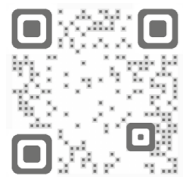


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ARaymond TM
MORE THAN FASTENING



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INNOVATION EXCELLENCE
AND BEST-IN-CLASS
FASTENING AND ASSEMBLY
SOLUTIONS



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ARaymond TM
MORE THAN FASTENING



INTERNATIONAL EXPERT IN FASTENING AND ASSEMBLY SOLUTIONS

We believe in the power of assembly solutions to ease the integration of the ever-growing number of components and functions in cars.

We design smart solutions that avoid tools, improve ergonomics and serviceability, save space, and allow late customization in production line processes to achieve increased efficiency.

Safe, discrete and light, our solutions contribute to reduced emissions, and improve passenger comfort and perceived vehicle quality.



Improved ergonomics
Quality of assembly
Increased efficiency



A SOLUTION FOR ANY ASSEMBLY SITUATION

- CLIPPING SYSTEMS** P. 6
 - CABLE & TUBE FASTENERS P. 6
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CLIPPING SYSTEMS

ARaymond has built a strong reputation in the automotive industry for clipping solutions that **ensure quick, easy, no-tool assembly for more efficiency and a qualitative assembly process.**

QUICK CONNECTORS FOR FLUID LINES

ARaymond™ Quick Connectors are widely used in the automotive industry to provide **fast, easy, safe, and reliable connections for all types of fluid systems.**

BONDING SOLUTIONS FOR FASTENERS

ARaymond™ bonding solutions are **tailor made complete systems** including adhesive, process and services that ensure production and quality achievements.

CABLE & TUBE FASTENERS

Our solutions manage easily **all tubes and cables** such as continuous tubes, bundles of tubes or cables, corrugated hoses, and more. They are compatible with all common **mounting strategies**: round, oval, oblong, and square holes, blind holes, studs and edges. They are available in **several designs** for a wide range of diameters, and panel thicknesses and can manage multi-housings.

- Weight saving
- Temperature resistant
- Vibration and noise reduction
- Watertightness
- Modularity

Electric wire harness & fluid lines management

CABLE STRAPS

- Wire harness diameters from 0,5 to +40mm.
- Swivel components increase flexibility for multidirectional mounting.
- Double cable straps allow to manage more than one bundle.
- Lightweight straps cover all wire harness diameters up to 25 mm, reducing waste and costs, and optimizing shipping and logistics.



Plastic or metal adapters allow flexibility in complex mounting situations.

Bi-injected seals for watertightness.

ONE PIECE SOLUTION FOR WIRES AND PIPES

Single molded swivel clip

- Locking 90° - swivels 90°.
- Bundle diameter from 1 to 40 mm.



TUBE HOLDERS & CABLE CLIPS

- Plastic and lightweight spring steel combinations.
- Broad range of options: live hinges, locking and adjustable lids.
- Metal parts for high-temperature environments.

Corrugated hose clips are specifically designed to prevent the hose from sliding along the wire bundles.



Plastic cable clip can be combined with spring steel insert to improve retention.



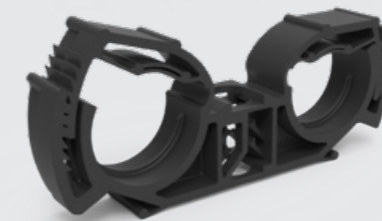
Bi-injected materials absorb vibrations and reduce noise.

Spacers manage brake, fuel, and electrical routing throughout vehicle.

Swivel function allows hoses to be fixed at different directions.

ROBUST CLIPS FOR HIGH VOLTAGE CABLES

- Fully serviceable due to robust cable latch feature.
- Integrated anti vibration feature against BSR (Buzz Squeak Rattle).



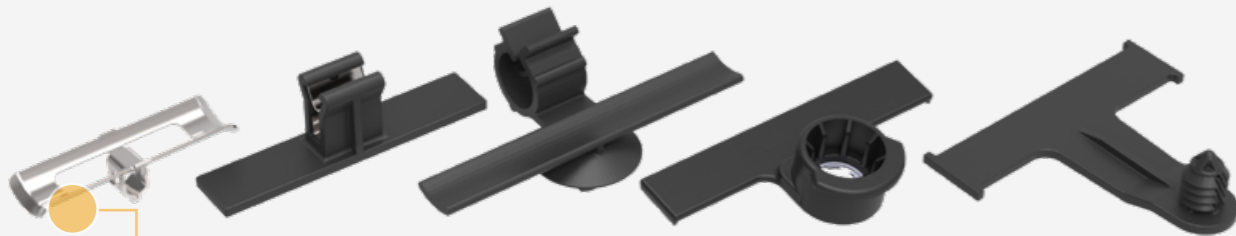
MODULAR SOLUTIONS

- Pre-assembled swivel clips range offers different fixing solutions and cable locking systems.
- Multiple fixing combinations and single or multiple cable housings available.



