



Stud Welding Product Catalog



stud welders

welding guns

weld studs

parts & accessories

Sunbelt Stud Welding
6381 Windfern Road, Houston, TX 77040
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SERVICE AND TECHNICAL SUPPORT

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EMAIL INFO@SUNBELTSTUDWELDING.COM

COMPANY PROFILE

Sunbelt Stud Welding, Inc. located in Houston, Texas, manufactures and distributes a complete line of stud welding products. Since 1980, we have been committed to providing our customers with quality products, on-time deliveries and service that is second to none. Our customers are located across the United States and throughout the world, and we ship our products from facilities "coast-to-coast".

Sunbelt stocks a large range of weld studs sizes, cable hangers, parts, accessories, new equipment and rental equipment. In addition, we also repair all brands of stud welding equipment.

Our Technical and Customer Service Representatives have many years of experience in stud welding and can assist with any of your stud welding requirements or questions.

Give us a call, 1-800-462-9353 and see how our professional and personal service can help you.



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SECTION 3

ARC WELD STUDS

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The Sunbelt Stud Welding, Inc. catalog has been developed as an information source for our customers, stud welding users and those that have interest in utilizing the stud welding process.

This catalog provides the following information:

- General and technical information on the stud welding' processes.
- Full line of weld studs with technical details
- Full line of stud welding accessories with many images for quick identification
- Full line of stud welding equipment for manual, CNC and robotic operation.

The catalog does not contain custom accessories, custom weld studs and some of the lower volume weld studs.

Please contact Sunbelt Stud Welding with any questions, product needs, service needs and suggestions.



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TERMS AND CONDITIONS OF SALE

TERMS: F.O.B shipping point unless otherwise specifically provided. Payment of invoices is NET 30 DAYS and no cash discounts are allowed unless otherwise specifically provided.

QUOTATIONS: Stenographic and clerical errors subject to correction. All quotations, unless otherwise stated, are for immediate acceptance. Until Seller accepts an order, quoted prices are subject to change without notice.

CHANGE OF PRICE: Goods will be billed at prices prevailing at time of shipment and Buyer agrees to pay Seller at the billed prices.

CREDIT: Accounts will be opened only with firms or individuals with approved credit. The Seller reserves the privilege of declining to make deliveries except for cash or sight draft whenever, for any reason, doubt of the Buyer's responsibility develops.

CANCELLATION: Orders may be canceled or deliveries deferred only upon the condition that the Buyer assume immediate liability and make payment to the Seller for all work complete at the unit price; raw material, unamortized tooling, engineering charges incurred on the basis of cost to the Seller plus handling and overhead charges. All cancellation charges shall be determined at the time of cancellation or deferment.

QUANTITIES: Except where otherwise specifically provided, quotations are based on Buyer accepting over-run or under-run on each individual item not exceeding 10% of the quantities ordered. Where closer quantity control is required, special arrangements must be made. Quantities stated by Seller are normally determined by weight or machine count.

DELIVERIES: The Seller does not assume the responsibility for any damage growing out of or owing to any delays which are beyond his control.

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RETURNS: No material may be returned without first obtaining written permission from Seller's office. Authorized returns will be subject to a minimum 15% restocking charge.

LIMITED WARRANTY: Sunbelt's only warranty is that goods being sold will be free from defects in workmanship and material. This warranty is expressly in lieu of other warranties, expressed or implied and whether statutory or otherwise, including any implied warranty of merchantability or fitness for a particular purpose. Sunbelt's liability for breach of warranty shall arise only upon return of defective goods at Buyer's expense after notice to Sunbelt of the claimed breach, and shall be limited to furnishing a like quantity of such goods free from such defects or at Sunbelt's option to refunding the purchase price, providing; however, that Sunbelt will not accept receipt of equipment returned unless Buyer has previously afforded Sunbelt's personnel a reasonable opportunity to inspect and repair equipment at Buyer's facility or such other location as is mutually agreeable. Notice to Sunbelt of claimed defects must be made within 90 days of receipt of equipment and 10 days after receipt of other goods. Sunbelt shall never be liable for any consequential damages.

CLAIMS: If the Buyer claims that the material received is not as ordered, he must notify Seller within ten (10) days of receipt of shipment. If such claim that material furnished is not as ordered is sustained to the satisfaction of both parties, the Seller shall repair, replace, credit or complete the order within the limitation of "QUANTITIES". Under no circumstances will the Seller be liable for damages or any claims for expense involved in using its products. Seller will not allow claims for defective goods on those parts further processed by the Buyer and resulting in change of either dimensions or characteristics from parts as ordered.



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TOLERANCES: Unless otherwise specified, all tolerances and dimensions will be to standard of Seller.

SHIPMENT: In ordering, Buyer should explicitly state the method of shipment preferred and in the absence of such shipping directions, the Seller will use his discretion in employing the method of shipment for the material ordered. Insured shipments will be insured at the Buyer's expense, unless otherwise specified.

Shipments are made at Buyer's risk and expense.

Claims for losses incurred in shipments shall be made by the Buyer against carrier. Seller will assist Buyer in preparation and prosecution of claim in every practicable way.

TAXES: Any sales tax now in force or any tax, impost, levy, duty or other charge hereafter imposed by any Government or other authority upon the productions, use or sale of any goods ordered hereunder or upon the materials, methods or machines for producing the same and any increase in cost to the Seller in manufacturing, processing or delivering any goods sold hereunder, resulting directly from Government supervision, regulation or control, now or hereafter prescribed by law or in force, and affecting Seller's performance of its obligations hereunder, shall be added to the purchase price as herein noted or any revisions thereof, and shall be paid by Buyer.

PATENTS: It is not the intention of the Seller to manufacture or sell any product which, or the use of which, infringes on any patent and it is understood that the Seller will be promptly notified by the Buyer if the product on which he is quoting or offering for sale, or the use thereof, infringes on any patent. If such infringement exists, the Seller reserves the right to withdraw the quotation, and if the Seller is not given the notice specified herein, Seller will not be obligated in any way to indemnify the Buyer for any losses or damages incurred because of such patent infringements.

AGREEMENT: All orders placed by Buyer with Seller are accepted subject to those terms and conditions of sale. No terms, conditions or warranties other than those stated herein, and no arrangement or understanding, oral or written, in any way purporting to modify these terms of conditions, whether contained in the Buyer's purchase or shipping release forms, or elsewhere, shall be binding on Seller unless hereafter made in writing and signed by its authorized representative. All proposals, negotiations and representations made prior, and with reference hereto, are merged herein.



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SECTION 1

STUD WELDING – INTRODUCTION

FOR INQUIRIES, TO PLACE ORDERS,
SERVICE AND TECHNICAL SUPPORT CONTACT
ANY OF THE FOLLOWING:

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Stud Welding: Introduction

INTRODUCTION

Stud Welding - General

Stud Welding is a general term for joining a metal stud or similar metallic part to a work piece. Welding can be done by a number of welding processes including Arc, Resistance, Friction and Percussion.

Of these processes, STUD ARC WELDING utilizes equipment and techniques unique to stud welding. The other processes use conventionally designed equipment with special tooling for stud welding.

The process technically known as STUD ARC WELDING is generally known as "STUD WELDING". STUD ARC WELDING methods, processes, equipment, weld studs, accessories and related products are covered in this product literature"

Stud Arc Welding

Stud Arc Welding is an arc welding process in which a stud or similar metal part can be end-joined to a work piece instantaneously. This process involves the same basic principles and metallurgical aspects as any other arc welding procedure.

Process Overview - The stud is placed (with a hand tool, weld gun or weld head) against the base metal, through the control of the stud welding equipment and the design of the stud; an arc is drawn which melts the base of the stud and a proportionate area of the base metal, the stud is then forced into the molten pool and held in place until the metals re-solidify. This high quality fusion weld is completed in milliseconds.

Stud Arc Welding Methods - The two stud welding methods are called Arc and Capacitor Discharge (usually "CD" for brevity). The difference between these two methods involves the Power Source used to provide the welding current / energy and the stud design.

The equipment required to STUD ARC WELD is composed of a direct current power supply, a weld gun or weld head and the weld cables.

Advantages

The major advantages of STUD ARC WELDING are:

- **Cost savings** - reduced labor time, materials and secondary operations
- **Weld strength** - weld is typically stronger than the stud and base material
- **Process** - single sided and split second cycle time
- **Base metal** - minimal heating and warpage
- **Base metal** - attachment to very thin metals
- **Base metal** - no reverse side marking (CD and SC Process)



Stud Welding: Introduction

STUD ARC WELDING – CHARACTERISTICS OF EACH METHOD

General Characteristics Of Each Method		
Characteristic	CD Stud Welding	Arc Stud Welding
Source of Weld Power:	Rapid discharge of stored energy from bank of capacitors	Transformer-Rectifier
		Inverter
		Motor/Engine-Generator
		Storage Battery
Power Source Input Voltages:	110 Volt AC, Single Phase	230 Volt AC, Three Phase *
	100 - 240 Volt AC, Single Phase (variable input)	380 Volt AC, Three Phase
	220 Volt AC, Single Phase	400 Volt AC, Three Phase
		460 Volt AC, Three Phase *
		575 Volt AC, Three Phase
		100 - 600 Volt AC, Three Phase (variable input)
		* Limited single phase based power sources
Typical Weld Tools:	Hand Held Weld Gun **	
	Mounted Weld Head **	
** Auto feed options are available for both weld tools		
Typical Stud Diameters:	.080 - .312"	.138 - 1.0"
Maximum Diameter:	.460"	2.0"
Shielding:	Shielding is not typically needed	Shielding is typically needed in the form of ceramic ferrule (most common) or gas
Welding Position:	Down Hand	
	Side Hand (limited to 7/8" diameter)	
	Over Head (limited to 7/8" diameter)	
Specific Process for each Method:	Contact	Arc or Drawn Arc
	Gap	Short Cycle (with or w/o gas)
	Drawn Arc	



Stud Welding: Introduction

PROCESS SELECTION GUIDE – PART 1

Factors To Be Considered	CD Processes		Arc Processes	
	Contact /Gap	Drawn Arc	Std. Arc	Short Cycle
Stud Shape:				
Round	A	A	A	A
Square	A	A	A	A
Rectangular	A	A	A	A
Other	A	A	A	A
Stud Weld Base Diameter:				
.060 - .125" Diameter	A	A	N	L
.125 - .250" Diameter	A	A	L	A
.250 - .430" Diameter	A	A	A	A
.430 - 1.00" Diameter	N	N	A	L
1.00 - 2.00" Diameter	N	N	B	N
Up to 0.05 inch squared	A	A	L	A
Over 0.05 inch squared	N	N	A	L
Stud Material:				
Carbon Steel	A	A	A	A
Stainless Steel	A	A	A	A
Alloy Steel	L	L	A / B	A / B
Aluminum	A	B	B	L
Brass	A	A	N	N
Base Material:				
Carbon Steel	A	A	A	A
Stainless Steel	A	A	A	A
Alloy Steel	A	L	A / B	A / B
Aluminum	A	B	B	L
Brass	A	A	N	N

Legend:	A - Applicable without special procedures, equipment, etc.
	B - Applicable with special techniques or on special applications.
	L - Limited application
	N - Not recommended

(continued on next page)



Stud Welding: Introduction

PROCESS SELECTION GUIDE - PART 2

Factors To Be Considered	CD Processes		Arc Processes	
	Contact /Gap	Drawn Arc	Std. Arc	Short Cycle
Base Metal Thickness:				
Under .015"	A	B	N	N
.016 - .030"	A	A	L	B
.031 - .062"	A	A	L	A
.063 - .125"	A	A	B	A
Over .126"	A	A	A	A

Shielding:				
Ceramic Ferrule	N	N	A	N
Gas	L	L	L	A

Stud Type / Design:				
Arc	N	N	A	L
CD (Capacitor Discharge)	A	A	L	A
SC (Short Cycle)	N	N	B	A

Design Criteria:				
Heat Effect on Material(s)	A	A	B	B
Weld Flash Clearance	A	A	B	B
Reverse Side Marking	A	A	N	L
Strength of Stud Rules	A	A	A	A
Strength Base Metal Rules	A	A	A	A

Legend:	A - Applicable without special procedures, equipment, etc.
	B - Applicable with special techniques or on special applications.
	L - Limited application
	N - Not recommended



Stud Welding: Introduction

PROCESS & STUD TYPE COMBINATION GUIDE

Stud Type / Style	CD Processes		Arc Processes	
	Contact /Gap	Drawn Arc	Std. Arc	Short Cycle
Arc Weld Studs:				
Concrete Anchors	N	N	A	N
Threaded	N	N	A	C
No Thread	N	N	A	C
TuffStudds	N	N	A	N
Debarking	N	N	A	N
Rectangular	N	N	A	C
Refractory *	N	N	A	N
* Some Refractory Anchors are suitable for hand welding only				
CD Weld Studs:				
All CD Styles	A	A	C	A **
** For smaller weld base diameters, results may not be acceptable for application requirements				
Insulation Pins:				
CD Weld Pins	A	A	C	A
CD Power Tip Weld Pins	A	A	B	A
Double Pointed Weld Pins	N	N	A	B
CD Cupped Head Weld Pins	A	N	N	N
Short Cycle Weld Studs:				
All SC Styles	N	A	N	A **
** For smaller weld base diameters, results may not be acceptable for application requirements				

Legend:	A - Excellent results
	B - Good results
	C - Results are often not acceptable for application requirements
	N - Not recommended and or suitable for the process

For assistance in determining the best stud welding equipment options to meet the current and potential applications of your business, please contact Sunbelt Stud Welding.





SECTION 2

ARC STUD WELDING – GENERAL & TECHNICAL DETAILS

FOR INQUIRIES, TO PLACE ORDERS,
SERVICE AND TECHNICAL SUPPORT CONTACT
ANY OF THE FOLLOWING:

OFFICE: 1-800-462-9353
713-939-8903

EMAIL: INFO@SUNBELTSTUDWELDING.COM



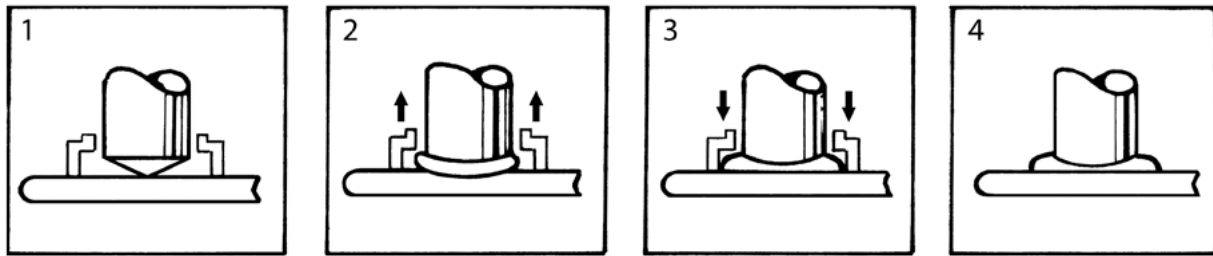
website www.sunbeltstudwelding.com **email** info@sunbeltstudwelding.com
6381 Windfern Road, Houston, TX 77040 **telephone** 1.800.462.9353 - Houston 713.939.8903 **fax** 713.939.9013

Arc Stud Welding - General Information

ARC STUD WELDING PROCESS DESCRIPTION

Arc Stud Welding is generally used to weld large diameter fasteners to rougher and thicker base metals. Arc studs may be almost any shape and there are literally hundreds; however, they must have one end of the fastener designed for Arc Stud Welding. Mild steel, stainless steel, and aluminum are applicable materials for Arc Stud Welding.

Arc Stud Welding is a split second, one sided, no hole process producing a weld stronger than the base material and the stud itself.



1. The weld gun is positioned over the base material and the main gun spring is partially compressed.
2. The trigger is pressed and the stud lifts off the base material drawing an arc. The arc melts the end of the weld stud and the base material below. The arc shield (ferrule) concentrates the heat below the weld stud and contains the molten metal within the weld zone.
3. The main spring plunges the weld stud down into the molten pool of metal in the base material. The cycle is completed in less than a second and the resulting weld bond develops the full strength of the fastener in the weld zone.
4. The weld gun is withdrawn from the weld stud leaving the ferrule. The ferrule is then broken away and discarded.



Arc Stud Welding - General Information

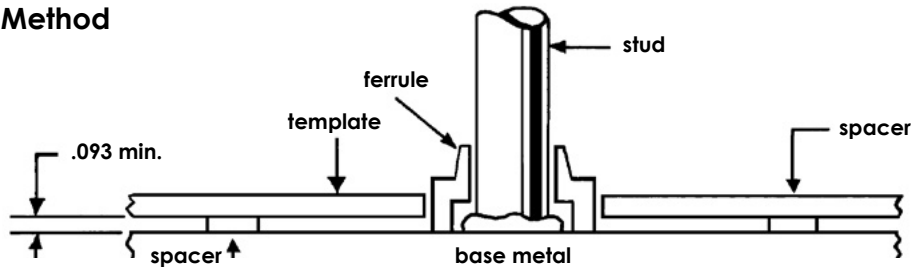
ARC STUD LOCATING: CENTER PUNCH, TEMPLATE & BUSHING DESIGN

Center Punch Method

By making a center punch mark in the base material the operator can place the fluxed tip of the stud into the punch mark for locating the Arc Stud.

Contact Sunbelt Stud Welding for proper set-up of the stud welding gun for welding with a center punch.

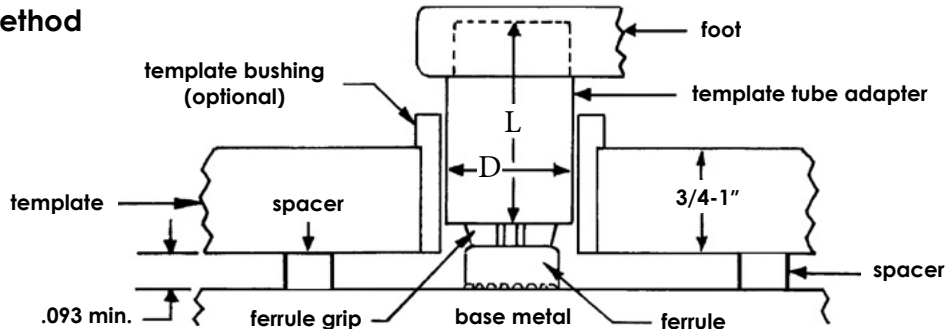
Template Method



This method of templating is recommended for use with ferrules. The template is usually a steel plate 3/32" to 3/16" thick. Spacers are required to allow the gases to escape during the welding cycle. The ferrule can be held by a standard ferrule grip or where clearance is prohibitive a tube type set-up can be used.

The recommended hole size on the template to locate the ferrules should equal the maximum outside diameter of the ferrule plus 1/32". Holes may be drilled or bored at required locations. See stud specification sheets for ferrule details. For further assistance contact Sunbelt Stud Welding.

Bushing Method



This method of templating is recommended for use with all arc stud styles. The design makes it possible to accurately hold angular alignment of the studs as well as stud location. The template should be made of ebonite or masonite of a thickness sufficient to afford good alignment. Template bushings may be used to insure greater accuracy and extend the life

of the template. Standard ferrule grips are used with the tube adapter. This permits standardization of templates since it is only necessary to change the ferrule grip to weld studs of different diameters. The hole diameter of the bushing or template should be approximately .010 larger than the maximum outside diameter of the template tube adapter.

Arc Template Tube Adapters

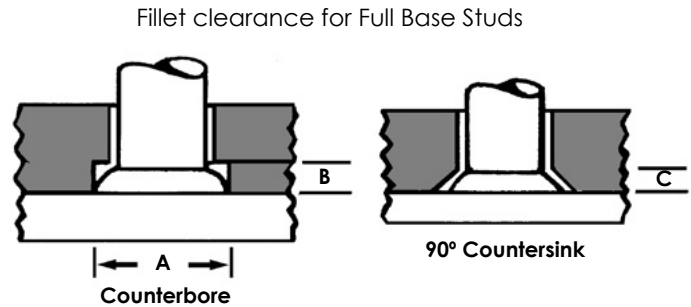
Part Number	Stud Size	D	L
MT-0008	1/2" and under	1.250	2.000
MT-0012	5/8" and 3/4"	1.562	2.500
MT-0016	7/8" and larger	2.125	2.500



ARC Stud Welding - General Information

ACCOMMODATING THE FILLET

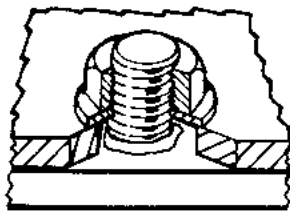
Stud Size (in.)	Counterbore (in.)		90° Countersink
	A	B	C
1/4	.0437	0.125	0.125
5/16	0.500	0.125	0.125
3/8	0.593	0.125	0.125
7/16	0.656	0.187	0.125
1/2	0.750	0.187	0.187
5/8	0.875	0.218	0.187
3/4	1.125	0.312	0.187



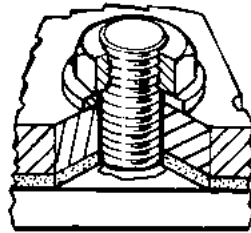
When the arc stud is welded, a fillet forms around its base with the dimensions being closely controlled by the design of the ferrule. Since the diameter of the fillet is generally larger than the diameter of the stud, some consideration is required in the design of mating parts. Counterbore and countersink methods are commonly used. Dimensions will vary with studs and ferrules.

ADDITIONAL METHODS OF ACCOMMODATING THE FILLET

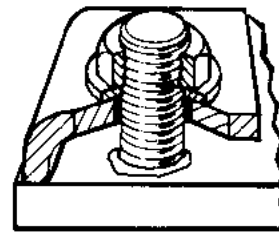
Additional methods of accommodating the fillet include oversized clearance holes, use of a dog-type construction or use of a gasket material around the fillet.



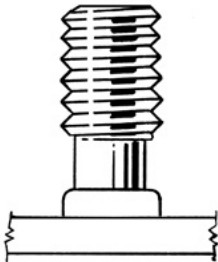
A) Oversize clearance hole



B) Gasket material



C) Dog clamp



Reduced Base Studs are designed so that the weld fillet does not exceed the maximum diameter of the fastener. This design is not recommended if full thread diameter fastener strength is required.

Arc Stud Welding - General Information

RECOMMENDED MINIMUM BASE METAL THICKNESS

Stud Weld Base Diameter (in.)	Steel		Aluminum	
	Without Backup (in.)	(gage)	Without Backup (in.)	With Backup (in.)
0.187	0.0359	20	0.125	0.125
0.250	0.0478	18	0.125	0.125
0.312	0.0598	16	0.187	0.125
0.375	0.0747	14	0.187	0.187
0.437	0.0897	13	0.250	0.187
0.500	0.1196	11	0.250	0.250
0.625	0.148	9		
0.750	0.187			
0.875	0.250			
1.000	0.375			

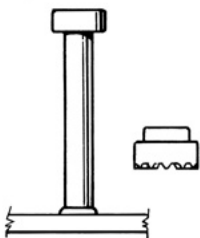
SHIELDING THE WELD

In Arc Stud Welding we either shield the weld utilizing gas or ferrules. Gas shielding is primarily used in industrial applications requiring a stud diameter of 1/2" or less.

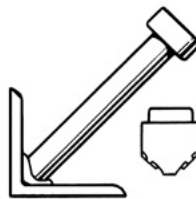
Please contact your Sunbelt Stud Welding representative for suggestions on the best gas mixes to utilize.

Ferrules are commonly used in industrial and construction applications requiring weld studs from 1/4" to 1" diameter. Specially designed ferrules are needed for some applications. This would include the need to weld to contoured surfaces and welding at angles to the work. Standard ferrules are available for welding to flat, vertical, inside angle, outside angle and thru-deck surfaces. These are shown below:

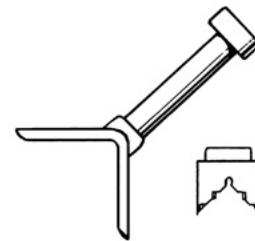
Flat Surface (F)



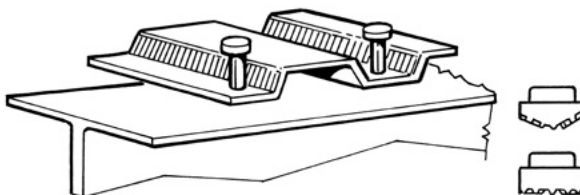
Inside Angle (IA)



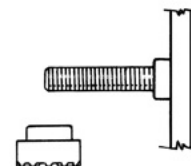
Outside Angle (OA)



Thru Deck (TD)



Vertical Surface (V)



Arc Stud Welding - Technical Details

THREADED & NO THREAD WELD STUDS - TECHNICAL DETAILS

Threaded & No Thread Weld Studs: Various types of externally and internally threaded weld studs and No Thread weld studs. These weld studs are used in many industrial and construction applications.

Specifications: Studs are commonly produced to AWS Specifications D1.1, D1.5 and or D1.6. Threaded weld studs and No Thread weld studs are available upon request to various international specifications. Should Certifications be required, please request these as part of the quotation details and at the time of order.

Threads: The chart below depicts the thread standards for imperial and metric external and internal threads. Unless requested or quoted otherwise, threads will be quoted based on these common thread standards.

Unless indicated or quoted otherwise, external threads will be a rolled type thread. The strength and surface finish of rolled threads are considered to be superior to cut type threads.

Thread Type	External Threads	Internal Threads
Imperial Threads - Coarse	UNC-2A	UNC-2B
Imperial Threads - Fine	UNF-2A	UNF-2B
Metric Threads	Class 6g	Class 6H

Flux: All Standard Arc Welding Studs are flux loaded for diameters greater than 3/16".

Length: The length dimension (L) indicated throughout these specifications is the overall length of the stud Before Weld (BW). The After Weld (AW) length will be shorter based on the stud diameter as depicted in the chart below:

Stud Diameter	Approximate Length Reduction
3/16" thru 1/2"	1/8" or 0.125"
5/8" thru 7/8"	3/16" or 0.188"
1" and larger	1/4" or 0.250"
1/8" thick rectangular	1/8" or 0.125"

Material: Low Carbon Steel weld studs are available in ASTM A108 / A29, Grade C1010 to C1020 material per AWS D1.1. In Stainless Steel, ASTM A-276 / A-493 Grades 302, 304, 310, 316, 321 are options. Stainless threaded weld studs are mostly stocked in grade 302HQ / 30430.

Mechanical Properties		
Parameter	Standard Mild Steel Studs, Type A, Per AWS D1.1	Standard Stainless Steel Studs Per AWS D1.6
Tensile Strength	61,000 PSI Min.	70,000 PSI Min.
Yield Strength (0.2% offset)	49,000 PSI Min.	35,000 PSI Min.
Elongation (% in 2 inch)	17% Min.	40% Min.
Elongation (% in 5x dia.)	14% Min.	—
Reduction of area	50% Min.	N/A



Arc Stud Welding - Technical Details

THREADED & NO THREAD WELD STUDS - TECHNICAL DETAILS . . . CONTINUED

Plating: All Arc Weld Studs are supplied with a plain finish / unplated condition. Upon request, we can provide Zinc Plating, Nickel Plating and Copper Plating. Zinc plated studs must be capped on the weld end to preclude the plating from compromising the weld quality.

Annealing: Standard in stock product is not post annealed. Low carbon steel and stainless steel studs can be annealed to a maximum of 75 Rockwell B hardness and 85 Rockwell B hardness, respectively.

Ferrules: The standard ferrule shipped for each thread diameter is listed on the specification page for each type of threaded weld stud. If other ferrules are desired, please specify at time of order. For other ferrule options please see General Ferrule Specification or contact your Sunbelt representative for assistance.

Accessories: For required accessories, please see each specification page or contact your Sunbelt representative for assistance.

Tensile and Torque Strengths: The 2 charts – Standard Arc Welding Studs – Tensile / Torque Strengths can be found under Arc Stud Welding - General Information.

The data was calculated based on the formulas shown below.

Tensile Load	L = SA
Torque	T = 0.2 x D x L
META*	A = Pi/4 x [D - (0.9743/N)]

A = Mean Effective Thread Area (META)*

L = Tensile Load Pounds

S = Tensile Stress in PSI

D = Nominal Thread Diameter

N = Threads Per Inch

T = Torque in Inch Pounds

*META is used instead of root area in calculating screw strengths because of closer correlation with actual tensile strength. META is based on mean diameter, which is the diameter of an imaginary coaxial cylinder whose surface would pass through the thread profile approximately midway between the minor and pitch diameters.

**Please note, in actual practice a stud should not be used at its yield load. A factor of safety must be applied. It is generally recommended that studs be used at no more than 60% of yield. However the factor of safety may vary up or down, depending on the application. The user will determine the appropriate safety factor.

***Please note, Torque figures based on assumption that excessive deformation of thread has not taken relationship between torque/tension out of its proportional range. All torque figures are shown in foot pounds (ft lbs).

Shear values were calculated at 75% of the Ultimate Tensile Load of the stud.



Arc Stud Welding - General Information

ARC STUD WELDING GUIDELINES & SETTINGS

- Keep weld studs and ferrules clean and dry.
- See chart below for approximate settings for proper equipment setup.

Stud Base Diameter			Welding Downhand				Welding Overhead				Welding to a Vertical Surface			
in.	mm	Area in.	Welding Current A	Weld Time Sec.	Lift in.	Plunge in.	Welding Current A	Weld Time Sec.	Lift in.	Plunge in.	Welding Current A	Weld Time Sec.	Lift in.	Plunge in.
1/4	6.4	0.0491	450	.17	0.062	0.125	450	.17	0.062	0.125	450	.17	0.062	0.125
5/16	7.9	0.0767	500	.25	0.062	0.125	500	.25	0.062	0.125	500	.25	0.062	0.125
3/8	9.5	0.1105	550	.33	0.062	0.125	550	.33	0.062	0.125	600	.33	0.062	0.125
7/16	11.1	0.1503	675	.42	0.062	0.125	675	.42	0.062	0.125	750	.33	0.062	0.125
1/2	12.7	0.1964	800	.55	0.062	0.125	800	.55	0.062	0.125	875	.46	0.062	0.125
5/8	15.9	0.3068	1200	.67	0.093	0.187	1200	.67	0.062	0.187	1275	.60	0.062	0.187
3/4	19.1	0.4418	1500	.84	0.093	0.187	1500	.84	0.062	0.187	Consult a Sunbelt sales representative			
7/8	22.2	0.6013	1700	1.00	.0125	0.250	1700	1.00	0.062	0.250				
1	25.4	0.7854	1900	1.40	0.125	0.250	2050	1.20	0.062	0.250				

- Make sure the negative polarity is to the weld stud gun and ensure a good, clean ground connection.
- Align accessories so they are centered and adjust legs so that 1/8" to 1/4" of the stud protrudes beyond the ferrule.
- Make sure work surface is relatively clean so impurities do not affect weld quality.
- Visually inspect all welds for 360° weld flash and for weld flash color (silver, blue & shiny).
- Check height of welded stud - length reduction equals 1/8"- 3/8".

Stud Diameter	Approximate Length Reduction
3/16" thru 1/2"	1/8" or 0.125"
5/8" thru 7/8"	3/16" or 0.188"
1" and larger	1/4" or 0.250"
1/8" thick rectangular	1/8" or 0.125"

- Test the welds at the beginning of each shift or change in stud size. Torque or bend two studs 30 degrees after cooling (AWS Bend Test).

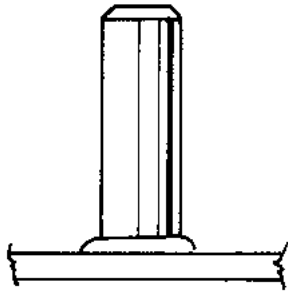
See charts for tensile and torque values.



Arc Stud Welding - General Information

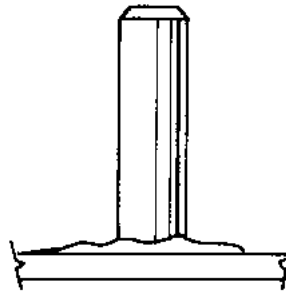
ARC STUD WELD VISUAL INSPECTION

The arc stud weld can be visually inspected by observing the fillet at the base of the stud. The illustrations and comments below will assist you in visually judging the quality of the weld.



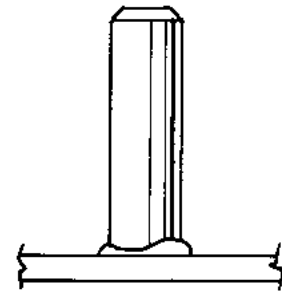
Good Weld

Full, even, shiny fillet all around stud.



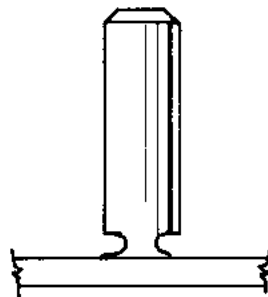
Hot Weld

Very shiny, low profile fillet extending beyond outside of ferrule.



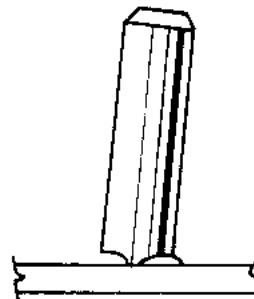
Cold Weld

Small, uneven, dull gray appearing fillet with fingers of metal extending through vents of ferrule.



Short Plunge or Hang-Up

No fillet, no stud burn-off, or undercut base.



Misalignment

Partial or no fillet, undercut, stud not perpendicular to base metal.

ARC Stud Welding - General Information

TENSILE AND TORQUE STRENGTHS

The following 2 charts are Standard Arc Welding Studs – Tensile / Torque Strengths.

The data was calculated based on the formulas shown below.

Tensile Load	$L = SA$
Torque	$T = 0.2 \times D \times L$
META*	$A = \text{Pi}/4 \times [D - (0.9743/N)]$

A = Mean Effective Thread Area (META)*

L = Tensile Load Pounds

S = Tensile Stress in PSI

D = Nominal Thread Diameter

N = Threads Per Inch

T = Torque in Inch Pounds

*META is used instead of root area in calculating screw strengths because of closer correlation with actual tensile strength. META is based on mean diameter, which is the diameter of an imaginary coaxial cylinder whose surface would pass through the thread profile approximately midway between the minor and pitch diameters.

**Please note, in actual practice a stud should not be used at its yield load. A factor of safety must be applied. It is generally recommended that studs be used at no more than 60% of yield. However the factor of safety may vary up or down, depending on the application. The user will determine the appropriate safety factor.

***Please note, Torque figures based on assumption that excessive deformation of thread has not taken relationship between torque/tension out of its proportional range. All torque figures are shown in foot pounds (ft lbs).

Shear values were calculated at 75% of the Ultimate Tensile Load of the stud.

See next 2 pages for charts on Tensile and Torque Strengths.



Arc Stud Welding - General Information

STANDARD ARC WELDING STUDS - TENSILE / TORQUE STRENGTHS

Standard Arc Welding Studs - Tensile / Torque Strengths							
Low Carbon Steel - 61,000 PSI Min. Tensile, 49,000 PSI Min. Yield							
Thread Size	Thread Diameter (in)	META (in) 2 *	Yield Load (lbs)**	Ultimate Tensile Load (lbs)	Yield Torque (ft lbs)***	Ultimate Torque (ft lbs)***	Shear Strength (60% of Tensile Load)
10-24	0.1875	0.017	853	1,061	2.7	3.3	637
10-32	0.1875	0.020	975	1,214	3.0	3.8	728
1/4-20	0.2500	0.032	1,553	1,934	6.5	8.1	1,160
1/4-28	0.2500	0.036	1,774	2,208	7.4	9.2	1,325
5/16-18	0.3125	0.032	1,578	1,964	8.2	10.2	1,179
5/16-24	0.3125	0.058	2,837	3,532	14.8	18.4	2,119
3/8-16	0.3750	0.077	3,788	4,715	23.7	29.5	2,829
3/8-24	0.3750	0.088	4,292	5,344	26.8	33.4	3,206
7/16-14	0.4375	0.106	5,194	6,466	37.9	47.1	3,880
7/16-20	0.4375	0.119	5,807	7,229	42.3	52.7	4,337
1/2-13	0.5000	0.142	6,938	8,638	57.8	72.0	5,183
1/2-20	0.5000	0.160	7,825	9,742	65.2	81.2	5,845
5/8-11	0.6250	0.226	11,054	13,762	115.2	143.4	8,257
5/8-18	0.6250	0.256	12,520	15,586	130.4	162.3	9,351
3/4-10	0.7500	0.334	16,366	20,374	204.6	254.7	12,224
3/4-16	0.7500	0.372	18,248	22,716	228.1	284.0	13,630
7/8-9	0.8750	0.461	22,599	28,133	329.6	410.3	16,880
7/8-14	0.8750	0.509	24,931	31,037	363.6	452.6	18,622
1-8	1.0000	0.605	29,650	36,911	494.2	615.2	22,147
1-14	1.0000	0.679	33,276	41,425	554.6	690.4	24,855
M5 - 0.80	0.1969	0.022	1,062	1,322	3.5	4.3	793
M6 - 1.00	0.2362	0.031	1,506	1,875	5.9	7.4	1,125
M8 - 1.25	0.3150	0.056	2,744	3,416	14.4	17.9	2,050
M10 - 1.50	0.3937	0.089	4,348	5,413	28.5	35.5	3,248
M12 - 1.75	0.4724	0.129	6,322	7,870	49.8	62.0	4,722
M16 - 2.00	0.6299	0.240	11,778	14,662	123.6	153.9	8,797
M20 - 2.50	0.7874	0.376	18,402	22,909	241.5	300.6	13,745
M22 - 2.50	0.8661	0.466	22,832	28,424	329.6	410.3	17,054
M24 - 3.0	0.9449	0.541	26,494	32,983	417.2	519.4	19,790

Please refer to first previous page for explanatory notes and formulas used to calculate the above data. Please note, it is the users responsibility to determine the appropriate safety factors to apply to the above data.



website www.sunbeltstudwelding.com email info@sunbeltstudwelding.com
 6381 Windfern Road, Houston, TX 77040 telephone 1.800.462.9353 - Houston 713.939.8903 fax 713.939.9013

Arc Stud Welding - General Information

STANDARD ARC WELDING STUDS - TENSILE / TORQUE STRENGTHS

Standard Arc Welding Studs - Tensile / Torque Strengths							
Stainless Steel - 70,000 PSI Min. Tensile, 35,000 PSI Min. Yield							
Thread Size	Thread Diameter (in)	META (in) 2 *	Yield Load (lbs)**	Ultimate Tensile Load (lbs)	Yield Torque (ft lbs)***	Ultimate Torque (ft lbs)***	Shear Strength (60% of Tensile Load)
10-24	0.1875	0.017	609	1,218	1.9	3.8	731
10-32	0.1875	0.020	697	1,393	2.2	4.4	836
1/4-20	0.2500	0.032	1,110	2,219	4.6	9.2	1,331
1/4-28	0.2500	0.036	1,267	2,534	5.3	10.6	1,520
5/16-18	0.3125	0.052	1,827	3,654	9.5	19.0	2,192
5/16-24	0.3125	0.058	2,027	4,053	10.6	21.1	2,432
3/8-16	0.3750	0.077	2,706	5,411	16.9	33.8	3,247
3/8-24	0.3750	0.088	3,066	6,132	19.2	38.3	3,679
7/16-14	0.4375	0.106	3,710	7,420	27.1	54.1	4,452
7/16-20	0.4375	0.119	4,148	8,295	30.2	60.5	4,977
1/2-13	0.5000	0.142	4,956	9,912	41.3	82.6	5,947
1/2-20	0.5000	0.160	5,590	11,179	46.6	93.2	6,707
5/8-11	0.6250	0.226	7,896	15,792	82.3	164.5	9,475
5/8-18	0.6250	0.256	8,943	17,885	93.2	186.3	10,731
3/4-10	0.7500	0.334	11,690	23,380	146.1	292.3	14,028
3/4-16	0.7500	0.372	13,034	26,068	162.9	325.9	15,641
7/8-9	0.8750	0.461	16,142	32,284	235.4	470.8	19,370
7/8-14	0.8750	0.509	17,808	35,616	259.7	519.4	21,370
1-8	1.0000	0.605	21,179	42,357	353.0	706.0	25,414
1-14	1.0000	0.679	23,769	47,537	396.1	792.3	28,522
M5 - 0.80	0.1969	0.022	759	1,518	2.5	5.0	911
M6 - 1.00	0.2362	0.031	1,076	2,152	4.2	8.5	1,291
M8 - 1.25	0.3150	0.056	1,960	3,920	10.3	20.6	2,352
M10 - 1.50	0.3937	0.089	3,106	6,212	20.4	40.8	3,727
M12 - 1.75	0.4724	0.129	4,516	9,031	35.6	71.1	5,419
M16 - 2.00	0.6299	0.240	8,413	16,825	88.3	176.6	10,095
M20 - 2.50	0.7874	0.376	13,145	26,289	172.5	345.0	15,774
M22 - 2.50	0.8661	0.466	16,309	32,617	235.4	470.9	19,570
M24 - 3.0	0.9449	0.541	18,925	37,849	298.0	596.0	22,709

Please refer to second previous page for explanatory notes and formulas used to calculate the above data. Please note, it is the users responsibility to determine the appropriate safety factors to apply to the above data.



Arc Stud Welding - Technical Details

THREADED WELD STUDS - WEIGHT CHART

Approximate Weights in Pounds Per 1000 Pieces									
Stud Length	Stud Diameter								
	3/16"	1/4"	5/16"	3/8"	7/16"	1/2"	5/8"	3/4"	7/8"
3/4	4.6	8.3	12.8	18.8	25.5	34.5			
1	6.1	11.0	17.0	25.0	34.0	46.0	70.0		
1 1/4	7.6	13.8	21.3	31.3	42.5	57.5	87.5	133.8	
1 1/2	9.2	16.5	25.5	37.5	51.0	69.0	105.0	160.5	243.8
1 3/4	10.7	19.3	29.8	43.8	59.5	80.5	122.5	187.3	284.4
2	12.2	22.0	34.0	50.0	68.0	92.0	140.0	214.0	325.0
2 1/4	13.7	24.8	38.3	56.3	76.5	103.5	157.5	240.8	365.6
2 1/2	15.3	27.5	42.5	62.5	85.0	115.0	175.0	267.5	406.3
2 3/4	16.8	30.3	46.8	68.8	93.5	126.5	192.5	294.3	446.9
3	18.3	33.0	51.0	75.0	102.0	138.0	210.0	321.0	487.5
3 1/4	19.8	35.8	55.3	81.3	110.5	149.5	227.5	347.8	528.1
3 1/2	21.4	38.5	62.5	119.0	161.0	245.0	374.5	568.8	595.0
3 3/4	22.9	41.3	68.8	127.5	172.5	262.5	401.3	609.4	637.5
4	24.4	44.0	75.0	136.0	184.0	280.0	428.0	650.0	650.0
4 1/4	25.9	46.8	81.3	144.5	195.5	297.5	454.8	690.6	690.6
4 1/2	27.5	48.5	87.5	153.0	207.0	315.0	481.5	731.3	731.3
4 3/4	29.0	52.3	93.8	161.5	218.5	332.5	508.3	771.9	771.9
5	30.5	55.0	100.0	170.0	230.0	350.0	535.0	850.0	850.0
Each Additional Inch	6.1	11.0	17.0	25.0	34.0	46.0	70.0	107.0	162.5
Ferrule	2.0	2.9	4.3	5.0	5.2	7.5	9.0	28.0	38.0

(continued on next page)



Arc Stud Welding - Technical Details

NO THREAD WELD STUDS - WEIGHT CHART

Approximate Weights in Pounds Per 1000 Pieces									
Stud Length	Stud Diameter								
	3/16"	1/4"	5/16"	3/8"	7/16"	1/2"	5/8"	3/4"	7/8"
3/4	6.0	10.5	16.4	23.5	31.9	41.7			
1	8.0	14.0	21.8	31.3	42.5	55.6	86.6		
1 1/4	10.0	17.5	27.3	39.1	53.1	69.5	108.3	156.0	
1 1/2	12.0	21.0	32.7	47.0	63.8	83.4	129.9	187.2	255.0
1 3/4	14.0	24.5	38.2	54.8	74.4	97.3	151.6	218.4	297.5
2	16.0	28.0	43.6	62.6	85.0	111.2	173.2	249.6	340.0
2 1/4	18.0	31.5	49.1	70.4	95.6	125.1	194.9	280.8	382.5
2 1/2	20.0	35.0	54.5	78.3	106.3	139.0	216.5	312.0	425.0
2 3/4	22.0	38.5	60.0	86.1	116.9	152.9	238.2	343.2	467.5
3	24.0	42.0	65.4	93.9	127.5	166.8	259.8	374.4	510.0
3 1/4	26.0	45.5	70.9	101.7	138.1	180.7	281.5	405.6	552.5
3 1/2	28.0	49.0	76.3	109.6	148.8	194.6	303.1	436.8	595.0
3 3/4	30.0	52.5	81.8	117.4	159.4	208.5	324.8	468.0	637.5
4	32.0	56.0	87.2	125.2	170.0	222.4	346.4	499.2	680.0
4 1/4	34.0	59.5	92.7	133.0	180.6	236.3	368.1	530.4	722.5
4 1/2	36.0	63.0	98.1	140.9	191.3	250.2	389.7	561.6	765.0
4 3/4	38.0	66.5	103.6	148.7	201.9	264.1	411.4	592.8	807.5
5	40.0	70.0	109.0	156.5	212.5	278.0	433.0	624.0	850.0
Each Additional Inch	8.0	14.0	21.8	31.3	42.5	55.6	86.6	124.8	170.0
Ferrule	2.0	2.9	4.3	5.0	5.2	7.5	9.0	28.0	38.0





SECTION 3
ARC WELD STUDS

CONCRETE ANCHORS • NO THREAD STUDS (UNTHREADED)
RECTANGULAR STUDS • THREADED STUDS
INTERNALLY THREADED • TUFFSTUDDS – WEAR PROTECTION

FOR INQUIRIES, TO PLACE ORDERS,
SERVICE AND TECHNICAL SUPPORT CONTACT
ANY OF THE FOLLOWING:

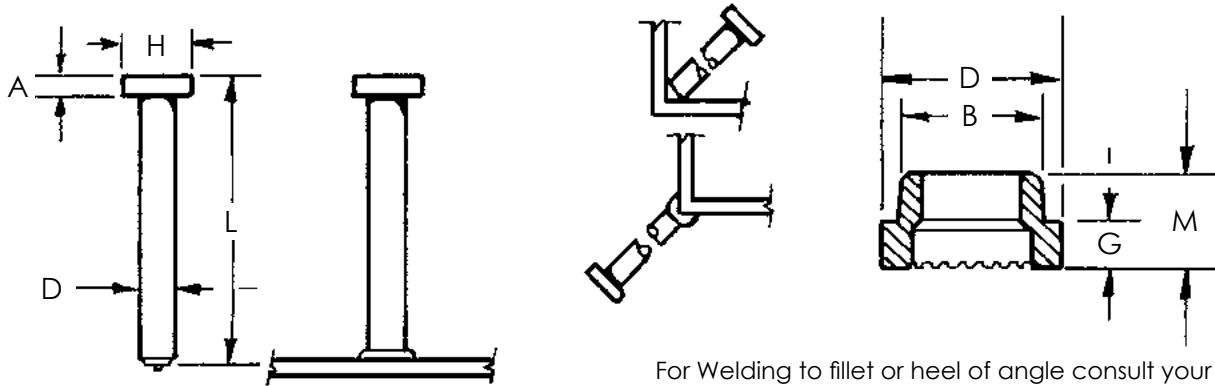
OFFICE: 1-800-462-9353
713-939-8903

EMAIL: INFO@SUNBELTSTUDWELDING.COM



Arc Weld Studs - Concrete Anchors

HCA - HEADED CONCRETE ANCHOR - TECHNICAL DETAILS



For Welding to fillet or heel of angle consult your Sunbelt Stud Welding representative for assistance.

Stud Specifications			Ferrule Specifications				
D	H	A	No.	D	B	G	M
1/4	.500	.187	F025-F	.455	.380	.234	.390
3/8	.750	.281	F037-F	.640	.505	.234	.390
1/2	1.000	.281	F050-F	.795	.650	.250	.438
5/8	1.250	.312	F062-F	1.030	.785	.328	.516

Headed Concrete Anchors are used in all types of concrete connections. They can be welded to a flat surface, inside of an angle or outside of an angle.

Specifications – HCA's meet AWS Specifications D1.1, D1.5 and or D1.6. International Specifications BS5950, BS5400, DIN/ISO are available.

Material – Low carbon steel, ASTM A108 / A29, Grade C1010 to C1020. In Stainless Steel, grades 302, 304, 310 and 316 are stocked in some sizes.

Ferrules – Customer to specify ferrule type at time of order.

Length – Lengths are listed before welding. For Stud Diameters (D) 1/2" and smaller the length reduction is roughly 1/8" and for (D) 5/8" the reduction is roughly 3/16". HCA's can be made in any length above the standard minimum.

Accessories – For a complete list of accessories required with each ferrule type, please see next page.

Mechanical Property Requirements		
	Type A	Type B
Tensile Strength	61,000 psi min.	65,000 psi min.
Yield Strength	49,000 psi min.	51,000 psi min.
Elongation (% in 2 in.)	17% min.	20% min.
Elongation (% in 5x dia.)	14% min.	15% min.
Reduction of Area	50% min.	50% min.
Type A Studs are general purpose studs.		
Type B Studs are headed, bent, or of other configuration that are used as an essential component in composite beam design and construction.		



Arc Weld Studs - Concrete Anchors

HCA - HEADED CONCRETE ANCHOR - ACCESSORY DETAILS

Stud Diameter	Chuck P/N	Ferrule Type	Ferrule P/N	Foot P/N	Grip P/N	Ferrule Foot Plate P/N (Dual Leg)	
1/4"	CN-050	Flat	F025-F	B-1C	GC-025	QN-025	
		Low Profile	F025-LP	B-1C	GC-025	QN-025	
		Heavy Duty	F025-HD	B-1C	GC-037	QN-037	
		Inside Angle	F025-IA	B-1C	GD-025	N/A	
		Outside Angle	F025-OA	B-1C	GC-025	QN-025	
3/8"	CH-037	Flat	F037-F	B-1C	GC-037	QN-037	
		Low Profile	F037-LP	B-1C	GC-037	QN-037	
		Heavy Duty	F037-HD	B-1C	GC-050	QN-050	
		Inside Angle	F037-IA	B-1C	GD-037	N/A	
		Outside Angle	F037-OA	B-1C	GC-037	QN-037	
				Weld Thru Deck	FO37-TD	B-002I	B-0060-3
1/2"	CH-050	Flat	F050-F	B-1C	GC-050	QN-050	
		Low Profile	F050-LP	B-1C	GC-050	QN-050	
		Vertical	F050-V	B-1C	GC-050	QN-050	
		Heavy Duty	F050-HD	B-2C	GC-062	QN-062	
		Inside Angle	F050-IA25	B-1C	GD-050	N/A	
		Inside Angle	F050-IA37	B-1C	GD-050	N/A	
		Outside Angle	F050-OA	B-1C	GC-050	QN-050	
				Weld Thru Deck	F050-TD	B-002I	B-0060-2
5/8"	CH-075	Flat	F062-F	B-2C	GC-062	QN-062	
		Low Profile	F062-LP	B-2C	GC-062	QN-062	
		Vertical	F062-V	B-2C	GC-062	QN-062	
		Heavy Duty	F062-HD	B-2C	GC-075	QN-075	
		Inside Angle	F062-IA25	B-2C	GD-062	N/A	
		Inside Angle	F062-IA37	B-2C	GD-062	N/A	
		Outside Angle	F062-OA	B-2C	GN-062	QN-062	
				Weld Thru Deck	F062-TD	B-002I	B-0060-2



Arc Weld Studs - Concrete Anchors

HCA - HEADED CONCRETE ANCHOR - STANDARD SIZES - PART 1

Specifications			Weights - in pounds		
Diameter	Length	SSW Part Number (mild steel)	Box Weight	Pallet Weight	1,000 Pcs. Weight
D	L				
1/4	1 - 1/8	HCA0250	48	1,296	24
	2 - 11/16	HCA0250	45	1,215	45
	3 - 1/8	HCA0250	51	1,377	51
	4 - 1/8	HCA0250	39	1,053	65
3/8	1 - 1/8	HCA0370	70	1,890	70
	1 - 5/8	HCA0370	79	2,133	79
	2 - 1/8	HCA0370	67	1,809	96
	2 - 5/8	HCA0370	66	1,782	110
	3 - 1/8	HCA0370	62	1,674	124
	4 - 1/8	HCA0370	55	1,485	157
	5 - 1/8	HCA0370	56	1,512	187
	6 - 1/8	HCA0370	44	1,188	220
1/2	8 - 1/8	HCA0370	69	1,863	276
	1 - 1/8	HCA0500	68	1,836	113
	1 - 1/2	HCA0500	68	1,836	136
	1 - 5/8	HCA0500	64	1,728	142
	2 - 1/8	HCA0500	67	1,809	168
	2 - 5/8	HCA0500	71	1,917	203
	3 - 1/8	HCA0500	68	1,836	227
	4 - 1/8	HCA0500	56	1,512	280
	5 - 5/16	HCA0500	52	1,404	347
	6 - 1/8	HCA0500	49	1,323	392
	8 - 1/8	HCA0500	50	1,350	500
	10 - 1/8	HCA0500	51	1,377	680
12 - 1/8	HCA0500	1095	1120	1095	

For non standard sizes contact Sunbelt Stud Welding.

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Arc Weld Studs - Concrete Anchors

HCA - HEADED CONCRETE ANCHOR - STANDARD SIZES - PART 2

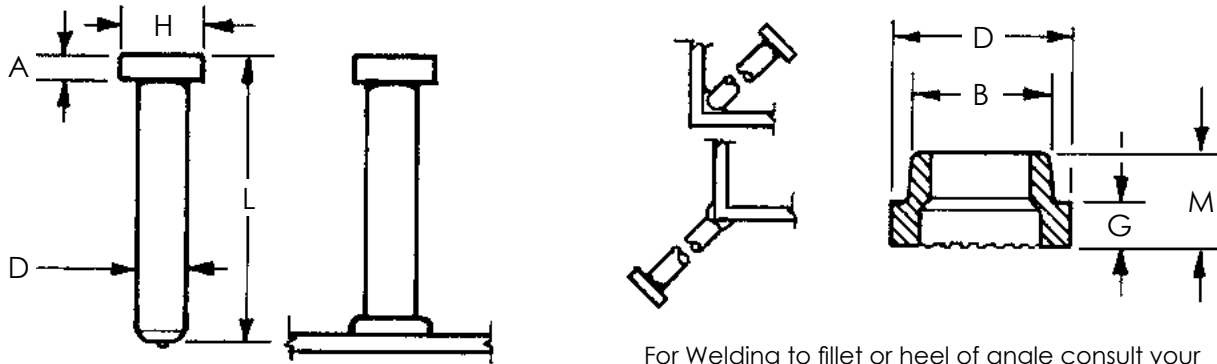
Specifications			Weights - in pounds		
Diameter	Length	SSW Part Number (mild steel)	Box Weight	Pallet Weight	1,000 Pcs. Weight
D	L				
5/8	1 - 7/16	HCA0625	85	2,295	213
	1 - 11/16	HCA0625	77	2,079	237
	1 - 15/16	HCA0625	78	2,106	260
	2 - 1/8	HCA0625	68	1,836	272
	2 - 3/16	HCA0625	71	1,917	284
	2 - 11/16	HCA0625	81	2,187	324
	3 - 3/16	HCA0625	75	2,025	375
	3 - 11/16	HCA0625	75	1,674	413
	4 - 3/16	HCA0625	62	1,863	460
	4 - 11/16	HCA0625	69	1,701	504
	5 - 3/16	HCA0625	55	1,485	550
	6 - 9/16	HCA0625	55	1,485	611
	8 - 3/16	HCA0625	52	1,404	650
	9 - 3/16	HCA0625	117	1,053	780
	10 - 3/16	HCA0625	98	882	980

For non standard sizes contact Sunbelt Stud Welding.



Arc Weld Studs - Concrete Anchors

HSC - HEADED SHEAR CONNECTORS - TECHNICAL DETAILS



For Welding to fillet or heel of angle consult your Sunbelt Stud Welding representative for assistance.

Stud Specifications			Ferrule Specifications				
D	H	A	No.	D	B	G	M
3/4	1-1/4	3/8	F075-F	1.218	1.030	.469	.656
3/4 *	1-1/4	3/8	F075-TD	1.335	1.210	.406	.600
7/8	1-3/8	3/8	F087-F	1.406	1.210	.545	.732
1	1-5/8	1/2	F100-F	1.610	1.406	.632	.820

* For 3/4" weld thru-deck only

Headed Shear Connectors are designed for composite construction to secure the concrete to the steel beams and to resist shear loadings between the concrete slab and steel beam.

Specifications – HSC's meet AWS Specifications D1.1, D1.5 and or D1.6. International Specifications BS5950, BS5400, DIN/ISO are available.

Material – Low carbon steel, ASTM A108 / A29, Grade C1010 to C1020. In Stainless Steel, grades 302, 304, 310 and 316 are stocked in some sizes.

Ferrules – Customer to specify ferrule type at time of order.

Length – Lengths are listed before welding. For Stud Diameters (D) 3/4" and 7/8" the length reduction is roughly 3/16" and for (D) 1" the reduction is roughly 1/4". For Weld Thru-deck the length reduction is roughly 3/8". HSC's can be made in any length above the standard minimum. The standard stock lengths are usually the most cost effective option.

Accessories – For a complete list of accessories required with each ferrule type, please see next page.

Mechanical Property Requirements		
	Type A	Type B
Tensile Strength	61,000 psi min.	65,000 psi min.
Yield Strength	49,000 psi min.	51,000 psi min.
Elongation (% in 2 in.)	17% min.	20% min.
Elongation (% in 5x dia.)	14% min.	15% min.
Reduction of Area	50% min.	50% min.
Type A Studs are general purpose studs.		
Type B Studs are headed, bent, or of other configuration that are used as an essential component in composite beam design and construction.		



Arc Weld Studs - Concrete Anchors

HSC - HEADED SHEAR CONNECTORS - ACCESSORY DETAILS

Stud Diameter	Chuck P/N	Ferrule Type	Ferrule P/N	Foot P/N	Grip P/N	Ferrule Foot Plate P/N (Dual Leg)
3/4	CH-075	Flat	F075-F	B-2C	GC-075	QN-075
		Low Profile	F075-LP	B-2C	GC-075	QN-075
		Vertical	F075-V	B-2C	GC-075	QN-075
		Inside Angle	F075-IA37	B-2C	GD-075	N/A
		Inside Angle	F075-IA50	B-2C	GD-075	N/A
		Outside Angle	F075-OA	B-2C	GC-075	QN-075
		Weld Thru Deck (WTD)	F075-TD	B-0021	B-0060-1	N/A
7/8	CH-087	Flat	F087-F	B-3C	GC-087	QN-087
		Vertical	F087-V	B-3C	GC-087	QN-087
		Outside Angle	F-087-OA	B-3C	GC-087	QN-087
		Weld Thru Deck (WTD)	F087-TD	B-0021	B-0060-4	N/A
1 inch	CH-100	Flat	F100-F	B-3C	GC-100	QN-100
		Flat	F100-F	B-0021	B-0060-4	QN-100



Arc Weld Studs - Concrete Anchors

HSC - HEADED SHEAR CONNECTORS - 3/4" STANDARD SIZES

Specifications			Packaging Detail			Weights - in pounds		
Diameter	Length	SSW Part Number (mild steel)	Pieces Per Box	Boxes Per Pallet	Pieces Per Pallet	Box Weight	Pallet Weight	1,000 Pcs. Weight
D	L							
Typical Bare Beam Sizes								
3/4	3 - 3/16	HSC0750318	125	48	6,000	60	2,880	480
	3 - 1 1/16	HSC0750368	100	48	4,800	55	2,640	550
	4 - 3/16	HSC0750418	100	48	4,800	63	3,024	630
	4 - 1 1/16	HSC0750468	75	27	2,025	51	1,377	680
	5 - 3/16	HSC0750518	60	48	2,880	43	2,064	717
	5 - 1 1/16	HSC0750568	60	48	2,880	47	2,256	783
	6 - 3/16	HSC0750618	60	48	2,880	51	2,448	850
	6 - 1 1/16	HSC0750668	80	27	2,160	75	2,025	938
	7 - 3/16	HSC0750718	60	27	1,620	59	1,593	983
	8 - 3/16	HSC0750818	50	27	1,350	56	1,512	1,120
	9 - 3/16	HSC0750918	100	9	900	123	1,107	1,230
	10 - 3/16	HSC0751018	100	9	900	137	1,233	1,370
	12 - 3/16	HSC0751218	1,100	1	1,100	1,760	1,760	1,600
	16 - 3/16	HSC0751618	1,000	1	1,000	2,000	2,000	2,000
For non standard sizes, please contact Sunbelt Stud Welding.								
Typical Weld Thru-Deck Sizes								
3/4	3 - 3/8	HSC0750337	125	48	6,000	62	2,976	496
	3 - 7/8	HSC0750387	100	48	4,800	58	2,784	580
	4 - 3/8	HSC0750437	100	48	4,800	62	2,976	620
	4 - 7/8	HSC0750487	75	48	3,600	51	2,448	680
	5 - 3/8	HSC0750537	60	48	2,880	45	2,160	750
	5 - 7/8	HSC0750587	60	48	2,880	49	2,352	817
	6 - 3/8	HSC0750637	60	48	2,880	53	2,544	883
For non standard sizes, please contact Sunbelt Stud Welding.								



Arc Weld Studs - Concrete Anchors

HSC - HEADED SHEAR CONNECTORS - 7/8" AND 1" STANDARD SIZES

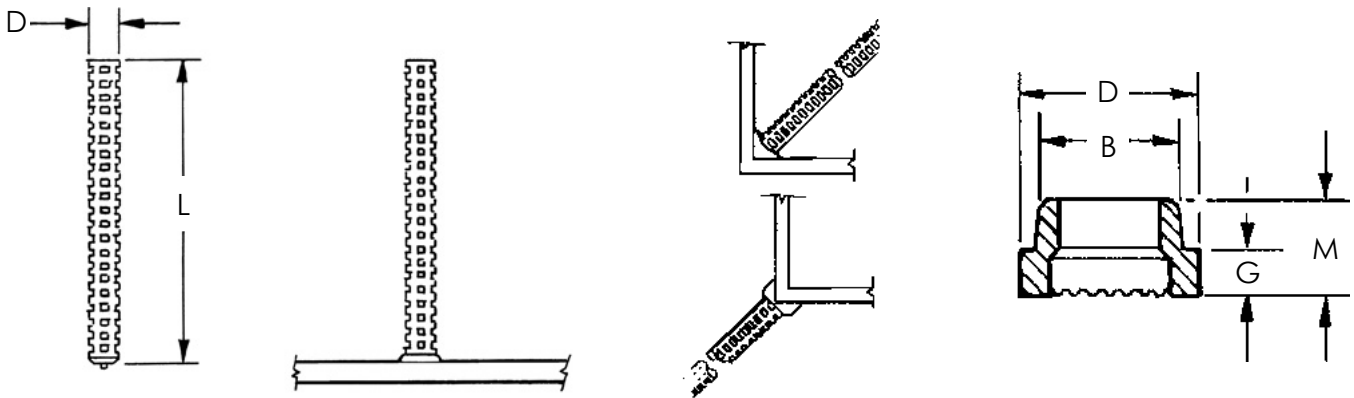
Specifications			Packaging Detail			Weights - in pounds		
Diameter	Length	SSW Part Number (mild steel)	Pieces Per Box	Boxes Per Pallet	Pieces Per Pallet	Box Weight	Pallet Weight	1,000 Pcs. Weight
D	L							
7/8	3 - 3/16	HSCM0870318	100	27	2,700	66	1,782	660
	3 - 11/16	HSCM0870368	100	27	2,700	74	1,998	740
	4 - 3/16	HSCM0870418	100	27	2,700	80	2,160	800
	5 - 3/16	HSCM0870518	75	27	2,025	73	1,971	973
	6 - 3/16	HSCM0870618	50	27	1,350	57	1,539	1,140
	7 - 3/16	HSCM0870718	45	27	1,215	59	1,593	1,311
	8 - 3/16	HSCM0870818	40	27	1,080	59	1,593	1,475
	9 - 3/16	HSCM0870918	75	9	675	125	1,125	1,667
	10 - 3/16	HSCM0871018	75	9	675	135	1,215	1,800
	12- 3/16	HSCM0871218	825	1	825	1,793	1,793	2,173
1 inch	3 - 1/4	HSCM1000325	100	27	2,700	74	1,998	740
	4 - 1/4	HSCM1000425	100	27	2,700	80	2,160	800
	5 - 1/4	HSCM1000525	75	27	2,025	73	1,971	973
	6 - 1/4	HSCM1000625	50	27	1,350	57	1,539	1,140
	7 - 1/4	HSCM1000725	45	27	1,215	59	1,593	1,311
	8 - 1/4	HSCM1000825	40	27	1,080	59	1,593	1,475
	9 - 1/4	HSCM1000925	75	9	675	125	1,125	1,667
	10 - 1/4	HSCM1001025	50	9	950	125	1,125	2,500
	12- 1/4	HSCM1001225	600	1	6000	1760	1,760	2,934

For non standard sizes contact Sunbelt Stud Welding.



Arc Weld Studs - Concrete Anchors

DBA - DEFORMED BAR ANCHOR - TECHNICAL DETAILS



Stud Specifications		Ferrule Specifications				
D	L	No.	D	B	G	M
3/8	See subsequent page for standard lengths by DBA diameter.	F037-F	.640	.505	.234	.390
1/2		F050-F	.795	.650	.250	.438
5/8		F062-F	1.030	.785	.328	.516
3/4		F075-F	1.218	1.030	.469	.656

Deformed Bar Anchors are designed for weld and bearing plates in concrete connections.

Specifications – DBA's meet AWS Specifications D1.1.

Material – Low carbon steel, ASTM A496

Ferrules – Flat ferrules are provided. For welding to the inside angle and outside angle refer to the next page for ferrule options.

Length – Lengths are listed before welding.

For Stud Diameters (D) 1/2" and smaller the length reduction is roughly 1/8" and for (D) 5/8" and 3/4" the reduction is roughly 3/16".

DBA's can be made in any length above the standard minimum.

Accessories – For a complete list of accessories required with each ferrule type, please see next page.

Mechanical Property Requirements

	Type C
Tensile Strength	80,000 psi min. (552 MPa)
Yield Strength (0.5% offset)	70,000 psi min. (485 MPa)

Type C Studs are cold-worked deformed steel bars manufactured in accordance with specification ASTM A496 having a nominal diameter equivalent to the diameter of a plain wire; having the same weight per foot as the deformed wire. ASTM A496 specifies a maximum diameter of 0.628 in. (16mm). Any bar supplied above that diameter must have the same physical characteristics regarding deformations as required by ASTM A496.



Arc Weld Studs - Concrete Anchors

DBA - DEFORMED BAR ANCHOR - ACCESSORY DETAILS

Deformed Bar Anchor - Accessory Detail						
Stud Diameter	Chuck P/N	Ferrule Type	Ferrule P/N	Foot P/N	Grip P/N	Ferrule Foot Plate P/N (Dual Leg)
1/4	CN-025	Flat	F025-F	B-1C	GC-025	QN-025
		Low Profile	F025-LP	B-1C	GC-025	QN-025
		Heavy Duty	F025-HD	B-1C	GC-037	QN-037
		Inside Angle	F025-IA	B-1C	GD-025	N/A
		Outside Angle	F025-OA	B-1C	GC-025	QN-025
3/8	CN-037	Flat	F037-F	B-1C	GC-037	QN-037
		Low Profile	F037-LP	B-1C	GC-037	QN-037
		Heavy Duty	F037-HD	B-1C	GC-050	QN-050
		Inside Angle	F037-IA	B-1C	GD-037	N/A
		Outside Angle	F037-OA	B-1C	GC-037	QN-037
1/2	CN-050	Flat	F050-F	B-1C	GC-050	QN-050
		Low Profile	F050-LP	B-1C	GC-050	QN-050
		Vertical	F050-V	B-1C	GC-050	QN-050
		Heavy Duty	F050-HD	B-2C	GC-062	QN-062
		Inside Angle	F050-IA25	B-1C	GD-050	N/A
		Inside Angle	F050-IA37	B-1C	GD-050	N/A
5/8	CN-062	Flat	F062-F	B-2C	GC-062	QN-062
		Low Profile	F062-LP	B-2C	GC-062	QN-062
		Vertical	F062-V	B-2C	GC-062	QN-062
		Heavy Duty	F062-HD	B-2C	GC-075	QN-075
		Inside Angle	F062-IA25	B-2C	GD-062	N/A
		Inside Angle	F062-IA37	B-2C	GD-062	N/A
3/4	CN-075	Flat	F075-F	B-2C	GC-075	QN-075
		Low Profile	F075-LP	B-2C	GC-075	QN-075
		Vertical	F075-V	B-2C	GC-075	QN-075
		Inside Angle	F075-IA37	B-2C	GD-075	N/A
		Inside Angle	F075-IA50	B-2C	GD-075	N/A
		Outside Angle	F075-OA	B-2C	GC-075	QN-075



Arc Weld Studs - Concrete Anchors

DBA - DEFORMED BAR ANCHOR - STANDARD SIZES

Specifications			Packaging Detail			Weights - in pounds		
Diameter	Length	SSW Part Number (mild steel)	Pieces Per Box	Boxes Per Pallet	Pieces Per Pallet	Box Weight	Pallet Weight	1,000 Pcs. Weight
D	L							
3/8	10 - 1/8	DBA0371012	150	18	2,700	46	828	307
	12 - 1/8	DBA0371212	150	18	2,700	55	990	367
	18 - 1/8	DBA0371812	150	12	1,800	80	960	533
	24 - 1/8	DBA0372412	150	8	1,200	108	864	720
	30 - 1/8	DBA0373012	150	7	1,050	130	910	867
	36 - 1/8	DBA0373612	150	6	900	156	936	1,040
	48 - 1/8	DBA0374812	150	6	900	208	1,248	1,387
1/2	8 - 1/8	DBA0500812	100	18	1,800	44	792	440
	10 - 1/8	DBA0501012	100	18	1,800	54	972	540
	12 - 1/8	DBA0501212	100	18	1,800	67	1,206	670
	18 - 1/8	DBA0501812	100	12	1,200	98	1,176	980
	24 - 1/8	DBA0502412	100	8	800	128	1,024	1,280
	30 - 1/8	DBA0503012	100	7	700	160	1,120	1,600
	36 - 1/8	DBA0503612	100	6	600	192	1,152	1,920
	48 - 1/8	DBA0504812	100	6	600	256	1,536	2,560
5/8	60 - 1/8	DBA0506012	100	1	100	314	314	3,140
	12 - 3/16	DBA0621218	50	18	900	51	918	1,020
	18 - 3/16	DBA0621818	50	12	600	76	912	1,520
	24 - 3/16	DBA0622418	50	8	400	102	816	2,040
	30 - 3/16	DBA0623018	50	7	350	126	882	2,520
	36 - 3/16	DBA0623618	50	6	300	151	906	3,020
	42 - 3/16	DBA0624218	50	8	400	176	1,408	3,520
3/4	48 - 3/16	DBA0624818	50	6	300	197	1,182	3,940
	12 - 3/16	DBA0751218	40	18	720	60	1,080	1,500
	18 - 3/16	DBA0751818	40	12	480	87	1,044	2,175
	24 - 3/16	DBA0752418	40	8	320	115	920	2,875
	30 - 3/16	DBA0753018	40	6	240	142	852	3,550
	36 - 3/16	DBA0753618	40	6	240	175	1,050	4,375
	42 - 3/16	DBA0754218	40	6	240	205	1,230	5,125
	48 - 3/16	DBA0754818	40	6	240	226	1,356	5,650

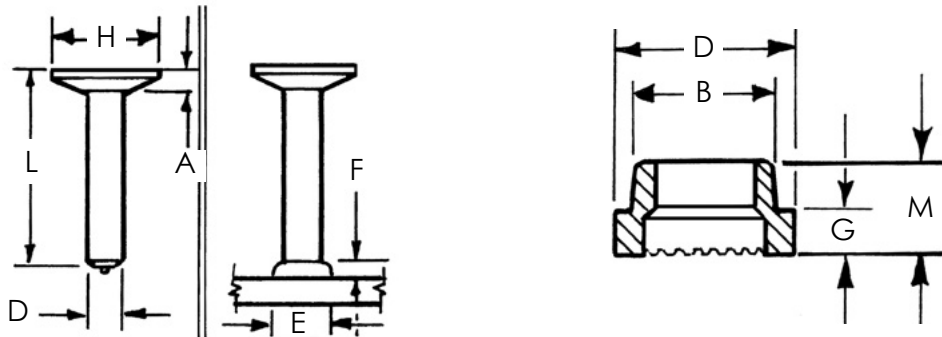
For non standard sizes contact Sunbelt Stud Welding.



6381 Windfern Road, Houston, TX 77040 **website** www.sunbeltstudwelding.com **email** info@sunbeltstudwelding.com
telephone 1.800.462.9353 - Houston 713.939.8903 **fax** 713.939.9013

Arc Weld Studs - Concrete Anchors

PSR - PUNCHING SHEAR RESISTOR - TECHNICAL DETAILS



Stud Specifications					Ferrule Specifications			
Diameter	Length Min.	SSW Part Number (mild steel)	Head Diameter	Head Thickness	Ferrule	Major O.D.	Minor O.D.	Height
D	L	P/N	H	A	P/N	D	B	M
3/8	3 - 7/16	PSR0370343	1.19	.260	F037-F	0.640	0.505	0.390
1/2	2 - 5/8	PSR0500262	1.58	.330	F050-F	0.795	0.650	0.438
5/8	3 - 3/4	PSR0620375	1.98	.400	F062-F	1.030	0.785	0.516
3/4	4 - 3/8	PSR0750437	2.37	.470	F075-F	1.215	1.030	0.656

PSR studs are large-headed shear connectors that are welded to flat steel bars (creating stud rails) and used for shear reinforcement in flat concrete slabs to replace stirrups and column capitals to resist the punching shear stress in the slabs.

Using these PSR stud rails, increases the punching shear capacity at the base of the concrete columns, resulting in a significant reduction in slab thickness. This creates a substantial savings in labor and material costs.

PSR Studs have heat codes stamped on the head that allow traceability to the specific Mill Certification of the stud.

PSR studs are available in any length over the standard minimum.

The ferrule part number provided is for the standard flat down hand position.

The next page details the accessories needed for the Flat type Ferrules indicated above.

Mechanical Property Requirements

Criteria	Type B
Tensile Strength	65,000 PSI min.
Yield Strength	51,000 PSI min.
Elongation (% in 2 in.)	20% min.
Elongation (% in 5 x D)	15% min.
Reduction of Area	50% min.



Arc Weld Studs - Concrete Anchors

PSR PUNCHING SHEAR RESISTOR – ACCESSORY DETAILS

Side Load Chucks			
	Chuck Only	Short Bracket	Long Bracket
Stud Size	Part #	Part #	Part #
3/8	CSLB-037	CSL-037S	CSL-037L
1/2	CSLB-050	CSL-050S	CSL-050L
5/8	CSLB-0562	CSL-062S	CSL-062L
3/4	CSLB-075	CSL-075S	CSL-075L

Side Load Chuck Components	
Component	Part #
Hold Down Finger 3/8, 1/2 & 5/8 Chucks	CSLF
Hold Down Finger 3/4 Chuck	CSLF750
Chuck Isolator	CSLN
Chuck Spring	CSLS
Long Bracket	CSLA-1
Short Bracket	CSLA-2

PSR Twin Leg Ferrule Foot Plate	
Stud Size	Part #
3/8	QNW-037
1/2	QNW-050
5/8	QNW-062
3/4	QNW-075

Other Needed Accessories	
Component	Part #
Leg Widener	CLSX
3/8 X 9" Legs (2 pcs.) Gun to Leg Widener	L-03709
Legs (2 pcs.) Leg Widener To Foot Plate	
Length to be determined based on stud length. See Arc Stud Welding Legs for stock lengths.	



Arc Weld Studs - Externally Threaded

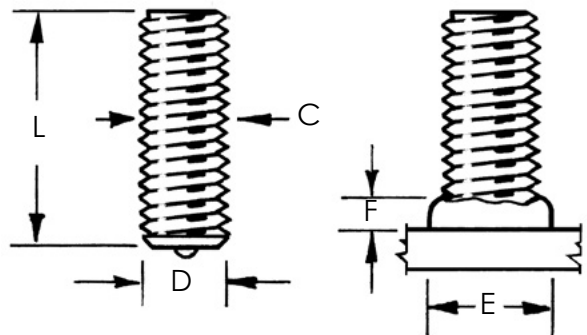
TF - THREADED FULLY WELD STUDS - TECHNICAL DETAILS

TF weld studs are available in mild steel and stainless steel materials.

