ❖ **Fix the washer and nut. Use taper washers where ever necessary.**
- ❖ **Tighten the nut with the spanner. Then SNUG tight the nut. (The term “snug-tight” is defined in the RCSC specification as “...the tightness that is attained with a few impacts of an impact wrench or the full effort of an ironworker using an ordinary wrench to bring the plies into firm contact.”)**
- ❖ **Tighten the bolts systematically from rigid part of the joint to free edges.**
- ❖ **On large joints take second run to ensure that all bolts are SNUG tight.**
- ❖ **Make the permanent marking using punch on the plate and Nut.**
- ❖ **Complete tightening using the part turn method according to the applicable standard. Tightening should proceed systematically from the most rigid part of the joint to its free edges. Wrench sockets should be marked at positions 180° apart to guide the operator in tightening.**
- ❖ **USE ONLY CALIBRATED WRENCHES.**

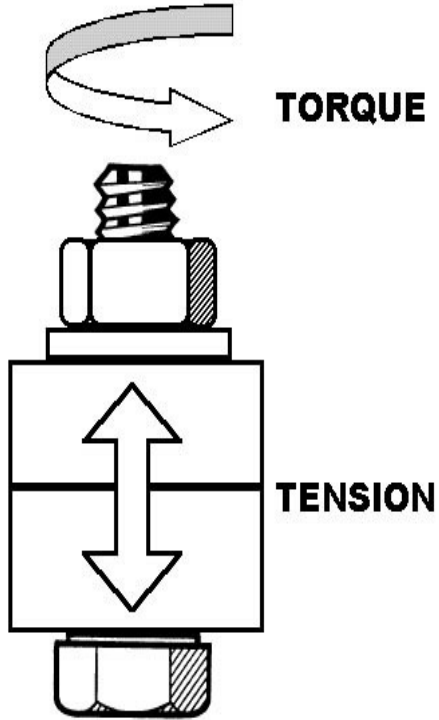
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- Snugging force can vary
  - 10% to 100% of Proof Load
  - Approx 20° rotation at Proof
- Part Turn ensures final bolt tension
  - Above Proof Load
  - Below Ultimate load

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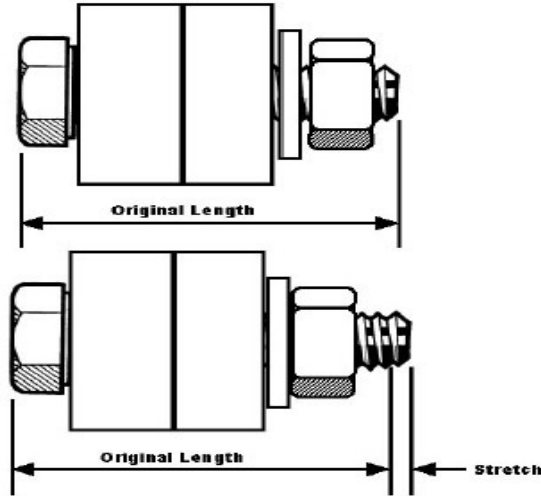
- In case of HSS fasteners it is desirable to control either the amount of developed tension when a specified range of torque has been applied or the torque required to develop a specified range of tension.
- The torque tension machine provides a means of analyzing the effects of lubrication, surface finish of threads, washer etc. The unit incorporates load and torque transducers for simultaneous torque and bolt tension measurements.

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**Bolts must be stretched and stay stretched to avoid failure!**



### Hooks Law:

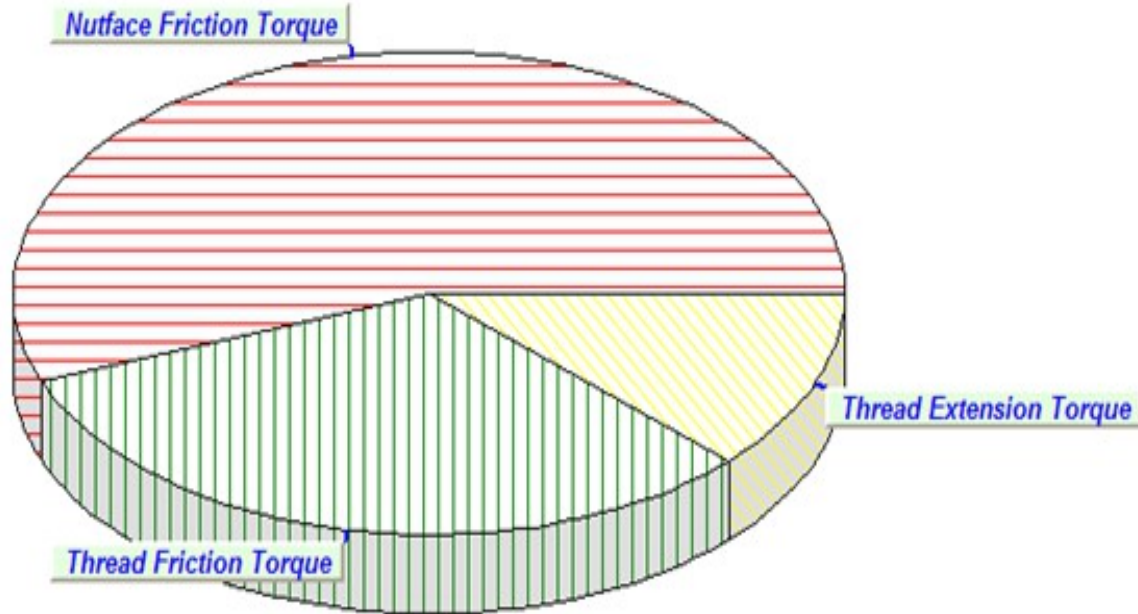
Steel bolts stretch .001 inches per inch between bearing surfaces for every 30,000 PSI of tension.

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## **TORQUE DISTRIBUTION CHART**

**Only 10% torque is used for tightening.**









# Inspection and sampling plan

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Lot Size	Shipping Lot <sup>2</sup> Sample Size	Production Lot <sup>3</sup> Sample Size
25 and less	2	4
26 to 150	3	6
151 to 1,200	5	10
1,201 to 10,000	8	16
10,001 to 35,000	13	26
35,001 to 150,000	20	40
150,001 and over	32	64

**PANCHSHEEL FASTENERS PVT.LTD.**

**CONTACT US.**  
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