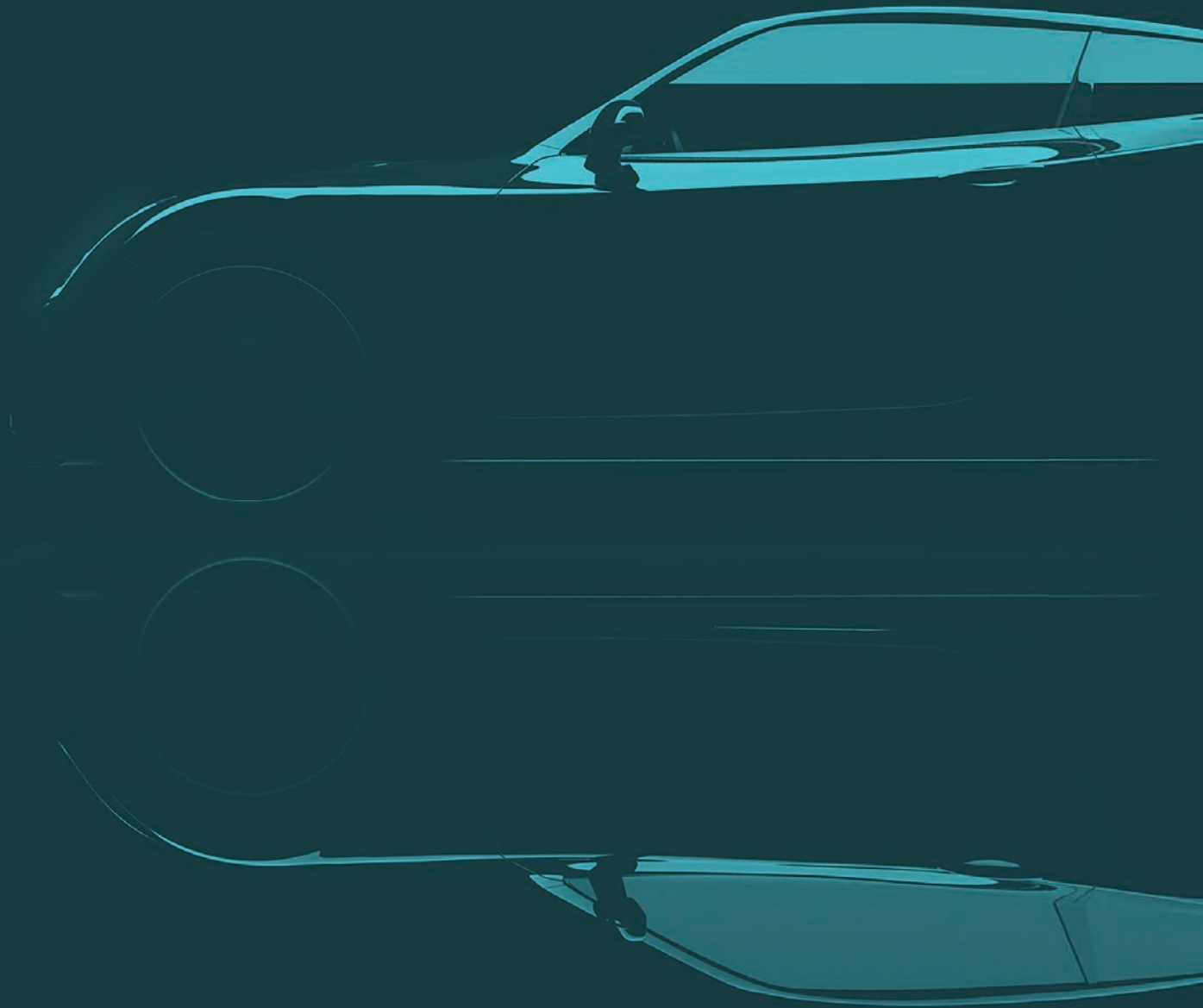




ARCONIC

# Engineered Fastening Solutions for the Road Ahead



marson



KEYSERT

Camloc



# Driving Automotive Assembly Technology Into The Future

Arconic Fastening Systems (AFS) is a premier manufacturer of world-class fasteners for reliable, durable joining of steel, aluminum, and dissimilar materials in aircrafts, trucks, heavy equipment, specialized industries, and every type of vehicle on the road today. AFS is building on a history of excellence with engineered solutions for any fastening need in manufacturing and assembly.

