

DESIGN CAPACITIES FOR SNUG-TIGHTENED BOLTS (CATEGORY/S) IN ACCORDANCE WITH AS4100 (2020) STEEL STRUCTURES


	PROPERTY CLASS 4.6		PROPERTY CLASS 8.8		PROPERTY CLASS 10.9	
	TENSION $\phi N_{tf}$ (kN)	SINGLE SHEAR $\phi V_f$ (kN)	TENSION $\phi N_{tf}$ (kN)	SINGLE SHEAR $\phi V_f$ (kN)	TENSION $\phi N_{tf}$ (kN)	SINGLE SHEAR $\phi V_f$ (kN)
M12	27	14 [22]	56	30 [46]	70	31 [58]
M16	50	27 [39]	104	58 [82]	130	60 [103]
M20	78	43 [62]	163	90 [129]	204	94 [162]
M24	113	62 [89]	234	130 [186]	293	135 [233]
M30	179	100 [140]	372	209 [290]	466	217 [364]

DESIGN CAPACITIES FOR SNUG-TIGHTENED BOLTS (CATEGORY/S) IN ACCORDANCE WITH AS4100 (2020) STEEL STRUCTURES

	GRADE 2		GRADE 5		GRADE 8	
	TENSION $\phi N_{tf}$ (kN)	SINGLE SHEAR $\phi V_f$ (kN)	TENSION $\phi N_{tf}$ (kN)	SINGLE SHEAR $\phi V_f$ (kN)	TENSION $\phi N_{tf}$ (kN)	SINGLE SHEAR $\phi V_f$ (kN)
1/2" UNC	38	20 [32]	61	33 [51]	77	34 [64]
5/8" UNC	60	32 [50]	98	53 [81]	122	55 [101]
3/4" UNC	89	49 [72]	144	79 [116]	180	82 [146]
1" UNC	131	72 [104]	261	145 [207]	327	151 [259]
1-1/4" UNC	209	117 [162]	366	206 [284]	522	244 [406]

NOTES

- DESIGN CAPACITIES SHOWN ARE FOR SNUG-TIGHTENED BOLTS (CATEGORY /S) IN ACCORDANCE WITH AS4100 (2020) STEEL STRUCTURES. THESE CAPACITIES ARE NOT APPLICABLE TO TENSION-CONTROLLED JOINTS.
- SINGLE PLANE SHEAR VALUES SHOWN ARE FOR BOLTS WITH THREADS INCLUDED IN THE SHEAR PLANE. VALUES SHOWN IN [ ] ARE FOR BOLTS WITH THREADS EXCLUDED FROM THE SHEAR PLANE.
- A BOLT REQUIRED TO RESIST BOTH DESIGN SHEAR ( $V_f^*$ ) AND DESIGN TENSION ( $N_{tf}^*$ ) AT THE SAME TIME SHALL SATISFY:
 
$$(V_f^*/\phi V_f)^2 + (N_{tf}^*/\phi N_{tf})^2 \leq 1.0$$
- CALCULATION OF INDIVIDUAL BOLT LOADS MUST CONSIDER THE GEOMETRICAL PROPERTIES OF THE BOLT GROUP AS WELL AS ANY ADDITIONAL FORCES DUE TO PRYING ACTION. BOLTED CONNECTIONS SHALL BE DESIGNED BY A SUITABLY QUALIFIED ENGINEER.
- CORRECT INTERPRETATION AND USE OF THIS INFORMATION IS THE RESPONSIBILITY OF THE USER. TRANG TAKES NO RESPONSIBILITY FOR THE OUTCOMES OF THE USE OF THIS INFORMATION.
- FOR DESIGN OF YOUR BOLTED CONNECTIONS CONTACT TRANG IMAGINEERING ON 13 000 87264 OR EMAIL [info@trang.com.au](mailto:info@trang.com.au)

DESIGNED AND ENGINEERED FOR:	DESIGNED AND ENGINEERED BY:																
<table border="1"> <tr> <td>SB</td> <td>GH</td> <td>SB</td> </tr> <tr> <td>BY</td> <td>CHK</td> <td>DES</td> </tr> </table>	SB	GH	SB	BY	CHK	DES											
SB	GH	SB															
BY	CHK	DES															
<table border="1"> <tr> <td>A</td> <td>04/09/23</td> <td>INITIAL RELEASE</td> </tr> <tr> <td>REV</td> <td>DATE</td> <td>DETAIL</td> </tr> </table>	A	04/09/23	INITIAL RELEASE	REV	DATE	DETAIL	<table border="1"> <tr> <td colspan="2">TRANG TECHNICAL REFERENCE DATA</td> </tr> <tr> <td colspan="2">SNUG TIGHT BOLT DESIGN CAPACITIES</td> </tr> <tr> <td>DRAWING No.</td> <td>TRANG-TRD-001</td> </tr> <tr> <td>ALL DIMENSIONS IN MM</td> <td>DO NOT SCALE</td> </tr> <tr> <td>THIRD ANGLE PROJECTION</td> <td>SHEET: 1 OF 1</td> </tr> </table>	TRANG TECHNICAL REFERENCE DATA		SNUG TIGHT BOLT DESIGN CAPACITIES		DRAWING No.	TRANG-TRD-001	ALL DIMENSIONS IN MM	DO NOT SCALE	THIRD ANGLE PROJECTION	SHEET: 1 OF 1
A	04/09/23	INITIAL RELEASE															
REV	DATE	DETAIL															
TRANG TECHNICAL REFERENCE DATA																	
SNUG TIGHT BOLT DESIGN CAPACITIES																	
DRAWING No.	TRANG-TRD-001																
ALL DIMENSIONS IN MM	DO NOT SCALE																
THIRD ANGLE PROJECTION	SHEET: 1 OF 1																

TRANG IMAGINEERING  
74 ASTILL DRIVE  
ORANGE NSW 2800  
PHONE: 13 000 TRANG  
[info@trang.com.au](mailto:info@trang.com.au)

TRANG TECHNICAL REFERENCE DATA  
SNUG TIGHT BOLT DESIGN CAPACITIES

DRAWING No. **TRANG-TRD-001**

ALL DIMENSIONS IN MM | DO NOT SCALE | THIRD ANGLE PROJECTION | SHEET: 1 OF 1