TAPE-ON CLIPS

- Available with or without offsets and wire housings.
- Good control of wire harness over tape feature length.



Lightweight spring steel tape-on clip suitable for high-temperature and harsh environments.

SAVING THROUGH COMMONIZING

MODULAR TAPE-ON CLIP

- All cable routing directions covered by only two parts.
- Excellent solution for efficient part ordering, inventory management, and transportation resulting in significant cost saving.



CONNECTOR HOLDERS & PROTECTOR CAPS

- Protecting, covering, and mounting connectors available for any circuits unused at point of manufacture.



Bi-injected seals for watertightness.

FUSE BOXES & RELAY HOLDERS

- Metal inserts, overmolded or assembled, provide secure and reliable fastening to vehicle.
- High quality laser marking process for identification of serviceable content.



BRACKETS

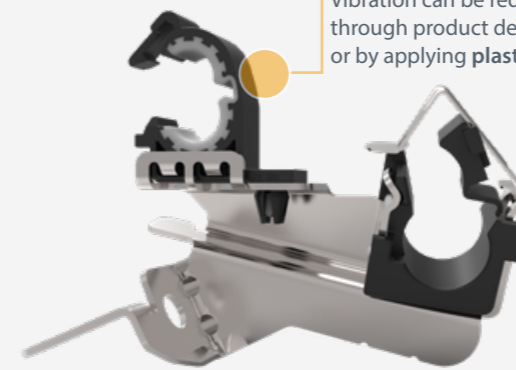
- Suit almost any packaging requirement and surface treatments.
- Spring steel is a lightweight, high strength and yet flexible material specifically suitable for ergonomic fastening.



Metal brackets for robust, temperature-resistant assembly.

Electric wire harness & fluid lines management

Vibration can be reduced through product design or by applying plastic materials.



WEIGHT SAVING BRACKET

- Lightweight and cost efficient plastic solution; single molded bracket and clip.
- Reinforced with metal anti-creep inserts.



CABLE CHANNELS

- Made from injection-molded plastic components with or without metal inserts.
- Robust performance throughout the vehicle's lifetime.
- Optimized number of fixing points.
- Repeatable assembly with quick and easy mounting.



High voltage applications

PANEL & TRIM FASTENERS

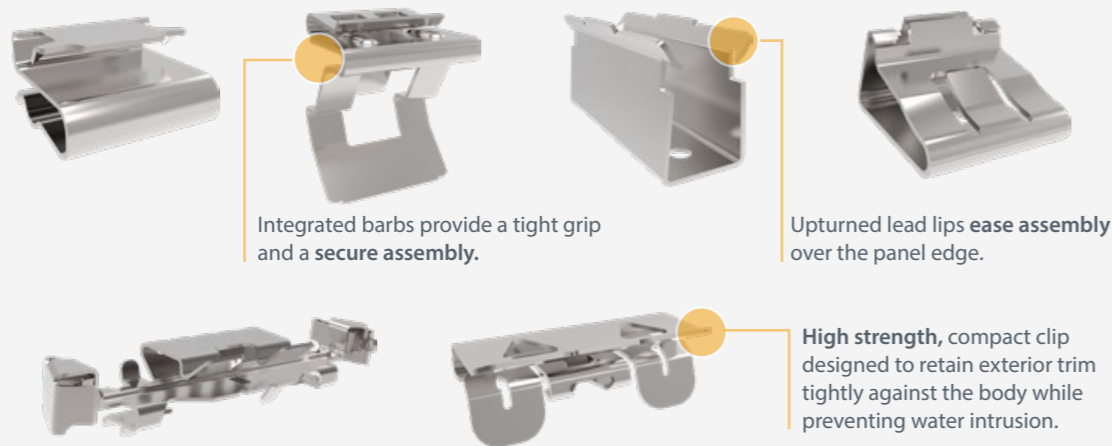
All-in-one parts eliminating the need for multiple fasteners and complex assembly operations. **Screwless** and **easy to assemble**, our fasteners accommodate most panel orientations and sizes.