Coarse and fine threads are available in both imperial (UNC-2A and UNF-2A) and ISO Metric (Class 6g) sizes. The imperial coarse threads are depicted below (UNC-2A) and are standard.

TF studs permit close run down of a nut to the base metal.

For application, dimensional and in stock assistance, please contact Sunbelt Stud Welding.



Stud Specifications					Standard Accessories			
Thread Size	Minimum Length	Base Diameter	Flash Dimensions		Ferrule	Foot	Grip	Chuck
C	L	D	E	F	P/N	P/N	P/N	P/N
10-24	0.750	0.159	0.281	0.094	F019-F	B-1N	GN-019	CN-018
10-32	0.750	0.167	0.281	0.094	F019-F	B-1N	GN-019	CN-018
1/4-20	0.750	0.215	0.359	0.109	F025-F	B-1N	GN-025	CN-025
5/16-18	0.750	0.275	0.438	0.109	F031-F	B-1N	GN-031	CN-031
3/8-16	0.750	0.330	0.500	0.125	F037-F	B-1N	GN-037	CN-037
7/16-14	0.875	0.387	0.578	0.141	F043-F	B-1N	GN-043	CN-043
1/2-13	0.875	0.444	0.688	0.156	F050-F	B-1N	GN-050	CN-050
5/8-11	1.000	0.562	0.797	0.188	F062-F	B-2N	GN-062	CN-062
3/4-10	1.250	0.680	0.938	0.250	F075-F	B-2N	GN-075	CN-075
7/8-9	1.375	0.798	1.094	0.313	F087-F	B-3N	GN-087	CN-087
1-8	1.500	0.915	1.234	0.375	F100-F	B-3N	GN-100	CN-100

To order or specify give: Stud Code, C x L, Material and Quantity

Example: TF 5/8-11 x 1.75, (BW), Stainless Steel, 2500 pcs.

Specify (L) Length, on a Before Weld basis by indicating "BW" or on an After Weld basis by indicating "AW."

See **Accessories** for accessory detail and **Ferrule Specifications** for ferrule options.

See **Arc Stud Welding – General Information** and **Technical Details** for industry specifications, thread options, Before Weld (BW) length, flux, raw material details, plating options, annealing, load strengths and shipping weights.



Arc Weld Studs - Externally Threaded

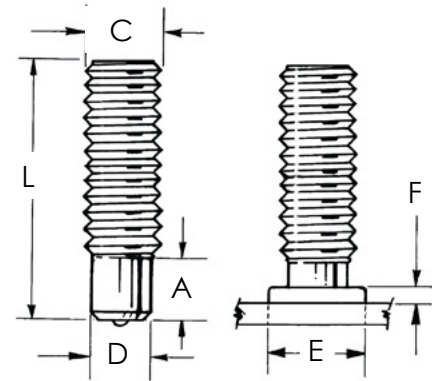
TP – STANDARD / PARTIALLY THREADED WELD STUDS – TECHNICAL DETAILS

TP weld studs are available in mild steel and stainless steel materials.

Coarse and fine threads are available in both imperial (UNC-2A and UNF-2A) and ISO Metric (Class 6g) sizes. The imperial coarse threads are depicted below (UNC-2A) and are standard.

TP studs are used in a wide range of general industrial applications.

For application, dimensional and in stock assistance, please contact Sunbelt Stud Welding.



Specifications						Standard Accessories			
Thread Size	Minimum Length	Base Diameter	Base Length	Flash Dimensions		Ferrule	Foot	Grip	Chuck
C	L	D	A	E	F	P/N	P/N	P/N	P/N
1/4-20	0.750	0.215	0.375	0.313	0.094	F025-P	B-1N	GN-025	CN-025
5/16-18	0.750	0.275	0.375	0.406	0.109	F031-P	B-1N	GN-031	CN-031
3/8-16	0.750	0.330	0.375	0.469	0.109	F037-P	B-1N	GN-037	CN-037
7/16-14	0.750	0.387	0.437	0.531	0.125	F043-P	B-1N	GN-043	CN-043
1/2-13	0.875	0.444	0.500	0.594	0.156	F050-P	B-1N	GN-050	CN-050
5/8-11	1.00	0.562	0.625	0.750	0.188	F062-P	B-2N	GN-062	CN-062
3/4-10	1.375	0.680	0.796	0.922	0.250	F075-P	B-2N	GN-075	CN-075
7/8-9	1.375	0.798	0.859	1.047	0.313	F087-P	B-3N	GN-087	CN-087
1-8	1.500	0.915	0.921	1.188	0.344	F100-P	B-3N	GN-100	CN-100

To order or specify give: Stud Code, Diameter, Length, Material and Quantity

Example: TP, 3/8-16 x 1.125, (BW), Mild Steel, 1000 pcs.

Specify (L) Length on a Before Weld basis by indicating "BW" or on an After Weld basis by indicating "AW."

See **Accessories** for accessory detail and **Ferrule Specifications** for ferrule options.

See **Arc Stud Welding – General Information** and **Technical Details** for industry specifications, thread options, Before Weld (BW) length, raw material details, plating options, annealing, load strengths and shipping weights.



Arc Weld Studs - Externally Threaded

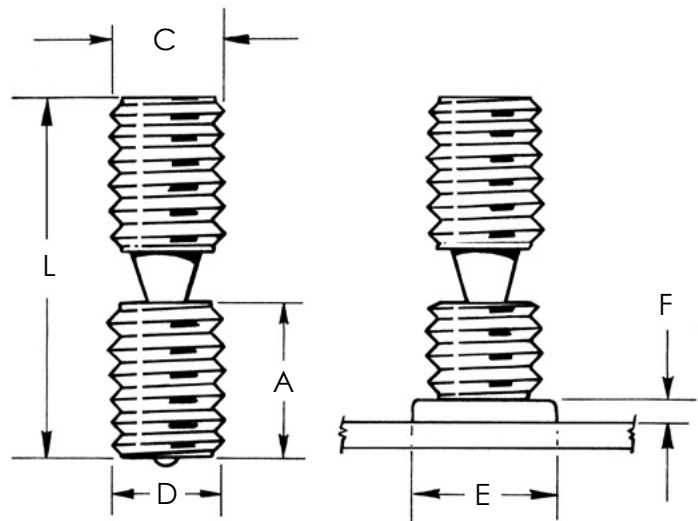
TKO - THREADED KNOCK OFF WELD STUDS - TECHNICAL DETAILS

TKO weld studs are available in mild steel and stainless steel materials. TKO studs are most often made to each customer's order.

Coarse and fine threads are available in both imperial (UNC-2A and UNF-2A) and ISO Metric (Class 6g) sizes. The imperial coarse threads are depicted below (UNC-2A) and are standard.

After TKO studs are welded in place and the top portion of the stud is Knocked off. The welded threaded stud remaining has a shorter threaded length than what is possible with TP and TF type studs.

For application, dimensional and in stock assistance, please contact Sunbelt Stud Welding.



Specifications						Standard Accessories			
Thread Size	Minimum Length	Base Diameter	Base Length	Flash Dimensions		Ferrule	Foot	Grip	Chuck
C	L	D	A	E	F	P/N	P/N	P/N	P/N
1/4-20	0.875	0.215	0.375	0.359	0.109	F025-F	B-1N	GN-025	CN-025
5/16-18	0.875	0.275	0.375	0.438	0.109	F031-F	B-1N	GN-031	CN-031
3/8-16	1.000	0.330	0.375	0.500	0.125	F037-F	B-1N	GN-037	CN-037
7/16-14	1.250	0.387	0.375	0.578	0.141	F043-F	B-1N	GN-043	CN-043
1/2-13	1.250	0.444	0.500	0.688	0.156	F050-F	B-1N	GN-050	CN-050
5/8-11	1.500	0.562	0.680	0.797	0.188	F062-F	B-2N	GN-062	CN-062
3/4-10	1.500	0.680	0.750	0.938	0.250	F075-F	B-2N	GN-075	CN-075
7/8-9	1.500	0.798	0.750	1.094	0.313	F087-F	B-3N	GN-087	CN-087
1-8	1.625	0.915	0.875	1.234	0.375	F100-F	B-3N	GN-100	CN-100

To order or specify give: Stud Code, Dimensions C x L x A, Material and Quantity

Example: TKO, 3/8-16 x 1, (BW), KO to .375, 18-8SS, 2200 pcs.

Specify (L) Length on a Before Weld basis by indicating "BW" or on an After Weld basis by indicating "AW."

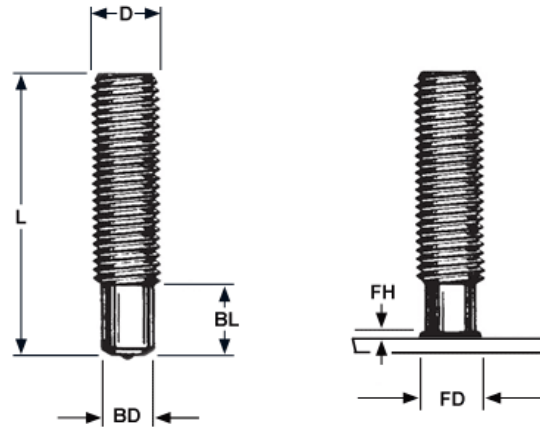
See **Accessories** for accessory detail and **Ferrule Specifications** for ferrule options.

See **Arc Stud Welding – General Information** and **Technical Details** for industry specifications, thread options, Before Weld (BW) length, flux, raw material details, plating options, annealing, load strengths and shipping weights.



Arc Weld Studs - Externally Threaded

ARC LRB - LONG REDUCED BASE THREADED - ARC WELD STUD



Stud Specifications

Diameter	Minimum Length	Base Diameter	Min. Base Length	Flash Dimensions		Ferrule Code
D	L	BD	BL	FD	FH	P/N
1/4	3/4	.187	.375	.281	.109	FS187
5/16	3/4	.250	.375	.359	.125	FS250
3/8	3/4	.312	.375	.437	.125	FS312
7/16	1	.375	.375	.500	.140	FS375
1/2	1	.437	.437	.578	.140	FS437
5/8	1-1/4	.500	.500	.656	.156	FS500
3/4	1-1/2	.625	.718			FS625

Standard thread is UNC-2A (Rolled when possible). Other threads are available upon request.
Maximum standard thread length is 3-7/8".

To order or specify give: Stud Code, Diameter, Length, Material and Quantity

Example: ARC LRB, 1/4, 3/4, Mild Steel, 2500 pcs.

Specify (L) Length on a Before Weld basis by indicating "BW" or on an After Weld basis by indicating "AW."

Material	Mild Steel		Stainless Steel
	C - 0.23% max.	P - 0.04% max.	AISI grade - 302/304/305/316 std.
	Mn - 0.90% max.	S - 0.05% max.	Other grades available upon request.
Mechanical Properties	Tensile	60,000 psi (min.)	Values for various grades available upon request.
	Yield	50,000 psi (min.)	
	Elongation	20% (in 2 inches)	
Plating	Plating is not standard. Cadmium, Copper, Nickel, and Zinc available upon customer request.		Does not apply to Stainless.

See **Accessories** for accessory detail and **Ferrule Specifications** for ferrule options.

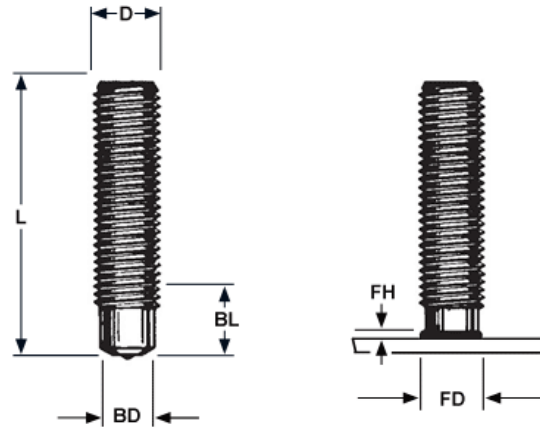
See **Arc Stud Welding – General Information** and **Technical Details** for industry specifications, thread options, Before Weld (BW) length, flux, raw material details, plating options, annealing, load strengths and shipping weights.



website www.sunbeltstudwelding.com email info@sunbeltstudwelding.com
6381 Windfern Road, Houston, TX 77040 telephone 1.800.462.9353 - Houston 713.939.8903 fax 713.939.9013

Arc Weld Studs - Externally Threaded

ARC SRB - SHORT REDUCED BASE THREADED - ARC WELD STUD



Stud Specifications

Diameter	Minimum Length	Base Diameter	Min. Base Length	Flash Dimensions		Ferrule Code
D	L	BD	BL	FD	FH	P/N
1/4	7/8	.187	.156	.281	.109	TB250
5/16	7/8	.275	.250	.390	.109	RB312
3/8	7/8	.312	.250	.437	.125	RB375
1/2	1	.435	.250	.593	.156	RB500
5/8	1-1 1/8	.500	.312	.687	.156	TB625
3/4	1-1 1/8	.625	.375	.812	.187	TB750

Standard thread is UNC-2A (Rolled when possible). Other threads are available upon request. Maximum standard thread length is 3-7/8".

To order or specify give: Stud Code, Diameter, Length, Material and Quantity

Example: ARC SRB, 1/4, 7/8, Mild Steel, 2500 pcs.

Specify (L) Length on a Before Weld basis by indicating "BW" or on an After Weld basis by indicating "AW."

Material	Mild Steel		Stainless Steel
	C - 0.23% max.	P - 0.04% max.	AISI grade - 302/304/305/316 std.
	Mn - 0.90% max.	S - 0.05% max.	Other grades available upon request.
Mechanical Properties	Tensile	60,000 psi (min.)	Values for various grades available upon request.
	Yield	50,000 psi (min.)	
	Elongation	20% (in 2 inches)	
Plating	Plating is not standard. Cadmium, Copper, Nickel, and Zinc available upon customer request.		Does not apply to Stainless.

See **Accessories** for accessory detail and **Ferrule Specifications** for ferrule options.

See **Arc Stud Welding - General Information** and **Technical Details** for industry specifications, thread options, Before Weld (BW) length, flux, raw material details, plating options, annealing, load strengths and shipping weights.



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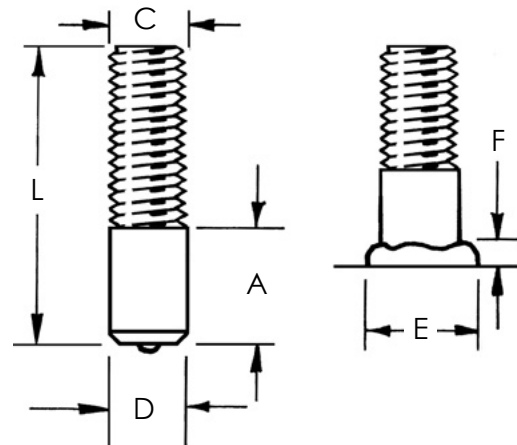
Arc Weld Studs - Externally Threaded

TFB - THREADED FULL BASE WELD STUDS - TECHNICAL DETAILS

TFB weld studs are available in mild steel and stainless steel materials.

TFB studs are most often made to each customer's order.

For application, dimensional and in stock assistance, please contact Sunbelt Stud Welding.



Specifications						Standard Accessories			
Thread Size	Minimum Length	Base Diameter	Base Length	Flash Dimensions		Ferrule	Foot	Grip	Chuck
C	L	D	A	E	F	P/N	P/N	P/N	P/N
1/4-20	0.780	0.250	0.187	0.359	0.109	F025-F	B-1N	GN-025	CN-025
5/16-18	0.780	0.312	0.250	0.438	0.109	F031-F	B-1N	GN-031	CN-031
3/8-16	0.780	0.375	0.265	0.500	0.125	F037-F	B-1N	GN-037	CN-037
7/16-14	0.780	0.437	0.281	0.578	0.141	F043-F	B-1N	GN-043	CN-043
1/2-13	1.000	0.500	0.296	0.688	0.156	F050-F	B-1N	GN-050	CN-050
5/8-11	1.234	0.625	0.359	0.797	0.188	F062-F	B-2N	GN-062	CN-062
3/4-10	1.234	0.750	0.500	0.938	0.250	F075-F	B-2N	GN-075	CN-075
7/8-9	1.500	0.875	0.625	1.094	0.313	F087-F	B-3N	GN-087	CN-087
1-8	1.650	1.000	0.750	1.234	0.375	F100-F	B-3N	GN-100	CN-100

To order or specify give: Stud Code, Thread size, Length, Unthreaded length, Material and Quantity

Example: TFB, 3/4-10 x 2, (BW), .75, Mild Steel, 2500 pcs.

Specify (L) Length on a Before Weld basis by indicating "BW" or on an After Weld basis by indicating "AW."

See **Accessories** for accessory detail and **Ferrule Specifications** for ferrule options.

See **Arc Stud Welding - General Information** and **Technical Details** for industry specifications, thread options, Before Weld (BW) length, flux, raw material details, plating options, annealing, load strengths and shipping weights.



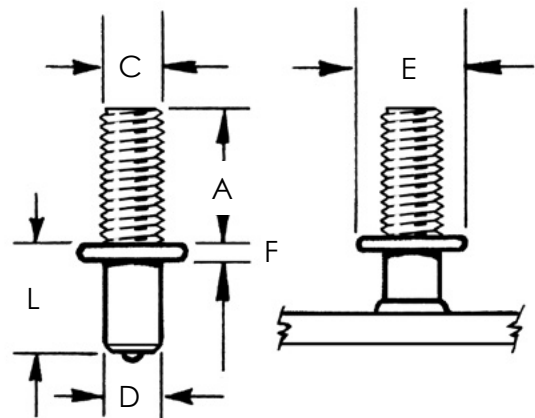
Arc Weld Studs - Externally Threaded

TC - THREADED COLLAR WELD STUDS - TECHNICAL DETAILS

TC studs are used to provide a spacer between the base metal and the attached part.

TC weld studs are available in mild steel and stainless steel materials.

For application, dimensional and in stock assistance, please contact Sunbelt Stud Welding.



						Standard Accessories			
Max. Thread Diameter	Std. Thread Length	Min. Base Length	Base Diameter	Collar Diameter	Collar Thickness	Ferrule	Foot	Grip	Chuck
C	A	L	D	E	F				
1/4 - 20	5/8	3/8	.215	1/2	3/32	F025-TC	B-2N	GN-062	CN-025
5/16 - 18	5/8	3/8	.275	5/8	3/32	F031-TC	B-2N	GN-062	CN-031
3/8 - 16	5/8	3/8	.330	5/8	3/32	F037-TC	B-2N	GN-062	CN-037
1/2 - 13	3/4	1/2	.448	3/4	3/32	F050-TC	B-2N	GN-075	CN-050

Standard thread is UNC-2A (Rolled when possible). Other threads are available upon request.

To order or specify give: Stud Code, Dimensions D x L; C x A, Material and Quantity

Example: TC, .330 x 1 with 3/8-16 x 5/8, (BW), Stainless, 2200 pcs.

Specify (L) Length on a Before Weld basis by indicating "BW"

or on an After Weld basis by indicating "AW."

See **Accessories** for accessory detail and **Ferrule Specifications** for ferrule options.

See **Arc Stud Welding – General Information** and **Technical Details** for industry specifications, thread options, Before Weld (BW) length, flux, raw material details, plating options, annealing, load strengths and shipping weights.



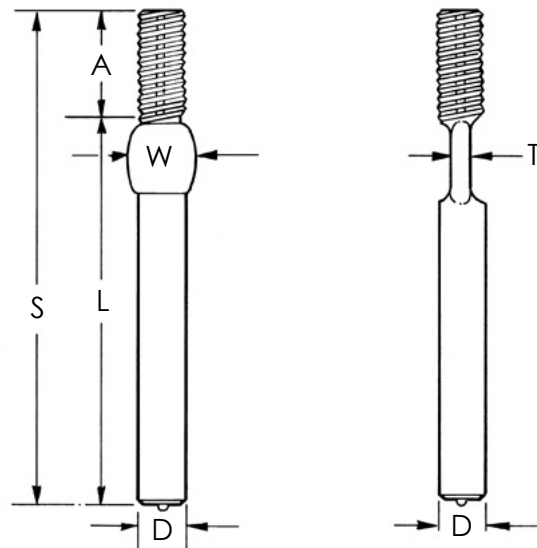
Arc Weld Studs - Externally Threaded

TCC - THREADED COLLAR CRIMPED WELD STUDS - TECHNICAL DETAILS

TCC weld studs are available in mild steel and stainless steel materials.

TCC studs are commonly used in refractory applications for heat recovery power generation systems. After the TCC studs are welded in place and the refractory material installed, the sheet metal skin is placed over the studs and hex nuts installed. The crimped area of the stud supports the sheet metal skin and precludes the skin from compressing the insulation below. See TCW - Threaded Collar Washer and TC - Threaded Collar studs for similar function studs.

For application, dimensional and in stock assistance, please Sunbelt Stud Welding.



Stud Specifications							Standard Accessories			
Base Diameter	Min. Length	Thread Size	Min. Thread Length	Crimp Width	Crimp Thickness	Ferrule	Foot	Grip	Chuck	
D	L	C	A	W	T	P/N	P/N	P/N	P/N	
0.375	2.000	3/8-16	0.500	0.500	0.218	F037-F	B-1C	GC-037	CN-037	
0.500	2.000	1/2-13	0.500	0.625	0.218	F050-F	B-1C	GC-050	CN-050	

To order or specify give: Stud Code, D x L x C x A, Material and Quantity

Example: TCC, .50 x 5.0 with 1/2-13 x 1.0, (BW), 18-8 SS, 3800 pcs.

Specify (L) Length on a Before Weld basis by indicating "BW"

or on an After Weld basis by indicating "AW."

TCC stud Flash Dimensions are the same as .375 and .500 Diameter NT studs.

See **Accessories** for accessory detail and **Ferrule Specifications** for ferrule options.

See **Arc Stud Welding – General Information** and **Technical Details** for industry specifications, thread options, Before Weld (BW) length, flux, raw material details, plating options, annealing, load strengths and shipping weights.



Arc Weld Studs - Externally Threaded

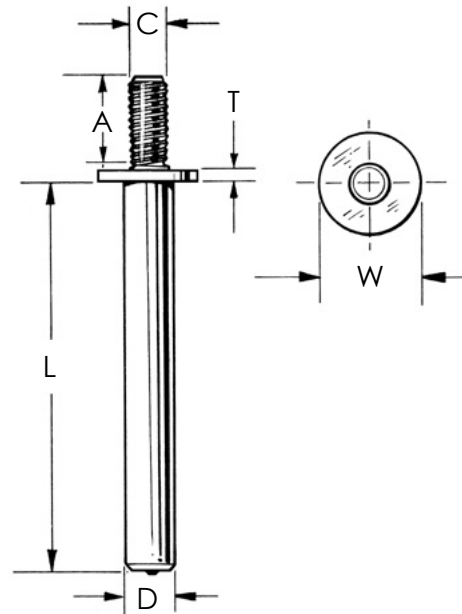
TCW - THREADED COLLAR WASHER WELD STUDS - TECHNICAL DETAILS

TCW weld studs are available in mild steel and stainless steel materials.

TCW studs are commonly used in refractory applications for heat recovery power generation systems. See TCC - Threaded Collar Crimped and TC - Threaded Collar studs for similar function studs.

The washer is installed prior to thread rolling process in order to lock the washer on stud. Washer can not be removed after threads are rolled.

For application, dimensional and in stock assistance, please contact Sunbelt Stud Welding.



Stud Specifications							Standard Accessories		
Base Diameter	Min. Length	Thread Size	Min. Thread Length	Min. Washer Diameter	Washer Thickness	Ferrule	Foot	Grip	Chuck
D	L	C	A	W	T	P/N	P/N	P/N	P/N
0.500	2.000	3/8-16	0.500	1.000	0.120	F050-F	B-1C	GC-050	CN-037
0.625	2.000	1/2-13	0.500	1.250	0.120	F062-F	B-2C	GC-062	CN-050

To order or specify give: Stud Code, Diameter, Length, C x A, Material and Quantity

Example: TCW, .50 x 5.0 with 1/2-13 x 3/4, (BW), 304 SS, 5000 pcs.

Specify (L) Length on a Before Weld basis by indicating "BW"

or on an After Weld basis by indicating "AW."

TCW stud Flash Dimensions are the same as .500 and .625 Diameter NT studs.

See **Accessories** for accessory detail and **Ferrule Specifications** for ferrule options.

See **Arc Stud Welding – General Information** and **Technical Details** for industry specifications, thread options, Before Weld (BW) length, flux, raw material details, plating options, annealing, load strengths and shipping weights.



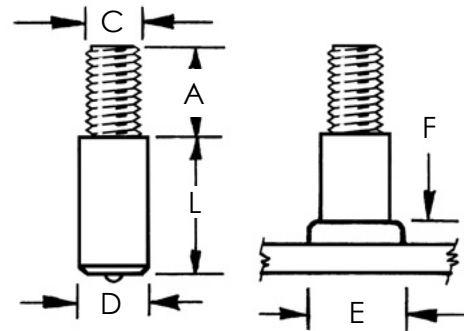
Arc Weld Studs - Externally Threaded

TS - THREADED SHOULDER WELD STUDS - TECHNICAL DETAILS

TS studs are available in mild steel and stainless steel materials. As most TS studs are made to each customer's order, the customer can specify all dimensions when ordering.

TS studs are used to provide a spacer between the base metal and the attached part.

For application and dimensional assistance, contact Sunbelt Stud Welding.



Stud Specifications						Standard Accessories			
Base Diameter	Max. Thread Diameter	Min. Thread Length	Min. Base Length	Flash Dimensions		Ferrule	Foot	Grip	Chuck*
D	C	A	L	E	F	P/N	P/N	P/N	P/N
0.250	#8	0.250	0.312	0.359	0.109	F025-F	B-1N	GN-025	CN-015
0.312	#10	0.250	0.312	0.438	0.109	F031-F	B-1N	GN-031	CN-018
0.375	1/4 - 20	0.250	0.312	0.500	0.125	F037-F	B-1N	GN-037	CN-025
0.438	5/16 - 18	0.312	0.350	0.578	0.141	F043-F	B-1N	GN-043	CN-031
0.500	3/8 - 16	0.375	0.375	0.688	0.156	F050-F	B-1N	GN-050	CN-037
0.625	1/2 - 13	0.500	0.500	0.797	0.188	F062-F	B-2N	GN-062	CN-050
0.750	5/8 - 11	0.562	0.625	0.938	0.250	F075-F	B-2N	GN-075	CN-062
0.875	3/4 - 10	0.625	0.625	1.094	0.313	F087-F	B-3N	GN-087	CN-075
1.000	7-8 - 9	0.750	0.720	1.250	0.375	F100-F	B-3N	GN-100	CN-087

* Chuck part number provided is for the Threaded Diameter (C) shown.

To order or specify give: Stud Code, Base diameter, Length.
 Thread Size, Thread Length, Material and Quantity
 Example: TS, .500 x 1.00, 3/8-16 x 5/8, (BW), 304 SS, 2200 pcs.
 Specify (L) Length on a Before Weld basis by indicating "BW"
 or on an After Weld basis by indicating "AW."

See **Accessories** for accessory detail and **Ferrule Specifications** for ferrule options.

See **Arc Stud Welding - General Information** and **Technical Details** for industry specifications, thread options, Before Weld (BW) length, flux, raw material details, plating options, annealing, load strengths and shipping weights.



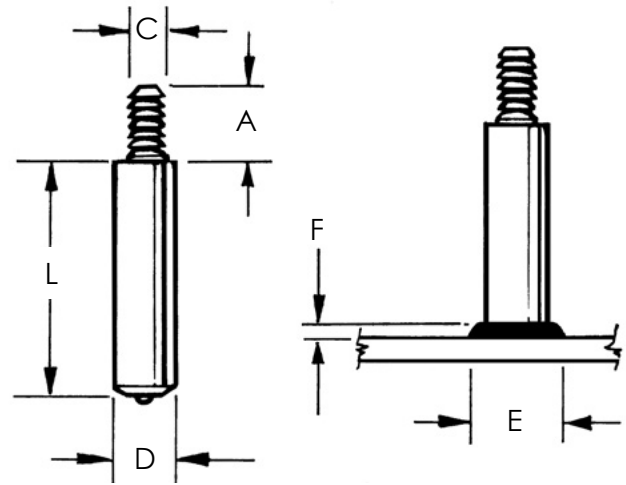
Arc Weld Studs - Externally Threaded

TAG - SHOULDER ANNULAR GROOVE WELD STUDS - TECHNICAL DETAILS

TAG weld studs are available in mild steel and stainless steel materials.

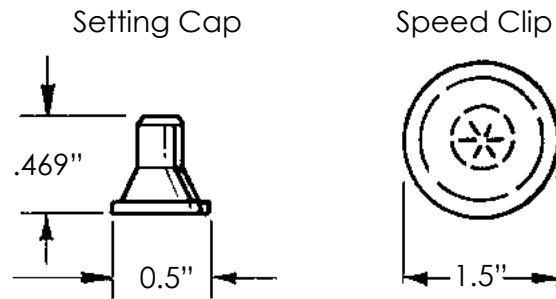
TAG studs are used to make roof or wall systems and to cover and insulate tanks. The speed clip is commonly used to secure insulation material impaled over the stud prior to capping. After the sheet metal skin is impaled over the annular grooves, the cap-setting tool and a hammer are used to install the setting caps onto the TAG studs.

For application, dimensional and in stock assistance, please contact Sunbelt Stud Welding.



Stud Specifications						Standard Accessories			
Base Diameter	Groove Diameter	Groove Length	Min. Length	Flash Dimensions		Ferrule	Foot	Grip	Chuck
D	C	A	L	E	F				
0.312	0.188	0.375	0.625	0.438	0.109	F031-F	B-IN	GN-031	CN-018
0.312	0.188	0.438	0.625	0.438	0.109	F031-F	B-IN	GN-031	CN-018

Recommended Hardware:	Part Number
Speed Clip - Mild Steel	SAG-001
Speed Clip - Stainless Steel	SAG-002
Speed Clip - Aluminum	SAG-003
Setting Caps - Aluminum	SAG-004
Setting Tool	SAG-005



To order or specify give: Stud Code, Dimensions D x L, A, Material and Quantity

Example: TAG .312 x 7/8, .437, (BW), Mild Steel, 4000 pcs.

Specify (L) Length on a Before Weld basis by indicating "BW"
or on an After Weld basis by indicating "AW."

See **Accessories** for accessory detail and **Ferrule Specifications** for ferrule options.

See **Arc Stud Welding – General Information** and **Technical Details** for industry specifications, thread options, Before Weld (BW) length, flux, raw material details, plating options, annealing, load strengths and shipping weights.



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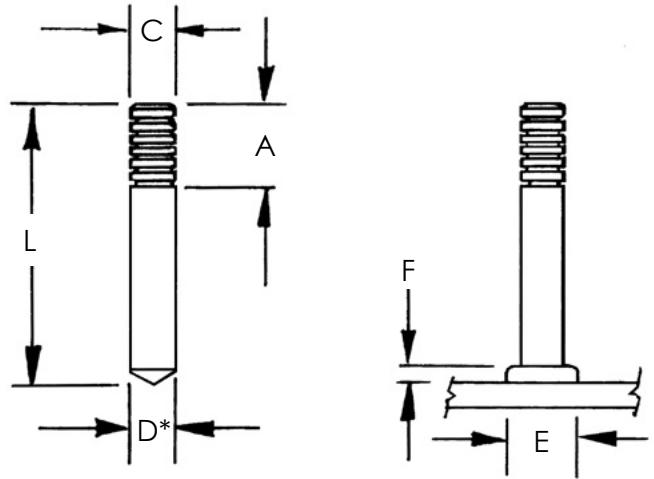
Arc Weld Studs - Externally Threaded

TAR - ANNULAR RING (NAVY) WELD STUDS - TECHNICAL DETAILS

TAR weld studs are available in mild steel and stainless steel materials.

TAR studs are used to install insulation materials. After the stud is welded in place, the insulation is impaled over the stud and then the mushroom navy cap is installed onto the stud with a hammer. The cap is now locked onto the stud.

For application, dimensional and in stock assistance, please contact Sunbelt Stud Welding.



*TAR Studs are fluxed as requested.

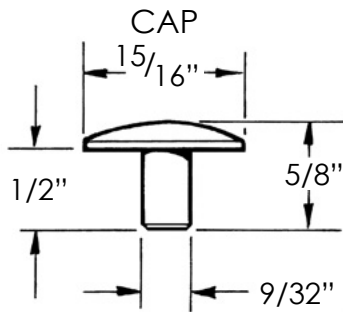
Stud Specifications						Standard Accessories			
Base Diameter	Groove Diameter	Groove Length	Min. Length	Flash Dimensions		Ferrule	Foot	Grip	Chuck
D	C	A	L	E	F				
0.188	0.175	0.312	0.750	0.281	0.094	F019-F	B-IN	GN-019	CN-018

To order or specify give: Stud Code, Dimensions C x L, A, Material and Quantity

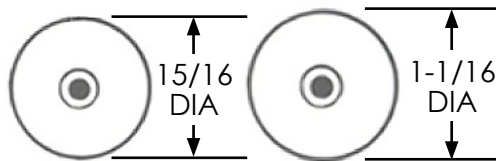
Example: TAR, .188 x 7/8, (BW), Stainless, 5000 pcs.

Specify (L) Length on a Before Weld basis by indicating "BW"
or on an After Weld basis by indicating "AW."

Recommended Hardware	Part Number
Mushroom Navy Cap - Aluminum	TAR



Application	Designed to permanently lock on to Navy annular ring studs
Material	Mild Steel / Zinc Plated, 304 Stainless Steel, 316 Stainless Steel & Aluminum
Size	For 1/8" or 3/16" diameter studs - 304 and 316 Stainless Steel have a 1-1/16" head diameter - 316 Stainless Steel, Aluminum and Mild Steel / Zinc Plated have a 15/16" head diameter



To order or specify give: Product Code, Size, Material and Quantity

Example: TAR, 1/8" diameter, 304 Stainless Steel, 5000 pcs.

See **Accessories** for accessory detail and **Ferrule Specifications** for ferrule options.

See **Arc Stud Welding - General Information** and **Technical Details** for industry specifications, thread options, Before Weld (BW) length, flux, raw material details, plating options, annealing, load strengths and shipping weights.

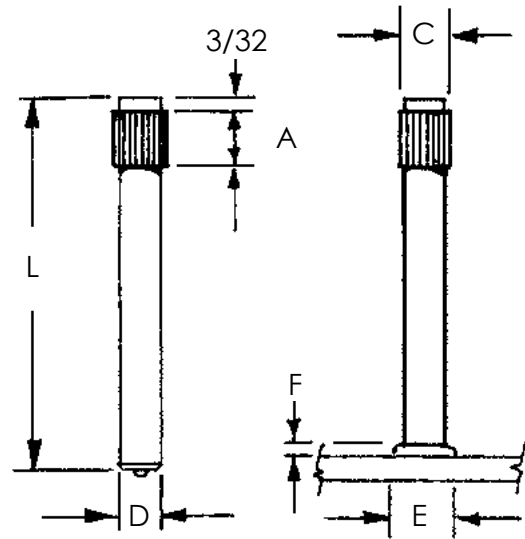
Arc Weld Studs - Externally Threaded

TKN - KNURLED WELD STUDS - TECHNICAL DETAILS

TKN weld studs are available in mild steel and stainless steel materials.

TKN studs are used to install insulation materials. After the stud is welded in place, the insulation is impaled over the stud and then the drive plate is installed onto the stud with a hammer. The drive plate is now locked onto the stud.

For application, dimensional and in stock assistance, please contact Sunbelt Stud Welding.



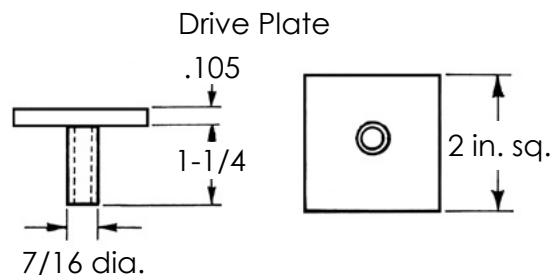
Stud Specifications						Standard Accessories			
Base Diameter	Knurled Diameter	Groove Length	Min. Length	Flash Dimensions		Ferrule	Foot	Grip	Chuck
D	C	A	L	E	F				
0.312	0.327	0.375	0.875	0.438	0.109	F031-F	B-IN	GN-031	CN-031

To order or specify give: Stud Code, Dimensions D x L, Material and Quantity

Example: TKN, .312 x 1, (BW), Stainless, 5000 pcs.

Specify (L) Length on a Before Weld basis by indicating "BW"
or on an After Weld basis by indicating "AW."

Recommended Hardware	Part Number
Drive Plate - Mild Steel	TKN-001
Drive Plate - Stainless Steel	TKN-002



To order or specify give: Part Number and Quantity

Example: TKN-002, 500 pcs.

See **Accessories** for accessory detail and **Ferrule Specifications** for ferrule options.

See **Arc Stud Welding - General Information** and **Technical Details** for industry specifications, thread options, Before Weld (BW) length, flux, raw material details, plating options, annealing, load strengths and shipping weights.



Arc Weld Studs - Internally Threaded

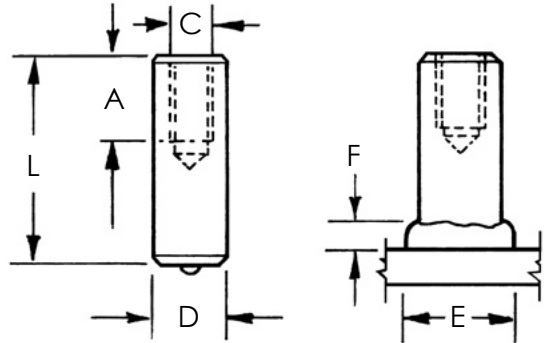
AIN-FB - TAPPED INTERNALLY THREADED FULL BASE - ARC WELD STUD

Tapped Internally Threaded Full Base weld studs are available in mild steel and stainless steel materials. As the majority of these studs are made to each customer's order, the customer can specify all dimensions.

Coarse and fine threads are available in both imperial (UNC-2B and UNF-2B) and ISO metric (Class 6g) sizes. The imperial coarse threads are depicted below (UNC-2B).

Tapped Internally Threaded studs are used to secure components to larger structures and or as a standoff.

For application, dimensional and in stock assistance, please contact Sunbelt Stud Welding.



Stud Specifications						Standard Accessories			
Base Diameter	Max. Thread Tap	Max Std. Thread Depth	Minimum Length*	Flash Dimensions		Ferrule	Foot	Grip	Chuck
D	C	A	L	E	F	P/N	P/N	P/N	P/N
0.250	#8	0.250	0.500	0.359	0.109	F025-F	B-1N	GN-025	CN-025
0.312	#10	0.281	0.577	0.438	0.109	F031-F	B-1N	GN-031	CN-031
0.375	1/4 - 20	0.375	0.718	0.500	0.125	F037-F	B-1N	GN-037	CN-037
0.438	5/16 - 18	0.468	0.858	0.578	0.141	F043-F	B-1N	GN-043	CN-043
0.500	3/8 - 16	0.562	0.983	0.688	0.156	F050-F	B-1N	GN-050	CN-050
0.625	1/2 - 13	0.750	1.287	0.797	0.188	F062-F	B-2N	GN-062	CN-062
0.750	5/8 - 11	0.937	1.593	0.938	0.250	F075-F	B-2N	GN-075	CN-075
0.875	3/4 - 10	1.125	1.859	1.094	0.313	F087-F	B-3N	GN-087	CN-087
1.000	7/8-9	1.312	2.125	1.250	0.375	F100-F	B-3N	GN-100	CN-100

Note, the minimum length (L) is reduced when smaller thread sizes are used compared to what is shown.

To order or specify give: Stud Code, Dimensions D x L, C x A, Material and Quantity

Example: AIN-FB, .50 x 1, with 3/8-16 x .562, (BW), Mild Steel, 1000 pcs.

Specify (L) Length on a Before Weld basis by indicating "BW"

or on an After Weld basis by indicating "AW."

See **Accessories** for accessory detail and **Ferrule Specifications** for ferrule options.

See **Arc Stud Welding - General Information** and **Technical Details** for industry specifications, thread options, Before Weld (BW) length, flux, raw material details, plating options, annealing, load strengths and shipping weights.



Arc Weld Studs - Internally Threaded

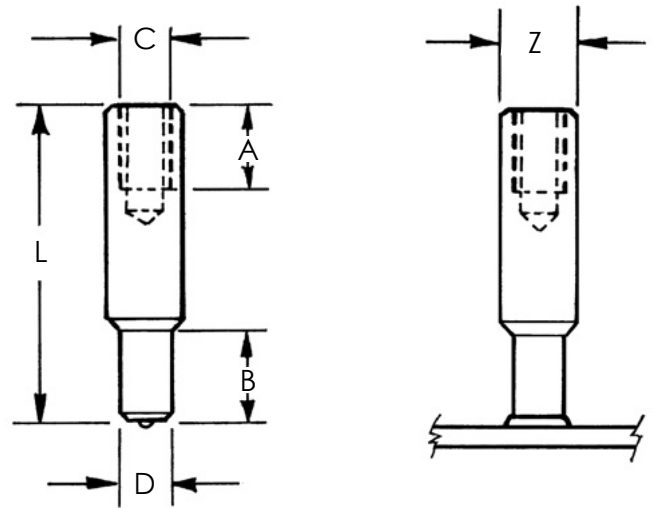
AIN-RB - TAPPED INTERNALLY THREADED REDUCED BASE - ARC WELD STUDS

Tapped Internally Threaded Reduced Base weld studs are available in mild steel and stainless steel materials. As the majority of these studs are made to each customer's order, the customer can specify all dimensions.

Coarse and fine threads are available in both imperial (UNC-2B and UNF-2B) and ISO metric (Class 6g) sizes. The imperial coarse threads are depicted below (UNC-2B).

Tapped Internally Threaded studs are used to secure components to larger structures and or as a standoff. The reduced weld base diameter may satisfy application needs and or equipment limitations.

For application, dimensional and in stock assistance, please contact Sunbelt Stud Welding.



Stud Specifications						Standard Accessories			
Major Diameter	Max. Thread Tap	Min. Thread Depth	Minimum Length*	Base Diameter	Base Length	Ferrule	Foot	Grip	Chuck
Z	C	A	L	D	B	P/N	P/N	P/N	P/N
0.375	1/4 - 20	0.250	0.828	0.250	0.375	F025-LP	B-1N	GN-025	CN-037
0.500	3/8 - 16	0.375	1.015	0.375	0.375	F037-LP	B-1N	GN-037	CN-050
0.625	1/2-13	0.375	1.250	0.500	0.547	F050-LP	B-1N	GN-050	CN-062
0.750	1/2-13	0.375	1.250	0.500	0.547	F050-LP	B-1N	GN-050	CN-075
0.875	5/8-11	0.500	1.703	0.625	0.797	F062-LP	B-2N	GN-062	CN-087
1.000	3/4-10	0.500	1.875	0.750	0.922	F075-LP	B-2N	GN-075	CN-100

Note, the minimum length (L) is reduced when smaller thread sizes are used compared to what is shown.

To order or specify give: Stud Code, Dimensions Z x L, C x A, D x B, Material and Quantity

Example: AIN-RB, .50 x 1.25 with 3/8-16 x .562, RB .375 x .375, (BW), Mild Steel, 1200 pcs.

Specify (L) Length on a Before Weld basis by indicating "BW"

or on an After Weld basis by indicating "AW."

See **Accessories** for accessory detail and **Ferrule Specifications** for ferrule options.

See **Arc Stud Welding - General Information** and **Technical Details** for industry specifications, thread options, Before Weld (BW) length, flux, raw material details, plating options, annealing, load strengths and shipping weights.



website www.sunbeltstudwelding.com email info@sunbeltstudwelding.com
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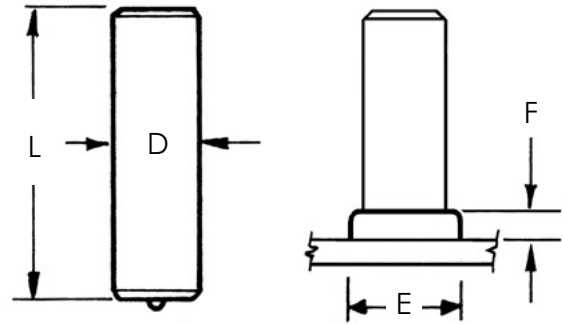
Arc Weld Studs - No Thread Studs

NT - NO THREAD WELD STUDS - TECHNICAL DETAILS

NT weld studs are available in mild steel and stainless steel materials.

NT studs are used as locating pins, spacers, stops, rotational points and tong holds.

For application, dimensional and in stock assistance, please contact Sunbelt Stud Welding.



Stud Specifications				Standard Accessories			
Base Diameter	Min. Stud Length	Flash Dimensions		Ferrule	Foot	Grip	Chuck
D	L	E	F	P/N	P/N	P/N	P/N
0.250	0.781	0.359	0.109	F025-F	B-1N	GN-025	CN-025
0.312	0.781	0.438	0.109	F031-F	B-1N	GN-031	CN-031
0.375	0.781	0.500	0.125	F037-F	B-1N	GN-037	CN-037
0.437	0.781	0.578	0.141	F043-F	B-1N	GN-043	CN-043
0.500	0.813	0.688	0.156	F050-F	B-1N	GN-050	CN-050
0.625	0.969	0.780	0.188	F062-F	B-2N	GN-062	CN-062
0.680	1.000	0.938	0.250	F075-P	B-2N	GN-075	CN-068
0.750	1.250	1.016	0.250	F075-F	B-2N	GN-075	CN-075
0.875	1.500	1.125	0.313	F087-F	B-3N	GN-087	CN-087
1.000	1.641	1.375	0.375	F100-F	B-3N	GN-100	CN-100

To order or specify give: Stud Code, Diameter, Length
 Example: NT, 5/8 x 1.75, (BW), Stainless Steel, 2500 pcs.
 Specify (L) Length on a Before Weld basis by indicating "BW"
 or on an After Weld basis by indicating "AW."

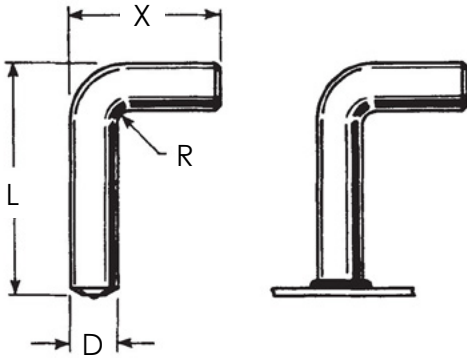
See **Accessories** for accessory detail and **Ferrule Specifications** for ferrule options.

See **Arc Stud Welding – General Information** and **Technical Details** for industry specifications, thread options, Before Weld (BW) length, flux, raw material details, plating options, annealing, load strengths and shipping weights.



Arc Weld Studs - No Thread Studs

NTB – BENT NO THREAD – ARC WELD STUD



Stud				
D	Min. L	Min. X	Min. R	Ferrule Code
1/4	1-1/8	1-1/4	.125	F250
5/16	1-1/4	1-1/2	.218	F312
3/8	1-1/2	1-1/2	.218	F375
7/16	1-5/8	1-5/8	.250	F437
1/2	1-3/4	1-3/4	.250	F500
5/8	1-7/8	2	.312	F625
3/4	2-3/4	3	.500	F750
7/8	3-1/2	3-3/8	.500	F875

Material	Mild Steel		Stainless Steel
	C - 0.23% max. Mn - 0.90% max.	P - 0.04% max. S - 0.05% max.	AISI grade - 302/304/305/316 std. Other grades available upon request.
Mechanical Properties	Tensile	60,000 psi (min.)	Values for various grades available upon request.
	Yield	50,000 psi (min.)	
	Elongation	20% (in 2 inches)	
Plating	Plating is not standard. Cadmium, Copper, Nickel, and Zinc available upon customer request.		Does not apply to Stainless.

To order or specify give: Stud Code, Diameter, Length, Material and Quantity.

Example: NTB, 1/4, 2 (BW), Mild Steel, 5000 pcs.

Specify (L) Length, on a Before Weld basis by indicating "BW"
or on an After Weld basis by indicating "AW."

See **Accessories** for accessory detail and **Ferrule Specifications** for ferrule options.

See **Arc Stud Welding – General Information** and **Technical Details** for industry specifications, thread options, Before Weld (BW) length, flux, raw material details, plating options, annealing, load strengths and shipping weights.



Arc Weld Studs - No Thread Studs

NBT – BOILER TUBE WELD STUDS – TECHNICAL DETAILS

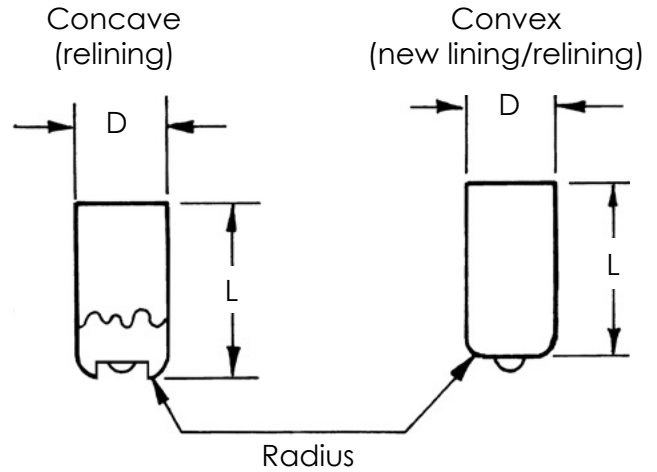
NBT weld studs are available in mild steel and stainless steel materials.

NBT studs are used to secure refractory material and to provide heat dissipation in coal burning boilers. BT studs are commonly made in 430 stainless steel. This stainless typically provides longer stud life than mild steel and is more cost effective than stainless grades 302 and 304.

NBT studs are available in Auto Feed (AF) quality. Please indicate if AF quality is needed.

The "F" ferrules are preferred for welding to flat surfaces. The "C" ferrules are preferred for welding to boiler tubes (i.e. round surfaces).

For application, dimensional and in stock assistance, please contact Sunbelt Stud Welding.



Stud Specifications				Standard Accessories			
Base Diameter	Min. Stud Length	Flash Dimensions		Ferrule	Foot	Grip	Chuck
D	L	E	F	P/N	P/N	P/N	P/N
0.375	0.750	0.500	0.125	F037-C	B-IN	GN-037	CN-037
				F037-F	B-IN	GN-037	CN-037
0.500	0.813	0.688	0.156	F050-C	B-IN	GN-050	CN-050
				F050-F	B-IN	GN-050	CN-050

To order or specify give: Stud Code, Diameter, Length, Material, Quantity, Concave or Convex, and Ferrule.

Example: NBT, 3/8 x 1.00, (BW), 430 Stainless Steel, 20000 pcs., Convex, F037-C

Specify (L) Length, on a Before Weld basis by indicating "BW"

or on an After Weld basis by indicating "AW."

See **Accessories** for accessory detail and **Ferrule Specifications** for ferrule options.

See **Arc Stud Welding – General Information** and **Technical Details** for industry specifications, thread options, Before Weld (BW) length, flux, raw material details, plating options, annealing, load strengths and shipping weights.



Arc Weld Studs - No Thread Studs

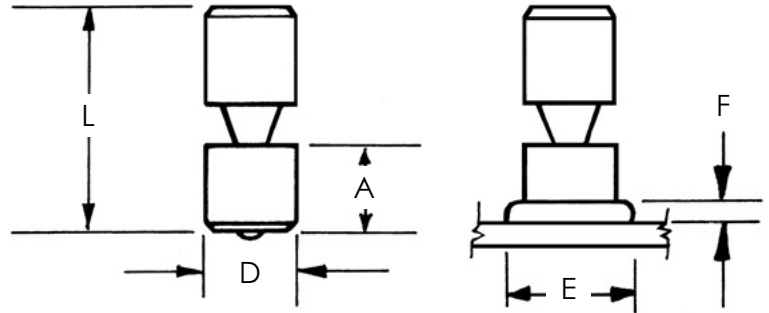
NTK – NO THREAD KNOCK OFF WELD STUDS – TECHNICAL DETAILS

NTK weld studs are available in mild steel and stainless steel materials.

After NTK studs are welded in place the top portion of the stud is knocked off. The welded stud remaining has a shorter height than what is possible to weld with standard No Thread (NT) weld studs.

In addition to being used as locating pins, spacers, stops and rotational points, NTK studs are installed on bridge decking and bridge expansion joints to reduce vehicular skidding. Sometimes called "Anti-Skid" studs.

For application, dimensional and in stock assistance, please contact Sunbelt Stud Welding.



Stud Specifications				Standard Accessories			
Base Diameter	Minimum Length	Flash Dimensions		Ferrule	Foot	Grip	Chuck
D	L	E	F	P/N	P/N	P/N	P/N
0.250	0.875	0.359	0.109	F025-F	B-1N	GN-025	CN-025
0.312	0.875	0.438	0.109	F031-F	B-1N	GN-031	CN-031
0.375	1.000	0.500	0.125	F037-F	B-1N	GN-037	CN-037
0.437	1.250	0.578	0.141	F043-F	B-1N	GN-043	CN-043
0.500	1.250	0.688	0.156	F050-F	B-1N	GN-050	CN-050
0.625	1.500	0.797	0.188	F062-F	B-2N	GN-062	CN-062
0.750	1.500	0.938	0.250	F075-F	B-2N	GN-075	CN-075
0.875	1.500	1.094	0.313	F087-F	B-3N	GN-087	CN-087
1.000	1.625	1.234	0.375	F100-F	B-3N	GN-100	CN-100

To order or specify give: Stud Code, Diameter, Length (L), Base Length (A), Material and Quantity

Example: NTK, 5/16 x 1.00, KO to .375, (BW), mild steel, 2000 pcs.

Specify (L) Length, on a Before Weld basis by indicating "BW"

or on an After Weld basis by indicating "AW."

See **Accessories** for accessory detail and **Ferrule Specifications** for ferrule options.

See **Arc Stud Welding – General Information** and **Technical Details** for industry specifications, thread options, Before Weld (BW) length, flux, raw material details, plating options, annealing, load strengths and shipping weights.



Arc Weld Studs - No Thread Studs

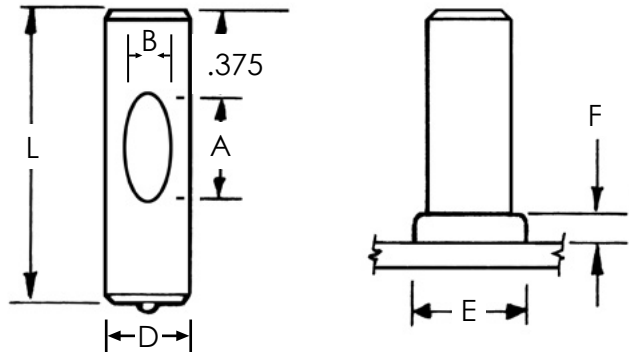
NTH - NO THREAD W/ HOLE WELD STUDS - TECHNICAL DETAILS

NTH weld studs are available in mild steel and stainless steel materials.

NTS studs are commonly used to secure blanket insulation to furnaces, duct work and tanks. Wire is inserted through the stud hole to retain the blanket insulation.

As requested, various diameter NTH studs are supplied with drilled cross holes.

For application, dimensional and in stock assistance, please contact Sunbelt Stud Welding.



Stud Specifications						Standard Accessories			
Base Diameter	Overall Length (min.)	Hole Width	Hole Length	Flash Dimensions		Ferrule	Foot	Grip	Chuck
D	L	B	A	E	F	P/N	P/N	P/N	P/N
0.375	1.125	0.156	0.500	0.500	0.125	F037-F	B-1N	GN-037	CN-037
0.500	1.125	0.188	0.500	0.688	0.156	F050-F	B-1N	GN-050	CN-050

To order or specify give: Diameter, Length, Material and Quantity

Example: NTH, 3/8 x 1.50, (BW), mild steel, 1000 pcs.

Specify (L) Length, on a Before Weld basis by indicating "BW"
or on an After Weld basis by indicating "AW."

See **Accessories** for accessory detail and **Ferrule Specifications** for ferrule options.

See **Arc Stud Welding – General Information** and **Technical Details** for industry specifications, thread options, Before Weld (BW) length, flux, raw material details, plating options, annealing, load strengths and shipping weights.



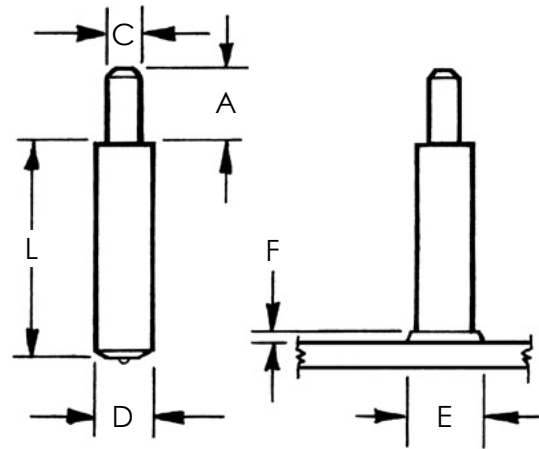
Arc Weld Studs - No Thread Studs

NTS – NO THREAD SHOULDER WELD STUDS – TECHNICAL DETAILS

NTS weld studs are available in mild steel and stainless steel materials.

NTS studs are used for locating pins, spacers, stops, stand offs and rotational points.

For application, dimensional and in stock assistance, please contact Sunbelt Stud Welding.



Stud Specifications						Standard Accessories			
Base Diameter	No Thread Diameter	Min. No Thread Length	Min. Length	Flash Dimensions		Ferrule	Foot	Grip	Chuck*
D	C	A	L	E	F	P/N	P/N	P/N	P/N
0.250	Customer to specify this dimension.	0.250	0.312	0.359	0.109	F025-F	B-1N	GN-025	CN-025
0.312		0.250	0.312	0.438	0.109	F031-F	B-1N	GN-031	CN-031
0.375		0.250	0.312	0.500	0.125	F037-F	B-1N	GN-037	CN-037
0.438		0.250	0.350	0.578	0.141	F043-F	B-1N	GN-043	CN-043
0.500		0.250	0.375	0.688	0.156	F050-F	B-1N	GN-050	CN-050
0.625		0.250	0.500	0.797	0.188	F062-F	B-2N	GN-062	CN-062
0.750		0.250	0.625	0.938	0.250	F075-F	B-2N	GN-075	CN-075
0.875		0.250	0.625	1.094	0.313	F087-F	B-3N	GN-087	CN-087
1.000		0.250	0.720	1.250	0.375	F100-F	B-3N	GN-100	CN-100

* Chuck part number shown is for the Base Diameter "D" shown.

To order or specify give: Stud Code, Diameter, Length, C dia., A Dimension, Material and Quantity

Example: NTS, 5/16 x 1.00, (BW), with .188 x .375, mild steel, 2000 pcs.

Specify (L) Length, on a Before Weld basis by indicating "BW"
or on an After Weld basis by indicating "AW."

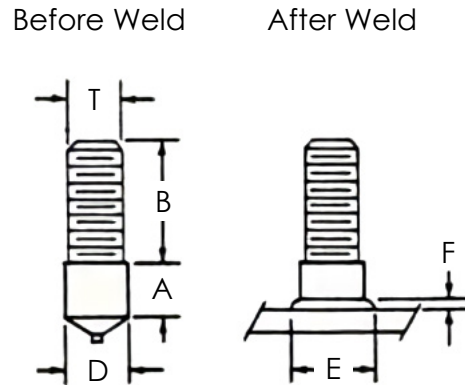
See **Accessories** for accessory detail and **Ferrule Specifications** for ferrule options.

See **Arc Stud Welding – General Information** and **Technical Details** for industry specifications, thread options, Before Weld (BW) length, flux, raw material details, plating options, annealing, load strengths and shipping weights.



Arc Weld Studs - Aluminum Standard Studs

ALUMINUM STANDARD STUDS



Aluminum standard studs are partially threaded with a weld base diameter greater than the thread diameter.

Typical Use: Most applications requiring full strength in weld base area.

Length Specifications: Lengths available as specified to a maximum of 2-13/16" nominal, 3" BW. Establish overall length by the combination of dimensions A and B.

Material: Aluminum alloy 5000 Series.

Ferrules: All orders include ferrules, which are supplied with the studs and are not sold individually.

Specifications						
Thread Size	Weld Base Diameter (Nom.)	Unthreaded Length		Maximum Threaded Length	Approximate Weld Bead Dimensions	
		Before Weld	After Weld (Nom.)		Diameter	Height
T	D	A (BW)	A (AW)	B	E	F
10-32	1/4	5/16	1/8	2-1/2	13/32	1/8
1/4-20	5/16	3/8	3/16	2-1/2	15/32	5-32
5/16-18	3/8	13/32	7/32	2-1/2	5/8	3/16
3/8-16	7/16	15/32	9/32	2-1/2	21/32	7/32
7/16-14	1/2	1/2	5/16	2-1/2	3/4	1/4

To order or specify give: Stud Code, D, A (BW), B, Material and Quantity

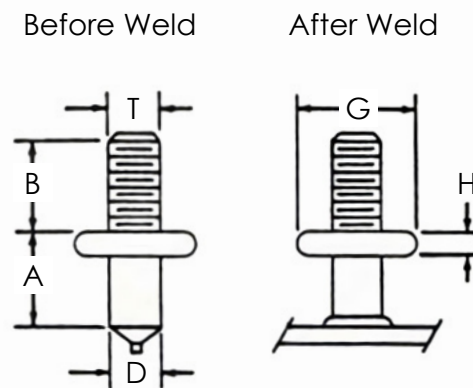
Example: TP-AL, 5/16, 3/8, 2-1/2, Aluminum alloy 5000 Series, 2000 pcs.

Specify (L) Length, on a Before Weld basis by indicating "BW"
or on an After Weld basis by indicating "AW."



Arc Weld Studs - Aluminum Collar Studs

ALUMINUM COLLAR STUDS



Aluminum collar studs are partially threaded studs with a collar separating the weld base and thread. They are available in thread diameters from 1/4" through 1/2".

Typical Use: As a spacer between parent metal and part secured on extension. Minimum weld base diameter facilitates welding to lighter gauge parent metal.

Length Specifications: Lengths are limited by minimums established by length before weld (BW), of A dimension, and thread length B.

Material: Aluminum alloy 5000 Series.

Ferrules: All orders include ferrules, which are supplied with the studs and are not sold individually.

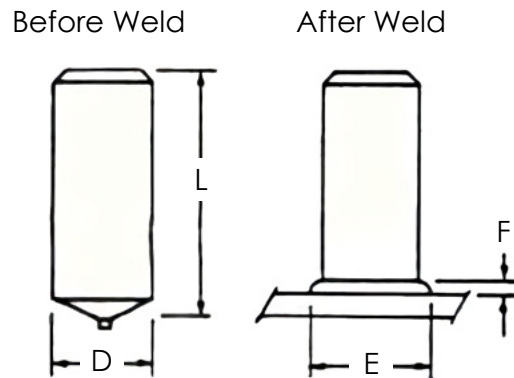
Specifications						
Thread Size	Weld Base Diameter (Nom.)	Minimum Length		Maximum Threaded Length	Collar Diameter	Collar Thickness
		Before Weld	After Weld (Nom.)			
T	D	A (BW)	A (AW)	B	G	H
1/4-20	.215	11/16	1/2	1-1/4	1/2	3/32
5/16-18	.275	3/4	9/16	1-1/4	5/8	1/8
3/8-16	.330	3/4	9/16	1-1/4	5/8	1/8
1/2-13	.447	13/16	5/8	1-1/4	3/4	1/8

To order or specify give: Stud Code, D, T, A (BW), B, Material and Quantity
 Example: TC-AL, .215, 1/4-20, 11/16 (BW), 1-1/4, Aluminum alloy 5000 Series, 2000 pcs.
 Specify (L) Length, on a Before Weld basis by indicating "BW"
 or on an After Weld basis by indicating "AW."



Aluminum Full Base Welding Pins

ALUMINUM FULL BASE WELDING PINS



Aluminum FB (Full Base) welding pins are unthreaded fasteners. They are available in diameters from 1/4" through 1/2".

Typical Use: Heat transfer pins.

Length Specifications: Lengths available from minimums shown in specifications.

Material: Aluminum alloy 5000 Series.

Ferrules: All orders include ferrules, which are supplied with the studs and are not sold individually.

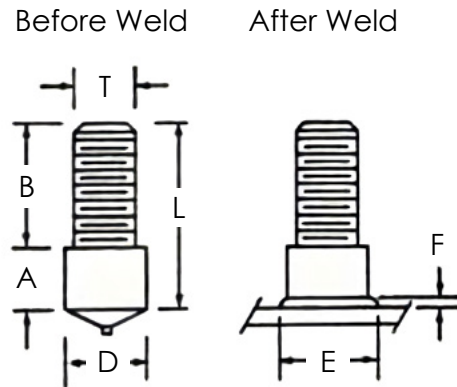
Specifications				
Weld Base Diameter (Nom.)	Minimum Length		Approximate Weld Bead Dimensions	
	Before Weld	After Weld (Nom.)	Diameter E	Height F
D	L (BW)	L (AW)		
1/4	11/16	1/2	13/32	1/8
5/16	11/16	1/2	15/32	5/32
3/8	13/16	5/8	5/8	3/16
7/16	7/8	11/16	21/32	7/32
1/2	7/8	11/16	3/4	1/4

To order or specify give: Stud Code, D, L (BW), Material and Quantity
Example: TFBP-AL, 1/4, 11/16 (BW), Aluminum alloy 5000 Series, 2000 pcs.
 Specify (L) Length, on a Before Weld basis by indicating "BW"
 or on an After Weld basis by indicating "AW."



Aluminum Shoulder Base Studs

ALUMINUM SHOULDER BASE STUDS



Aluminum SB (Shoulder Base) welding studs are partially threaded studs with a base diameter greater than the thread diameters. Available with weld-base diameters from 5/16" through 1/2"; thread diameters as specified.

Typical Use: To provide a spacer between the parent metal and the fastened part.

Length Specifications: Overall length limits are established by the combination of A and B.

Material: Aluminum alloy 5000 Series.

Ferrules: All orders include ferrules, which are supplied with the studs and are not sold individually.

Specifications

Thread Size	Weld Base Diameter (Nom.)	UNTHREADED LENGTH		Maximum Threaded Length	Maximum Overall Length		Approximate Weld Bead Dimensions	
		Before Weld	After Weld (Nom.)		BW	AW	Diameter	Height
T	D	A (BW)	A (AW)	B	L (BW)	L (AW)	E	F
10-32	5/16	7/16	1/4	7/16	7/8	11/16	15/32	5/32
1/4-20	3/8	15/32	9/32	5/8	1-3/32	29/32	5/8	3/16
5/16-18	7/16	15/32	9/32	3/4	1-7/32	1-1/32	21/32	7/32
3/8-16	1/2	1/2	5/16	1	1-1/2	1-5/16	3/4	1/4

To order or specify give: Stud Code, D, T, A (BW), B, Material and Quantity

Example: TS-AL, 3/8, 1/4-20, 15/32 (BW),

5/8, Aluminum alloy 5000 Series, 2000 pcs.

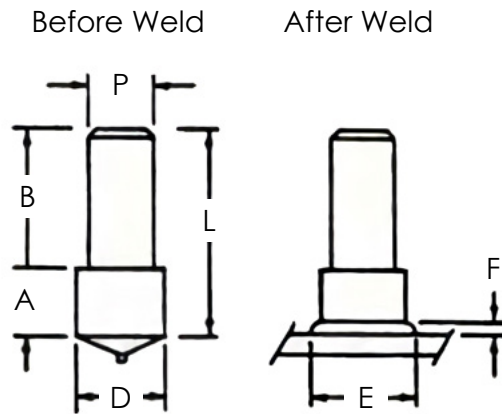
Specify (L) Length, on a Before Weld basis by indicating "BW"

or on an After Weld basis by indicating "AW."



Aluminum Shoulder Base Welding Pins

ALUMINUM SHOULDER BASE WELDING PINS



Aluminum SB (Shoulder Base) welding pins are plain, unthreaded fasteners with a weld base diameter greater than the extension diameter. Available with weld base diameters from 1/4" through 1/2"; extension diameters, 1/8" through 3/8".

Typical Use: As standoff and pivot between parent metal and rotating arm or wheel.

Length Specifications: Overall length limits are established by the combination of A and B.

Material: Aluminum alloy 5000 Series.

Ferrules: All orders include ferrules, which are supplied with the studs and are not sold individually.

Specifications

Pin Diameter	Weld Base Diameter (Nom.)	Weld Base Length		Maximum Pin Length	Maximum Overall Length		Approximate Weld Bead Dimensions	
		Before Weld	After Weld (Nom.)		B/W L (BW)	A/W L (AW)	Diameter E	Height F
P	D	A (BW)	A (AW)	B	B/W L (BW)	A/W L (AW)	E	F
1/8	1/4	5/16	1/8	5/16	5/8	7/16	13/32	1/8
3/16	5/16	3/8	3/16	15/32	27/32	21/32	15/32	5/32
1/4	3/8	13/32	7/32	5/8	1-1/32	25/32	5/8	3/16
5/16	7/16	15/32	9/32	25/32	1-1/4	1-1/16	21/32	7/32
3/8	1/2	1/2	5/16	1	1-1/2	1-5/16	3/4	1/4

To order or specify give: Stud Code, D, P, A (BW), B, Material and Quantity

Example: TSP-AL, 1/4, 1/8, 5/16 (BW), 5/16,

Aluminum alloy 5000 Series, 2000 pcs.

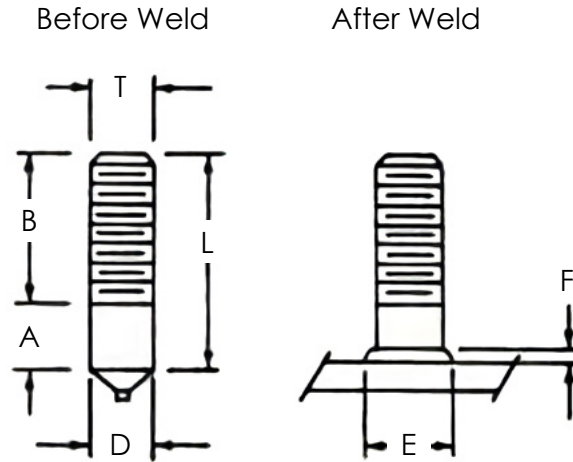
Specify (L) Length, on a Before Weld basis by indicating "BW"

or on an After Weld basis by indicating "AW."



Aluminum Full Base Studs

ALUMINUM FULL BASE STUDS



Aluminum FB (Full Base) studs available in diameters from 1/4" to 1/2", have equal weld base and thread diameters.

Typical Use: When minimum fillet dimensions are required at the weld base.

Length Specifications: Available in minimum weld base heights specified, with a maximum of 1-1/4" thread length.

Material: Aluminum alloy 5000 Series; others on request.

Ferrules: All orders include ferrules, which are supplied with the studs and are not sold individually.

Specifications

Thread Size	Weld Base Diameter (Nom.)	Minimum Weld Base Height		Maximum Thread Length	Maximum Overall Length		Approximate Weld Bead Dimensions	
		Before Weld	After Weld (Nom.)		Before Weld	After Weld	Diameter	Height
T	D	A (BW)	A (AW)	B	L (BW)	L (AW)	E	F
1/4-20	1/4	5/16	1/8	1-1/4	13/16	5/8	13/32	1/8
5/16-18	5/16	3/8	3/16	1-1/4	1	13/16	15/32	5/32
3/8-16	3/8	13/32	7/32	1-1/4	1-5/32	31/32	5/8	3/16
7/16-14	7/16	15/32	9/32	1-1/4	1-11/32	1-5/32	21/32	7/32
1/2-13	1/2	3/8	3/16	1-1/4	1-1/2	1-5/16	3/4	1/4

To order or specify give: Stud Code, D, L (BW), B, Material and Quantity

Example: TFB-AL, 1/4, 13/16 (BW), 1-1/4,

Aluminum alloy 5000 Series, 2000 pcs.

Specify (L) Length, on a Before Weld basis by indicating "BW"

or on an After Weld basis by indicating "AW."

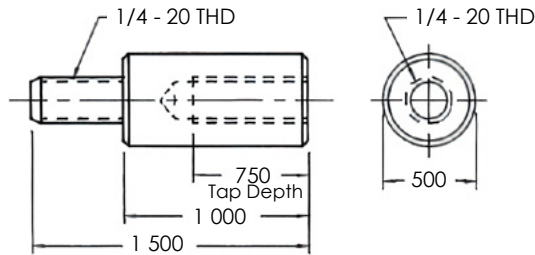


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Shipbuilding: Stack Studs

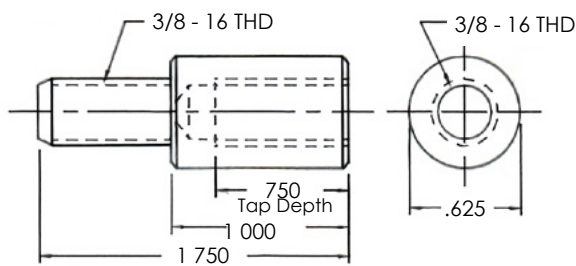
SHIPBUILDING / OFFSHORE: STACK STUDS

1/4 - 20



P/N - 3101-04-024-04-12C

3/8 - 16



P/N - 3101-06-028-06-12C

Material Code		
Mild Steel	Stainless Steel	Aluminum
C	S=304SS SS= 316SS	A

To order or specify give:
Shipbuilding/Offshore: SS, Specify Part Number and Quantity



Arc Weld Studs - No Thread Studs

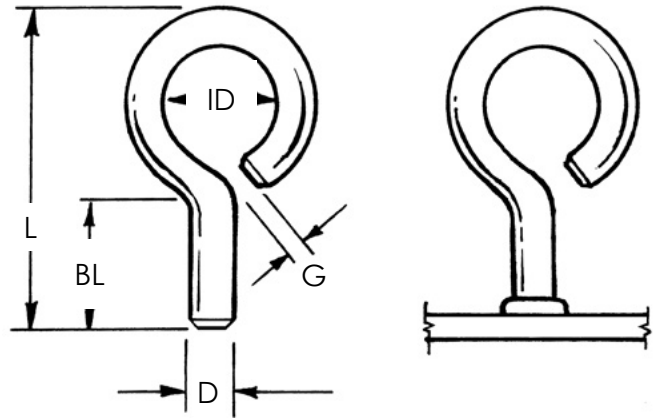
NTE - NO THREAD EYE BOLT WELD STUDS - TECHNICAL DETAILS

NTE weld studs are available in mild steel and stainless steel materials.

NTE studs are commonly used for lifting parts and for assembly attachment.

To stud weld NTE studs, special chucks are required and the dual leg ferrule foot plate is preferred.

For application, dimensional and in stock assistance, please contact Sunbelt Stud Welding.



Stud Specifications						Standard Accessories		
Base Diameter	Minimum Length	Minimum Base Length	Minimum Inside Diameter	Minimum Opening	Ferrule	Foot	Grip	Chuck
D	L	BL	ID	G	P/N	P/N	P/N	P/N
0.188	1.875	0.750	0.500	0.188	F019-F	QN-018	n/a	EB-018
0.250	1.750	0.750	0.750	0.250	F025-F	QN-025	n/a	EB-025
0.312	1.875	0.750	0.750	0.313	F031-F	QN-031	n/a	EB-031
0.375	2.625	1.000	0.875	0.375	F037-F	QN-037	n/a	EB-037
0.438	3.000	1.125	1.000	0.438	F043-F	QN-043	n/a	EB-043
0.500	2.625	1.375	1.250	0.500	F050-F	QN-050	n/a	EB-050

To order or specify give: Stud Code, D x L; BL; ID; G
 Example: NTE, 3/8 x 2.75, 1.125, (BW), 0.875, 0.375, mild steel, 2000 pcs.
 Specify (L) Length, on a Before Weld basis by indicating "BW"
 or on an After Weld basis by indicating "AW."

See **Accessories** for accessory detail and **Ferrule Specifications** for ferrule options.

See **Arc Stud Welding – General Information** and **Technical Details** for industry specifications, thread options, Before Weld (BW) length, flux, raw material details, plating options, annealing, load strengths and shipping weights.



