



Cam-Safe[®]

Grounding Connection



Camloc® Cam-Safe® Grounding Connection Range

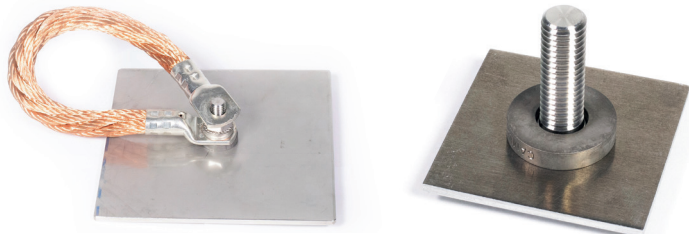
Introduction

The Camloc Cam-Safe Grounding Connection is a unique system-based approach to provide electrical grounding in electro-risk applications, suitable for many industries including transportation, renewable energy and more.

The system-based approach focuses on complete quality process by offering full process management, traceability and archiving from start to finish to reduce the risk of failure. The specially adapted intelligent tooling, a vast improvement on traditional installation methods currently available on the market, makes the installation quick and easy, and provides a true quality documentation feature.

The system comprises of:

- Grounding Studs
- Grounding Nuts
- Intelligent Installation Tooling
- Integrated Barcode Readers
- Software Process Management Tools



Designed 'from scratch' to make the process as simple, easy, and safe as possible, the Camloc Cam-Safe Grounding Connection system redefines the industry standard for safety critical electrical grounding. Patent pending.

Application / Range Overview

The Camloc Cam-Safe Grounding Connection system offers Stud and Nuts for fastening Grounding Connections in a range of material thicknesses from 1.5mm to 5mm. Our current Stud range includes M6, M8 and M10 diameters.

Each fastener consists of two components, a tension Stud or Nut and a contact-ring. With a force-controlled installation process using our intelligent installation tooling, the contact ring expands within the panel hole creating a permanent joint with maximum surface contact, resistant to vibration and tampering.

There is also a repair process for correcting sub-optimal installations or repairing damage ensuring continuous joint integrity and safety.

Grounding Connection	GRIP - Range		
	Aluminium (mm)	Steel (mm)	Stainless Steel (mm)
Grounding Stud - M6	1.5 - 4.0	1.5 - 4.0	1.5 - 4.0
Grounding Stud - M8	1.5 - 4.0	1.5 - 4.0	1.5 - 4.0
Grounding Stud - M10	2.0 - 5.0	2.0 - 5.0	2.0 - 5.0
Grounding Nut - M6	1.5 - 4.0	1.5 - 4.0	1.5 - 4.0
Grounding Nut - M8	1.5 - 4.0	1.5 - 4.0	1.5 - 4.0
Grounding Nut - M10	2.0 - 5.0	2.0 - 4.0	2.0 - 5.0

Camloc® Cam-Safe® Grounding Connection vs Alternatives

The Camloc Cam-Safe Grounding Connection system has been designed to be a superior alternative to current / traditional electrical grounding fastening systems, focusing especially on:

- Conforming to specified electrical connection with required ampacity
- Improved installation efficiency
- Advanced, fully-automated battery tooling solution
- Full process traceability
- Repair / maintenance solution

See table for a comprehensive comparison of Camloc Cam-Safe Grounding Connection vs traditional Grounding Connection methods:

	Camloc Cam-Safe	Traditional Grounding Connection	Welding
Health & Safety Installation	No Danger	No Danger	Dangerous
Installation Time (incl. hole prep.)	1 minute	3 minutes	15 minutes
Preparation	None	None	8 minutes
Overall Cost	Medium tooling investment	Low tooling investment	High tooling investment
Reliability of Installation	Very good	Medium	Medium
Tooling/ Handling	Excellent	Poor	Very poor
Quality Documentation of Installation	Each installation is documented; Real time integration with ERP via Wifi upon customer request	No	No
Operator Skill	Minor training	Minor training	Welder training
Traceability	Part and batch number	Part and batch number	N/A
Testing	All required tests	All required tests	N/A
Approvals	In cooperation with customer	Permanent solution	N/A
Removal /Repair Solution	Yes	No	No
Paint Protection Covers	Yes	No	No

