

## REVISIONS TO SECTION 3.5 SPECIFICATION FOR HEAT TREATED CARBON STEEL TRACK BOLTS AND CARBON STEEL NUTS

### 3.5.1 SCOPE (2007)

- a. This specification covers the material and mechanical requirements for heat-treated carbon-steel **oval neck** track bolts and carbon-steel track nuts, in diameters from 7/8 to 1-1/8 inches.
- b. Heat-treated carbon-steel track bolts shall be produced to either a Grade 5 or Grade 8 designation in conformance with the chemical requirements, mechanical requirements, and in general as far as applicable to the latest issue of the Society of Automotive Engineers Specification SAE J429 for *Mechanical and Material Requirements For Externally Threaded Fasteners*.
- c. Carbon-steel nuts shall be produced to either a Grade 5 or Grade 8 designation in conformance with the chemical requirements, mechanical requirements, and in general as far as applicable to the latest issue of the Society of Automotive Engineers Specification SAE J995 for *Mechanical and Material Requirements For Steel Nuts*.

### 3.5.2 CHEMICAL COMPOSITION (2007)

- a. Bolts shall be made of steel conforming to the description and chemical composition requirements in the table below:

**Table 4.3.3 Chemical Composition Requirements for Bolts**

Grade of Steel	Material and Treatment	Element (%)			
		C		P	S
		Min.	Max.	Max.	Max.
5	Medium carbon steel, quench and tempered	<del>0.28</del> 0.25	0.55	.030	<del>0.50</del> .040
8	Medium carbon alloy steel*, quench and tempered	<del>0.28</del> 0.25	0.55	.030	<del>.050</del> .040

**Note: Boron additions are not permissible under this specification.**

\* Alloy steel shall contain at least one of the following elements in the minimum quantity given: chromium 0.30 %, nickel 0.30 %, molybdenum 0.20 %, vanadium 0.10 %, manganese 1.65%.

- b. Nuts shall be made of steel conforming to the description and chemical composition requirements in the table below:

**Table 4-3-5. Chemical Composition Requirements for Nuts**

Grade of Steel	C	Mn	P	S
	Max.	Min.	Max.	Max.
5	0.55	0.30	0.05	0.15
8	0.55	0.30	0.04	0.05

**3.5.3 LADLE ANALYSIS (2007)**

- a. An analysis of each heat of steel **for both bolts and nuts**, shall be made to determine the percentage of carbon, manganese (if applicable), phosphorus, sulphur **and any alloying elements (if applicable)**.
- b. **Upon request of the purchaser**, the analysis prescribed in Section 3.5.3.a above shall be made by the manufacturer from test samples taken during the pouring of each heat or melt. The chemical composition thus determined shall be reported to the purchaser or his representative and shall conform to the requirements specified in Section 3.5.2, **Chemical composition**.

**3.5.8 TOLERANCES (2023)**

- a. **The Oval-neck track bolts and nuts** shall conform to the dimensions specified in Table 4-3-12 ~~and Table 4-3-13 respectively~~, subject to the following variations:
  - (1) The nominal diameter of the bolts shall be taken as the overall diameter of the threads.
  - (2) The diameter of the rolled threads shall not exceed the diameter of the shank by more than 1/16 inch for bolts 7/8 inch in diameter and under, nor more than 3/32 inch for bolts 1 inch in diameter and over.
- b. **Track nuts shall conform to the dimensions specified in Table 4-3-12**
- c. The following tolerances (in inches) shall apply to finished ~~nuts and~~ bolts:

Shank diameter .....	+1/64 or -1/32
Neck dimensions .....	±0.0313"
Length under head .....	±1/8"
Height and diameter of head .....	±0.0625"
<del>Nut Width .....</del>	<del>-0.05 @ thread diameter of bolt</del>

Nut Height .....  $\pm((0.016 \times \text{thread diameter of bolt}) + 0.012)$

d. The following tolerances (in inches) shall apply to finished nuts:

Nut-Width .....  $-0.05'' \times \text{thread diameter of bolt}$

Nut-Height .....  $\pm((0.016'' \times \text{thread diameter of bolt}) + 0.012)$

**Comment for Ballot – Figure 4-3-11 and Table 4-3-11, Figure 4-3-12 and Table 4-3-12 will be moved under 3.5.8 Tolerances from the end of Section 3.5**