Arc Weld Studs - No Thread Studs

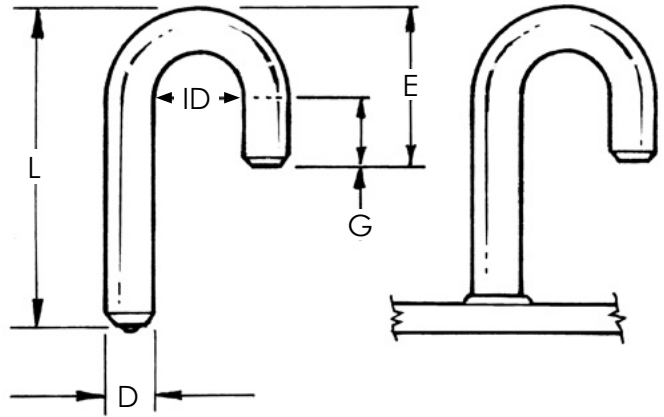
NTJ - NO THREAD "J" BOLT WELD STUDS - TECHNICAL DETAILS

NTJ weld studs are available in mild steel and stainless steel materials.

NTJ studs are commonly used for lifting parts and for assembly attachment.

To stud weld NTJ studs, special chucks are required and the dual leg ferrule foot plate is preferred.

For application, dimensional and in stock assistance, please contact Sunbelt Stud Welding.



Stud Specifications						Standard Accessories		
Base Diameter	Minimum Length	Minimum Bend Length	Minimum Inside Diameter	Minimum End Length	Ferrule	Foot	Grip	Chuck
D	L	E	ID	G	P/N	P/N	P/N	P/N
0.188	1.125	1.000	0.500	0.500	F019-F	QN-018	n/a	JB-018
0.250	1.250	1.125	0.625	0.500	F025-F	QN-025	n/a	JB-025
0.312	1.500	1.250	0.750	0.500	F031-F	QN-031	n/a	JB-031
0.375	1.625	1.375	0.875	0.500	F037-F	QN-037	n/a	JB-037
0.438	1.750	1.500	1.000	0.500	F043-F	QN-043	n/a	JB-043
0.500	2.000	1.500	1.000	0.500	F050-F	QN-050	n/a	JB-050
0.625	2.500	1.875	1.500	0.500	F050-F	QN-050	n/a	JB-062

To order or specify give: Stud Code, D x L; E; ID, Material and Quantity

Example: JNT, 1/2 x 3, (BW), with 2 x 1.25, 304SS, 1000 pcs.

Specify (L) Length, on a Before Weld basis by indicating "BW"
or on an After Weld basis by indicating "AW."

See **Accessories** for accessory detail and **Ferrule Specifications** for ferrule options.

See **Arc Stud Welding – General Information** and **Technical Details** for industry specifications, thread options, Before Weld (BW) length, flux, raw material details, plating options, annealing, load strengths and shipping weights.



Arc Weld Studs - Rectangular Studs

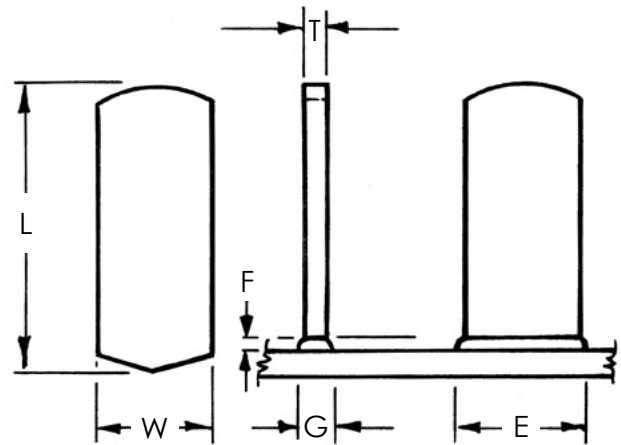
RP – RECTANGULAR PLAIN WELD STUDS – TECHNICAL DETAILS

RP weld studs are available in mild steel and stainless steel materials.

RP studs are commonly used for locating parts in assemblies and for heat dissipation on furnaces and molds.

To stud weld RP studs, rectangular chucks, standard foot pieces and standard ferrule grips are typically used.

For application, dimensional and in stock assistance, please contact Sunbelt Stud Welding.



Stud Specifications						Standard Accessories			
Thickness*	Width*	Length (Min.)	Flash Dimensions			Ferrule	Foot	Grip	Chuck
T	W	L	E	F	G	P/N	P/N	P/N	P/N
0.125	0.250	0.875	0.300	0.109	0.218	F025-R1	B-1N	GN-037	CR-CA
0.125	0.375	1.000	0.437	0.109	0.218	F037-R1	B-1N	GN-037	CR-CB
0.125	0.625	1.000	0.687	0.109	0.218	F062-R1	B-2N	GN-075	CR-CC
0.125	0.875	1.000	0.937	0.156	0.218	F087-R1	B-3N	GN-087	CR-CH
0.125	1	1.000	1.062	0.156	0.218	F100-R1	B-3N	GN-100	CR-CE
0.250	0.75	1.250	0.840	0.188	0.350	F075-R2	B-2N	GN-075	CR-CF

* Other sizes are available upon request.

To order or specify give: Stud Code, T x W x L, Material and Quantity

Example: RP, 1/8 x 0.625 x 1.25, (BW), mild steel, 1000 pcs.

Specify (L) Length, on a Before Weld basis by indicating "BW"

or on an After Weld basis by indicating "AW."

See **Accessories** for accessory detail and **Ferrule Specifications** for ferrule options.

See **Arc Stud Welding – General Information** and **Technical Details** for industry specifications, thread options, Before Weld (BW) length, flux, raw material details, plating options, annealing, load strengths and shipping weights.



Arc Weld Studs - Rectangular Studs

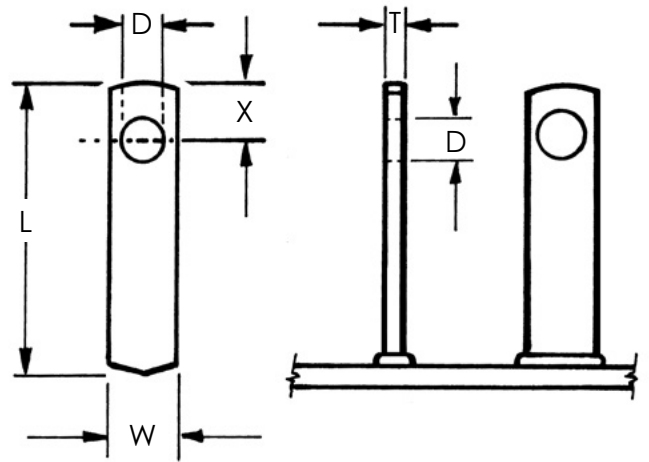
RH - RECTANGULAR W/HOLE WELD STUD - TECHNICAL DETAILS

RH weld studs are available in mild steel and stainless steel materials.

RH studs are commonly used for fastening and attachment purposes. Bolts or wires are installed in the hole to make the connection.

To stud weld RH studs, rectangular chucks, standard foot pieces and standard ferrule grips are typically used.

For application, dimensional and in stock assistance, please contact Sunbelt Stud Welding.



Stud Specifications					Standard Accessories			
Thickness*	Width*	Length (Min.)	Hole Information		Ferrule	Foot	Grip	Chuck
T	W	L	D	X	P/N	P/N	P/N	P/N
0.125	0.375	1.000	0.203	0.313	F037-R1	B-1N	GN-037	CR-CB
0.125	0.625	1.000	0.313	0.313	F062-R1	B-2N	GN-075	CR-CC

* Other sizes are available upon request.

To order or specify give: Stud Code, T x W x L, w/ D & X, Material and Quantity

Example: RH, 1/8 x 0.625 x 1.50, (BW), with .313 x .313, mild steel, 1000 pcs.

Specify (L) Length, on a Before Weld basis by indicating "BW"

or on an After Weld basis by indicating "AW."

See **Accessories** for accessory detail and **Ferrule Specifications** for ferrule options.

See **Arc Stud Welding – General Information** and **Technical Details** for industry specifications, thread options, Before Weld (BW) length, flux, raw material details, plating options, annealing, load strengths and shipping weights.



Arc Weld Studs - TUFFSTUDDS

TUFFSTUDD WEAR PROTECTION SYSTEM – PRODUCT INFORMATION

Tuffstudd Wear Protection System is a proven product in protecting equipment exposed to high wear and abrasion. The Tuffstudd System has had excellent results protecting mining, construction and aggregate equipment over other methods of wear protection.

Some other methods of wear protection are hard facing, AR plate, Hardox plate, weld buttons and shrouds. The Tuffstudd System has been used in conjunction with and as an alternative to these other methods.

Product Features:

Dead Bed Effect - Tuffstudds are applied in a staggered pattern that captures material between the studs resulting in material wearing on material versus material wearing on the equipment. Tuffstudds have a height profile ranging from 3/8 to 5/8.

Equipment Life - The split second time to weld a Tuffstudd minimizes the heat input to the base metal (i.e. Your equipment) thereby reducing stress, distortion and warping.

Tuffstudds have a hardness of 50 to 60 Rc. Tuffstudds increase service life up to 3 times longer than non-studded surfaces, reducing equipment downtime and component replacement costs.

Fast Installation - An achievable welding rate of 200 Tuffstudds per hour correlates to coverage area of 1.43 to 2.86 square feet per hour and the deposition of 7.4 to 18 pounds per hour.

Replacement - Repair and re-stud previously studded surfaces.

Safety - Compared to other welding processes, stud welding is virtually smokeless and the arc flash is much shorter and partially covered.

Realizable Benefits:

Increased life of material handling and processing equipment.
Reduced wear protection installation costs.
Reduced equipment maintenance costs.
Reduced equipment downtime.

Some Proven Tuffstudd Applications Include:

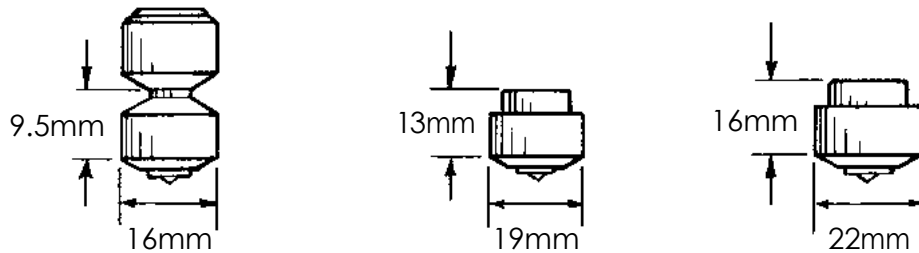
Dragline buckets & Dippers
Shovel and Loader Buckets
Dozer Blades
Gyratory Crushers
Roll Crushers
Discharge Chutes
Augers



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Arc Weld Studs - TUFFSTUDDS

TS - TUFFSTUDDS WEAR PROTECTION WELD STUDS - TECHNICAL DETAILS



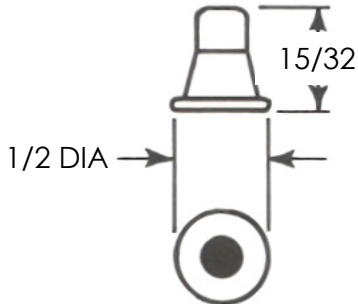
Product Detail	Series 58*	Series 68	Series 78
Alloy Selection:	* Low profile knock-off design		
A-Series Alloy	Medium-high carbon chromium carbide in iron-molybdenum alloy matrix		
Part number	TSA-58	TSA-68	TSA-78
Hardness (Rc)	48 - 52		
Recommended use	Very good abrasion and excellent impact resistance.		
I-Series Alloy	Medium-high carbon chromium carbide in iron-molybdenum alloy matrix		
Part number	TSI-58	TSI-68	TSI-78
Hardness (Rc)	55 - 60		
Recommended use	Excellent abrasion resistance and good impact resistance		
Stud Dimensions:			
Diameter	5/8"	3/4"	7/8"
Length before weld	1/2"	5/8"	3/4"
Length after weld	3/8"	1/2"	5/8"
Packaging & Coverage:			
Studs Per box	500	250	250
Studs Per square foot	140	100	70
Square feet per box	3.5	2.5	3.5
Installation rates:			
Studs per hour	200	200	200
Square feet per hour	1.4	2.0	2.9
Pounds per hour	7.4	12.4	18.0
Pounds per square foot	5.2	6.2	6.3
Best Use:	Leading edges & overhead position	Behind leading edge rows & in large areas	
Welding Detail:			
Amperage	800 - 1000	1000 - 1100	1200 - 1400
Weld Time (seconds)	0.60 - 0.70	0.70 - 0.85	0.85 - 1.00
Weld Position	Down hand, Side hand & Overhead	Down hand & Side Hand	Down hand
Preheat	Not required. Minimal to remove condensation during cold weather.		
Chuck	CN-062	CN-050	CN-062
Ferrule Grip	GDN-062	GN-075	GN-087
Foot	B-2N	B-2N	B-3N



Panel Caps & Nuts

ANNULAR GROOVE CAP

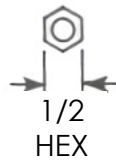
(FOR ANNULAR GROOVE SHOULDER STUDS – SEE PAGE 3.24)



Application	Designed to permanently lock on to annular groove shoulder studs to hold panel in place against stud shoulder.
Material	Aluminum
Size	For 3/16" diameter annular groove.

To order or specify give: **Stud Code and Quantity**
 Example: WCN AG CAP, 100 pcs.

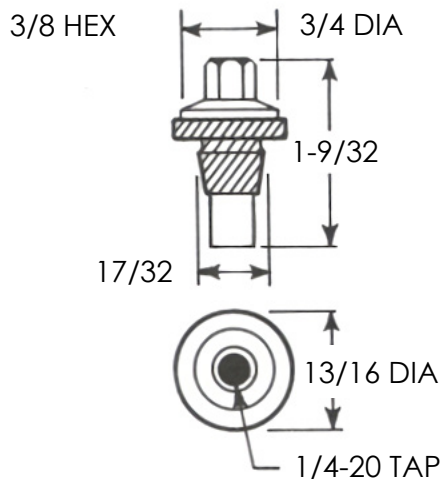
CAP SETTING TOOL (FOR INSTALLING AG CAPS)



Application	This tool is recommended for installing the Annular Groove Cap (above.)
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To order or specify give: **Stud Code and Quantity**
 Example: Cap Setting Tool, 10 pcs.

PANEL NUT (FOR 1/4-20 THREADED STUDS)



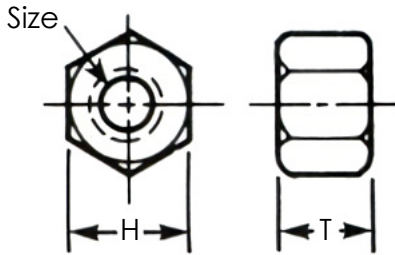
Application	Designed to be threaded down through pre-drilled holes in the panel on to pre-welded studs providing a firm water resistant attachment.
Material	Aluminum & Neoprene Rubber
Size	For 1/4-20 threaded studs

To order or specify give: **Stud Code and Quantity**
 Example: WCN PANUT, 100 pcs.



Standard Hex Nuts

HEX NUTS (AMERICAN STANDARD) - HN



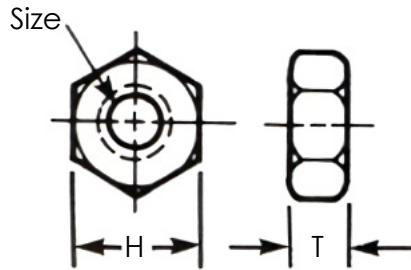
Size	H	T
#6	5/16	7/64
#8	11/32	1/8
#10	3/8	1/8
1/4	7/16	7/32
5/16	1/2	17/64

Size	H	T
3/8	9/16	21/64
7/16	11/16	3/8
1/2	3/4	7/16
5/8	15/16	35/64
3/4	1-1/8	41/64

To order or specify give: Product Code, Size and Quantity

Example: HN, 1/2, 250 pcs.

HEX JAM NUTS (AMERICAN STANDARD) - JN



Size	H	T
1/4	7/16	5/32
5/16	1/2	3/16
3/8	9/16	7/32
7/16	11/16	1/4

Size	H	T
1/2	3/4	5/16
5/8	15/16	3/8
3/4	1-1/8	27/64

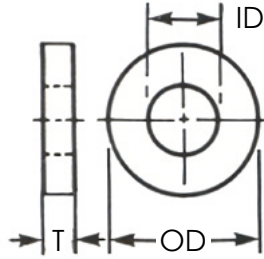
To order or specify give: Product Code, Size and Quantity

Example: JN, 1/2', 250 pcs.



Standard Flat Washers

FLAT WASHERS (AMERICAN STANDARD - TYPE A, SERIES W) - FW

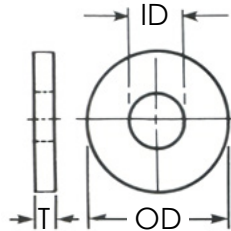


Size	ID	OD	T
#6	5/32	3/8	3/64
#8	3/16	7/16	3/64
#10	7/32	1/2	3/64
1/4	5/16	47/64	1/16
5/16	3/8	7/8	5/64

Size	ID	OD	T
3/8	7/16	1"	5/64
7/16	1/2	1-1/4	5/64
1/2	9/16	1-3/8	7/64
5/8	11/16	1-3/4	9/64
3/4	13/16	2"	5/32

To order or specify give: Product Code, Size, Material and Quantity
 Example: FW, #8, Mild Steel, 100 pcs.

LARGE OD FLAT WASHERS (AMERICAN STANDARD - TYPE B, SERIES W) - FWL



Size	ID	OD	T
1/4	9/32	1"	1/16
5/16	11/32	1-1/8	1/16
3/8	13/32	1-1/4	3/32
7/16	15/32	1-15/32	3/32

Size	ID	OD	T
1/2	17/32	1-3/4	3/32
5/8	21/32	2-1/4	5/32
3/4	13/16	2-1/2	5/32

To order or specify give: Product Code, Size, Material and Quantity
 Example: FWL, 3/8", Stainless Steel, 100 pcs.

TYPE & SIZE: Types and sizes shown are standard. Many other types and sizes are available by special order. All dimensions shown are $\pm 1/64"$.

MATERIAL:

HEX NUTS and **FLAT WASHERS** are available in mild steel (unplated or zinc plated), stainless steel, aluminum and brass.

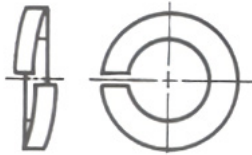
LOCK WASHERS are available in mild steel (unplated or zinc plated) and stainless steel. Other materials are available by special order.



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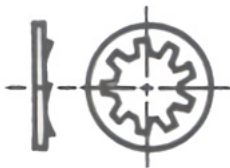
Standard Lock Washers

SPLIT LOCK WASHER – LWS



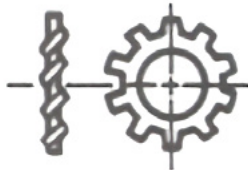
Sizes									
#6	#8	#10	1/4	5/16	3/8	7/16	1/2	5/8	3/4

INTERNAL TOOTH LOCK WASHER – LWIT



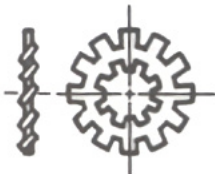
Sizes					
#6	#8	#10	1/4	5/16	3/8

EXTERNAL TOOTH LOCK WASHER – LWET



Sizes					
#6	#8	#10	1/4	5/16	3/8

INTERNAL / EXTERNAL TOOTH LOCK WASHER – LWIET



Sizes					
#6	#8	#10	1/4	5/16	3/8

To order or specify give: **Product Code, Size, Material and Quantity**
Example: LWET, #10, Stainless Steel, 250 pcs.

TYPE & SIZE: Types and sizes shown are standard. Many other types and sizes are available by special order. All dimensions shown are $\pm 1/64"$.

MATERIAL:

HEX NUTS and **FLAT WASHERS** are available in mild steel (unplated or zinc plated), stainless steel, aluminum and brass.

LOCK WASHERS are available in mild steel (unplated or zinc plated) and stainless steel. Other materials are available by special order.



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SECTION 4

ARC WELD STUDS – REFRACTORY ANCHORS

FOR INQUIRIES, TO PLACE ORDERS,
SERVICE AND TECHNICAL SUPPORT CONTACT
ANY OF THE FOLLOWING:

OFFICE: 1-800-462-9353
713-939-8903

EMAIL: INFO@SUNBELTSTUDWELDING.COM



website www.sunbeltstudwelding.com **email** info@sunbeltstudwelding.com
6381 Windfern Road, Houston, TX 77040 **telephone** 1.800.462.9353 - Houston 713.939.8903 **fax** 713.939.9013

Refractory Studs

REFRACTORY STUDS



RECTANGULAR
TWO TINE



RECTANGULAR
THREE TINE



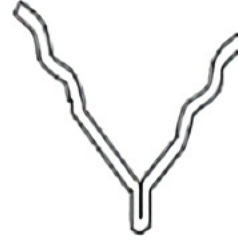
RECTANGULAR
CORRUGATED



INSULTWIST



BULL HORN



"Y" ANCHOR



SPLIT PIN



"T" PLATE



KNURLED

*other studs available on request



website www.sunbeltstudwelding.com email info@sunbeltstudwelding.com
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General Specifications - Arc Stud Welded Anchors

GENERAL SPECIFICATIONS – ARC STUD WELDED ANCHORS

Arc Stud Welded Refractory Anchors			
Material	Standard in low carbon steel and 302/304/305 stainless. Monel, inconel, and other grades of stainless steel are available.		
Plating	Plating is not standard. Cadmium to ASTM A 165, type TS and zinc to ASTM B 633 are available. Non-weldable plating is removed from the weld end to avoid contamination of the weld.		
Annealing	Low carbon steel can be annealed to a maximum of 75 Rockwell B and stainless steel to a maximum of 90 Rockwell B.		
Weld Base	Solid flux is provided where required.		
Stud Length	SUNBELT arc stud length designations are BEFORE WELD.	Stud Diameter	Approx. Reduction
	AFTER WELD lengths are shown in the table.	3/16" thru 1/2"	1/8"
		5/8" thru 7/8"	3/16"
		7/8" and over	1/4"
	1/8" wide rectangulars	1/8"	
Ferrules	All orders include ferrules when required.		

DESIGNING WITH SUNBELT ARC STUD WELDED REFRACTORY ANCHORS

Advantages: Sunbelt Arc stud welded refractory anchors reduce costs and downtime and increase production through speedier installation and improved product quality.

Arc stud welding systems are portable and require minimal instruction or maintenance for use.

Speed of anchor application and ease of use reduce labor requirements and eliminate other complicated fastening systems while maintaining excellent weld quality and improved refractory holding power.

HOW TO CHOOSE THE PROPER REFRACTORY ANCHOR

Style: See table on page 4.4.

Material: The following temperature limits at the hot face or surface of the refractory, are recommended for anchors of the steel grades shown.

Steel Type	Hot Face Temperature Limit
Low Carbon Steel	1000° F
Stainless-304 or 305	2000° F
Stainless-309 or 310	2500° F

The temperatures indicated are those encountered in continuous service. Slightly higher temperatures can be withstood if the fluctuation is cyclic in nature. For applications above 2500° F, the anchors can be made of inconel or other special metals.



Arc Stud Welded Refractory Anchor Application Guide (Table #2)

ARC STUD WELDED REFRACTORY ANCHOR – APPLICATION GUIDE (TABLE #2)

Application		Refractory Anchor Style													
		RA EJ-256	ARC ST	ARC B-NT	ARC R-WH	ARC R-TS	RA R-2T	RA R-3T	RA R-C	RA UL	RA BH	RA Y	RA SP	RA T-PLT	RA EJ-801
Rebar & Mesh	a) Reinforcing Bar														
	b) Wire Mesh														
	c) Hex-Mesh Steel														
Block Insulation Only															
Concrete Construction															
Refractory Construction	a) Castables														
	b) Plastics														
	c) Gunning Mixes														
	d) Block Insulation														
Single Component Linings	a) Under 5" Thick														
	b) Over 5" Thick														
Two Component Linings	a) Under 5" Thick														
	b) Over 5" Thick														
	c) Brick Backing														
	d) Castable Backing														
	e) Block Insulation Backing														



Arc Stud Welded Refractory Anchor Application Guide (continued)

HOW TO APPLY THE REFRACTORY ANCHOR

ANCHOR LENGTH & SPACING: All information given in this section is general and may vary according to special service conditions encountered. Therefore, this information should only be used as a guide.

The anchor length shown is the after-weld length of the longest section of the anchor. The lengths (in table #3 on the next page) are recommended to insure good refractory holding power, while preventing rapid oxidation of the anchor and preventing spalling of the refractory surface.

Generally the anchor length should be about 75% of the refractory depth, however, the end of the anchor should never be closer to the refractory hot face than 1". The anchor spacing will be determined by the type and density of the refractory used, and how and where it is to be applied.

For anchoring purposes, the refractory can be classified as LOW DENSITY (25-90 lbs. per cu. ft.) and HIGH DENSITY (100-200 lbs. per cu. ft.). High-density material can be used in one component linings of any thickness. Low-density material is only used in one component linings to a depth of 6". Frequently, in sections more than 6" thick, high-density material composes the working lining with a back up of low-density material.



Refractory Anchor Placement (Table #3)

REFRACTORY ANCHOR PLACEMENT (TABLE #3)

Refractory Thickness	Anchor Length	Refractory Density	Center - Center Anchor Spacing	
			Wall	Roof
2"	1"	Low High	12" x 12" 18" x 18"	9" x 9" 12" x 12"
3"	2"	Low High	12" x 12" 18" x 18"	12" x 12" 18" x 18"
4"	3"	Low High	12" x 12" 18" x 12"	12" x 12" 18" x 12"
5"	3-1/2"	Low High	12" x 12" 18" x 12"	12" x 9" 18" x 12"
6"	4-1/2"	High Low	12" x 9" 18" x 12"	9" x 9" 12" x 12"
7"	5"	High	18" x 12"	12" x 12"
8"	6"	High	18" x 12"	12" x 12"
9"	6-1/2"	High	18" x 12"	12" x 9"
10"	7-1/2"	High	12" x 12"	12" x 9"
11"	8"	High	12" x 12"	12" x 9"
12"	9"	High	12" x 12"	12" x 9"
13"	10"	High	12" x 12"	12" x 9"

QUANTITY OF ANCHORS REQUIRED (TABLE #4)

Anchor Spacing	9" X 9"	12" X 9"	12" X 12"	18" X 12"	18" X 18"
Anchors Required Per Square Foot	1.80	1.33	1.00	0.67	0.44



Refractory Anchors: Anchor Patterns

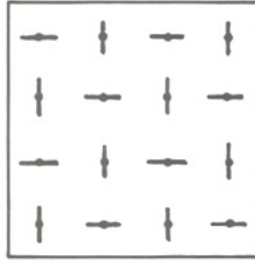
REFRACTORY ANCHORS: ANCHOR PATTERNS

ANCHOR PATTERNS

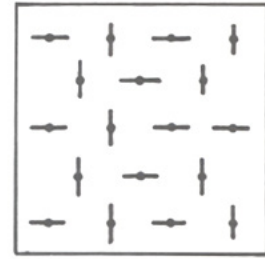
The three anchor patterns (shown below) are in use today; the latter two being the more popular. The important factor is that an irregular pattern is achieved by opposing anchors so that secure retention of the refractory in all directions is achieved.



Diamond Pattern



Square Pattern



Staggered Pattern

NOTE:

The expansion of the steel anchor is usually greater than that of the refractory material, especially in dense, high strength castables. Metallic refractory anchors can be coated with various materials that will burn off and allow room for the anchor to expand

Consult your refractory supplier for the proper refractory and coating material to meet your application needs.

Arc Weld Studs - Rectangular Studs

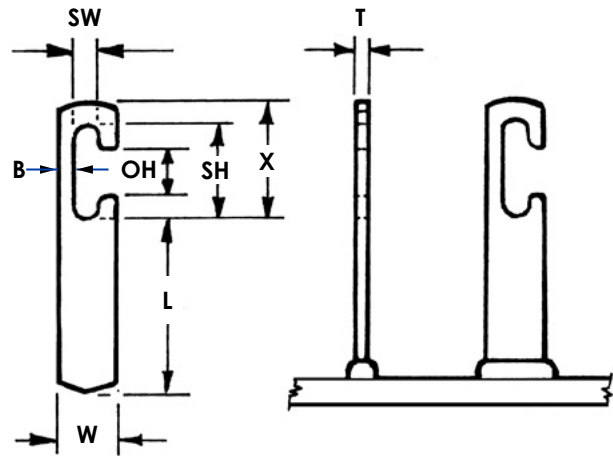
RT - RECTANGULAR "T" SLOT WELD STUDS - TECHNICAL DETAILS

RT weld studs are available in mild steel and stainless steel materials.

RT studs are commonly used for securing wire mesh to furnaces. After installation, the mesh is filled with refractory material.

To stud weld RT studs, rectangular chucks, standard foot pieces and standard ferrule grips are typically used.

For application, dimensional and in stock assistance, please contact Sunbelt Stud Welding.



Stud Specifications

Thickness	Width	Length (Min.)	"T" Slot Details				Ferrule	
			OH	SH	X	B		
T	W	L					SW	P/N
0.125	0.375	0.500	0.322	0.531	0.765	0.122	0.130	F037-RI
0.125	0.625	0.500	0.500	1.000	1.250	0.185	0.255	F062-RI

To order or specify give: Stud Code, T x W x L, Material and Quantity

Example: RH, 0.125 x 0.625 x .75, (BW), mild steel, 1000 pcs.

Specify (L) Length, on a Before Weld basis by indicating "BW"
or on an After Weld basis by indicating "AW."

See **Accessories** for accessory detail and **Ferrule Specifications** for ferrule options.

See **Threaded and No-Thread Weld Studs - Technical Details** for industry specifications, thread options, Before Weld (BW) length, flux, raw material details, plating options, annealing, load strengths and shipping weights.



Arc Weld Studs - Rectangular Studs

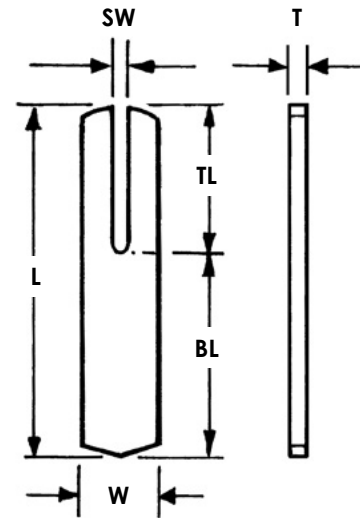
R2 - RECTANGULAR - 2 TINE WELD STUDS - TECHNICAL DETAILS

R2 weld studs are available in mild steel and stainless steel materials.

R2 studs are used to secure refractory materials (blanket, block, cast, gunned and troweled) inside various types of furnaces and chimneys.

To stud weld R2 studs, rectangular chucks, standard foot pieces and standard ferrule grips are typically used.

For application, dimensional and in stock assistance, please contact Sunbelt Stud Welding.



Stud Specifications							Standard Accessories		
Thickness	Width	Length (Min.)	Length (Min.)	Length (Min.)	Slot Width	Ferrule	Foot	Grip	Chuck
T	W	L	BL	TL	SW	P/N	P/N	P/N	P/N
0.125	0.375	1.250	0.250	1.000	0.125	F037-R1	B-1N	GN-037	CR-CB
0.125	0.625	1.250	0.625	0.625	0.156	F062-R1	B-2N	GN-075	CR-CC

To order or specify give: Stud Code, T x W x BL x TL, Material and Quantity

Example: RA R2, 0.125 x 0.625 x 2 x 1, (BW), 304SS, 1000 pcs.

Specify (L) Length, on a Before Weld basis by indicating "BW"
or on an After Weld basis by indicating "AW."

See Rectangular Weld Stud specifications for the flash dimensions of R2 type studs.

See **Accessories** for accessory detail and **Ferrule Specifications** for ferrule options.

See **Arc Stud Welding – General Information** and **Technical Details** for industry specifications, thread options, Before Weld (BW) length, flux, raw material details, plating options, annealing, load strengths and shipping weights.



Arc Weld Studs - Rectangular Studs

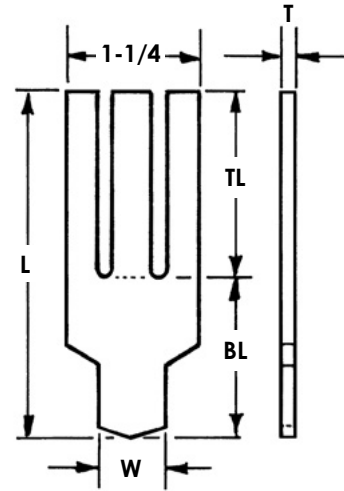
R3 - RECTANGULAR - 3 TINE WELD STUDS - TECHNICAL DETAILS

R3 weld studs are available in mild steel and stainless steel materials.

R3 studs are used to secure refractory materials (blanket, block, cast, gunned and troweled) inside various types of furnaces and chimneys.

To stud weld R3 studs, rectangular chucks, standard foot pieces and standard ferrule grips are typically used.

For application, dimensional and in stock assistance, please contact Sunbelt Stud Welding.



Stud Specifications							Standard Accessories		
Thickness	Width*	Length (Min.)	Length (Min.)	Length (Min.)	Slot Width	Ferrule	Foot	Grip	Chuck
T	W	L	BL	TL	SW	P/N	P/N	P/N	P/N
0.125	0.625	2.250	1.250	1.000	0.156	F062-R1	B-2N	GN-075	CR-CB

*Width represents weld base width.

To order or specify give: Stud Type, T x W x BL x TL, Material and Quantity

Example: R3, 0.125 x 0.625 x 1.50 x 2.5, (BW), Mild Steel, 1000 pcs.

Specify (L) Length, on a Before Weld basis by indicating "BW"
or on an After Weld basis by indicating "AW."

See Rectangular Weld Stud specifications for the flash dimensions of R3 type studs.

See **Accessories** for accessory detail and **Ferrule Specifications** for ferrule options.

See **Arc Stud Welding – General Information** and **Technical Details** for industry specifications, thread options, Before Weld (BW) length, flux, raw material details, plating options, annealing, load strengths and shipping weights.



Arc Weld Studs - Rectangular Studs

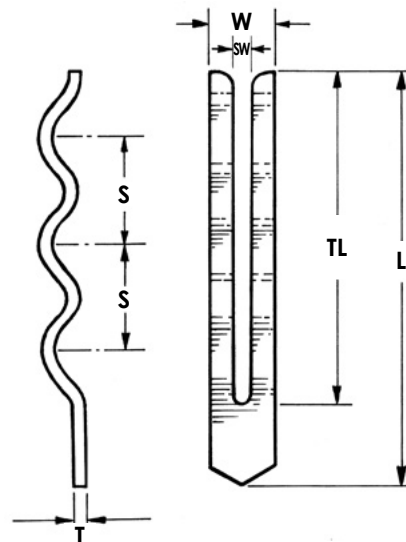
R2W – RECTANGULAR – 2 TINE WIGGLE WELD STUDS – TECHNICAL DETAILS

R2W weld studs are available in mild steel and stainless steel materials.

Like the R2W studs, RW studs are used to secure refractory materials. The bends in the R2W stud help to preclude slippage of the refractory material when in service.

To stud weld RW studs, rectangular chucks, standard foot pieces and standard ferrule grips are typically used.

For application, dimensional and in stock assistance, please contact Sunbelt Stud Welding.



Stud Specifications							Standard Accessories		
Thickness	Width	Length Range*	Tine Length**	Wiggle Length	Slot Width	Ferrule	Foot	Grip	Chuck
T	W	L	TL	S	SW	P/N	P/N	P/N	P/N
0.125	0.625	2.125 - 3.0	1.625	1.031	0.156	F062-R1	B-2N	GC-075	CR-CC
0.125	0.625	3.125 - 4.0	2.625	1.031	0.156	F062-R1	B-2C	GC-075	CR-CC
0.125	0.625	4.13 - 7.13	3.250	1.031	0.156	F062-R1	B-2C	GC-075	CR-CC
0.125	0.625	5.50 - 8.50	4.625	1.031	0.156	F062-R1	B-2C	GC-075	CR-CC
0.125	0.625	6.88 - 9.88	6.000	1.031	0.156	F062-R1	B-2C	GC-075	CR-CC

* For lengths over 3", the split foot and split grip accessories are depicted.
 **Tine Length determines whether 1, 2 or 3 wiggles will be provided.

To order or specify give: Stud Code, T x W x L, Material and Quantity
 Example: R2W, 0.125 x 0.625 x 6, (BW), mild steel, 3000 pcs.
 Specify (L) Length, on a Before Weld basis by indicating "BW"
 or on an After Weld basis by indicating "AW."

See RP Weld Stud specifications for the flash dimensions of RW type studs.

See **Accessories** for accessory detail and **Ferrule Specifications** for ferrule options.

See **Arc Stud Welding – General Information** and **Technical Details** for industry specifications, thread options, Before Weld (BW) length, flux, raw material details, plating options, annealing, load strengths and shipping weights.



Arc Weld Studs - Rectangular Studs

RF - RECTANGULAR FIBER WELD STUDS - TECHNICAL DETAILS

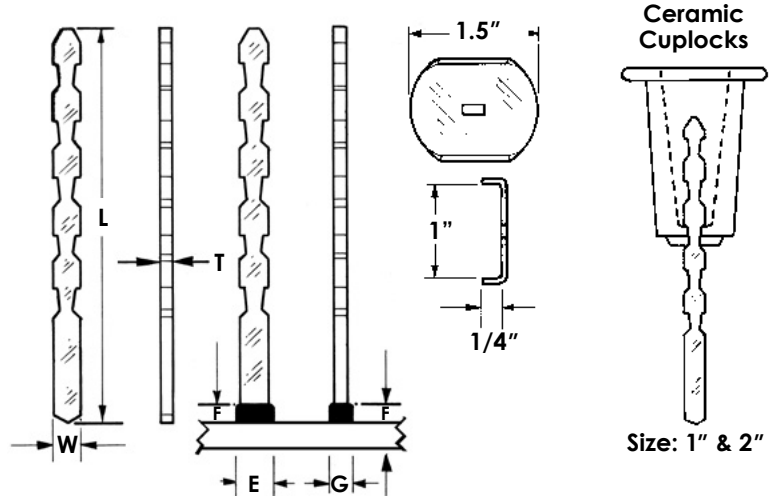
RF weld studs are available in mild steel and stainless steel materials. Material options and temperature limits are as follows:

- 304 SS - Temperature up to 1500 degrees F
- 310 SS - Temperature up to 1850 degrees F
- 330 SS - Temperature up to 2000 degrees F
- 601 Inconel - Temperature up to 2150 degrees F

RF studs are used to secure blanket insulation to furnaces. After the insulation is impaled over the RF studs, metal washers and or the ceramic cuplocks are installed and lock on the RF Stud to retain the insulation. The ceramic cuplock can be filled with refractory material or a ceramic plug.

Washers, ceramic cuplocks and cuplock plugs are sold separately. The RF stud and washer must be the same alloy.

For application, dimensional and in stock assistance, please contact Sunbelt Stud Welding.



Stud Specifications						Standard Accessories			
Thickness	Width	Length (Min.)	Flash Dimensions			Ferrule	Foot	Grip	Chuck
T	W	L	E	F	G	P/N	P/N	P/N	P/N
0.125	0.250	1.500	0.300	0.109	0.218	F025-R1	B-1C	GC-037	CR-CA

To order or specify give: Stud Code, T x W x L, Material and Quantity
 Example: RIT (Insultwist Pin), 0.125 x 0.25 x 5.25, (BW), 601 Inconel, 3000 pcs.
 Specify (L) Length, on a Before Weld basis by indicating "BW"
 or on an After Weld basis by indicating "AW."

See **Accessories** for accessory detail and **Ferrule Specifications** for ferrule options.

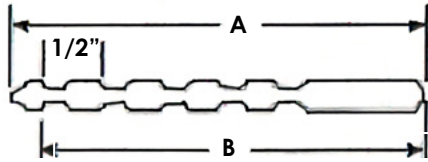
See **Arc Stud Welding – General Information** and **Technical Details** for industry specifications, thread options, Before Weld (BW) length, flux, raw material details, plating options, annealing, load strengths and shipping weights.



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Refractory Weld Studs: Insultwist

REFRACTORY WELD STUDS: INSULTWIST PRODUCT CODE – RIT



Stud	
Min Length	2"
Ferrule Code	F025-RI

	Inconel	Stainless Steel
Material	AISI grade - 601 std. Other grades available upon request	AISI grade - 304, 310 and 330 standard Other grades available upon request
Mechanical Properties	Values for various grades available upon request	Values for various grades available upon request

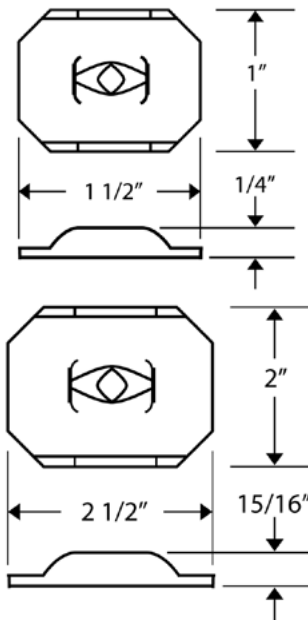
To order or specify give: Product Code, Length, Material and Quantity
Example: RIT (Insultwist Pin), 2", Stainless Steel: 310, 1000 pcs.

Note: Washers are not a component part of studs.

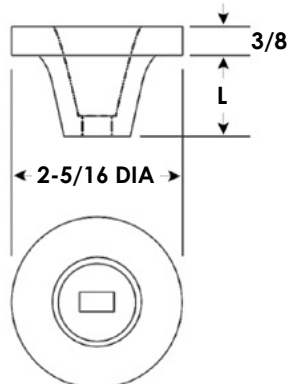
LOCK WASHER PRODUCT CODE – RIT WAS

Application	Designed for 1/4 turn locking on to Sunbelt Insultwist refractory anchors.
Material	Stainless Steel: 304 Stainless Steel: 310 Stainless Steel: 330 Inconel: 601

To order or specify give: Product Code, Size, Material and Quantity
Example: RIT WAS, 1 1/2", Stainless Steel: 310, 1000 pcs.



INSULTWIST LOCK CUP PRODUCT CODE – RIT CUP



Application	Designed for 1/4 turn locking on to Sunbelt Insultwist refractory anchors.	
Material	Ceramic (High Temperature)	
Size	L	Short - 1" Long - 2"

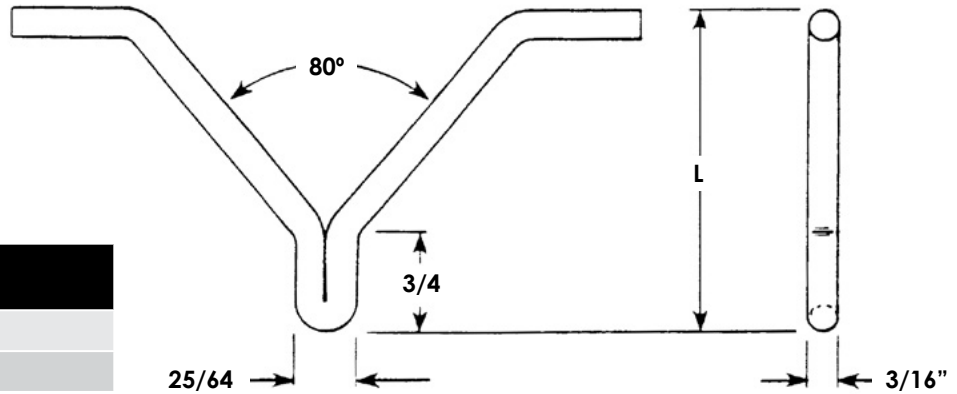
To order or specify give: Product Code, Size and Quantity
Example: RIT CUP, Long: - 2", 1000 pcs.



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Refractory Weld Studs: Bull Horn

REFRACTORY STUDS: BULL HORN



Stud	
Min Length	1-1/8"
Ferrule Code	F187

	Mild Steel	Stainless Steel
Material	C - .23% max. P - 0.04% max. Mn - 0.90% max. S - 0.05% max.	AISI grade - 304, 310, 316 and 330 standard Other grades available upon request
Mechanical Properties	Tensile - 60,000 psi (min.) Yield - 50,000 psi (min.) Elongation - 20% (in 2 inches)	Values for various grades available upon request
Plating	Plating is not standard. Cadmium, Copper, Nickel and Zinc available upon customer request.	Does not apply to Stainless

To order or specify give: **Product Code, Diameter: 3/16, Length: L, Material and Quantity**
Example: RBH, 3/16, 1-1/8", Mild Steel, 1000 pcs.

See **Accessories** for accessory detail and **Ferrule Specifications** for ferrule options.

See **Threaded and No-Thread Weld Studs – Technical Details** for industry specifications, thread options, Before Weld (BW) length, flux, raw material details, plating options, annealing, load strengths and shipping weights.

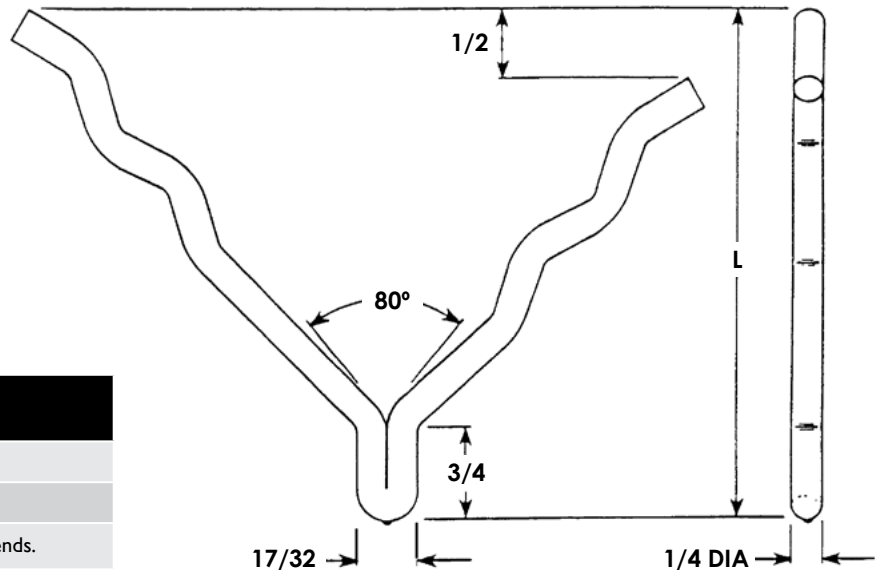


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Refractory Weld Studs: "Y" Anchor

REFRACTORY STUDS: "Y" ANCHOR

Product Code: RA Y



Stud	
Min Length	2-7/16"
Ferrule Code	RA250
Studs shorter than L MIN will have no bends.	

	Mild Steel	Stainless Steel
Material	C - .23% max. P - 0.04% max. Mn - 0.90% max. S - 0.05% max.	AISI grade - 304, 310, 316 and 330 standard Other grades available upon request
Mechanical Properties	Tensile - 60,000 psi (min.) Yield - 50,000 psi (min.) Elongation - 20% (in 2 inches)	Values for various grades available upon request

To order or specify give: Stud Code, Diameter 1/4", Length: L, Material and Quantity

Example: RA Y, 1/4", 2-7/16", Mild Steel, 1000 pcs.

See **Accessories** for accessory detail and **Ferrule Specifications** for ferrule options.

See **Arc Stud Welding – General Information** and **Technical Details** for industry specifications, thread options, Before Weld (BW) length, flux, raw material details, plating options, annealing, load strengths and shipping weights.

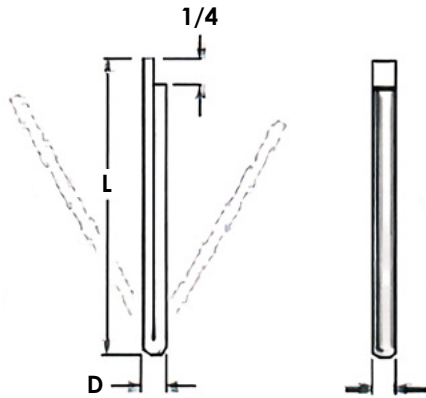


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Refractory Weld Studs: Split Pin

REFRACTORY STUDS: SPLIT PIN

Product Code: RA SP



Stud		
D	Min Length	Ferrule Code
3/16"	7/8"	P250
1/4"	7/8"	P312
5/16"	7/8"	P375

	Mild Steel	Stainless Steel
Material	C - .23% max. P - 0.04% max. Mn - 0.90% max. S - 0.05% max.	AISI grade - 302, 304, and 305 standard Other grades available upon request
Mechanical Properties	Tensile - 60,000 psi (min.) Yield - 50,000 psi (min.) Elongation - 20% (in 2 inches)	Values for various grades available upon request
Plating	Plating is not standard. Cadmium, Copper, Nickel and Zinc available upon customer request.	Does not apply to Stainless

To order or specify give: Product Code, Diameter, Length, Material and Quantity

Example: RA SP, 3/16", 7/8", Mild Steel, 1000 pcs.

See **Accessories** for accessory detail and **Ferrule Specifications** for ferrule options.

See **Arc Stud Welding – General Information** and **Technical Details** for industry specifications, thread options, Before Weld (BW) length, flux, raw material details, plating options, annealing, load strengths and shipping weights.

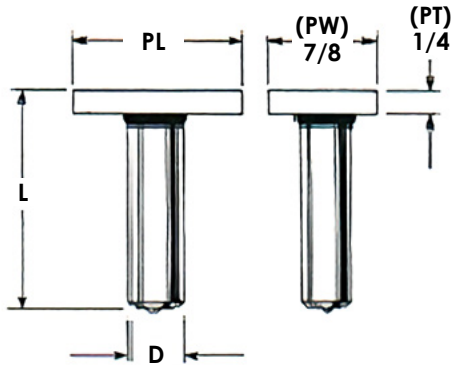


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Refractory Weld Studs: "T" Plate

REFRACTORY STUDS: "T" PLATE

Product Code: RA T-PLT



Stud			
D	L Min Length	PL	Ferrule Code
3/8"	1-1/8"	2-1/2"	F375
3/8"	1-1/8"	3"	
1/2"	1-1/8"	2-1/2"	F500
1/2"	1-1/8"	3"	

	Mild Steel	Stainless Steel
Material	C - .23% max. P - 0.04% max. Mn - 0.90% max. S - 0.05% max.	AISI grade - 302, 304, and 305 standard Other grades available upon request
Mechanical Properties	Tensile - 60,000 psi (min.) Yield - 50,000 psi (min.) Elongation - 20% (in 2 inches)	Values for various grades available upon request
Plating	Plating is not standard. Cadmium, Copper, Nickel and Zinc available upon customer request.	Does not apply to Stainless

To order or specify give: Product Code, Diameter: D, Length: L, Plate Length: PL, Material and Quantity
 Example: RA T-PLT, 3/8, 1-1/8", 2-1/2, Mild Steel, 3000 pcs.

See **Accessories** for accessory detail and **Ferrule Specifications** for ferrule options.

See **Arc Stud Welding – General Information** and **Technical Details** for industry specifications, thread options, Before Weld (BW) length, flux, raw material details, plating options, annealing, load strengths and shipping weights.



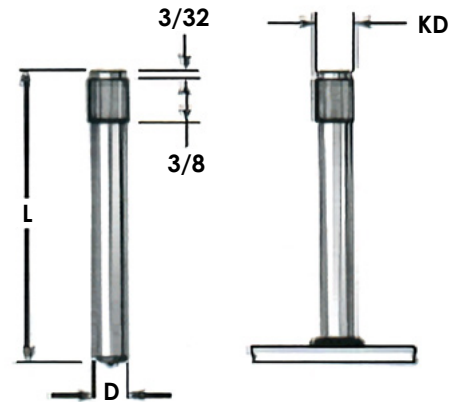
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Refractory Weld Studs: Knurled & Refractory Anchor: Drive Plate

REFRACTORY STUDS: KNURLED

Product Code: RA KNRL

Stud			
D	Min Length	KD	Ferrule Code
5/16"	1"	.327"	F321



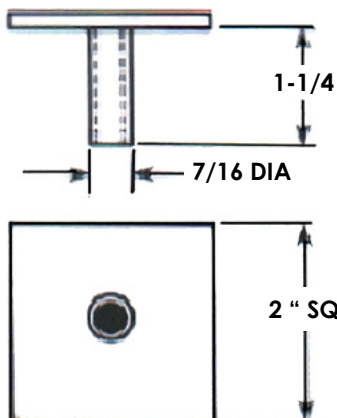
	Mild Steel	Stainless Steel
Material	C - .23% max. P - 0.04% max. Mn - 0.90% max. S - 0.05% max.	AISI grade - 302, 304, 305 and 316 standard Other grades available upon request
Mechanical Properties	Tensile - 60,000 psi (min.) Elongation - 20% (in 2 inches)	Values for various grades available upon request
Plating	Plating is not standard. Cadmium, Copper, Nickel and Zinc available upon customer request.	Does not apply to Stainless

To order or specify give: Product Code, Diameter: D, Length: L, Material and Quantity

Example: RA KNRL, 5/16", 1", Mild Steel, 2500 pcs.

REFRACTORY ANCHOR: DRIVE PLATE

Product Code: 183-1000-04



Application	Designed to lock on to Sunbelt Stud Welding 5/16" diameter Knurled Studs.
Material	Mild Steel

Drive plate: Sold separately. Not a component part of stud.

To order or specify give: Product Code, Quantity

Example: 183-1000-04, 5/16", 2500 pcs.

See **Accessories** for accessory detail and **Ferrule Specifications** for ferrule options.

See **Arc Stud Welding – General Information** and **Technical Details** for industry specifications, thread options, Before Weld (BW) length, flux, raw material details, plating options, annealing, load strengths and shipping weights.



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Miscellaneous Refractory Anchors General Specifications

MISCELLANEOUS REFRACTORY ANCHORS – GENERAL SPECIFICATIONS

Miscellaneous Anchors	This catalog section lists some of the most often used “non-stud-welded” or “miscellaneous” refractory anchors available. The technical representatives at Sunbelt can provide information on the availability of other standard refractory anchors and also assist you in designing a special anchor to meet your refractory fastening requirements.
Materials	Miscellaneous Refractory Anchors are generally available in the following materials: 1. Low Carbon Steel 2. Stainless Steel – types 304, 310 & 330, and 3. Inconel 601 Other materials are available by special order.
To order or specify	1. Product Code - RA EJ-000 (found in top-right corner of page) 2. Dash Number -00 (found in left side column of chart) 3. Material - (as required) The dimensions shown in the charts represent the most commonly used sizes, however, these refractory anchors can be manufactured to the dimensions required for your application. To order special sizes, replace the Dash Number with – (NS) and give your required dimensions. Example: 1. RA EJ-261 2. –(NS) A = 3 1/2”, all other dimensions same as (-01) 3. Stainless Steel 310



RA EJ-261

RA EJ-261

Anchor					
Dash Number	A	B	C	D	E
-01	3"	1"	3/16	1/2	1/2
-02	4"	1"	3/16	1/2	1/2
-03	5"	1"	3/16	1/2	1/2
-04	6"	1"	3/16	1/2	1/2
-05	6-3/4"	1"	3/16	1/2	1/2

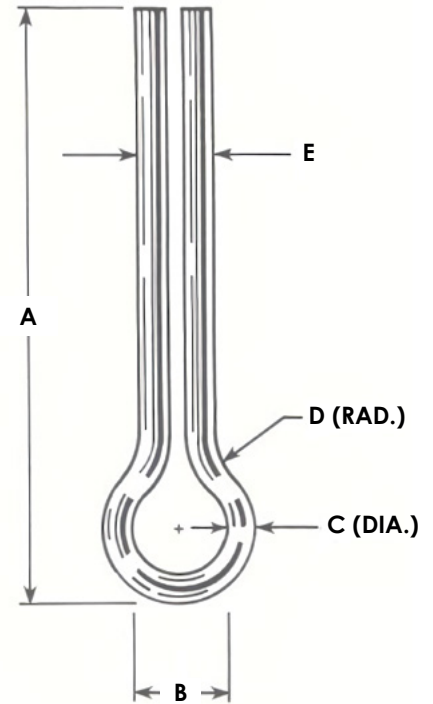
Miscellaneous Refractory Anchors are generally available in the following materials:

1. Low Carbon Steel
2. Stainless Steel – types 304, 310 & 330, and
3. Inconel 601

Other materials are available by special order.

The dimensions shown in the charts represent the most commonly used sizes, however, these refractory anchors can be manufactured to the dimensions required for your application.

To order special sizes, replace the Dash Number with – (NS) and give your required dimensions.



To order or specify give: Stud Code, Dash Number, Material and Quantity

Example: RA EJ-261, -03, Stainless Steel 310, 750 pcs.

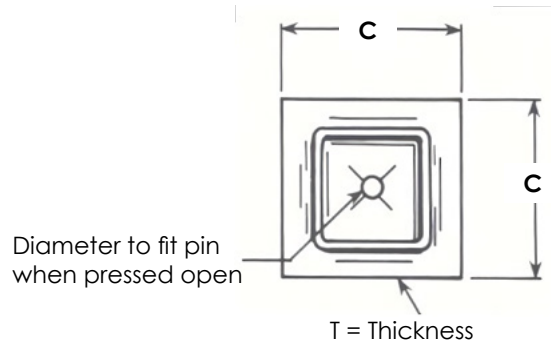
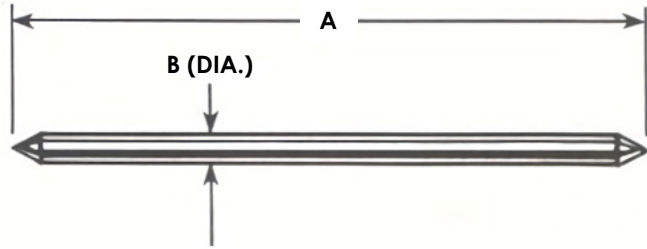
See **Accessories** for accessory detail and **Ferrule Specifications** for ferrule options.

See **Arc Stud Welding – General Information** and **Technical Details** for industry specifications, thread options, Before Weld (BW) length, flux, raw material details, plating options, annealing, load strengths and shipping weights.



RA EJ-265

RA EJ-265



Dash Number	Anchor		Washer	
	A	B	C	T
-01	2-1/8	1/8	1-1/2	20 GA
-02	4-1/8	1/8	1-1/2	20 GA
-03	2-1/8	3/16	1-1/2	20 GA
-04	4-1/8	3/16	1-1/2	20 GA
-05	2-1/8	1/4	2-1/2	20 GA
-06	4-1/8	1/4	2-1/2	20 GA
-07	5"	10 GA	1-1/2	20 GA
-08	3"	3/16	1-1/2	20 GA
-09	2-5/8	10 GA	1-1/2	20 GA
-10	4-5/8	1/8	1-1/2	20 GA

Miscellaneous Refractory Anchors are generally available in the following materials:

1. Low Carbon Steel
2. Stainless Steel – types 304, 310 & 330, and
3. Inconel 601

Other materials are available by special order.

The dimensions shown in the charts represent the most commonly used sizes, however, these refractory anchors can be manufactured to the dimensions required for your application.

To order special sizes, replace the Dash Number with – (NS) and give your required dimensions.

To order or specify give: Stud Code, Dash Number, Material and Quantity

Example: RA EJ-265, -02, Stainless Steel 310, 750 pcs.

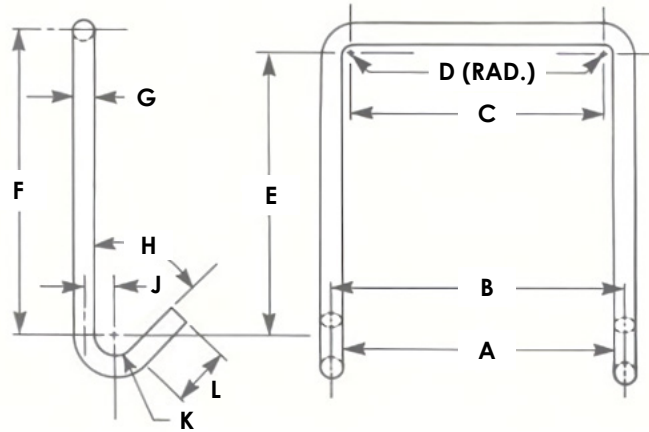
See **Accessories** for accessory detail and **Ferrule Specifications** for ferrule options.

See **Arc Stud Welding – General Information** and **Technical Details** for industry specifications, thread options, Before Weld (BW) length, flux, raw material details, plating options, annealing, load strengths and shipping weights.



RA EJ-268

RA EJ-268



Anchor											
Dash Number	A	B	C	D	E	F	G	H	J	K	L
-01	3-5/16	3-9/16	3-1/16	1/8	3-7/16	3-11/16	1/4	45°	3/8	1/4	3/4
-02	3-3/16	3-7/16	2-15/16	1/8	4-1/2	4-3/4	1/4	60°	1/4	1/8	3/4
-03	3-5/8	4"	3"	5/16	4-3/16	4-11/16	3/8	60°	1/2	5/16	3/4

Miscellaneous Refractory Anchors are generally available in the following materials:

1. Low Carbon Steel
2. Stainless Steel – types 304, 310 & 330, and
3. Inconel 601

Other materials are available by special order.

The dimensions shown in the charts represent the most commonly used sizes, however, these refractory anchors can be manufactured to the dimensions required for your application.

To order special sizes, replace the Dash Number with – (NS) and give your required dimensions.

To order or specify give: Stud Code, Dash Number, Material and Quantity

Example: RA EJ-268, -03, Stainless Steel 310, 750 pcs.

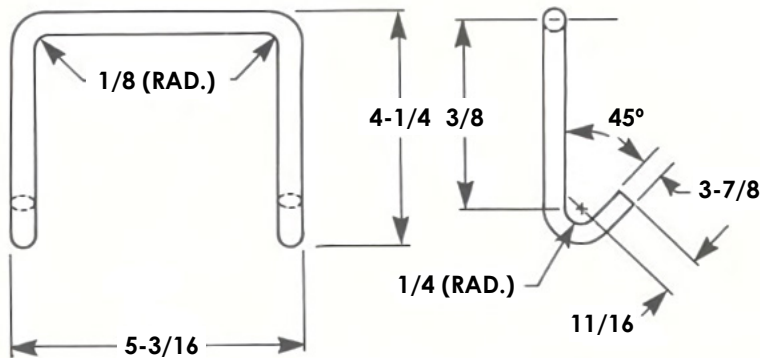
See **Accessories** for accessory detail and **Ferrule Specifications** for ferrule options.

See **Arc Stud Welding – General Information** and **Technical Details** for industry specifications, thread options, Before Weld (BW) length, flux, raw material details, plating options, annealing, load strengths and shipping weights.



RA EJ-269

RA EJ-269



Anchor	
Dash Number	Dimensions
-01	(see above)

Miscellaneous Refractory Anchors are generally available in the following materials:

1. Low Carbon Steel
2. Stainless Steel – types 304, 310 & 330, and
3. Inconel 601

Other materials are available by special order.

The dimensions shown in the charts represent the most commonly used sizes, however, these refractory anchors can be manufactured to the dimensions required for your application.

To order special sizes, replace the Dash Number with – (NS) and give your required dimensions.

To order or specify give: Stud Code, Dash Number, Material and Quantity

Example: RA EJ-269, -01, Stainless Steel 310, 750 pcs.

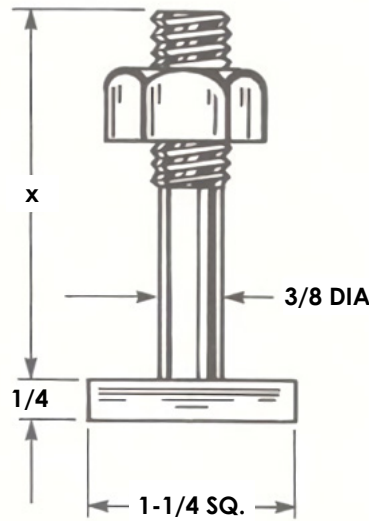
See **Accessories** for accessory detail and **Ferrule Specifications** for ferrule options.

See **Arc Stud Welding – General Information** and **Technical Details** for industry specifications, thread options, Before Weld (BW) length, flux, raw material details, plating options, annealing, load strengths and shipping weights.



RA EJ-270

RA EJ-270



Anchor							
Dash Number	X	Number	X	Dash Number	X	Number	X
-01	2	17	6	-09	4	25	8
-02	2-1/4	18	6-1/4	-10	4-1/4	26	8-1/4
-03	2-1/2	19	6-1/2	-11	4-1/2	27	8-1/2
-04	2-3/4	20	6-3/4	-12	4-3/4	28	8-3/4
-05	3	21	7	-13	5	29	9
-06	3-1/4	22	7-1/4	-14	5-1/4	30	9-1/4
-07	3-1/2	23	7-1/2	-15	5-1/2	31	9-1/2
-08	3-3/4	24	7-3/4	-16	5-3/4	32	9-3/4

Miscellaneous Refractory Anchors are generally available in the following materials:

1. Low Carbon Steel
2. Stainless Steel – types 304, 310 & 330, and
3. Inconel 601

Other materials are available by special order.

The dimensions shown in the charts represent the most commonly used sizes, however, these refractory anchors can be manufactured to the dimensions required for your application.

To order special sizes, replace the Dash Number with – (NS) and give your required dimensions.

To order or specify give: Stud Code, Dash Number, Material and Quantity

Example: RA EJ-270, -05, Stainless Steel 310, 750 pcs.

See **Accessories** for accessory detail and **Ferrule Specifications** for ferrule options.

See **Arc Stud Welding – General Information** and **Technical Details** for industry specifications, thread options, Before Weld (BW) length, flux, raw material details, plating options, annealing, load strengths and shipping weights.

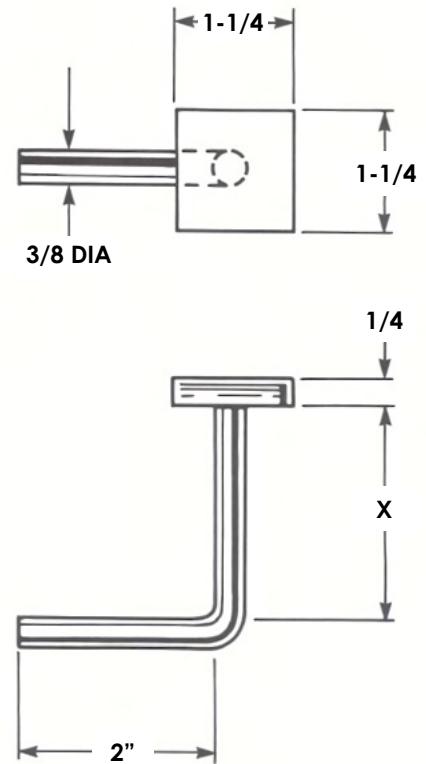


website www.sunbeltstudwelding.com email info@sunbeltstudwelding.com
 6381 Windfern Road, Houston, TX 77040 telephone 1.800.462.9353 - Houston 713.939.8903 fax 713.939.9013

RA EJ-271

RA EJ-271

Anchor			
Dash Number	Dimension X	Dash Number	Dimension X
-01	1-9/16	-18	5-13/16
-02	1-13/16	-19	6-1/16
-03	2-1/16	-20	6-5/16
-04	2-5/16	-21	6-9/16
-05	2-9/16	-22	6-13/16
-06	2-13/16	-23	7-1/16
-07	3-1/16	-24	7-5/16
-08	3-5/16	-25	7-9/16
-09	3-9/16	-26	7-13/16
-10	3-13/16	-27	8-1/16
-11	4-1/16	-28	8-5/16
-12	4-5/16	-29	8-9/16
-13	4-9/16	-30	8-13/16
-14	4-13/16	-31	9-1/16
-15	5-1/16	-32	9-5/16
-16	5-5/16	-33	9-9/16
-17	5-9/16	-34	9-13/16



Miscellaneous Refractory Anchors are generally available in the following materials:

1. Low Carbon Steel
2. Stainless Steel – types 304, 310 & 330, and
3. Inconel 601

Other materials are available by special order.

The dimensions shown in the charts represent the most commonly used sizes, however, these refractory anchors can be manufactured to the dimensions required for your application.

To order special sizes, replace the Dash Number with – (NS) and give your required dimensions.

To order or specify give: Stud Code, Dash Number, Material and Quantity

Example: RA EJ-271, -09, Stainless Steel 310, 750 pcs.

See **Accessories** for accessory detail and **Ferrule Specifications** for ferrule options.

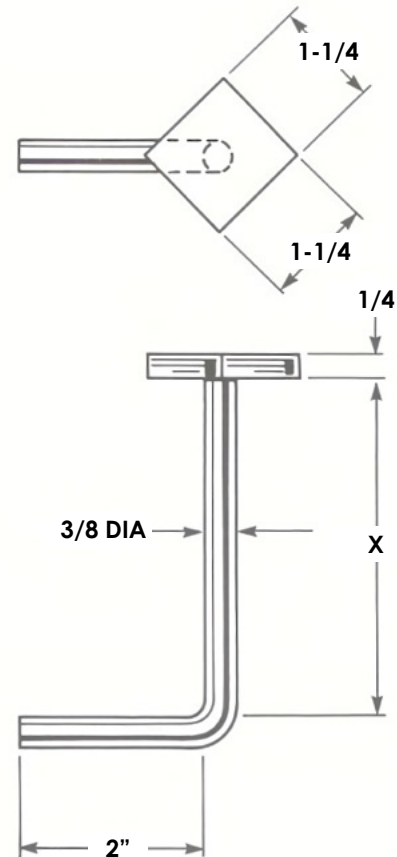
See **Arc Stud Welding – General Information** and **Technical Details** for industry specifications, thread options, Before Weld (BW) length, flux, raw material details, plating options, annealing, load strengths and shipping weights.



RA EJ-272

RA EJ-272

Anchor			
Dash Number	Dimension X	Dash Number	Dimension X
-01	1-1/16	-18	5-5/16
-02	1-5/16	-19	5-9/16
-03	1-9/16	-20	5-13/16
-04	1-13/16	-21	6-1/16
-05	2-1/16	-22	6-5/16
-06	2-5/16	-23	6-9/16
-07	2-9/16	-24	6-13/16
-08	2-13/16	-25	7-1/16
-09	3-1/16	-26	7-5/16
-10	3-5/16	-27	7-9/16
-11	3-9/16	-28	7-13/16
-12	3-13/16	-29	8-1/16
-13	4-1/16	-30	8-5/16
-14	4-5/16	-31	8-9/16
-15	4-9/16	-32	8-13/16
-16	4-13/16	-33	9-1/16
-17	5-1/16		



Miscellaneous Refractory Anchors are generally available in the following materials:

1. Low Carbon Steel
 2. Stainless Steel – types 304, 310 & 330, and
 3. Inconel 601
- Other materials are available by special order.

The dimensions shown in the charts represent the most commonly used sizes, however, these refractory anchors can be manufactured to the dimensions required for your application.

To order special sizes, replace the Dash Number with – (NS) and give your required dimensions.

To order or specify give: Stud Code, Dash Number, Material and Quantity
Example: RA EJ-272, -12, Stainless Steel 310, 750 pcs.

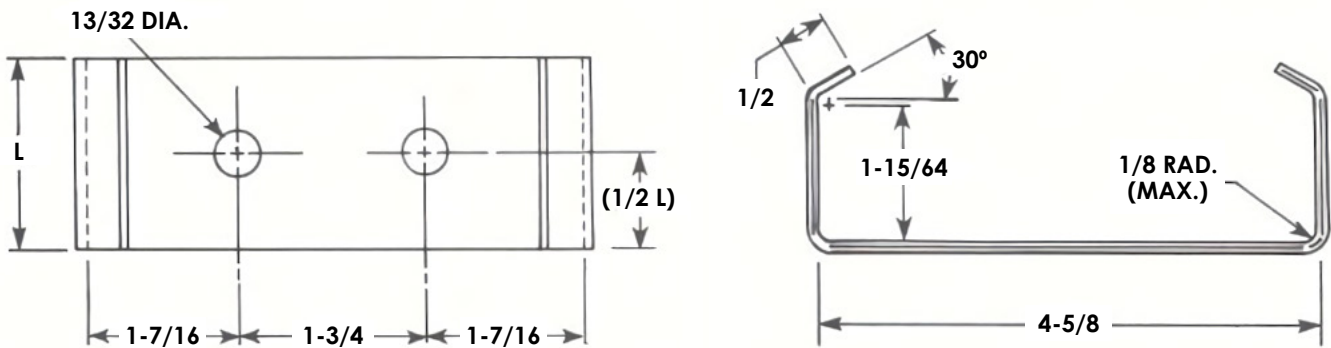
See **Accessories** for accessory detail and **Ferrule Specifications** for ferrule options.

See **Arc Stud Welding – General Information** and **Technical Details** for industry specifications, thread options, Before Weld (BW) length, flux, raw material details, plating options, annealing, load strengths and shipping weights.



RA EJ-273

RA EJ-273



Anchor			
Dash Number	Thickness	L (Inches)	Steel Type
-01	3 GA.	2-1/2	CARBON
-02	11 GA.	2-1/2	CARBON
-03	3 GA.	1-1/2	304 SS
-04	11 GA.	1-1/2	304 SS
-05	3 GA.	1-1/2	309 SS
-06	11 GA.	1-1/2	309 SS
-07	3 GA.	1-1/2	310 SS
-08	11 GA.	1-1/2	310 SS
-09	3 GA.	1-1/2	316 SS
-10	11 GA.	1-1/2	316 SS

Miscellaneous Refractory Anchors are generally available in the following materials:

1. Low Carbon Steel
2. Stainless Steel – types 304, 310 & 330, and
3. Inconel 601

Other materials are available by special order.

The dimensions shown in the charts represent the most commonly used sizes, however, these refractory anchors can be manufactured to the dimensions required for your application.

To order special sizes, replace the Dash Number with – (NS) and give your required dimensions.

To order or specify give: Stud Code, Dash Number, Material and Quantity

Example: RA EJ-273, -04, Stainless Steel 310, 750 pcs.

See **Accessories** for accessory detail and **Ferrule Specifications** for ferrule options.

See **Arc Stud Welding – General Information** and **Technical Details** for industry specifications, thread options, Before Weld (BW) length, flux, raw material details, plating options, annealing, load strengths and shipping weights.



RA EJ-276

RA EJ-276

Washer		
Dash Number	A	Product Code*
-01	1/4"	WCN K150S B 1/4
-02	3/16"	WCN K150SB 3/16
-03	UL**	WCN K150SB (IT)

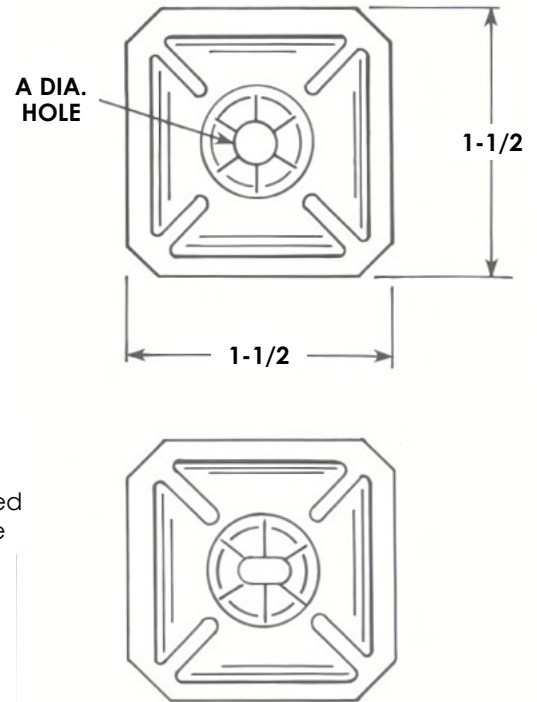
Miscellaneous Refractory Anchors are generally available in the following materials:

1. Low Carbon Steel
2. Stainless Steel – types 304, 310 & 330, and
3. Inconel 601

Other materials are available by special order.

The dimensions shown in the charts represent the most commonly used sizes, however, these refractory anchors can be manufactured to the dimensions required for your application.

To order special sizes, replace the Dash Number with – (NS) and give your required dimensions.



To order or specify give: Stud Code, Dash Number, Material and Quantity

Example: RA EJ-276, -01, Stainless Steel 310, 750 pcs.

See **Accessories** for accessory detail and **Ferrule Specifications** for ferrule options.

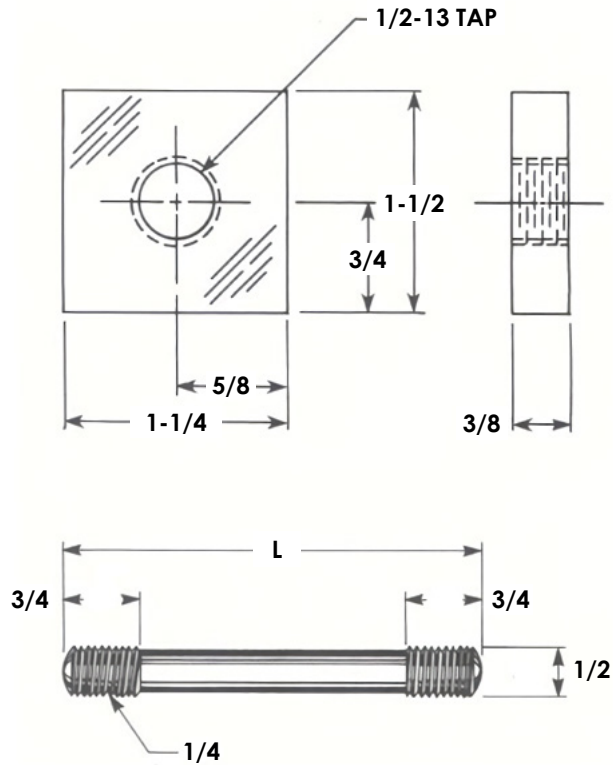
See **Arc Stud Welding – General Information** and **Technical Details** for industry specifications, thread options, Before Weld (BW) length, flux, raw material details, plating options, annealing, load strengths and shipping weights.