- Increased passenger safety
- Preserved aesthetics
- Serviceability
- Compact packaging
- Watertightness
- Vibration and noise reduction

EDGE PANEL CLIPS

- Multi-functional: metal-to-metal or metal-to-plastic.
- Fast and easy manual mounting.
- Designed for parallel, non-parallel and perpendicular panels.

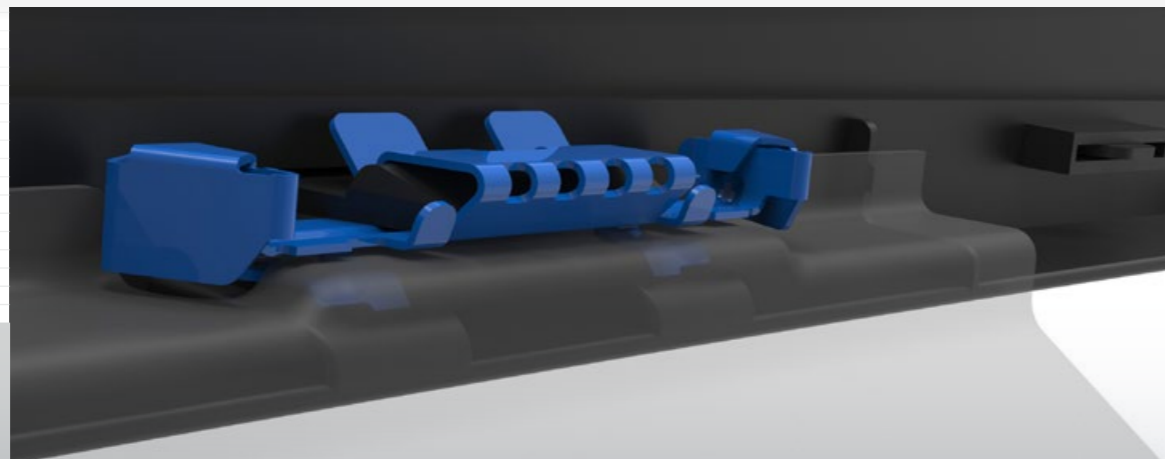
Car body



Integrated barbs provide a tight grip and a secure assembly.

Upturned lead lips ease assembly over the panel edge.

High strength, compact clip designed to retain exterior trim tightly against the body while preventing water intrusion.

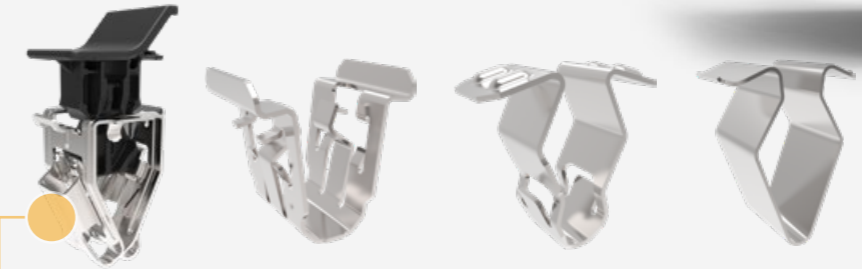


Headliner & pillar trim

Instrument panel & central console

SNAP CLIPS

- Ergonomic push-in force.
- Easy servicability.
- Without tools or screws.
- Invisible once mounted.



Versatile headliner fasteners with panel locking features for sun visor, upper console, grab handle and sunglasses pocket assembly.



Small packaging for tight environment (IPCC).



High retention force, ideal for front grill assembly.



Prevents vibration over the car's lifetime, enhancing consumers' quality perception.



Customized pillar trim, including wire and tube routing.

TOOL-FREE DISASSEMBLY FOR EASY TRIM SERVICEABILITY

2- stage panel trim retainer

- Fits any A, B, or C pillar.
- A tool-free blind disassembly process facilitates trim replacement after a crash, without access cover.
- Two-component assembly produced on a fully-automated assembly line with camera quality inspection.



WHEN FASTENING SOLUTIONS BRING MORE SAFETY

Airbag clip

- Very low assembly force.
- High retention performance.
- Different packaging thickness possible.
- Simple disassembly with standard pliers.
- Serviceability, 5 times without plastic deformation.



PANEL CLIPS

- Easy to install and serviceable.
- Audible click to check the assembly.
- Compact for tight packaging environment.



Multiple installation and removal. Quarter-turn fixing.

Sealing clips fasten the door rubber sealing.

Bi-injected seal for watertightness.

