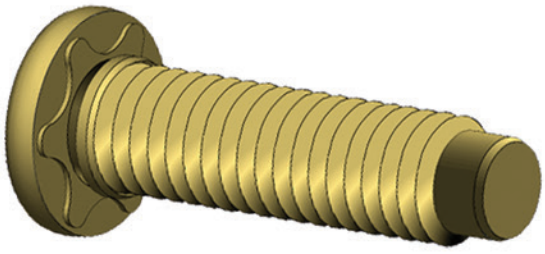
Semblex

CLINCH STUD® Strux®

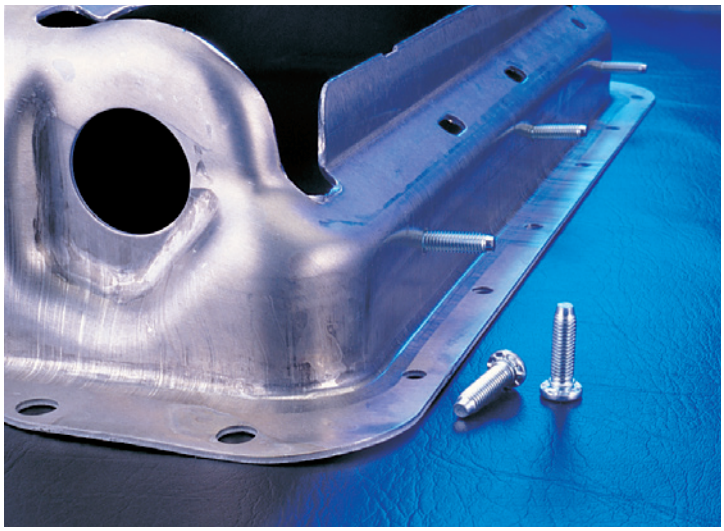


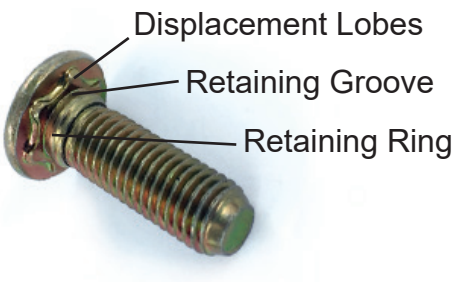
High Performance Clinch Studs for Use in Steel & Aluminum

Unique Design Provides Exceptional Performance

Our high-performance STRUX® fasteners offer a stronger and more reliable assembly alternative to traditional clinch and weld studs.

In most cases, a STRUX fastening solution can yield significant time and cost savings when compared to welded or other staked fasteners.





Benefits Exceeding Expectations

- Resists rotation and push-out
- Eliminates welding operations
- Can be used on non-weldable materials
- Can be installed using automated equipment
- Facilitates assembly of hard-to-reach components

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Technology Overview

Unique Design Provides Exceptional Performance

Eliminates Welding

STRUX® fasteners eliminate the need for expensive and sometimes hazardous welding operations.

- No distortion due to excessive heat
- Aesthetic value of application is improved
- Potential for corrosion is reduced
- Elimination of costly production bottlenecks

Consistent Reliability

With proper installation, STRUX fasteners can reduce the potential for failure. STRUX products give you consistent push-out strength and torque values, whether it's the 10th or 10 millionth fastener being installed. Visual inspection of joint is fast and clean

- Consistent joint integrity
- Predictable performance

Resists Push-Out & Rotation

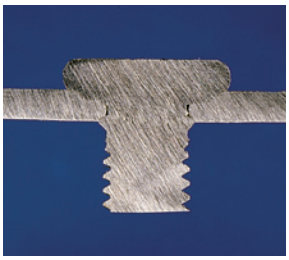
Once seated, the displacement lobes keep the STRUX fastener from rotating during service. The torsional and push-out strength are limited only by the shear strength of the engagement material.

Critical Applications

The high-performance capabilities of STRUX products makes them an excellent match for critical applications such as air bags and seating.

- Complete design assistance
- Application testing
- Assembly validation

Installation



The stud end is fed through a punched or drilled hole and into a lower die. A punch then applies force to the stud and the retaining ring passes through the hole. As pressure is applied, the displacement lobes are seated, forcing the engagement material into the retaining groove.

STRUX clinch fasteners can be assembled manually or automatically with any equipment capable of feeding rivets, weld studs or conventional clinch studs. This includes hydraulic staking presses.

- Increased production rates when using progressive dies
- Improved product and joint integrity

STRUX product reduces costs and simplifies assembly

The innovative STRUX clinch stud design can be incorporated in many ways to overcome application challenges and reduce assembly cost. A major OEM was faced with a unique assembly configuration on one of their highest volume product lines. The application involved the assembly of a major component which provided only one-sided access. In this assembly a stamping would need to be attached to a special M12 diameter bolt to prevent rotation during tightening. The original design concept considered the welding of this stamping to the bolt. Our engineering services team engaged with the customer early enough in the design process and proposed the STRUX design as part of an improved fastening solution. The result was a design which was simpler, lighter, utilized less raw material, avoided the process constraints of welding and was more environmentally friendly.