RA EJ-353

RA EJ-353

Plate	
As shown	
Anchor	
Length	As required



Miscellaneous Refractory Anchors are generally available in the following materials:

1. Low Carbon Steel
2. Stainless Steel – types 304, 310 & 330, and
3. Inconel 601

Other materials are available by special order.

The dimensions shown in the charts represent the most commonly used sizes, however, these refractory anchors can be manufactured to the dimensions required for your application.

To order special sizes, replace the Dash Number with – (NS) and give your required dimensions.

To order or specify give: Stud Code, Length, Dash Number, Material and Quantity

Example: RA EJ-353, 1", -01, Stainless Steel 310, 750 pcs.

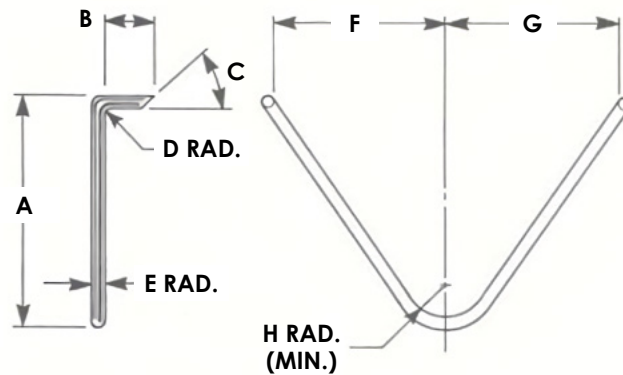
See **Accessories** for accessory detail and **Ferrule Specifications** for ferrule options.

See **Arc Stud Welding – General Information** and **Technical Details** for industry specifications, thread options, Before Weld (BW) length, flux, raw material details, plating options, annealing, load strengths and shipping weights.



RA EJ-611

RA EJ-611



Anchor								
Number	A	B	C	D	E	F	G	H
-01	1-1/2	3/4	45°	1/8	1/8	2-1/4	2-1/4	5/8
-02	2-1/4	3/4	45°	1/8	1/8	2-1/4	2-1/4	5/8
-03	3-1/4	3/4	45°	1/8	1/8	2-1/4	2-1/4	5/8
-04	4-1/4	3/4	45°	1/8	1/8	2-1/4	2-1/4	5/8
-05	5-1/4	3/4	45°	1/8	1/8	2-1/4	2-1/4	5/8
-06	3-5/16	7/8	45°	1/8	1/8	2-1/4	2-1/4	5/8
-07	4-11/16	7/8	45°	1/8	1/8	2-1/4	2-1/4	5/8

Miscellaneous Refractory Anchors are generally available in the following materials:

1. Low Carbon Steel
2. Stainless Steel – types 304, 310 & 330, and
3. Inconel 601

Other materials are available by special order.

The dimensions shown in the charts represent the most commonly used sizes, however, these refractory anchors can be manufactured to the dimensions required for your application.

To order special sizes, replace the Dash Number with – (NS) and give your required dimensions.

To order or specify give: Stud Code, Dash Number, Material and Quantity

Example: RA EJ-611, -04, Stainless Steel 310, 750 pcs.

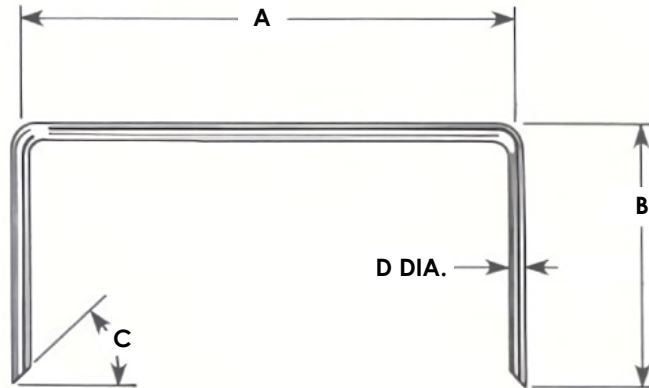
See **Accessories** for accessory detail and **Ferrule Specifications** for ferrule options.

See **Arc Stud Welding – General Information** and **Technical Details** for industry specifications, thread options, Before Weld (BW) length, flux, raw material details, plating options, annealing, load strengths and shipping weights.



RA EJ-612

RA EJ-612



Anchor				
Dash Number	A	B	C	D
-01	2-1/2	2-1/4	45°	1/8
-02	4-1/2	2-1/4	45°	1/8

Miscellaneous Refractory Anchors are generally available in the following materials:

1. Low Carbon Steel
2. Stainless Steel – types 304, 310 & 330, and
3. Inconel 601

Other materials are available by special order.

The dimensions shown in the charts represent the most commonly used sizes, however, these refractory anchors can be manufactured to the dimensions required for your application.

To order special sizes, replace the Dash Number with – (NS) and give your required dimensions.

To order or specify give: Stud Code, Dash Number, Material and Quantity

Example: RA EJ-612, -01, Stainless Steel 310, 750 pcs.

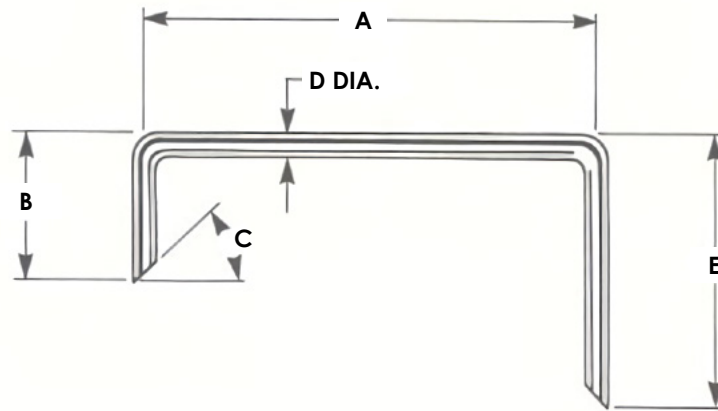
See **Accessories** for accessory detail and **Ferrule Specifications** for ferrule options.

See **Arc Stud Welding – General Information** and **Technical Details** for industry specifications, thread options, Before Weld (BW) length, flux, raw material details, plating options, annealing, load strengths and shipping weights.



RA EJ-613

RA EJ-613



Anchor					
Dash Number	A	B	C	D	E
-01	3	1-1/4	45°	3/16	2-1/4
-02	4	1-1/4	45°	3/16	2-1/4
-03	5	1-1/4	45°	3/16	2-1/4
-04	5-1/2	1-1/4	45°	3/16	2-1/4

Miscellaneous Refractory Anchors are generally available in the following materials:

1. Low Carbon Steel
2. Stainless Steel – types 304, 310 & 330, and
3. Inconel 601

Other materials are available by special order.

The dimensions shown in the charts represent the most commonly used sizes, however, these refractory anchors can be manufactured to the dimensions required for your application.

To order special sizes, replace the Dash Number with – (NS) and give your required dimensions.

To order or specify give: Stud Code, Dash Number, Material and Quantity

Example: RA EJ-613, -03, Stainless Steel 310, 750 pcs.

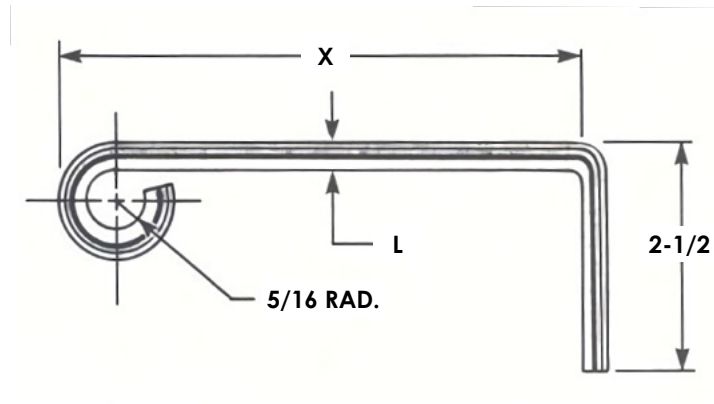
See **Accessories** for accessory detail and **Ferrule Specifications** for ferrule options.

See **Arc Stud Welding – General Information** and **Technical Details** for industry specifications, thread options, Before Weld (BW) length, flux, raw material details, plating options, annealing, load strengths and shipping weights.



RA EJ-614

RA EJ-614



Anchor	
X	As required

Miscellaneous Refractory Anchors are generally available in the following materials:

1. Low Carbon Steel
2. Stainless Steel – types 304, 310 & 330, and
3. Inconel 601

Other materials are available by special order.

The dimensions shown in the charts represent the most commonly used sizes, however, these refractory anchors can be manufactured to the dimensions required for your application.

To order special sizes, replace the Dash Number with – (NS) and give your required dimensions.

To order or specify give: Stud Code, X, Material and Quantity

Example: RA EJ-614, 1", Stainless Steel 310, 750 pcs.

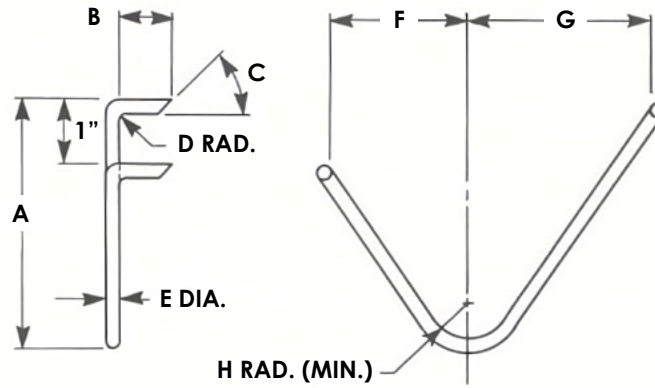
See **Accessories** for accessory detail and **Ferrule Specifications** for ferrule options.

See **Arc Stud Welding – General Information** and **Technical Details** for industry specifications, thread options, Before Weld (BW) length, flux, raw material details, plating options, annealing, load strengths and shipping weights.



RA EJ-615

RA EJ-615



Anchor								
Dash Number	A	B	C	D	E	F	G	H
-01	1-1/2	3/4	45°	1/8	1/8	1-5/8	2-1/4	5/8
-02	2-1/4	3/4	45°	1/8	1/8	1-5/8	2-1/4	5/8
-03	3-1/4	3/4	45°	1/8	1/8	1-5/8	2-1/4	5/8
-04	4-1/4	3/4	45°	1/8	1/8	1-5/8	2-1/4	5/8
-05	5-1/4	3/4	45°	1/8	1/8	1-5/8	2-1/4	5/8
-06	3-5/16	7/8	45°	1/8	1/8	1-5/8	2-1/4	5/8
-07	4-11/16	7/8	45°	1/8	1/8	1-5/8	2-1/4	5/8

To order or specify give: Stud Code, Dash Number, Material and Quantity
 Example: RA EJ-615, -03, Stainless Steel 310, 750 pcs.

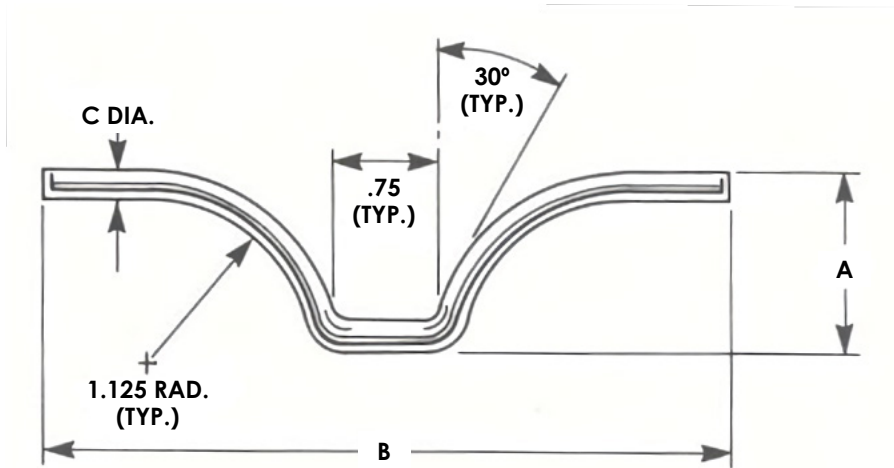
See **Accessories** for accessory detail and **Ferrule Specifications** for ferrule options.

See **Arc Stud Welding – General Information** and **Technical Details** for industry specifications, thread options, Before Weld (BW) length, flux, raw material details, plating options, annealing, load strengths and shipping weights.



RA EJ-730

RA EJ-730



Anchor							
Dash Number	A	B	C	Dash Number	A	B	C
-01	1	4.73	3/16	-12	1	4.73	1/4
-02	1.5	5.30	3/16	-13	1.5	5.30	1/4
-03	2	5.88	3/16	-14	2	5.88	1/4
-04	2.5	6.45	3/16	-15	2.5	6.45	1/4
-05	3	7.03	3/16	-16	3	7.03	1/4
-06	3.5	7.61	3/16	-17	3.5	7.61	1/4
-07	4	8.18	3/16	-18	4	8.18	1/4
-08	4.5	8.76	3/16	-19	4.5	8.76	1/4
-09	5	9.33	3/16	-20	5	9.33	1/4
-10	5.5	9.91	3/16	-21	5.5	9.91	1/4
-11	6	10.4	3/16	-22	6	10.4	1/4

To order or specify give: Stud Code, Dash Number, Material and Quantity
 Example: RA EJ-730, -01, Stainless Steel 310, 750 pcs.

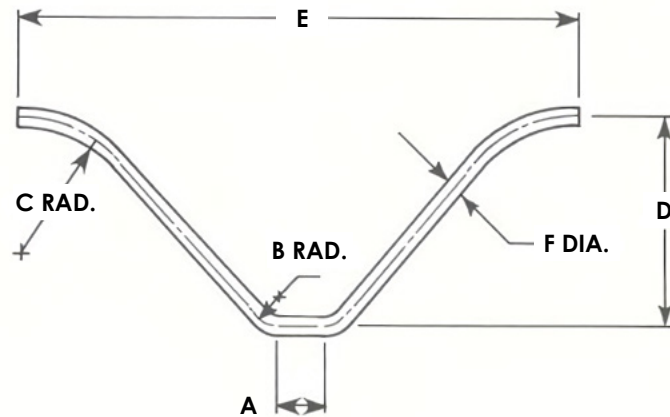
See **Accessories** for accessory detail and **Ferrule Specifications** for ferrule options.

See **Arc Stud Welding – General Information** and **Technical Details** for industry specifications, thread options, Before Weld (BW) length, flux, raw material details, plating options, annealing, load strengths and shipping weights.



RA EJ-731

RA EJ-731



Anchor						
Dash Number	A	B	C	D	E	F
-01	7/16	5/16	1-3/8	3/4	5-3/4	3/16
-02	7/16	5/16	1-3/8	1	5-3/4	3/16
-03	7/16	5/16	1-3/8	1-1/2	5-3/4	3/16
-04	7/16	5/16	1-3/8	2	5-3/4	3/16
-05	7/16	5/16	1-3/8	2-1/4	5-3/4	3/16
-06	1/2	1/2	1-1/2	2-1/2	6	3/16
-07	1/2	1/2	2-1/4	3	7	3/16
-08	1/2	1/2	1-1/2	3-1/2	6	3/16
-09	1/2	1/2	2-1/4	3-1/2	7-3/4	3/16
-10	3/4	3/4	2	3-3/4	8	3/16
-11	1/2	1/2	2-1/4	4-1/2	8	3/16
-12	3/4	3/4	2-1/4	5	9-15/16	3/16
-13	3/4	3/4	2	3-3/4	8	1/4
-14	3/4	3/4	2	4	8	1/4
-15	3/4	3/4	2-1/2	4-1/2	8-1/2	1/4
-16	3/4	3/4	4	6	11-1/2	5/16

To order or specify give: Stud Code, Dash Number, Material and Quantity
 Example: RA EJ-731, -09, Stainless Steel 310, 750 pcs.

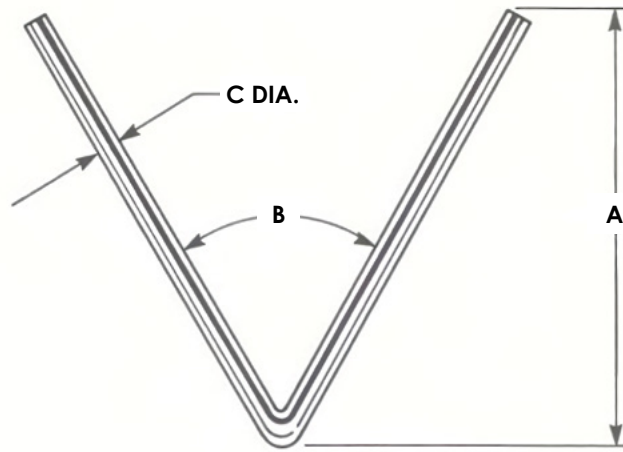
See **Accessories** for accessory detail and **Ferrule Specifications** for ferrule options.

See **Arc Stud Welding – General Information** and **Technical Details** for industry specifications, thread options, Before Weld (BW) length, flux, raw material details, plating options, annealing, load strengths and shipping weights.



RA EJ-732

RA EJ-732



Anchor			
Dash Number	A	B	C
-01	1	60°	3/16
-02	1-1/2	60°	3/16
-03	2	60°	3/16
-04	3	60°	3/16
-05	4	60°	3/16
-06	5	60°	3/16
-07	6	60°	3/16

To order or specify give: Stud Code, Dash Number, Material and Quantity
Example: RA EJ-732, -05, Stainless Steel 310, 750 pcs.

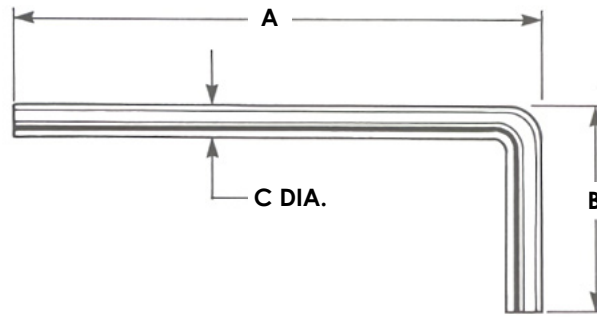
See **Accessories** for accessory detail and **Ferrule Specifications** for ferrule options.

See **Arc Stud Welding – General Information** and **Technical Details** for industry specifications, thread options, Before Weld (BW) length, flux, raw material details, plating options, annealing, load strengths and shipping weights.



RA EJ-733

RA EJ-733



Anchor							
Dash Number	A	B	C	Dash Number	A	B	C
-01	1	1-1/2	3/16	-19	1	1-1/2	1/4
-02	1-1/2	1-1/2	3/16	-20	1-1/2	1-1/2	1/4
-03	1-3/4	1-1/2	3/16	-21	1-3/4	1-1/2	1/4
-04	2	1-1/2	3/16	-22	2	1-1/2	1/4
-05	2-1/2	1-1/2	3/16	-23	2-1/2	1-1/2	1/4
-06	3	1-1/2	3/16	-24	3	1-1/2	1/4
-07	4	1-1/2	3/16	-25	4	1-1/2	1/4
-08	4-1/2	1-1/2	3/16	-26	4-1/2	1-1/2	1/4
-09	5	1-1/2	3/16	-27	5	1-1/2	1/4
-10	5-1/2	1-1/2	3/16	-28	5-1/2	1-1/2	1/4
-11	6	1-1/2	3/16	-29	6	1-1/2	1/4
-12	6-1/2	1-1/2	3/16	-30	6-1/2	1-1/2	1/4
-13	7	1-1/2	3/16	-31	7	1-1/2	1/4
-14	7-1/2	1-1/2	3/16	-32	7-1/2	1-1/2	1/4
-15	7-3/4	1-1/2	3/16	-33	7-3/4	1-1/2	1/4
-16	8-1/2	1-1/2	3/16	-34	8-1/2	1-1/2	1/4
-17	9	1-1/2	3/16	-35	9	1-1/2	1/4
-18	9-1/2	1-1/2	3/16	-36	9-1/2	1-1/2	1/4

To order or specify give: Stud Code, Dash Number, Material and Quantity

Example: RA EJ-733, -05, Stainless Steel 310, 750 pcs.

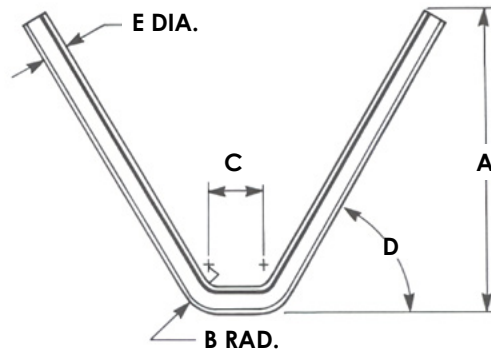
See **Accessories** for accessory detail and **Ferrule Specifications** for ferrule options.

See **Arc Stud Welding – General Information** and **Technical Details** for industry specifications, thread options, Before Weld (BW) length, flux, raw material details, plating options, annealing, load strengths and shipping weights.



RA EJ-734

RA EJ-734



Anchor					
Dash Number	A	B	C	D	E
-01	2	3/4	3/4	60°	1/8
-02	3	3/4	3/4	60°	1/8
-03	6-1/2	3/4	3/4	60°	1/8
-04	1-1/2	3/4	3/4	60°	3/16
-05	2	3/4	3/4	60°	3/16
-06	2-1/4	3/4	3/4	60°	3/16
-07	2-3/4	3/4	3/4	60°	3/16
-08	3-3/4	3/4	3/4	60°	3/16
-09	4-1/2	3/4	3/4	60°	3/16
-10	5-1/2	3/4	3/4	60°	3/16
-11	6-1/2	3/4	3/4	60°	3/16
-12	1-1/2	3/4	3/4	60°	1/4
-13	2-1/4	3/4	3/4	60°	1/4
-14	2-3/4	3/4	3/4	60°	1/4
-15	3-3/4	3/4	3/4	60°	1/4
-16	4-1/2	3/4	3/4	60°	1/4
-17	5-1/2	3/4	3/4	60°	1/4
-18	6-1/2	3/4	3/4	60°	1/4

To order or specify give: Stud Code, Dash Number, Material and Quantity

Example: RA EJ-734, -01, Stainless Steel 310, 750 pcs.

See **Accessories** for accessory detail and **Ferrule Specifications** for ferrule options.

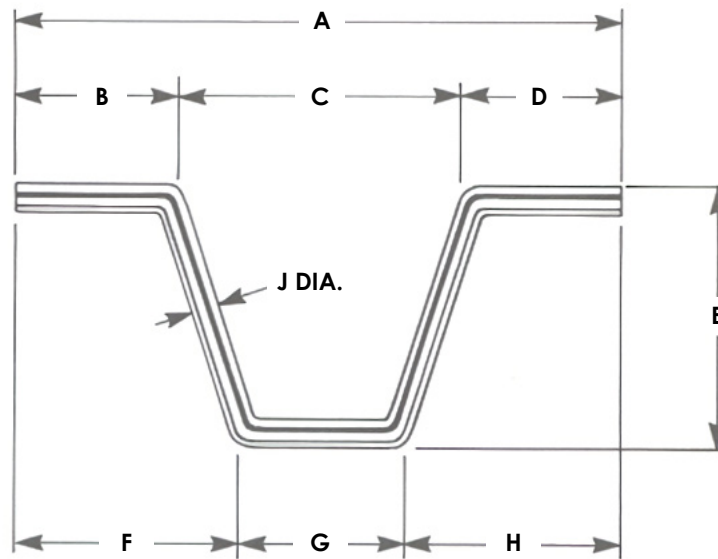
See **Arc Stud Welding – General Information** and **Technical Details** for industry specifications, thread options, Before Weld (BW) length, flux, raw material details, plating options, annealing, load strengths and shipping weights.



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RA EJ-735

RA EJ-735



Anchor									
Dash Number	A	B	C	D	E	F	G	H	J
-01	6	1-1/2	3	1-1/2	2-1/4	2-1/4	1-1/2	2-1/4	3/16
-02	6	1-1/2	3	1-1/2	3-1/4	2-1/4	1-1/2	2-1/4	3/16
-03	6	1-1/2	3	1-1/2	3-1/2	2-1/4	1-1/2	2-1/4	3/16
-04	6	1-1/2	3	1-1/2	5	2-1/4	1-1/2	2-1/4	3/16
-05	6	1-1/2	3	1-1/2	6-1/4	2-1/4	1-1/2	2-1/4	3/16
-06	6	1-1/2	3	1-1/2	8-1/2	2-1/4	1-1/2	2-1/4	3/16
-07	7	1-3/4	3-1/2	1-3/4	3-1/2	2-3/4	1-1/2	2-3/4	3/16

To order or specify give: Stud Code, Dash Number, Material and Quantity

Example: RA EJ-735, -01, Stainless Steel 310, 750 pcs.

See **Accessories** for accessory detail and **Ferrule Specifications** for ferrule options.

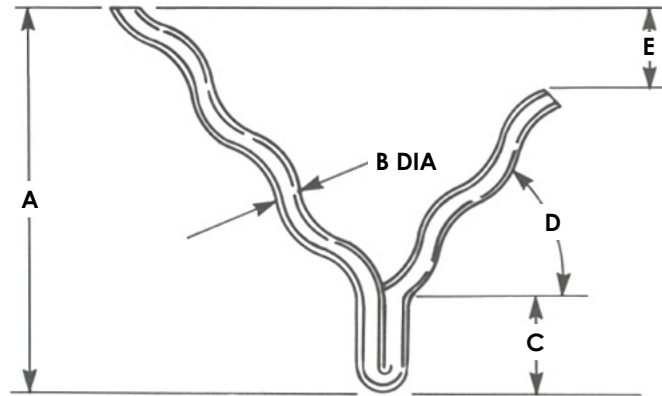
See **Arc Stud Welding – General Information** and **Technical Details** for industry specifications, thread options, Before Weld (BW) length, flux, raw material details, plating options, annealing, load strengths and shipping weights.



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RA EJ-737

RA EJ-737



Anchor					
Dash Number	A	B	C	D	E
-01	2	1/4	3/4	50°	1/2
-02	2-5/8	1/4	3/4	50°	1/2
-03	3-1/8	1/4	3/4	50°	1/2
-04	3-5/8	1/4	3/4	50°	1/2
-05	4-1/8	1/4	3/4	50°	1/2
-06	5	1/4	3/4	50°	1/2
-07	5-1/8	1/4	3/4	50°	1/2
-08	7-1/8	1/4	3/4	50°	1/2
-09	2-5/8	5/16	3/4	50°	1/2
-10	3-1/8	5/16	3/4	50°	1/2
-11	3-5/8	5/16	3/4	50°	1/2
-12	4-1/8	5/16	3/4	50°	1/2
-13	4-5/8	5/16	3/4	50°	1/2
-14	5-1/8	5/16	3/4	50°	1/2
-15	7-1/8	5/16	3/4	50°	1/2

To order or specify give: Stud Code, Dash Number, Material and Quantity
 Example: RA EJ-737, -07, Stainless Steel 310, 750 pcs.

See **Accessories** for accessory detail and **Ferrule Specifications** for ferrule options.

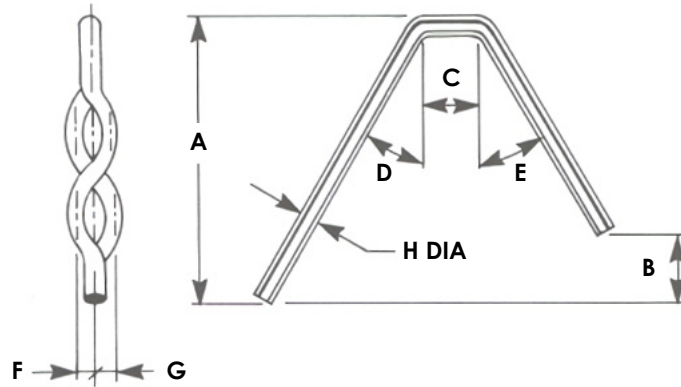
See **Arc Stud Welding – General Information** and **Technical Details** for industry specifications, thread options, Before Weld (BW) length, flux, raw material details, plating options, annealing, load strengths and shipping weights.



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RA EJ-738

RA EJ-738



Anchor								
Dash Number	A	B	C	D	E	F	G	H
-01	1-1/4	1/2	3/4	30°	30°	3/16	3/16	3/16
-02	2-1/4	1/2	3/4	30°	30°	3/16	3/16	3/16
-03	2-3/4	1/2	3/4	30°	30°	3/16	3/16	3/16
-04	3-3/4	1/2	3/4	30°	30°	3/16	3/16	3/16
-05	4-3/4	1/2	3/4	30°	30°	3/16	3/16	3/16
-06	5-3/4	1/2	3/4	30°	30°	3/16	3/16	3/16
-07	6-3/4	1/2	3/4	30°	30°	3/16	3/16	3/16
-08	1-1/4	1/2	3/4	30°	30°	3/16	3/16	1/4
-09	2-1/4	1/2	3/4	30°	30°	3/16	3/16	1/4
-10	2-3/4	1/2	3/4	30°	30°	3/16	3/16	1/4
-11	3-3/4	1/2	3/4	30°	30°	3/16	3/16	1/4
-12	4-3/4	1/2	3/4	30°	30°	3/16	3/16	1/4
-13	5-3/4	1/2	3/4	30°	30°	3/16	3/16	1/4
-14	6-3/4	1/2	3/4	30°	30°	3/16	3/16	1/4

To order or specify give: Stud Code, Dash Number, Material and Quantity
 Example: RA EJ-738, -08, Stainless Steel 310, 750 pcs.

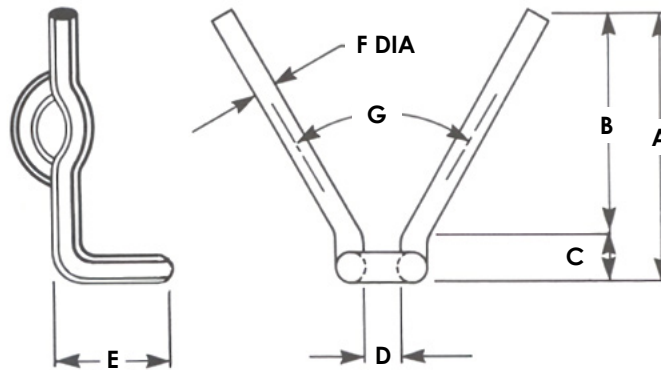
See **Accessories** for accessory detail and **Ferrule Specifications** for ferrule options.

See **Arc Stud Welding – General Information** and **Technical Details** for industry specifications, thread options, Before Weld (BW) length, flux, raw material details, plating options, annealing, load strengths and shipping weights.



RA EJ-739

RA EJ-739



Anchor							
Dash Number	A	B	C	D	E	F	G
-01	2-5/8	2-1/8	1/2	.406	1-1/4	1/4	60°
-02	3-1/8	2-5/8	1/2	.406	1-1/4	1/4	60°
-03	4-1/8	3-1/8	1	.406	1-1/4	1/4	60°
-04	5-1/8	4-1/8	1	.406	1-1/4	1/4	60°
-05	6-1/8	5-1/8	1	.406	1-1/4	1/4	60°
-06	2-1/8	2-1/8		.406	1-1/4	5/16	60°
-07	2-1/2	2	1/2	.406	1-1/4	5/16	60°
-08	2-5/8	2-5/8		.406	1-1/4	5/16	60°
-09	3-1/8	3-1/8		.406	1-1/4	5/16	60°
-10	3-5/8	3-5/8	1	.406	1-1/4	5/16	60°
-11	3	2-1/2	1/2	.406	1-1/4	5/16	60°
-12	3-1/2	2-1/2	1	.406	1-1/4	5/16	60°
-13	4	3	1	.406	1-1/4	5/16	60°
-14	5-1/8	4-1/8	1	.406	1-1/4	5/16	60°
-15	6-1/8	5-1/8	1	.406	1-1/4	5/16	60°

To order or specify give: Stud Code, Dash Number, Material and Quantity

Example: RA EJ-739, -12, Stainless Steel 310, 750 pcs.

See **Accessories** for accessory detail and **Ferrule Specifications** for ferrule options.

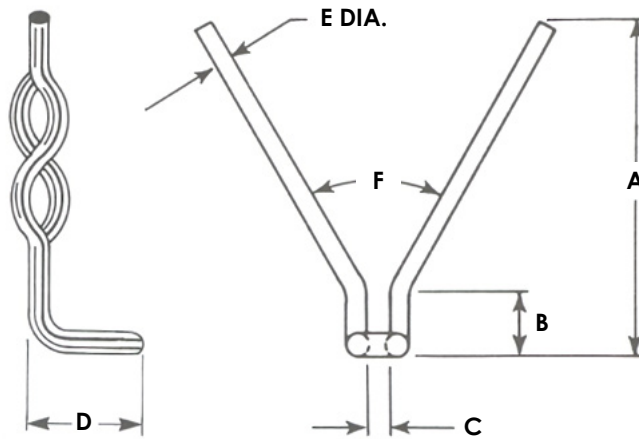
See **Arc Stud Welding – General Information** and **Technical Details** for industry specifications, thread options, Before Weld (BW) length, flux, raw material details, plating options, annealing, load strengths and shipping weights.



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RA EJ-740

RA EJ-740



Anchor						
Dash Number	A	B	C	D	E	F
-01	5-1/8	1	.406	1-1/4	1/4	60°
-02	7-1/8	3-1/8	.406	1-1/4	1/4	60°
-03	4-1/4	3/4	.406	1-1/4	5/16	60°
-04	5	1	.406	1-1/4	5/16	60°
-05	6	2	.406	1-1/4	5/16	60°
-06	6	1	.406	1-1/4	5/16	60°
-07	7	3	.406	1-1/4	5/16	60°
-08	8	3	.406	1-1/4	5/16	60°
-09	8	4	.406	1-1/4	5/16	60°
-10	9	4	.406	1-1/4	5/16	60°
-11	10	5	.406	1-1/4	5/16	60°
-12	10	6	.406	1-1/4	5/16	60°
-13	11	6	.406	1-1/4	5/16	60°
-14	12	7	.406	1-1/4	5/16	60°

To order or specify give: Stud Code, Dash Number, Material and Quantity
 Example: RA EJ-740, -01, Stainless Steel 310, 750 pcs.

See **Accessories** for accessory detail and **Ferrule Specifications** for ferrule options.

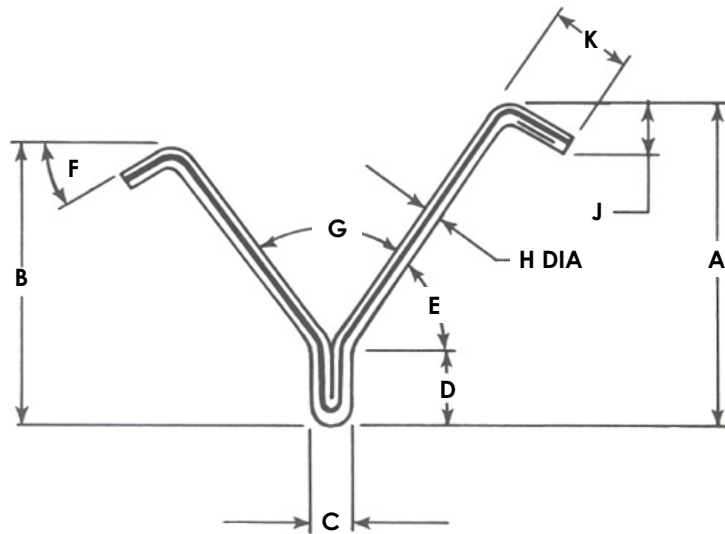
See **Arc Stud Welding – General Information** and **Technical Details** for industry specifications, thread options, Before Weld (BW) length, flux, raw material details, plating options, annealing, load strengths and shipping weights.



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RA EJ-741

RA EJ-741



Anchor										
Dash Number	A	B	C	D	E	F	G	H	J	K
-01	1-5/8	1-3/8	3/8	3/4	54°	30°	72°	3/16	9/16	15/16
-02	2-1/8	1-7/8	3/8	3/4	54°	30°	72°	3/16	9/16	15/16
-03	2-5/8	2-3/8	3/8	3/4	54°	30°	72°	3/16	9/16	15/16
-04	3-1/8	2-7/8	3/8	3/4	54°	30°	72°	3/16	9/16	15/16
-05	3-5/8	3-3/8	3/8	3/4	54°	30°	72°	3/16	9/16	15/16
-06	4-1/8	3-7/8	3/8	3/4	54°	30°	72°	3/16	9/16	15/16
-07	4-5/8	4-3/8	3/8	3/4	54°	30°	72°	3/16	9/16	15/16
-08	5-1/8	4-7/8	3/8	3/4	54°	30°	72°	3/16	9/16	15/16
-09	7-1/8	6-7/8	3/8	3/4	54°	30°	72°	3/16	9/16	15/16
-10	9-1/8	8-7/8	3/8	3/4	54°	30°	72°	3/16	9/16	15/16

To order or specify give: Stud Code, Dash Number, Material and Quantity

Example: RA EJ-741, -09, Stainless Steel 310, 750 pcs.

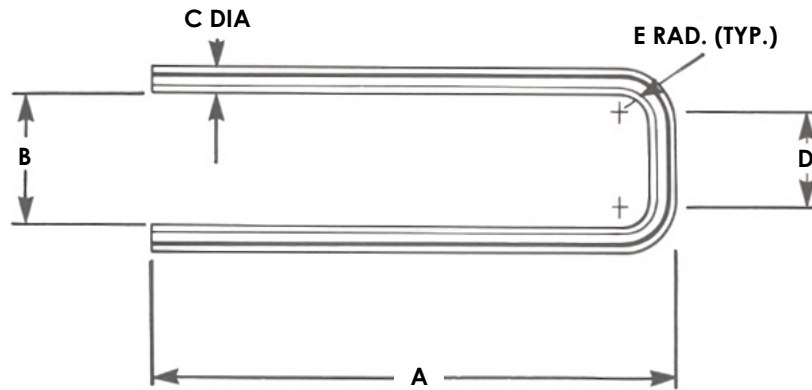
See **Accessories** for accessory detail and **Ferrule Specifications** for ferrule options.

See **Arc Stud Welding – General Information** and **Technical Details** for industry specifications, thread options, Before Weld (BW) length, flux, raw material details, plating options, annealing, load strengths and shipping weights.



RA EJ-742

RA EJ-742



Anchor											
Dash Number	A	B	C	D	E	Dash Number	A	B	C	D	E
-01	4	1	3/16	3/8	5/16	-09	9	1	1/4	3/8	5/16
-02	4-3/4	1	3/16	3/8	5/16	-10	4-3/4	1	1/4	3/8	5/16
-03	5-3/4	1	3/16	3/8	5/16	-11	5-3/4	1	1/4	3/8	5/16
-04	6	1	3/16	3/8	5/16	-12	6	1	1/4	3/8	5/16
-05	6-1/8	1	3/16	3/8	5/16	-13	6-1/8	1	1/4	3/8	5/16
-06	8-1/2	1	3/16	3/8	5/16	-14	7	1	1/4	3/8	5/16
-07	7	1	3/16	3/8	5/16	-15	8	1	1/4	3/8	5/16
-08	8	1	3/16	3/8	5/16	-16	8-1/2	1	1/4	3/8	5/16

To order or specify give: Stud Code, Dash Number, Material and Quantity
 Example: RA EJ-742, -07, Stainless Steel 310, 750 pcs.

See **Accessories** for accessory detail and **Ferrule Specifications** for ferrule options.

See **Arc Stud Welding – General Information** and **Technical Details** for industry specifications, thread options, Before Weld (BW) length, flux, raw material details, plating options, annealing, load strengths and shipping weights.



RA EJ-743

RA EJ-743

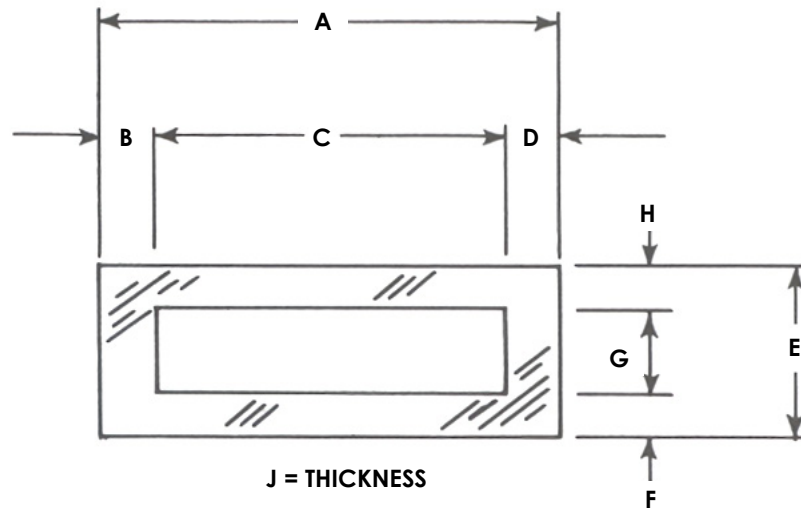


Plate									
Dash Number	A	B	C	D	E	F	G	H	J
-01	2-1/8	1/4	1-5/8	1/4	3/4	7/32	5/16	7/32	1/8

To order or specify give: Stud Code, Dash Number, Material and Quantity
Example: RA EJ-743, -01, Stainless Steel 310, 750 pcs.

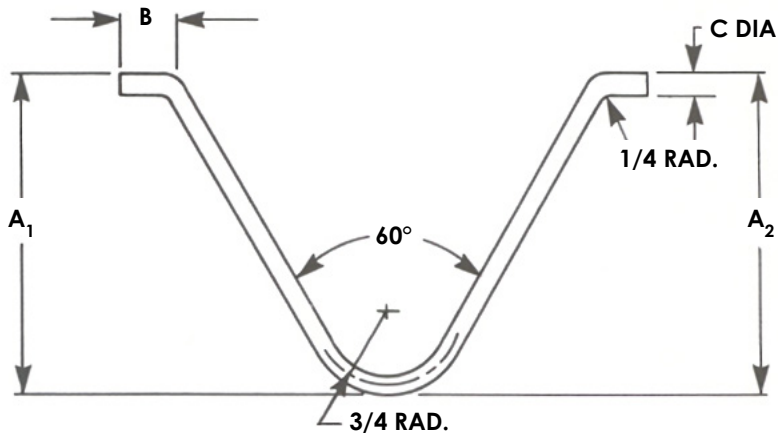
See **Accessories** for accessory detail and **Ferrule Specifications** for ferrule options.

See **Arc Stud Welding – General Information** and **Technical Details** for industry specifications, thread options, Before Weld (BW) length, flux, raw material details, plating options, annealing, load strengths and shipping weights.



RA EJ-744

RA EJ-744



Anchor				
Dash Number	A1	A2	B	C
-01	2	2	1/2	3/16
-02	2	4	1	3/16
-03	3	3	1	3/16
-04	3	5	1	3/16
-05	4	4	1	3/16
-06	4	6	1	3/16
-07	5	5	1	3/16
-08	5	7	1	3/16
-09	6	6	1	3/16

To order or specify give: Stud Code, Dash Number, Material and Quantity
 Example: RA EJ-744, -09, Stainless Steel 310, 750 pcs.

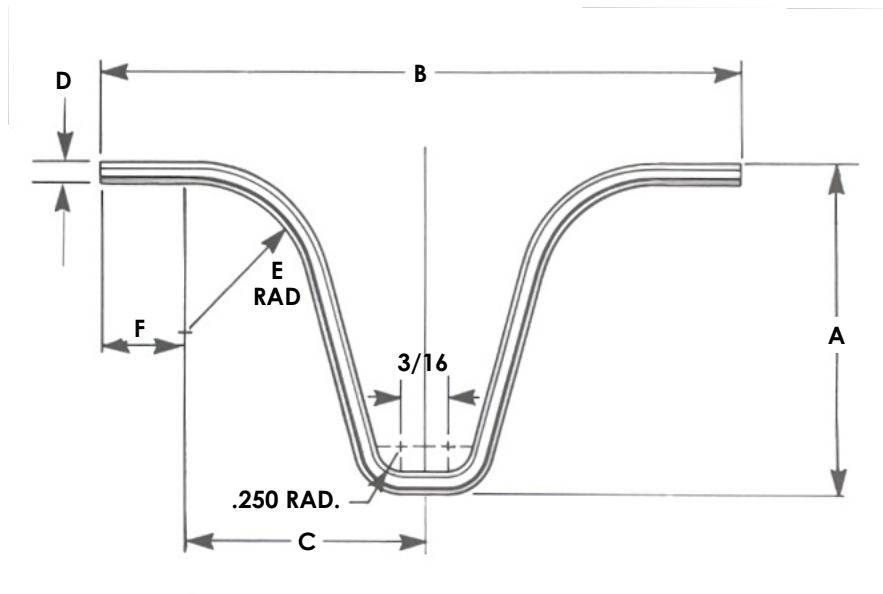
See **Accessories** for accessory detail and **Ferrule Specifications** for ferrule options.

See **Arc Stud Welding – General Information** and **Technical Details** for industry specifications, thread options, Before Weld (BW) length, flux, raw material details, plating options, annealing, load strengths and shipping weights.



RA EJ-745

RA EJ-745



Anchor						
Dash Number	A	B	C	D	E	F
-01	3-1/2	6	2-1/4	3/16	1-1/4	3/4
-02	4	6	2-1/4	3/16	1-1/4	3/4
-03	4-1/2	6	2-1/4	3/16	1-1/4	3/4
-04	5	6	2-1/4	3/16	1-1/4	3/4
-05	5-1/2	6	2-1/4	3/16	1-1/4	3/4
-06	6	6	2-1/4	3/16	1-1/4	3/4

To order or specify give: Stud Code, Dash Number, Material and Quantity
 Example: RA EJ-745, -03, Stainless Steel 310, 750 pcs.

See **Accessories** for accessory detail and **Ferrule Specifications** for ferrule options.

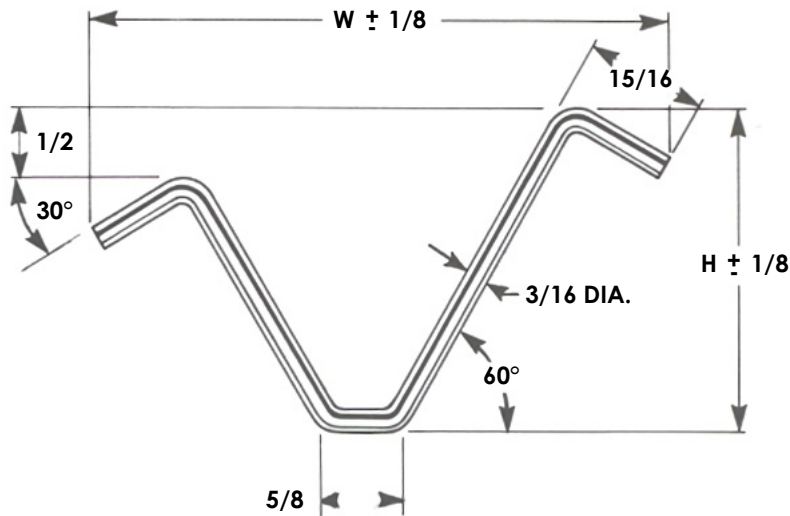
See **Arc Stud Welding – General Information** and **Technical Details** for industry specifications, thread options, Before Weld (BW) length, flux, raw material details, plating options, annealing, load strengths and shipping weights.



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RA EJ-746

RA EJ-746



Anchor					
Dash Number	H	W	Dash Number	H	W
-01	2	3-1/2	-09	6	9-1/2
-02	2-1/2	4-1/4	-10	6-1/2	10-1/4
-03	3	5	-11	7	11
-04	3-1/2	5-3/4	-12	7-1/2	11-3/4
-05	4	6-1/2	-13	8	12-1/2
-06	4-1/2	7-1/4	-14	8-1/2	13-1/4
-07	5	8	-15	9	14
-08	5-1/2	8-3/4			

To order or specify give: Stud Code, Dash Number, Material and Quantity
 Example: RA EJ-746, -06, Stainless Steel 310, 750 pcs.

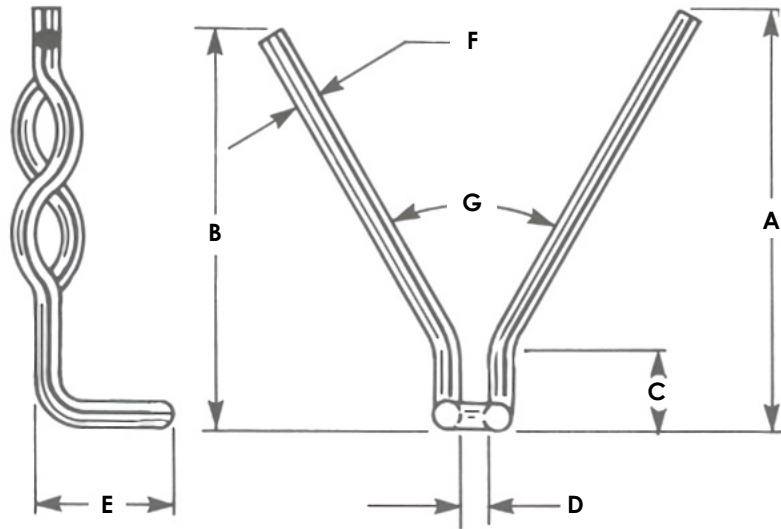
See **Accessories** for accessory detail and **Ferrule Specifications** for ferrule options.

See **Arc Stud Welding – General Information** and **Technical Details** for industry specifications, thread options, Before Weld (BW) length, flux, raw material details, plating options, annealing, load strengths and shipping weights.



RA EJ-750

RA EJ-750



Anchor							
Dash Number	A	B	C	D	E	F	G
-01	7	6-1/2	3-1/8	7/16	1-1/4	1/4	60°

To order or specify give: Stud Code, Dash Number, Material and Quantity
 Example: RA EJ-750, -01, Stainless Steel 310, 750 pcs.

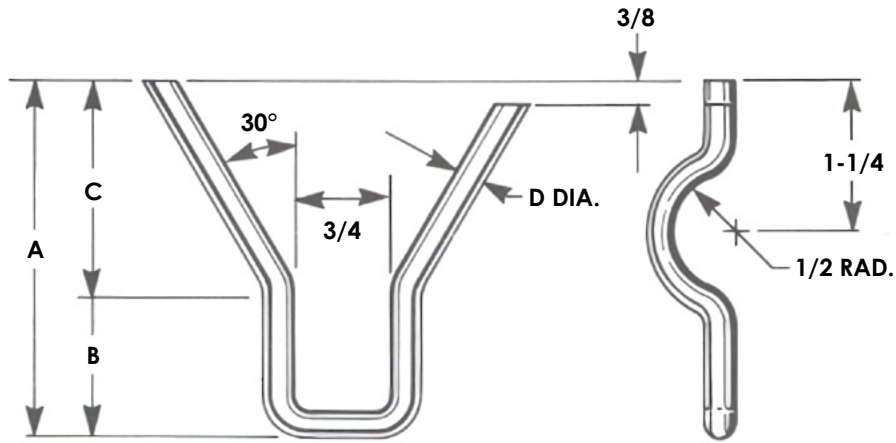
See **Accessories** for accessory detail and **Ferrule Specifications** for ferrule options.

See **Arc Stud Welding – General Information** and **Technical Details** for industry specifications, thread options, Before Weld (BW) length, flux, raw material details, plating options, annealing, load strengths and shipping weights.



RA EJ-751

RA EJ-751



Anchor									
Dash Number	A	B	C	D	Dash Number	A	B	C	D
-01	2.2	0	2.2	1/4	-06	7	2	4	1/4
-02	3	1	2	1/4	-07	8	3	5	1/4
-03	4	1	3	1/4	-08	9	4	5	1/4
-04	5	2	3	1/4	-09	10	5	5	1/4
-05	6	2	4	1/4	-10	11	6	5	1/4

To order or specify give: Stud Code, Dash Number, Material and Quantity

Example: RA EJ-751, -03, Stainless Steel 310, 750 pcs.

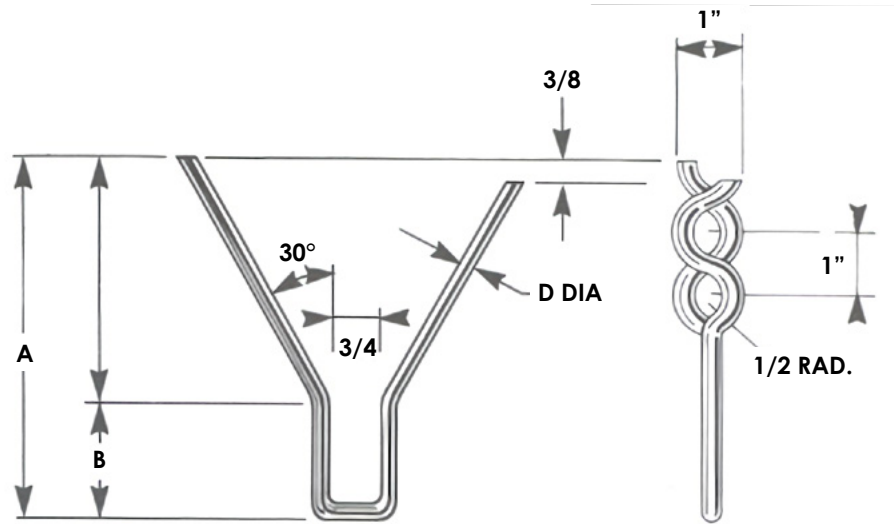
See **Accessories** for accessory detail and **Ferrule Specifications** for ferrule options.

See **Arc Stud Welding – General Information** and **Technical Details** for industry specifications, thread options, Before Weld (BW) length, flux, raw material details, plating options, annealing, load strengths and shipping weights.



RA EJ-752

RA EJ-752



Anchor									
Dash Number	A	B	C	D	Dash Number	A	B	C	D
-01	2.2	0	2.2	1/4	-06	7	2	4	1/4
-02	3	1	2	1/4	-07	8	3	5	1/4
-03	4	1	3	1/4	-08	9	4	5	1/4
-04	5	2	3	1/4	-09	10	5	5	1/4
-05	6	2	4	1/4	-10	11	6	5	1/4

To order or specify give: Stud Code, Dash Number, Material and Quantity
 Example: RA EJ-752, -05, Stainless Steel 310, 750 pcs.

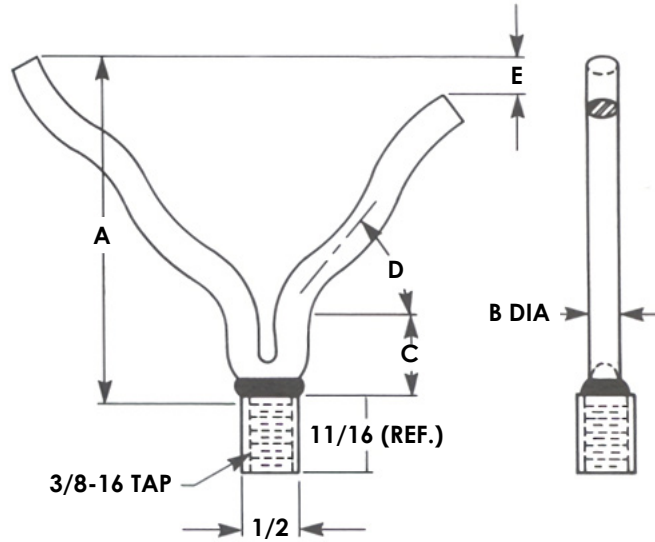
See **Accessories** for accessory detail and **Ferrule Specifications** for ferrule options.

See **Arc Stud Welding – General Information** and **Technical Details** for industry specifications, thread options, Before Weld (BW) length, flux, raw material details, plating options, annealing, load strengths and shipping weights.



RA EJ-801

RA EJ-801



Anchor					
Dash Number	A	B	C	D	E
-01	2	1/4	3/4	50°	1/2
-02	2-5/8	1/4	3/4	50°	1/2
-03	3-1/8	1/4	3/4	50°	1/2
-04	3-5/8	1/4	3/4	50°	1/2
-05	4-1/8	1/4	3/4	50°	1/2
-06	5	1/4	3/4	50°	1/2
-07	5-1/8	1/4	3/4	50°	1/2
-08	7-1/8	1/4	3/4	50°	1/2
-09	2-5/8	5/16	3/4	50°	1/2
-10	3-1/8	5/16	3/4	50°	1/2
-11	3-5/8	5/16	3/4	50°	1/2
-12	4-1/8	5/16	3/4	50°	1/2
-13	4-5/8	5/16	3/4	50°	1/2
-14	5-1/8	5/16	3/4	50°	1/2
-15	7-1/8	5/16	3/4	50°	1/2

To order or specify give: Stud Code, Dash Number, Material and Quantity
 Example: RA EJ-801, -02, Stainless Steel 310, 750 pcs.

See **Accessories** for accessory detail and **Ferrule Specifications** for ferrule options.

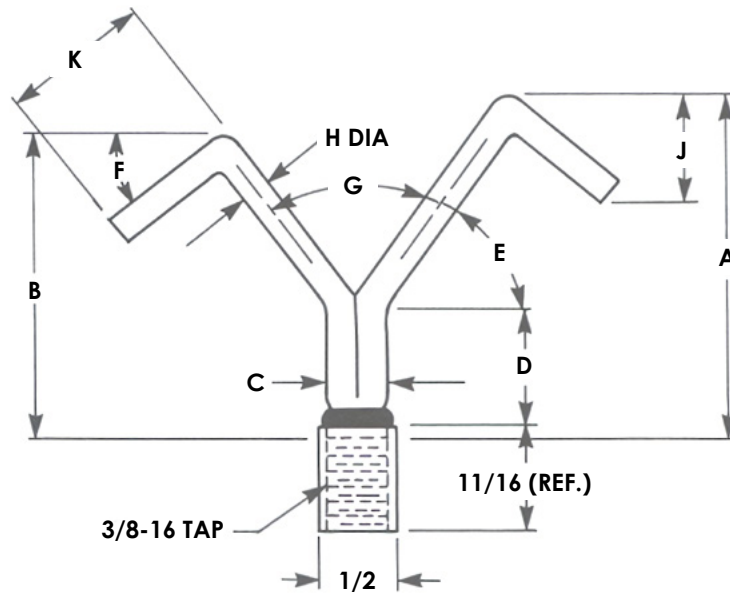
See **Arc Stud Welding – General Information** and **Technical Details** for industry specifications, thread options, Before Weld (BW) length, flux, raw material details, plating options, annealing, load strengths and shipping weights.



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RA EJ-802

RA EJ-802



Anchor										
Dash Number	A	B	C	D	E	F	G	H	J	K
-01	1-5/8	1-3/8	3/8	3/4	54°	30°	72°	3/16	9/16	15/16
-02	2-1/8	1-7/8	3/8	3/4	54°	30°	72°	3/16	9/16	15/16
-03	2-5/8	2-3/8	3/8	3/4	54°	30°	72°	3/16	9/16	15/16
-04	3-1/8	2-7/8	3/8	3/4	54°	30°	72°	3/16	9/16	15/16
-05	3-5/8	3-3/8	3/8	3/4	54°	30°	72°	3/16	9/16	15/16
-06	4-1/8	3-7/8	3/8	3/4	54°	30°	72°	3/16	9/16	15/16
-07	4-5/8	4-3/8	3/8	3/4	54°	30°	72°	3/16	9/16	15/16
-08	5-1/8	4-7/8	3/8	3/4	54°	30°	72°	3/16	9/16	15/16
-09	7-1/8	6-7/8	3/8	3/4	54°	30°	72°	3/16	9/16	15/16
-10	9-1/8	8-7/8	3/8	3/4	54°	30°	72°	3/16	9/16	15/16

To order or specify give: Stud Code, Dash Number, Material and Quantity
 Example: RA EJ-802, -05, Stainless Steel 310, 750 pcs.

See **Accessories** for accessory detail and **Ferrule Specifications** for ferrule options.

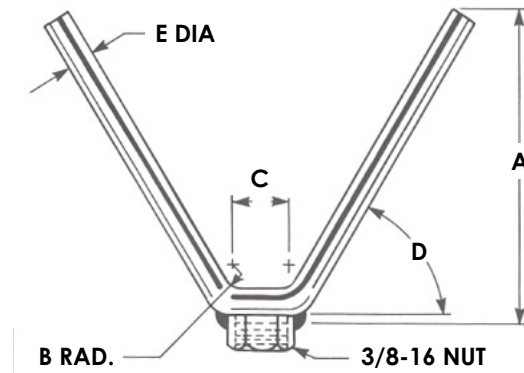
See **Arc Stud Welding – General Information** and **Technical Details** for industry specifications, thread options, Before Weld (BW) length, flux, raw material details, plating options, annealing, load strengths and shipping weights.



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RA EJ-803

RA EJ-803



Anchor					
Dash Number	A	B	C	D	E
-01	2	3/4	3/4	60°	1/8
-02	3	3/4	3/4	60°	1/8
-03	6-1/2	3/4	3/4	60°	1/8
-04	1-1/2	3/4	3/4	60°	3/16
-05	2	3/4	3/4	60°	3/16
-06	2-1/4	3/4	3/4	60°	3/16
-07	2-3/4	3/4	3/4	60°	3/16
-08	3-3/4	3/4	3/4	60°	3/16
-09	4-1/2	3/4	3/4	60°	3/16
-10	5-1/2	3/4	3/4	60°	3/16
-11	6-1/2	3/4	3/4	60°	3/16
-12	1-1/2	3/4	3/4	60°	1/4
-13	2-1/4	3/4	3/4	60°	1/4
-14	2-3/4	3/4	3/4	60°	1/4
-15	3-3/4	3/4	3/4	60°	1/4
-16	4-1/2	3/4	3/4	60°	1/4
-17	3-1/2	3/4	3/4	60°	1/4
-18	6-1/2	3/4	3/4	60°	1/4

To order or specify give: Stud Code, Dash Number, Material and Quantity

Example: RA EJ-803, -13, Stainless Steel 310, 750 pcs.

See **Accessories** for accessory detail and **Ferrule Specifications** for ferrule options.

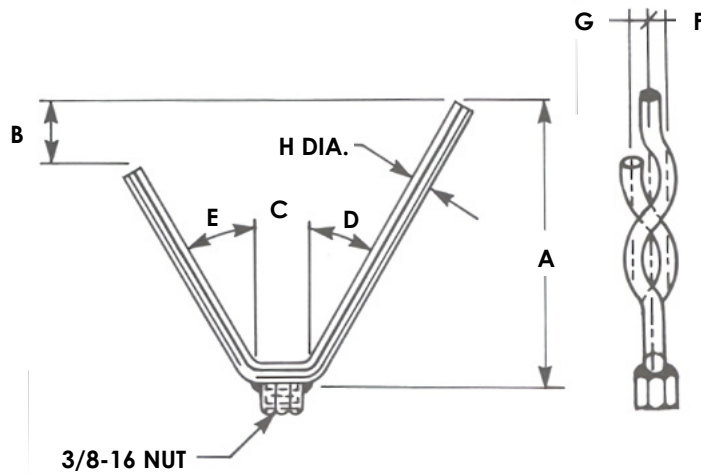
See **Arc Stud Welding – General Information** and **Technical Details** for industry specifications, thread options, Before Weld (BW) length, flux, raw material details, plating options, annealing, load strengths and shipping weights.



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RA EJ-804

RA EJ-804



Anchor								
Dash Number	A	B	C	D	E	F	G	H
-01	1-1/4	1/2	3/4	30°	30°	3/16	3/16	3/16
-02	2-1/4	1/2	3/4	30°	30°	3/16	3/16	3/16
-03	2-3/4	1/2	3/4	30°	30°	3/16	3/16	3/16
-04	3-3/4	1/2	3/4	30°	30°	3/16	3/16	3/16
-05	4-3/4	1/2	3/4	30°	30°	3/16	3/16	3/16
-06	5-3/4	1/2	3/4	30°	30°	3/16	3/16	3/16
-07	6-3/4	1/2	3/4	30°	30°	3/16	3/16	3/16
-08	1-1/4	1/2	3/4	30°	30°	3/16	3/16	1/4
-09	2-1/4	1/2	3/4	30°	30°	3/16	3/16	1/4
-10	2-3/4	1/2	3/4	30°	30°	3/16	3/16	1/4
-11	3-3/4	1/2	3/4	30°	30°	3/16	3/16	1/4
-12	4-3/4	1/2	3/4	30°	30°	3/16	3/16	1/4
-13	5-3/4	1/2	3/4	30°	30°	3/16	3/16	1/4
-14	6-3/4	1/2	3/4	30°	30°	3/16	3/16	1/4

To order or specify give: Stud Code, Dash Number, Material and Quantity
 Example: RA EJ-804, -11, Stainless Steel 310, 750 pcs.

See **Accessories** for accessory detail and **Ferrule Specifications** for ferrule options.

See **Arc Stud Welding – General Information** and **Technical Details** for industry specifications, thread options, Before Weld (BW) length, flux, raw material details, plating options, annealing, load strengths and shipping weights.



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SECTION 5

CD WELD STUDS GENERAL INFORMATION & TECHNICAL DETAILS

FOR INQUIRIES, TO PLACE ORDERS,
SERVICE AND TECHNICAL SUPPORT CONTACT
ANY OF THE FOLLOWING:

OFFICE: 1-800-462-9353
713-939-8903

EMAIL: INFO@SUNBELTSTUDWELDING.COM



website www.sunbeltstudwelding.com **email** info@sunbeltstudwelding.com
6381 Windfern Road, Houston, TX 77040 **telephone** 1.800.462.9353 - Houston 713.939.8903 **fax** 713.939.9013

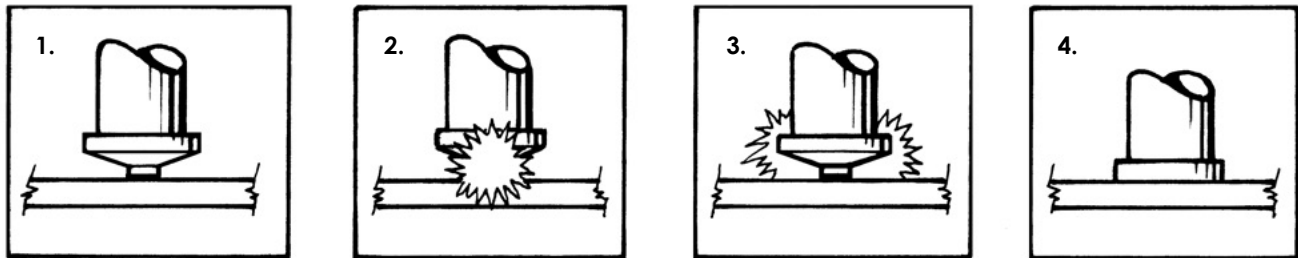
CD Weld Studs

General Information & Technical Details

CAPACITOR DISCHARGE (CD) STUD WELDING PROCESS DESCRIPTION

Process Description:

Capacitor Discharge (CD) Stud Welding involves the same basic principles and metallurgical aspects as any other arc welding procedure. When the weld gun is activated, a special precision weld tip initiates a controlled electric arc from the welder capacitor bank which melts the end of the stud and a portion of the base metal. The stud is held in place as the molten metal solidifies instantly accomplishing a high quality fusion weld.



1. The weld gun and stud are positioned against the work.
2. Stored energy is discharged through special weld "timing" tip and stud starts downward.
3. The stud is forced into the pool of molten metal.
4. Metal solidifies and weld is completed in milliseconds.

Process Advantages:

Base & Stud Material Compatibility - CD Stud Welding is compatible with just about any weldable material, and permits the welding of dissimilar metals. See Chart on the next page for further details.

Reverse-Side Marking - CD Stud Welding is generally used to weld smaller diameter studs to thin base metals, especially where reverse side marking is not permissible. Since the entire weld cycle is completed in milliseconds, welds can be made to thin material without pronounced distortion, burn-through, or reverse side discoloration. See CD Stud Reverse-Side Marking Guide.



CD Weld Studs

General Information & Technical Details

COMPATIBILITY OF BASE METAL & CD STUD MATERIAL COMBINATIONS

Base Weld Material	Stud Material			
	Mild Steel	Stainless	Aluminum	Brass
	1008, 1010, 1015, 1018	302, 304, 305	1100, 5086, 6063	70-30, 65-35
MILD STEEL: 1006 through 1030	Excellent	Excellent	—	Excellent
MEDIUM CARBON STEEL: 1030 through 1050	Good *	Good *	—	Good *
GALVANIZED SHEET DUCT OR DECKING	Excellent	Excellent	—	—
STRUCTURAL STEEL:	Excellent	Excellent	—	Excellent
STAINLESS STEEL: 405, 410, 430, AND 300 SERIES, EXCEPT 303	Excellent	Excellent	—	Excellent
LEAD FREE BRASS; ELECTROLYTIC COPPER; ROLLED COPPER	Excellent	Excellent	—	Excellent
MOST ALUMINUM ALLOYS OF THE 1100, 3000, 5000, AND 6000 SERIES **	—	—	Excellent	—
ZINC ALLOYS (die cast)	Good *	Good *	Excellent	Good *

* Good: Generally Full Strength results, depending upon the combination of stud size and base metal.

** Other materials such as 7000 Series Aluminum, titanium alloys, Inconel, etc. can be welded under specified conditions.



CD Weld Studs

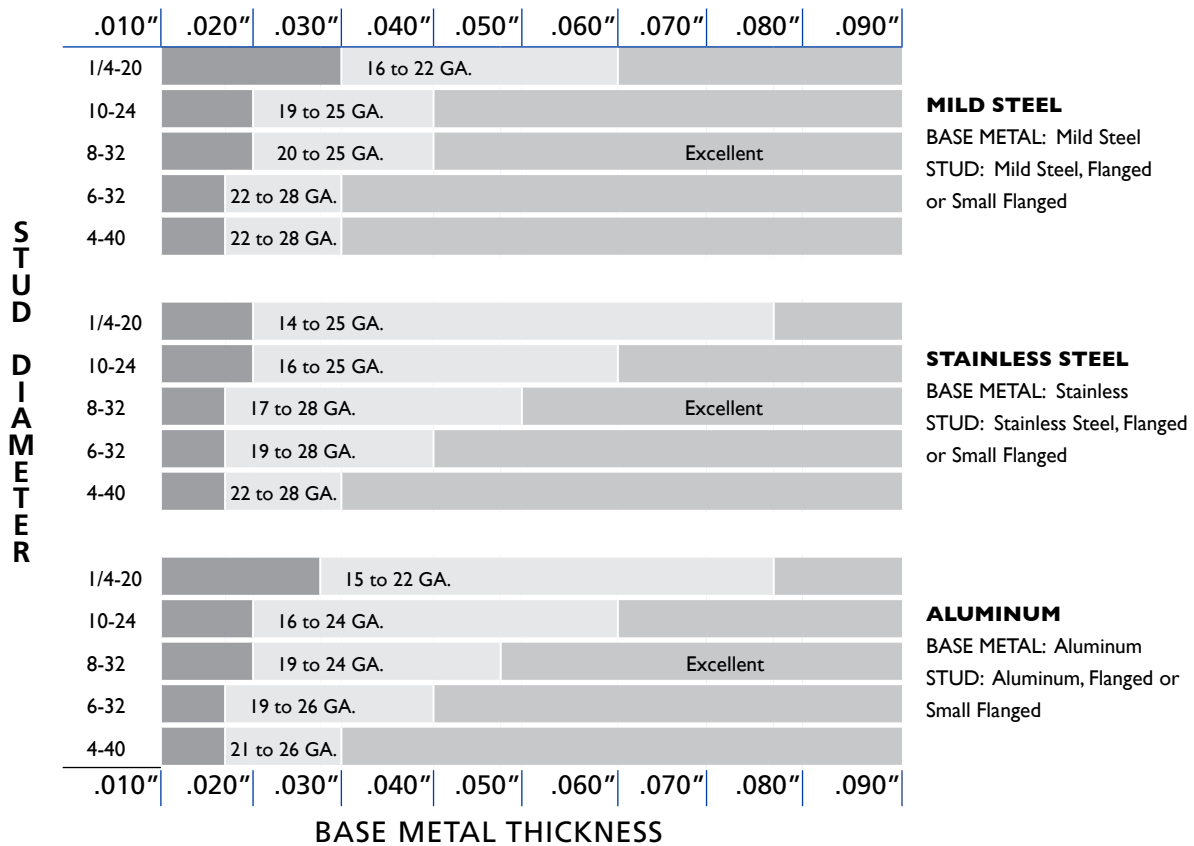
General Information & Technical Details

CD STUD REVERSE-SIDE MARKING GUIDE

The charts below will be of help in determining the best combination of stud weld base size and base metal thickness. The terms on the charts are defined as follows:

UNACCEPTABLE	Unacceptable Marking, Base Metal Failure
ACCEPTABLE	Visible Marking(s), Excellent Weld
EXCELLENT	No Marking, Excellent Weld

Additional factors that can influence the degree of reverse-side marking are tip size, weld voltage, spring pressure and the CD process used (i.e. Contact versus Gap).



CD Weld Studs

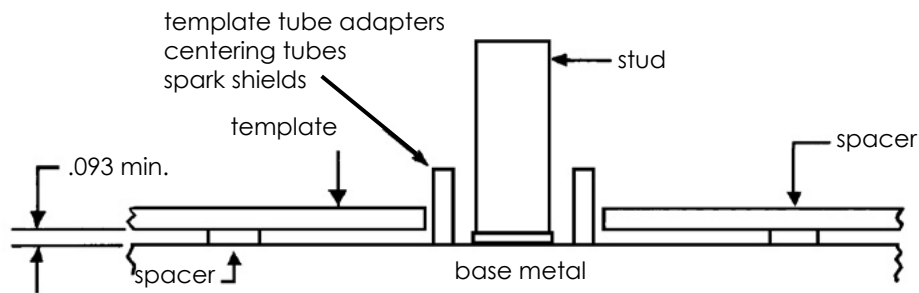
General Information & Technical Details

CD WELD STUD LOCATING OPTIONS

Template Method:

This method of templating is recommended by Sunbelt Stud Welding for use with gun attachments called "Template Tube Adapters," "Centering Tubes" and "Spark Shields."

These attachments are installed directly onto the gun or used indirectly with a CD foot. These attachments have diameters of 1", 1.25", 1.375" and 30mm. Contact your sales representative for details.



Options	Gun Mount	Foot
Template Tube Adapter - 1" Dia.	039-839	—
Template Tube Adapter - 1-1/4" Dia.	039-840	—
Center Tubes - 30mm Dia.	80-40-513	—
Spark Shield - Phenolic 1.156" Dia.	033-769L	028-833
Spark Shield - Brass 1.156" Dia.	033-769B	028-833

Scribe Method:

The operator can scribe a mark in the base metal at the location for the stud to be welded. The scribe mark can either be the center point or can be a circle. With the later, the weld base diameter of the stud would fit within the circle.

EXAMPLES: X - Locate stud in center of the X.
O - Locate stud in center of the circle.

Center Punch Method: Not Recommended

When the CD Stud Welding Process is being used, the special weld tip on the end of all CD Type studs should not be used with center punch marks as a method of locating CD Type studs.

The diameter and length of the special weld tip controls the time duration of the CD Stud Welding Process and is absolutely critical in obtaining welds that develop full fastener strength. Accordingly, the introduction of a center punch mark interferes with the timing of the CD Stud Welding process and will result in weld failures.

There is an automatic center punch available that will work to ensure each punch mark depth is identical to avoid weld failures. (Ask a Sunbelt Team Member for more information.)



CD Weld Studs

General Information & Technical Details

CD WELD STUDS – TECHNICAL DETAILS

Threaded & No Thread CD Weld Studs: Sunbelt Stud Welding has various sizes of externally and internally threaded weld studs and various shapes and size of no thread weld studs. These weld studs are used in various construction, automotive and industrial applications.

Threads: The chart below depicts the thread standards for imperial and metric external and internal threads. Unless requested or quoted otherwise, threads will be quoted based on these common thread standards.

Unless indicated or quoted otherwise, external threads will be a rolled type thread. The strength and surface finish of rolled threads are considered to be superior to cut type threads.

