Panel Fasteners

Fairchild Fasteners has the broadest selection of Panel Fasteners available.
Fairchild Fasteners. Global leadership through excellence and innovation.
For more than 50 years, Fairchild Fasteners® has set industry standards in the design and manufacture of precision fasteners, fastening systems and support tooling. Offering a broad selection of panel fasteners, Fairchild Fasteners serves the needs of aerospace, industrial, and automotive markets with proven excellence and innovation.

Today, Fairchild Fasteners meets the challenges of an expanded arena. Our totally integrated company provides global industry support through worldwide sales and services.

The Fairchild philosophy helps explain our ongoing leadership. We are committed to constant improvement of every product, system and service. To maintain our cutting edge engineering and manufacturing expertise, we select teams of highly skilled personnel who use the latest computer applications to provide total, custom solutions. Our commitment is broad yet highly specific, with experienced specialists assigned to each product line.

Our success in achieving and maintaining quality is well documented. Fairchild Fasteners has distinguished itself by achieving ISO 9001/AS9000 Registration, FAA Certifications and NADCAP Third Party Accreditation, in addition to an extensive set of customer approvals. Since 1991, Fairchild Fasteners has been dedicated to Continuous Improvement programs. At each facility, Lean Manufacturing and Service Workshops have become a way of life.

For high technology fastener solutions, look to Fairchild Fasteners. Our dedication to excellence is the template for success.
**Structural Panel Fasteners** are designed to provide high strength in tension and shear, high vibration resistance, and exceptionally high cycle life. There are five primary structural panel fastening systems that are offered by Fairchild Fasteners including the Mark IV™, Live Lock™, Milson® TrMiIl™, and QR™ Series. Each design offers a unique set of features to support the broadest range of customer applications.

The **Mark IV™** panel fastener incorporates the Flatbeam™ lock design for superior vibration resistance. This feature also extends the locking capability to up to 1,500 seated cycles, greatly exceeding the NASM25027 “unseated” locking cycle requirement, that other panel fasteners meet. Multiple lead thread configurations are available to facilitate quick operation for reduced down time. Due to its unique design, this fastener can accommodate a large variation in grip. Receptacles allow for radial float making it easier to assemble curved panels, or panels with hole misalignment. Within the Mark IV™ panel fastener system, there are three basic **variations** including plug type, hold-out type, and twist-on type, each of which is available with a radial-slot, hex or Torx® recess. All stud bolt configurations are held in the panel by a retaining ring. With the hold-out type, the stud bolt, when dis-engaged from the receptacle, can be pulled out to the hold-out position to facilitate easy removal of curved or hinged panels. The twist-on configuration incorporates the benefits of the TrMiIl™ retaining ring system onto an externally threaded fastener, while preserving single-tool installation and removal of the retaining ring, and the high-strength and reusability common to all Mark IV™ panel fastening systems.

The **Live Lock™** panel fastening system provides a high strength joint, offering quick operation and an exceptionally high cycle life for use on high performance aircraft, electronic, and avionics applications. Comprised of a stud nut and receptacle, the system provides a low prevailing installation and removal torque, yet offers high vibration resistance. Receptacles offer radial float and, in most configurations, the receptacle housing assembly can be replaced without removing the mounting rivets. The receptacle housing assembly is also totally encapsulated. This is particularly valuable in electronic environments for reducing the chance of debris-related damage. The spring-loaded ratchet design insures a positive locking action and vibration resistance without relying on prevailing torque. The multi-spring system nullifies the negative effects that can exist due to resonant vibrations. The stud nuts are positively retained to the panels with retaining rings, improving maintainability. A stud nut hold-out feature allows for easy installation and removal of...
The Milson® panel fastener system is a high shear strength fastener system that accommodates misaligned hole patterns and provides a means of retaining the sleevebolt in the removable panel. The Milson® sleevebolt and receptacles are available in many lengths and heights for application to various panel and structure thicknesses. Various types and strength levels of material are also available. The sleevebolt is retained to the removable panel with a retaining ring. The receptacle barrel assemblies are easily removed and replaced without drilling out the rivets. The Milson® panel fastener is available in three different sizes to accommodate varying strength requirements.

The TriMil™ panel fastener was originally developed to provide a more robust union between the stud nut and mating retaining ring, one suited for surviving the most extreme "real world" environments. It was also designed to provide an extended self-locking or prevailing torque feature, high tension and shear strength. High vibration resistance is also a key feature with this fastening system. The TriMil™ Fastener may be used in place of the Milson® sleeve bolt and retaining ring with the Milson® receptacle. Its use simplifies the retrofitting of existing aircraft, and has been fully qualified for numerous aircraft applications. The TriMil™ fastener can also be used with the special TriMil™ mating receptacle for high strength and high fatigue applications.

