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*A Guide to*

# SPS Inserts and Studs



**SPS high performing inserts and studs are manufactured to meet the demanding quality, performance and reliability requirements of today's applications. Every insert and stud is a reflection of SPS's advanced engineering, sophisticated manufacturing and strict quality control.**

**Central to SPS insert's success is the solid wall design. Both the inserts and studs provide excellent torque-out and pullout capabilities through integral locking stakes which are driven into the parent material.**

## Solid Wall Staked Inserts

**Features** Provides excellent resistance to torque-out and pullout. Integral stakes are driven into the parent material to mechanically lock the insert in place and prevent rotation under high torsion loading and extreme vibration. Prevailing torque self-locking threads are integral to the insert or through the use of a Vespel washer incorporated into the insert. Locking stakes are available in a number of materials including self-broaching materials to eliminate pre-broaching in hard materials such as Alloy Steels, Inconel, Titanium and WSPALLOY®.

**Applications** Staked inserts can be used to enhance thread life and performance in soft materials such as Aluminum and Magnesium. They also provide increased torsion load capabilities. Ideal for electronics, aircraft engines, military defense systems and vehicles as well as overall thread repair, maintenance and salvage of expensive castings and forgings.

Configuration	Materials	Sizes	Standards
Miniature	303 Stainless Steel	#2 through 1¼ inch	MS51830
Lightweight	304 Stainless Steel	4mm-24mm	MS51831
Heavy Duty	17-4 PH	internal thread	MS51832
Extra Heavy Duty	A286		NAS1394
Blind End	4140 Alloy Steel	<b>ID Threads</b>	NAS1395
Solid Plug	Alloy 718 (INCONEL® 718) Titanium	UNJF UNJC Metric	

**Finishes** Cadmium per QQ-P-416; Type II, Class 2; Type II Class 3  
Passivate per AMS QQ-P-35 or ASTM A380  
Silver per AMS 2410, AMS 2411, or QQ-S-365, Type I, Grade A  
Molybdenum Disulfide solid film lubricant coated per MIL-L-46010 on thread locking products  
Nickel per QQ-N-290

**Locking Feature** Metal, VESPEL®

**Performance** MIL I45914



## Staked Studs

**Features** Weight-saving and provides excellent resistance to torque-out and pullout. Integral stakes are driven into parent material for a positive mechanical lock. Can withstand high temperatures and loading.

**Applications** Staked studs are used in a number of turbine engine and transmission/gear box applications. Widely used for component assembly that cannot accept a through bolt and nut combination.

Configuration	Materials	Sizes	Standards
Shear	303 Stainless	#10 through 1 inch	NASM51833
Lightweight	A286	5mm-12mm	NASM51834
Heavy Duty	4140 Alloy Steel Alloy 718 (INCONEL® 718) 6A1-4V Titanium	<b>Nut End Threads</b>	
		UNJF UNJC Metric	

**Finishes** Cadmium per QQP-416, Type II, Passivated per AMS-QQ-P-35 or ASTM A380

**Performance** MIL-S-45915



## Swaged Inserts

**Features** Lightweight, high strength and space-saving by design are key features of the Swaged Insert. Minimum boss required for installation. Locking knurl design provides for ease of installation and high torque-out performance in soft and hard parent materials.

**Applications** Swaged inserts are utilized where boss area is minimal to enhance thread life and performance. Used in electronics, aircraft engines and other applications requiring a lightweight, high performance solid wall insert.

Configuration	Materials	Sizes	Standards
Reduced wall thickness insert, available in standard length and extra length	4130 Alloy Steel A286 17-4 PH Alloy 718 (INCONEL® 718)	#4 through ½ inch 5mm-10mm <b>ID Threads</b> UNJF UNJC Metric	MIL-I-45932/1 AS52760/63 AS52790/93 NSA5054 EN3236 AS3504

**Finishes** Cadmium per QQ-P-416 Type II, Class 2; Type III, Class 3; Molybdenum Disulfide solid film lubricant per MIL-L-46010, Type I; Silver per AMS 2411 or QQ-S-365, Type II, Grade B

**Locking Features** Metal

**Performance** MIL-I-45932, T313B, EN3297



**Studs and inserts are available in many materials and configurations and can be easily installed with simple hand tools. SPS inserts and studs are manufactured to MS, MIL I, NAS, NASM, EN, NA, NSA Standards or specific customer requirements.**

## Ringlock Studs

**Features** Weight-saving and provides high resistance to torque-out and pullout when used in conjunction with serrated lock ring driven into parent material. Interference fit stud end threads provide excellent performance in high fatigue/high vibration applications.

**Applications** Utilized in soft and hard materials found in gear boxes, engines, pumps and vehicles in general.

Configuration	Materials	Sizes	Standards
Shear Lightweight Heavy Duty	4130 Alloy Steel 303 Stainless 17-4 PH Alloy 718 (INCONEL® 718) 6A1-4V Titanium	#10 through 1 inch 5mm-12mm <b>Nut End Threads</b> UNJC UNJF Metric	MS51551 MS51992 MS52989

**Finishes** Cadmium, Per QQ-P-416 Type II, Class 3, Passivated per ASTM A380

**Performance** MIL-S-45909



**This brochure will familiarize you with the applications and features, as well as the various types and styles of threaded inserts and studs available from SPS. For additional information, questions or problems, please call our highly experienced insert engineering department at 714-850-3637.**

