

# ***SPS Technologies fasteners.***

O r c o n t a c t :



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# **High Performance Racing Parts**

The Difference between **DNE**  
and the **checkered flag!**



# Why Drive **SPS** Fasteners?

Sophisticated  
Testing

Reliable performance by the fasteners in your vehicle could mean the difference between a DNF and a victory lap. Choosing a quality fastener is a relatively inexpensive way to protect your investment, increase safety and help boost your chances for a checkered flag.

SPS Technologies is a recognized supplier of fastener products for motorsports around the world, including connecting rod bolts and engine, transmission and chassis fasteners for Formula One, NASCAR Winston Cup, IndyCar, Cart, NHRA, Busch Grand National Series, Craftsman Truck Series and ASA.



Metallographic  
Verification

## **SPS Quality.**

It is estimated that 90% of all fastener failures in motorsports are fatigue related. SPS Technologies fasteners are designed to stand up under the rigorous operating conditions associated with high performance autos, motorcycles and boats...increasing safety and reliability. The processes used to achieve superior fatigue resistance and deliver these important advantages are exclusive to SPS Technologies.

**Here are just a few of the advantages SPS fasteners offer for the racing enthusiast at every level:**

- Tensile strength levels as high as 260,000 psi
- Superior fatigue resistance resulting from advanced design and mechanical properties
- Precision forged for optimal grain flow, maximum strength
- One of the widest selection of quality nuts and bolts available





## ***Here's How We Do It.***

The complexity of producing fasteners to meet the requirements of high performance racing cars demands faultless control of the manufacturing process. SPS maintains computer-based quality control and adds the higher assurance of statistical monitoring to provide certifiable results.

### ***SPS's exclusive product quality control system includes:***

- Process control to increase lot-to-lot consistency
- In-process metallurgical inspections and mechanical testing
- Comprehensive final inspection to achieve zero defects...
  - dimensional inspection; sample or 100% of lot; over (double) inspection for highly critical parts
  - mechanical testing including tensile and cyclic fatigue
  - metallographic testing

## ***Material Selection***

Another consideration in manufacturing a quality fastener is proper selection of materials. SPS Technologies maintains strategic partnerships with mills supplying its materials to assure the chemistry and physical properties in every batch of materials satisfies the product performance requirements.

## ***Extensive Product Selection***

SPS offers nuts and bolts ranging in diameters up to 1" and lengths up to 8". A selection of materials is available to meet different strength and application requirements:

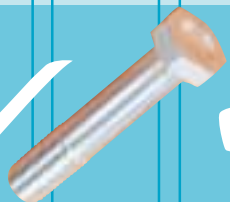
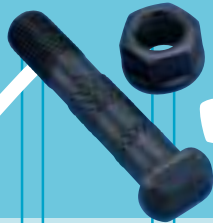
Titanium alloys – strength levels up to 200,000 psi  
Alloy Steel – strength levels up to 220,000 psi  
INCONEL® alloys – strength levels up to 220,000 psi  
MULTIPHASE® super alloys – MP35N® and MP159®  
– strengths of 260,000 psi

## ***Weigh the Advantage***

Note the strength level for titanium parts available from SPS — most other titanium fasteners only exhibit a strength level of 160,000. And while most other manufacturers offer alloy steel parts at 180,000 psi, SPS can offer up to a 220,000 psi strength level. This strength level advantage can result in significant weight savings since fewer fasteners are required per assembly.



	engine studs		bearing retainers		hex head bolts		button head screws	
	cylinder head studs	connecting rod bolts	shoulder bolts	socket head cap screws				
engine	✓	✓	✓	✓	✓	✓	✓	✓
transmission			✓	✓	✓	✓	✓	✓
chassis/ suspension			✓		✓	✓	✓	✓
brakes			✓		✓	✓	✓	✓
other			✓		✓	✓	✓	✓