Inside door systems, appliqué & decorative moldings

Rear closures, fenders, wheel arch liners, rocker panels & mudguards

INVISIBLE SCREWLESS SOLUTION

Two-component screwless panel retainer

- Vertical and lateral tolerance management.
- High quality sealing.
- Easy manual and screwless assembly by clipping.
- Easy disassembly by simple push release for serviceability.



Car body

PUSH PINS

- Easy manual assembly and quick installation.
- Available with barbed feature which easily digs into the panel with minimal force.
- Can be grained and color matched for class A surface.



PUSH RIVETS

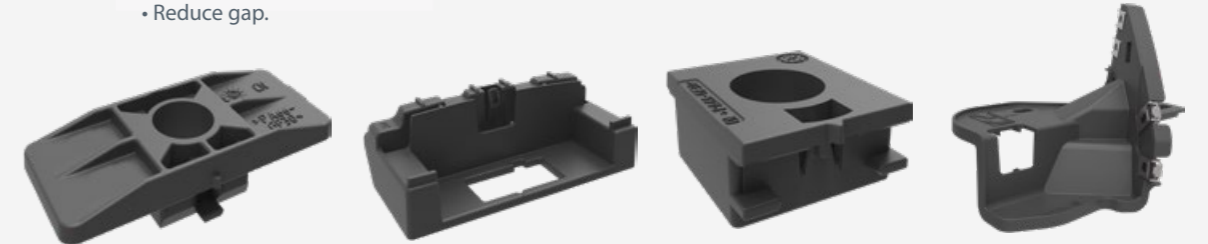
- Simply push through or turn the screw to lock and the expansion leg provides a secure joint.
- Easy manual assembly.
- Can be painted and compatible with surface treatment for aesthetic solutions.



High serviceability without compromising retention.

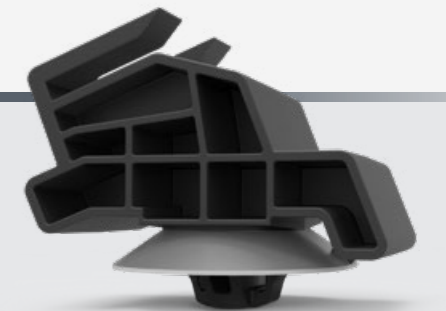
BRACKETS

- Enhance structural strength.
- Reduce gap.



VIBRATION & NOISE REDUCTION

- Bi-injected rocker panel bracket
- Bi-injection sealing reduces noise transfer to the passenger compartment.
- Flexible, allows lower-body-shell expansion.



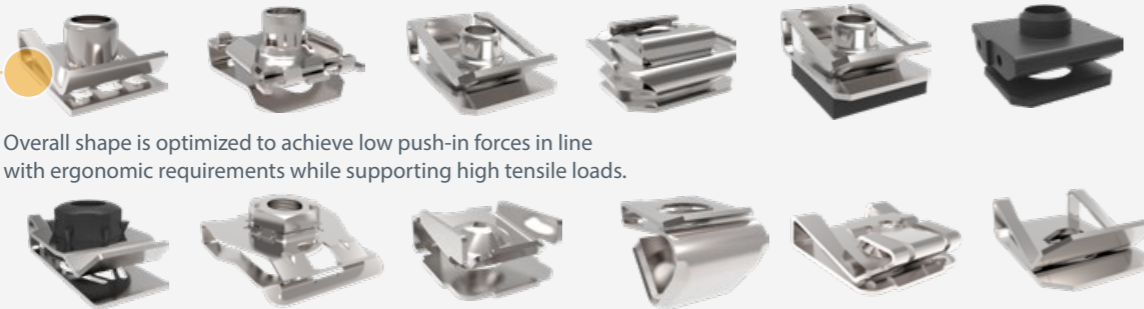
THREADED FASTENERS & RETAINERS

Our solutions accommodate most panel orientations, sizes and thicknesses. They are suitable for both metric or self-tapping and PT thread screws.

- Anti-creep
- Tolerance management
- Vibration absorption
- Watertightness
- Robust

PANEL EDGE NUTS

- Self-retaining ring securing the pre-mounting and speeding up the assembly.
- Anti-creep mechanism.
- Prevailing torque.
- Integrated guide flaps allow automated assembly processes.
- Electrically insulated nuts and watertight nuts are also available.
- Metric and non metric.