System Features & Benefits

The advanced Camloc Cam-Safe® Grounding Connection system has been developed to offer significant process benefits:

- Full process traceability
- Process management via software / intelligent tooling
- Individual installation parameter archiving
- Visual installation confirmation
- Installer / user identification
- Software management tools

Grounding Stud & Nut:

The Camloc Cam-Safe Grounding Connection is available in a range of sizes to suit numerous material thicknesses, offering superior performance across the board.

- Unique contact feature enables superior performance
- Quick and easy to install
- Available for use with M6, M8 and M10 Studs
- Aluminium, steel & stainless steel variants
- Suitable for material thicknesses from 1.5mm to 5mm
- Removal / repair / maintenance solution available
- Each connector has a unique barcode for system implementation
- The Camloc Grounding Nut enables a Grounding Connection to be used in conjunction with conventional bolts.

Barcode Functionality:

The Camloc Cam-Safe Grounding Connection installation tool has a unique barcode reader to enable system integration.

- Quick and easy barcode reader function via trigger mechanism
- Each fastener has a unique barcode on the box
- Reader enables automated product identification within the tool
- Tool setting automatically adjust to the scanned barcode



Tooling Benefits:

The intelligent battery powered Camloc Cam-Safe Grounding Connection Installation Tool has been specially adapted to enable advanced system process control features:

- Integrated barcode scanner
- USB interface
- Tool management software
- Force monitoring
- 99 program memory
 - Save up to 150,000 installation records
 - OLED screen for visual control
 - OK / not-OK display and evaluation
 - Operator information



Display Screen:

The Camloc Cam-Safe Grounding Connection Installation Tool is equipped with an easy to use display.

- Superior OLED display
- Visual confirmation of process steps including barcode reading, automatic product recognition and verification of correct installations

Installation Speed:

The Installation Tool has been especially adapted to install Grounding Studs and Nuts quickly and effectively.

- Simple process not requiring special skills
- Complete installation process takes <10 seconds per fastener
- Automatic tool release after installation
- Immediate OK / not-OK verification
- Audible and visual confirmation signals

Repair Solution

As part of the Camloc Cam-Safe Grounding Connection System, Camloc offers a unique and effective repair solution to ensure that every Camloc Cam-Safe Grounding Connection reaches optimal joint integrity at production and at any subsequent point of repair / maintenance.

The repair solution can be used in situations when a) the installation is not implemented correctly (confirmed by visual confirmation or not-OK signal) or b) the fastener needs to be removed for repair work / maintenance purposes.

Once the need for correction / repair has been confirmed the repair process involves three steps:

1. Punch out or press out the stud with the specially designed hand tool
2. Adjust the contact ring to achieve alignment
3. Install the oversized repair stud (identifiable through colour marking)

Traditionally **Innovative**

The range of quick release fasteners, draw latches & solid inserts from Camloc brings together 75 years' worth of experience, traditional engineering skill and innovation, providing customers with effective, reliable and creative solutions for applications in electronics, industrial, transportation, aerospace and defence markets.

The Camloc range includes quarter-turn, push-turn and push-push fasteners for applications where quick and easy access is required on a regular basis such as electrical cabinets and machine guarding. Camloc quick release fasteners are captive meaning that the fasteners remain attached to the machine or the guarding when removed.

Camloc draw latches provide an adjustable, high-performance method ideal for securing machine and equipment parts that must be opened or removed frequently.

Camloc Keenserts® are high strength, vibration resistant solid inserts for creating strong threads in weaker materials and repairing damaged threads.

Make our engineers part of your team at the concept stage. Their unrivalled knowledge of advanced fastener function can make the impossible, possible. A standard fastener in our range may provide your answer. If not, we can produce a cost-effective, tailor-made solution.







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