12 pt.  
nuts & bolts

ESNA®  
self-locking nuts

hex nuts

spanner nuts

plate nuts

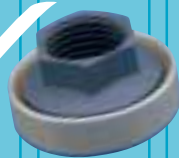
flush  
head bolts

FLEXLOC®  
self-locking nuts

self-aligning  
nuts

castellated nuts

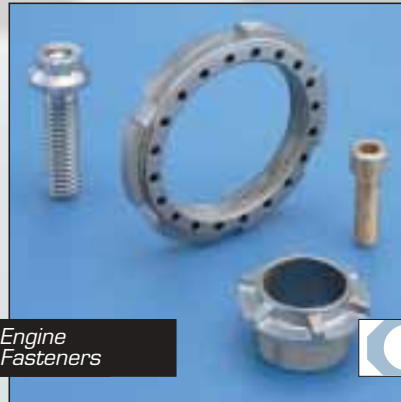
captive  
washer nuts



# More About *Fastener* Technology

## Manufacturing Requirements

Stringent control of all manufacturing processes is critical to the production of fasteners for high performance racing applications. Certain manufacturing practices produce better products than others.



Engine Fasteners



Transmission Fasteners

Properly forged heads and rolled threads produce the strongest, most reliable fasteners. Forging forms the metal and actually makes the heads stronger. Machining—actually cutting the metal—weakens threads, inviting fatigue failure.

## More Considerations

Design is another important element in producing a quality fastener. Heads must be designed with proper bearing area, correct upset and controlled fillet radius. Socket depth and drive lengths must conform to dimensional requirements in order to develop proper tightening characteristics.

Proper selection of material, proper heat treating, computer control of critical plating procedures and well-equipped quality control and testing facilities are all important, too.



Suspension Fasteners





Quality  
Manufacturing



## ***Control is Critical***

Failure to correctly control any of these and other manufacturing processes can result in fasteners that will not stand-up in high performance racing conditions. Low quality fasteners can lead to premature failures, safety concerns and reduced performance.

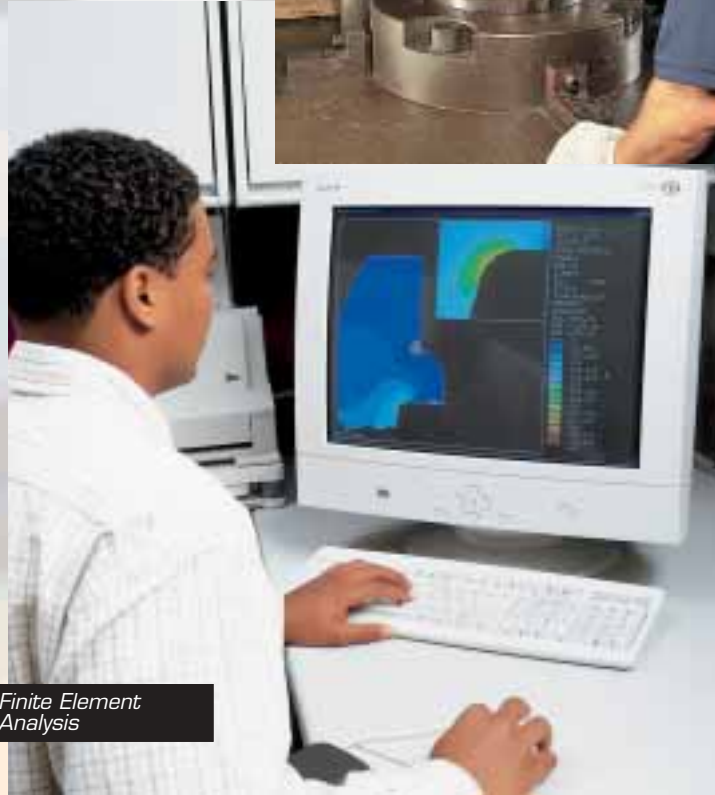
## ***FEA Design***

SPS Technologies uses Finite Element Analysis (FEA) to uncover optimal designs for fasteners destined for use in high performance racing circles. In fact, SPS has used the FEA tool to speed the design of connecting rod bolts for Formula One racing teams.

The company is one of the few fastener makers offering FEA as a design service.



Finite Element  
Analysis



## ***About SPS Technologies***

SPS Technologies offers fasteners for most critical engine and drivetrain applications. These products are available globally to meet the needs of motorsports everywhere.

*When the green flag comes  
up make sure you're running  
with fasteners that say*

# **SPS!**