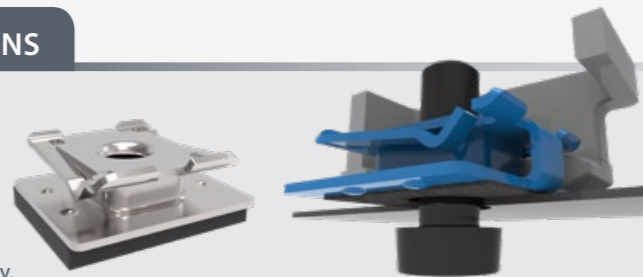
Car body, chassis & powertrain

Overall shape is optimized to achieve low push-in forces in line with ergonomic requirements while supporting high tensile loads.

ROBUST AND FLEXIBLE SOLUTIONS

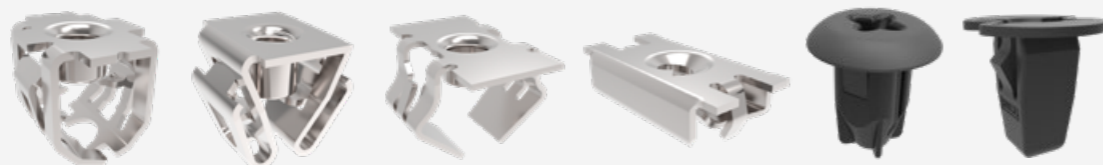
Sliding snap-on nut

- Robust screw-in assembly with the flexibility of an embedded anti-creep ring for tolerance management.
- Watertightness ensured with foam.
- Sliding before tightening for good positioning.
- Allowing linear sliding movement after assembly.



EXPANSION AND PUSH-IN NUTS

- Fast and vibration-resistant assembly for blind and center-panel locations where only one side is accessible.
- Easy to snap in, self-retained by spring legs.
- Plastic for corrosion-resistance.
- Metric and non metric.

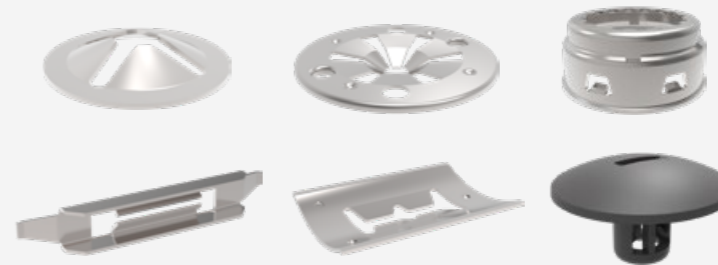


Interior trim

SHAFT RETAINERS

PUSH-ON STUDS RETAINERS

- For threaded or smooth studs.
- Compact design.



LIGHTWEIGHT 2-IN-1 SOLUTION

- Lightweight 2-in-1 strain relief plate that can reduce tailgate hinge weight by 75%.
- Distributes load and avoids composite creep.

PROTECTING & FINISHING

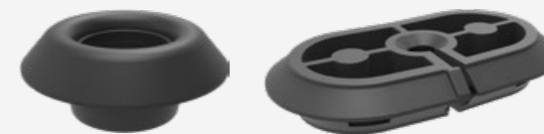
METAL ANTI-CREEPING RINGS

- Transmit the locking torque of the screw while preventing plastic creeping, thus stabilizing the attachment.



GROMMETS

- High quality sealing.
- Reducing vibration and associated noise.



PLUGS

- Tight seal.
- Water evacuation feature available.
- Easy serviceability.



Specific engine plug designs with assembled O-ring seal for watertightness or locking system with hinge for easy serviceability.

SELF-ADJUSTABLE GAP COMPENSATION TAILGATE BUMPER

- Easy, quick and accurate calibration process.
- Auto-adjusting height.
- Watertight, prevent gaps, vibrations & noise.
- Screwless locking by quarter-turn.



WASHER SYSTEMS

Mounted on or under the hood of the car, on the cowl, in the stop lamp, or on the wiper arms, our nozzles can accommodate all front and rear windshields, as well as cameras and sensors. They allow efficient water management. Options include integrated check valves, heated nozzles and seals.



Nozzles and jumpertubes assembly

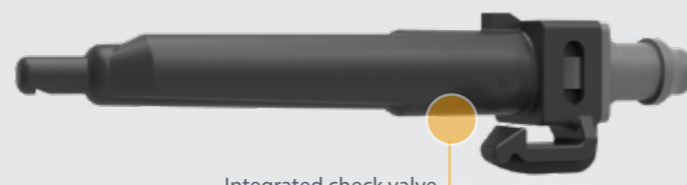
Quick Connectors

Check valves

SOLUTIONS FOR SELF-DRIVER CAR SYSTEMS

Rear-view camera nozzle

- Hook fastening system, easy to assemble and serviceable.
- Efficient water consumption.