	External Threads	Internal Threads
Imperial Threads - Coarse	UNC-2A	UNC-2B
Imperial Threads - Fine	UNF-2A	UNF-2B
Metric Threads	Class 6g	Class 6H

Auto Feed Quality (AFQ): All CD weld studs are available in auto feed quality. This allows for usage in auto feed stud welding systems. Auto feed hand guns and weld heads are available with the power source(s) and feeding equipment for incorporation into automated CNC and robotic systems.

Auto feed quality should be requested at the time of quotation.

Material: The chart below depicts the common material types with corresponding typical tensile strengths used to produce CD Weld Studs.

Material Type(s)	Typical Tensile Strength	
	Ultimate (psi)	Yield (psi)
Mild Steel C1006 -C1018 range	55,000	35,000
Stainless Steel 18-8 (302HQ & 304)	75,000	30,000
Aluminum Alloy 5356 & 5154	40,000	29,000
Aluminum Alloy 1100	21,000	20,000
Copper Alloy (Brass) CDA 260 & CDA 268	50,000	30,000

Note, all external threaded mild steel CD studs are copper flashed / plated.



CD Weld Studs

General Information & Technical Details

CD WELD STUDS – TECHNICAL DETAILS – (CONTINUED)

Plating: For mild steel studs, copper plating is standard for externally threaded studs. Upon request Nickel, Zinc and other plating's are available.

Annealing: All low carbon steel and stainless steel studs are annealed where required.

Weld Base: CD Studs are available in the Flanged, Small-Flanged and Non-Flanged condition.

Length Reduction: CD Studs have no appreciable length reduction after welding.

Shielding: The CD Process does not utilize ferrules or arc shields as with the Arc Stud Welding Process.

Generally shielding gas is not required.

Welding Position: CD Studs can easily be welded in the down hand, side hand and overhead positions.

Other: For further details please see the following sections:

CD Stud Welding Guidelines - (page 5.8)

CD Stud Weld Inspection - Visual - (page 5.9)

CD Stud Weld Inspection - Mechanical (torque values) - (page 5.10 - 5.13)

CD Weld Stud Weight Charts - (page 5.14)

CD Weld Studs - Standard Stock Sizes - (page 5.15 - 5.19)



CD Weld Studs

General Information & Technical Details

CD STUD WELDING GUIDELINES

The following guidelines should be followed for producing and maintaining good CD Stud Welds:

- Ensure the stud welding equipment is capable of welding the stud size intended to be welded.
- Ensure the Stud Welding Equipment is in proper working order and that all cable and ground connections are tight.
- Weld surface cleanliness. The surface should be free from excessive oils, grease and other lubricants and from rust, mill scale, and other oxides. These conditions contribute to high electrical resistance in areas of welding and grounding.
- Weld surface imperfections, such as extreme roughness, which can prevent complete fusion in the weld area and or interfere with the time duration of the process, should be avoided.
- The stud axis must be perpendicular to the work surface to obtain complete fusion.
- Proper weld end design of the stud is necessary. The tip size, weld base diameter and face angle must be correct for the application.
- The operator should follow the equipment manufacturer's setup parameters (i.e.. Weld voltage, Spring pressure, Plunge and when using GAP or Drawn Arc Method, Lift).
- Visually inspect all welds for 360 degree weld flash. See next page for illustrations of Good, Cold and Hot welds. If a questionable weld is evident after the welds have been visually inspected, the weld should be mechanically tested.
- Mechanically test 2 welded studs at the start of each shift and change in stud size.
- Mechanical Testing of CD stud welds should be done by bend testing or torque testing. The tests are used to establish welding conditions and qualify production studs. The stud and or weld may be tensile tested and or submitted to other forms of destructive or non-destructive testing as the application requires.
- The bend test should be performed by bending the stud 30 degrees by striking with a hammer or, preferably, bending with a pipe.
- Torque values are given in the subsequent table for various stud materials and stud diameters.



CD Weld Studs

General Information & Technical Details

CD STUD WELD INSPECTION - VISUAL

The CD stud weld can be visually inspected by observing the weld flash at the base of the stud. The illustrations and comments below are intended to assist in visually judging the quality of the weld. For assistance, contact Sunbelt Stud Welding.



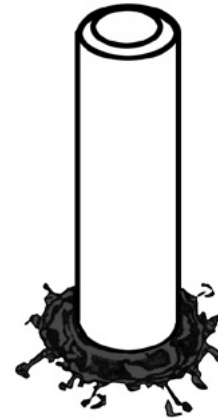
Good Weld

Full, even, shiny weld flash all around stud.



Cold Weld

No or uneven weld flash around weld stud.



Hot Weld

Large crater, excessive metal expulsion with shiny appearance.



CD Weld Studs

General Information & Technical Details

CD STUD WELD INSPECTION - MECHANICAL - TENSILE / TORQUE STRENGTHS

The following 3 pages of charts contain CD weld stud - Tensile / Torque Strengths. The data was calculated based on the formulas shown below. These formulas and the notes below are considered integral parts of the Tensile/Torque Strength charts that follow.

Tensile Load	L = SA
Torque	T = 0.2 x D x L
META*	A = Pi/4 x [D - (0.9743/N)]

A = Mean Effective Thread Area (META)*	D = Nominal Thread Diameter
L = Tensile Load Pounds	N = Threads Per Inch
S = Tensile Stress in PSI	T = Torque in Inch Pounds

* META is used instead of root area in calculating screw strengths because of closer correlation with actual tensile strength. META is based on mean diameter, which is diameter of an imaginary coaxial cylinder whose surface would pass through the thread profile approximately midway between the minor and pitch diameters.

** Please note, in actual practice a stud should not be used at its yield load. A factor of safety must be applied. It is generally recommended that studs be used at no more than 60% of yield. However the factor of safety may vary up or down, depending on the application. **The user will determine the appropriate safety factor.**

*** Please note, Torque figures based on assumption that excessive deformation of thread has not taken relationship between torque/tension out of its proportional range.

Shear values were calculated at 75% of the Ultimate Tensile Load of the stud.

See next 3 pages for charts on Tensile and Torque Strengths

**** & *** Applies to subsequent Tensile / Torque Strength Charts.**



CD Weld Studs

General Information & Technical Details

CD STUD WELD INSPECTION - MECHANICAL - TENSILE / TORQUE STRENGTHS

Low Carbon Steel - 55,000 PSI Min. Tensile, 35,000 PSI Min. Yield					
Thread Size	Yield Load (lbs.)**	Ultimate Tensile Load (lbs.)	Yield Torque (inch lbs.)***	Ultimate Torque (inch lbs.)***	Shear Strength (75% of Tensile Load)
4-40	211	332	5	7	249
6-32	318	500	9	14	375
8-32	490	770	16	25	578
10-24	614	964	23	37	723
10-32	700	1,100	27	42	825
1/4-20	1,120	1,760	56	88	1,320
5/16-18	1,820	2,860	114	179	2,145
3/8-16	2,695	4,235	202	318	3,176
M3 - .50	269	423	6	10	317
M4 - .70	469	737	15	23	553
M5 - .80	759	1,192	30	47	894
M6 - 1.00	1,085	1,705	51	81	1,279
M8 - 1.25	1,960	3,080	123	194	2,310
M10 - 1.50	3,106	4,881	245	384	3,661

Stainless Steel - 75,000 PSI Min. Tensile, 30,000 PSI Min. Yield					
Thread Size	Yield Load (lbs.)**	Ultimate Tensile Load (lbs.)	Yield Torque (inch lbs.)***	Ultimate Torque (inch lbs.)***	Shear Strength (75% of Tensile Load)
4-40	181	452	4	10	339
6-32	273	682	8	19	511
8-32	420	1,050	14	34	788
10-24	526	1,315	20	50	986
10-32	600	1,500	23	57	1,125
1/4-20	954	2,385	48	119	1,789
5/16-18	1,560	3,900	97	244	2,925
3/8-16	2,325	5,813	174	436	4,359
M3 - .50	230	576	5	14	432
M4 - .70	402	1,005	13	32	754
M5 - .80	650	1,626	26	64	1,220
M6 - 1.00	930	2,325	44	110	1,744
M8 - 1.25	1,680	4,200	106	265	3,150
M10 - 1.50	2,663	6,656	210	524	4,992

** & *** For footnote details see first page of CD Stud Weld Inspection - Mechanical



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CD Weld Studs

General Information & Technical Details

CD STUD WELD INSPECTION - MECHANICAL - TENSILE / TORQUE STRENGTHS

Standard CD Weld Studs - Tensile / Torque Strengths					
Aluminum 5356 / 5154 - 40,000 PSI Min. Tensile, 29,000 PSI Min. Yield					
Thread Size	Yield Load (lbs.)**	Ultimate Tensile Load (lbs.)	Yield Torque (inch lbs.)***	Ultimate Torque (inch lbs.)***	Shear Strength (75% of Tensile Load)
4-40	175	241	4	5	181
6-32	264	363	7	10	273
8-32	406	560	13	18	420
10-24	508	701	19	27	526
10-32	580	800	22	30	600
1/4-20	928	1,280	46	64	960
5/16-18	1,508	2,080	94	130	1,560
3/8-16	2,233	3,080	167	231	2,310
M3 - .50	223	307	5	7	230
M4 - .70	389	536	12	17	402
M5 - .80	629	867	25	34	650
M6 - 1.00	899	1,240	42	59	930
M8 - 1.25	1,624	2,240	102	141	1,680
M10 - 1.50	2,574	3,550	203	280	2,663

Aluminum 1100 - 21,000 PSI Min. Tensile, 20,000 PSI Min. Yield					
Thread Size	Yield Load (lbs.)**	Ultimate Tensile Load (lbs.)	Yield Torque (inch lbs.)***	Ultimate Torque (inch lbs.)***	Shear Strength (75% of Tensile Load)
4-40	121	127	3	3	95
6-32	182	191	5	5	143
8-32	280	294	9	10	221
10-24	351	368	13	14	276
10-32	400	420	15	16	315
1/4-20	636	668	32	33	501
5/16-18	1,040	1,092	65	68	819
3/8-16	1,550	1,628	116	122	1,221
M3 - .50	154	161	4	4	121
M4 - .70	268	281	8	9	211
M5 - .80	434	455	17	18	341
M6 - 1.00	620	651	29	31	488
M8 - 1.25	1,120	1,176	71	74	882
M10 - 1.50	1,775	1,864	140	147	1,398

** & *** For footnote details see first page of CD Stud Weld Inspection - Mechanical



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CD Weld Studs

General Information & Technical Details

CD STUD WELD INSPECTION - MECHANICAL - TENSILE / TORQUE STRENGTHS

Standard CD Weld Studs - Tensile / Torque Strengths					
Brass - 50,000 PSI Min. Tensile, 30,000 PSI Min. Yield					
Thread Size	Yield Load (lbs.)**	Ultimate Tensile Load (lbs.)	Yield Torque (inch lbs.)***	Ultimate Torque (inch lbs.)***	Shear Strength (75% of Tensile Load)
4-40	181	302	4	7	226
6-32	273	454	8	13	341
8-32	420	700	14	23	525
10-24	526	877	20	33	657
10-32	600	1,000	23	38	750
1/4-20	960	1,600	48	80	1,200
5/16-18	1,560	2,600	98	163	1,950
3/8-16	2,310	3,850	173	289	2,888
M3 - .50	230	384	5	9	288
M4 - .70	402	670	13	21	503
M5 - .80	650	1,084	26	43	813
M6 - 1.00	930	1,550	44	73	1,163
M8 - 1.25	1,680	2,800	106	176	2,100
M10 - 1.50	2,663	4,438	210	349	3,328

** & *** For footnote details see first page of CD Stud Weld Inspection - Mechanical



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CD Weld Studs

General Information & Technical Details

WEIGHT CHARTS - CD FLANGED MILD STEEL STUDS

Threaded Studs In Pounds Per 1,000 Pieces							
Length	4-40	6-32	8-32	10-24	1/4-20	5/16-18	3/8-16
1/4	0.7	1.0	1.4	1.8	3.1	—	—
3/8	0.9	1.4	1.9	2.5	4.4	7.0	9.5
1/2	1.2	1.8	2.5	3.2	5.7	9.1	12.6
5/8	1.4	2.1	3.0	3.9	7.0	11.1	15.7
3/4	1.7	2.5	3.6	4.6	8.2	13.2	18.8
7/8	1.9	2.9	4.2	5.4	9.5	15.3	21.9
1	2.2	3.3	4.7	6.1	10.8	17.4	25.8
1-1/4	2.7	4.0	5.8	7.5	13.4	21.5	31.3
1-1/2	3.2	4.8	6.9	8.9	16.0	25.7	37.5
1-3/4	3.6	5.5	8.0	10.4	18.5	29.8	43.8
2	4.1	6.3	9.2	11.8	21.1	34.0	50.0
2-1/4	4.6	7.0	10.3	13.2	23.7	38.1	56.3
2-1/2	5.1	7.8	11.4	14.6	26.3	42.3	62.5
Ea.Add. Inch	2.0	3.0	4.4	5.7	10.3	16.6	25.0

Non-Threaded Studs In Pounds Per 1,000 Pieces							
Length	3/32	1/8	5/32	3/16	1/4	5/16	3/8
1/4	0.7	1.1	1.6	2.2	3.9	—	—
3/8	0.9	1.5	2.3	3.2	5.6	8.7	11.8
1/2	1.2	1.9	2.9	4.2	7.4	11.4	15.7
5/8	1.4	2.4	3.6	5.2	9.1	14.1	19.6
3/4	1.6	2.8	4.3	6.1	10.8	16.8	23.5
7/8	1.9	3.2	5.0	7.1	12.6	19.5	27.4
1	2.1	3.7	5.7	8.1	14.3	22.3	31.3
1-1/4	2.6	4.5	7.0	10.0	17.8	27.7	39.1
1-1/2	3.1	5.4	8.4	12.0	21.3	33.1	47.0
1-3/4	3.6	6.3	9.7	14.0	24.8	38.5	54.8
2	4.0	7.2	11.1	15.9	28.3	44.0	62.6
2-1/4	4.5	8.0	12.4	17.9	31.8	49.4	70.4
2-1/2	5.0	8.9	13.8	19.8	35.2	54.8	78.3
Each additional inch	1.9	3.5	5.4	7.8	13.9	21.7	30.5



CD Weld Studs

General Information & Technical Details

CD WELD STUDS – STANDARD STOCK SIZES

The following pages indicate the THREADED CD Weld Studs that are considered to be “Standard Stock Sizes.” This means that 99% of the time these studs will be in stock.

The information on the following pages does not cover the vast inventory of CD Weld Studs that are:

- “Threaded CD Weld Studs” NOT Considered to be “Standard Stock Sizes” that are in stock.
- Non Threaded CD Weld Studs that are in stock.
- Other Styles of CD Weld Studs that are in stock.
- Contact Sunbelt Stud Welding for assistance.

(continued on next page)



CD Weld Studs

General Information & Technical Details

CD WELD STUDS – STANDARD STOCK SIZES

Y = in stock

Thread Size	Stud Length	Mild Steel		Stainless Steel		Aluminum	
		Flanged	Non-Flanged	Flanged	Non-Flanged	Flanged	Non-Flanged
4 - 40	X 1/4	Y		Y	Y		
	X 5/16	Y		Y			
	X 3/8	Y	Y	Y	Y	Y	
	X 1/2		Y	Y	Y		
	X 5/8			Y			
	X 3/4	Y		Y		Y	
	X 7/8			Y			
	X 1			Y			
	X 1-1/4	Y					
	6 - 32	X 1/4	Y		Y		
X 5/16				Y			
X 3/8		Y		Y	Y	Y	
X 1/2		Y		Y	Y	Y	
X 5/8		Y		Y			
X 3/4		Y		Y	Y	Y	
X 7/8				Y			
X 1		Y		Y	Y	Y	
X 1-1/4		Y		Y			
X 1-1/2		Y		Y		Y	
8 - 32	X 2	Y		Y		Y	
	X 1/4	Y		Y		Y	Y
	X 5/16		Y				
	X 3/8	Y	Y	Y	Y	Y	
	X 1/2	Y	Y	Y	Y	Y	
	X 5/8	Y	Y	Y			
	X 3/4	Y	Y	Y	Y		
	X 7/8	Y		Y			
	X 1	Y		Y		Y	
	X 1-1/4	Y		Y			
	X 1-1/2	Y		Y	Y	Y	
	X 1-3/4						
	X 2	Y		Y		Y	

(continued on next page)



CD Weld Studs

General Information & Technical Details

CD WELD STUDS – STANDARD STOCK SIZES . . . CONTINUED

Y = in stock

Thread Size	Stud Length	Mild Steel		Stainless Steel		Aluminum	
		Flanged	Non-Flanged	Flanged	Non-Flanged	Flanged	Non-Flanged
10 - 24	X 1/4	Y		Y			
	X 5/16						
	X 3/8	Y	Y	Y	Y	Y	
	X 1/2	Y	Y	Y	Y	Y	
	X 5/8	Y		Y			
	X 3/4	Y	Y	Y	Y	Y	
	X 7/8			Y	Y		
	X 1	Y	Y	Y		Y	Y
	X 1-1/4	Y		Y			
	X 1-1/2	Y		Y		Y	
	X 1-3/4			Y			
	X 2	Y		Y		Y	
	X 3	Y					
	10 - 32	X 1/4	Y	Y	Y	Y	Y
X 5/16				Y			
X 3/8		Y	Y	Y	Y	Y	
X 7/16							
X 1/2		Y		Y	Y	Y	
X 5/8		Y		Y	Y		
X 3/4		Y	Y	Y	Y	Y	
X 7/8							
X 1		Y		Y	Y	Y	Y
X 1-1/4		Y		Y	Y		
X 1-1/2		Y		Y		Y	
X 1-3/4		Y		Y			
X 2						Y	
1/4 - 20		X 1/4					
	X 3/8	Y	Y	Y	Y	Y	Y
	X 1/2	Y	Y	Y	Y	Y	
	X 5/8	Y		Y	Y	Y	
	X 3/4	Y	Y	Y	Y	Y	
	X 7/8	Y		Y	Y		
	X 1	Y	Y	Y	Y	Y	
	X 1-1/4					Y	
	X 1-3/8						
	X 1-1/2			Y	Y	Y	
	X 1-3/4	Y	Y	Y			
	X 2	Y		Y	Y	Y	
	X 2-1/4						
	X 2-1/2	Y		Y			
	X 3	Y		Y		Y	

(continued on next page)

CD Weld Studs

General Information & Technical Details

CD WELD STUDS – STANDARD STOCK SIZES . . . CONTINUED

Y = in stock

Thread Size	Stud Length	Mild Steel		Stainless Steel		Aluminum	
		Flanged	Non-Flanged	Flanged	Non-Flanged	Flanged	Non-Flanged
5/16 - 18	X 1/2	Y		Y	Y		
	X 5/8			Y			
	X 3/4	Y		Y	Y		
	X 7/8						
	X 1	Y		Y	Y		
	X 1-1/4	Y		Y	Y		
	X 1-1/2	Y		Y			
	X 1-3/4			Y			
	X 2	Y		Y			
	3/8 - 16	X 1/2	Y		Y	Y	
X 3/4		Y		Y	Y		Y
X 1		Y	Y	Y	Y		Y
X 1-1/4		Y		Y	Y		
X 1-1/2		Y		Y	Y		
X 2		Y		Y			
M3	X 6		Y	Y			
	X 8	Y	Y	Y			
	X 10	Y		Y			
	X 12	Y		Y			
	X 16	Y					
	X 20	Y		Y		Y	
	X 25	Y		Y			
M4	X 6			Y	Y		
	X 8	Y			Y		
	X 10	Y		Y	Y		
	X 12	Y	Y	Y			
	X 15						
	X 16	Y		Y	Y		
	X 20	Y		Y		Y	
	X 25	Y		Y			
	X 30	Y	Y				
	X 35						
X 40			Y				

(continued on next page)



CD Weld Studs

General Information & Technical Details

CD WELD STUDS – STANDARD STOCK SIZES . . . CONTINUED

Y = in stock

Thread Size	Stud Length	Mild Steel		Stainless Steel		Aluminum		
		Flanged	Non-Flanged	Flanged	Non-Flanged	Flanged	Non-Flanged	
M5	X 6							
	X 8	Y		Y				
	X 10	Y		Y				
	X 12	Y	Y	Y	Y			
	X 15	Y		Y				
	X 16	Y		Y				
	X 20	Y		Y				
	X 25	Y		Y				
	X 30	Y		Y				
	X 35							
	X 40							
	X 50							
	M6	X 10	Y	Y	Y			
		X 12	Y		Y	Y		
X 15		Y		Y	Y			
X 16		Y	Y	Y	Y			
X 20		Y	Y	Y				
X 25		Y		Y				
X 30		Y		Y				
X 35		Y						
X 40		Y		Y				
M8	X 12	Y		Y				
	X 15							
	X 16			Y				
	X 20	Y		Y				
	X 25	Y		Y				
	X 30			Y				
	X 35							





SECTION 6
CD WELD STUDS

FOR INQUIRIES, TO PLACE ORDERS,
SERVICE AND TECHNICAL SUPPORT CONTACT
ANY OF THE FOLLOWING:

OFFICE: 1-800-462-9353
713-939-8903

EMAIL: INFO@SUNBELTSTUDWELDING.COM



website www.sunbeltstudwelding.com **email** info@sunbeltstudwelding.com
6381 Windfern Road, Houston, TX 77040 **telephone** 1.800.462.9353 - Houston 713.939.8903 **fax** 713.939.9013

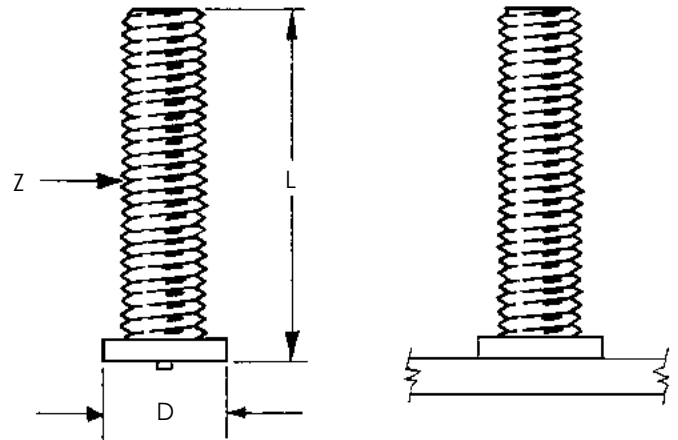
CD Weld Studs

CDF – CD THREADED FLANGED WELD STUDS – TECHNICAL DETAILS

The Capacitor Discharge (CD) Stud Welding process is designed for welding CD type studs to sheet metal with little to no reverse side marking.

The Arc - Short Cycle process is also used to weld CD type studs to sheet metal and plate.

For application, dimensional and technical assistance, please contact Sunbelt Stud Welding.



Stud Specifications				Standard Accessories				
Thread Size	Stud Diameter	Flange Diameter	Min. Length	B Collet Standard 1-3/8" Long	B Collet Short 1-3/16" Long	Long Collet 2-3/8" Long	Euro Collet 1.80" Long	Collet Inserts 1-3/4" Long
C	Z	D	L	P/N *	P/N *	P/N **	P/N	P/N ***
4-40	0.112	0.187	0.250	CDB-010	CDB-010A	CDBN-010	CDBS-010	CI-010-XXX
6-32	0.138	0.218	0.250	CDB-013	CDB-013A	CDBN-013	CDBS-013	CI-013-XXX
8-32	0.164	0.250	0.250	CDB-015	CDB-015A	CDBN-015	CDBS-015	CI-015-XXX
10-24	0.190	0.250	0.250	CDB-018	CDB-018A	CDBN-018	CDBS-018	CI-018-XXX
10-32	0.190	0.250	0.250	CDB-018	CDB-018A	CDBN-018	CDBS-018	CI-018-XXX
1/4-20	0.250	0.312	0.250	CDB-025	CDB-025A	CDBN-025	CDBS-025	CI-025-XXX
5/16-18	0.312	0.375	0.500	CDB-031	CDB-031A	CDBN-031	CDBS-031	CI-031-XXX
3/8-16	0.375	0.437	0.500	CDB-037	CDB-037A	CDBN-037	CDBS-037	CI-037-XXX

* Note, requires B Stop, see Accessories for details

** Note, Requires Long Style Stops, see Accessories for details

*** Note, Collet Inserts are specific to stud length, see Accessories for details

To order or specify give: Stud Code, C x L, Material and Quantity
 Example: CDF, 10-24 x 1.00, Aluminum, 5000 pcs.

See **Accessories** for accessory details. See **CD Stud Welding General Information** and **Technical Details** for process description, material combinations, reverse-side marking, locating options, technical details, guidelines, torque values, weight charts and standard stock sizes.



CD Weld Studs

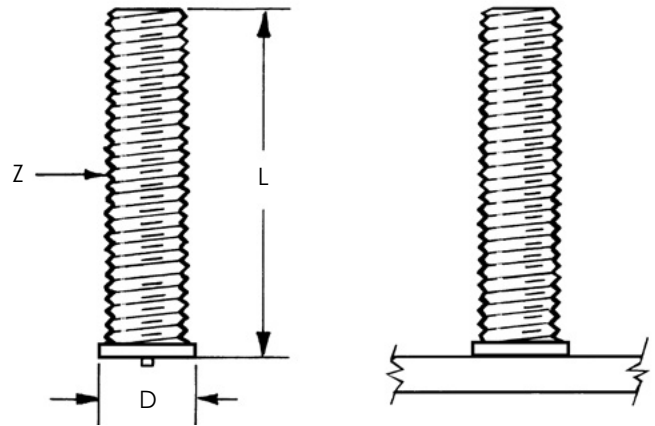
CDS – CD THREADED SMALL FLANGED WELD STUDS – TECHNICAL DETAILS

The Capacitor Discharge (CD) Stud Welding process is designed for welding CD type studs to sheet metal with little to no reverse side marking.

The Arc - Short Cycle process is also used to weld CD type studs to sheet metal and plate.

The smaller flange diameter allows for smaller diameter holes in components to be mounted on welded studs.

For assistance contact Sunbelt Stud Welding.



Stud Specifications				Standard Accessories				
Thread Size	Stud Diameter	Flange Diameter	Min. Length	B Collet Standard 1-3/8" Long	B Collet Short 1-3/16" Long	Long Collet 2-3/8" Long	Euro Collet 1.80" Long	Collet Inserts 1-3/4" Long
C	Z	D	L	P/N *	P/N *	P/N **	P/N	P/N ***
4-40	0.112	0.143	0.250	CDB-010	CDB-010A	CDBN-010	CDBHBS-010	CI-010-XXX
6-32	0.138	0.169	0.250	CDB-013	CDB-013A	CDBN-013	CDBHBS-013	CI-013-XXX
8-32	0.164	0.195	0.250	CDB-015	CDB-015A	CDBN-015	CDBHBS-015	CI-015-XXX
10-24	0.190	0.221	0.250	CDB-018	CDB-018A	CDBN-018	CDBHBS-018	CI-018-XXX
10-32	0.190	0.221	0.250	CDB-018	CDB-018A	CDBN-018	CDBHBS-018	CI-018-XXX
1/4-20	0.250	0.281	0.250	CDB-025	CDB-025A	CDBN-025	CDBHBS-025	CI-025-XXX
5/16-18	0.312	0.342	0.500	CDB-031	CDB-031A	CDBN-031	CDBHBS-031	CI-031-XXX
3/8-16	0.375	0.406	0.500	CDB-037	CDB-037A	CDBN-037	CDBHBS-037	CI-037-XXX

* Note, requires B Stop, see Accessories for details

** Note, Requires Long Style Stops, see Accessories for details

*** Note, Collet Inserts are specific to stud length, see Accessories for details

To order or specify give: Stud Code, C x L, Material and Quantity

Example: CDMF, 1/4-20 x 0.75, Stainless Steel, 5000 pcs.

See **Accessories** for accessory details. See **CD Stud Welding General Information** and **Technical Details** for process description, material combinations, reverse-side marking, locating options, technical details, guidelines, torque values, weight charts and standard stock sizes.



website www.sunbeltstudwelding.com email info@sunbeltstudwelding.com
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CD Weld Studs

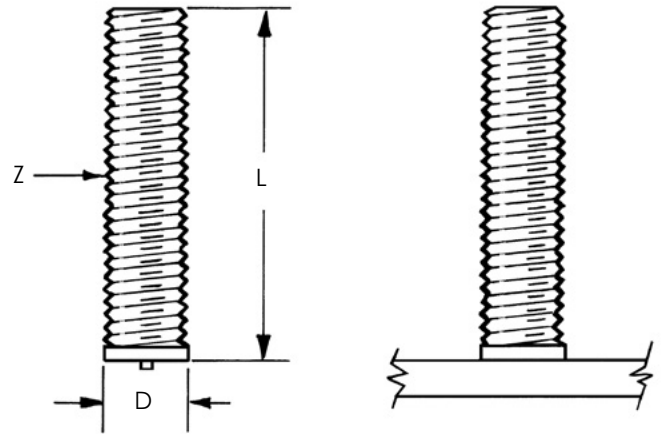
CDN - CD THREADED NON FLANGED WELD STUDS - TECHNICAL DETAILS

The Capacitor Discharge (CD) Stud Welding process is designed for welding CD type studs to sheet metal with little to no reverse side marking.

The Arc - Short Cycle process is also used to weld CD type studs to sheet metal and plate.

The smaller flange diameter allows for smaller diameter holes in components to be mounted on welded studs.

For assistance contact Sunbelt Stud Welding.



Stud Specifications				Standard Accessories				
Thread Size	Stud Diameter	Flange Diameter	Min. Length	B Collet Standard 1-3/8" Long	B Collet Short 1-3/16" Long	Long Collet 2-3/8" Long	Euro Collet 1.80" Long	Collet Inserts 1-3/4" Long
C	Z	D	L	P/N *	P/N *	P/N **	P/N	P/N ***
4-40	0.112	0.116	0.250	CDB-010	CDB-010A	CDBN-010	CDBS-010	CI-010-XXX
6-32	0.138	0.142	0.250	CDB-013	CDB-013A	CDBN-013	CDBS-013	CI-013-XXX
8-32	0.164	0.168	0.250	CDB-015	CDB-015A	CDBN-015	CDBS-015	CI-015-XXX
10-24	0.190	0.194	0.250	CDB-018	CDB-018A	CDBN-018	CDBS-018	CI-018-XXX
10-32	0.190	0.194	0.250	CDB-018	CDB-018A	CDBN-018	CDBS-018	CI-018-XXX
1/4-20	0.250	0.252	0.250	CDB-025	CDB-025A	CDBN-025	CDBS-025	CI-025-XXX
5/16-18	0.312	0.315	0.500	CDB-031	CDB-031A	CDBN-031	CDBS-031	CI-031-XXX
3/8-16	0.375	0.380	0.500	CDB-037	CDB-037A	CDBN-037	CDBS-037	CI-037-XXX

* Note, requires B Stop, see Accessories for details

** Note, Requires Long Style Stops, see Accessories for details

*** Note, Collet Inserts are specific to stud length, see Accessories for details

To order or specify give: Stud Code, C x L, Material and Quantity

Example: CDN, 10-24 x 0.50, Mild Steel, 2500 pcs.

See **Accessories** for accessory details. See **CD Stud Welding General Information** and **Technical Details** for process description, material combinations, reverse-side marking, locating options, technical details, guidelines, torque values, weight charts and standard stock sizes.



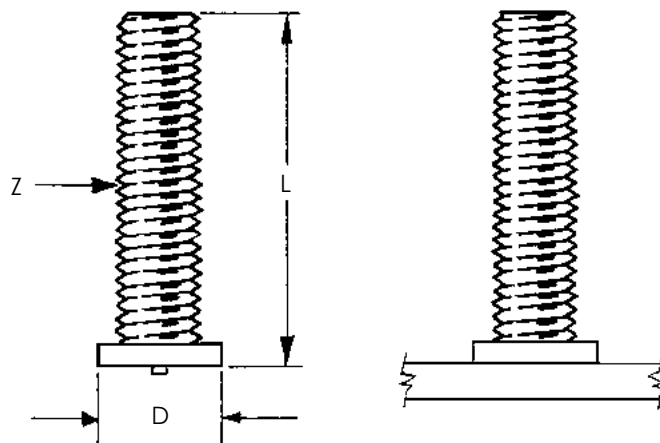
CD Weld Studs

CMF – CD METRIC FLANGED WELD STUDS – TECHNICAL DETAILS

The Capacitor Discharge (CD) Stud Welding process is designed for welding CD type studs to sheet metal with little to no reverse side marking.

The Arc - Short Cycle process is also used to weld CD type studs to sheet metal and plate.

For application, dimensional and technical assistance, please contact Sunbelt Stud Welding.



Stud Specifications				Standard Accessories		
Thread Size	Stud Diameter	Flange Diameter	Min. Length	B Collet Standard 1-3/8" Long	Long Collet 2-3/8" Long	Euro Collet 1.80 Long
C	Z	D	L	P/N *	P/N **	P/N
M3 - .50	0.118	0.197	6mm	CDB-003M	CDBN-003M	CDBS-003M
M4 - .70	0.158	0.236	6mm	CDB-004M	CDBN-004M	CDBS-004M
M5 - .80	0.197	0.276	10mm	CDB-005M	CDBN-005M	CDBS-005M
M6 - 1.00	0.236	0.315	10mm	CDB-006M	CDBN-006M	CDBS-006M
M8 - 1.25	0.315	0.413	12mm	CDB-008M	CDBN-008M	CDBS-008M
M10 - 1.50	0.394	0.465	12mm	CDB-010M	CDBN-010M	CDBS-010M
* Note, requires B Stop, see Accessories for details						
** Note, Requires Long Style Stops, see Accessories for details						

To order or specify give: Stud Code, C x L, Material and Quantity
Example: CMF, M8-1.25 X 20mm, Stainless Steel, 5000 pcs.

See **Accessories** for accessory details. See **CD Stud Welding General Information** and **Technical Details** for process description, material combinations, reverse-side marking, locating options, technical details, guidelines, torque valves, weight charts and standard stock sizes.



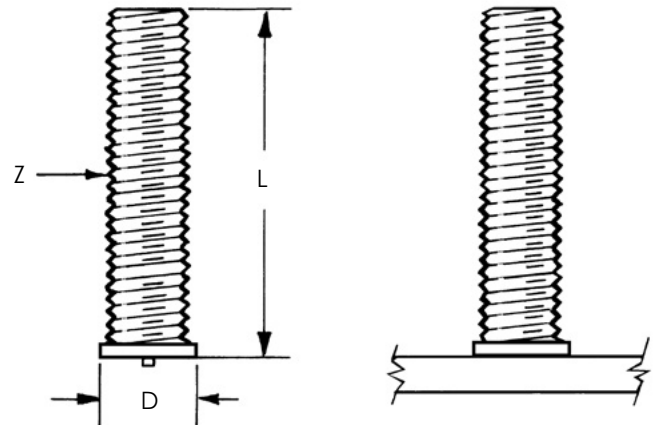
CD Weld Studs

CMS – CD METRIC SMALL FLANGED WELD STUDS – TECHNICAL DETAILS

The Capacitor Discharge (CD) Stud Welding process is designed for welding CD type studs to sheet metal with little to no reverse side marking.

The Arc - Short Cycle process is also used to weld CD type studs to sheet metal and plate.

The smaller flange diameter allows for smaller diameter holes in components to be mounted on welded studs.



Stud Specifications				Standard Accessories		
Thread Size	Stud Diameter	Flange Diameter	Min. Length	B Collet Standard 1-3/8" Long	Long Collet 2-3/8" Long	Euro Collet 1.80 Long
C	Z	D	L	P/N *	P/N **	P/N
M3 - .50	0.118	0.148	6mm	CDB-003M	CDBN-003M	CDBS-003M
M4 - .70	0.158	0.187	6mm	CDB-004M	CDBN-004M	CDBS-004M
M5 - .80	0.197	0.226	10mm	CDB-005M	CDBN-005M	CDBS-005M
M6 - 1.00	0.236	0.266	10mm	CDB-006M	CDBN-006M	CDBS-006M
M8 - 1.25	0.315	0.344	12mm	CDB-008M	CDBN-008M	CDBS-008M
M10 - 1.50	0.394	0.427	12mm	CDB-010M	CDBN-010M	CDBS-010M
* Note, requires B Stop, see Accessories for details						
** Note, Requires Long Style Stops, see Accessories for details						

To order or specify give: Stud Code, C x L, Material and Quantity

Example: CMS, M5-.80 x 25mm, Mild Steel, 3000 pcs.

See **Accessories** for accessory details. See **CD Stud Welding General Information** and **Technical Details** for process description, material combinations, reverse-side marking, locating options, technical details, guidelines, torque values, weight charts and standard stock sizes.



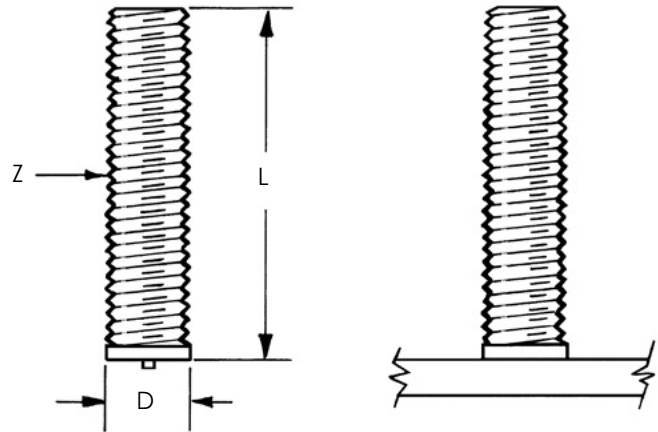
CD Weld Studs

CMN - CD METRIC NON FLANGED WELD STUDS - TECHNICAL DETAILS

The Capacitor Discharge (CD) Stud Welding process is designed for welding CD type studs to sheet metal with little to no reverse side marking.

The Arc - Short Cycle process is also used to weld CD type studs to sheet metal and plate.

The smaller flange diameter allows for smaller diameter holes in components to be mounted on welded studs.



Stud Specifications				Standard Accessories		
Thread Size	Stud Diameter	Flange Diameter	Min. Length	B Collet Standard 1-3/8" Long	Long Collet 2 -3/8" Long	Euro Collet 1.80" Long
C	Z	D	L	P/N *	P/N **	P/N
M3 - .50	0.118	0.120	6mm	CDB-003M	CDBN-003M	CDBS-003M
M4 - .70	0.158	0.160	6mm	CDB-004M	CDBN-004M	CDBS-004M
M5 - .80	0.197	0.199	10mm	CDB-005M	CDBN-005M	CDBS-005M
M6 - 1.00	0.236	0.238	10mm	CDB-006M	CDBN-006M	CDBS-006M
M8 - 1.25	0.315	0.316	12mm	CDB-008M	CDBN-008M	CDBS-008M
M10 - 1.50	0.394	0.395	12mm	CDB-010M	CDBN-010M	CDBS-010M
* Note, requires B Stop, see Accessories for details						
** Note, Requires Long Style Stops, see Accessories for details						

To order or specify give: Stud Code, C x L, Material and Quantity

Example: CMN, M6 - 1.00 x 12mm, Stainless Steel, 3000 pcs.

See **Accessories** for accessory details. See **CD Stud Welding General Information** and **Technical Details** for process description, material combinations, reverse-side marking, locating options, technical details, guidelines, torque values, weight charts and standard stock sizes.



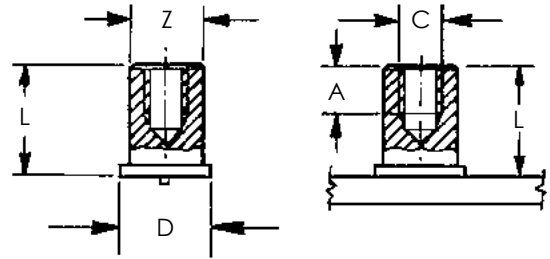
CD Weld Studs

CIT - CD INTERNALLY THREADED, FLANGED (TAPPED PADS) - TECHNICAL DETAILS

CIT flanged weld studs provide greater strength over non flanged studs when welded to thinner sheet.

For application, dimensional and technical assistance, contact Sunbelt Stud Welding.

For CIT Flanged studs with imperial taps, contact Sunbelt Stud Welding.



Stud Specifications					Standard Accessories		
Tap Size	Tap Depth	Flange Diameter	Stud Diameter	Length Range	B Collet Standard 1-3/8" Long	Long Collet 2-3/8" Long	Euro Collet 1.80" Long
C	A	D	Z	L	P/N *	P/N **	P/N
M3 - .50	0.197	0.256	0.197	6 - 30mm	CDB-005M	CDBN-005M	CDBS-005M
M3 - .50	0.236	0.295	0.236	8 - 30mm	CDB-006M	CDBN-006M	CDBS-006M
M4 - .70	0.236	0.295	0.236	8 - 30mm	CDB-006M	CDBN-006M	CDBS-006M
M5 - .80	0.295	0.354	0.280	10 - 30mm	CA	CA	CDBS-007M
* Note, requires B Stop, see Accessories for details							
** Note, Requires Long Style Stops, see Accessories for details							
CA - Check Availability, not standard stock items							

To order or specify give: Stud Code, Z x L, C, Material and Quantity

Example: CIT, .236 x 12mm, M4, Stainless Steel, 6000 pcs.

See **Accessories** for accessory details. See **CD Stud Welding General Information** and **Technical Details** for process description, material combinations, reverse-side marking, locating options, technical details, guidelines, torque values, weight charts and standard stock sizes.

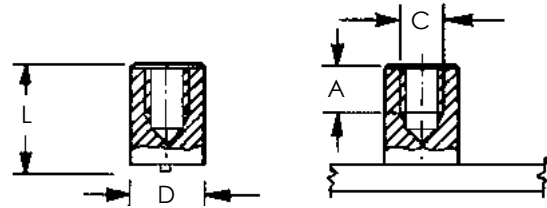


CD Weld Studs

CIN - CD INTERNALLY THREADED, NON FLANGED (TAPPED PADS) - TECHNICAL DETAILS

CIN non flanged weld studs are available in mild steel, stainless steel and aluminum materials. As CIN weld studs are typically made to order, metric taps and other dimensions should be specified.

For application, dimensional and technical assistance, contact Sunbelt Stud Welding.



Stud Specifications				Standard Accessories		
Tap Size	Minimum Tap Depth	Min. Stud Diameter	Min. Length	B Collet Standard 1-3/8" Long	Long Collet 2-3/8" Long	Euro Collet 1.80" Long
C	A	D	L	P/N *	P/N **	P/N
6-32	0.197	0.190	0.315	CDB-018	CDBN-018	CDBS-018
8-32	0.236	0.250	0.315	CDB-025	CDBN-025	CDBS-025
10-24	0.295	0.250	0.394	CDB-025	CDBN-025	CDBS-025
10-32	0.295	0.250	0.394	CDB-025	CDBN-025	CDBS-025
1/4-20	0.375	0.312	0.437	CDB-031	CDBN-031	CDBS-031
5/16-18	0.437	0.375	0.500	CDB-037	CDBN-037	CDBS-037
* Note, requires B Stop, see Accessories for details						
** Note, Requires Long Style Stops, see Accessories for details						
Note, Collets listed above based on Min. Stud Diameter shown above						

To order or specify give: Stud Code, C x L, D x A, Material and Quantity

Example: CIN, .250 x 1, 10-32 x .375, Stainless Steel, 1200 pcs.

See **Accessories** for accessory details. See **CD Stud Welding General Information** and **Technical Details** for process description, material combinations, reverse-side marking, locating options, technical details, guidelines, torque values, weight charts and standard stock sizes.



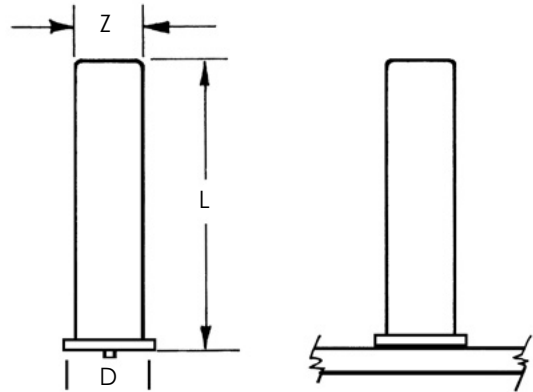
CD Weld Studs

CNF – CD NO THREAD FLANGED WELD STUDS – TECHNICAL DETAILS

The Capacitor Discharge (CD) Stud Welding process is designed for welding CD type studs to sheet metal with little to no reverse side marking.

The Arc - Short Cycle process is also used to weld CD type studs to sheet metal and plate.

For assistance contact Sunbelt Stud Welding.



Stud Specifications			Standard Accessories				
Stud Diameter	Flange Diameter	Min. Length	B Collet Standard 1-3/8" Long	B Collet Short 1-3/16" Long	Long Collet 2-3/8" Long	Euro Collet 1.80" Long	Collet Inserts 1-3/4" Long
Z	D	L	P/N *	P/N *	P/N **	P/N	P/N ***
0.094	0.174	0.250	CA	CA	CA	CA	CA
0.112	0.187	0.250	CDB-010	CDB-010A	CDBN-010	CDBS-010	CI-010-XXX
0.125	0.187	0.250	CDB-012	CDB-012A	CDBN-012	CDBS-012	CS
0.138	0.218	0.250	CDB-013	CDB-013A	CDBN-013	CDBS-013	CI-013-XXX
0.156	0.250	0.250	CDB-004M	CDB-004AM	CDBN-004M	CDBS-004M	CA
0.164	0.250	0.250	CDB-015	CDB-015A	CDBN-015	CDBS-015	CI-015-XXX
0.188	0.250	0.250	CDB-018	CDB-018A	CDBN-018	CDBS-018	CI-018-XXX
0.215	0.312	0.250	CA	CA	CA	CA	CA
0.250	0.312	0.250	CDB-025	CDB-025A	CDBN-025	CDBS-025	CI-025-XXX
0.273	0.375	0.375	CA	CA	CA	CA	CA
0.312	0.375	0.500	CDB-031	CDB-031A	CDBN-031	CDBS-031	CI-031-XXX
0.375	0.437	0.500	CDB-037	CDB-037A	CDBN-037	CDBS-037	CI-037-XXX

* Note, requires B Stop, see Accessories for details ** Note, Requires Long Style Stops, see Accessories for details

*** Note, Collet Inserts are specific to stud length, see Accessories for details

CA - Check Availability, not standard stock items

To order or specify give: Stud Code, Z x L, Material and Quantity
 Example: CNF, 0.312 x 0.75, Stainless Steel, 5000 pcs.

See **Accessories** for accessory details. See **CD Stud Welding General Information** and **Technical Details** for process description, material combinations, reverse-side marking, locating options, technical details, guidelines, torque valves, weight charts and standard stock sizes.



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CD Weld Studs

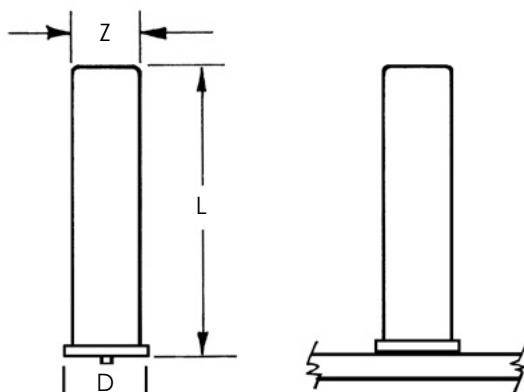
CNS - CD NO THREAD SMALL FLANGED WELD STUDS - TECHNICAL DETAILS

The Capacitor Discharge (CD) Stud Welding process is designed for welding CD type studs to sheet metal with little to no reverse side marking.

The Arc - Short Cycle process is also used to weld CD type studs to sheet metal and plate.

The smaller flange diameter allows for smaller diameter holes in components to be mounted on welded studs.

For assistance contact Sunbelt Stud Welding.



Stud Specifications			Standard Accessories				
Stud Diameter	Flange Diameter	Min. Length	B Collet Standard 1-3/8" Long	B Collet Short 1-3/16" Long	Long Collet 2-3/8" Long	Euro Collet 1.80" Long	Collet Inserts 1-3/4" Long
Z	D	L	P/N *	P/N *	P/N **	P/N	P/N ***
0.094	0.143	0.250	CA	CA	CA	CA	CA
0.112	0.156	0.250	CDB-010	CDB-010A	CDBN-010	CDBS-010	CI-010-XXX
0.125	0.156	0.250	CDB-012	CDB-012A	CDBN-012	CDBS-012	CS
0.138	0.195	0.250	CDB-013	CDB-013A	CDBN-013	CDBS-013	CI-013-XXX
0.156	0.221	0.250	CDB-004M	CDB-004AM	CDBN-004M	CDBS-004M	CA
0.164	0.221	0.250	CDB-015	CDB-015A	CDBN-015	CDBS-015	CI-015-XXX
0.188	0.221	0.250	CDB-018	CDB-018A	CDBN-018	CDBS-018	CI-018-XXX
0.215	0.281	0.250	CA	CA	CA	CA	CA
0.250	0.281	0.250	CDB-025	CDB-025A	CDBN-025	CDBS-025	CI-025-XXX
0.273	0.343	0.375	CA	CA	CA	CA	CA
0.312	0.343	0.500	CDB-031	CDB-031A	CDBN-031	CDBS-031	CI-031-XXX
0.375	0.406	0.500	CDB-037	CDB-037A	CDBN-037	CDBS-037	CI-037-XXX

* Note, requires B Stop, see Accessories for details ** Note, Requires Long Style Stops, see Accessories for details
 *** Note, Collet Inserts are specific to stud length, see Accessories for details CA - Check Availability, not standard stock items

To order or specify give: Stud Code, Z x L, Material and Quantity
 Example: CNS, 0.25 x 0.50, Mild Steel, 5000 pcs.

See **Accessories** for accessory details. See **CD Stud Welding General Information** and **Technical Details** for process description, material combinations, reverse-side marking, locating options, technical details, guidelines, torque valves, weight charts and standard stock sizes.



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CD Weld Studs

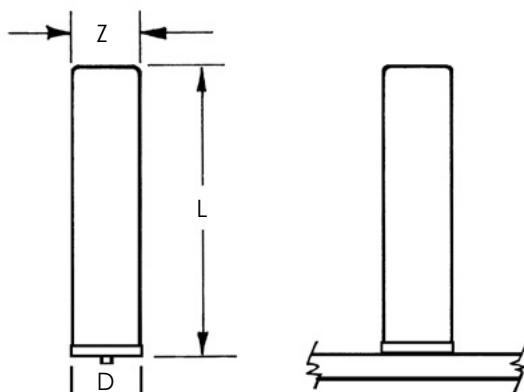
CNN - CD NO THREAD NON FLANGED WELD STUDS - TECHNICAL DETAILS

The Capacitor Discharge (CD) Stud Welding process is designed for welding CD type studs to sheet metal with little to no reverse side marking.

The Arc - Short Cycle process is also used to weld CD type studs to sheet metal and plate.

The smaller flange diameter allows for smaller diameter holes in components to be mounted on welded studs.

For assistance contact Sunbelt Stud Welding.



Stud Specifications			Standard Accessories				
Stud Diameter	Flange Diameter	Min. Length	B Collet Standard 1-3/8" Long	B Collet Short 1-3/16" Long	Long Collet 2-3/8" Long	Euro Collet 1.80 Long	Collet Inserts 1-3/4" Long
Z	D	L	P/N *	P/N *	P/N **	P/N	P/N ***
0.094	0.094	0.250	CA	CA	CA	CA	CA
0.112	0.112	0.250	CDB-010	CDB-010A	CDBN-010	CDBS-010	CI-010-XXX
0.125	0.125	0.250	CDB-012	CDB-012A	CDBN-012	CDBS-012	CS
0.138	0.138	0.250	CDB-013	CDB-013A	CDBN-013	CDBS-013	CI-013-XXX
0.156	0.156	0.250	CDB-004M	CDB-004AM	CDBN-004M	CDBS-004M	CA
0.164	0.164	0.250	CDB-015	CDB-015A	CDBN-015	CDBS-015	CI-015-XXX
0.188	0.188	0.250	CDB-018	CDB-018A	CDBN-018	CDBS-018	CI-018-XXX
0.215	0.215	0.250	CA	CA	CA	CA	CA
0.250	0.250	0.250	CDB-025	CDB-025A	CDBN-025	CDBS-025	CI-025-XXX
0.273	0.273	0.375	CA	CA	CA	CA	CA
0.312	0.312	0.500	CDB-031	CDB-031A	CDBN-031	CDBS-031	CI-031-XXX
0.375	0.375	0.500	CDB-037	CDB-037A	CDBN-037	CDBS-037	CI-037-XXX

* Note, requires B Stop, see Accessories for details

** Note, Requires Long Style Stops, see Accessories for details

*** Note, Collet Inserts are specific to stud length, see Accessories for details

CA - Check Availability, not standard stock items

To order or specify give: Stud Code, Z x L, Material and Quantity

Example: CNN, 0.156 x 0.625, Mild Steel, 5000 pcs.

See **Accessories** for accessory details. See **CD Stud Welding General Information** and **Technical Details** for process description, material combinations, reverse-side marking, locating options, technical details, guidelines, torque values, weight charts and standard stock sizes.



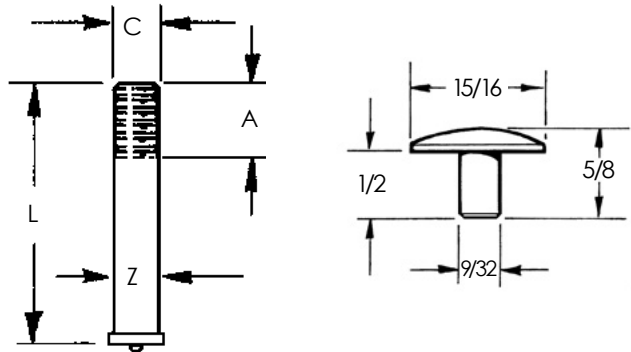
CD Weld Studs

CAR – CD ANNULAR RING (NAVY) STUDS –TECHNICAL DETAILS

CAR weld studs are available in mild steel and stainless steel materials.

CAR weld studs are used to install insulation materials. After the stud is welded in place, the insulation is impaled over the stud and then a Mushroom Navy Cap is installed onto the stud with a hammer. The cap is now locked onto the stud.

For application, dimensional and in stock assistance contact Sunbelt Stud Welding.



Stud Specifications				Standard Accessories				
Nominal Diameter	Groove Diameter	Groove Length	Min. Length	B Collet Standard 1-3/8" Long	B Collet Short 1-3/16" Long	Long Collet 2-3/8" Long	Euro Collet 1.80 Long	Collet Inserts 1-3/4" Long
Z	C	A	L	P/N *	P/N *	P/N **	P/N	P/N ***
0.188	0.175	0.312	0.750	CDB-018	CDB-018A	CDBN-018	CDBS-018	CI-010-XXX
* Note, requires B Stop, see Accessories for details								
** Note, Requires Long Style Stops, see Accessories for details								
*** Note, Collet Inserts are specific to stud length, see accessories for details.								

To order or specify give: Stud Code, Z x L, Material and Quantity
 Example: CAR, .188 x .75, Mild Steel, 2000 pcs.

Materials

Low Carbon Steel - conforms to MIL-S-24149 (Tensile 60,000 PSI min. and yield 50,000 PSI min.)

Copper Plating is standard

Stainless Steel - conforms to MIL-S-24149 (Tensile 85,000 PSI min. and yield 40,000 PSI min.)

Recommended Hardware:	Part Number
Mushroom Navy Cap - Aluminum	AR-001
To order indicate P/N and Quantity - item sold separately	

See **Accessories** for accessory details. See **CD Stud Welding General Information** and **Technical Details** for process description, material combinations, reverse-side marking, locating options, technical details, guidelines, torque valves, weight charts and standard stock sizes.

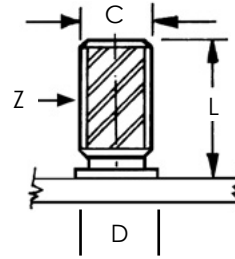


CD Weld Studs

CMP – CD METRIC PAINT CLEARING WELD STUDS – TECHNICAL DETAILS

Paint Clearing (CMP) weld studs are designed to be welded in place, processed through powder coat and then accept a nut. This eliminates the need to cap studs prior to powder coat. Available in mild steel material.

For application, dimensional and technical assistance contact Sunbelt Stud Welding.



Stud Specifications				Standard Accessories		
Thread Size	Stud Diameter	Flange Diameter	Min. Length	B Collet Standard 1-3/8" Long	Long Collet 2-3/8" Long	Euro Collet 1.80" Long
C	Z	D	L	P/N *	P/N **	P/N
M4 - .70	0.158	0.236	6mm	CDB-004M	CDBN-004M	CDBS-004M
M5 - .80	0.197	0.276	10mm	CDB-005M	CDBN-005M	CDBS-005M
M6 - 1.00	0.236	0.315	10mm	CDB-006M	CDBN-006M	CDBS-006M
M8 - 1.25	0.315	0.413	12mm	CDB-008M	CDBN-008M	CDBS-008M
* Note, requires B Stop, see Accessories for details						
** Note, Requires Long Style Stops, see Accessories for details						

To order or specify give: Stud Code, C x L, Material and Quantity

Example: CMP, M6-1.00 X 15mm, Mild Steel, 4500 pcs.

See **Accessories** for accessory details. See **CD Stud Welding General Information** and **Technical Details** for process description, material combinations, reverse-side marking, locating options, technical details, guidelines, torque valves, weight charts and standard stock sizes.



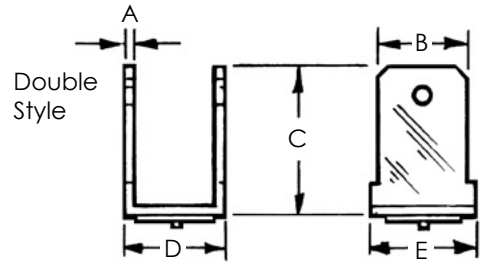
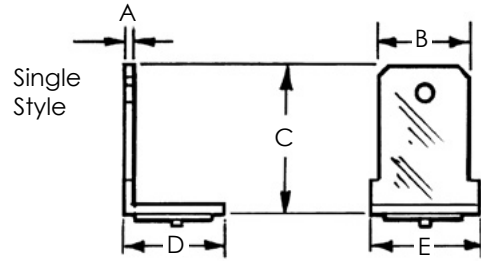
CD Weld Studs

CGS & CGD – CD GROUND STUDS – SINGLE & DOUBLE – TECHNICAL DETAILS

The CGS & CGD weld studs are stud welded in place using the CD Process. After welding in place the "Push On" style electrical terminal connectors are installed on either of these studs.

For application, dimensional and technical assistance contact Sunbelt Stud Welding.

For additional weld studs used as grounding studs see CDF, CMF, CGT and SCM stud codes.



Stud Specifications							Std. Acc.
Stud Code	Material	Thickness A	Width B	Height C	Base Width D	Base Length E	Euro Collet P/N
CGS Single	Mild Steel	0.032	0.250	0.460	0.375	0.320	82-50-050
	Stainless						
	Brass						
CGD Double	Mild Steel	0.032	0.250	0.460	0.438	0.320	82-50-050
	Stainless						
	Brass						

To order or specify give: Stud Code, Material and Quantity
 Example: CGS or CGD, Stainless Steel, 3000 pcs.

See **Accessories** for accessory details. See **CD Stud Welding General Information** and **Technical Details** for process description, material combinations, reverse-side marking, locating options, technical details, guidelines, torque values, weight charts and standard stock sizes.



CD Weld Studs

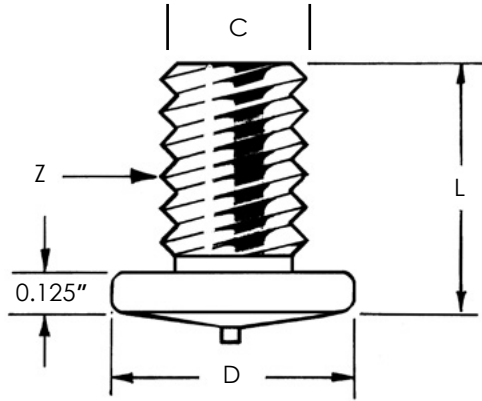
CGT - CD GROUND WELD STUDS - TECHNICAL DETAILS

The (CGT) CD Ground Weld Studs provide a larger than normal flange diameter to assist in obtaining a better ground connection than standard flanged CD studs.

CGT studs are welded in place using CD type equipment and Arc - short cycle type equipment.

CGT weld studs are available in mild and stainless steel materials.

For application, dimensional and technical assistance contact Sunbelt Stud Welding.



Stud Specifications				Standard Accessories		
Thread Size	Stud Diameter	Flange Diameter	Length	B Collet Standard 1-3/8" Long	Long Collet 2-3/8" Long	Euro Collet 1.80" Long
C	Z	D	L ***	P/N *	P/N **	P/N
1/4-20	0.250	0.500	0.590	CDB-025	CDBN-025	CDBS-025
M6 - 1.00	0.236	0.500	0.630	CDB-006M	CDBN-006M	CDBS-006M
M8 - 1.25	0.315	0.500	0.630	CDB-008M	CDBN-008M	CDBS-008M
* Note, requires B Stop, see Accessories for details						
** Note, Requires Long Style Stops, see Accessories for details						
*** Note, these are considered standard lengths, other lengths are special order						

To order or specify give: Stud Code, C, Material and Quantity
Example: CGT, 1/4-20, Mild Steel, 1,000 pcs.

See **Accessories** for accessory details. See **CD Stud Welding General Information** and **Technical Details** for process description, material combinations, reverse-side marking, locating options, technical details, guidelines, torque values, weight charts and standard stock sizes.



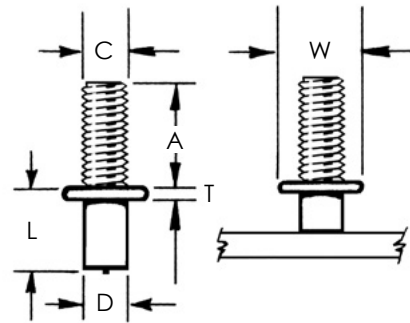
CD Weld Studs

CDC – CD THREADED COLLAR WELD STUDS – TECHNICAL DETAILS

CDC weld studs are available in mild steel and stainless steel.

CDC weld studs are used to provide a spacer between the base metal and the attached part.

For application, dimensional, in stock and welding assistance contact Sunbelt Stud Welding.



Stud Specifications						Standard Accessories		
Base Diameter	Min. Length	Max. Thread Diameter	Std. Thread Length	Collar Diameter	Collar Thickness	B Collet Standard 1-3/8" Long	Long Collet 2-3/8" Long	Euro Collet 1.80" Long
D	L	C	A	W	T	P/N *	P/N **	P/N
0.160	0.375	10-24	0.500	0.436	0.062	CDB-018	CDBN-018	CDBS-018
0.160	0.375	10-32	0.500	0.436	0.062	CDB-018	CDBN-018	CDBS-018
0.215	0.375	1/4 - 20	0.500	0.500	0.093	CDB-025	CDBN-025	CDBS-025
0.275	0.375	5/16 - 18	0.625	0.562	0.093	CDB-031	CDBN-031	CDBS-031
0.330	0.375	3/8 - 16	0.625	0.625	0.093	CDB-037	CDBN-037	CDBS-037
* Note, may require B Stop, see Accessories for details								
** Note, may require Long Style Stops, see Accessories for details								
Note, limited stock on CDC studs with metric threads								

To order or specify give: Stud Code, C x L, D x A, Material and Quantity

Example: CDC, .330 x 1 w/ 3/8-16 x 5/8, Mild Steel, 2800 pcs.

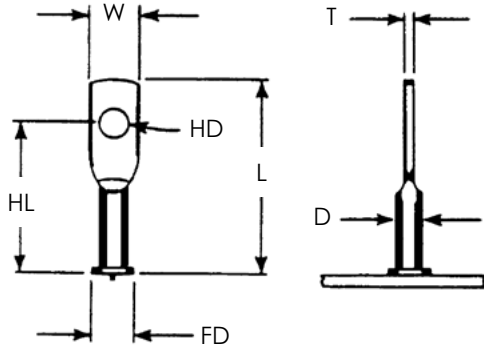
See **Accessories** for accessory details. See **CD Stud Welding General Information** and **Technical Details** for process description, material combinations, reverse-side marking, locating options, technical details, guidelines, torque values, weight charts and standard stock sizes.



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CD Studs - Flanged Acoustical Hanger

CD STUDS: FLANGED ACOUSTICAL HANGER



STUD						
D	L	FD	HD	HL	W	T
.168	1-1/8	.250	.187	7/8	5/16	1/16
.214	1-1/8	.312	.187	7/8	3/8	5/64

	MILD STEEL	STAINLESS STEEL
MATERIAL	C - 0.23% max. P - 0.04% max. Mn - 0.90% max. S - 0.05% max.	AISI grade - 304/305 std. Other grades available upon request.
MECHANICAL PROPERTIES	Tensile - 60,000 psi (min.) Yield - 50,000 psi (min.)	Tensile - 85,000 psi (min.) Yield - 40,000 psi (min.)
PLATING	Copper plating is standard	Does not apply to Stainless

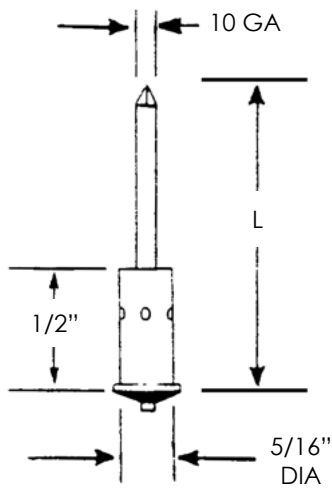
To order or specify give: Stud Code, Diameter, Material and Quantity
 Example: CD F-AH, .168, Mild Steel, 2800 pcs.

See **Accessories** for accessory details. See **CD Stud Welding General Information** and **Technical Details** for process description, material combinations, reverse-side marking, locating options, technical details, guidelines, torque values, weight charts and standard stock sizes.



CD Studs - Pin Bi-Metallic

CD STUDS: PIN BI-METALLIC



MATERIAL	PIN Stainless Steel	BASE Aluminum - (5000 Series)
WASHER	Self-Locking washers are available in a variety of sizes, shapes and materials.	

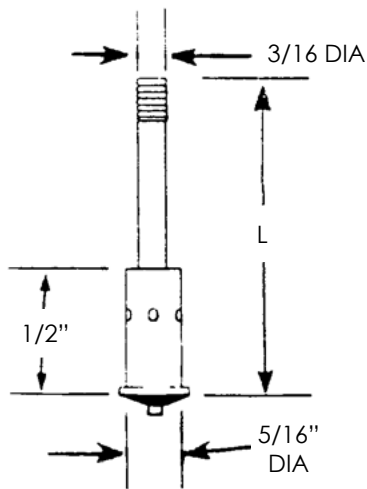
To order or specify give: Product Code, Material and Quantity
Example: CB BM-P, Stainless Steel, 1000 pcs.

See **Accessories** for accessory details. See **CD Stud Welding General Information** and **Technical Details** for process description, material combinations, reverse-side marking, locating options, technical details, guidelines, torque values, weight charts and standard stock sizes.



CD Studs - Annular Ring Bi-Metallic

CD STUDS: ANNULAR RING BI-METALLIC



MATERIAL	PIN Stainless Steel	BASE Aluminum - (5000 Series)
CAP	The cap for use with this stud is the WCNAR CAP, annular ring cap.	

To order or specify give: Product Code, Material and Quantity
Example: CD BM-AR, Stainless Steel, 1000 pcs.

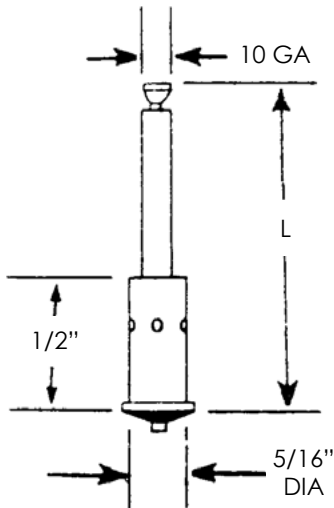
See **Accessories** for accessory details. See **CD Stud Welding General Information** and **Technical Details** for process description, material combinations, reverse-side marking, locating options, technical details, guidelines, torque values, weight charts and standard stock sizes.



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CD Studs - Notched End Bi-Metallic

CD STUDS: NOTCHED END BI-METALLIC



MATERIAL	PIN Stainless Steel	BASE Aluminum - (5000 Series)
WASHER	The washer for use with this stud is the WCN NE KHS, notched and keyhole slotted washer.	

To order or specify give: Product Code, Material and Quantity

Example: CD BM-NE, Stainless Steel, 1000 pcs.

See **Accessories** for accessory details. See **CD Stud Welding General Information** and **Technical Details** for process description, material combinations, reverse-side marking, locating options, technical details, guidelines, torque values, weight charts and standard stock sizes.



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CD Weld Studs

CTB – CD CABLE TIE BASE WELD STUDS – TECHNICAL DETAILS

CTB weld studs are a superior option to securing cable tie bases compared to adhesives or screws.

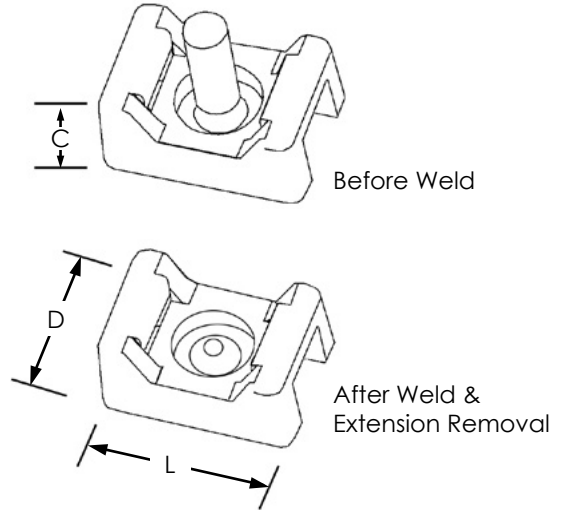
To install, first weld the wire tie base in place, then break off the top portion of stud and insert cable tie. Holds wire bundle up to 1 in diameter.

The retaining stud is a .188 diameter stainless steel or aluminum knock-off style CD stud.

The pull off strength of the cable tie base exceeds that of a typical 3/16 nylon wire tie.

For application, dimensional, in stock, technical details and welding assistance contact Sunbelt Stud Welding.

(See the next page for CD Cable Tie Base Weld Studs - Technical Data Sheet.)



Cable Tie Base Specifications					Standard Accessories		
Height	Length	Width	Slot Height	Slot Width	B Collet Standard 1-3/8" Long	Long Collet 2-3/8" Long	Euro Collet 1.80" Long
C	L	D	A	W	P/N *	P/N **	P/N
0.390	0.875	0.625	0.090	0.325	CDB-018	CDBN-018	CDBS-018
* Note, requires B Stop, see Accessories for details							
** Note, requires Long Style Stops, see Accessories for details							

To order or specify give: Stud Code, Material and Quantity
Example: CTB, Stainless Steel, 1000 pcs.

See **Accessories** for accessory details. See **CD Stud Welding General Information** and **Technical Details** for process description, material combinations, reverse-side marking, locating options, technical details, guidelines, torque valves, weight charts and standard stock sizes.



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CD Weld Studs

CTB – CD CABLE TIE BASE WELD STUDS – TECHNICAL DATA SHEET

Nylon 6/6 Properties				
Property	ASTM Method	Test Condition	Units	Nylon 6/6
Tensile Strength	D368	+73 Degrees F, 50% RH	kpsi	11.2
Elongation at break	D368	+73 Degrees F, 50% RH	%	> 299
Yield Strength	D368	+73 Degrees F, 50% RH	kpsi	8.5
Shear Strength	D732	Dry as Molded	kpsi	9.6
Deformation Under Load	D621	2,000 psi; +122 F, DAM	%	1.4
IZOD Impact	D256	+73 Degrees F, 50% RH	ft lb/in	2.1
Tensile Impact Strength	D1822	+73 Degrees F, Long Specimen; DAM	ft lb/in	240
Melting Point	D789	Fisher-Johns	Degrees F	491
Thermal Conductivity	—	DAM Conche-Fitch	BTU-in/h*F	1.7
Brittleness Temperature	D746	50% RH	Degrees F	-85
Oxygen Index	D2683	DAM	%O	28
Oxygen Index	D2683	50% RH	%O	31
UL Flammability	UL 94	DAM	—	V-2
UL Flammability	UL 95	50% RH	—	V-2

Nylon 6/6 NBS Smoke Generation				
Test Parameters			Specific Optical Density	
Sample Thickness	UL Flammability	Energy Source	at Maximum Smoke Accumulation	At 2 Minutes
1/16	94 V-2	Radiant (2.5 watts/sp cm)	13	0
1/8	94 V-2	Radiant (2.5 watts/sp cm)	26	1

Nylon 6/6 Temperature Index			
Temperature Index			
Minimum Thickness	Electrical Degrees C	Mechanical w/o Impact Degrees C	Hot Wire Ignition (sec)
0.028	125	65	11.8
0.058	125	85	15.0

Weld Stud Dimensions and Properties					
Stud Diameter	Flange Diameter	Length	Length after knock-off *	Material Type **	Ultimate Tensile
0.190	0.265	0.780	0.180	302 SS	85 KPSI
* Excludes flange thickness					
** Along with 304 SS, meets requirements of 18-8 Stainless Steel					



CD Weld Studs

OTHER CAPACITOR DISCHARGE “CD” WELD STUDS



Oval Head Pin



Round Head Pin



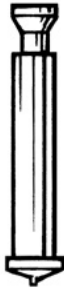
Pierced Pin



Retaining Pin



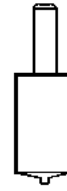
Pointed Retaining Pin



Notched Insulation Pin



Cone Head Pin



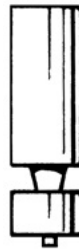
NT Shoulder Pin



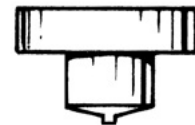
Threaded
Shoulder Pin



Tapped Pad
Reduced Base



Knock-off Pin



Keyhole Stud



SECTION 7
INSULATION PINS

FOR INQUIRIES, TO PLACE ORDERS,
SERVICE AND TECHNICAL SUPPORT CONTACT
ANY OF THE FOLLOWING:

OFFICE: 1-800-462-9353
713-939-8903

EMAIL: INFO@SUNBELTSTUDWELDING.COM



website www.sunbeltstudwelding.com **email** info@sunbeltstudwelding.com
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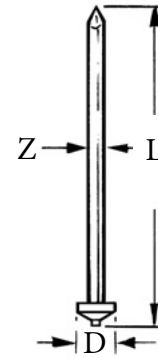
Insulation Pins

CWP - CD WELD PINS - TECHNICAL DETAILS

Weld pins are commonly used to attach blanket insulation to ducts, ovens, boilers and hot/cold equipment. The pins are welded in place, the insulation impaled over the pin and then self locking washers are installed over the pin to secure the insulation.

The CD process is used to weld CD type studs to sheet metal and plate.

For application, dimensional and technical assistance, contact Sunbelt Stud Welding.



Stud Specifications							
10 Gauge				12 Gauge			
Stud Diameter	Flange Diameter	Standard Lengths	Pounds Per 1,000 Pieces	Stud Diameter	Flange Diameter	Standard Lengths	Pounds Per 1,000 Pieces
Z	D	L		Z	D	L	
10 Gauge 0.135	0.220	1.0	5	12 Gauge 0.105	0.175	0.75	2
		1.5	7			1.0	3
		2.0	8			1.25	4
		2.5	11			1.5	5
		3.0	13			2.0	6
		3.5	15			2.5	7
		4.0	17			3.0	8
		4.5	18			3.5	9
		5.0	21			4.0	11
		5.5	22			4.5	12
		6.0	25			5.0	13
		6.5	26			5.5	14
		7.0	29			6.0	15
		8.0	33			6.5	16
9.0	37	7.0	17				
	41	8.0	20				
		9.0	24				

To order or specify give: Stud Code, Z x L, Material and Quantity
 Example: CWP, 10 Ga. X 4, Mild Steel, 5000 pcs.

Materials: Low carbon steel (copper plated), stainless steel 18-8 and aluminum are standard. Other materials are available upon request. Material is annealed as required.

Plating: Galvanized Weld Pins and other coatings are available.

Accessories: See the Accessories section for details. P/N's CDB-013, CDB-013A, CDBN-013, CDBS-013, CIP-014-075 and CDB-010, CDB-010A, CDBN-010, CDBS-010, CIP-010-075

Self Locking Washers: See Technical Details in this section.