## A History Of High Performance

AFS's superior selection of standard fasteners are more than just standard. Arconic's legacy brands include Huck® structural blind fasteners and 2-piece HuckBolts®, Recoil® threaded inserts, Keysert® solid inserts, Camloc® quick-release fasteners and latches, and a complete range of high-performance installation tools.

## Advanced Fastening Solutions

For decades, AFS has been at the forefront of specialty fastener research and development. Our unrivaled team of top-tier fastening engineers know joining technology and understand how the automotive assembly floor works. Specialized Arconic products like Enduralum™, Shoulder Bolts, Resistance Spot Rivet (RSR), and new developments in tooling and automation demonstrate AFS's commitment to advancing fastening solutions for your most challenging automotive assembly applications.



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## Lightweighting

Arconic fasteners deliver higher clamp and tensile strength than conventional fasteners, so fewer or smaller diameter fasteners can be used to reduce equipment weight without loss of durability. Advanced manufacturing processes allow for lighter weight aluminum instead of steel in many assembly joints. While welding dissimilar materials can be problematic, the strength and versatility of Arconic fasteners enable a problem-free joining solution.

## Productivity

Arconic fasteners are engineered for quick, easy installation. Unique product design and advanced tooling allow for installation of 2-piece lockbolts in 2 seconds or less in most cases. The engineered strength of AFS products allow for fewer fasteners to secure a joint, saving even more valuable time on the assembly line. We constantly evaluate and innovate products, tools and processes to deliver the most efficient fastening systems available.

## Quality Assurance

Arconic's proprietary Huck® SureSet® Assembly Control System ensures installation integrity of each and every installed fastener. SureSet's built-in data processing unit monitors and measures hydraulic pressure to determine accuracy of installation and provides easy on-screen visual confirmation that the fastener is set correctly.

## Vibration Resistance

The unique direct tension, swaging installation technique used for 2-piece HuckBolts results in full metal-to-metal contact between the swaged collar and the lock grooves of the bolt. This eliminates the gaps between the collar and bolt that regular nuts and bolts have, ensuring a vibration-resistant joint.

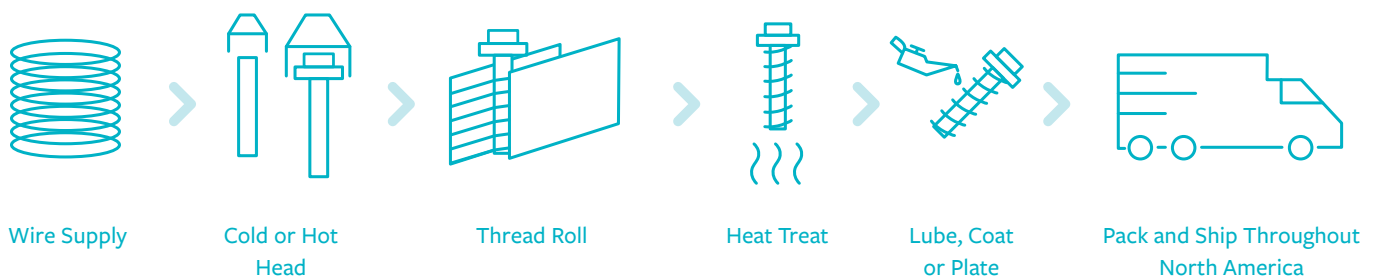
A woman wearing a white lab coat and clear safety glasses is working in a laboratory. She is looking intently at a piece of equipment on a table. The entire image has a blue color overlay. The text "More Than a Source of Fasteners, a Source for Joining Solutions" is overlaid on the left side of the image.

More Than a Source of Fasteners,  
a Source for Joining Solutions



## Fully, Vertically Integrated for Single-Source Solutions

Arconic owns every step of the process from design to delivery of our finished fasteners. Our 400,000 square foot manufacturing facility in the United States features advanced cold heading, thread rolling, and machining equipment, 14 discrete heat treat furnaces finishing 170,000 pounds of fasteners per day, and various electroplate and dip spin lines to tailor a completed fastener to your needs. By controlling every aspect of the manufacturing process, we can ensure quality workmanship and timely deliveries of the fasteners you need.