The QR™ fastening system is lightweight, has a small envelope and is quick operating. Most versions lock and unlock in less than two turns. The stud is positively retained and both flush and protruding head styles are available with various drive recess configurations. There is an optional stud hold-out grommet, which provides for a bottom flush condition. The receptacle offers a minimum 0.020 radial float for easier alignment.

Fairchild Fasteners Assembly Tool Systems offers a wide selection of installation and removal tools for panel fasteners, and have the capabilities to custom design tools to suit any unique requirement.

Among the variety of panel fastening systems are a number of components, which come in a wide range of materials and finishes. Common materials for the stud bolt, nuts, and receptacles include various aircraft quality Alloy Steels, along with high strength A286 Corrosion Resistant Steel, 300 series Corrosion Resistant Steel, and specialty materials such as Inconel® 718 Nickel-Chromium Alloy.

Both unified and metric products are available.

Typical panel fastener applications include fixed and rotary-wing commercial and military aircraft, missiles, satellites, and ground support equipment.
**Eccentrix™ Adjustable Shear Alignment Pins** provide adjustment for perfect alignment of chassis and plug-in modules. They also protect against damaging shock, shear-loads, and chassis warpage. The design allows for 360° adjustment of the pin centerline from 0 up to 0.062 inch for the standard series and 0.040 inch for the miniature series. Shear loads are transferred from the chassis to the rack, ahead of sensitive components, such as connectors, to prevent damage. The system consists of an eccentric shear pin, concentric bushing, eccentric hex bushing, and locknut. Adjustment is accomplished by rotating the eccentric pin with a hex wrench and the eccentric bushing with an open-end wrench. Once alignment is achieved, the assembly is secured by tightening the locknut.

There are three series available based upon the strength and envelope requirements. These include the miniature, general purpose and heavy-duty series. They range in shank thread size from 0.190-32 to 0.375-24.

Mating high strength receptacles are also available. They are particularly recommended when the pin must be inserted into thin or soft chassis or rack materials or when large shear loads are present. The self-aligning design uses the same concentric bushing and eccentric hex bushing as the alignment pin assembly, and eliminates the need for costly precision hole locations. In addition, use of this system eliminates the need for heavy precision slides or rails resulting in both weight and cost savings.

Ordering of this system begins with choosing the appropriate alignment pin assembly, and selecting material, finish, strength, and envelope requirements. The dash number to fit a particular panel thickness is then selected, followed by a receptacle assembly, according to the mating pin diameter. Generally, receptacle assemblies are specified using the same material and finish as the alignment pin assembly.

Installation and pin alignment are performed using standard hand tools. Shear pins are available in various aircraft quality Alloy Steels, 17-4 PH, 300 Series, and high strength A286 Corrosion Resistant Steel. The mating nut material, for Alloy Steel pins is Carbon Steel, and 300 Series Corrosion Resistant Steel for pins made of 17-4 PH, 300 series, and A286 Corrosion Resistant Steels.

Both unified and metric shear alignment pins are available.

Typical Eccentrix™ Adjustable Shear Alignment Pin applications include electronic chassis and plug-in modules housed within ground support equipment along with fixed and rotary-wing aircraft and tracked vehicles.
Captive Screws come in a wide range of configurations, head styles, drive recesses, sizes, and materials. The basic design behind the captive screw is to provide a fastening system with a retractable screw which allows equipment to be removed and installed without the possibility of jamming, damage or loss of the screws. There are several basic captive screw configurations including snap ring type, crimp ring type, swage type, nut retainer type and snap-in type, each offering unique design features.

Snap Ring captive screws are retained to the panel by use of a split retaining ring. This eliminates the housing that is required with most captive screws. The retaining ring is installed with the use of a simple hand tool. This was our first generation captive screw to be retained by a retaining ring. An improvement to this product is the crimp ring captive screw and is recommended as a replacement.

The Crimp Ring™ captive screw bridges the gap between conventional designs and high performance structural panel fasteners. The elimination of the housing allows direct transfer of shear and tensile loads through the screw without the usual compromise of competing systems. The retaining ring retention allows for quick installation and removal using inexpensive hand tools without loss of the fastener, minimizing maintainability problems.

The Swage Type configuration is ideal for assemblies where permanent installations are desirable. The housing is swaged on the backside of the panel for positive retention. Available in non-spring loaded or self-retracting spring-loaded versions, the self-retracting designs are very popular as an aid to sliding or curved panel installations.

Nut Retainer Type configuration is ideal for assemblies where it may be required to remove the fastener from the panel. The nut retainer can be removed easily with use of simple hand tools. The nut retainer type automatically retracts flush with the panel when disengaged from the mating threads.

The Snap-In type is completely assembled eliminating the need for separate retaining rings or nuts contributing to its low installation cost. No special tooling is required for installation as it is snapped into place with simple thumb pressure. Hole preparation consists of a drilled or punched hole. This design comes in both a front and rear-mounting configurations.