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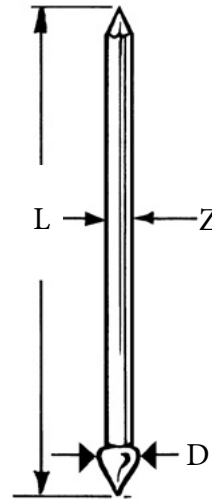
Insulation Pins

CPT – “SURE-FIRE” CD POWER TIP WELD PINS – TECHNICAL DETAILS

Weld pins are commonly used to attach blanket insulation to ducts, ovens, boilers and hot / cold equipment. The pins are welded in place, the insulation impaled over the pin and then self locking washers are installed over the pin to secure the insulation.

The CD Stud Welding process is used to weld CPT's to sheet metal and plate.

For application, dimensional and technical assistance, contact Sunbelt Stud Welding.



Stud Specifications							
10 Gauge				12 Gauge			
Stud Diameter	Base	Standard Lengths	Pounds Per 1,000 Pieces	Stud Diameter	Base Diameter	Standard Lengths	Pounds Per 1,000 Pieces
Z	D	L		Z	D	L	
10 Gauge 0.135	0.220	2.5	11	12 Gauge 0.105	0.220	2.5	6
		3.0	14			3.0	8
		3.5	16			3.5	10
		4.0	18			4.0	11
		4.5	20			4.5	12
		5.0	21			5.0	13
		5.5	22			5.5	14
		6.0	26			6.0	15
		7.0	29			7.0	18
		8.0	34			8.0	20

To order or specify give: Stud Code, Z x L, Material and Quantity
 Example: CPT, 12 Ga. X 3", Mild Steel, 6000 pcs.

Materials: Low carbon steel (copper plated) and stainless steel are standard. Other materials are available upon request. Material is annealed as required.

Plating: Galvanized Weld Pins and other coatings are available.

Accessories: See the Accessories section for details. P/N's CDB-013, CDB-013A, CDBN-013, CDBS-013, CIP-014-075 and CDB-010, CDB-010A, CDBN-010, CDBS-010, CIP-010-075

Self Locking Washers: See Technical Details in this section.



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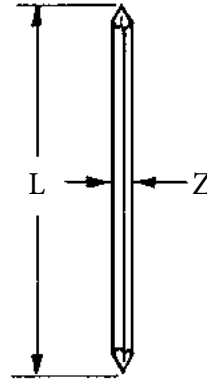
Insulation Pins

DPW – DOUBLE POINTED WELD PINS – TECHNICAL DETAILS

Weld pins are commonly used to attach blanket insulation to ducts, ovens, boilers and hot / cold equipment. The pins are welded in place, the insulation impaled over the pin and then self locking washers are installed over the pin to secure the insulation.

The Arc Stud Welding process is used to weld DPW's to sheet metal and plate.

For application, dimensional and technical assistance, contact Sunbelt Stud Welding.



Stud Specifications				Standard Accessories		
Stud Diameter	Standard Lengths	Pounds Per 1,000 Pieces	Ferrule	Foot	Grip	Chuck
Z	L		P/N	P/N	P/N	P/N
10 Gauge 0.135	1.5	7	F014-F	B-1N	GC-019	CN-013
	2.0	9				
	2.5	11				
	3.0	13				
	3.5	15				
	4.0	17				
	4.5	19				
	5.0	21				
	5.5	23				
	6.0	25				
	6.5	27				
	7.0	29				
	7.5	31				
8.0	33					

To order or specify give: Stud Code, Z x L, Material and Quantity

Example: DPW, 10 Ga. X 3.5", Mild Steel, 2500 pcs.

Materials: Low carbon steel (copper plated), stainless steel 18-8 and aluminum are standard. Other materials are available upon request. Material is annealed as required.

Plating: Galvanized Weld Pins and other coatings are available.

Self Locking Washers: See TECHNICAL DETAILS in this section.



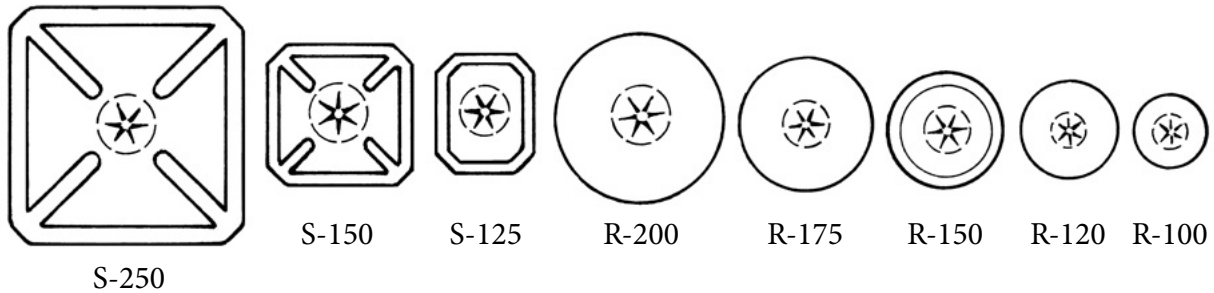
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Insulation Pins

WAS & WAR - SELF LOCKING WASHERS "SPEED CLIPS" - TECHNICAL DETAILS

After weld pins are welded in place and insulation is impaled over the weld pins, the Self Locking Washers are installed onto the weld pins to retain the insulation.

For application, dimensional and technical assistance, contact Sunbelt Stud Welding.



Washer Specifications							
Type / Code	Size	Hole Gauge	Material	Edge	Thickness	Pounds per 1000 pieces	Box Quantity
Square							
WAS-250	2.5 x 2.5	10 Gauge	Mild Steel (Galvanized) Stainless and Aluminum	Beveled	0.016	28	1000
WAS-150	1.5 x 1.5	12 Gauge		Beveled		10	
WAS-125	1 x 1.25	or 14 Gauge		Beveled		6	
Round							
WAR-200	2.00	10 Gauge 12 Gauge or 14 Gauge	Mild Steel (Galvanized) Stainless and Aluminum	Beveled	0.016	14	1000
WAR-175	1.75			Flat		12	
WAR-150	1.50			Beveled		9	
WAR-120	1.20			Beveled		6	
WAR-100	1.00			Beveled		4	

To order or specify give: Product Code, Hole Gauge, Material and Quantity

Example: WAS-150, 10Ga., Mild Steel, 9000 pcs.

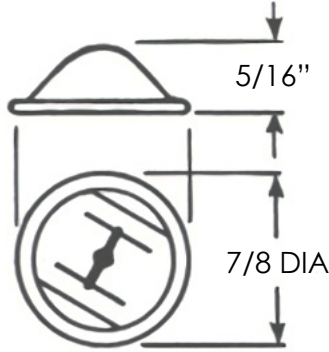


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Insulation Pins

MISCELLANEOUS INSULATION WASHERS

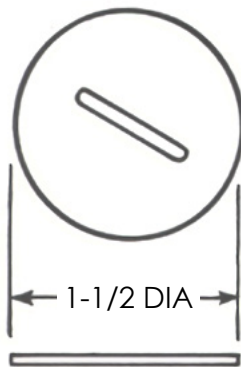
INSULATION WASHERS: CAPPED SPEED WASHER – WCN CSW



Application	Designed to permanently lock on to 12 GA weld pins or insul-anchors where appearance is a major factor, or where no sharp points or edges are permissible on the surface.
Material	Decorative Domed Cap - Aluminum Self-Locking Insert - Hardened Steel
Color	Plain (bright aluminum) or painted white. Other painted colors are available by special order.

To order or specify give: **Product Code, Size, Color and Quantity**
Example: WCN CSW, 12 GA., Plain, 9000 pcs.

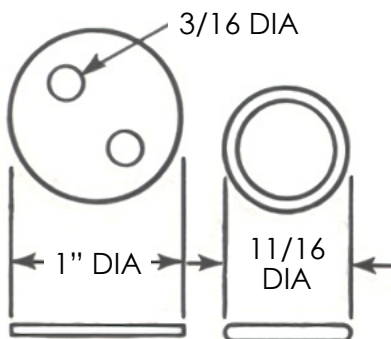
INSULATION WASHERS: PRONG WASHER – WCN P150



Application	Designed to be used with Sunbelt Stud Welding Prong Insul-Anchors. Slide over prong and bend prong tabs down in opposite directions.
Material	Mild Steel - Galvanized and Aluminum. Stainless Steel is available by special order.
Slot Size	3/32" x 13"/16"

To order or specify give: **Product Code, Material and Quantity**
Example: WCN P150, Mild Steel, 9000 pcs.

INSULATION WASHERS: LACING WASHER & RING – LA L100 OR LA RING



Application	Designed to be used with lacing wire to wrap insulation around irregular shapes.
Material	Washer - Aluminum or Stainless Steel Ring - Zinc alloy, bright zinc plated
NO-AB	Washers are available stamped NO AB to indicate non-asbestos material

To order or specify give: **Product Code, Material (Washer) and Quantity**
Example: LA L100 or LA RING, Aluminum, 9000 pcs.



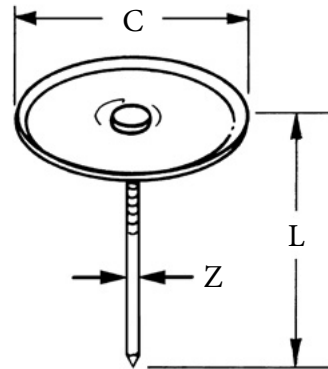
Insulation Pins

CHP - CD CUPPED HEAD WELD PINS - TECHNICAL DETAILS

Weld pins are commonly used to attach blanket insulation to ducts, ovens, boilers and hot / cold equipment. The insulation material is placed on the surface, the Cupped Head Pin pushed through the insulation and then welded to the base metal.

The CD Stud Welding process is best suited for welding CHP's to sheet metal and plate.

For application, dimensional and technical assistance, contact Sunbelt Stud Welding.



Stud Specifications							
Standard Cupped Head Pins				Mini Cupped Head Pins			
Stud Diameter	Cup Head Diameter	Standard Lengths	Pounds Per 1,000 Pieces	Stud Diameter	Cup Head Diameter	Standard Lengths	Pounds Per 1,000 Pieces
Z	C	L		D	C	L	
12 Gauge 0.105	1.500	0.375	9	12 Gauge 0.105	1.188	0.375	6
		0.500	10			0.500	7
		0.625	11			0.625	8
		0.750	11			0.750	8
		0.875	11			0.875	8
		1.000	11			1.000	8
		1.125	12			1.125	9
		1.250	12			1.250	9
		1.375	12			1.375	9
		1.500	12			1.500	9
		1.625	12			1.625	9
		1.750	13			1.750	9
		1.875	13			1.875	10
		2.000	13			2.000	10
		2.125	14			2.125	11
		2.250	14			2.250	11
		2.500	14			2.500	11
		2.626	15			2.626	12
		2.875	15			2.875	12
		3.000	16			3.000	13
		3.125	16			3.125	13
		3.500	17			3.500	14
		4.000	18			4.000	15
4.125	18	4.125	15				
4.500	19	4.500	16				
5.000	20	5.000	17				
5.500	21	5.500	18				
6.000	23	6.000	19				

To order or specify give: Stud Code, C x L, Material and Quantity

Example: CHP, 1.5 x 2.125", 3000 pcs.

Materials: Low carbon steel

Plating: The washer and pin are galvanized

Paper Washers: Sold separately either in bulk or installed on the CHP

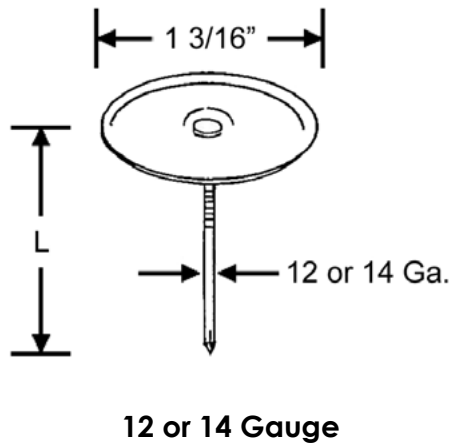
Accessories: See the Accessories section for details - 1 piece Chuck P/N 039-613 and multi part Chuck P/N 035-301



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Insulation Pins

QUILTING PINS



MATERIAL	Stainless Steel
----------	-----------------

Gauge	Length
14 Ga.	2-1/2"
14 Ga.	3-1/2"
14 Ga.	4-1/2"
12 Ga.	2"
12 Ga.	2-1/2"
12 Ga.	4"
12 Ga.	4-1/2"

To order or specify give: Stud Code, Fastener Size and Quantity
 Example: QP-12-2500 (for 12 ga. 2-1/2"), 500 pcs.

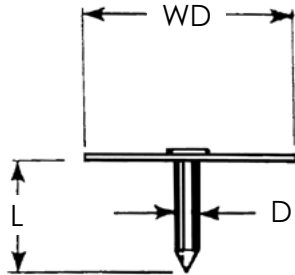


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Insulation Pins

DUCT LINER PINS

CS-10 Cupped Head Weld Pin



MATERIAL	Low Carbon Steel
PLATING	The Washer and Pin are Galvanized

Fastener Size	Quantity	Recommended for:
1/2"	5M	1/2" Insulation - All Densities
3/4"	5M	3/4" Insulation - 1-1/2 lb. Densities
1"	5M	1" Insulation - 3 lb. Densities
1-1/8"	3M	1-1/8" Insulation - 4 to 6 lb. Densities
1-1/2"	3M	1-1/2" Insulation - 1-1/2 lb. Densities
2"	3M	2" Insulation - 1-1/2 & 2 lb. Densities

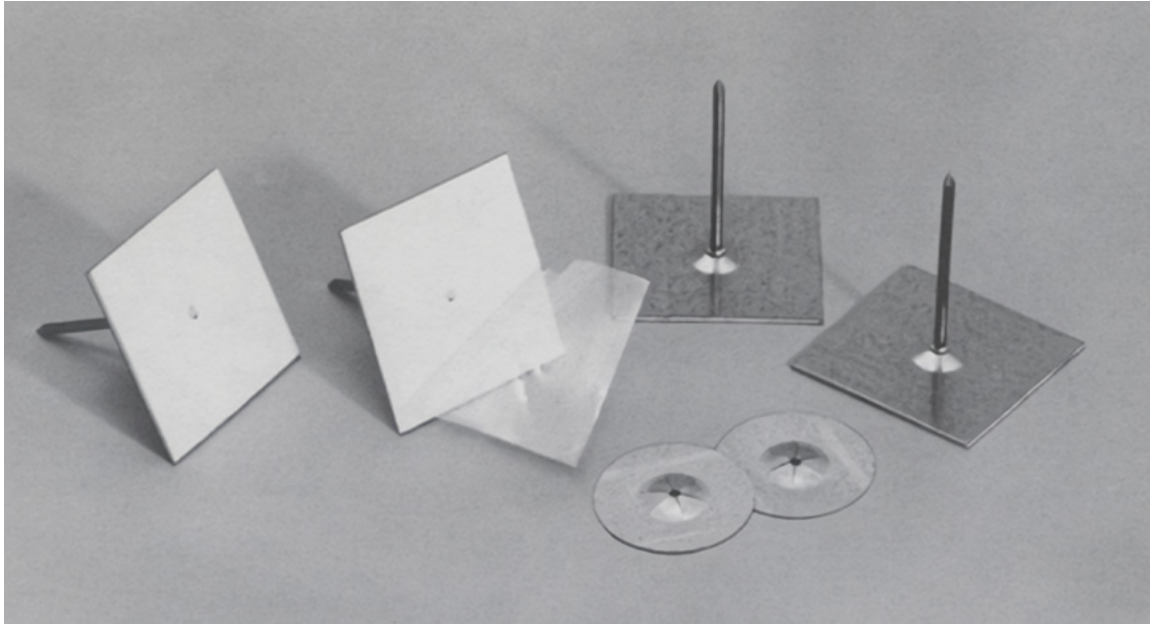
To order or specify give: Stud Code, Fastener Size and Quantity
 Example: CHP CS-10-0750 (for 3/4"), 3000 pcs.



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Insulation Pins

SELF-STICK INSUL-ANCHORS



INSTANT ANCHOR PLACEMENT

Sunbelt Self-Stick Insul-Anchors simplify the permanent installation of insulation to non-porous construction surfaces and non-weldable materials. They can be applied quickly and easily, simply peel off the release backing, press in place, and then hang the insulation. There are no messy adhesives, or time-delay for adhesive curing.

Sunbelt Self-Stick Insul Anchors are available with a 2" x 2" solid plate and 12 Ga. Spindle of varying lengths to meet your requirements. The spindles on short anchors are softened for ease of clipping or bending.

To complete the insulation fastening operation, Sunbelt Self-Stick Insul-Anchors are used in conjunction with Sunbelt Self-Locking Washers.

For more information concerning the application of Sunbelt Self-Stick Insul-Anchors, see the next page and also the page titled Guidelines for Self-Stick Insul-Anchors. For more information concerning self-locking washers, refer to the Washers, Caps and Nuts section of this catalog.



Insulation Pins

APPLICATION OF SELF-STICK INSUL-ANCHORS



1. WIPE SURFACE CLEAN

Anchor must be applied to a clean, dry and non-porous surface.



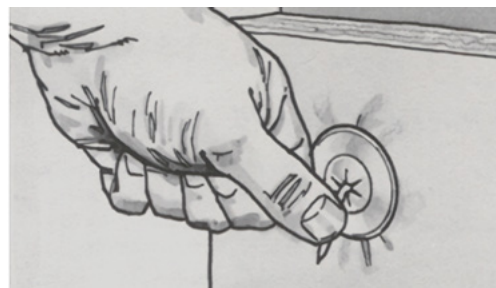
2. PEEL OFF RELEASE BACKING

Double faced foam tape is 1/32 inch thick, with a 1 year active shelf life.



3. STICK ANCHOR IN PLACE

Select location before contact with surface. Press firmly.



4. HANG INSULATION AND SECURE WITH WASHER

Recommended loading 3 lbs. per anchor. (.75 lbs/sq. inch maximum)

Insulation Pins

GUIDELINES FOR SELF-STICK INSUL-ANCHORS

1. Must be applied to a clean, non-porous surface, that is free of all oil, film, dust, rust, etc.
2. Not recommended on painted surfaces or ceilings of metal buildings.
3. Best results are obtained when ambient temperature is above 40° F at time of application.
4. Temperature range for the foam tape is from -20° to + 180° F.
5. Loading should not exceed 3 lbs. per anchor. (.75lb./sq. Inch)
6. Must be applied with firm (20 pounds) pressure all around base. Do not twist during application. Do not remove release (backing) paper until ready to use.
7. Insulation may be applied 1/2 hour after bond is made.
8. Not recommended for use on single skin roofdecks.

Important Notice to Purchaser

All statements, technical information and recommendations contained herein are based on tests we believe to be reliable, but the accuracy or completeness thereof is not guaranteed, and the following is made in lieu of all warranties, expressed or implied.

Seller's and manufacturer's only obligation shall be to replace such quantity of the product proved to be defective. Neither seller nor manufacturer shall be liable for any injury, loss or damage direct or consequential, arising out of the use of or the inability to use the product.

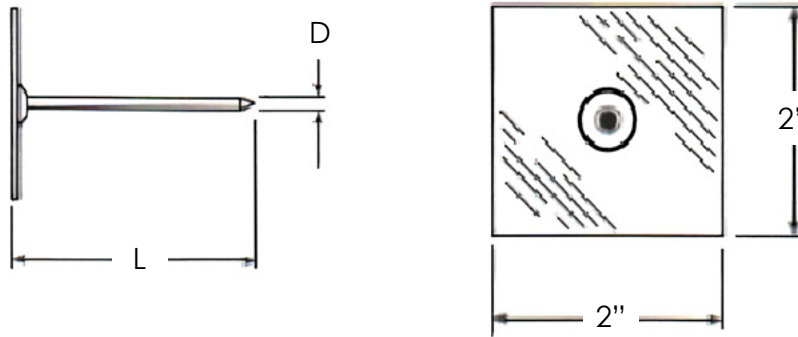
Before using, user shall determine the suitability of the product for his intended use, and user assumes all risk and liability whatsoever in connection therewith.

No statement or recommendation not contained herein shall have any force or effect unless in an agreement signed by officers of seller and manufacturer.



Insulation Pins

SELF-STICK



Size	D	12 GA (.105") is standard. Other sizes available by special order only.
Length	L	1", 1-5/8", 2", 2-1/2", 3-1/2", 4-1/2", 5-1/2", 6-1/2", 8" and 9" are standard. Other lengths are available by special order.

	Plate	Pin
Material	Low Carbon Steel	Low Carbon Steel
Plating	Galvanized is standard	Galvanized coating is standard

Other Materials	Also available by special order in all Stainless Steel or all Aluminum. Note: Aluminum pins are provided on shorter length Insul-Anchors for ease of bending.
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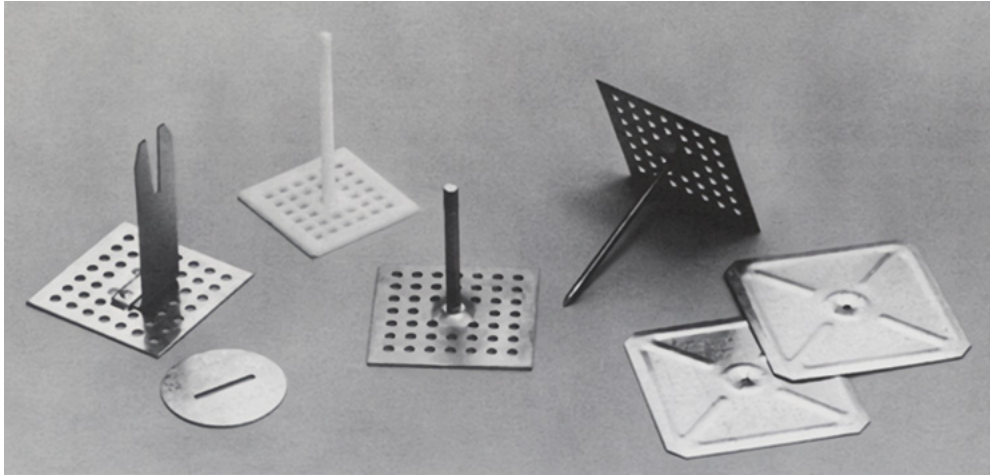
Washers	Self-locking washers are available in a variety of sizes, shapes and materials.
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To order or specify give: **Product Code, Length, Fastener Size, Material: (if other than standard) and Quantity**
Example: IA SS, 2", 12 GA, Low Carbon Steel, 3000 pcs.



Insulation Pins

SPINDLE, PRONG & NYLON INSUL-ANCHORS



Sunbelt Spindle, Prong and Nylon Insul-Anchors simplify the permanent installation of insulation to porous construction surfaces and non-weldable materials. They can be applied quickly and easily using only a putty knife or caulking gun and Sunbelt General Purpose Adhesive.

Sunbelt General Purpose Adhesive is available in quart or gallon cans. The coverage is approximately 800 to 1,000 standard anchors with 2" x 2" plates per gallon. For more information see the Adhesives section of this catalog.

To complete the insulation fastening operation, Sunbelt Spindle and Nylon Insul-Anchors are used in conjunction with Sunbelt Self-Locking washers (see Washers, Caps and Nuts section). The spindles on short anchors are softened for ease of clipping or bending. The Sunbelt Prong Insul-anchors are used in conjunction with the Sunbelt Prong Washer.

Sunbelt Spindle Insul-Anchors are also available with a curved plate for attaching to corrugated panels. See the reverse side of this page for more information regarding the application of Insul-Anchors.



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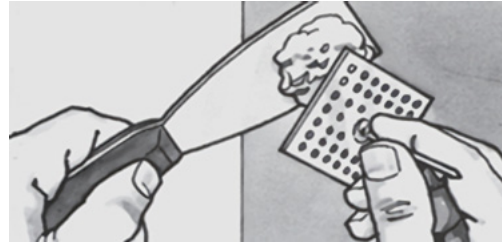
Insulation Pins

APPLICATION OF SPINDLE, PRONG & NYLON INSUL-ANCHORS



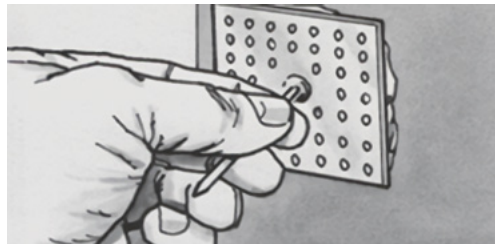
1. WIPE SURFACE CLEAN

Anchor must be applied to a clean, dry and non-painted surface.



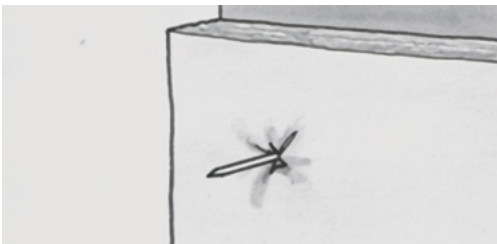
2. APPLY ADHESIVE TO ANCHOR

Spread a daub of General Purpose Adhesive IHA-170 onto the perforated base with putty knife.



3. STICK ANCHOR IN PLACE

Press anchor into position with twisting motion to spread adhesive evenly.
(Adhesive should protrude through perforations and beyond base edges.)



5. HANG INSULATION

(Allow adhesive to dry thoroughly before hanging insulation: 24-48 hours.)

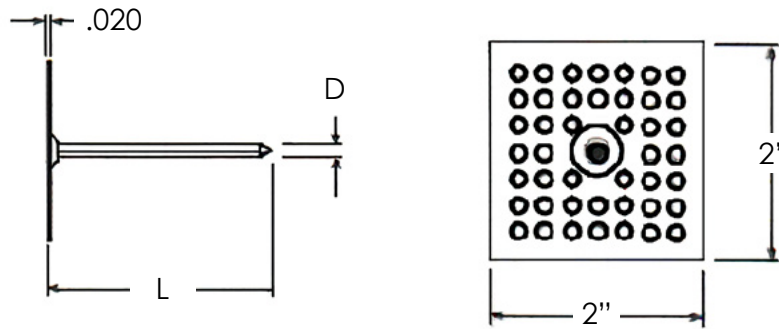


6. SECURE WITH WASHER

Secure insulation in place with a self-locking washer.
(Bend over or clip off the spindle.)

Insulation Pins

SPINDLE



Size	D	12 GA (.105") is standard. Other sizes available by special order only.
Length	L	1", 1-5/8", 2", 2-1/2", 3-1/2", 4-1/2", 5-1/2", 6-1/2", 8" and 9" are standard. Other lengths are available by special order.

	Plate	Pin
Material	Low Carbon Steel	Low Carbon Steel
Plating	Galvanized is standard	Galvanized coating is standard

Other Materials	Also available by special order in all Stainless Steel or all Aluminum.
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Note: Aluminum pins are provided on shorter length Insul-Anchors for ease of bending.

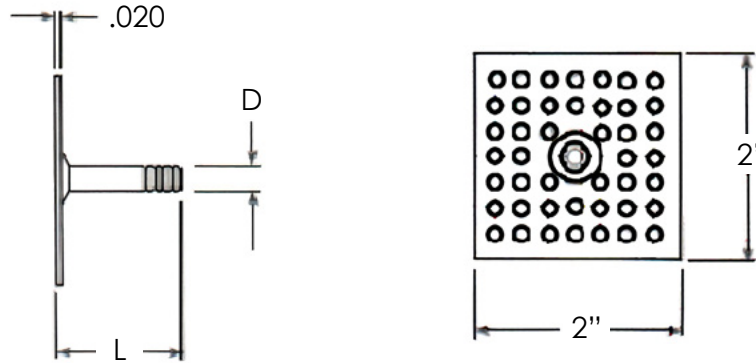
Washers	Self-locking washers are available in a variety of sizes, shapes and materials.
----------------	---

To order or specify give: **Product Code, Length, Fastener Size, Material: (if other than standard) and Quantity**
Example: IA SP, 2", 12 GA, Low Carbon Steel, 3000 pcs.



Insulation Pins

ANNULAR RING ANCHOR-BOLT



Size	D	3/16 Nominal Actual Ring Diameter is .175"
Length	L	7/8", 1-7/8", 2-7/8" and 3-7/8" are standard. Other lengths are available by special order.

	Plate	Pin
Material	Low Carbon Steel	Low Carbon Steel
Plating	Galvanized is standard	Copper Plating is standard

Other Materials	Also available by special order only.
------------------------	---------------------------------------

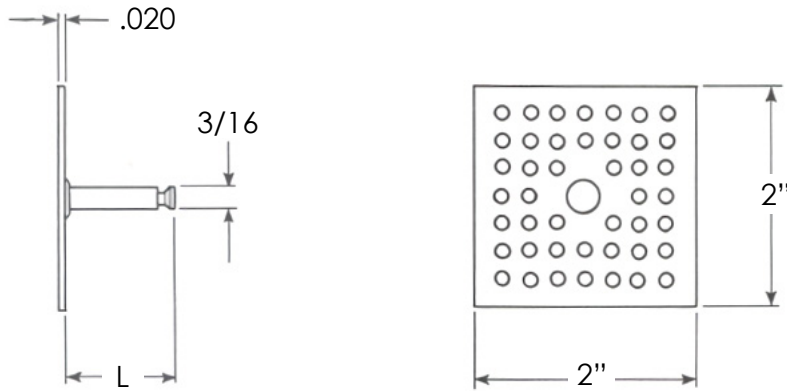
Retaining Cap	The cap for use with this anchor bolt is the WCN AR CAP part number 052-297.
----------------------	--

To order or specify give: Product Code, Size, Length, Material: (if other than standard) and Quantity
 Example: 1A AB-AR, 3/16, 7/8", Low Carbon Steel, 3000 pcs.



Insulation Pins

NOTCHED END ANCHOR-BOLT



Length	L	7/8", 1-3/8", 1-7/8", 2-7/8", 3-7/8" are standard. Other lengths are available by special order.
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	Plate	Prong
Material	Low Carbon Steel	Low Carbon Steel
Plating	Galvanized is standard	Copper Plating is standard

Other Materials	Also available by special order only.
------------------------	---------------------------------------

Washers	The washer for use with this anchor-bolt is the WCN NE KHS key hole slotted washer part no. 033-1000-45.
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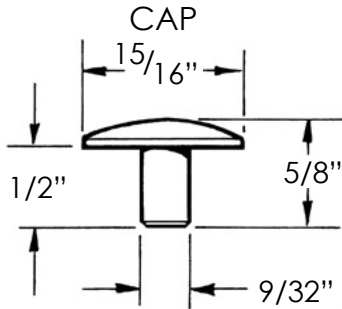
To order or specify give: Stud Code, Length, Material: (if other than standard) and Quantity
 Example: IA AB-NE, 1-3/8", Low Carbon Steel, 3000 pcs.



Insulation Pins

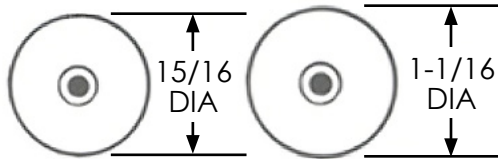
NAVY STUDS - WASHER, CAPS & NUTS

ANNULAR RING CAP - TAR (FOR ANNULAR RING STUDS)

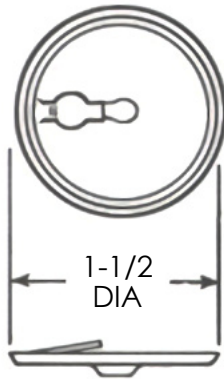


Application	Designed to permanently lock on to Navy annular ring studs
Material	Mild Steel / Zinc Plated, 304 Stainless Steel, 316 Stainless Steel & Aluminum
Size	For 1/8" or 3/16" diameter studs - 304 and 316 Stainless Steel have a 1-1/16" head diameter - 316 Stainless Steel, Aluminum and Mild Steel / Zinc Plated have a 15/16" head diameter

To order or specify give: **Product Code, Size, Material and Quantity**
 Example: TAR, 1/8" diameter, 304 Stainless Steel, 5000 pcs.



KEY HOLE SLOTTED WASHER (FOR 3/16 DIAMETER NOTCHED END STUDS)



Application	Designed to lock on to Navy notched end studs.
Material	Mild Steel - Cadmium Plated Mild Steel - Galvanized

To order or specify give: **Product Code, Material and Quantity**
 Example: WCN NE KHS, Mild Steel - Cadmium Plated, 3000 pcs.

Insulation Pins

FLAT WASHERS & HEX NUTS (FOR ALL THREADED STUDS)

Note: Most standard hex nuts, flat washers, and lock washers are available in a variety of sizes and materials for threaded mil-spec.

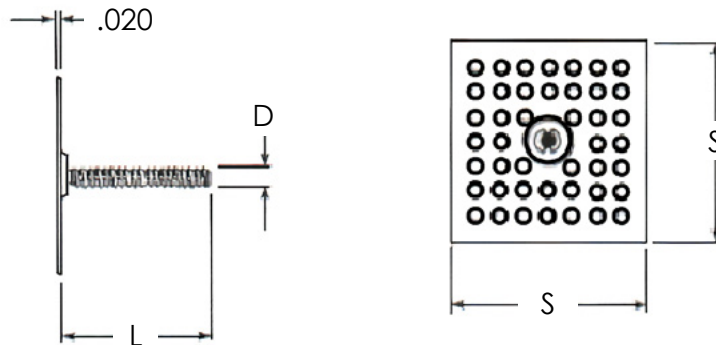
Navy studs such as pitch diameter, shoulder, reduced base and collar.



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Insulation Pins

THREADED ANCHOR-BOLT



Bolt	D	#10-24 is standard. Other sizes available by special order only.
Length	L	1/4" to 3" long in 1/4" increments are standard.
Plate Size	S	1" Square, 1-1/2" Square, 2" Square and 2-3/4" Square are standard

	Plate	Bolt
Material	Low Carbon Steel	Low Carbon Steel
Plating	Zinc with yellow chromate	Zinc with yellow chromate

Other Materials	Available by special order only.
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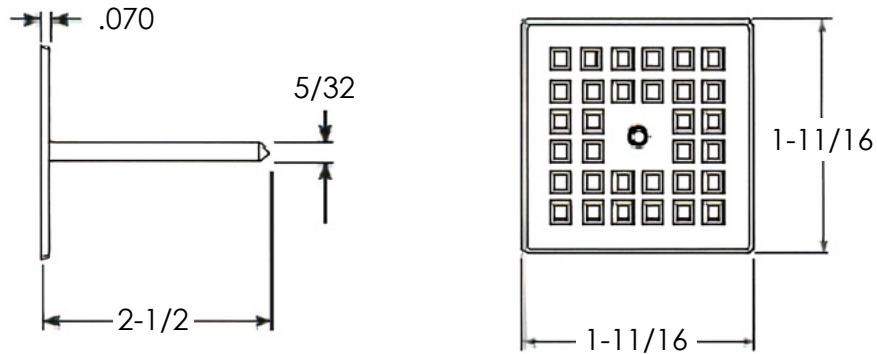
Hardware	Hex nuts, flat washers and lock washers are available in a variety of materials.
-----------------	--

To order or specify give: Product Code, Bolt Size, Length, Plate Size, Material and Quantity
 Example: IA AB-THD, #10-24, 1-1/4", 2 Square", Low Carbon Steel, 3000 pcs.



Insulation Pins

NYLON



Features

- Can be used for insulation up to 2" thick
- Has a base area 14% larger than similar nylon anchors with a round base
- Has 21% more perforated area for glue extrusion than similar nylon anchors
- These perforations have a beveled lock-tight design (See illustration below)
- Uses 30% less adhesive than metal insul-anchors with a 2" x 2" square base
- Will not conduct heat or cold
- Lighter in weight than metal anchors for ease of handling

Material

This is a one-piece insulation anchor of molded nylon.

Washers

The self locking washer for use with this insulation anchor is the WCN KI20 BY 5/32-NY part number 031-0804-13. These washers are packed with anchors.

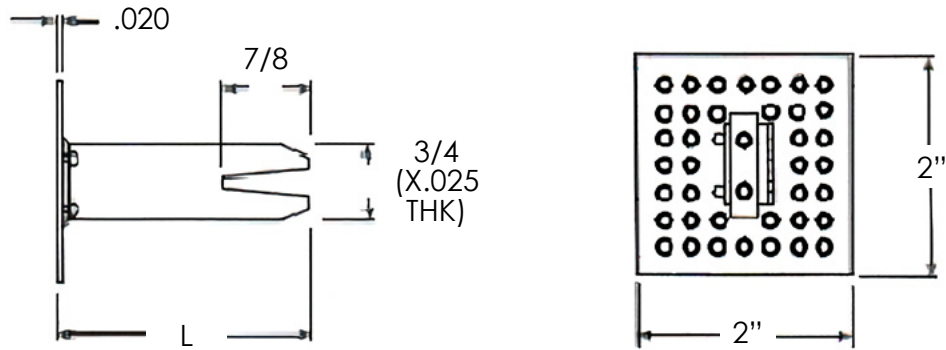
To order or specify give: Product Code and Quantity
Example: IA NY, 3000 pcs.



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Insulation Pins

PRONG



Length	L	1-7/8", 2-3/8", 2-7/8" 3-7/8", 4-7/8", 6-7/8" are standard. Other lengths are available by special order.
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	Plate	Prong
Material	Low Carbon Steel	Low Carbon Steel
Plating	Galvanized is standard	Galvanized is standard

Other Materials	Available by special order only.
------------------------	----------------------------------

Washers	The washer for use with this insul-anchor is the WCN PI50 FY slotted part number 041-568.
----------------	---

To order or specify give: Stud Code, Length, Material and Quantity
 Example: IA PG, 1-7/8", Low Carbon Steel, 2500 pcs.



Insulation Pins

TUFF-BOND ADHESIVE FOR INSULATION HANGERS

Special Characteristics:

- Non-Slip Formula – Immediate Grab
- Performs in Temperatures up to 250°
- Provides Excellent Water/Mildew Resistance



Description:

INSULATION HANGER ADHESIVE TB-170 is a high-strength, heavy-bodied, neoprene rubber adhesive, specifically formulated for adhering anchors for hanging insulation. IHA-170 is also recommended for use as a general-purpose construction adhesive in applications requiring a high-strength bond or in applications subjected to high temperatures.

Uses:

Surfaces should be clean, dry and free of oil, grease, frost or any other foreign matter, which will impair adhesion. Painted surfaces should be roughened. Clean all metal surfaces with I, I, I – Trichloroethane, acetone or other degreaser, exercising safe practices as recommended by the manufacturer. Some protective coatings are not compatible for TB-170; therefore, make a test bond before proceeding with application. Store adhesive at room temperature for at least 24 hours prior to use.

Application:

Do not apply at temperatures below 30°. Prepare and install one anchor at a time. Apply a dab (the size of a small walnut) of TB -170 to the anchor base with a putty knife immediately (max. open time is 10 minutes). Press anchor in place with a slight twisting motion. For proper adhesion, insure that the film of adhesive covering the anchor base (after the anchor has been firmly pressed into place) is approximately 1/16" thick and protruding through the perforated base plate. Application will be dry within approximately 24-72 hours, depending on atmospheric conditions. Do not apply load until application is completely dry.

Note:

When installing metal or ceramic wall fixtures or tile, butter the back with TB -170 and immediately press in place with a slight twisting motion. Allow to dry 24-72 hours before subjecting to use.

Coverage & Clean Up:

Covers approximately 500-1,000 anchors per gallon, depending on size. Clean tools and adhesive smears with Toluol, exercising safe practices recommended by manufacturer.



Insulation Pins

TUFF-BOND ADHESIVE: PHYSICAL PROPERTIES & TECHNICAL INFORMATION

Packaging Information		
Size	Packed	Weight
Quart	12 per carton	29 lbs. per carton
1 Gallon	4 per carton	37 lbs. per carton

Physical Properties & Technical Information

Base: Neoprene	Flash Point: 45° (ASTM D 3278)
Solvent: Toluene	Water Resistance: Excellent
Color: Dark Green	Mildew Resistance: Won't support fungus growth
Consistency: Heavy mastic. Do not thin.	Application Temp: 30°F to 120°F
Solids Content: 33% ± .3 lbs.	Service Temp: -30°F to 250°F
Open Time: Up to 10 minutes	Storage: Room temp. w/cross ventilation. OSHA Class 1B Liquid. Store as per 29 CFR 1910.106
Dry Time: 24-72 hours	Shelf Life: 12 Months
Coverage: 500-1000 Anchors per Gallon	Photochemically Reactive
Thermal Shock Resistance: Excellent	Flammability (wet stage): Extremely flammable. DOT: Adhesive, Flammable Liquid, UN 1133 OSHA Class 1B Liquid

Cautionary Information

DANGER! FLAMMABLE - VAPOR HARMFUL - CONTAINS TOLUENE

Precautionary measures: Keep away from heat, sparks and flames.

Prior to use and until all vapors (odors) are gone: do not smoke; do not use electric switches; do not generate static sparks; extinguish all flames and pilot lights; and turn off all electric and gas appliances, motors and other sources of ignition. Vapors are heavier than air and may travel to areas away from the work site. Prevent build-up of vapors – open all windows and doors – use only with cross ventilation.

To avoid breathing vapors, open windows and doors or use other means to ensure fresh air during application and drying. If you experience eye watering, headaches or dizziness, increase fresh air or wear respiratory protection (NIOSH/MSHA TC 23C or equivalent) or leave the area. AVOID contact with skin or eyes. DO NOT take internally.

STORAGE/HANDLING:

Keep containers closed when not removing adhesive. Do not reuse container or transfer adhesive to another container.

FIRST AID:

Inhalation Overexposure – If dizziness or nausea occurs, remove person to fresh air and seek medical attention.

Swallowing – If swallowed, do not induce vomiting. Call Poison Control Center, hospital Emergency Room or Physician immediately.

Eye Contact: – Flush eyes immediately and thoroughly with large amounts of water. If irritation persists, see a physician.

Skin Contact – Wash skin thoroughly with warm water and soap.

NOTICE:

Reports have associated repeated and prolonged occupational over-exposure to solvents with permanent brain and nervous system damage. Intentional misuse by deliberately concentrating and inhaling may be harmful/fatal.

FOLLOW ALL PRECAUTIONS IN THE WORK AREA AND ALL ADJACENT AREAS.

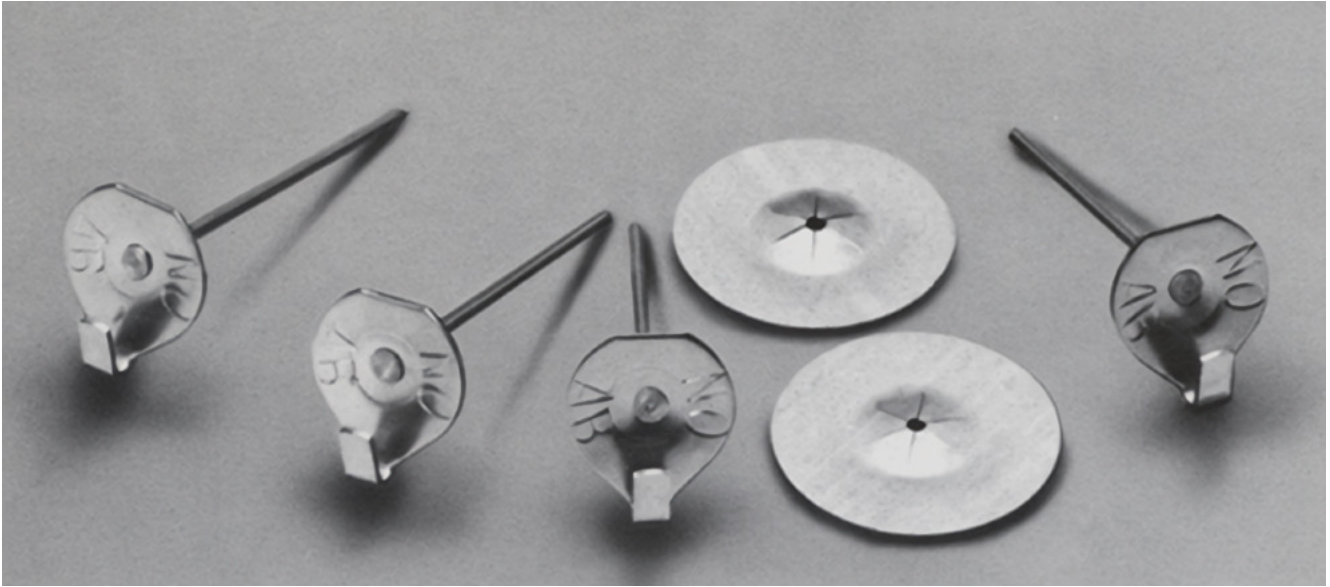
BE SURE THAT ALL PERSONS UNDERSTAND AND FOLLOW ALL PRECAUTIONS.



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Insulation Pins

SERIES 74 LACING-ANCHORS



Sunbelt Series 74 Lacing Anchor and Self-Locking Washer System simplifies the installation of removable blankets. The Series 74 Lacing Anchors are economical and applied in seconds without tools. They provide secure lacing without damage to removable insulation blankets.

Sunbelt Series 74 Lacing Anchors are available in cadmium plated mild steel or stainless steel with 12 ga. or 14 ga. Spindles in standard and custom lengths.

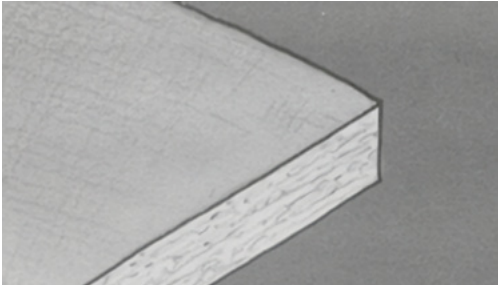
All Sunbelt Series 74 Lacing Anchors are stamped "NO AB", to indicate no asbestos, at no additional cost.



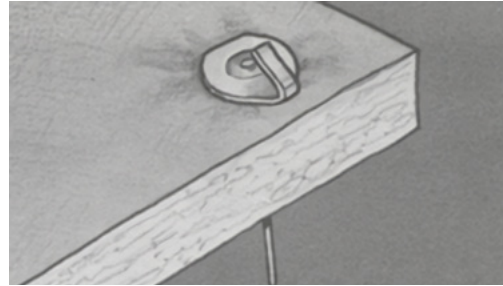
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Insulation Pins

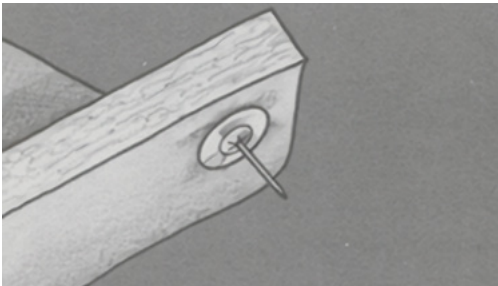
APPLICATION OF LACING-ANCHORS



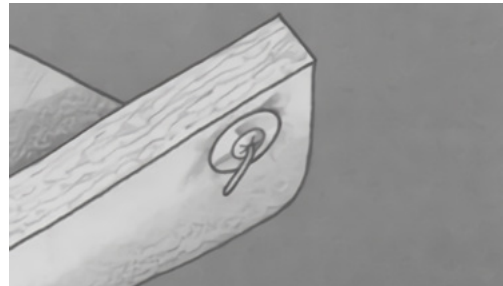
1. PREPARE INSULATION BLANKET



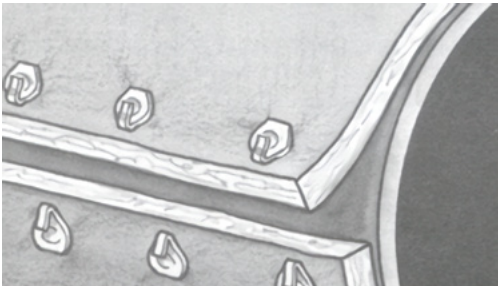
2. PRESS ANCHOR THRU BLANKET



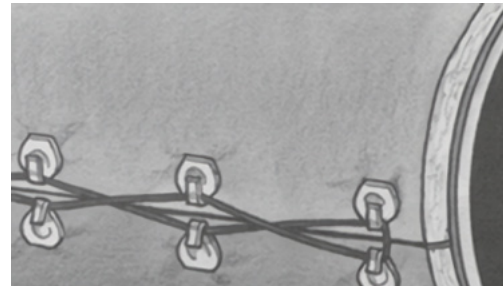
3. SECURE LACING-ANCHOR WITH SELF-LOCKING WASHER



4. BEND OR CLIP OFF SPINDLE



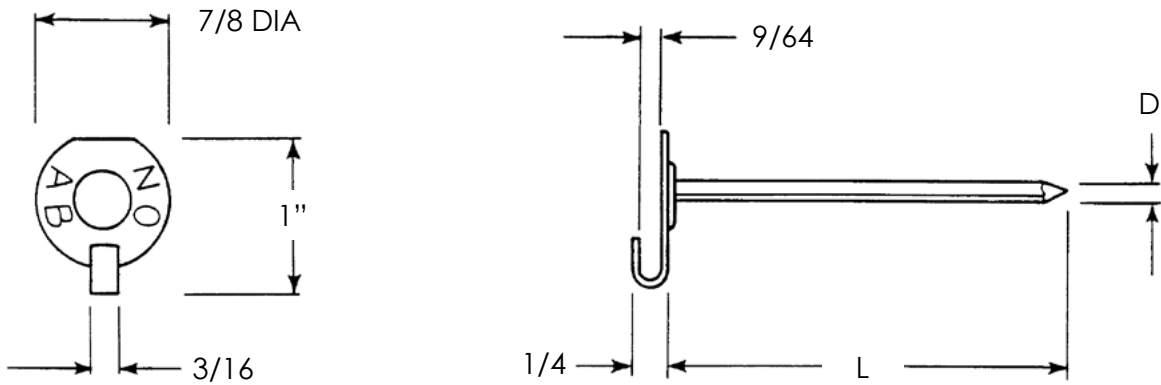
5. APPLY INSULATION BLANKET - PRESS ANCHOR THRU BLANKET



6. SECURE BLANKET BY LACING THRU HOOKS WITH LACING WIRE

Insulation Pins

SERIES 74 LACING-ANCHORS



Size	D	12 GA and 14 GA are standard. Other sizes available by special order only.
Length	L	2-1/2" and 4-1/2" are standard. Other lengths are available by special order only.

Material	Low Carbon Steel	Stainless
Plating	Cadmium plating is standard	Does not apply to Stainless

Other Materials	Available by special order only
------------------------	---------------------------------

Washers	Self-locking washers are available in a variety of sizes, shapes and materials.
----------------	---

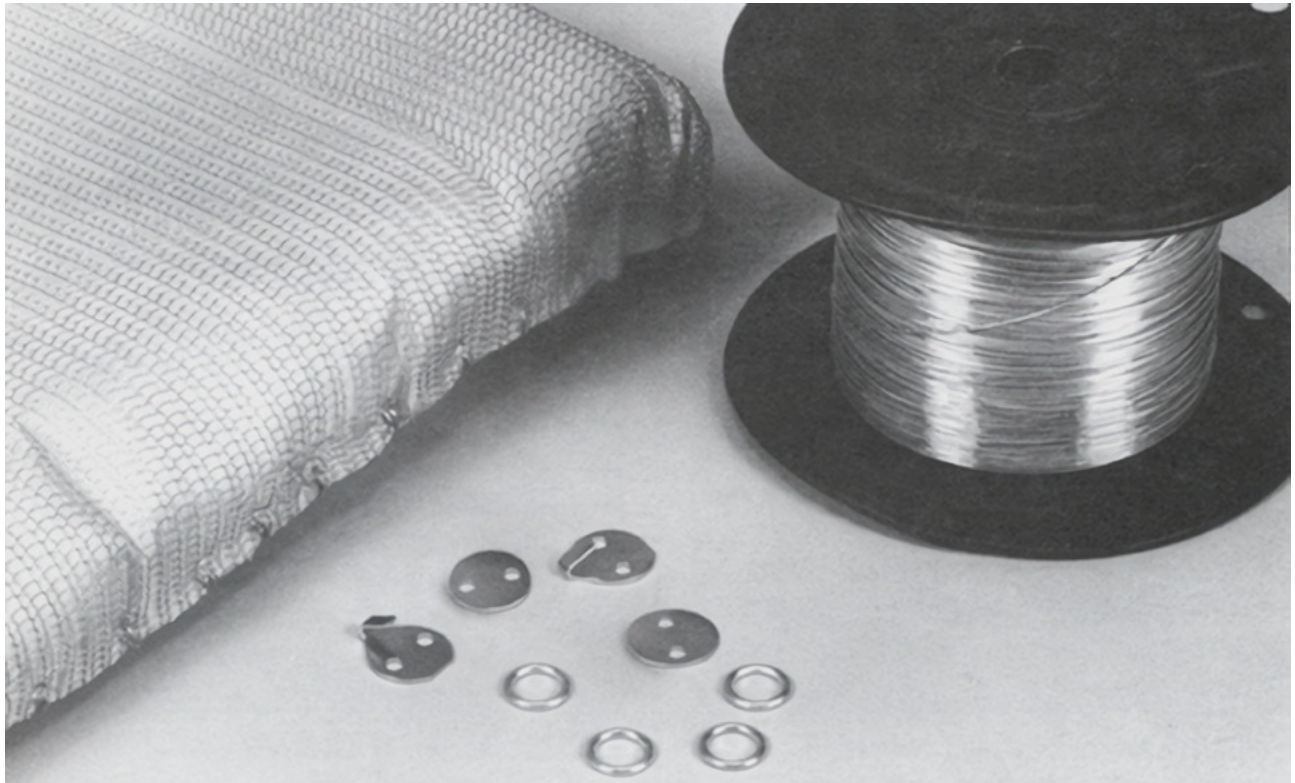
To order or specify give: **Product Code, Length, Size, Material and Quantity**
Example: LA 74, 2-1/2", 12 GA, Low Carbon Steel, 2500 pcs.



website www.sunbeltstudwelding.com email info@sunbeltstudwelding.com
 6381 Windfern Road, Houston, TX 77040 telephone 1.800.462.9353 - Houston 713.939.8903 fax 713.939.9013

Insulation Pins

LACING HOOK, LACING WASHER & LACING RING



Sunbelt Series 80 Lacing Hook and Two-Hole Washer System provides an even lower cost and the same easy-to-lace design. The tie wire application provides more blanket flexibility with equally secure performance. The Sunbelt Series 80 Lacing Hook is similar in function and appearance to the Series 74 Lacing System. The Series 80 Lacing Hook is stocked in mild steel, cadmium plated and stainless steel.

All Sunbelt Series 80 Lacing Hooks are stamped "NO AB" to indicate no asbestos at no additional cost. The Sunbelt L100 Lacing Washer can also be used with a Lacing ring and a second L100 lacing washer, which are fastened to the insulation blanket with a tie wire. One advantage with the lacing system is the positive detention of the lacing wire. The insulation blanket can be loosened for access or repositioning, without having to worry about the lacing wire falling away from the hooks. It is also advantageous in maintaining the position of the lacing wire when insulating complex shapes. All L100 Lacing Washers are stamped "NO AB" to indicate no asbestos, at no additional cost.

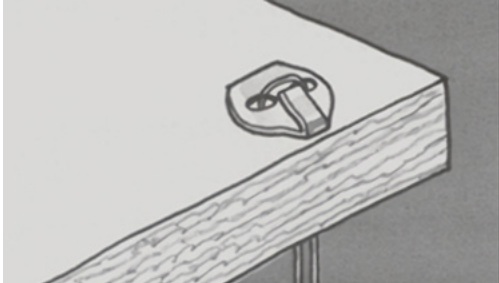


website www.sunbeltstudwelding.com email info@sunbeltstudwelding.com
6381 Windfern Road, Houston, TX 77040 telephone 1.800.462.9353 - Houston 713.939.8903 fax 713.939.9013

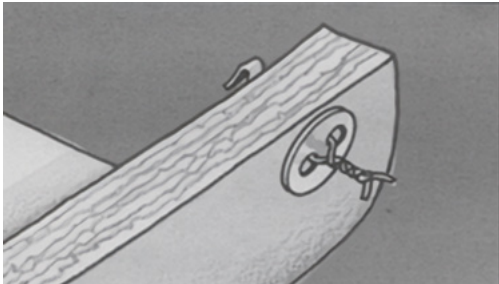
Insulation Pins

APPLICATION OF LACING HOOK, LACING WASHER & LACING RING

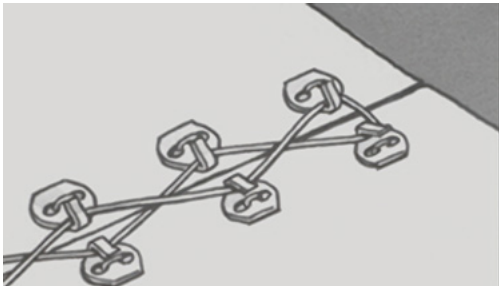
SERIES 80 LACING HOOK SYSTEMS



1. INSTALL LACING HOOK WITH TIE WIRE

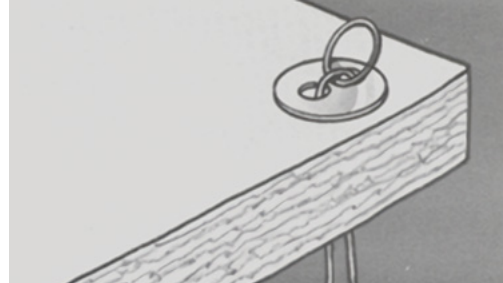


2. SECURE WITH LACING WASHER

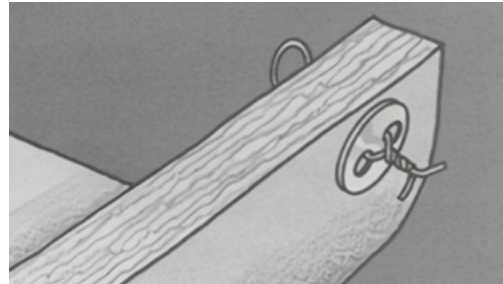


3. SECURE INSULATION BY LACING THRU HOOKS

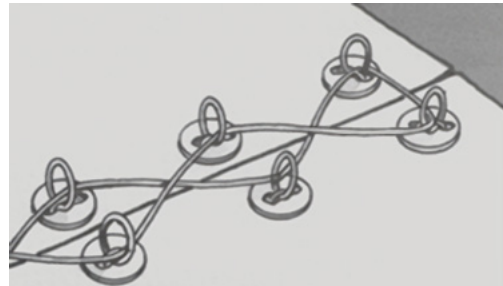
LACING RING SYSTEM



1. INSTALL LACING WASHER & LACING RING WITH TIE WIRE



2. SECURE WITH LACING WASHER

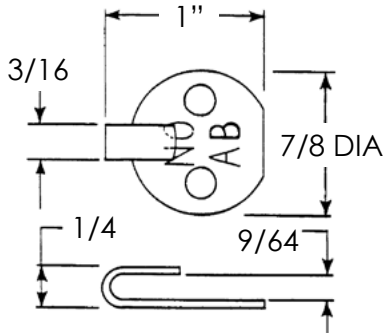


3. SECURE INSULATION BY LACING THRU RINGS

Insulation Pins

SERIES 80 LACING HOOK, L 100 WASHER & RING

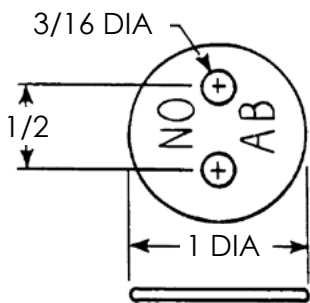
SERIES 80 LACING HOOK



Size	One size shown
Material	Mild Steel: Cadmium plated or Stainless Steel
NO-AB	Furnished stamp NO AB to indicate non-asbestos material

To order or specify give: Product Code, Material and Quantity
Example: LA HOOK 80, Mild Steel, 2500 pcs.

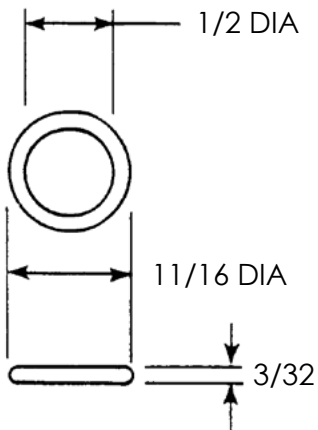
L100 LACING WASHER



Size	One size shown
Material	Aluminum or Stainless Steel
NO-AB	Furnished stamp NO AB to indicate non-asbestos material

To order or specify give: Product Code, Material and Quantity
Example: LA L100, Aluminum, 2500 pcs.

LACING RING



Size	One size shown
Material	Zinc Alloy - bright Zinc plated or Stainless Steel

To order or specify give: Product Code and Quantity
Example: LA RING, 2500 pcs.





SECTION 8
METRIC WELD STUDS

FOR INQUIRIES, TO PLACE ORDERS,
SERVICE AND TECHNICAL SUPPORT CONTACT
ANY OF THE FOLLOWING:

OFFICE: 1-800-462-9353
713-939-8903

EMAIL: INFO@SUNBELTSTUDWELDING.COM



website www.sunbeltstudwelding.com **email** info@sunbeltstudwelding.com
6381 Windfern Road, Houston, TX 77040 **telephone** 1.800.462.9353 - Houston 713.939.8903 **fax** 713.939.9013

Metric Weld Studs

METRIC WELD STUDS - GUIDE

The chart below indicates the weld studs commonly supplied in metric sizes. The technical details for the stud type or styles throughout this literature apply to metric studs. Should additional specifications be required, please indicate this in the Request for Quote.

Some types or styles of weld studs are used in the imperial size when requested in a metric size because the difference is not meaningful to the application (ie. HCA's, HSC's, DBA's and PSR's). Should the substitution not be possible, please note this on the Request for Quote.

Stud Type / Style	Applicable Comments
Arc Weld Studs:	
Threaded - Externally	Various metric sizes are stocked.
Threaded - Internally	Generally these are made to order. Metric taps are common
No Thread	Generally metric sizes are made to order
CD Weld Studs:	
Threaded - Externally	Various metric sizes are stocked
Threaded - Internally	Some flanged metric sizes are stocked. Many metric tap studs are made to order.
No Thread	Generally metric sizes are made to order
Short Cycle Weld Studs:	
Threaded - Externally	Various metric sizes are stocked.
Threaded - Internally	Generally these are made to order. Metric taps are common
No Thread	Generally metric sizes are made to order

Note: Threaded - internally studs are commonly made to order due to the weld stud dimensions, tap size and or tap depth required by the application.

Threaded - internally studs are often called "Tap Studs" or "Tapped Pads."





SECTION 9

SHORT CYCLE STUD WELDING GENERAL INFORMATION & TECHNICAL DETAILS

FOR INQUIRIES, TO PLACE ORDERS,
SERVICE AND TECHNICAL SUPPORT CONTACT
ANY OF THE FOLLOWING:

OFFICE: 1-800-462-9353
713-939-8903

EMAIL: INFO@SUNBELTSTUDWELDING.COM



website www.sunbeltstudwelding.com **email** info@sunbeltstudwelding.com
6381 Windfern Road, Houston, TX 77040 **telephone** 1.800.462.9353 - Houston 713.939.8903 **fax** 713.939.9013

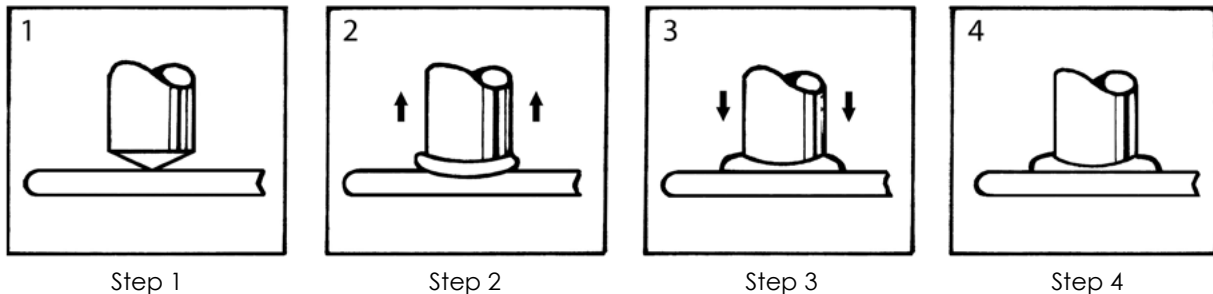
Short Cycle Stud Welding

SHORT CYCLE STUD WELDING PROCESS DESCRIPTION

Short Cycle Drawn Arc Stud Welding is commonly referred to as "Short Cycle Stud Welding" or "SC."

The SC welding sequence is the same as the sequence of Arc Stud Welding, however, with relatively higher currents and shorter welding times (100 milliseconds).

The SC welding process is very suitable for stud diameters up to 1/2" (12mm) on thin sheets. To achieve a high welding quality, use of a shielding gas is recommended.



- 1) The welding gun is positioned over the base material and the main gun spring is partially compressed.
- 2) The trigger is pressed and the stud lifts off the base material, drawing an arc. The arc melts the end of the weld stud and the base material below. The process times out and the main current is shut off.
- 3) The main spring plunges the weld stud down into the molten pool of metal in the base material. The cycle is complete and the resulting weld bond develops full strength of the fastener in the weld zone.
- 4) The weld gun is withdrawn from the weld stud.



Short Cycle Stud Welding

SHORT CYCLE WELD STUDS – TECHNICAL DETAILS

Threaded & No Thread Short Cycle (SC) Weld Studs: Sunbelt Stud Welding has various sizes of externally and internally threaded weld studs and various sizes of no thread weld studs. These weld studs are used in various automotive and industrial applications.

Threads: The chart below depicts the thread standards for imperial and metric external and internal threads. Unless requested or quoted otherwise, threads will be quoted based on these common thread standards.

Unless indicated or quoted otherwise, external threads will be a rolled type thread. The strength and surface finish of rolled threads are considered to be superior to cut type threads.

Thread Type	External Threads	Internal Threads
Imperial Threads - Coarse	UNC-2A	UNC-2B
Imperial Threads - Fine	UNF-2A	UNF-2B
Metric Threads	Class 6g	Class 6H

Auto Feed Quality: All SC weld studs are available in auto feed quality. This allows for usage in auto feed stud welding systems. Auto feed hand guns and weld heads are available with the power source(s) and feeding equipment for incorporation into automated CNC and robotic systems. Auto feed quality should be requested at the time of quotation.

Material: The chart below depicts the common material types with corresponding typical tensile strengths used to produce SC Weld Studs.

Note, all externally threaded mild steel SC studs are copper flashed / plated.

Material Type(s)	Typical Tensile Strength	
	Ultimate (psi)	Yield (psi)
Mild Steel C1006 -C1018 range	55,000	35,000
Stainless Steel 18-8 (302HQ & 304)	75,000	30,000
Aluminum Alloy 5356 & 5154	40,000	29,000
Aluminum Alloy 1100	21,000	20,000



Short Cycle Stud Welding

SHORT CYCLE WELD STUDS - TECHNICAL DETAILS

Plating: For mild steel studs, copper plating is standard for externally threaded studs. Upon request Nickel, Zinc and other plating's are available.

Annealing: All low carbon steel and stainless steel studs are annealed where required.

Weld Base: Studs are available in the Flanged condition. Other flange diameters and weld base dimensions are quoted upon request.

Length Reduction: SC Studs have an approximate length reduction from welding of 0.030 inches.

Flux: SC Studs are not flux loaded.

Shielding: The SC Process does not require shielding gas up through 1/4" diameter studs, however, in most cases it is recommended to use a shielding gas.

Welding Position: SC Studs can be welded in the down hand, side hand and overhead positions. In the side hand and overhead positions this becomes increasingly more difficult as the stud diameter increases.

Available Sizes: SC studs are available in diameters up through 1/2" (M12) and length is not a limitation. SC studs over 3/8" Diameter typically do not have a flange and are made to order.

Visual Inspection: The weld is acceptable if a 360 degree weld flash is present.

Mechanical Testing: Testing can be done by bend testing or torque testing. The bend test should be done by bending the stud 30 degrees by striking with a hammer or bending with a pipe.

For torque testing, please refer to the CD Stud Weld Inspection - Mechanical (torque values). These values are the same for SC type studs.

Weight Charts: Please see the CD Weld Stud Weight Charts for these values.





SECTION 10
SHORT CYCLE WELD STUDS

FOR INQUIRIES, TO PLACE ORDERS,
SERVICE AND TECHNICAL SUPPORT CONTACT
ANY OF THE FOLLOWING:

OFFICE: 1-800-462-9353
713-939-8903

EMAIL: INFO@SUNBELTSTUDWELDING.COM



website www.sunbeltstudwelding.com **email** info@sunbeltstudwelding.com
6381 Windfern Road, Houston, TX 77040 **telephone** 1.800.462.9353 - Houston 713.939.8903 **fax** 713.939.9013

Short Cycle Weld Studs

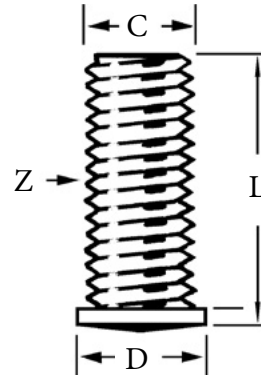
SCT - SHORT CYCLE THREADED WELD STUDS - TECHNICAL DETAILS

The CD Drawn Arc process and the Arc Short Cycle process are the best equipment options for welding of Short Cycle weld studs.

In some applications the Standard Arc Process can be used without the ceramic ferrule.

The small flange diameter allows for components to be easily mounted on welded studs.

For assistance contact Sunbelt Stud Welding.



Stud Specifications				Standard Accessories			
Thread Size	Stud Diameter	Flange Diameter	Min. Length	Standard Adjustable Chuck	Standard Adjustable Chuck Long Style	Long Collet 2-3/8" Long	Euro Collet 1.80" Long
C	Z	D	L	P/N	P/N	P/N *	P/N
4-40	0.112	0.143	0.250	CN-010	CM-010	CDBN-010	CDBS-010
6-32	0.138	0.169	0.250	CN-013	CM-013	CDBN-013	CDBS-013
8-32	0.164	0.195	0.250	CN-015	CM-015	CDBN-015	CDBS-015
10-24	0.190	0.221	0.250	CN-018	CM-018	CDBN-018	CDBS-018
10-32	0.190	0.221	0.250	CN-018	CM-018	CDBN-018	CDBS-018
1/4-20	0.250	0.281	0.250	CN-025	CM-025	CDBN-025	CDBS-025
5/16-18	0.312	0.344	0.500	CN-031	CM-031	CDBN-031	CDBS-031
3/8-16	0.375	0.418	0.500	CN-037	CM-037	CDBN-037	CDBS-037

* Note, Requires Long Style Stops, see Accessories for details

To order or specify give: Stud Code, C x L, Material and Quantity

Example: SCT, 10-24 X 0.50, mild steel, 8000 pcs.

See **Accessories** for accessory detail.

See **Short Cycle Stud Welding – General Information** and **Technical Details** for industry specifications, thread options, Before Weld (BW) length, flux, raw material details, plating options, annealing, load strengths and shipping weights.



website www.sunbeltstudwelding.com email info@sunbeltstudwelding.com
 6381 Windfern Road, Houston, TX 77040 telephone 1.800.462.9353 - Houston 713.939.8903 fax 713.939.9013



Short Cycle Weld Studs

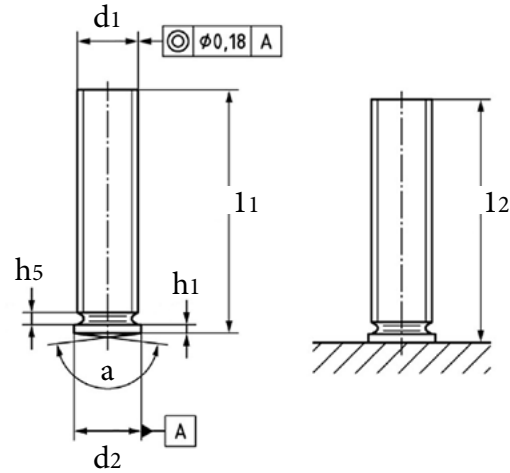
SCM – SHORT CYCLE THREADED WELD STUDS – METRIC THREAD SIZES



PS Threaded studs with flange

Material - Steel 4.8 copper coated (suitable for welding)

Suitable for stud feeding:	
Manual	Automation 1)
	



Stud Specifications					
Diameter d_1	$l_1+0.6$	$d_2\pm 0.2$	h_1	max h_5	$a\pm 2^\circ$
M5	Length 10 mm - 40 mm	6.0	0.7 - 1.4	1.0	166°
M6		7.0			
M8		9.0	0.8 - 1.4	1.5	

Custom dimensions are not listed in the table, pricing available on request.

1) For automation:

Diameter: M3 to M8 (M10 with modification only)

Stud length: 8 to 40mm (other lengths on request)

To order or specify give: Stud Code, Diameter, Length and Quantity

Example: SCM, M6, 20mm, 5000 pcs.

See **Accessories** for accessory detail.

See **Short Cycle Stud Welding – General Information** and **Technical Details** for industry specifications, thread options, Before Weld (BW) length, flux, raw material details, plating options, annealing, load strengths and shipping weights.



website www.sunbeltstudwelding.com email info@sunbeltstudwelding.com
6381 Windfern Road, Houston, TX 77040 telephone 1.800.462.9353 - Houston 713.939.8903 fax 713.939.9013

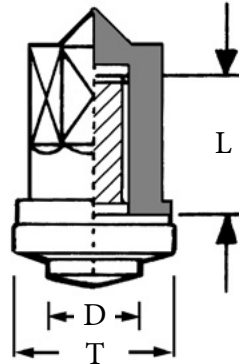
Short Cycle Weld Studs

SCM – SHORT CYCLE GROUND STUD W/ CAP – TECHNICAL DETAILS

The Arc Short Cycle process is the best equipment option for welding Short Cycle Ground Studs.

The Standard Arc Process can be used without the ceramic ferrule. Gas shielding is recommended regardless of process used.

Studs are available with or without the caps installed. Studs are available in mild steel and 18-8 stainless steel. Mild steel studs are copper or nickel plated.



The Short Cycle Ground Stud is used as a ground stud in several automotive and industrial applications. The plastic cap protects the threads and washer face during paint operations. Once the cap is removed, the paint free washer face and threads provide an excellent connection point for ground terminals.

Stud Specifications					Standard Accessories *		
Thread Size	Thread Length	Weld Base Diameter	Collar Diameter	Washer Face Diameter	Standard Adjustable Chuck	Standard Adjustable Chuck Long Style	Euro Collet 1.80" Long
C	L	D	T	W	P/N	P/N	P/N
M6-1.00	0.472	0.317	0.550	0.460	CN-006M	CM-006M	CDBS-006M
	0.591						
M8-1.25	0.472	0.390	0.550	0.460	CN-008M	CM-008M	CDBS-008M
	0.591						

* For Chucks & Collet to weld with the cap installed, contact your SSW Representative

To order or specify give: Stud Code, C x L, Material and Quantity
 Example: SCM, M6-1.00 X .472, mild steel, 5000 pcs.

See **Accessories** for accessory detail.

See **Short Cycle Stud Welding – General Information** and **Technical Details** for industry specifications, thread options, Before Weld (BW) length, flux, raw material details, plating options, annealing, load strengths and shipping weights.



Short Cycle Weld Studs

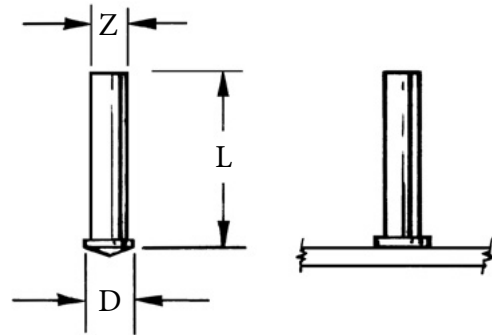
SCN – SHORT CYCLE NO THREAD WELD STUDS – TECHNICAL DETAILS

The CD Drawn Arc process and the Arc Short Cycle process are the best equipment options for welding of Short Cycle weld studs.

In some applications the Standard Arc Process can be used without the ceramic ferrule.

The small flange diameter allows for components to be easily mounted on welded studs.

For assistance contact Sunbelt Stud Welding.



Stud Specifications			Standard Accessories			
Stud Diameter	Flange Diameter	Min. Length	Standard Adjustable Chuck	Standard Adjustable Chuck Long Style	Long Collet 2 3/8" Long	Euro Collet 1.80" Long
Z	D	L	P/N	P/N	P/N*	P/N
0.094	0.143	0.250	CA	CA	CA	CA
0.112	0.156	0.250	CN-010	CM-010	CDBN-010	CDBS-010
0.125	0.156	0.250	CN-012	CM-012	CDBN-012	CDBS-012
0.138	0.195	0.250	CN-013	CM-013	CDBN-013	CDBS-013
0.156	0.221	0.250	CN-004M	CM-004M	CDBN-004M	CDBS-004M
0.164	0.221	0.250	CN-015	CM-015	CDBN-015	CDBS-015
0.188	0.221	0.250	CN-018	CM-018	CDBN-018	CDBS-018
0.215	0.281	0.250	CA	CA	CA	CA
0.250	0.281	0.250	CN-025	CM-025	CDBN-025	CDBS-025
0.273	0.343	0.375	CA	CA	CA	CA
0.312	0.344	0.500	CN-031	CM-031	CDBN-031	CDBS-031
0.375	0.418	0.500	CN-037	CM-037	CDBN-037	CDBS-037

* Note, Requires Long Style Stops, see Accessories for details

CA - Check Availability - not standard stock items

To order or specify give: Stud Code, D x L, Material and Quantity

Example: SCN, .156 X 0.75, mild steel, 2000 pcs.