## Leader in Metals Science, Research and Fabrication

The Arconic Technical Center (ATC) is the world's largest and most advanced light metals development and testing facility. Located on a 25 acre campus, the ATC is home to more than 600 scientists, engineers, and vital support personnel working in key areas as physical, mechanical, and process metallurgy, thermodynamics, corrosion and electrochemistry, as well as applied metallurgy and 3D prototype printing using our proprietary aluminum, titanium, and nickel powders. With a focus on effective collaboration, the ATC is able to best meet the exacting requirements of the customer objective application on a variety of projects. These projects span across a wide variety of industries and require knowledge and expertise in multiple areas of metals science, research, and fabrication. We are fully equipped to partner with your team to prototype, test, manufacture and deliver highly optimized and innovative solutions.



# Strong Family of Automotive Fasteners

## Huck® Structural Blind Fasteners



### Magna-Lok®

Huck Magna-Lok is a versatile, moisture- and vibration-resistant, wide-grip range, hole-filling fastener that can be installed with conventional installation tools. It has a unique circle-lock feature, which means a simple visual inspection ensures proper installation. Sizes: 3/16", 1/4", 3/8", 1/2"



### Magna-Bulb®

The Huck Magna-Bulb provides the high shear strength and high pull-out strength needed for thin materials, and oversized or misaligned holes. Its superior blind-side strength and structural integrity is provided by its unique bulbing system and positive, mechanical pin retention. Sizes: 3/16", 1/4", 5/16"



### HuckLok®

The HuckLok structural blind rivet features a wide grip range and unique double-locking action. This action consistently secures the assembly from both sides, resulting in maximum hold and joint integrity. Sizes: 3/16", 1/4"



### Auto-Bulb™

For automated, high-speed assemblies, the Huck Auto-Bulb is the ideal solution. Fast, reliable installation is provided with its easy-to-use lead-in point. It works by clamping the joint with a broad, blind-side bulb, making it ideal for use within thin materials. Sizes: 3/16", 1/4"



### BOM®

The Huck BOM® (Blind, Oversized, Mechanically locked) blind bolt is so strong, one can do the work of up to four conventional fasteners. Its unique push-and-pull installation design makes it ideal for automotive industry use. Sizes: 3/16", 1/4", 5/16", 3/8", 1/2", 5/8", 3/4"

## Two-Piece HuckBolts®



### Huck® BobTail®

Engineered to meet the challenges of the automotive assembly application, Huck BobTail delivers high performance, vibration resistance, and ultimate reliability in a unique, pintail-less design. Sizes: 1/4", 5/16", 3/8", 1/2", 5/8", 3/4", 7/8", 1", 12mm, 14mm, 16mm, 20mm



### Magna-Grip®

When a wide grip range is required and a flush bolt break to the collar is beneficial, Huck Magna-Grip is the right choice. This strong, two-piece HuckBolt offers installation reliability and provides consistently high, uniform installed values. Sizes: 3/16", 1/4", 5/16", 3/8"



### Huck Shoulder Bolt

These C150L, C120L and BobTail lockbolts have a precision shoulder as pivot point and offer faster installations, a permanent and vibration-resistant joint, and easy installation integrity verification.

# Additional Arconic Fastening Options



## Recoil® Threaded Inserts

Recoil® leads the way in threaded insert systems, offering a broad selection of free-running, screw-locking, and Tangless® inserts. The Recoil system consists of precision inserts, quality high speed taps, complementary STI taps and easy-to-use installation tools for repairing damaged screw threads or creating strong new threads. Recoil helically wound screw-thread inserts are generally manufactured from Type 304 (18-8) stainless steel wire, cold rolled into a diamond shaped cross section.

Tangless is a registered trademark of Advanex Inc.



## Keysert® Solid Inserts

Designed to repair damaged threads or for use in original equipment, Keyserts provide easy installation and versatility. Featuring a key-locking action that prevents rotation due to vibration or torsion. Commercial-grade Keyserts are available in carbon and stainless steel, both inch and metric series, and are supplied in Thinwall, Heavy Duty, Extra Heavy Duty, and Solid styles. Keyserts are offered individually or in kits.



