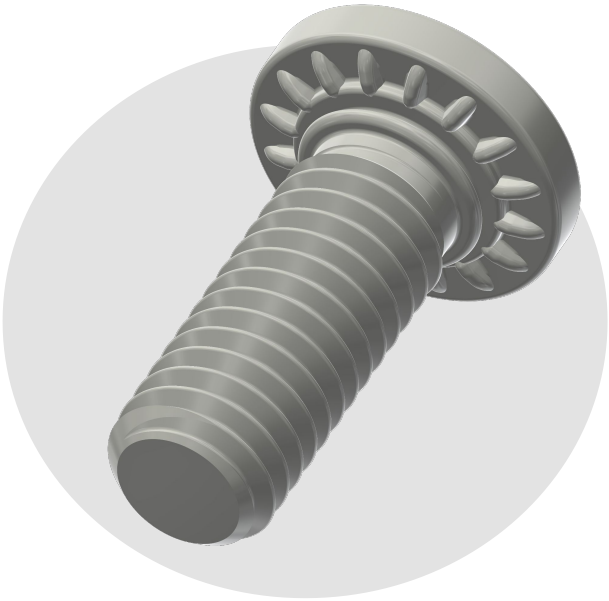
CAMCAR® INNOVATIONS

Strux HM™ is the second member of the new **Strux®** family specifically designed for thinner, harder metals needing exceptional torque-out and high-push out performance. It can be used in thinner materials as low as 0.5 mm and harder metals (250-900 MPa UTS). Using an identical hole size and installation method to that of **Strux®** and **Strux SM™**, **Strux HM™** offers the ultimate performance in multiple metals.



SUPERIOR HARD METAL CLINCH SOLUTION

Strux HM™

FEATURES

- Material Displacement Collar
  - Displaces sheet material into retaining groove
- Optimized Retaining Groove
  - Allows sheet material to flow inward to secure stud
- Retaining Groove
  - Allows sheet material to flow inward to secure stud
- Carry-over Retaining Ring
  - Barrier for displaced sheet material to prevent stud pushout

BENEFITS

- Significantly higher torsional resistance in thinner metal vs. current competing clinch product
- Able to be used in material as hard as 900 MPa UTS
- Overall lower total cost of ownership (TCO) compared to equivalent weld studs/nuts
- Fast and easy installation - can be installed in-die or using automated equipment
  - Seals against fluids without the need for expensive chemical sealants
- Simple low-cost and long-life tooling for manufacturing
- Consistent performance
- Each thread size (M3-M16) has a single design for reduced product complexity
  - Each thread size is designed for a minimum material thickness, and performance is equal or
  - better when installed into thicker material
  - — Allows significant reduction in part numbers in complex assemblies

IDEAL APPLICATIONS

- Bumpers and Beams
- Heat Shield
- Battery Pack Enclosures
- Body and Closures
- Roof Rails
- Aluminum and cast iron castings

STRUX HM™ PERFORMANCE DATA

- Performance approximations are based on installation into A1008 steel with a thickness at the design (minimum material) thickness. Actual unsupported torsional resistance values may exceed the ISO 898-7 standard for minimum breaking torque, and therefor may result in stud fracture.
- Performance values in the table above are based on a combination of tested parts and correlated simulations.
- Different materials will yield different results.

THREAD SIZE	DESIGN (MIN. MATERIAL THICKNESS) (MM)	APPROXIMATE STAKING FORCE (KN)	APPROXIMATE PUSH OUT FORCE (N)	APPROXIMATE UNSUPPORTED TORSIONAL RESISTANCE (NM)	ISO 898-7 MINIMUM BREAKING TORQUE PC 10.9 (NM)
M3	0.50	13	440	2.5	1.9
M4	0.50	15	495	3.6	4.4
M5	0.75	26	1040	12.9	9.3
M6	0.75	33	1100	20.9	16
M8	0.75	48	1200	46.5	40
M10	1.00	60	1930	78.6	81
M12	1.50	84	4410	173.8	-
M14	1.50	90	4460	207.1	-
M16	1.50	103	4320	275.5	-

STRUX HM™ DIFFERENCE COMPARED TO THE COMPETITION

- Significantly higher torsional resistance in thinner metal
- Avoids embedment by utilizing a correctly sized head O.D.
- Detailed standards with production and quality controls for the header to ensure consistent performance
- Minimized product complexity with a single design for each thread size

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