PEM® High Tensile Strength Studs

HFG8-1209
Rev. 1209A

Property class 10.9 studs meeting 1040 MPa minimum

PEM® Type HF109™ studs are manufactured for the most demanding applications from medium carbon alloy steel, then heat-treated to high strength and hardness qualities.

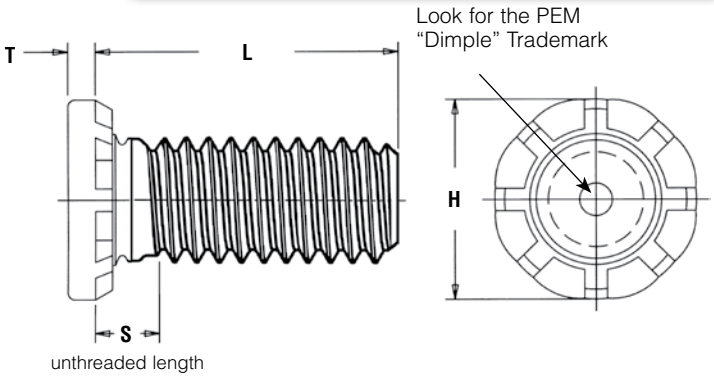
NEW!

Features and Benefits

- High tensile strength.
- Recommended for use in carbon steel or HSLA steel sheets HRB 89 or less on the Rockwell "B" scale.
- Large head diameter reduces compressive stress on panel.

To be sure that you are getting genuine PEM products, look for the PEM stamp. Studs within the size range of the ISO specs are also identified with the 10.9 head markings.

HF109 Marking



All dimensions are in millimeters.

	Thread Size x Pitch	Type / Steel	Thread Code	Length Code "L" ±0.4 (1) (Length Code in millimeters)			Min. Sheet Thickness	Hole Size in Sheet +0.13	Max. Hole in Attached Parts	H ±0.25	S Max.	T Max.	Min. Dist. Hole C/L To Edge
METRIC	M5 x 0.8	HF109	M5	15	20	25	1	5	7.3	10.3	2.6	2.06	11.5
	M6 x 1	HF109	M6	15	20	25	1	6	8.3	12.1	2.7	2.29	18.0
	M8 x 1.25	HF109	M8	NA	20	25	1.5	8	10.3	16.6	3.4	3.25	21.0

NA - Not Available.

PART NUMBER DESIGNATION

HF – 109 – M6 – 15 – ZI

HF	109	M6	15	ZI
Type	Strength Grade	Thread Size Code	Length Code	Finish Code

109 = Property class 10.9 per ISO 898-1/SAE J1199

Material & Finish Specifications

Threads: External, ANSI B1.1, 2A ANSI/ASME B1.13M, 6g (2)
Fastener Material: Heat-treated Medium Carbon Alloy Steel
Finish: Zinc plated, 5µm, colorless (3)
For Use In Sheet Hardness: HRB 89 or less (Hardness Rockwell "B" Scale)
HB 180 or less (Hardness Brinell)

(1) Other lengths available up to a maximum of 40mm on special order.
(2) As with all external plated threads, Class 2A/6g, the maximum major and pitch, after plating, may equal basic sizes and be gauged to Class 3A/4h, per ANSI B1.1, Section 8, Table 3A and ANSI B1.13M, Section 8, Paragraph 8.2.
(3) See PEM Technical Support section of our web site for related plating standards and specifications (PEM FIN-C21). Other finishes available on special order. Other finishes available on special order.

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Performance Data[1]

Tensile strength greater than or equal to 150 ksi.

	Thread Code	Max. Nut Tightening Torque (N•m)	Pull Thru (kN)	Test Sheet Material	Sheet Hardness HRB	Installation (kN) (2)	Pushout (N)	Torque-out (N•m)	Test Sheet Material	Sheet Hardness HRB	Installation (kN) (2)	Pushout (N)	Torque-out (N•m)
METRIC	M5	7.8	13.3	1.2 mm HSLA Steel	86.1	60.1	2084	9	1.0 mm Cold-rolled Steel	45.3	43.2	978	9
	M6	13.2	21.1	1.2 mm HSLA Steel	85.6	90.0	2454	15.6	1.0 mm Cold-rolled Steel	45.5	60.0	1072	14.4
	M8	32.0	34.9	1.5 mm HSLA Steel	84.0	145.0	3026	38.4	1.5 mm Cold-rolled Steel	55.0	85.0	1992	37.7

Tensile strength greater than or equal to 1040 MPa.