## Camloc® Quick-Release Fasteners and Latches

The Camloc® product line includes an extensive range of quick-release fasteners, tension latches and door locks, hinges, and handles. Typical uses for Camloc products include maintenance paneling, access hatches, external components, and a wide range of other applications where quick removal and re-attachment is required.



# Arconic Powers Fast, Reliable Auto Assemblies

## Engine Inserts

Typical Application —  
Engine Block



## Enduralum

Typical Application —  
Transmission and  
Transfer Case,  
Engine Assembly,  
Powertrain



## Hucklok Structural Blind Rivets

Typical Application —  
Steering Column

## Keysert Solid Inserts

Typical Application —  
Engine Castings  
and Door Frames



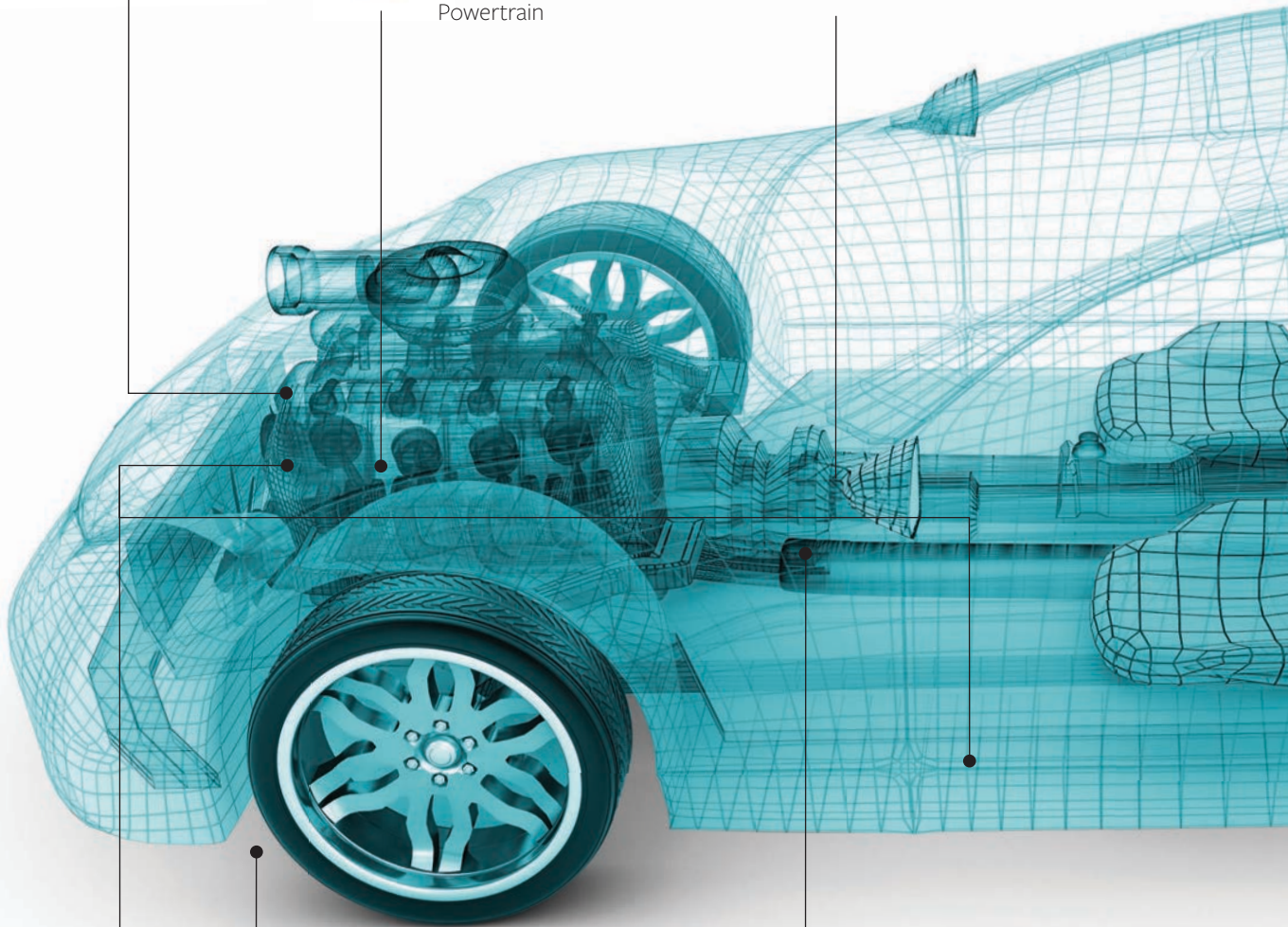
## Recoil Wire Inserts

Typical Application —  
Oil and Transmission Pans



## Camloc 1/4-Turn Fasteners

Typical Application —  
Fuse Box





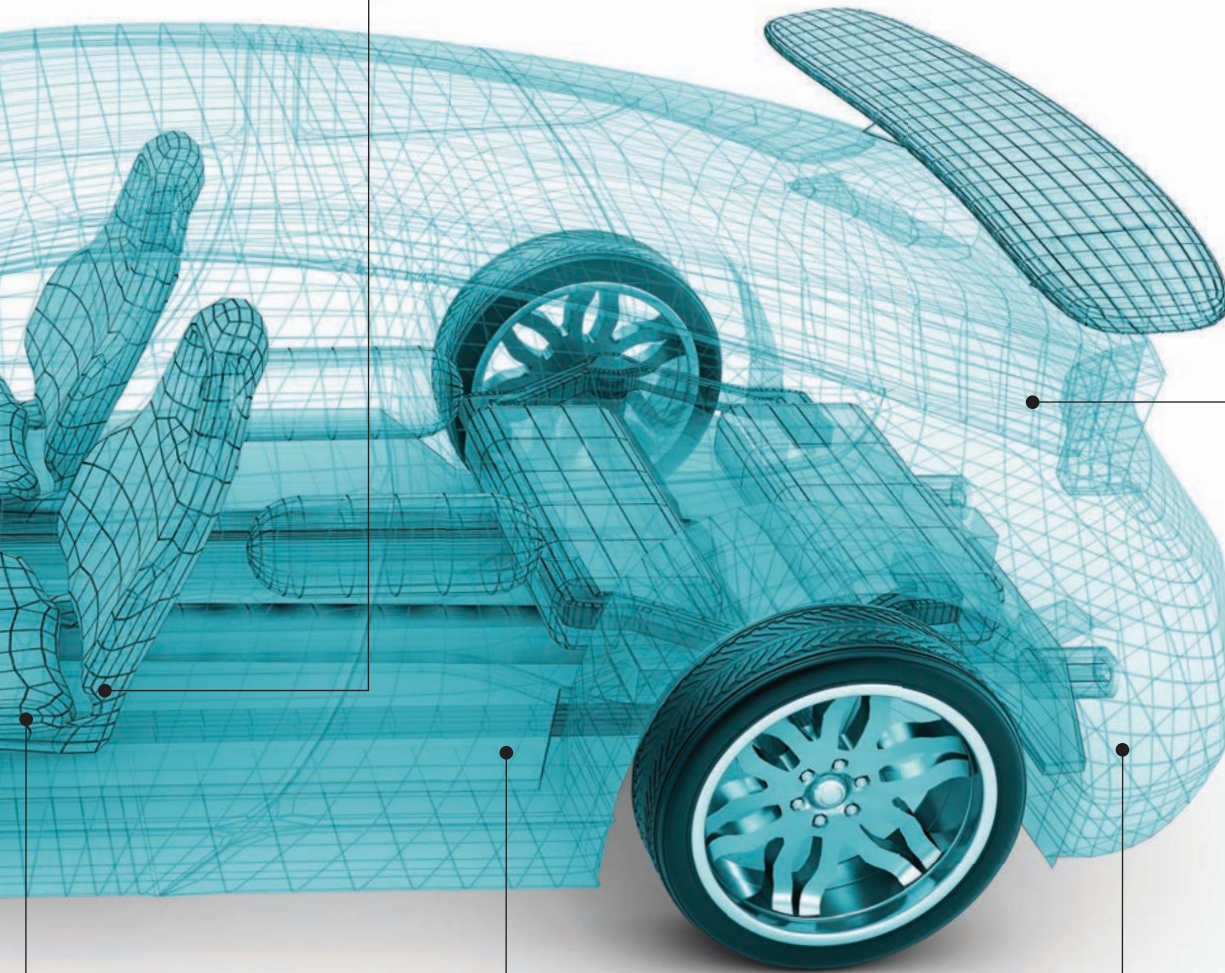


**Shoulder Bolt**

Typical Application —  
Seating Structures

**Camloc Latches**

Typical Application —  
Trunk / Hatch



**BobTail HuckBolt**

Typical Application —  
Seating Structures



**RSR**

Typical Application —  
Frames, Floors,  
Closeout Panels,  
Pillars, Roofs,  
Intrusion Beams