See **Accessories** for accessory detail.

See **Short Cycle Stud Welding – General Information** and **Technical Details** for industry specifications, thread options, Before Weld (BW) length, flux, raw material details, plating options, annealing, load strengths and shipping weights.



website www.sunbeltstudwelding.com email info@sunbeltstudwelding.com
 6381 Windfern Road, Houston, TX 77040 telephone 1.800.462.9353 - Houston 713.939.8903 fax 713.939.9013



SECTION 11

CABLE HANGERS & CLAMPS & MARINE PRODUCTS

FOR INQUIRIES, TO PLACE ORDERS,
SERVICE AND TECHNICAL SUPPORT CONTACT
ANY OF THE FOLLOWING:

OFFICE: 1-800-462-9353
713-939-8903

EMAIL: INFO@SUNBELTSTUDWELDING.COM



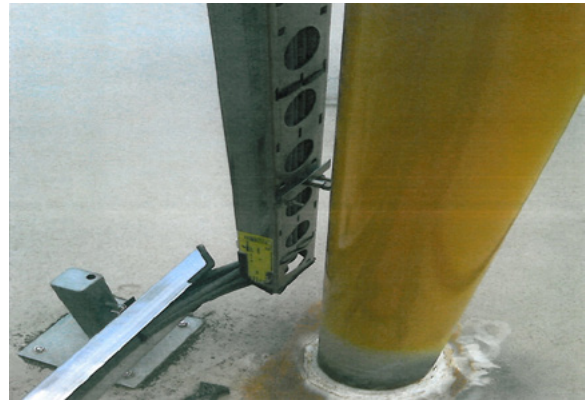
website www.sunbeltstudwelding.com **email** info@sunbeltstudwelding.com
6381 Windfern Road, Houston, TX 77040 **telephone** 1.800.462.9353 - Houston 713.939.8903 **fax** 713.939.9013

SMO / STS Overview

SMO/STS OVERVIEW

The Sunbelt Multi-Option (SMO) Hanger is Sunbelt Stud Welding's new solution for mounting cables, cable tray/channel and pneumatic tubing quickly and securely. With both vertical slots and horizontal holes, the SMO allows the flexibility for use in a variety of applications.

Whether using as a support for mounting cable tray/channel, cable/pneumatic tubing runs coming out of tray or used as a top support (SMOTS) with optional Sunbelt Tubing Spacer (STS), the Sunbelt Multi-Option Hanger has the flexibility of your needs.



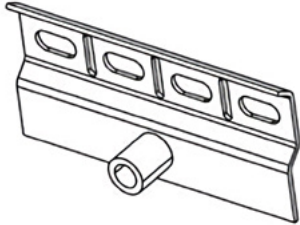
In the Sunbelt Tubing Spacer (STS), Sunbelt Stud Welding has partnered with Deepwater Corrosion Services in the manufacturing of a specially configured non-corrosive, UV resistant and rigid thermoplastic (I-ROD). Specially designed notches allow separation between and air flow under the metal tubing thus ensuring no moisture is collected eliminating possible corrosion or puncture damage caused by shock or vibration. These notches also ensure any tubing diameter securely stays in place without any metal surface touching the pneumatic tubing.

The SMO and STS can be combined for custom situations depending on your particular needs and application. Please consult the product detail sheets and contact Sunbelt Stud Welding for technical assistance.

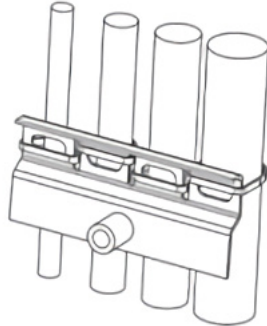


Sunbelt Multi-Option Hanger (SMO)

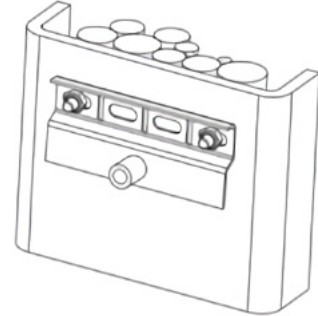
SUNBELT MULTI-OPTION HANGER (SMO)



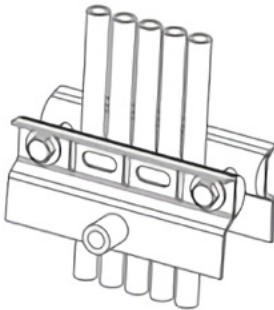
The Sunbelt Multi-Option Hanger (SMO)



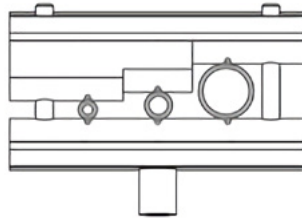
as a Cable Hanger
15-3



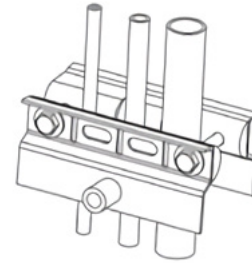
as a Tray Support
15-3



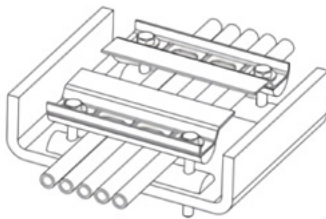
SMO with STS
15-4



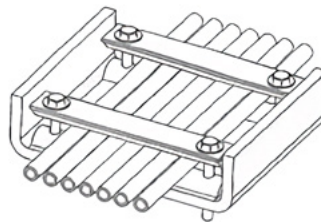
SMO with STS-TS
15-4



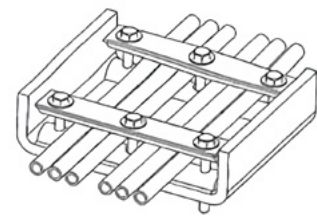
SMO with STS-TS
15-4



SMO-TS Top Support
15-5



Flat Bar Top Support
15-5



Flat Bar Top Support
15-5

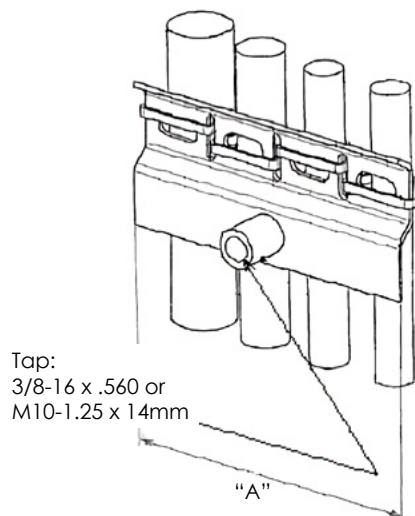
Sunbelt Multi-Option Hanger

SUNBELT MULTI-OPTION HANGER (SMO)

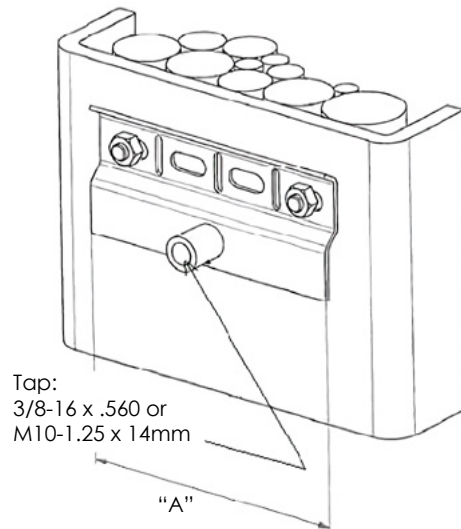
Special Features of the Multi-Option Hanger

- Can be used for mounting cable, cable tray/channel or pneumatic tubing
- Easily installs onto a 3/8" or M10 diameter weld stud
- Mounted to cable tray/channel with 1/4-20 bolts/nuts or-
- Mounts inside tray for pneumatic tubing run with 1/4-20 bolts/nuts or-
- Mounts to 3/8" or M10 diameter weld stud and associated hardware attached for tubing support
- Can mount different cable diameters to the same hanger which reduces inventory
- Less inventory = less cost
- Available in 2", 3", 4", 6", & 8" lengths
- In stock item
- Neat appearance

Sunbelt Multi Option Hanger				
Part Number	Turning Radius	Alloy	Max Number Slots	"A"
SMO-002	1 1/4"	SS-316	1	2"
SMO-003	1 7/8"	SS-316	2	3"
SMO-004	2 1/2"	SS-316	3	4"
SMO-006	3 3/4"	SS-316	5	6"
SMO-008	5"	SS-316	7	8"



Example A:
Used as Cable Hanger

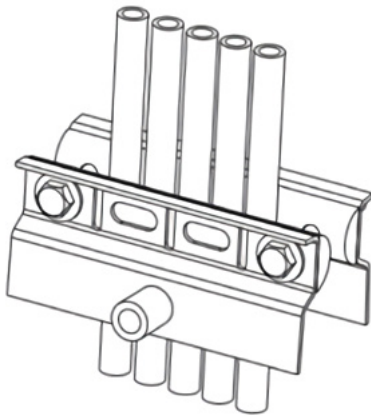


Example B:
Used with Cable Tray

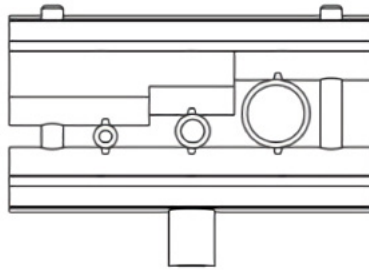


SMO-TS & STS-MOD Applications

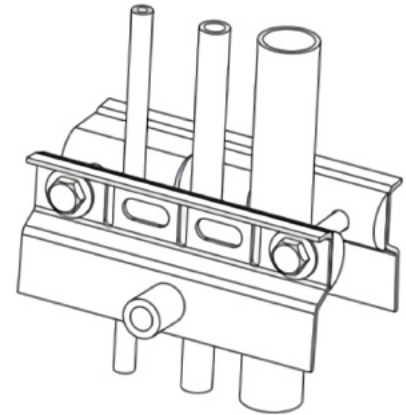
SMO-TS & STS-MOD APPLICATIONS



SMO with STS



SMO with STS-TS



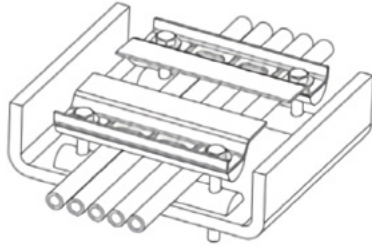
SMO with STS-TS

- Easily installed onto 3/8" or M10 diameter weld stud for running tubing to hydraulic & pneumatic equipment.
- May be used as support between long pneumatic tubing runs for support by using STS-TS-002" thru STS-TS-008" wide runs or up to 36" wide runs with flat bar or channel. Wider sections available as modified.
- High impact, non-corrosive thermoplastic (I-ROD/www.stoprust.com) securely locks tubing of same or different diameters in place with no metal to metal contact, thus eliminating the possibility of pitting, corrosion or damage of metallic tubing.
- Specialty notches in I-ROD allow airflow between the surface of the tubing and base to eliminate condensation or moisture build up.
- Spacing of tube diameters of 1/8" to 1" diameter allowing multiple diameters of tubing to be installed on one support (STS-MOD).
- Thermoplastic material (I-ROD) proven and trusted in the offshore oil & gas industry since 1988.
- STS uses "I-ROD" specified by major oil companies including Shell, Chevron, Conoco Phillips, Sunoco, Exxon Mobil, Enbridge, Dow, Florida Gas, Southern Union Gas, Williams Pipeline, Imperial Oil, One OK, Valero, Kinder Morgan and more.
- SMO/SMO-TS shape (STS-stud or STS-tray) increases strength compared to standard flat bar configuration.

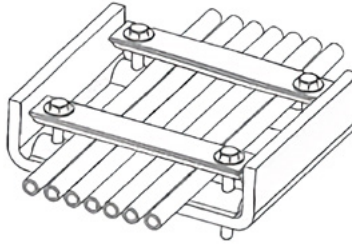


STS Tray Applications with SMO-TS Flat Bar Support

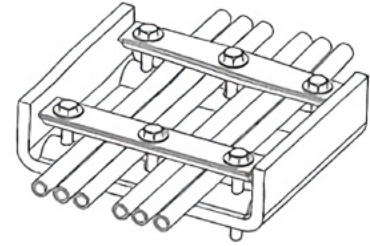
STS TRAY APPLICATIONS WITH SMO-TS FLAT BAR SUPPORT



SMO-TS Top Support



Flat Bar Top Support



Flat Bar Top Support

- Easily installed into fiberglass/stainless steel tray or channel for running tubing to hydraulic & pneumatic equipment.
- Tubing runs for support by using STS-TS-002 thru STS-TS-008 wide runs or up to 36" wide runs with flat bar or channel (see next page).
- High impact, non-corrosive thermoplastic (I-ROD specifications page 11.8) securely locks tubing of same or different diameters in place with no metal-to-metal contact, thus eliminating the possibility of pitting, corrosion or damage of metallic tubing.
- Specialty notches in I-ROD allow airflow between the surface of the tubing and base to eliminate condensation or moisture build up.
- Spacing of tube diameters of 1/8" to 1 1/4" diameter allowing multiple diameters of tubing to be installed on one support.
- Thermoplastic material (I-ROD) proven and trusted in the offshore oil and gas industry since 1988.
- STS uses "I-ROD" specified by major oil companies including Shell, Chevron, ConocoPhillips, Sunoco, ExxonMobil, Enbridge, Dow, Florida Gas, Southern Union Gas, Williams Pipeline, Imperial Oil, Oneok, Valero, Kinder Morgan and more.
- For quantities and sizes of tubing allowed in specific tray widths, refer to STS Tray/No Tray Table (page 15-11) for breakdown. Custom configurations such as multiple tubing diameters available upon request
- Specify inside width of tray/channel, number of tubes/diameters and direction of diameters left to right.
- Bolting positions determined by length of SMO/STS or total inches greater than 6" of STS material.



STS Assembly Lengths

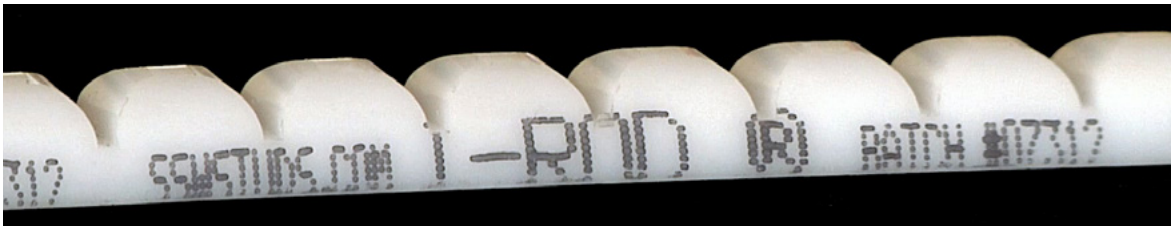
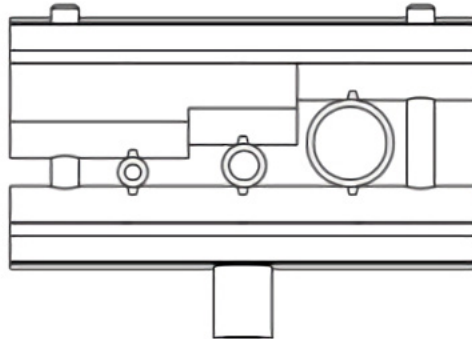
STS ASSEMBLY LENGTHS

Maximum Number of Tubes in Relation to Length of Sunbelt Tubing Spacer								
Quantity/Length of Bolting Hardware/Sunbelt Multi Option Top Support (SMO-TS), Channel (CNL) or Flat Bar (FB)								
	.050" Centers thru 3/8" Diameter Tubing			1.0" Centers thru 1" Diameter Tubing				# Bolts
	1/8"	1/4"	3/8"	1/2"	5/8"	3/4"	1"	
STS-002	1	1	1	1	1	1	0	
1/4-20 X 2 1/2"								2
STS-003	3	3	3	2	2	2	1	
1/4-20 X 2 1/2"								2
STS-004	5	5	5	3	3	3	2	
1/4-20 X 2 1/2"								2
STS-006	7	7	7	5	5	5	3	
1/4-20 X 2 1/2"								2
STS-008	10	10	10	6	6	6	4	
1/4-20 X 2 1/2"								3
STS-010	14	14	14	8	8	8	5	
1/4-20 X 2 1/2"								3
STS-012	20	20	20	10	10	10	6	
1/4-20 X 2 1/2"								*Note
STS-018	27	27	27	15	15	15	9	
1/4-20 X 2 1/2"								*Note
STS-024	42	42	42	20	20	20	12	
1/4-20 X 2 1/2"								*Note
STS-30	54	54	54	25	25	25	15	
1/4-20 X 2 1/2"								*Note
STS-036	64	64	64	30	30	30	18	
1/4-20 X 2 1/2"								*Note
*Note: Bolt every 6 inches SS Flat Bar recommended for lengths over 6 inches 2 flat washers, 1 lock washer and 1 hex nut per bolt								
Optional Top Supports:			SMO-TS-002 thru SMO-TS-008 1/4" TH X 3/4" W X ____" LONG 316SS (SS) OR 5061 ALUM 1" W X 3/8" H X ____" LONG 316SS CHANNEL					

Configuration/Ordering Examples				
STS Length	Tube Size	Max Number of Tubes	Top Support Requested	Part# Configuration
STS-008	3/8"	10	SMO-TS-008	STS008X3/8X10XSMOTS008
STS-024	3/8"	42	24 CNL	STS024X3/8X42X24CNL
STS-030	3/8"	54	30SSFB	STSOEOX3/8X54X30SSFB
TS-MOD-024	1/4", 3/8"	20, 22	24CNL	STSMOD024X1/4203/822X24CNL
Above is "modified" for multiple tube diameters. Specify tubing diameters from left to right.				

I-ROD™ Standard

I-ROD™ STANDARD



I-ROD™ Standard

Property Value	ASTM Test	Metric	Imperial
Density, 73OF (23O C)	D792	1.41 g/cm	0.0509lb/in3
Tensile Strength, 73OF (23O C)	D638	64.8 MPa	9,400 psi
Tensile Modulus of Elasticity, 73O F (23O C)	D638	2.62GPa	380 ksi
Elongation (at break), 73OF (23OC)	D638	30-60%	30-60%
Flexural Modules of Elasticity, 73OF (23OC)	D790	2.76GPa	400 ksi
Flexural Strength, 73OF (23OC)	D790	82.7MPa	13 ksi
Compressive Strength, 10% def, 73OF (23OC)	D695	103MPa	15 ksi
Coefficient of Friction (dry vs. steel)	N/A QTM 55007	.25	0.25
IZOD Impact (notched), 73OF (23OC)	D256	.534 J/cm	1 ft-lb/in notch
Hardness, Rockwell, 73OF (23OC) M/R	D785	88/120	88/120
Maximum Service Temperature	(Long Term)	83°C	181°F
Deformation Under Load	D621	1.0%	1.0%
Melting Point	D3418	168° C	329°F
Coefficient of Linear Expansion	E831	97.2 um/m/°C	54uin/in/°F
Heat Deflection Temperature, 265 psi	D648	220°F	220°F
Flammability Rating	VL94	HB	HB
Dielectric Strength, Short Term	D149	420V/mil	420V/mil



website www.sunbeltstudwelding.com email info@sunbeltstudwelding.com
 6381 Windfern Road, Houston, TX 77040 telephone 1.800.462.9353 - Houston 713.939.8903 fax 713.939.9013

Slotted Cable Hanger Application

SLOTTED CABLE HANGER APPLICATION



A 3/8 diameter 316 SS weld stud, welded in the web and on the flanged edge of the beam. SMO/SBS-002 slotted cable hangers (316SS) are threaded onto the weld studs. This hanger has one slot and can accommodate two cables, which are secured to the cable hanger using banding. This application is versatile because the weld stud can be stud welded on narrow areas and on thin base material allowing the most efficient routing of electrical cable.

A 3/8 diameter 316 SS weld stud, welded to the structure. As shown in the photo, cable support systems can be easily attached to overhead or vertical surfaces. The studs were welded following procedures specified in American Welding Society's "Recommended Practices for Stud Welding". This results in a full penetration weld that develops the full strength of the fastener. The weld is as strong as the fastener and the parent metal. Also, you don't reduce the strength of the parent material because there are no holes. An SMO/SBS-002 slotted cable hanger is threaded on the stud. The electrical cable is secured to the hanger by use of a banding strap. This system allows cable to be routed in a safe, secure, and out of the way position underneath the traffic area.



A 3/8 diameter 316 SS weld stud, welded around the perimeter of the cellar deck. SMO/SBS-004 slotted cable hangers are threaded onto the weld studs. This cable hanger has 3 slots and allows up to 4 cables of different diameters to be secured without bunching. Slotted cable hangers are available that can accommodate up to 8 cables. This method of securing electrical cable has withstood the test of time, maintaining its integrity through vibration, corrosion, and incidental impact for the life of the rig.

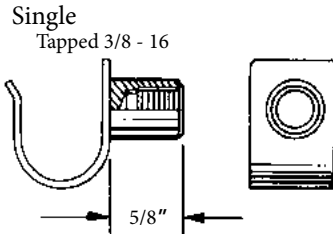
A 3/8 diameter 316 SS weld stud, welded inside the web of the beam. An SMO/SBS-004 SS cable hanger is threaded onto the stud and the electrical cable is secured using 316 SS banding. The result is a neat and easily maintained system. Cable can be added or removed without disturbing existing cables. Different size diameter cables can be attached because each cable is under dually supported. Useful for securing cable in the harshest environments, platform decks, control rooms, switchgear buildings, heldecks, and generation modules.



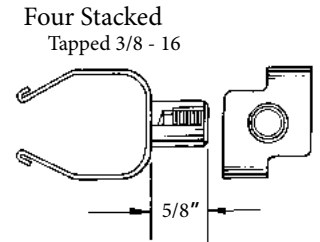
Cable Hangers - Crimp Type

CRIMP TYPE - TECHNICAL DETAILS

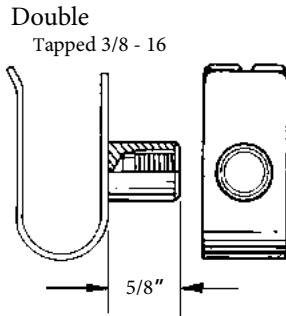
Catalog No.	Cable Diameter in inches From - To	
JCT 1020	.305	.371
JCT 1040	.375	.531
JCT 1051	.531	.680
JCT 1026	.437	.750
JCT 1027	.680	.900
JCT 1030	.750	1.000
JCT 1031	.900	1.224



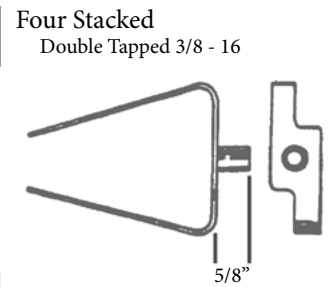
Catalog No.	Cable Diameter in inches
JCT 1181	.531



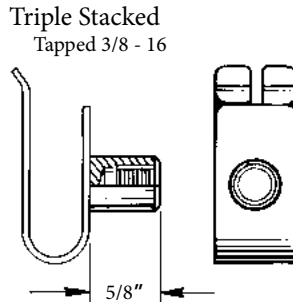
Catalog No.	Cable Diameter in inches From - To	
JCT 2001	.305	.371
JCT 1052	.375	.531
JCT 1162	.531	.680
JCT 2002	.437	.750
JCT 2003	.680	.900
JCT 2004	.750	1.000
JCT 2005	1.000	1.224



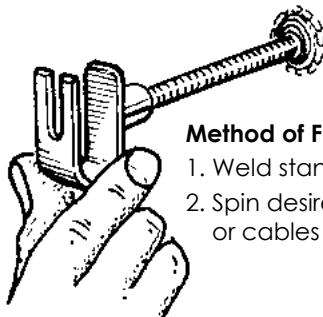
Catalog No.	Cable Diameter in inches
JCT 1041	.500
JCT 1042	1.000
JCT 1043	.750
JCT 1044	1.224
JCT 1045	.680



Catalog No.	Cable Diameter in inches From - To	
JCT 1170	.531	.531
JCT 1171	.325	.371



Cable Hangers are available in Mild Steel and Stainless Steel types 304 and 316.



Method of Fastening

1. Weld standard 3/8" dia. stud to overhead deck or bulkhead.
2. Spin desired hanger (crimp, plate or tubular type) onto stud. Secure cable or cables by crimping hanger or banding, depending on type of hanger.

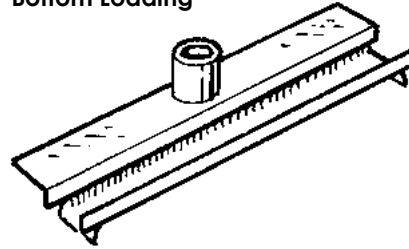


Cable Hangers - Plate Type

PLATE TYPE

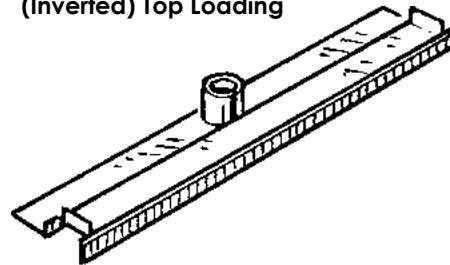
Catalog No.	Length-A in Inches
JPT 15002	2
JPT 15003	3
JPT 15004	4
JPT 15006	6
JPT 15008	8

Bottom Loading



Catalog No.	Length-A in Inches
JPT 16002	2
JPT 16003	3
JPT 16004	4
JPT 16006	6
JPT 16008	8

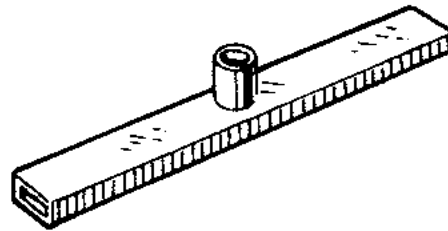
(Inverted) Top Loading



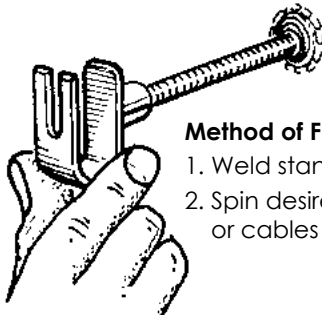
TUBULAR TYPE

Catalog No.	Length-A in Inches
JTT 0150	1.50
JTT 0250	2.50
JTT 0350	3.50
JTT 0450	4.50
JTT 0550	5.50
JTT 0650	6.50
JTT 0750	7.50

7/8" x 3/8" Rectangular



Cable Hangers are available in Mill Steel and Stainless Steel types 304 and 316.



Method of Fastening

1. Weld standard 3/8" dia. stud to overhead deck or bulkhead.
2. Spin desired hanger (crimp, plate or tubular type) onto stud. Secure cable or cables by crimping hanger or banding, depending on type of hanger.



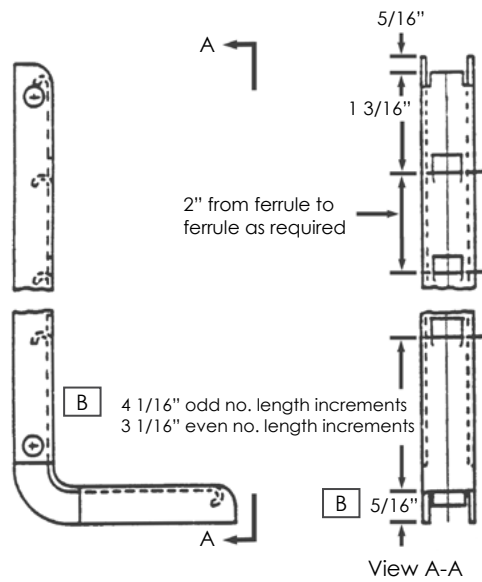
website www.sunbeltstudwelding.com email info@sunbeltstudwelding.com
 6381 Windfern Road, Houston, TX 77040 telephone 1.800.462.9353 - Houston 713.939.8903 fax 713.939.9013

Cable Hanger - Banding Type

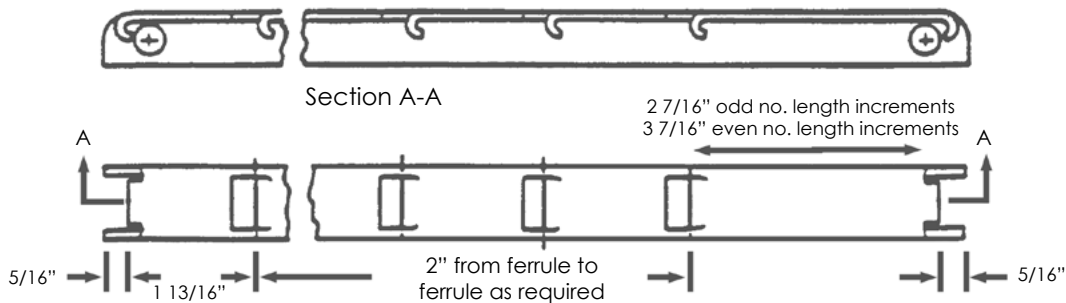
CABLE HANGERS: BANDING-TYPE

Shipbuiding/Offshore: Cable Hanger: Banding Type: Type 7: Stamped Ferrule Option

Note: Stamped Ferrule Dimensions Typical only.
Complete 180 degrees arc required.



Shipbuiding/Offshore: Cable Hangers Banding Type - Type 8: Stamped Ferrule Option



1. Also, all banding hangers, Types 2, 3, 7, 8, 19 and 20 can be manufactured in strict accordance with Buships DWG. 302-1716084.

2. All banding hanger ferrules, PC. NOS. 1361, 1362, 1363, and 1367 manufactured in strict accordance with Buships DWG. 9000-S6202-73980, section 1, sheet 36.

3. All banding hanger slotting is on 2" centers for types 7 and 8 and on 2" centers for types 2 and 3.

4. Finish:

- (a) banding hangers, types 2, 3, 7 and 8 - military yellow zinc chromate.
- (b) banding hangers, type 19 and 20 - zinc plated.

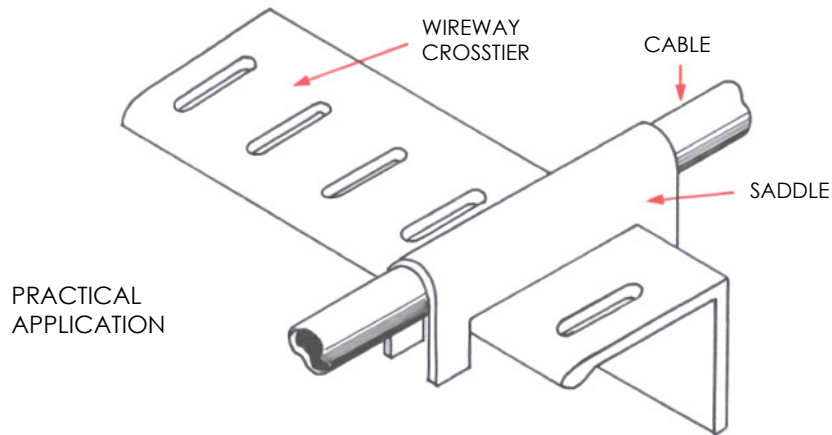
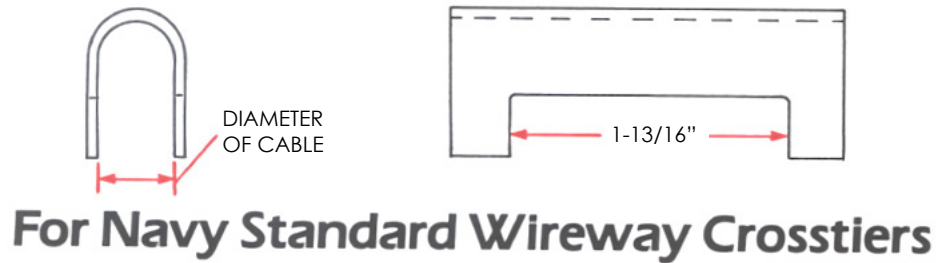
Note: Hanger accessory items shown on this page are commonly used for main and local wire way runs aboard submarines. However these items are not restricted to that end use.

All hangers are intended for use with standard 3/8" shouldered welding studs.



Coaxial Cable Saddles

COAXIAL CABLE SADDLES



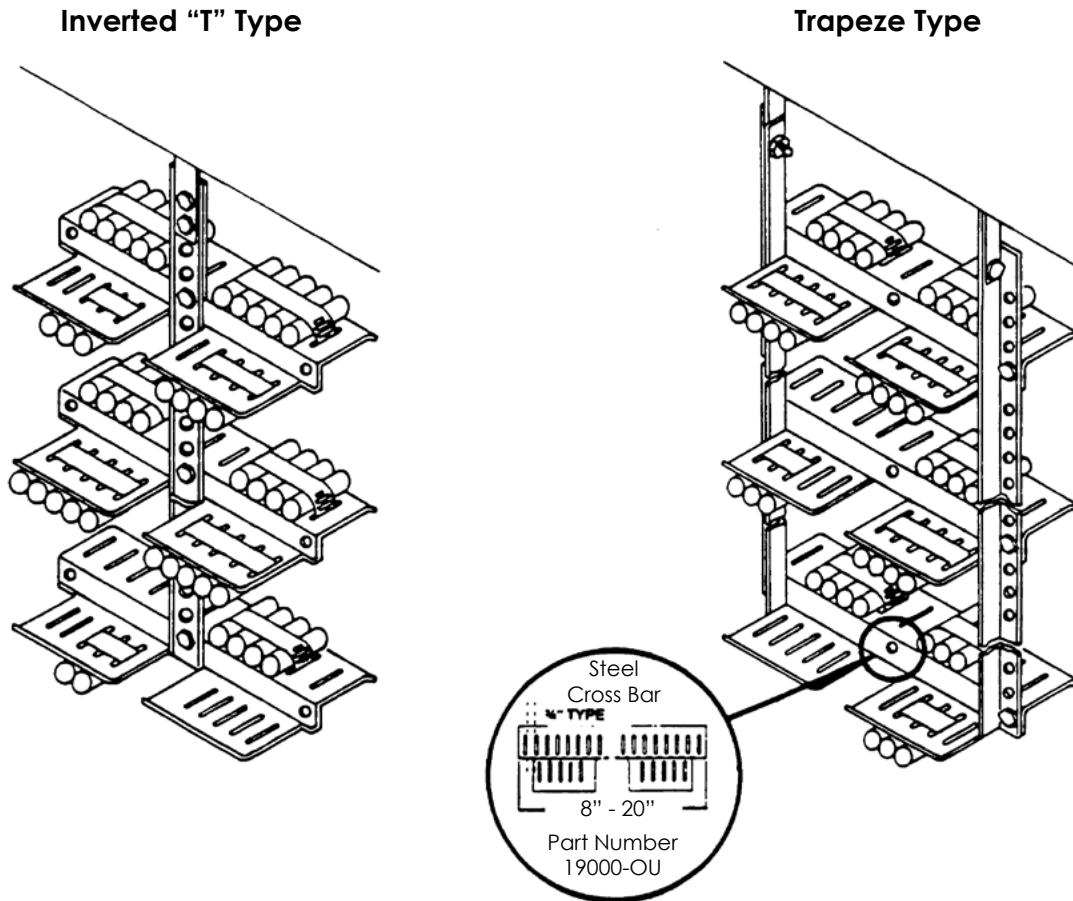
Part Number Steel	Part Number Aluminum	Part Number Stainless	Number of Cables	Diameter of Cable
0125	0125S	0125SS	1	.25
0150	0150A	0150SS	1	.50
0175	0175A	0175SS	1	.75
0100	0100A	0100SS	1	1.00
01125	01125A	01125SS	1	1.25
0225	0225A	0225SS	2	.25
0250	0250A	0250SS	2	.50
0275	0275A	0275SS	2	.75
02100	02100A	02100SS	2	1.00
02125	02125A	02125SS	2	1.25
0325	0325A	0325SS	3	.25
0350	0350A	0350SS	3	.50
0375	0375A	0375SS	3	.75
03100	03100A	03100SS	3	1.00
03125	03125A	03125SS	3	1.25



Inverted "T" and Trapeze Hanger w/Over and Under Crossbars

INVERTED "T" AND TRAPEZE HANGER W/OVER & UNDER CROSSBARS

TYPICAL SHIPBOARD INSTALLATION



For applications where cable must be run through areas with limited overhead space, the over and under style system with over and under cross bars #19000-OU is available. It is identical to the #19000 cross bar, except that it has an extra tier to facilitate another layer of cable.

The Inverted "T" & Trapeze Over and Under System is available in high weldable grade steel and type 304 or 316 stainless steel.

The Inverted "T" & Trapeze Over and Under System conforms to the test arrangement criteria of Navships DWG. 9000-S6202-73980, section 1 sheet G and has been successfully tested to MIL-S-901C, Grade A, Class 1 shock, and MIL-STD-167-1, Type 1 (5-15 Hz) vibration.

The Inverted "T" & Trapeze Over and Under System is manufactured in complete accordance with the detail specifications outlined in Navships DWG. 9000-S6202-73980, with all banding slots in the cross bar having complete capability for use with standard banding methods or "Snaplock" cable clamps.

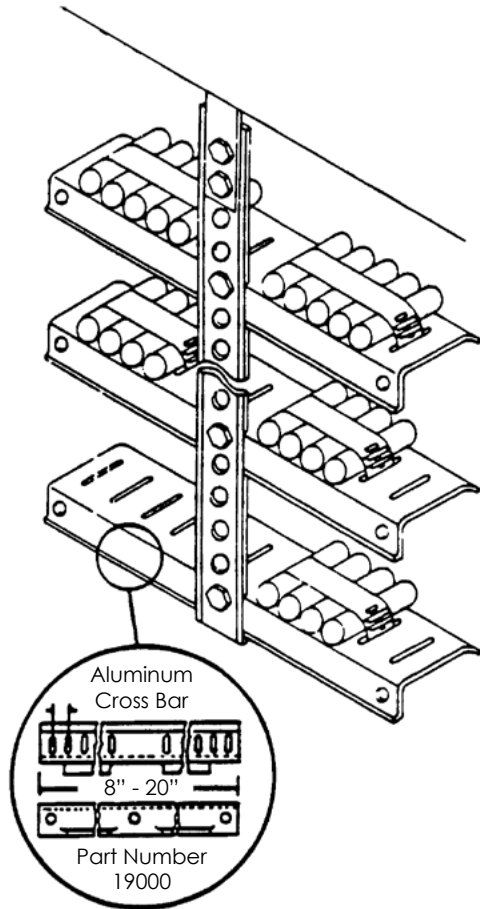


Inverted "T" and Trapeze Hanger

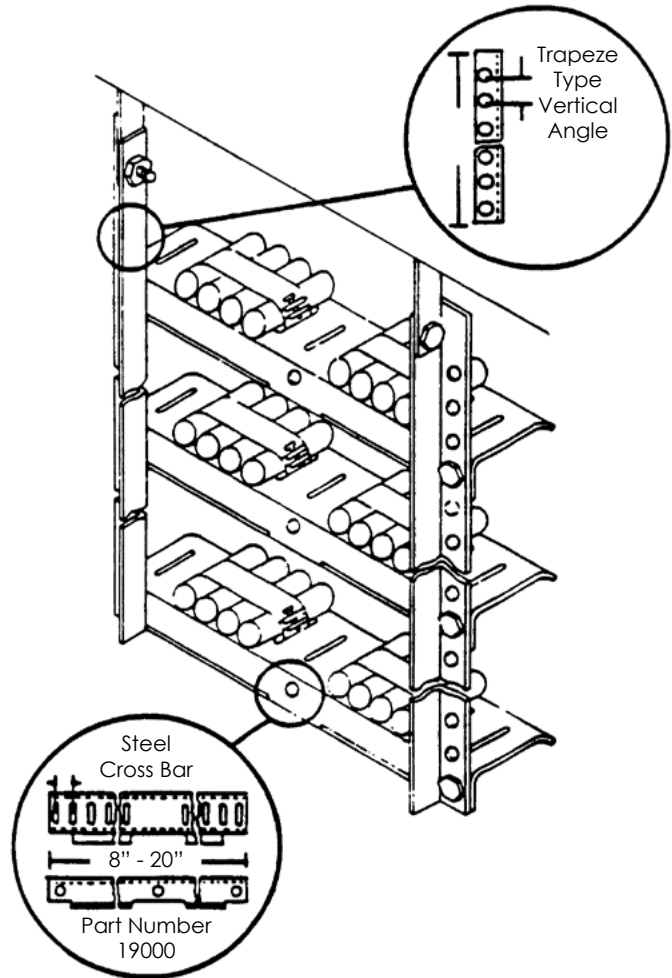
INVERTED "T" AND TRAPEZE HANGER

TYPICAL SHIPBOARD INSTALLATION

Inverted "T" Type



Trapeze Type



The Inverted "T" & Trapeze type system offers a combination of weight reduction, speedy installation, simplicity, versatility and monetary savings to an industry concerned with ways of reducing ship construction costs. As testimony to the above claims, this system is currently being used for supporting main cable runs aboard many navy and commercial marine vessels.

The Inverted "T" & Trapeze type system conforms to the test arrangement criteria of Navships DWG. 9000-S6202-73980, section 1, sheet G and has been successfully tested to MIL-S-901C (grade A shock), and MIL-STD-167, TY. I (vibration).

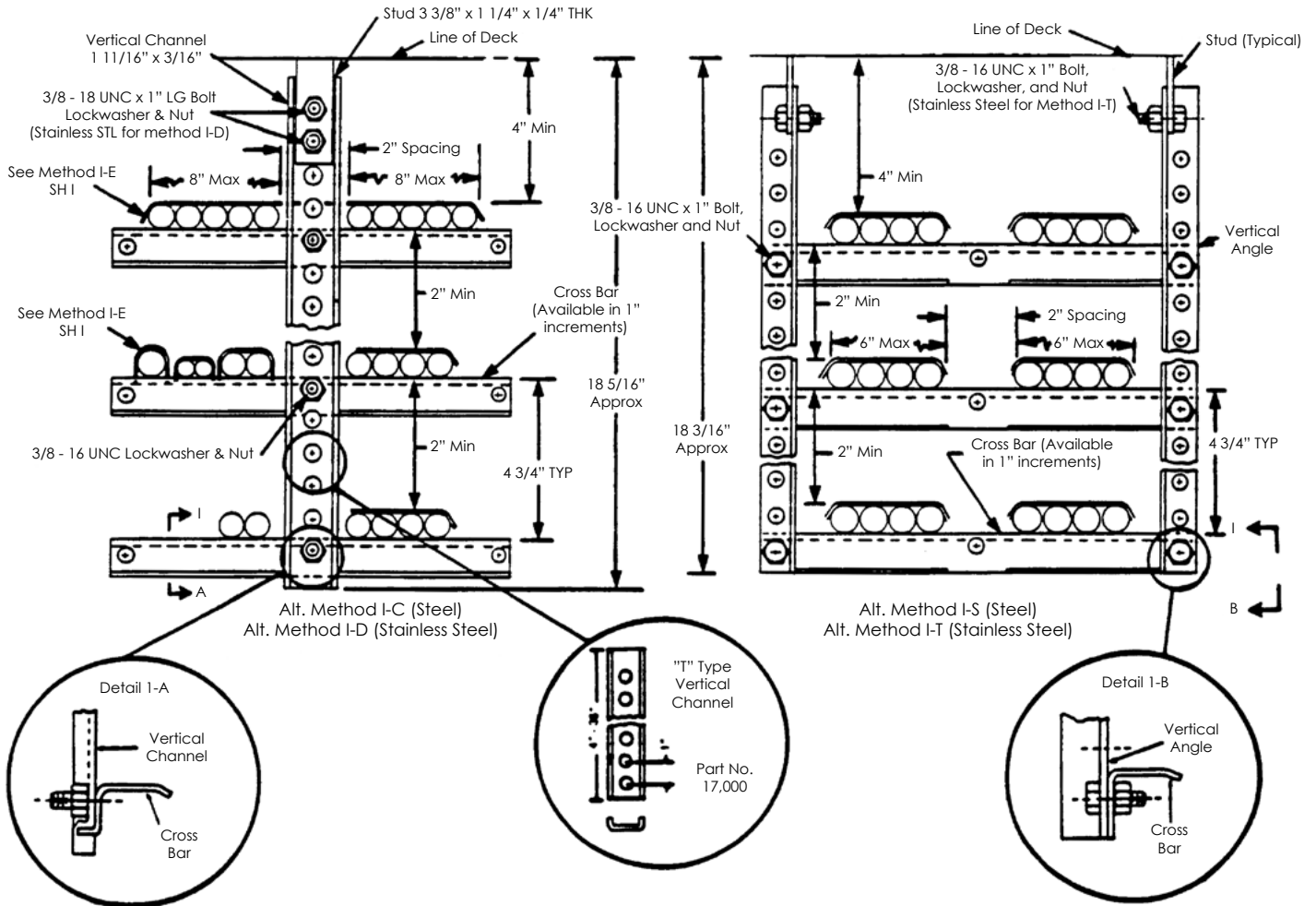
The Inverted "T" & Trapeze type system is manufactured in complete accordance with the detail specifications outlined in Navships DWG. 9000-S6202-73980, section 2, sheets 223, 224 & 225, with all banding slots in the cross tier having complete capability for use with the standard banding method or "snaplock" cable clamp.



Inverted "T" and Trapeze Hanger

INVERTED "T" AND TRAPEZE HANGER

METHODS OF SUPPORTING CABLES

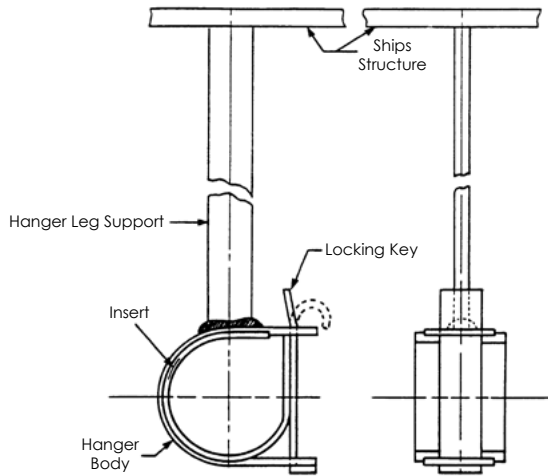


- All hanger components are available in high weldable grade steel, stainless steel & aluminum, with finish to customer's specification.
- All hangers can be supplied pre-assembled to the customer's exact loading and stacking requirements or unassembled.
- All hanger components can be assembled into one (1) to five (5) tier configurations ("T" or "Trapeze") utilizing standard 3/8-16 hardware (hex bolt, nut & lockwasher), allowing increments of adjustment between the cross-tiers of one (1") inch over the full length of the channel or angle leg support.
- The cross-tier is completely interchangeable and can be used for either the "T" or "Trapeze" style assembly.



Pipe Hanger: "Key-Lock" Type

PIPE HANGER: "KEY-LOCK" TYPE



For 3/8" thru 4" IPS Pipe

Material Specifications

- Hanger Leg Support
- Hot Rolled Steel (M1015)
- Hanger Body
- Cold Rolled Steel (C1015-C1018)
- Locking Key
- Cold Rolled Steel (C1015-C1018)
- Insert
- Rubber (MIL-R-6855, CL2, 60 DURO)
- Finish
- Yellow Zinc Chromate (STD)
- Special finish to customer requirements also available

Pipe Hanger

Assembly Number	Nominal (inches) IPS	Leg Support Length	Assembly Number	Nominal (inches) IPS	Leg Support Length	Assembly Number	Nominal (inches) IPS	Leg Support Length
1200-04	3/8"	4"	1203-04	1"	4"	1206-04	2"	4"
1200-08		8"	1203-08		8"	1206-08		8"
1200-12		12"	1203-12		12"	1206-12		12"
1200-16		16"	1203-16		16"	1206-16		16"
1200-18		18"	1203-18		18"	1206-18		18"
1201-04	1/2"	4"	1204-04	1 1/4"	4"	1207-04	2 1/2"	4"
1201-08		8"	1204-08		8"	1207-08		8"
1201-12		12"	1204-12		12"	1207-12		12"
1201-16		16"	1204-16		16"	1207-16		16"
1201-18		18"	1204-18		18"			
1202-04	3/4"	4"	1205-04	1 1/2"	4"	1208-04	3"	4"
1202-08		8"	1205-08		8"	1208-08		8"
1202-12		12"	1205-12		12"	1208-12		12"
1202-16		16"	1205-16		16"	1208-16		16"
1202-18		18"	1205-18		18"			
						1209-04	3 1/2"	4"
						1209-08		8"
						1209-12		12"
						1200-04	4"	4"
						1200-08		8"
						1200-12		12"

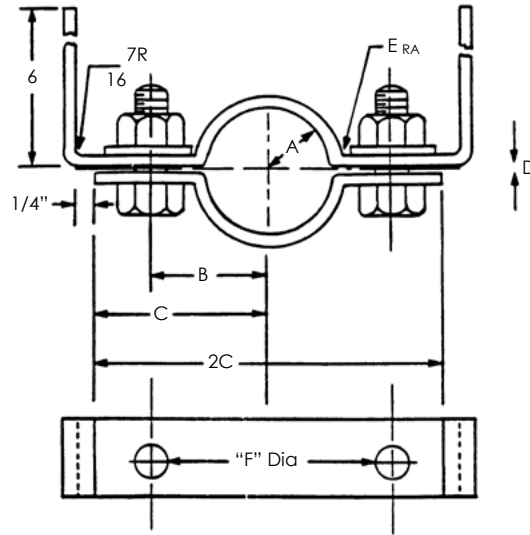
Navy and Commercial Marine Approved



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Pipe Hanger: Shipboard Pipe Hanger Type III

PIPE HANGER: SHIPBOARD PIPE HANGER TYPE III



Pipe Hanger							
Pipe Size I.P.S.	A	B	C	D	E	F	Flat Bar Size
1/4	13/32	1-1/8	1-5/8	1-16	13/32	3/8	1 x 1/8
3/8	15/32	1-1/4	1-3/4	1-16	13/32	3/8	1 x 1/8
1/2	35/64	1-5/16	1-13/16	1-16	13/32	3/8	1 x 1/8
3/4	21/32	1-7/16	1-15/16	1-16	13/32	3/8	1 x 3/16
1	25/32	1-9/16	2-1/16	1-16	13/32	3/8	1 x 3/16
1-1/4	61/64	1-15/16	2-1/2	1-16	13/32	3/8	1 x 3/16
1-1/2	1-5/64	2-1/16	2-5/8	1-16	13/32	3/8	1 x 3/16
2	1-5/16	2-5/16	2-7/8	1-16	13/32	1/2	1 x 3/16
2-1/2	1-9/16	2-9/16	3-1/8	1-16	13/32	1/2	1 x 1/4
3	1-7/8	3-1/8	3-15/16	1-16	13/32	1/2	1 x 1/4
3-1/2	2-1/8	3-5/16	4-3/16	1-16	13/32	1/2	1 x 1/4
4	2-3/8	4-1/8	5	1-16	13/32	1/2	1 x 1/4

Material	Steel ASTM-A36
Finish	Galvanized when called for. DWG 53711, 810-1385781 Rev. D.

Also, pipe hangers in accordance with:

NAVSHIPS DWG. #845-2445497

BUSHIPS DWG. #5000-S4823-1385782

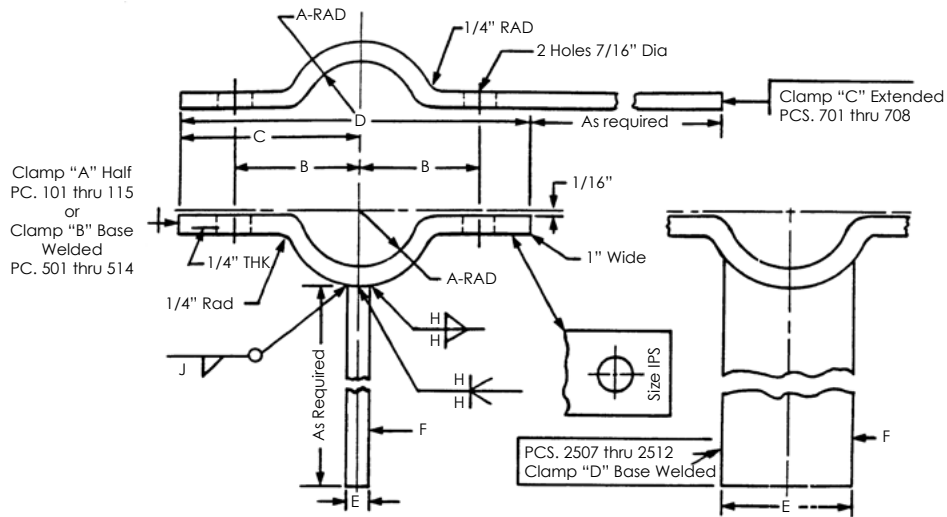
BUSHIPS DWG. #845-1889878 & #845-1889880



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Pipe Hanger: Clip Type, Welded Type, Extended Type

PIPE HANGER: CLIP TYPE, WELDED TYPE, EXTENDED TYPE



Pipe Hanger

Nom IPS Size	Pipe Clamp Type & Part Number				Notes: 1. Clamps available with plain painted (yellow zinc chromate) or galvanized finish 2. Ref. Dwg. Buships No. 845-2069186 3. Material: Steel, ASTM-A36 or equal							
	A	B	C	D	A	B	C	D	E	F	H	J
1/4"	101	501	701	-	17/32"	1 1/4"	1 7/8"	3 3/4"	1/4"	1"	3/16"	-
3/8"	102	502	702	-	19/32"	1 3/8"	2"	4"	1/4"	1"	3/16"	-
1/2"	103	503	703	-	11/16"	1 7/6"	2 1/16"	4 1/8"	1/4"	1"	3/16"	-
3/4"	104	504	704	-	25/32"	1 9/16"	2 3/16"	4 3/8"	1/4"	1"	3/16"	-
1"	105	505	705	-	29/32"	1 11/16"	2 5/16"	4 5/8"	1/4"	1"	3/16"	-
1 1/4"	106	506	706	-	1 3/32"	1 7/8"	2 1/2"	5"	3/8"	1"	1/4"	-
1 1/2"	107	507	707	-	1 7/32"	2 1/16"	2 11/16"	5 3/8"	3/8"	1"	1/4"	-
2"	108	508	708	-	1 7/16"	2 9/32"	2 29/32"	5 13/16"	3/8"	1"	1/4"	-
2 1/2"	103	509	-	-	1 11/16"	2 17/32"	2 5/32"	6 5/16"	3/8"	1"	1/4"	-
3"	110	510	-	-	2"	2 27/32"	3 15/32"	6 15/16"	3/8"	1"	1/4"	-
3 1/2"	111	511	-	-	2 1/4"	3 1/8"	3 3/4"	7 1/2"	3/8"	1"	1/4"	-
4"	112	512	-	-	2 1/2"	3 11/32"	3 31/32"	7 15/16"	1/2"	1"	5/16"	-
5"	113	513	-	-	3 1/32"	3 29/32"	4 17/32"	9 1/16"	1/2"	1"	5/16"	-
6"	114	514	-	-	3 9/16"	4 7/16"	5 1/16"	10 1/8"	1/2"	1"	5/16"	-
8"	115	-	-	-	4 9/16"	5 15/32"	6 3/32"	12 3/16"	-	-	-	-
1 1/2"	-	-	-	2507	1 7/32"	2 1/16"	2 11/16"	5 3/8"	1 1/2"	1/2"	-	5/16"
2"	-	-	-	2508	1 7/16"	2 9/32"	2 29/32"	5 13/16"	1 1/2"	1/2"	-	5/16"
2 1/2"	-	-	-	2509	1 11/16"	2 17/32"	3 5/32"	6 5/16"	1 1/2"	1/2"	-	5/16"
3"	-	-	-	2510	2"	1 27/32"	3 15/32"	6 15/16"	1 1/2"	1/2"	-	5/16"
3 1/2"	-	-	-	2511	2 1/4"	3 1/8"	3 3/4"	7 1/8"	1 1/2"	1/2"	-	5/16"
4"	-	-	-	2512	2 1/2"	3 11/32"	3 31/32"	7 15/16"	1 1/2"	1/2"	-	5/16"



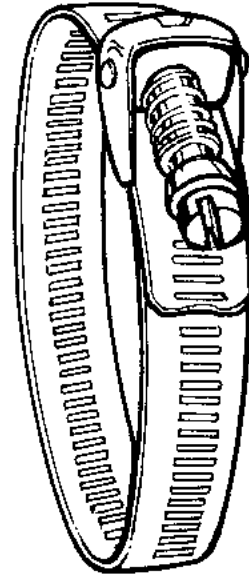
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JWC & JSC - Cable Clamps - Specifications

JWC & JSC - CABLE CLAMPS - TECHNICAL DETAILS

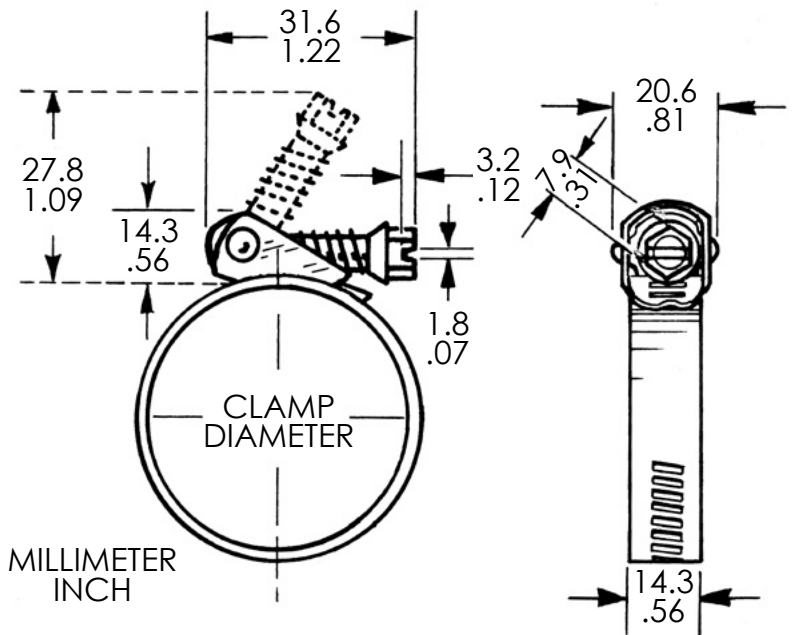
The Swivel-action locking of screw to band make Snaplock a truly versatile clamp. Snaplock is quickly opened or closed. The quick release feature of Snaplock allows the addition and removal of cables with simple ease and eliminates the "hay-wiring" and "tie-wrapping" done during the initial stages of cable pulling. Snaplock is reusable as opposed to the old method of cable banding.

Swivel Action Worm Drive - JWC



Reference Number	Max. Clamp Diameter	Clamp Length
Full Notching Type JWC		
5612	1.250	4
5620	1.750	5.5
5628	2.250	7
5636	2.750	8.5
5648	3.500	11
5656	4.000	12.5
5672	5.120	16
5688	6.000	18.5
56104	7.120	22
56128	8.620	27
56152	10.000	31.5
56188	12.250	38
56258	15.750	50
Limited Notching Type JSC		
5836	6.000	19.75
5837	7.120	23.125
5838	8.620	28
5839	10.000	31.875
5840	12.000	36
5841	13.000	40
5843	15.000	46

Standard Snaplock - JSC
1/16" hex head screw



Note, the band and housing are 300 Stainless steel. The 5/16" hex head, slotted screw is mild steel, zinc plated.





SECTION 12
FERRULE OPTIONS & DETAILS

FOR INQUIRIES, TO PLACE ORDERS,
SERVICE AND TECHNICAL SUPPORT CONTACT
ANY OF THE FOLLOWING:

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website www.sunbeltstudwelding.com **email** info@sunbeltstudwelding.com
6381 Windfern Road, Houston, TX 77040 **telephone** 1.800.462.9353 - Houston 713.939.8903 **fax** 713.939.9013

Ferrules

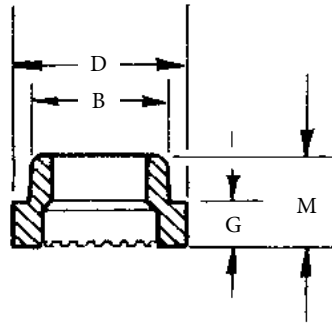
FERRULE OPTIONS & COMMON USAGE

Ferrule Options & Common Usage			
Surface	Ferrule Option	Base of Weld Stud	Comment
Flat	Flat	Full Base	For welding full base studs
	Heavy Duty	Full Base	For welding in applications where the "Flat" ferrule is prone to breaking
	Low Profile	Full Base	For welding studs shorter than 1.0" in length
	Vertical	Full Base	For welding in the side hand position / vertical surface
	Weld Thru Deck	Full Base	Specific to the Weld Thru Deck (WTD) application
	Reduced Base	Less than stud Dia.	Specific to welding Reduced Base type weld studs
	Pitch	Pitch Diameter	For welding partially threaded studs
	Thru Bore	Less than stud Dia.	Used for specific applications and or weld base diameters
	Collar Stud	Pitch Diameter	For welding Collar Stud type studs
	Angle to Work	Full Base	Required for very specific applications
	Rectangular	Rectangular	For welding Rectangular Type (shaped) studs
Inside Corner	Inside Angle	Full Base	For welding to the inside angle
Outside Corner	Outside Angle	Full Base	For welding to the outside angle
Round	Curved	Various	For welding to round / curved surface
Edge	Edge	Full Base	For welding stud to edge of plate
Other	Special	All	When needed, ferrules are designed and made to meet application needs
NOTE, Full Base means the full diameter (ie. 1/4", 5/16", 3/8", 7/16", 1/2", 5/8", 3/4", 7/8" or 1") of the stud is to be welded.			



Ferrules

STANDARD FERRULES

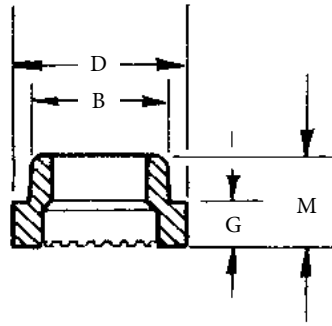


Standard Ferrules						
Type	Nominal Size	SSW Part Number	D	B	M	G
F (Flat)	3/16	F019-F	0.390	0.281	0.390	0.234
	1/4	F025-F	0.455	0.380	0.390	0.234
	5/16	F031-F	0.578	0.455	0.390	0.234
	3/8	F037-F	0.640	0.505	0.390	0.234
	7/16	F043-F	0.703	0.585	0.422	0.234
	1/2	F050-F	0.795	0.650	0.438	0.250
	5/8	F062-F	1.030	0.785	0.516	0.328
	3/4	F075-F	1.218	1.030	0.656	0.468
	7/8	F087-F	1.406	1.210	0.732	0.544
	1	F100-F	1.610	1.406	0.820	0.632
HD (Heavy Duty)	1/4	F025-HD	0.645	0.515	0.390	0.240
	3/8	F037-HD	0.800	0.645	0.400	0.250
	1/2	F050-HD	0.875	0.785	0.455	0.270
	5/8	F062-HD	1.230	1.035	0.520	0.335
LP (Low Profile)	1/4	F025-LP	0.457	0.380	0.282	0.165
	5/16	F031-LP	0.595	0.505	0.265	0.141
	3/8	F037-LP	0.650	0.515	0.308	0.200
	1/2	F050-LP	0.835	0.657	0.305	0.165
	5/8	F062-LP	1.024	0.794	0.433	0.285
	3/4	F075-LP	1.250	1.025	0.465	0.265
V (Vertical)	1/4	F025-V	0.450	0.370	0.390	0.240
	3/8	F037-V	0.640	0.500	0.400	0.240
	1/2	F050-V	0.795	0.655	0.455	0.270
	5/8	F062-V	1.020	0.785	0.520	0.335
	3/4	F075-V	1.220	1.030	0.660	0.475
	7/8	F087-V	1.436	1.221	0.769	0.577
TD (Weld Thru Deck)	3/8	F037-TD	0.893	0.794	0.442	0.286
	1/2	F050-TD	0.800	0.645	0.450	0.265
	5/8	F062-TD	1.015	0.775	0.525	0.340
	3/4	F075-TD	1.335	1.210	0.600	0.415
	7/8	F087-TD	1.528	1.406	0.666	0.466

For other ferrule options (including Angle to Work, Rectangular, Curved, Edge) contact Sunbelt Stud Welding.

Ferrules

STANDARD FERRULES



Standard Ferrules						
Type	Nominal Size	SSW Part Number	D	B	M	G
R (Reduced Base)	3/8	F037-R	0.595	0.505	0.250	0.250
	7/16	F043-R	0.675	0.585	0.250	0.250
	1/2	F050-R	0.740	0.650	0.281	0.281
	5/8	F062-R	0.875	0.785	0.281	0.281
	3/4	F075-R	1.030	0.921	0.375	0.375
B (Thru-Bore)	3/8	F037-B	0.647	0.506	0.405	0.252
	1/2	F050-B	0.804	0.637	0.534	0.341
P (Pitch)	1/4	F025-P	0.455	0.380	0.250	0.125
	5/16	F031-P	0.535	0.445	0.250	0.125
	3/8	F037-P	0.595	0.505	0.265	0.140
	7/16	F043-P	0.675	0.585	0.329	0.173
	1/2	F050-P	0.740	0.650	0.362	0.206
	5/8	F062-P	0.905	0.785	0.433	0.277
	3/4	F075-P	1.150	1.030	0.526	0.339
	7/8	F087-P	1.330	1.203	0.593	0.406
TC (Collar Stud)	1/4	F025-TC	0.875	0.785	0.250	0.250
	5/16	F031-TC	0.875	0.785	0.250	0.250
	3/8	F037-TC	0.875	0.785	0.250	0.250
	1/2	F050-TC	1.203	1.045	0.281	0.281
	IA (Inside Angle)	1/4	F025-IA	0.586	0.377	0.505
3/8		F037-IA	0.650	0.505	0.495	0.335
1/2 - Radius 1/4"		F050-IA25	0.808	0.673	0.668	0.468
1/2 - Radius 3/8"		F050-IA37	0.818	0.667	0.684	0.505
5/8 - Radius 1/4"		F062-IA25	1.034	0.800	0.923	0.733
5/8 - Radius 3/8"		F062-IA37	1.034	0.800	0.904	0.719
3/4 - Radius 3/8"		F075-IA37	1.253	1.033	1.016	0.822
OA (Outside Angle)	1/4	F025-OA	0.577	0.432	0.412	0.286
	3/8	F037-OA	0.709	0.505	0.682	0.526
	1/2	F050-OA	1.041	0.794	0.842	0.648
	5/8	F062-OA	1.043	0.790	0.927	0.729
	3/4	F075-OA				

For other ferrule options (including Angle to Work, Rectangular, Curved, Edge) contact Sunbelt Stud Welding Representative.



SECTION 13

ACCESSORY OPTIONS & DETAILS

FOR INQUIRIES, TO PLACE ORDERS,
SERVICE AND TECHNICAL SUPPORT CONTACT
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website www.sunbeltstudwelding.com **email** info@sunbeltstudwelding.com
6381 Windfern Road, Houston, TX 77040 **telephone** 1.800.462.9353 - Houston 713.939.8903 **fax** 713.939.9013

Accessories

FERRULE GRIP – TECHNICAL DETAILS

Stud Size	Foot Size	Grip Dia. "D"	Part #
3/16	Small	0.305	GN-019
1/4	Small	0.380	GN-025
5/16	Small	0.445	GN-031
3/8	Small	0.505	GN-037
7/16	Small	0.585	GN-043
1/2	Small	0.650	GN-050
5/8	Medium	0.785	GN-062
3/4	Medium	1.030	GN-075
7/8	Large	1.203	GN-087
1"	Large	1.406	GN-100



Split Ferrule Grip (1" Long) BRASS

Stud Size	Foot Size	Grip Dia. "D"	Part #
3/16	Small	0.305	GC-019
1/4	Small	0.380	GC-025
5/16	Small	0.445	GC-031
3/8	Small	0.505	GC-037
7/16	Small	0.585	GC-043
1/2	Small	0.650	GC-050
5/8	Medium	0.785	GC-062
3/4	Medium	1.030	GC-075
7/8	Large	1.203	GC-087
1"	Large	1.406	GC-100



Long Split Ferrule Grip (2" Long) Brass

Stud Size	Foot Size	Grip Dia. "D"	Part #
3/16	Small	0.305	GC-019
1/4	Small	0.380	GC-025
5/16	Small	0.445	GC-031
3/8	Small	0.505	GC-037
7/16	Small	0.585	GC-043
1/2	Small	0.650	GC-050
5/8	Medium	0.785	GC-062
3/4	Medium	1.030	GC-075



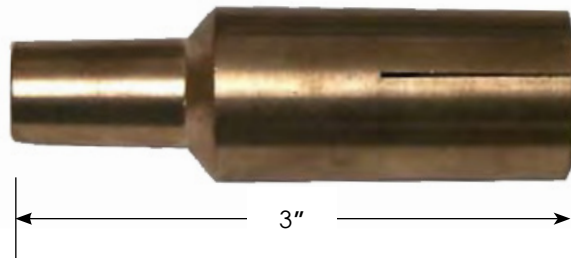
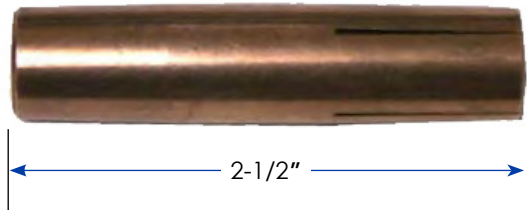
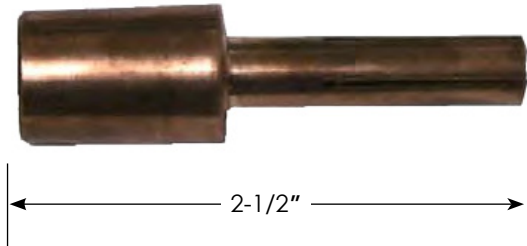
For special sizes and copper grips contact Sunbelt Stud Welding.



Accessories

CHUCKS - TECHNICAL DETAILS

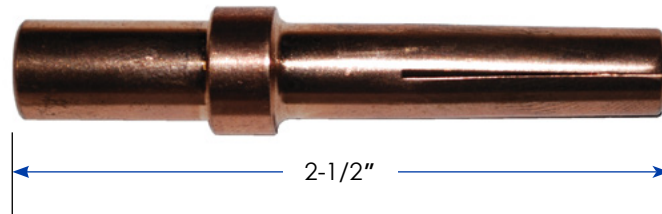
Standard Adjustable Chucks	
Stud Diameter	Part #
2mm (0.079)	CN-002M
#2	CN-008
12 GA & #4	CN-010
3mm (0.116)	CN-003M
1/8 & #5	CN-012
10 GA & #6	CN-013
4mm (0.155)	CN-004M
#8	CN-015
#10	CN-018
5mm (0.196)	CN-005M
6mm (0.236)	CN-006M
0.215	CN-021
0.330	CN-033
1/4	CN-025
5/16	CN-031
8mm (0.315)	CN-008M
3/8	CN-037
10mm (0.390)	CN-010M
7/16	CN-043
12mm (0.472)	CN-012M
1/2	CN-050
14mm (0.551)	CN-014M
9/16	CN-056
5/8	CN-062
16MM (0.63)	CN-016M
0.680	CN-068
18mm (0.708)	CN-018M
3/4	CN-075
7/8	CN-087
20mm (0.787)	CN-020M
1"	CN-100



Accessories

CHUCKS - TECHNICAL DETAILS

EURO Standard Adjustable Chucks	
Stud Diameter	Part #
2mm (0.079)	CN-002M - HBS
#2	CN-008 - HBS
12 GA & #4	CN-010 - HBS
3mm (0.116)	CN-003M - HBS
1/8 & #5	CN-012 - HBS
10 GA & #6	CN-013 - HBS
4mm (0.155)	CN-004M - HBS
#8	CN-015 - HBS
#10	CN-018 - HBS
5mm (0.196)	CN-005M - HBS
0.215	CN-021 - HBS
6mm (0.236)	CN-006M - HBS
1/4	CN-025 - HBS
5/16	CN-031 - HBS
8mm	CN-008M - HBS
0.330	CN-033 - HBS
3/8	CN-037 - HBS
10mm (0.390)	CN-010M - HBS
7/16	CN-043 - HBS
12mm (0.472)	CN-012M - HBS
1/2	CN-050 - HBS
EURO Style "Long" & "Extra Long" Adjustable Chucks available upon request.	



