

# ALLOWABLE DESIGN LOADS 316 SS

*Modern design and high performance*

## ALLOWABLE BENDING YIELD STRENGTH AND FASTENER ALLOWABLE STEEL STRENGTH

| FASTENER DESIGNATION                   | FASTENER SIZE | Minor Thread (ROOT) Diameter, D1(in.) | Unthreaded Shank Diameter (in) | Major Thread (OUTSIDE) Diameter d (in.) | Bending Yield (Fyb) (psi) | Tensile (lbf) | Shear (lbf) |
|--|---------------|---------------------------------------|--------------------------------|---|---------------------------|---------------|-------------|
| Fine Screw 316 Stainless               | # 8           | 0.104                                 | 0.116                          | 0.159                                   | 150,150                   | 327           | 255         |
|  | # 9           | 0.113                                 | 0.131                          | 0.176                                   | 163,781                   | 425           | 322         |
| Universal Screw 316 Stainless Steel    | # 9           | 0.113                                 | 0.131                          | 0.176                                   | 168,639                   | 475           | 318         |
|  | # 10          | 0.130                                 | 0.146                          | 0.197                                   | 187,793                   | 535           | 423         |
| Construction Screw 316 Stainless Steel | # 5/16        | 0.170                                 | 0.197                          | 0.274                                   | 200,710                   | 1,067         | 776         |

1. Bending yield strength determined per methods specified in ASTM F1575 and based on the minor thread (root) diameter.

2. Tension and shear design load applied FOS=3 to average tested results per AC233 3.2.1



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## ALLOWABLE DESIGN LOADS FOR SINGLE SCREW SUBJECT TO TENSION

| FASTENER DESIGNATION                   | FASTENER SIZE | D1761 WITHDRAWAL (lbf/in) SG=0.55 | D1761 PULL THROUGH (lbf) SG=0.55 |
|--|---------------|-----------------------------------|----------------------------------|
| Fine Screw 316 Stainless               | # 8           | 121                               | 69                               |
|  | # 9           | 127                               | 92                               |
| Universal Screw 316 Stainless Steel    | # 9           | 133                               | -                                |
|  | # 10          | 144                               | 184                              |
| Construction Screw 316 Stainless Steel | # 5/16        | 235                               | 517                              |

3. FOS=5
4. Edge Distance = 0.75" (withdrawal), 2.75" (pull through)
5. Installation details must be sufficient to prevent splitting of wood
6. Test location = side grain (withdrawal), face grain (pull-through)

### Allowable Design Load Determination Methods

| Property               | Procedure   |
|------------------------|---|
| Withdrawal Design Load | Apply FOS=5 to average test results per AC233 4.2.3 and compare to Calculated value per NDS 12.2.2 (use lesser of tested or calculated) |
| Pull through Strength  | Apply FOS=5 to average test results per AC233 4.2.5   |

NDS 12.2.2 Withdrawal Calculation for Wood Screws - ( $W=2850xG^2xD$ )  
 W=Withdrawal load (lbs/in)  
 G= Average tested Specific Gravity (per AC233 3.3)  
 D=outside diameter screw (per AC233 3.3) (d min from U2 drawings -inches)  
 Embedment Length= threaded length (Lt avg from U2 drawings - inches)

