# UCAN UTC FAÇADE SELF-PIERCING SCREWS


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## ► DESCRIPTION

The UCAN UTC carbon steel RUSPRO® coated dual-thread self-piercing screw provides reliable load capacity for façade installation in light to medium carbon steel substrates up to 14 GA (2.0 mm) and aluminum substrates up to 1/4" (6.4 mm) with predrilling. The applied RUSPRO® corrosion protection offers increased corrosion protection if a bonded neoprene washer is used. The large, low-profile 16 mm diameter truss head provide a larger bearing surface for load transfer, with an effective #2 square socket drive for consistent drilling engagement.

This UCAN UTC is primarily a facade screw that is RUSPRO® coated to provide an effective and economical solution for attaching façade panels to metal.
It is currently available in #12-20 X 1" and #12-20 X 1-1/8" sizes. Painted heads are



## ► MATERIAL SPECIFICATION

**Material:**
- Cold heading quality wire
- Carbon steel: AISI C1022

**Heat treatment**:
**Surface Hardness**
- HV 550 Min.
**Core Hardness**
- HV 400-500 (HRC 40-48)

**Corrosion protection:**
- Silver Ruspro® Coating, 1000 hrs salt spray resistance
- The coating's effectiveness in preventing galvanic corrosion depends on protecting the connection from moisture.

## ► ASSESSMENTS AND STANDARDS COMPLIANCE

The UTC FAÇADE self-piercing comply with the material, processes and performance requirements of the following standards: ASTM C1513; ASTM A500; SAE J78

The screw's load capacities are based on an independent testing agency in compliance with the following standards:

Tension - AC491 S3.2.2 (AISI S904)
Shear - AC491 S3.2.2 (AISI S904)
Torsion - AC118 S3.3 (ASME B18.6.3)
Pull Out - AC 491 S3.4.3 (AISI S905)
Member materials - ASTM A653, ASTM A36, ASTM A1011: ASTM B221

## ► INSTALLATION

### Table 1 - UTC Installation Data

| Screw Type | Screw Size | Drill Point | Nominal Diameter (inch) | Screw head not in contact with the material | | | | | Recommended Drill Speed |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Material | Member Thickness | | Pre-drill Diameter | Min. Torsional Strength* | |
| | | | | | inch | Ga | inch (#) | lb-in | RPM |
| Truss Head | 12-20 | Sharp | 0.225 | Carbon Steel | 0.0445 | 18 | - | 93 | 1000-1800 |
| | | | | | 0.0590 | 16 | - | | |
| | | | | | 0.0710 | 14 | - | | |
| | | | | Aluminum | 1/8 | - | 3/16 (15) | | |
| | | | | | 1/4 | - | 13/64 (7) | | |

Note: * Minimum torsional strength is per SAE J78-98

1. Predrilling is required in the connecting material to achieve a reliable connection in the support structure. Pre-drill a 1/4" diameter hole in the joining structure before connecting it to the supporting structure.
2. Carbon steel supporting material with no surface hardening, with thickness up to 14 Ga (2.0 mm) does not require predrilling.
3. Aluminum (grade 6063-T52) supporting structure requires predrilling in 1//8" to1/4" thickness. See Table 1 for the predrilling diameter.
4. For effective drilling speed, see Table 1.
5. Always drive self-drilling screws perpendicular to the work surface.
6. It is highly advised to use torque control when fastening into thin sheet metal.
7. Do not exceed more than 10% of the minimum torsional strength, shown in Table 1.

## ► TECHNICAL DATA

### Table 2 - UTC Screw Strength

| Screw Type | Screw Size | Drill Point | Nominal Diameter | Average Ultimate load | | Min. Torsional Strength* | Recommended Drill Speed |
|---|---|---|---|---|---|---|---|
| | | | | Tension | Shear | | |
| | | | inch | lbf | lbf | lb-in | RPM |
| Truss Head | 12-20 | Sharp Point | 0.225 | 4552 | 3348 | 93 | 1000-1800 |

Note: * Minimum torsional strength is per SAE J78-98

### Table 3 - UTC Screw Ultimate Pull-out Data in Carbon Steel[1,2,3,4]

| Screw Type | Screw Size | Drill Point | Units | Screw head not in contact with the material | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 18 Ga | 16 Ga | 14 Ga | 12 Ga | 1/8" | 3/16" |
| | | | inch | 0.0445 | 0.0590 | 0.0710 | 0.1015 | 0.1330 | 0.1900 |
| Truss Head | 12-20 | sharp point | lbf | 486 | 789 | 1172 | 1868 | - | - |

[1] Published pullout strengths are based on independent laboratory testing and are for information only
[2] The Allowable strength (ASD design) and Design strength (LSD Design) shall be calculated in accordance with AISI S100
[3] For connection design, published pull-out values shall be compared to pull-over and screw strength, and the lowest must be used
[4] Values are based on ASTM A653 compliant steel members with the minimum strength of $F_y$ 33 ksi (16-18 Ga), Fy 50 ksi (12-14 Ga)

## ► TECHNICAL DATA

### Table 4 - UTC Screw Ultimate Pull-out Data in Aluminum[1,2,3,4]

| Screw Type | Screw Size | Drill Point | Units | Screw head not in contact with the material | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 18 Ga | 16 Ga | 14 Ga | 12 Ga | 1/8" | 1/4" |
| | | | inch | 0.0445 | 0.0590 | 0.0710 | 0.1015 | 0.1330 | 0.1900 |
| Truss Head | 12-20 | sharp point | lbf | - | - | - | - | 891 | 1971 |

[1] Published pullout strengths are based on independent laboratory testing and for information only
[2] The Allowable strength (ASD design) and Design strength (LSD Design) shall be calculated in accordance with AISI S100
[3] For connection design, published pull-out values shall be compared to pull-over and screw strength, and the lowest must be used
[4] Values are based on Grade 6036-T52 aluminum members with the minimum strength of $F_y$ 21 ksi