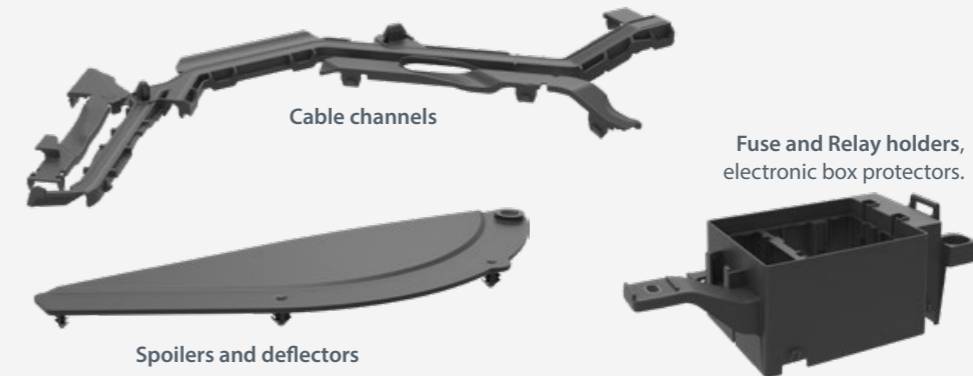
Camera

Integrated check valve.

CUSTOM DEVELOPMENT & MANUFACTURING EXPERTISE

DESIGN AND MANUFACTURING OF COMPLEX PARTS

ARaymond offers vehicle-specific development services to respond to automotive OEM's and parts manufacturers' assembly challenges. We handle all stages of manufacturing in house, from designing molds to plastic injection molding of complex or particularly detailed parts.



Cable channels

Fuse and Relay holders, electronic box protectors.

Spoilers and deflectors

ASSEMBLY PARTS AND MECHANISMS

ARaymond is able to provide a comprehensive assembly service, involving metal, plastic parts or a bi-material assembly. We also combine our expertise in clipping, connecting, and bonding to provide the best assembly solution.



Window channel

Designed to ensure that rubber cannot move during the repeated up and down movements of the glass.

Roof molding flap

Easy to mount, delivered as a mounted part combining the two plastic parts, and in trays to allow a fully automatic assembly.

Customizable axis and orientation.

ACTUATOR AND ADJUSTER

Our experts optimize the design of individual parts to be assembled together to ensure both a good assembly and end performance.

100% control of assembly to ensure the functioning of the part.



MODULAR CONNECTING ROD

- Transmits wheel movement to the car body for smart adaptive front lights.
- Low push-in force and high pull-out force.
- Automatic gap and wear compensation.
- Clean assembly process: no grease needed.



QUICK CONNECTORS FOR AUTOMOTIVE FLUID LINES

ARaymond™ Quick Connectors bring **reliable and efficient solutions for fuel lines and all fluid lines**. The connectors are compact, short and easy to use. No tools are required to disconnect for service. The use of Quick Connectors will help reduce assembly cycle time and increase productivity.

Secure connection
Sealing tightness
Time, space and weight savings

FLAGSHIP QUICK CONNECTORS

1-AND 2-BUTTONS QUICK CONNECTORS LARGE RANGE

- Diameters from 6.30-1/4" to 37,56 SAE standard.
- Adapt to any packaging environment with a wide range of geometries, angles and multiways.
- 100% tested, guaranteeing a quick and secure connection.
- Compliant with the SAE J2044 standard.



Specific materials available especially when immersed in tank or AdBlue®.

P2L®: MANUAL CONNECTION WITH VISUAL CONFIRMATION



- Visual and tactile confirmation of the connection: the lock latches only when the end piece is fully engaged.
- Compliant with the SAE J2044 standard.



For transmission and engine oil cooling lines requiring higher operating pressure, a **metal insert** can be added to allow better tube crimping and higher pull-out force.

A FUEL CONNECTOR FOR DEMANDING CONDITIONS



- Metal P2L®**
- Improved crash test, temperature, and pressure performance.
 - Allows crimping to reinforce high-temperature fuel hoses and oil hoses in the engine compartment.
 - Low insertion effort with our new design.

VDA RANGE FOR COOLING LINES

- Diameters from NW6 to NW32 VDA standard.
- Robust and compact.
- Compatible with various cooling fluids such as glycol and oil.