Quad-Lead Receptacles are available for use with most captive screw configurations.

Both unified and metric products are available.

Typical captive screw applications include electronic packaging housed within ground support equipment, satellites, missile systems, along with fixed and rotary-wing aircraft and tracked vehicles.

Fairchild Fasteners Assembly Tool Systems offers all the necessary tools required to support our broad line of captive screws, and have the capabilities to custom design tools to suit any unique requirement.

Captive screws are most commonly manufactured of 300 Series Corrosion Resistant Steel but are available in all popular alternate materials as required. The housing for the snap-in series comes in both Aluminum and Nylon materials.


1/4-Turn Fasteners, sometimes referred to as Camloc® fasteners, offer the quickest operating high re-use, mechanical fastening system available. They securely lock and disengage with a simple 90° action. A standard fastener system consists of a stud and mating receptacle, the panel and frame, along with a method of retaining the stud. Stud retention might be a grommet or retaining ring, or possibly both. Some series include snap-in type studs, which do not require the use of a retaining ring, and some studs do not require retaining rings or receptacles.

Receptacle types are included with each stud series. Most attach by use of rivets to the underside of the frame. Some simply snap into place from the front or rear of the frame and others are ultrasonically installed.

Fastener selection consists of finding the desired stud based on strength requirements, head style, installation method and operational characteristics. A receptacle is then chosen with the selection, varying based upon the stud selected. When calculating the total material thickness, it is important to consider any paint, finishes or compressed gaskets that may be present in the joint.

Fairchild Fasteners offer miniature, general purpose, heavy duty and extra heavy-duty designs along with fasteners with special design features. The mating receptacle also has numerous options including standard mounting, side mounting, rivetless (for rapid installation) offered in clip-on, front loading, rear loading, and ultrasonic styles. Additional configurations include corner mounting special purpose, encapsulated, floating and weld attachment.

Hole preparation, installation, and removal tools, in support of the entire 1/4-Turn product line, are available through Fairchild Fasteners Assembly Tool Systems.

Fairchild Fasteners 1/4-Turn fastener product line has the broadest product offering of any other panel fastening systems. Some of the protruding head styles include slotted recess, cross recess, recess style per NAS1078, High-Torque® hex socket, hex head, slotted hex, folding wing, fixed wing, offset fixed wing, folding ball handle, knurled head, knurled knob, plastic knob, plastic T-knob, and handle operated. Unique head styles include tamper resistant, sealed, push to operate, and self-captivating for rapid installation. Based upon the head style, both protruding and flush mounting configurations are available. In terms of size and strength,

The 1/4-Turn product line is manufactured from a wide range of materials including Aluminum, Carbon Steel, Alloy Steel, Spring Steel, Silicon Bronze, Zinc, Plastic, and a variety of Corrosion Resistant Steels.

1/4-Turn fasteners are available in inch or metric sizes and are covered by "NAS" standards.

Typical applications include automotive, electronic computing and office equipment, instrumentation and telecommunications, panels, drawers, and doors.
Grommets and Hole-Liners are the latest addition to Fairchild Fasteners’ broad range of panel fastening systems. For use in non-metallic and soft or thin metallic structures, this system is comprised of precision thin-wall sleeves, which are flared, bonded, or riveted to the structure. Available to house screws ranging in size from 0.190 to 0.375 inch, these grommets and hole-liners are designed to protect the parent material from damage due to fastener reuse and hole misalignment. They also provide a metallic “hard seat” for the fasteners to clamp-up against, allowing the full tension and shear load capabilities of the fasteners to be achieved. This is becoming increasingly important with the expanded use of lightweight, composite materials and soft, ultra-thin metallic structures.

Designed to mate with Fairchild Fasteners’ panel fastener systems, configurations have been developed to fit virtually any bolt or stud head style. Designs are available to mate with the receptacle or nutplate side of the assembly, allowing a full metallic lining in the structure, as well as the panel side of the assembly.

The sleeves are manufactured from 300 Series and A286 Corrosion Resistant Steel materials.

Typical grommet and hole-liner applications include fixed and rotary wing commercial and military aircraft, access panels and substructure holes.
Fairchild Fasteners is a total solutions provider for fasteners and installation tools to the aerospace, industrial and automotive markets. Our Assembly Tool Systems (ATS) Division has over forty years of experience in providing answers for all of our customers’ assembly needs. Tools are available for hole preparation, installation and removal, to support our wide range of panel fasteners.

ATS also offers Design & Engineering Services, Tool Lease Programs, Tool Rental Programs, Service and Maintenance Programs, and Calibration Services. In addition, ATS is a full line Atlas Copco® Distributor.

For installing one part or thousands, ATS has the right tool for any application.