**Auto-Bulb Structural Blind Rivets**

Typical Application —  
Front and Rear Bumpers



# Aluminum Heavyweight in Lightweighting



# Enduralum™

Enduralum™ is an incredibly strong, yet remarkably lightweight, aluminum fastener designed for thermal and galvanic compatibility with next-generation aluminum and magnesium castings in automotive powertrains. The heat-treated AA 6056 Alloy of Aluminum in Enduralum helps to reduce overall weight while maximizing joint strength and ensuring industry-leading reliability.

Arconic maintains the highest level of quality control through wire-to-box manufacturing.

- Class I continuous aluminum heat treat furnace (currently only US manufacturer)
- In-house design and prototyping capabilities
- Single-source manufacturer of custom fastener solutions

#### Applications:

- Hybrid battery assemblies
- Transmission and transfer case internal and external assembly
- Engine assembly
- Powertrain cover and subcomponent attachment

## Data and Dimensions

**Tensile strength (Rm):** 420-460 MPa

**Yield strength (Rpo.2):** 380-410 MPa

**Elongation (Af):** >12% on fully threaded fastener

**Diameters:** M6, M8, M10, M12

**Lengths:** 25mm-85mm

T6 or T9 thread condition

Available in external hex, internal 6-lobe and external 6-lobe head styles

Licensed MATHread manufacturer



# Seating Assembly and Attachment Solutions





Arconic is committed to advancing automotive manufacturing processes through engineered solutions that provide structural strength and efficient assembly and installation. This ensures fewer seating structure reworks, increased installation speed and a reduction in seating component complexity. Seating structure fastening options include:

## 1 Huck® Shoulder Bolts

Special bolt design provides vibration resistance and high fatigue strength of Huck Lockbolt technology; replacing threaded fasteners with permanent, consistent joints.

These specialty shoulder bolts can be custom-designed to fit any geometric or strength requirements, and inspected for integrity via either visual or automated methods.

## 2 Huck® Lockbolts

Two-piece pin and collar design for fast swage installation of permanent and vibration resistant joints.

## 3 Huck® Blind Fasteners

Provides structural strength and quick installation for applications with no blind-side access.

## 4 Arconic RSR™ Resistance Spot Rivet

Allows multi-material joining using traditional RSW equipment.

1



2



3



4





Proven Technology to Join  
Dissimilar Materials

# Resistance Spot Rivet™ (RSR)

The growing trend towards multi-material part design inspired engineers at our Arconic Technical Center to develop a new technology called Resistance Spot Rivet™ (RSR™). This advancement allows a wide range of dissimilar materials to be joined quickly and reliably, including:

- High-Strength Aluminum
- Steel
- High-Strength Steel (HSS)
- Ultra-High-Strength Steel (UHSS)
- Magnesium (Mg)
- Composites