Anti-rotation device.

THERMAL MANAGEMENT

Both traditional internal combustion engines and new EV and hybrid EV powertrains require thermal management systems to **enhance performance, lower fuel consumption, and increase battery life and capacity**. Whatever the system configuration, ARaymond has a solution.

Quick Connectors with **integrated sensors** help to provide optimum performance where both electrical and fluid system are present.



AUTOMATIC SECURE CONNECTIONS

SELFY QUICK CONNECTOR: SIMPLE, SMART, SECURE

In response to a customer request for a specific feature, ARaymond developed a Quick Connector with automatic locking. The Selfy Quick Connector exceeded the customer's expectations, securing connection operations on the production line.

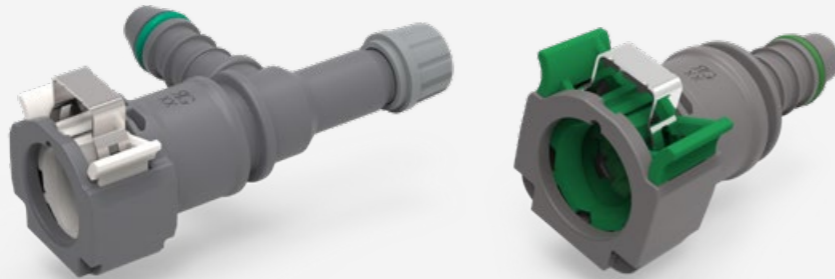
- Foolproof connection with audible, tactile, and visual confirmation in one assembly operation 100% automatic.



RAYLOCK®: AUTOMATIC CONNECTION WITH MANUAL DOUBLE LOCKING

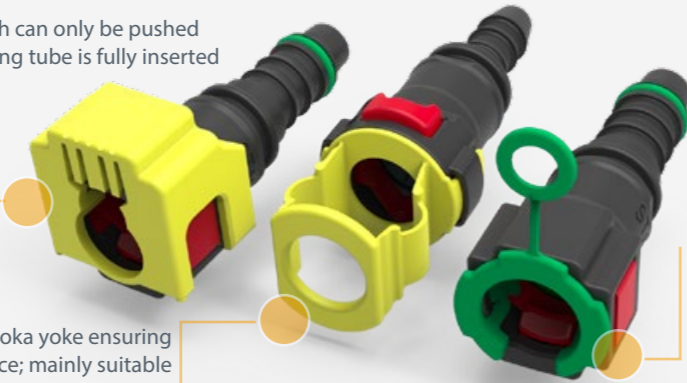


- Unlockable once the metal clip is pushed down.
- Compliant with the SAE J2044 standard.



ACCESSORIES TO CHECK THE CONNECTION

The plastic «double lock» latch can only be pushed down and secured if the mating tube is fully inserted in the QC helping to ensure a complete connection.



Spring Off Element: Plastic poka yoke ensuring the correct use of the end piece; mainly suitable for brake booster applications.

Assembly Check Pull Tab: Plastic pull tab automatically ejected, confirming that the end piece is fully engaged.

VALUE ADDED FEATURES

MECHATRONICS: FLUID PRESSURE AND TEMPERATURE MEASUREMENT

- Smart and compact 2-in-1 solution: fluid connection and pressure or temperature measurement.
- Easy change of measuring range by changing the sensor without additional hardware needed.



VALVES: FLUID FLOW CONTROL



Shut-off valve



One-way valve



Pressure regulator



Calibrated valve

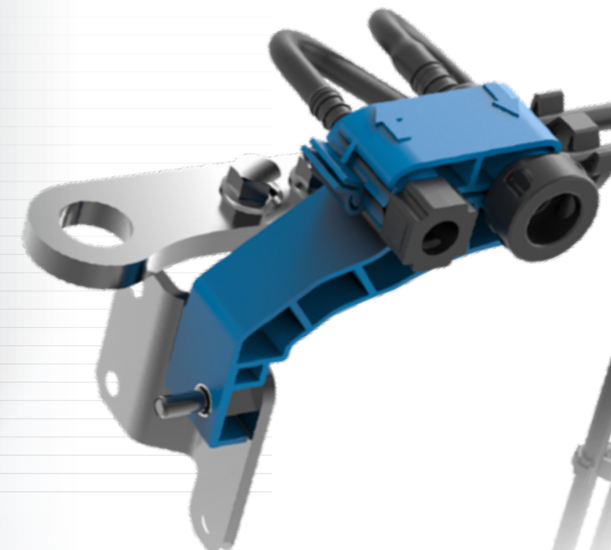


RG® valve: allows the priming or venting of the system when access is needed for troubleshooting.