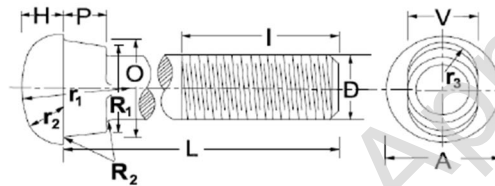


Figure 4-3-11. Oval Neck Track Bolt

Table 4-3-11. Oval Neck Track Bolt Dimensions

D	A	H	R <sub>2</sub>	r <sub>1</sub>	r <sub>2</sub>	O	R <sub>1</sub>	P	r <sub>3</sub>	V	L	I	Threads Per Inch
Nom. Dia. Over Thread	Head					Neck					Length Under Head	Min. Thread Length	
7/8	1.4844	0.5469	0.0625	1.3906	0.5156	1.2188	1.1875	0.50	1/2 body dia. of bolt	Same as body dia. bolt	Under 7", in steps of 1/4" From 7" to 10" in steps of 1/2"	2	9
1	1.6875	0.6250	0.0625	1.6250	0.5938	1.3750	1.3438	0.5625				2-1/4"	8
1-1/8	1.8906	0.7031	0.0625	1.8594	0.6719	1.5313	1.50	0.6250				2-1/2"	7
Additional Sizes Now in Use But Not Recommended for New Designs													
13/16	1.2813	0.4688	0.0625	1.1563	0.4375	1.0625	1.0313	0.4375	Same as above	Same as above	Same as above	1-7/8	10
15/16	1.4844	0.5469	0.0625	1.3906	0.5156	1.2188	1.1875	0.50				2-1/8	9
1-1/16	1.6875	0.6250	0.0625	1.6250	0.5938	1.3750	1.3438	0.5625				2-3/8	8

Notes: All dimension given in inches.  
 Tolerances: Length (L)  $\pm 1/8''$ , Neck (O and R<sub>1</sub>)  $\pm 0.0313''$ , Head (A and H)  $\pm 0.0625''$ , R<sub>2</sub>  $\pm 0.0175''$   
 In ordering bolts, specify the nominal diameter, "D", over the threads and not the body diameter.

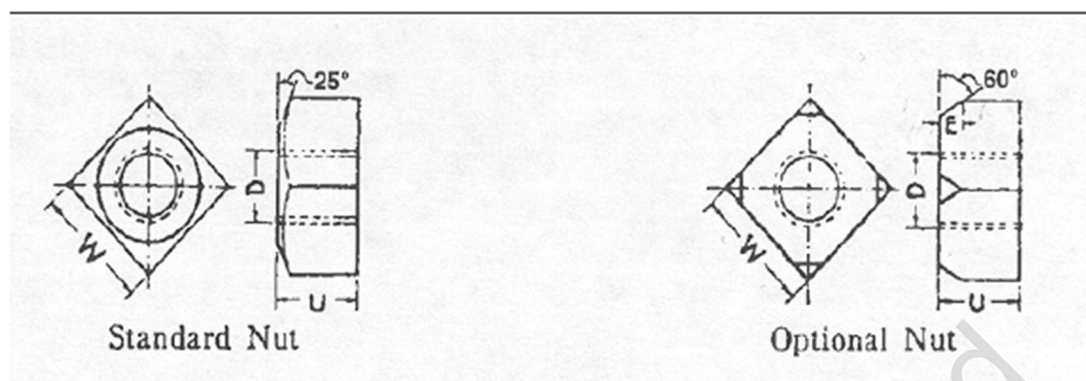


Figure 4-3-12. Track Nuts

Table 4-3-12. Track Nut Dimensions

Nominal Diameter	Width Across Flats (W)			Thickness (U)			Chamfer (Optional Nut Only)	
	D	Nominal	Max.	Min.	Nominal	Max.	Min.	E
7/8		1.4375	1.4375	1.3940	0.8750	0.9010	0.8330	0.2500
1		1.6250	1.6250	1.5750	1.0000	1.0280	0.9560	0.3750
1-1/8		1.8125	1.8125	1.7560	1.1250	1.1550	1.0790	0.5000
13/16		1.2500	1.2500	1.2120				0.2500
15/16		1.5000	1.5000	1.4500				0.3750
1		1.5000	1.5000	1.4500				0.3750
1-1/16		1.6250	1.6250	1.5750				0.3750
1-1/8		1.6875	1.6875	1.6310				0.5000

**Notes: All dimensions given in inches.  
A 25 degree chamfer is standard.**

### 3.5.13 PACKAGING (2007)

a. All containers shall be marked by the manufacturer as follows:

- (1) Name of manufacturer
- (2) Size of bolt (both diameter and length)
- (3) Grade designation for both bolt and nut
- (4) Weight of filled container
- (5) Lot number or batch number, that will allow for product traceability

Draft Not Yet Approved