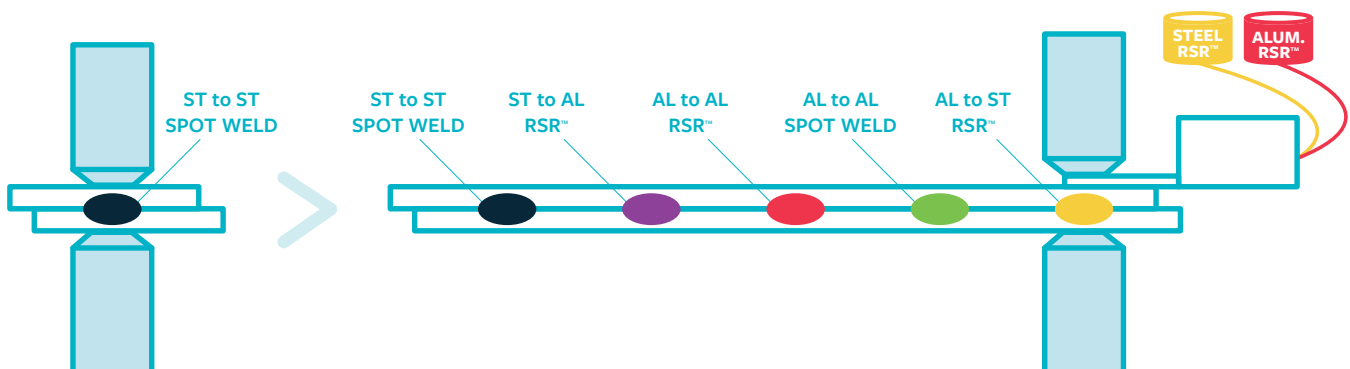


Resistance Spot Rivet technology is an effective alternative to conventional Self-Piercing Rivets (SPR) and Flow Drill Screws (FDS). It can be used in a number of automotive applications, including frames, floors, closeout panels, pillars, roofs, intrusion beams, and more.

## RSR Advantages

This breakthrough, proprietary technology offers a number of advantages, separating it from a wide range of conventional joining processes:

- Reliably joins UHSS and aluminum, steel to Mg, and steel to composites
- Reliably joins 7xxx alloys to lower-strength 6xxx and 5xxx alloys
- Uses existing RSW equipment, and can increase the flexibility of current joining infrastructure by enabling spot welding of similar materials in sequence with dissimilar material joining using RSW
- Seamlessly transitions between conventional spot welding to RSR™ on the same welding equipment
- Installed rivets have no back protrusions



A photograph of a male mechanic with a beard, wearing a dark t-shirt and a tool belt, working on the engine of a car. The image is heavily filtered with a teal/cyan color. The mechanic is looking upwards and to the right, focused on his work. The background shows the complex metal parts of the engine and other mechanical components.

A Wide Selection of  
Tooling Options



# Tooling and Power Supplies

Arconic Fastening Systems offers a broad selection of installation tools, as well as our acclaimed Powerig<sup>®</sup> hydraulic power sources. Huck hydraulic installation tools install a wide range of fasteners, from structural blind rivets to the largest HuckBolts. The Huck line of pneudraulic tools, designed for use in repair work or in lower volume production applications, can effectively pull fasteners ranging from 3/32" blind rivets to 3/8" HuckBolts. The new Makita-designed Huck Range Force battery-powered tool has an electronically adjustable pull force and long stroke to enable installation of structural and non-structural rivets and up to 1/4" two-piece HuckBolt<sup>®</sup> fasteners.\*

\* Excludes 1/4" BOM



Huck Range Force



2025



2480

## Powerig<sup>®</sup> Power Supplies

Huck Powerigs offer advanced design and quality manufacturing to deliver both best-in-class performance and long product life. Whether for mobile or factory use, there is a Huck Powerig hydraulic power source for the job, from portable electric and gasoline units to larger rigs that operate up to three individual tools.



Powerig Model 940



Powerig Model 918 Series

# Huck SureSet® Assembly Control System

Arconic's Huck SureSet system checks the integrity of every installed blind or two-piece fastener. Sensors built into our high-quality Huck Powerig units measure load and piston movement (converted from hydraulic fluid pressure and flow, respectively) during the installation. The data processing unit (DPU) then uses this information to detect whether the fastener has been installed correctly.

A graphical display of every fastener installation is shown on a built-in screen which indicates any malfunctions during the installation process. This assures you that no incorrect installations leave your production line unnoticed, providing peace of mind about the quality of your product.

## Benefits

- Precise, reliable measurement and visual confirmation of every installation.
- Can be configured to enable audible alarm and system lockout features when incorrect installations are indicated.
- All measuring components are integrated into SureSet Powerig so you can use any standard Huck hydraulic tools without modifications.
- No time-consuming calibrations each time a tool is changed.
- Can be programmed with settings for up to 32 different Huck fasteners which can then be quickly and easily selected.
- Each program can be user defined to ensure maximum control over the installation process.







**ARCONIC**

# Arconic Fastening Systems

Arconic Inc. (NYSE: ARNC) creates breakthrough products that shape industries. Working in close partnership with our customers, we solve complex engineering challenges to transform the way we fly, drive, build and power. Through the ingenuity of our people and cutting-edge advanced manufacturing, we deliver these products at a quality and efficiency that ensures customer success and shareholder value.



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