FASTENING AND CONNECTING SOLUTIONS FOR BETTER SERVICEABILITY AND ASSEMBLY

Combination of a Quick Connector and integrated shut-off valve for leak-free disconnection to facilitate the transportation of engines and other fluid modules after testing and filling.

A molded ARaymond bracket secures the Quick Connectors in place for easy connection to the mating components at the OEM assembly plant.



BONDING SOLUTIONS FOR AUTOMOTIVE FASTENERS

- Turnkey solution
- Solid, clean & fast curing adhesive
- Complete monitoring of the bonding process
- Assistance and quality control during serial life

ASSEMBLY OF ADD-ON PARTS ON GLAZING

BONDED SENSORS AND CAMERAS ON WINDSHIELDS

- Bonded pre- or post-autoclave, which allows more freedom on the assembly line.
- No curing stock.

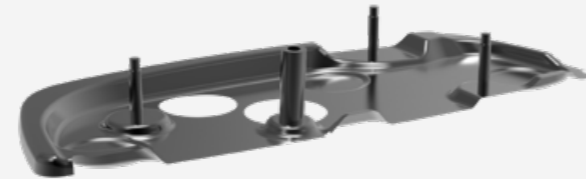
BONDED OPENING GLAZING SYSTEMS

- Ideal when bonding is required, onto laminated glass or on the edge of the glass.
- Allows reduced glass dimensions, lighter weight and improved design.



BONDED WIPER SYSTEMS

- Withstand the stress placed on multifunctional wiper plates.



BONDED TRIM AND SPOILER FASTENERS

- Compact fastener and unique bonding process for high performance on small bonded surfaces.
- Invisible fastening system that preserves the aesthetics of the glass.



LOGISTICS CHALLENGES FACED BY COMBINATION OF CLIPPING AND BONDING EXPERTISE

Megabrackets have complex geometries and come in a wide range of models, creating logistic challenges. Our fast-curing adhesive and simple process enable in-sequence bonding as close as possible to OEM assembly lines, reducing logistics related costs.



ASSEMBLY OF VALUE ADD PARTS ON STRUCTURAL ELEMENTS

Composite compatibility

- Respect the structural integrity of lightweight materials.
- Eliminates corrosion between two incompatible materials.
- Easy to mount from a variety of positions.

ASSEMBLY OF TRIM ONTO CAR BODY COMPONENTS

Pillar trim, roofs, doors, appliques, spoilers, bumpers, & fenders

This ready-to-assemble and invisible solution offers a perfect A-surface while maintaining strength. Because it is compact, packaging and shipping are more efficient and cost effective.



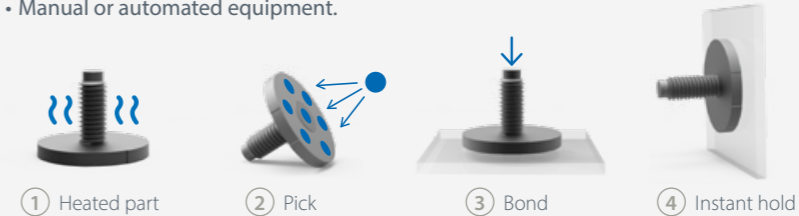
DEEP ENGINEERING KNOW-HOW

TECHBOND™ PUR ADHESIVES

- Thermoreactive polyurethane adhesives.
- Structural performance.
- Immediate hold and quick curing.
- Clean, precise, and assisted implementation.

PICK&BOND™ : CLEAN, REPEATABLE, AND RELIABLE PROCESS

- Full control over all bonding parameters.
- Fast cycle times (just a few seconds).
- Easy implementation.
- Manual or automated equipment.



SCA™ METHODOLOGY

ARaymond has developed the SCA™ (Systematic & Collaborative Architecture) Methodology to ensure that you receive a complete, high-performance bonding solution that meets your unique needs.

Our Bonding Solutions Architects leverage advanced tools and expertise to bring you a bonding solution you can trust for total peace of mind.

BONDING ADD-ON ELEMENTS ON BODY-IN-BLACK

- ARaymond can bond hundreds of studs to a carbon fiber reinforced polymer car body to fasten cables, heatshields, under body streamlining, hydraulic tubing, and more.
- Studs can be bonded in any position, even on vertical and inverted surfaces.