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Design & Performance Data

Metric Dimensional and Performance Data

Thread Size	Retaining Ring S ±0.07	C ±0.13	D ±0.25	K Ref	Material Thickness Min.	Recommended Hole Size		Approx. Staking Force k/N	Approx. Pushout k/N	Approx. Unsupported Torsional Resistance Nm
						Min.	Max.			
M3-0.5	3.61	1.05	6.00	1.5	1.0	3.68	3.78	TBD	TBD	TBD
M4-0.7	4.61	1.40	7.75	1.5	1.0	4.68	4.78	13.3	1.04	4.80
				2.3	1.5			16.9	2.27	5.01
M5-0.8	5.61	1.75	8.75	1.5	1.0	5.68	5.78	13.3	1.09	4.00
				2.3	1.5			16.5	2.22	10.73
M6-1.0	6.61	2.10	11.00	1.5	1.0	6.68	6.78	20.2	1.42	7.69
				2.3	1.5			25.8	2.56	15.22
				3.4	2.3			26.7	4.78	15.22
M8-1.25	8.61	2.80	15.25	2.3	1.5	8.68	8.78	35.6	2.40	26.78
				3.4	2.3			42.3	6.09	40.06
				4.6	3.0			45.4	9.06	40.06
M10-1.5	10.61	3.50	19.75	3.4	2.3	10.68	10.78	66.7	5.92	60.49
				4.6	3.0			73.4	8.82	84.80
M12-1.75	12.61	3.80	20.00	3.4	2.3	12.68	12.78	73.4	7.26	81.14
				4.6	3.0			77.8	13.91	124.25

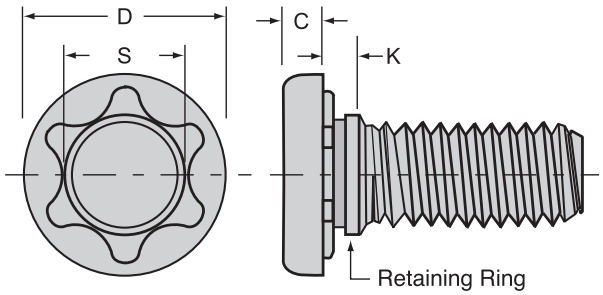
Underhead configuration is controlled by Semblex to achieve the performance requirements.

The performance information provided is to be used only as a guideline, actual application conditions may vary.

All performance data is based on tests performed in low carbon steel (hardness 70 Rb Max.) under laboratory conditions. Performance data for materials other than steel, should be individually tested.

It is recommended that when specific performance values are required, the actual application be tested.

Contact Semblex Application Engineering for additional design assistance.



Inch Dimensional and Performance Data

Thread Size	Retaining Ring S +.002 - .003	C ±.005	D ±.010	K Ref	Material Thickness Min.	Recommended Hole Size		Approx. Staking Force* Tons	Approx. Pushout lb.	Approx. Unsupported Torsional Resistance in./lb.
						Min.	Max.			
#6	.149	.040	.260	.060	.036 (20 ga.)	.151	.155			
#8	.176	.060	.350	.060	.036 (20 ga.)	.178	.182			
				.095	.060 (16 ga.)					
#10	.204	.070	.370	.060	.036 (20 ga.)	.206	.210			
				.095	.060 (16 ga.)					
1/4	.270	.090	.470	.060	.036 (20 ga.)	.272	.276			
				.095	.060 (16 ga.)					
				.135	.090 (13 ga.)					
5/16	.331	.110	.600	.095	.060 (16 ga.)	.333	.337			
				.135	.090 (13 ga.)					
				.180	.120 (11 ga.)					
3/8	.398	.130	.690	.135	.090 (13 ga.)	.400	.404			
				.180	.120 (11 ga.)					
1/2	.530	.175	.950	.135	.090 (13 ga.)	.532	.536			
				.180	.120 (11 ga.)					

Application testing is required to determine specific performance data for inch-sized studs. Please contact Semblex Application Engineering for assistance.

Engineering Services

Design & Technical Assistance
VA/VE Project Support
Product Engineering Samples
Training Programs
On-Site Technical Support
Application Testing
Product Teardowns

Value Added Services

Technical Sales Team
Integrated Supply Base
Sourcing Solutions
Customized Labeling and Packaging
EDI Capable
Global Partnerships - North America, Europe & Asia

Certifications & Accreditations

NSF-ISR
Registered to IATF 16949

ACCREDITED
Testing Lab
Cert #0794.01

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