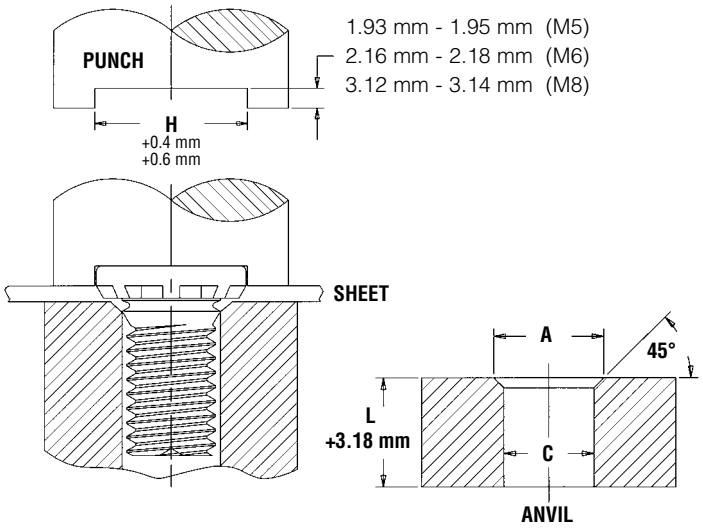
(1) Performance values reported are averages when all installation specifications and procedures are followed. Variations in mounting hole size, sheet material and installation force will affect this data. Performance testing of this product in your application is recommended. We will be happy to provide samples for this purpose.

(2) Installation controlled by proper cavity depth in punch.

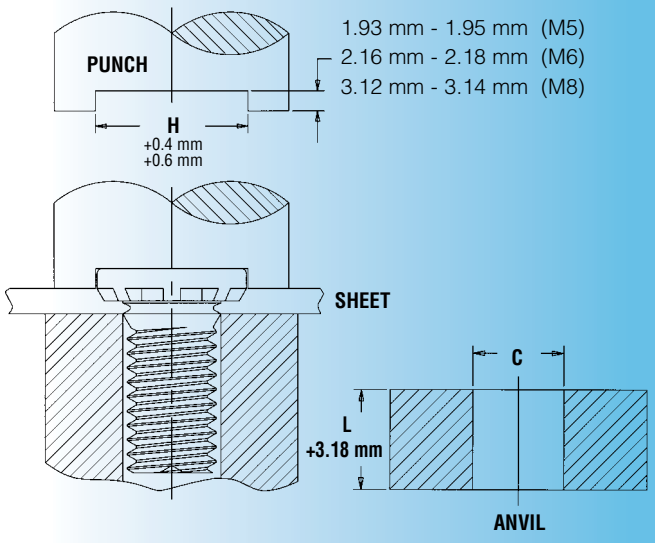
Installation

The illustrations below indicate suggested tooling for applying installation forces. Note that for sheets 1.51 mm and thicker, the anvil requires only a straight thru hole to accommodate the stud. For sheets less than 1.51 mm to less than 1.9 mm, the hole requires a countersink with dimension A at the top to provide for metal flow around the shank of the stud.

Tooling for sheet thicknesses less than 1.51 mm with M5 and M6 thread sizes and less than 1.9 mm with M8 threads.



Tooling for sheet thicknesses 1.51 mm and greater with M5 and M6 thread sizes and 1.9 mm and greater with M8 threads.



	Thread Code	Anvil Dimensions (millimeters)	
		A +0.1	C +0.08
METRIC	M5	5.6	5.03
	M6	6.6	6.03
	M8	8.6	8.03

RoHS compliance information can be found on our website.

Specifications subject to change without notice.
Check our website for the most current version of this bulletin.

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