Accessories

LONG AND RECTANGULAR CHUCKS - TECHNICAL DETAILS

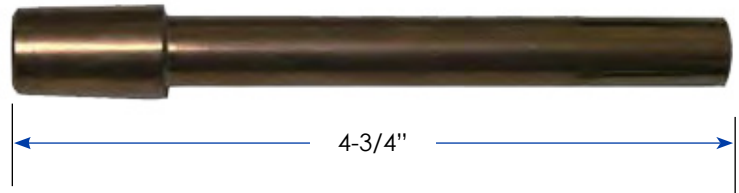
3-7/8" Long Adjustable Chucks

Stud Size	Part #
#6	CM-013
#8	CM-015
#10 & 5mm	CM-018
6mm	CM-006M
1/4	CM-025
5/16	CM-031
8mm	CM-008M
0.330	CM-033
3/8	CM-037
10mm	CM-010M
7/16	CM-043
12mm	CM-012M
1/2	CM-050
9/16	CM-056
5/8	CM-062



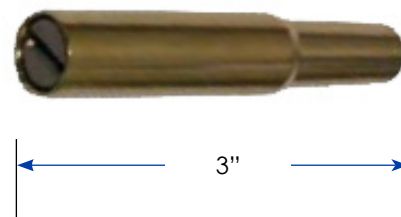
4-3/4" Extra Long Adjustable Chucks

Stud Size	Part #
#6	CL-013
#8	CL-015
#10	CL-018
1/4	CL-025
5/16	CL-031
3/8	CL-037
7/16	CL-043
1/2	CL-050
5/8	CL-062
3/4	CL-075



Rectangular Chucks

Stud Size	Part #
1/8 X 1/4	CR-CA
1/8 X 3/8	CR-CB
1/8 X 5/8	CR-CC
1/8 X 3/4	CR-CG
1/8 X 7/8	CR-CH
1/8 X 1"	CR-CE
1/4 X 3/4	CR-CF
1/4 X 1-1/4	CR-CJ

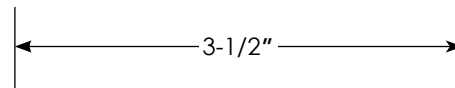


Accessories

HEADED STUD CHUCKS - TECHNICAL DETAILS

3/8" Diameter Headed Anchor Chuck (3/4" Diameter Head)

Part #	Description
CH-037	Complete Assy.
CH-037-1	Sleeve Only
CH-037-2	Base Only
CH-037-3	Stop Screw
SCREWS	10-32 X 3/8



1/2" Diameter Headed Anchor Chuck (1" Diameter Head)

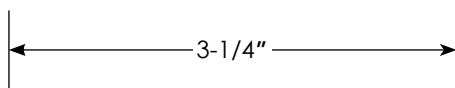
Part #	Description
CH-050	Complete Assy.
CH-050-1	Sleeve Only
CH-050-2	Base Only
CH-050-3	Stop Screw

5/8 & 3/4 Diameter Headed Anchor Chuck (1-1/4" Diameter Head)

Part #	Description
CH-075	Complete Assy.
CH-075-1	Sleeve Only
CH-075-2	Base Only
CH-075-3	Stop Screw

7/8 Diameter Headed Anchor Chuck (1-3/8" Diameter Head)

Part #	Description
CH-087	Complete Assy.
CH-087-1	Sleeve Only
CH-087-2	Base Only
CH-087-3	Stop Screw



1" Diameter Headed Anchor Chuck (1-5/8" Diameter Head)

Part #	Description
CH-100	Complete Assy.
CH-100-1	Sleeve Only
CH-100-2	Base Only
CH-100-3	Stop Screw
SCREWS	10-32 X 1/2



Accessories

SPECIAL CHUCKS / LEGS - TECHNICAL DETAILS



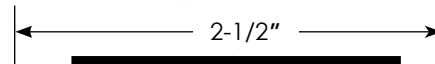
Y Anchor Chucks	
Anchor Size	Part #
3/16	CY-018
1/4	CY-025
5/16	CY-031



Bent Stud Chuck		
Stud Dia.	Bend	Part #
3/8	90 Degree	CB-037-90
3/8	45 Degree	CB-037-45
1/2	90 Degree	CB-050-90
1/2	45 Degree	CB-050-45
5/8	90 Degree	CB-062-90
5/8	45 Degree	CB-062-45
3/4	90 Degree	CB-075-90
3/4	45 Degree	CB-075-45



Arc Stud Welding Legs		
Length	Diameter	Part #
7"	5/16	L-03107
9"	5/16	L-03109
14"	5/16	L-03114
18"	5/16	L-03118
24"	5/16	L-03124
27"	5/16	L-03127
7"	3/8	L-03707
9"	3/8	L-03709
14"	3/8	L-03714
18"	3/8	L-03718
24"	3/8	L-03724
27"	3/8	L-03727
32"	3/8	L-03732
36"	3/8	L-03736
48"	3/8	L-03748
5/16 Leg Washer		LW-031
5/16 Leg Screw		LS-031
3/8 Leg Washer		LW-037
3/8 Leg Screw		LS-037



Male Chucks	
Hole Size	Part No.
8-32	CX-008-32
10-24	CX-010-24
10-32	CX-010-32
1/4-20	CX-025-20
5/16-18	CX-031-18
3/8-16	CX-037-16
1/2-13	CX-050-13
5/8-11	CX-062-11
3/4-10	CX-075-10
1/4	CX-025
3/8	CX-037
1/2	CX-050
5/8	CX-062

Accessories

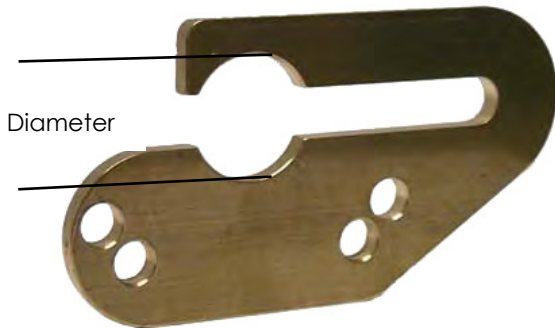
WELD THRU DECK ACCESSORIES



Weld Thru Deck (WTD) Foot Assembly	
Part #	Description
B-0021	Foot Assy.
B-0021-1	Foot Only
B-0021-2	Extension Bar
B-0021-3	1/4-20 X 1" Screws



Weld Thru Deck Ferrule Holder	
Part #	Description
B-0060-1	3/4 WTD & 7/8 Flat
B-0060-2	3/4 Flat
B-0060-3	5/8 Flat
B-0060-4	1" Flat
B-0060-5	1/2 Flat



Refractory Ferrule Foot Plate	
Part #	Neck Dia.
QY-025-1	.810
QY-025-2	.930
QY-025-3	1.030



Heavy Duty Ferrule Grip	
Part #	Stud Dia.
GH-050	1/2
GH-062	5/8
GH-075	3/4
GH-087	7/8
GH-100	1"

1/2" HD or WTD Headed Studs require: 5/8" WTD Grip
 5/8" HD or WTD Headed Studs require: 3/4" WTD Grip
 3/4" HD or WTD Headed Studs require: 7/8" WTD Grip
 7/8" HD or WTD Headed Studs require: 1" WTD Grip



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Accessories

CLOSED FEET - TECHNICAL DETAILS



B-1N



B-2N



B-3N



B-4N/B-5N



B-6N/B-7N



028-833

Standard Closed Feet		
Gun Type	Stud Size	Part #
Arc Guns - For use with ferrule grips		
USA LD & MD	1/8-1/2"	B-1N
USA HD	1/8-1/2"	B-1N
NS-30 & NS-40	1/8-1/2"	B-6N
EURO LD	1/8-1/2"	H-1N
EURO LD (Alum.)	1/8-1/2"	H-1N-1
USA LD & MD	5/8-3/4"	B-2N
USA HD	5/8-3/4"	B-2N
NS-30 & NS-40	5/8-3/4"	B-7N
EURO MD	5/8-3/4"	H-2N
USA HD	7/8-1"	B-3N
BANTAM A-58	1/8-1/2"	B-4N
BANTAM A-58	5/8-3/4"	B-5N
CD Guns - For use with or without a spark shield		
USA CD FOOT	1/8-3/8"	028-833
EURO CD FOOT	1/8-3/8"	H-2N



Accessories

SPLIT FEET - TECHNICAL DETAILS



B-1C



B-2C



B-3C



B-4C/B-5C



B-4CR/B-5CR



B-6C/B-7C

Standard Split Feet		
Gun Type	Stud Size	Part #
Arc Guns - For use with ferrule grips		
USA LD & MD	1/8-1/2"	B-1C
USA HD	1/8-1/2"	B-1C
NS-30 & NS-40	1/8-1/2"	B-6C
EURO LD	1/8-1/2"	H-1C
USA LD & MD	5/8-3/4"	B-2C
USA HD	5/8-3/4"	B-2C
NS-30 & NS-40	5/8-3/4"	B-7C
EURO MD	5/8-3/4"	H-2C
USA HD	7/8-1"	B-3C
EURO HD	7/8-1"	B-3C
BANTAM A-58	1/8-1/2"	B-4C
BANTAM A-58	5/8-3/4"	B-5C
CD Gun - For use with or without a spark shield		
BANTAM C-2	1/8-3/8"	B-4CR (Recessed)
BANTAM C-2	1/8-3/8"	B-5CR (Recessed)



Accessories

SPECIAL FEET & FERRULE FOOT PLATES

Closed BI-POD Feet		
Gun Type	Stud Size	Part #
USA	1/8-1/2"	BP-1N
USA	5/8-3/4"	BP-2N
USA	7/8-1"	BP-3N



Split BI-POD Feet		
Gun Type	Stud Size	Part #
USA	1/8-1/2"	BP-1C
USA	5/8-3/4"	BP-2C
USA	7/8-1"	BP-3C



Twin Leg Ferrule Foot Plate	
Stud Size	Part #
1/4	QN-025
5/16	QN-031
3/8	QN-037
1/2	QN-050
5/8	QN-062
3/4	QN-075
7/8	QN-087
1"	QN-100



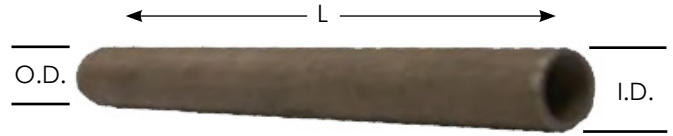
Single Leg Ferrule Foot Plate	
Stud Size	Part #
1/4	QM-025
5/16	QM-031
3/8	QM-037
1/2	QM-050
5/8	QM-062
3/4	QM-075
7/8	QM-087
1"	QM-100



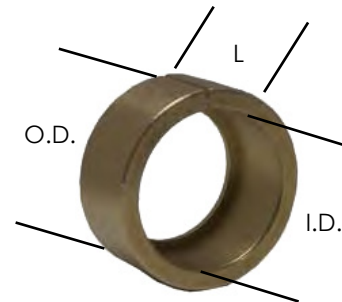
Accessories

SPECIAL ACCESSORIES

Ferrule Tubing				
Stud Size	Part #	I.D.	O.D.	L
#8	MP-015	0.291	0.360	36"
#10	MP-018	0.305	0.375	36"
1/4	MP-025	0.380	0.500	36"
5/16	MP-031	0.445	0.562	36"
3/8	MP-037	0.505	0.625	36"
7/16	MP-043	0.585	0.687	36"
1/2	MP-050	0.650	0.750	36"
5/8	MP-062	0.785	0.906	36"
3/4	MP-075	1.030	1.156	36"



Ferrule Tubing Bushing				
Stud Size	Part #	I.D.	O.D.	Foot Size
#8	MB-015	0.360	0.875	Small
#10	MB-018	0.375	0.875	Small
1/4	MB-025	0.500	0.875	Small
5/16	MB-031	0.562	0.875	Small
3/8	MB-037	0.625	0.875	Small
7/16	MB-043	0.687	0.875	Small
1/2	MB-050	0.750	0.875	Small
5/8	MB-062	0.906	1.156	Medium
3/4	Not required			Medium



Gas Adapter Feet For Aluminum & Short Cycle Welding



PART # BG-1
Use with Ferrule
USA Gun Type



PART # BG-2	
BG-2-1	Foot Only
BG-2-2	Spark Shield Only
BG-2-3	Valve Assembly
Use without Ferrule	
USA Gun Type	



PART # BG-3	
BG-3-1	Foot Only
BG-3-2	Spark Shield Only
119-0010	Hose Connector
BG-3-XXX	Gas Insert

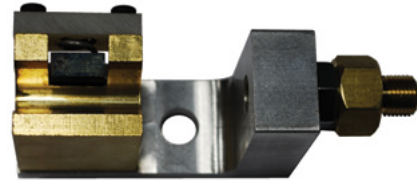


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Accessories

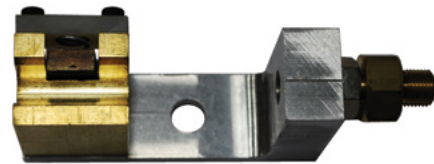
PSR STUD ACCESSORIES

Side Load Chucks			
	Chuck Only	Short Brkt	Long Brkt
Stud Size	Part #	Part #	Part #
3/8	CSLB-037	CSL-037S	CSL-037L
1/2	CSLB-050	CSL-050S	CSL-050L
5/8	CSLB-0562	CSL-062S	CSL-062L
3/4	CSLB-075	CSL-075S	CSL-075L



SHORT
VERSION

Side Load Chuck Components	
Component	Part #
Hold Down Finger 3/8, 1/2 & 5/8 Chucks	CSLF
Hold Down Finger 3/4 Chuck	CSLF750
Chuck Isolator	CSLN
Chuck Spring	CSLS
Long Bracket	CSLA-1
Short Bracket	CSLA-2



LONG
VERSION

PSR Twin Leg Ferrule Foot Plate	
Stud Size	Part #
3/8	QNW-037
1/2	QNW-050
5/8	QNW-062
3/4	QNW-075



QNW

Other Needed Accessories	
Component	Part #
Leg Widener	CLSX
Leg Widener - Special	CLSX-S
3/8 X 9" Legs (2 pcs.) Gun to Leg Widener	L-03709
Legs (2 pcs.) Leg Widener To Foot Plate	-A)
(A- length to be determined based on stud length. See Arc Stud Welding Legs for stock lengths.	



CLSX



CLSX-S



Accessories

CAPACITOR DISCHARGE ACCESSORIES

"B" Collets - Standard	
Stud Diameter	Part #
3mm	CDB-003M
14 GA	CDB-008
12 GA & #4	CDB-010
1/8 & #5	CDB-012
10 GA & #6	CDB-013
4mm	CDB-004M
#8	CDB-015
#10	CDB-018
5mm	CDB-005M
0.215	CDB-021
6mm	CDB-006M
1/4	CDB-025
5/16	CDB-031
8mm	CDB-008M
3/8	CDB-037
10mm	CDB-010M



"B" Collets - Short	
Stud Diameter	Part #
14 GA	CDB-008A
12 GA	CDB-010A
#6	CDB-013A
#8	CDB-015A
#10	CDB-018A
1/4	CDB-025A



"B" Stop - For Use With Above "B" Collets		
Stud Length	Stop Length	Part #
1/4	1-1/4	033-781
3/8	1-1/8	033-782
1/2	1"	033-783
5/8	7/8	033-784
3/4	3/4	033-785
7/8	5/8	033-775
1"	1/2	033-776
1-1/8	3/8	033-777
1-1/4	1/4	033-778
1-3/8 (Button Stop)	1/8	033-779
UNIVERSAL		033-780



Short Button Stop

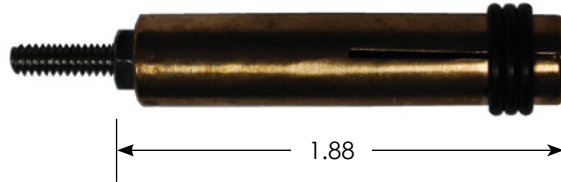


Universal "B" Stop

Accessories

CAPACITOR DISCHARGE ACCESSORIES

HBS "B" Collet with Stop	
Stud Dia.	Part #
2mm (0.79)	CDBHBS-002M
#4 & 12 GA.	CDBHBS-010
3mm (0.116)	CDBHBS-003M
#6 & 10GA.	CDBHBS-013
4mm	CDBHBS-004M
#8	CDBHBS-015
#10	CDBHBS-018
5mm (0.196)	CDBHBS-005M
6mm (0.234)	CDBHBS-006M
1/4	CDBHBS-025
5/16	CDBHBS-031
8mm (0.313)	CDBHBS-008M
3/8	CDBHBS-037
10mm	CDBHBS-010M

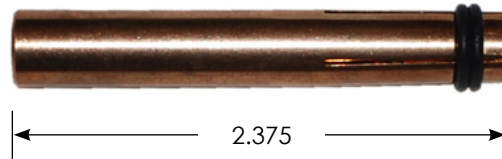


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Accessories

CAPACITOR DISCHARGE ACCESSORIES

B Collets - Long		
Stud Size	Part #	Cross Ref.
#6	CDBN-013	500-001-356
#8	CDBN-015	500-001-357
#10	CDBN-018	500-001-366
1/4	CDBN-025	500-001-359
5/16	CDBN-031	500-001-360
4 mm	CDBN-004M	500-001-361
6 mm	CDBN-006M	500-001-362
12 GA & #4	CDBN-010	500-001-363



Long Style Adj. Stops For Above		
Stud Length	Part #	Cross Ref.
1/4 TO 5/8	CDBNS-062	500-017-017
3/4 TO 1-1/8	CDBNS-113	500-017-018
1-1/4 TO 1-5/8	CDBNS-162	500-017-019
1-3/4 TO 2-1/8	CDBNS-213	500-017-020
Insulator Only	CDBNS-1	500-017-025



KSM / ERICO	Air Collet
Bottom Load	
Stud Diameter	Part #
#4 (.112)	016-412
#6 (.138)	016-415
#8 (.164)	016-416
#10 (.189)	016-417
1/4 (.250)	016-418

Ram Feed	
Stud Diameter	Part #
#4 (.112)	025-016
#6 (.138)	025-017
#8 (.164)	025-018
#10 (.189)	025-019
1/4 (.250)	025-020



Accessories

CAPACITOR DISCHARGE ACCESSORIES

Collets Inserts For Weld Pins

Stud Diameter X Depth	Part #
12GA X 1/2	CIP-010-050
12GA X 3/4	CIP-010-075
12GA X 1"	CIP-010-100
10GA X 1/2	CIP-014-050
10GA X 3/4	CIP-014-075



Collets Inserts For Weld Studs

Stud Diameter X Depth	Part #	Stud Diameter X Depth	Part #
#4 X 1/4	CI-010-025	#10 X 1/4	CI-018-025
#4 X 3/8	CI-010-037	#10 X 3/8	CI-018-037
#4 X 1/2	CI-010-050	#10 X 1/2	CI-018-050
#4 X 1"	CI-010-100	#10 X 5/8	CI-018-062
#6 X 1/4	CI-013-025	#10 X 3/4	CI-018-075
#6 X 3/8	CI-013-037	#10 X 1"	CI-018-100
#6 X 1/2	CI-013-050	1/4 X 1/4	CI-025-025
#6 X 5/8	CI-013-062	1/4 X 3/8	CI-025-037
#6 X 3/4	CI-013-075	1/4 X 1/2	CI-025-050
#6 X 1"	CI-013-100	1/4 X 5/8	CI-025-062
10 GA X 1/2	CI-014-050	1/4 X 3/4	CI-025-075
10 GA X 3/4	CI-014-075	1/4 X 1"	CI-025-100
10 GA X 1"	CI-014-100	5/16 X 3/8	CI-031-037
#8 X 1/4	CI-015-025	5/16 X 1/2	CI-031-050
#8 X 3/8	CI-015-037	5/16 X 5/8	CI-031-062
#8 X 1/2	CI-015-050	5/16 X 3/4	CI-031-075
#8 X 5/8	CI-015-062	5/16 X 1"	CI-031-100
#8 X 3/4	CI-015-075	3/8 X 1/2	CI-037-050
#8 X 1"	CI-015-100	3/8 X 3/4	CI-037-075
		3/8 X 1"	CI-037-100



Accessories

CAPACITOR DISCHARGE ACCESSORIES

One Piece Contact / Magnetic Chuck

Part #	Description
039-613	Magnetic Chuck - 1 Piece, B Collet Gun
039-613-1	Magnetic Chuck - 1 Piece, Euro Gun



Magnetic Chuck - "B" Collet Gun

Part #	Description
035-301	Complete Assy.
017-633	Magnet Only
029-615	Conductor Plate
039-609	Insul. Tube
039-610	Insul. Disc
Screw	10-32 X 7/8



"B" Collet Protector

Part #	Stud Size
028-837	14 GA X 12 GA
028-838	10 GA
028-836	Body Only
028-834-1	14 GA Insert
028-834	12 GA Insert
028-835	10 GA Insert



Accessories

CAPACITOR DISCHARGE ACCESSORIES

Standard Spark Shield

Part #	Stud Range
033-764	10 GA. - #6
033-765	#8 - 3/8



Vented Spark Shield

Part #	Stud Range
033-769	10 GA. - #6
033-769L	#8 - 3/8
033-769-B	#8 - 3/8, Brass Mat.



Template Tube Adapter

Part #	Template I.D.
039-838	1" Dia.
039-840	1-1/4" Dia.
80-40-513	30mm (Euro Gun)



039-838



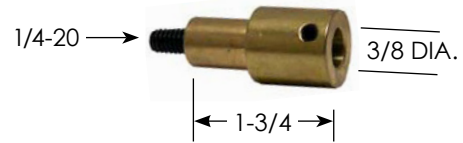
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Accessories

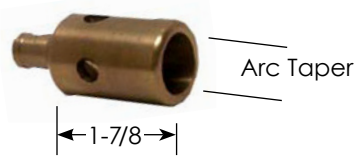
ADAPTERS



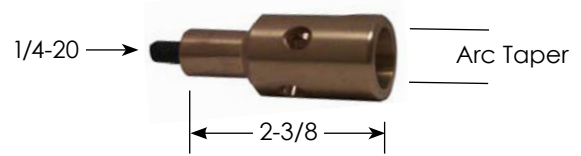
B-CI Adapters	
Part #	Description
044-082	7/8 Long
033-746	1-9/16 Long



K-B Adapter	
Part #	Description
039-464	1 - 3/4 Long



B-N Adapter	
Part #	Description
039-468	1 - 7/8 Long



K-N Adapter	
Part #	Description
033-750	2 - 3/8 Long



Tapered Base Adapter	
Part #	I.D.
044-083 N-B	3/8 ID
044-084 N-C	1/4 ID



Threaded Tapered Adapter	
Part #	Description
MT-0003	1/2-20 Thread

Accessories

ADAPTERS

Miscellaneous Adapters	
Part #	Description
033-505	Chuck Adapter Erico HD & MD
033-505T	Chuck Adapter - NEW STYLE
033-506	Connector Stud HD & MD
302-0026	AG Style Chuck Adapter LD
751-458-049	NS-30 Chuck Adapter
82-01-84	NS-40 Chuck Adapter
83-50-012-1	EURO Chuck Adapter HD & MD
80-05-689	EURO Connector Stud HD & MD
033-505L	L-TEC Chuck Adapter
033-601	EURO Gun - B Collet Adapter (Long)
033-601-S	EURO Gun - B Collet Adapter (Short)
033-749	K-CI Adapters



033-505T



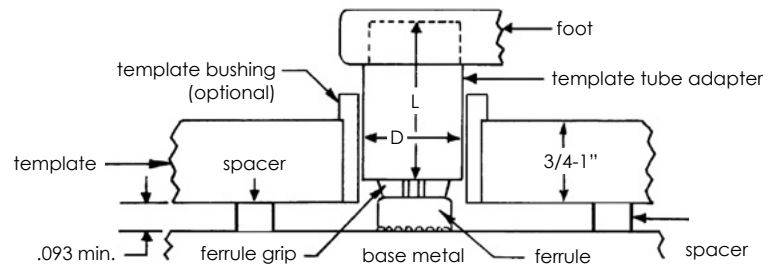
033-504



033-506

Arc Template Tube Adapters	
Part #	Description
MT-0008	Under 1/2" Dia., AOL 2", D 1.250 A
MT-0012	5/8 TO 3/4 Dia., AOL 2.5", D 1.562 A
MT-0016	7/8 TO 1 Dia., AOL 2.5", D 2.125 A
92-40-051	Assy., 30MM O.D., L - 34MM B
92-41-051	Assy., 30MM O.D., L - 48MM B
92-42-051	Assy., 30MM O.D., L - 58MM B
80-40-737	Nozzle Only, 30MM, L - 34MM B
80-41-737	Nozzle Only, 30MM, L - 48MM B
80-42-737	Nozzle Only, 30MM, L - 58MM B
A	For use with ceramic ferrule on any gun
B	For use with gas on Euro Arc Guns

Blushing Method



92-4X-051



Accessories

CONTROL CABLE CONNECTORS



107-0015



107-0014



107-0001

Control Cable Connector - 4 & 6 Pole		
Part #	Description	Style
107-0014	MALE 4 Pole Connector	Old
107-0015	FEMALE 4 Pole Connector	Old
107-0001	PANEL Mount Connector	Old
107-1014	MALE 4 Pole Connector	New
107-1015	FEMALE 4 Pole Connector	New
107-1001	PANEL Mount Connector	New
107-2014	MALE 6 Pole Connector	Euro
107-2015	FEMALE 6 Pole Connector	Euro
107-2001	Panel Mount Connector	Euro



107-1014



107-1015



Arc 2-Wire



Panel Mount



CD Hubbell (M)

Hubbell Style Connector	
Part #	Description
107-0016	Arc 2-Wire (M)
107-0017	Arc 2-Wire (F)
107-0018	Arc 2-Wire (Panel Mount)
107-0019	(M) Rubber Cover
107-0020	(F) Rubber Cover
107-0030	CD Hubbell (M)
107-0032	CD Hubbell (F)
107-0031	CD Hubbell (Panel Mount)



Accessories

WELD CABLE CONNECTORS



Heavy Duty Hi Temp Camlok Connectors			
Part #	Description	Part #	Description
107-0006	4/O (M) HI Temp	107-0007	4/O (F) HI Temp
107-0006-1	4/O (M) Sleeve	107-0007-1	4/O (F) Sleeve
107-0006-2	4/O Brass Only	107-0007-2	4/O Brass Only
107-0007-MF	HI Temp Pin - Fits (M) OR (F)	107-0007-MF	HI Temp Pin - Fits (M) OR (F)
107-0007-CW	Copper Wrap - Fits (M) OR (F)	107-0007-CW	Copper Wrap - Fits (M) OR (F)



Light Duty Connector	
Part #	Description
107-0010	1/O (M) with Fiber Shell
107-0011	1/O (F) with Fiber Shell
107-0012	#4 (M) with Fiber Shell

Accessories

WELD CABLE CONNECTORS

Panel Mount Camlok Connectors

Part #	Description
107-0003	Male Panel Mount
107-0002	Female Panel Mount



Weld Cable Lugs

Part #	Description
123-0003	#4 with #10 Hole
123-0001	#1 with #10 Hole
123-0006	#1 with 1/4 Hole
123-0002	#1 with 3/8 Hole
123-0008	1/O with 3/8 Hole
123-0009	1/O with 1/2 Hole
123-0013	4/O with 3/8 Hole
123-0010	4/O with 1/2 Hole



ALLEN WRENCH & CHUCK EJECTOR

Accessories

Part #	Description
102-0041	Allen Wrench Set - Imperial
102-0041-M	Allen Wrench Set - Metric
102-0042	Chuck Ejector Key





SECTION 14

STUD WELDING EQUIPMENT – RENTAL & NEW EQUIPMENT

FOR INQUIRIES, TO PLACE ORDERS,
SERVICE AND TECHNICAL SUPPORT CONTACT
ANY OF THE FOLLOWING:

OFFICE: 1-800-462-9353
713-939-8903

EMAIL: INFO@SUNBELTSTUDWELDING.COM



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6381 Windfern Road, Houston, TX 77040 **telephone** 1.800.462.9353 - Houston 713.939.8903 **fax** 713.939.9013



SECTION 14

STUD WELDING EQUIPMENT – RENTAL EQUIPMENT

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Stud Welding Equipment

RENT STUD WELDERS

Sunbelt Stud Welding has CD, Arc and Short Cycle stud welders available for rent to satisfy all applications.

Common stud types / applications are listed below:

CD Applications:

- CD Threaded Studs
- CD Non Threaded Studs
- CD Tap Studs
- CD Cable Tie Bases
- CD Weld Pins
- Insulation Pins
- Power Point Pins
- Cupped Head Pins
- Tap studs

Arc Applications:

- Headed Concrete Anchors
- Headed Shear Connectors
- Weld Thru Deck
- Deformed Bar Anchors
- Threaded Weld Studs
- Non Threaded Weld Studs
- Boiler Tube Pins
- Rectangular Weld Studs
- Collar Studs
- Shoulder Studs

Short Cycle (SC) Applications:

- SC & CD Studs all types
- SC Collar Studs

We accept most major credit cards or we can assist with the credit approval process.

We have a full line of weld studs and accessories to go with your Stud Welder Rental!

For personnel assistance **call 1-800-462-9353** or email **info@sunbeltstudwelding.com**.
We have the expertise to determine the right equipment for your needs!





SECTION 14

STUD WELDING EQUIPMENT – PROCESS & CAPABILITY SUMMARY

CD EQUIPMENT • ARC EQUIPMENT • SHORT CYCLE EQUIPMENT

FOR INQUIRIES, TO PLACE ORDERS,
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Stud Welding Equipment - New

Equipment Process And Capability Summary						
Model Designation	Page Number	Automation	Maximum Capacity by Stud Diameter			Comments
			CD	Arc	Short Cycle	
CDi 508 & C08-FS gun	14.7					120V - 10 amps
CDi 1502	14.8		1/4"			120V - 10 amps
CDi 2302	14.9		5/16"			120V - 10 amps
CDi 3102	14.10		3/8"			120V - 10 amps
Pegasar 500 accu	14.11					100 - 240V - 10 amps
C 06-3	14.12					
CI 03	14.13		12 gauge pins			CD Contact Gun
C 08	14.14		3/8"			CD Contact Gun
CA 08	14.15		3/8"			CD Gap Gun
Visar 650	14.16			3/8"	1/4"	100-230V / 16 amps
Visar 650 & Visar 650 (Shield. gas version)	14.17 14.18					
ARC 800	14.19	Optional		1/2"	7/16"	230V / 50 amps - 400V / 35 amps - 575V / 25 amps
IT 1002	14.20	Optional		1/2"	1/2"	480 / 460V / 35 amps
Visar 1200	14.21			5/8"	1/2"	200-600V (600V / 20 amps, 400V / 32 amps, 200V / 64 amps)
IT 2002	14.22	Optional		1"	5/8"	480 / 460V / 63 amps
IT 3002	14.23			1"	5/8"	480 / 460V / 125 amps
A 12	14.24			1/2"	1/2"	Arc Stud Welding Gun
A 16	14.25			5/8"	5/8"	Arc Stud Welding Gun
A 22	14.26			7/8"		Arc Stud Welding Gun
Nut Welding Systems	14.27					
A 12 M	14.27					
MARC Nut Welding System	14.28					
MARC Welding Nuts - Type Hex ^{Nut}	14.29					

(continued on next page)



Stud Welding Equipment - New

Equipment Process And Capability Summary						
Model Designation	Page Number	Automation	Maximum Capacity by Stud Diameter			Comments
			CD	Arc	Short Cycle	
Automatic Components	14.30	Automation				
CDi 1502 AT	14.31	Automation	1/4"			120V / 10 amps
CDMi 2402	14.32	Automation				120V / 10 amps
CDMi 2402 - Technical Data Sheet	14.33	Automation				
CDMi 2402 - Technical Data Sheet	14.34	Automation				
CDMi 3202	14.35	Automation	3/8"			120V / 10 amps
CDMi 3202 - Technical Data Sheet	14.36	Automation				
CDMi 3202 - Technical Data Sheet	14.37	Automation				
IT 90	14.38	Automation		1"	5/8"	480 / 460V / 63 amps
KAH 412 LA	14.39	Automation	3/8"	1/2"	1/2"	Weld Head
KAH 412	14.40	Automation	3/8"	1/2"	1/2"	Weld Head
PAH-1	14.41	Automation	5/16"		5/16"	Weld Gun
VBZ-3	14.42	Automation	5/16"	5/16"	5/16"	Stud Feeder
PMB-LS2	14.43	Automation				Pneumatic Clamp
PMB-S	14.44	Automation				Pneumatic Clamp
CNC Auto Feed Systems	14.45	Automation				
PC-S Production Center	14.46	Automation	1/2"	1/2"	1/2"	
CPW Series	14.47	Automation				
MPW 1010 CNC Multi Production Welder	14.48	Automation	1/2"	1/2"	1/2"	
MPW 2010 CNC Multi Production Welder	14.48	Automation	1/2"	1/2"	1/2"	



Stud Welding Equipment - CD

CDI 508



- For construction sites and workshops (IP 23)
- Welds to M8 (5/16") on thin sheets
- Inverter-Capacitor Charging Technology
- Digital Display

M3 to M8 #4 to 5/16"

C 08-FS



- Easy handling
- No settings necessary

M3 to M8 #4 to 5/16"

Welding process	CD (Contact)
Welding material	Mild Steel - Stainless Steel
Welding range	M3 to M8, dia. 2 to 8 mm / #4 to 5/16", dia. 14 ga to 5/16"
Welding rate	M8 / 5/16" = 6 studs/min. (voltage 220V)
Capacitance	50000 µF
Welding time	1 to 3 ms
Energy	1210 Ws
Charging voltage	54 to 220V
Connection	1 ~, 100 bis 240V, 50/60 Hz, 10 AT
Connected load	600 VA
Power source	Capacitor
Cooling type	F (temperature controlled cooling fan)
IP Code	IP 23
Dimension LxWxH (without handle)	363 x 163 x 257 mm / 14.3" x 6.4" x 10.1"
Weight	9.9 kg / 21.8 lbs
Order No.	92-10-0508 (Plug E+F; Europe + China), sticker welding parameters, metric" *) 92-12-0508 (Plug B; USA + Canada), sticker welding parameters, imperial" *) 92-40-095 (ground cable, 2.5 m, 25 mm ² , 2x 10" vice grip)

Welding process	CD (Contact)
Stud material	Mild Steel - Stainless Steel
Welding range	M3 to M8, dia. 2 to 8 mm / #4 to 5/16", dia. 14 ga to 5/16"
Stud length	6 to 40 mm / 0.24" - 1.57"; longer studs (> 40 mm / 1.57") with optional accessories
Stud type	Any type or shape (special chucks if required)
Spring pressure	- - -
Welding cable	6.5 m / 21.33'; 25 mm ² , SK 50, 7 poles
Workplace noise level	> 90 dB (A) may occur during welding process
IP Code	IP 20
Dimension LxWxH (without cable)	170 x 40 x 140 mm / 6,7" x 1,6" x 5,5"
Weight	0,5 kg / 1,10 lbs
Order No.	92-20-290 (Leg assembly) 92-40-018 (accessories CD to 8 mm – chucks M3 to M8, socket wrench)



Stud Welding Equipment - CD

CDi 1502 TECHNICAL DATA SHEET



CDi 1502

Stud Welding Unit (with digital display)
For CD stud welding (capacitor discharge welding)
according to current standards

Only power unit in its class (66.000 µF), which officially fulfills the requirements of the Technical Bulletin 0903. Capacitor discharge stud welding with tip ignition" for studs diameter M8 with a required charging voltage of 220 V.

Inverter-Capacitor Charging Technology

- Maximum welding rates
- Minimum energy consumption
- Minimum weight
- Maximum efficiency

Technical Data	
Automatic	Option
Welding range	Studs #4 to 5/16", dia. 14 ga to 5/16"; cupped head pins dia. 14 ga and 12 ga; insulation pins dia. 14 ga and #4 (studs M3 to M8, dia. 2 to 8 mm; cupped head pins dia. 2 and 2.7 mm; insulation pins dia. 2 and 3 mm)
Welding material	Mild steel, stainless steel, aluminum and brass
Welding rate	M3 = 40 studs/min. (Charging voltage 60 V) M8 = 14 studs/min. (Charging voltage 200 V) M8 = 12 studs/min. (Charging voltage 220 V)
Capacitance	66,000 µF
Welding time	1 to 3 msec
Energy	1,600 Ws
Charging voltage	50 to 220 V (stepless voltage regulation)
Primary power	115 V, 50/60 Hz, 10 AT
Power source	Capacitor
Cooling type	F (temperature controlled cooling fan)
IP-code	IP 23 (92-12-1502), IP 21 (92-12-1504)
Dimension L x W x H	15.75" x 8.07" x 9.84" (400 x 205 x 250 mm) without handle
Weight	30.87 lbs (14 kg)
Order No	92-12-1502 92-12-1504 (Automatic)

General Information

Application

- Especially suitable for thin sheets (at least 0.5 mm)
- ISO – especially suitable for fixing heating, ventilation and air-conditioning mats (HVAC)

Process variants

- Contact welding
- Gap welding



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Stud Welding Equipment - CD

CDI 2302 TECHNICAL DATA SHEET



CDi 2302

Stud Welding Unit (with digital display)
For CD stud welding (capacitor discharge welding)
according to current standards

Inverter-Capacitor Charging Technology

- Maximum welding rates
- Minimum energy consumption
- Minimum weight
- Maximum efficiency

Technical Data	
Welding range	#4 to 5/16" (7/16" limited), dia. 14 ga to 5/16" (dia. 3/8" limited) (M3 to M8 (M10 limited), dia. 2 to 8 mm (dia. 10 mm limited))
Welding material	Mild steel, stainless steel, aluminum and brass
Welding rate	M3 = 33 studs/min. (Charging voltage 60 V) M8 = 12 studs/min. (Charging voltage 170V) M10 = 9 studs/min. (Charging voltage 210 V)
Capacitance	99,000 μ F
Welding time	1 to 3 msec
Energy	2,400 Ws
Charging voltage	50 to 220 V (stepless voltage regulation)
Primary power	115 V, 50/60 Hz, 10 AT
Power source	Capacitor
Cooling type	F (temperature controlled cooling fan)
IP-code	IP 23
Dimension L x W x H	18.90" x 8.07" x 9.84" (480 x 205 x 250 mm) without handle
Weight	37.48 lbs (17 kg)
Order No	92-12-2302
General Information	
Application	- Especially suitable for thin sheets (at least 0.5 mm)
Process variants	- Contact welding - Gap welding



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Stud Welding Equipment - CD

CDI 3102 TECHNICAL DATA SHEET



CDi 3102

Stud Welding Unit (with digital display)
For CD stud welding (capacitor discharge welding)
according to current standards

Inverter-Capacitor Charging Technology

- Maximum welding rates
- Minimum energy consumption
- Minimum weight
- Maximum efficiency

Technical Data	
Welding range	#4 to 7/16", dia. #4 to 3/8" (M3 to M10, dia. 3 to 10 mm)
Welding material	Mild steel, stainless steel, aluminum and brass
Welding rate	M3 = 20 studs/min. (Charging voltage 50 V) M8 = 10 studs/min. (Charging voltage 140 V) M10 = 6 studs/min. (Charging voltage 200 V)
Capacitance	132,000 µF
Welding time	1 to 3 msec
Energy	3,200 Ws
Charging voltage	50 to 220 V (stepless voltage regulation)
Primary power	115 V, 50/60 Hz, 10 AT
Power source	Capacitor
Cooling type	F (temperature controlled cooling fan)
IP-code	IP 23
Dimension L x W x H	18.90" x 8.07" x 9.84" (480 x 205 x 250 mm) without handle
Weight	39.68 lbs (18 kg)
Order No	92-12-3102
General Information	
Application	- Especially suitable for thin sheets (at least 0.5 mm)
Process variants	- Contact welding - Gap welding



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Stud Welding Equipment - CD

PEGASAR 500 ACCU - TECHNICAL DATA SHEET



Pegasar 500 accu

Battery-powered stud welding unit
For CD stud welding (capacitor discharge welding/
contact welding) according to current standards

Inverter-Capacitor Charging Technology

- Maximum welding rates
- Minimum energy consumption
- Minimum weight
- Maximum efficiency

Technical Data	
Welding range	Studs (mild steel, stainless steel): #4 to 1/4", dia. 1/8" to 1/4" (M3 to M6, dia. Ø 3 to 6 mm), Studs (aluminum): #4 to #6, dia. 1/8" to 5/32" (M3 to M4, dia. 3 to 4 mm)
Welding material	Mild steel, stainless steel, aluminum
Welding rate	M3 = 40 studs/min. (Charging voltage 55 V) M6 = 20 studs/min. (Charging voltage 95 V)
Sheet thickness workpiece	From 0.02" (0.5 mm)
Capacitance	100,000 µF
Welding time	1 to 3 ms
Energy	500 Ws
Charging voltage	50 to 100 V (stepless voltage regulation)
Primary power	100 V to 240 V, 50/60 Hz, 10 AT, in battery operation: 25.55 V
Ground cable	8.2' (2.5 m), 25 mm ² , 1 vice grip 10" (not possible to extend), (not included in delivery)
Battery	25.55 V / 5.7 Ah / 145.64 Wh (LiNiCoAlO ₂) (not included in delivery)
Number of weldings per battery charge	400 welds M6
Battery charging time	Max. 2.5 h
Battery operating time	At least 400 charging cycles
Power source	Capacitor
Cooling type	F (temperature controlled cooling fan)
IP-code	With inserted battery: IP 44, without battery: IP 23
Dimension L x W x H	18.70" x 11.81" x 13.98" (475 x 300 x 355 mm) with handle
Weight	26.46 lbs (12 kg) incl. battery, 23.59 lbs (10.7 kg) without battery
Suitable stud welding gun	C 06-3, welding cable length 3 m (not possible to extend), (not included in delivery)
Order No	92-12-0500 (Pegasar 500 accu) 88-23-484 (Accu 150 – battery) 88-24-066 (ACCU CHARGER 150 - charging unit for battery type Accu 150) 92-40-154 (Ground cable) 92-20-275 (C 06-3 - stud welding gun) 92-40-050 (Accessories up to 6 mm - chucks M3 to M6, socket wrench) 92-40-118 (Accessories up to 1/4" - chucks #4, #6, #8, #10, 1/4", socket wrench)

Stud Welding Equipment - CD

C 06-3 - TECHNICAL DATA SHEET



C 06-3

Stud welding gun
for CD stud welding (contact welding)
according to current standards

Technical Data	
Welding range	#4 to 1/4", dia. 14 ga to 1/4" (M3 to M6, dia. 2 to 6 mm), depending on the used stud welding unit
Stud length	0.24" to 1.57" (6 to 40 mm); longer studs (> 40 mm) can be welded with optional accessories
Stud material	Depending on the used stud welding unit
Stud type	Any type or shape (special chucks if required)
Sheet thickness workpiece	From 0.02" (0.5 mm)
Welding cable	9.84' (3 m)
IP Code	IP 20
Workplace noise level	> 90 dB (A) may occur during welding
Dimension L x W x H	6.70" x 1.57" x 5.51" (170 x 40 x 140 mm) without cable
Weight	1.10 lbs (0.5 kg) without cable
Suitable stud welding unit	Pegasar 500 accu
Order No	92-20-275 (C 06-3) 92-40-050 (Accessories up to 6 mm – chucks M3 to M6, socket wrench) 92-40-118 (Accessories up to 1/4" – chucks #4, #6, #8, #10, 1/4", socket wrench) 92-12-0500 (Pegasar 500 accu – stud welding unit)



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Stud Welding Equipment - CD

CI 03 STUD WELDING GUN (FOR INSULATION)



CI 03

Stud Welding Gun (for insulation)
for CD stud welding
according to current standards

Technical Data	
Welding range	Cupped head pins dia. 14 ga/12 ga (dia. 2/2.7 mm)
Pin length	0.37" to 6.00" (9.5 to 152.4 mm)
Pin material	Mild steel, stainless steel
Pin type	Cupped head pins
Spring pressure	Adjustable, arresting
Welding cable	32.81' (10 m)
IP Code	IP 20
Workplace noise level	> 90 dB (A) may occur during welding
Dimension L x W x H	6.89" x 1.97" x 5.71" (175 x 50 x 145 mm) without cable and tripod
Weight	1.54 lbs (0.7 kg) without cable and tripod
Order No	92-20-254
General Information	
<p>Application</p> <ul style="list-style-type: none"> • Especially suitable for thin sheets (at least 0.5 mm) • ISO – especially suitable for welding on cupped head pins (for fixing heating, ventilation and air-conditioning mats - HVAC) • Especially suitable for insulation mats with and without aluminum cover. The cupped head pin has a special tip which permits particularly easy penetration of the insulation materials. Variably adjustable spring pressure allows the stud welding gun to be optimally adjusted to a wide range of material densities • The fixing method with cupped head pins replaces the complex procedure: weld on pin – press mat over pin – affix clip – pinch off or bend over projecting tip 	
<p>Process variants</p> <ul style="list-style-type: none"> • Contact welding 	



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Stud Welding Equipment - CD

C 08 STUD WELDING GUN



C 08

Stud Welding Gun
for CD stud welding
according to current standards

Technical Data	
Welding range	#4 to 5/16", dia. 14 ga to 5/16" (M3 to M8, dia. 2 to 8 mm) other dimensions on request
Stud length	0.24" to 1.57" (6 to 40 mm); longer studs can be welded with optional accessories
Stud material	Mild steel, stainless steel
Stud type	Any type or shape (special chucks if required)
Spring pressure	Adjustable, arresting
Welding cable	21.33' (6.5 m)
IP-Code	IP 20
Workplace noise level	> 90 dB (A) may occur during welding process
Dimension LxWxH (without cable)	6.70" x 1.57" x 5.51" (170 x 40 x 140 mm) without cable
Weight	1.10 lbs (0.5 kg) without cable
Order No.	92-20-256
General Information	
Application	<ul style="list-style-type: none">• Especially suitable for thin sheets (at least 0.5 mm)• ISO – especially suitable for welding on insulation pins with flange and ignition tip
Process variants	<ul style="list-style-type: none">• Contact welding
Advantages	
Structure	<ul style="list-style-type: none">• Rigid casing made of impact-resistant plastic• Torsion-resistant basic shell (casing) to accommodate all function elements (e.g. ball bearing guide) and accessories (e.g. foot ring)• Zero-play ball linear bearing for guiding the welding piston• Sealed welding piston guidance• Ergonomic design• Compact dimensions• Stud length freely adjustable (up to 40 mm; from 40 mm with tripod)• Mechanical structure tested in production



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Stud Welding Equipment - CD

CA 08 STUD WELDING GUN



CA 08

Stud Welding Gun
for CD and Arc stud welding
according to current standards

Technical Data	
Welding range	#4 to 5/16", dia. 14 ga to 5/16" (M3 to M8, dia. 2 to 8 mm) other dimensions on request
Stud length	0.24" to 1.57" (6 to 40 mm); longer studs can be welded with optional accessories
Stud material	Mild steel, stainless steel, aluminum, brass
Stud type	Any type or shape (special chucks if required)
Stroke	Adjustment range 0.18" (4.5 mm), lockable
Spring pressure	Adjustable, arresting
Welding cable	9.84' (3 m)
IP-Code	IP 20
Workplace noise level	> 90 dB (A) may occur during welding process
Dimension LxWxH (without cable)	7.48" x 1.57" x 5.51" (190 x 40 x 140 mm) without cable
Weight	1.54 lbs (0.7 kg) without cable
Order No.	92-20-255
General Information	
Application	<ul style="list-style-type: none">• Especially suitable for thin sheets (at least 0.5 mm)• ISO – especially suitable for welding on insulation pins with flange and ignition tip
Process variants	<ul style="list-style-type: none">• Gap welding• Short cycle drawn arc welding
Advantages	
Structure	<ul style="list-style-type: none">• Rigid casing made of impact-resistant plastic• Torsion-resistant basic shell (casing) to accommodate all function elements (e.g. ball bearing guide) and accessories (e.g. foot ring)• Zero-play ball linear bearing for guiding the welding piston• Sealed welding piston guidance• Ergonomic design• Compact dimensions• Stud length freely adjustable (up to 40 mm; from 40 mm with tripod)• Mechanical structure tested in production



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Stud Welding Equipment - Arc

VISAR 650 – TECHNICAL DATA SHEET



Visar 650

Stud welding unit
For Arc stud welding
(short cycle drawn arc welding
(BH 10), drawn arc welding (BH 100))
according to current standards

Inverter-Capacitor Charging Technology

- Maximum welding rates
- Minimum energy consumption
- Minimum weight
- Maximum efficiency

Technical Data	
Welding range	BH 100: dia. 1/4 ga to 5/16" (dia. 2 to 8 mm), #4 to 3/8" (M3 to M10) (type RD) BH 10: dia. 1/4 ga to 1/4" (dia. 2 to 6 mm), #4 to 1/4" (M3 to M6)
Welding material	Mild steel, stainless steel
Welding rate	M3 = 40 studs/min M8 = 12 studs/min
Welding current	650 A (max.)
Current adjustment range	100 to 650 A
Welding time	5 to 200 ms (stepless)
Primary power	100 to 240 V, 1 phase, 50/60 Hz, 16 AT
Primary plug	2-pin grounded safety plug
Connected load	3 kVA
Cooling type	F (temperature controlled cooling fan)
IP-code	IP 44
Dimension L x W x H	18.66" x 13.27" x 13.82" (474 x 337 x 351 mm) with handle
Weight	39.68 lbs (18 kg)
Suitable stud welding gun	A 12, welding cable length 15.91' (4.8 m) (not possible to extend),
Order No	93-66-0650 (Visar 650) 93-40-020 (Ground cable) 93-20-270 (A 12 – Stud welding gun) 93-40-022 (PSC-1 – Ceramic leg assembly) 88-24-466 (Toolbag)

(Technical data may change)



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Stud Welding Equipment - Arc

VISAR 650 | VISAR 650 (SHIELD GAS VERSION)

VISAR 650



- Robust inverter unit with single-phase mains connection (100 to 240 V)
- Compact lightweight unit (18 kg) with high protection class (IP 44)
- Current setting range from 25 to 650 A

M3 to M10 (type RD) - #4 to 7/16" (type RD)

VISAR 650 (SHIELD. GAS VERSION)



Further development:

- with display and shielding gas connection
- USB port for saving and loading welding programs
- Comprehensive customer-specific setting options as well as detailed process optimisation and control

M3 to M10 (type RD) - #4 to 7/16" (type RD)

Welding process	Arc = Drawn arc stud welding, SC = Short cycle stud welding				Arc = Drawn arc stud welding, SC = Short cycle stud welding			
Welding material	Mild Steel - Stainless Steel				Mild Steel - Stainless Steel - Aluminum ¹⁾ Welding element is not standardized according to DIN EN ISO 13918, but manufactured by the manufacturer's discretion. The welding parameters should be determined by test weldings.			
Technology	Inverter				Inverter			
Equipment	x				x			
Welding with ceramic ferrule	--				x			
Welding with shielding gas	--				x			
Process control	--				x			
Display	--				Digital			
Welding range	Arc: M3 to M10 (type RD), dia. 2 to 8 mm / #4 to 7/16" (type RD), dia. 14 ga to 5/16" SC: M3 to M6, dia. 2 to 6 mm #4 to 1/4", dia. 14 ga to 1/4"				Arc: M3 to M10 (type RD), dia. 2 to 8 mm / #4 to 7/16" (type RD), dia. 14 ga to 5/16" SC: M3 to M6, dia. 2 to 6 mm #4 to 1/4", dia. 14 ga to 1/4"			
Welding rate (Duty cycle ²⁾)	25 °C	100 %	50 %	35 %	25 °C	100%	50%	35%
	F	8/min.	14/min.	18/min.	F	8/min.	14/min.	18/min.
	[studs/ min]				[studs/ min]			
	τ [ms]	160	160	160	τ [ms]	160	160	160
	I ₂ [A]	650	650	650	I ₂ [A]	650	650	650
U ₂ [V]	30	30	30	U ₂ [V]	30	30	30	

2) The term "duty cycle" refers to the ratio of welding duration to work pause of a stud welding unit. It describes the uninterrupted operating time of a unit over a period of 10 minutes. The largest possible studs are used in the test.

100 % duty cycle = 10 min. of continuous welding, no shutdown due to over-temperature.

50 % duty cycle = 5 min. of welding followed by 5 min. pause.

35 % duty cycle = 3.5 min. of welding followed by 6.5 min. pause.

(continued on next page)

Stud Welding Equipment - Arc

VISAR 650 | VISAR 650 (SHIELD GAS VERSION) - (CONTINUED)

VISAR 650



- Robust inverter unit with single-phase mains connection (100 to 240 V)
- Compact lightweight unit (18 kg) with high protection class (IP 44)
- Current setting range from 25 to 650 A

M3 to M10 (type RD) - #4 to 7/16" (type RD)

VISAR 650 (SHIELD. GAS VERSION)



Further development:

- with display and shielding gas connection
- USB port for saving and loading welding programs
- Comprehensive customer-specific setting options as well as detailed process optimization and control

M3 to M10 (type RD) - #4 to 7/16" (type RD)

Welding current	650 A (max.)	650 A (max.)
Current adjustment range	25 - 650 A	25 - 650 A
Welding time	5 - 200 ms (stepless)	5 - 200 ms (stepless)
Primary power	100 - 240 V, 1 phase, 50/60 Hz, 16 AT	100 - 240 V, 1 phase, 50/60 Hz, 16 AT
Primary plug	16 A, 2-pin grounded safety plug (plug type F; CEE 7/4)	16 A, 2-pin grounded safety plug (plug type F; CEE 7/4)
Connected load	3 kVA	3 kVA
Cooling type	F (temperature controlled cooling fan)	F (temperature controlled cooling fan)
IP Code	IP 44	IP 44
Dimension LxWxH (without handle)	474 x 337 x 351 mm / 18.66" x 13.27" x 13.82"	474 x 337 x 351 mm / 18.66" x 13.27" x 13.82"
Weight	18 kg / 40 lbs	18 kg / 40 lbs
Suitable guns	A 12, A 12-FL (welding cable not possible to extend)	A 12, A 12-FL (welding cable not possible to extend)
Order No.	93-60-0650 (Plug E+F; Europe + China) 93-66-0650 (Plug B; USA, Canada + China) 93-40-020 (Ground cable, 5 m, 25 mm ² , 2 vice grips 10") 88-24-466 (Toolbag) (Accessories and welding gun are not included)	93-60-0652 (Plug E+F; Europe + China) 93-66-0652 (Plug B; USA, Canada + China) 93-40-020 (Ground cable, 5 m, 25 mm ² , 2 vice grips 10") 88-24-466 (Toolbag) (Accessories and welding gun are not included)



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Stud Welding Equipment - Arc

ARC 800 STUD WELDING UNIT



ARC 800

Stud Welding Unit
for Arc stud welding
according to current standards

Technical Data	
Gas/Automation	Series/Option
Welding range	#4 to 1/2", dia. 14 ga to 3/8" (M3 to MR12, dia. 2 to 10 mm)
Welding material	Mild steel, stainless steel
Welding rate	7 to 17 studs/min (depending on application and stud dia.)
Welding current	800 A
Welding time	5 to 1,000 msec
Primary power	230/460 V 3 phases, 50/60 Hz, 50/35 AT or 575 V, 3 phases, 50/60 Hz, 25 AT (alternative input voltages available)
Power source	Transformer/Rectifier
Cooling type	F (temperature controlled cooling fan)
IP-code	IP 23
Dimension L x W x H	18.50" x 9.06" x 8.66" (470 x 230 x 220 mm) without handle
Weight	81.57 lbs (37 kg)
Order No	93-16-0702A (Gas) 93-15-0702A (Gas) 93-16-0704A (Gas/Automation) 93-15-0704A (Gas/Automation)
General Information	
Application	<ul style="list-style-type: none"> Especially suitable for thicker sheets of about 2 mm or higher
Process variants	<ul style="list-style-type: none"> Short cycle drawn arc welding Drawn arc welding
Equipment	<ul style="list-style-type: none"> Welding with ceramic ferrule (series) Welding with shielding gas (series) Automatic (optional)



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Stud Welding Equipment - Arc

IT 1002 STUD WELDING UNIT



IT 1002

Stud Welding Unit for Arc stud welding according to current standards

Inverter

- Maximum welding quality
- Maximum welding rates
- Minimum energy consumption
- Minimum weight
- Maximum efficiency

Technical Data	
Gas/Automation/Process control	Series/Option/Option
Welding range	#4 to 5/8", dia. 14 ga to 9/16" (M3 to MR16, dia. 2 to 14 mm)
Welding material	Mild steel, Stainless steel, Aluminum
Welding rate	1/2" (M12) = 25 studs/min
Welding current	1,000 A (max.)
Current adjustment range	Stud welding 100 to 1,000 A, electrode 50 to 400 A (stepless)
Welding time	5 to 1,000 msec (stepless)
Primary power	480/460V, 3 phases, 50/60 Hz, 35 AT (alternative input voltages available)
Connected load	50 KVA (with 400V mains), 40 kW
Cooling type	F (temperature controlled cooling fan)
IP-code	IP 23
Dimension L x W x H	26" x 11" x 13.4" (660 x 280 x 340 mm) without handle
Weight	63.9 lbs (29 kg)
Order No	93-66-1202 (Gas) 93-66-1204 (Gas/Automation) 93-66-1206 (Gas/Automation/Process control)
General Information	
Application	<ul style="list-style-type: none"> • Especially suitable for thicker sheets of about 2 mm or higher
Process variants	<ul style="list-style-type: none"> • Short cycle drawn arc welding • Drawn arc welding
Equipment	<ul style="list-style-type: none"> • Welding with ceramic ferrule (series) • Welding with shielding gas (series) • Automation (optional) • Process sequence control (optional)



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Stud Welding Equipment - Arc

VISAR 1200

- All-rounder for workshops and construction sites – whether with shielding gas or with ceramic ferrule
- Compact lightweight unit with power: 1 200 A but just 20.5 kg
- Extremely wide current setting range from 25 to 1 200 A
- USB port for saving and loading welding programs
- Comprehensive customer-specific setting options as well as detailed process optimisation and control



M3 to M16 - #4 to 5/8"

Welding process	Arc = Drawn arc stud welding, SC = Short cycle stud welding			
Welding material	Mild Steel - Stainless Steel - Aluminium ¹⁾ Welding element is not standardized according to DIN EN ISO 13918, but manufactured by the manufacturer's discretion. The welding parameters should be determined by test weldings.			
Technology	Inverter			
Equipment				
Welding with ceramic ferrule	x			
Welding with shielding gas	x			
Process control	x			
Display	Digital			
Welding range	M3 to M16, dia. 2 to 16 mm / #4 to 5/8", dia. 14 ga to 9/16"			
Welding rate (Duty cycle ²⁾)	25 °C	100 %	50 %	35 %
	F [studs/min]	11	16	21
	t [ms]	600	600	600
	I ₂ [A]	1200	1200	1200
	U ₂ [V]	30	30	30
²⁾ The term "duty cycle" refers to the ratio of welding duration to work pause of a stud welding unit. It describes the uninterrupted operating time of a unit over a period of 10 minutes. The largest possible studs are used in the test. 100 % duty cycle = 10 min. of continuous welding, no shutdown due to overtemperature. 50 % duty cycle = 5 min. of welding followed by 5 min. pause. 35 % duty cycle = 3.5 min. of welding followed by 6.5 min. pause.				
Welding current	1 200 A (max.) at 50 V			
Current adjustment range	25 to 1 200 A (stepless)			
Welding time	5 to 1 500 ms (stepless)			
Primary power	200 to 600 V, 3 phases, 50/60 Hz			
Cooling type	F (temperature controlled cooling fan)			
IP Code	IP 43			
Dimension LxWxH (without handle)	472.5 x 355 x 358 mm / 18.60" x 13.98" x 14.09"			
Weight	20.5 kg / 45 lbs			
Suitable guns	A 12, A 12-FL, A 16			
Order No.	93-60-0120 (Europe + China) 93-66-0120 (USA, Canada + China) 93-40-020 (Ground cable, 5 m, 25 mm ² , 2x 10" vice grip) 88-24-466 (Toolbag) (Accessories and welding gun are not included)			

Stud Welding Equipment - Arc

IT 2002 STUD WELDING UNIT



IT 2002

Stud Welding Unit
for Arc stud welding
according to current standards

Inverter

- Maximum welding quality
- Maximum welding rates
- Minimum energy consumption
- Minimum weight
- Maximum efficiency

Technical Data	
Gas	Option
Welding range	#4 to 1", dia. 14 ga to 1" (M3 to M24, dia. 2 to 25 mm)
Welding material	Mild steel, Stainless steel, Aluminum
Welding rate	Dia. 7/8" = 7 studs/min (dia. 22 mm = 7 studs/min)
Welding current	2,000 A (max.)
Current adjustment range	300 to 2,000 A (stepless)
Welding time	5 to 1,500 msec (stepless)
Primary power	480/460 V, 3 phases, 50/60 Hz, 63 AT (alternative input voltages available)
Connected load	100 KVA (with 400 V mains), 80 kW
Cooling type	F (temperature controlled cooling fan)
IP-code	IP 23
Dimension L x W x H	23.6" x 19.7" x 32.7" (600 x 500 x 830 mm) without handle
Weight	209.4 lbs (95 kg)
Order No	93-66-2201 93-66-2202 (Gas)
General Information	
Application <ul style="list-style-type: none"> • Especially suitable for thicker sheets of about 2 mm or higher • Especially suitable for welding of concrete anchors/shear connectors for job site applications • Suitable for through deck welding 	
Process variants <ul style="list-style-type: none"> • Short cycle drawn arc welding • Drawn arc welding 	
Equipment <ul style="list-style-type: none"> • Welding with ceramic ferrule (series) • Welding with shielding gas (series) 	



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Stud Welding Equipment - Arc

IT 3002 STUD WELDING UNIT



IT 3002

Stud Welding Unit
for Arc stud welding
according to current standards

Inverter

- Maximum welding quality
- Maximum welding rates
- Minimum energy consumption
- Minimum weight
- Maximum efficiency

Technical Data	
Gas	Option
Welding range	#4 to 1", dia. 14 ga to 1" (M3 to M24, dia. 2 to 25 mm)
Welding material	Mild steel, Stainless steel, Aluminum
Welding rate	Dia. 1" = 6 studs/min (dia. 25 mm = 6 studs/min) Through deck welding 3/4" = 12 studs/min (300 feet, AWG 4/0) Industrial application 3/4" = 14 to 15 studs/min
Welding current	2,600 A (max.)
Current adjustment range	300 to 2,600 A (stepless)
Welding time	5 to 1,500 msec (stepless)
Primary power	480/460V, 3 phases, 50/60 Hz, 125 AT (alternative input voltages available)
Connected load	150 KVA (with 400V mains), 120 kW
Cooling type	F (temperature controlled cooling fan)
IP-code	IP 23
Dimension L x W x H	25.6" x 22" x 50.8" (650 x 560 x 1,290 mm) without handle
Weight	93-66-3211: 352.74 lbs (160 kg) 93-66-3221: 394.63 lbs (179 kg)
Order No	93-66-3211 (1 Gun connection) 93-66-3221 (2 Gun connections)
General Information	
Application <ul style="list-style-type: none"> • Especially suitable for thicker sheets of about 2 mm or higher • Especially suitable for welding of concrete anchors/shear connectors for job site applications • Suitable for through deck welding 	
Process variants <ul style="list-style-type: none"> • Short cycle drawn arc welding • Drawn arc welding 	
Equipment <ul style="list-style-type: none"> • Welding with ceramic ferrule (series) 	



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Stud Welding Equipment - Arc

A 12 STUD WELDING GUN



A 12

Stud Welding Gun
for Arc stud welding
according to current standards

Technical Data	
Welding range	#4 to 1/2", dia. 14 ga to 1/2" (M3 to M12, dia. 2 to 12 mm)
Stud length	0.39" to 15.74" (10 to 400 mm) depending on tripod
Stud material	Mild steel, Stainless steel
Stud type	Any type or shape (special chucks if required)
Length compensation	0.12" (3 mm) automatic
Stroke Adjustment range	0.12" (3 mm), lockable
Spring pressure	Adjustable, arresting
Welding cable	16.40' (5 m)
IP-code	IP 20
Workplace noise level	Up to 90 dB (A) may occur during welding
Dimension L x W x H	7.87" x 2.56" x 5.51" (200 x 65 x 140 mm) without cable, with foot piece
Weight	1.76 lbs (0.8 kg) without cable and tripod
Order No	93-20-270 (gun including foot piece) 93-40-021 (tripod gas complete) 93-40-022 (tripod ceramic ferrule (CF) complete)
General Information	
Application <ul style="list-style-type: none"> • Especially suitable for thicker metal sheets from approx. 2 mm • ISO – especially suitable for welding on ARC-ISO and Fiberfix pins • Automatic compensation of length tolerance of welding elements through integrated length adjustment 	
Process variants <ul style="list-style-type: none"> • Short cycle drawn arc welding • Drawn arc welding with ceramic ring or shielded gas 	



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Stud Welding Equipment - Arc

A 16 STUD WELDING GUN (DAMPED)



A 16

Stud Welding Gun (damped)
for Arc stud welding
according to current standards

Technical Data	
Welding range	Dia. #4 to 5/8" (dia. 3 to 16 mm)
Stud length	0.39" to 9.45" (10 to 240 mm) depending on tripod
Stud material	Mild steel, Stainless steel
Stud type	Any type or shape (special chucks if required)
Length compensation	0.24" (6 mm) automatic
Stroke Adjustment range	0.16" (4 mm), (0.01" (0.25 mm) steps, arresting)
Damping	Adjustable oildamper
Welding cable	15.91', 1/0 (4.85 m, 50 mm ²)
IP-code	IP 20
Workplace noise level	Up to 90 dB (A) may occur during welding
Dimension L x W x H	10.24" x 2.91" x 8.66" (260 x 74 x 220 mm) without cable, with foot piece
Weight	4.41 lbs (2 kg) without cable
Order No	93-21-280
General Information	
Application <ul style="list-style-type: none"> • Especially suitable for thicker metal sheets from approx. 2 mm • Automatic compensation of length tolerance of welding elements through integrated length adjustment 	
Process variants <ul style="list-style-type: none"> • Short cycle drawn arc welding • Drawn arc welding with ceramic ring or shielded gas 	
Advantages	
Structure <ul style="list-style-type: none"> • Rigid casing made of impact-resistant plastic • Slide bearing for guiding the welding piston • Sealed welding piston guidance • Ergonomic design • Compact dimensions • Lift adjustment • Stud length freely adjustable • Mechanical structure tested in production 	



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Stud Welding Equipment - Arc

A 22 STUD WELDING GUN (DAMPED)



A 22

Stud Welding Gun (damped)
for Arc stud welding
according to current standards

Technical Data	
Welding range	Dia. 9/16" to 7/8" (dia. 1") (dia. 14 to 22 mm (dia. 25 mm))
Stud length	0.39" to 15.35" (10 to 390 mm) depending on tripod
Stud material	Mild steel, Stainless steel
Stud type	Any type or shape (special chucks if required)
Length compensation	0.35" (9 mm) automatic
Stroke Adjustment range	0.24" (6 mm), (0.01" (0.25 mm) steps, arresting)
Damping	Adjustable oildamper
Welding cable	15.91', 3/0 (4.85 m, 95 mm ²)
IP-code	IP 20
Workplace noise level	Up to 90 dB (A) may occur during welding
Dimension L x W x H	10.24" x 2.91" x 8.66" (260 x 74 x 220 mm) without cable, with foot piece
Weight	4.41 lbs (2 kg) without cable
Order No	93-21-290
General Information	
Application	<ul style="list-style-type: none"> • Especially suitable for thicker metal sheets from approx. 2 mm • Especially suitable for through deck welding • Automatic compensation of length tolerance of welding elements through integrated length adjustment
Process variants	<ul style="list-style-type: none"> • Drawn arc welding with ceramic ring
Advantages	
Structure	<ul style="list-style-type: none"> • Rigid casing made of impact-resistant plastic • Slide bearing for guiding the welding piston • Sealed welding piston guidance • Ergonomic design • Compact dimensions • Lift adjustment • Stud length freely adjustable • Mechanical structure tested in production • Reduced heating of the stud welding gun body thanks to externally positioned welding current cable



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Stud Welding Equipment - ARC

A 12 M - NUT & STUD WELDING GUN



A 12 M

For welding on weld nuts type Hex^{Nut}

For welding on perforated and unperforated sheet metal

Particularly suitable for workshop and assembly areas

Technical Data	
Welding range	MARC welding nuts type HexNut M6 to M12 Hexagon nuts DIN 934 M6 to M12 SC welding elements M5 to M10, dia. 5 to 8 mm / 3/16" to 3/8", dia. 3/16" to 5/16" CD welding elements M5 to M10, dia. 5 to 8 mm / 3/16" to 3/8", dia. 3/16" to 5/16"
Sheet metal thickness	Nut welding: 1 to 3 mm / 0.04" to 0.12" Stud welding: min. 1 mm / min. 0.04" (other sheet thicknesses on request)
Welding elements material	MARC welding nuts type HexNut: Stainless steel (A2-50) Hexagon nuts DIN 934: Stainless steel (A2-50,-70 / A4-50,-70, A5-50,-70) SC welding elements: Mild steel, stainless steel, type PT / UT / IT CD welding elements: Mild steel stainless steel, type PS / US / IS
Welding elements type	MARC welding nuts type HexNut, hexagon nuts according to DIN 934 SC welding elements and CD welding elements according to DIN EN ISO 13918
Welding sequence	Up to 4 weld nuts/min. The maximum welding sequence is limited by a large number of parameters.
Length compensation	3 mm / 0.12", automatic
Lift	Adjustment range 3 mm / 0.12", arresting
Spring force	Adjustable, arresting
Welding cable	Welding gun: 4.85 m connecting cable, 35 mm ² 1.73 m field former cable, 10 mm ² (0.61 m welding current connection, 0.85 m control cable connection) Ground cable: 5 m, 25 mm ²
Workplace noise level	Up to 90 dB (A) may occur during welding
Dimension L x W x H	200 x 65 x 140 mm / 7.87" x 2.56" x 5.51" (without cable, with leg assembly) Shielding gas leg assembly D = 60 mm Protective hose L = 4300 mm
Weight	0.8 kg / 1.76 lbs (without cable)
General Information	
Design	<ul style="list-style-type: none"> • Robust housing made of impact resistant plastic • Backlash-free ball linear bearing for guiding the welding piston • Sealed welding piston guide • Integrated lift and spring force adjustment
Safety	<ul style="list-style-type: none"> • Locking spring adjustment • High safety against unintentional change of selected settings • Guide protected against welding spatter
Welding	<ul style="list-style-type: none"> • Automatic length compensation

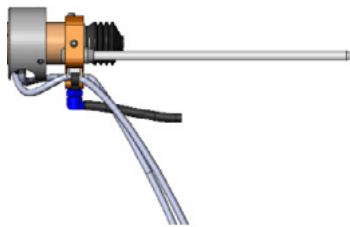
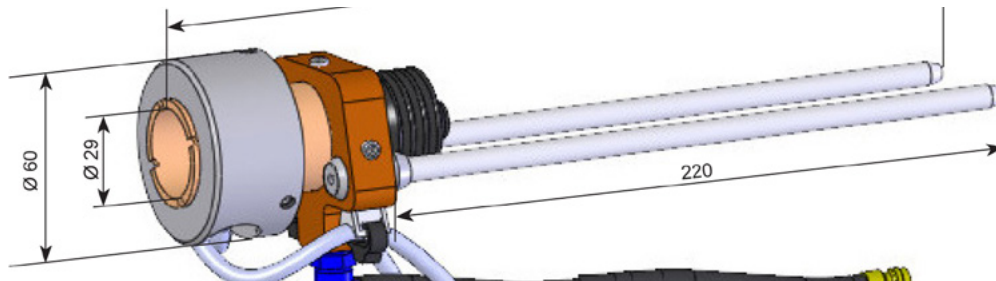


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Stud Welding Equipment - ARC

A 12 M - NUT & STUD WELDING GUN

Equipment for A 12 M



Shielding gas leg assembly with field former

D = 60,
Legs 8 x 220
With shielding gas connection

Order number: 88-26-880



Protective hose for A 12 M to protect the welding cables and the field former cable from dirt, dust and welding sparks

Length: 430 cm
Width: 13.5 cm

Order number: 80-10-2769



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Stud Welding Equipment - Arc

MARC NUT WELDING SYSTEM

Nut welding systems for welding with magnetic rotating arc

- For welding of welding nuts of type Hex^{Nut}
- For welding on perforated and unperforated metal sheets
- Especially suitable for workshop and assembly area
- Up to 4 welding nuts/min



Nut and Stud Welding Gun - A 12 M



Stud Welding Unit - IT 1002

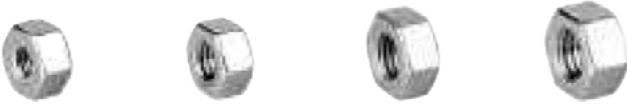
	Nuts M6 to M12 - Studs M5 to M10 / 3/16" to 3/8
Suitable stud welding unit	IT 1002
Welding process	Drawn arc welding with magnetically impelled electric arc and shielding gas
Welding range	MARC welding nuts type HexNut M6 to M12 Hexagon nuts DIN 934 M6 to M12 SC welding elements M5 to M10, dia. 5 to 8 mm / 3/16" to 3/8", dia. 3/16" to 5/16" CD welding elements M5 to M10, dia. 5 to 8 mm / 3/16" to 3/8", dia. 3/16" to 5/16"
Wall thickness	Nut welding: 1 to 3 mm / 0.04" to 0.12" Stud welding: min. 1 mm / min. 0.04" (other sheet thicknesses on request)
Welding element material	MARC welding nuts type HexNut: Stainless steel (A2-50) Hexagon nuts DIN 934: Stainless steel (A2-50,-70 / A4-50,-70, A5-50,-70) SC welding elements: Mild steel, stainless steel, type PT / UT / IT CD welding elements: Mild steel stainless steel, type PS / US / IS
Welding element type	MARC welding nuts type HexNut, hexagon nuts according to DIN 934 SC welding elements and CD welding elements according to DIN EN ISO 13918
Welding rate	Nut welding: up to 4 welding nuts/min. Stud welding: M10 = 25 studs/min The maximum welding sequence is limited by a number of parameters
Length compensation	3 mm / 0.12", automatic
Lift	Adjustment range 3 mm / 0.12", lockable
Spring pressure	Adjustable, arresting
Welding cable	Welding gun: 4.85 m connecting cable, 35 mm ² 1.73 m field former cable, 10 mm ² (0.61 m welding current connection, 0.85 m control cable connection) Ground cable: 5 m, 25 mm ²
IP Code	IT 1002: IP 23, A 12 M: IP 20
Workplace noise level	Up to 90dB (A) may occur during welding
Dimension LxWxH	200 x 65 x 140 mm / 7.87" x 2.56" x 5.51" (without cable, with leg assembly) Shielding gas leg assembly D = 60 mm Protective hose L = 4300 mm
Weight	0.8 kg / 1.76 lbs (without cable)
Order No.	93-20-242 (Welding gun AM 12A) 93-60-1202 (Welding unit IT 1002) 93-40-020 (Ground cable, 5m 25 mm ² , 2 vice grips 10") Complete equipment for AM 12 A: 93-40-0030068 for HexNut M6 93-40-003008 for HexNut M8 93-40-003010 for HexNut M10 93-40-003012 for HexNut M12



Stud Welding Equipment - Arc

MARC NUT WELDING SYSTEM

Order No.	<p>93-20-242 (Welding gun AM 12A) 93-60-1202 (Welding unit IT 1002) 93-40-020 (Ground cable, 5m 25 mm², 2 vice grips 10")</p> <p>Complete equipment for AM 12 A: 93-40-0030068 for HexNut M6 93-40-003008 for HexNut M8 93-40-003010 for HexNut M10 93-40-003012 for HexNut M12</p> <p>Accessories – Nut welding 88-16-881 Nut fixture DIN 934 M6 88-16-882 Nut fixture DIN 934 M8 88-16-883 Nut fixture DIN 934 M10 88-16-884 Nut fixture DIN 934 M12</p>
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Dimension of welding element					
		M6	M8	M10	M12
	Dimension	M6	M8	M10	M12
	Height HexNut	8	8	9	11
	Width across flats	AF14	AF14	AF17	AF19
Bore diameter	Bore diameter - metal sheet (based on DIN EN ISO 4032)	10.6+0.1...+0.4	10.6+0.1...+0.4	12.6+0.1...+0.4	14.9+0.1...+0.4
Tightening torque	(μ - 0,18)	3.8	9.5	19.0	33.0



Stud Welding Equipment - Arc

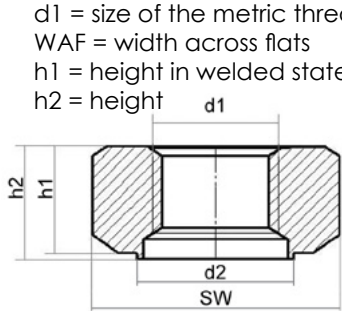
MARC WELDING NUTS - TYPE HEX^{NUT}

MATERIAL A2-50

Equipping the Welding Gun

Select a chuck and the corresponding chuck adaptor suitable for your welding element.

Welding elements for nut welding (MARC welding nuts):



A 12 M - Suitable welding gun for manual stud feeding

WAF	d1	d2 ^{-0.1} in mm	Suitable for d _{hole} in mm	h1 in mm	h2 in mm
14	M6	10.5	10.7 to 11.0	7.5	8
14	M8	10.5	10.7 to 11.0	7.5	8
17	M10	12.5	12.7 to 13.0	8.5	9
19	M12	14.8	15.0 to 15.3	10.5	11

		Diameter			
		M6	M8	M10	M12
		Order No.	Order No.	Order No.	Order No.
Material	A2-50	60-06-0082*	60-08-0082A*	60-10-0092*	60-12-0112*

Sleeve Fixture	88-22-532	88-21-107	88-21-108	88-21-109

Chuck adapter - 88-26-647
for M8 - Internal thread



Hex^{Nut}



Hex ^{Nut}	Nut fixture (Hex ^{Nut})
0 d _l	
M6	88-22-532
M8	88-21-107
M10	88-21-108
M12	88-21-109



Chuck adapter for use with studs on only.

Minimum order quantity, delivery time and price upon request.



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SECTION 14

STUD WELDING EQUIPMENT – AUTOMATIC COMPONENTS

FOR INQUIRIES, TO PLACE ORDERS,
SERVICE AND TECHNICAL SUPPORT CONTACT
ANY OF THE FOLLOWING:

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Stud Welding Equipment - Automatic Components

CDI 1502 AT



Stud Welding Unit (with digital display)

For capacitor discharge stud welding according to current standards.

- Entry level automation for semi-automatic use.
- Simple library function for ease of use.

Unbeatable new power pack

- With efficient inverter-capacitor charging technology.
- Enormous time and energy savings (30 % less energy!)
- Highest cycle sequence of its class (up to 40 studs/min.)
- 20 % energy reserve due to 220 V charging voltage.
- Simple operation & minimal weight (20% lighter than previous model).
- Extreme long life due to robust and functional industrial design.

Highest level of quality and safety

- Capacitor formation recorded - Quality control for consistent capacitor quality through automated formation.
- Shock-proof capacitor battery - No contact of the capacitors to the device housing; sparkover (short circuit) is therefore not possible!
- Cooling channel - Protects the electronic components from getting soiled. Ideal cooling of the inverter charging p.c. board for high sequence cycles.

Technical Data	
Welding material	Mild steel, stainless steel, aluminum and brass
Equipment	Automation
Display	Digital
Welding range	Studs: M3 to M8, dia. 2 to 8 mm / #4 to 5/16", dia. 14 ga to 5/16" Cupped head pins: dia. 2 and 2.7 mm / 14 ga and 12 ga Insulation pins: dia. 2 and 3 mm / 14 ga and #4
Welding rate	M3 / #4 = 40 studs/min. (voltage 60V) M8 / 5/16" = 14 studs/min. (voltage 200V)
Capacitance	66,000 µF
Welding time	1 to 3 msec
Energy	1,600 Ws
Charging voltage	50 to 220 V (stepless voltage regulation)
Primary power	230 V/115 V*, 50/60 Hz, 10 AT (slow blow) (*alternative primary power see order number below)
Connected load	600 VA
Power source	Capacitor
Cooling type	F (temperature controlled cooling fan)
IP-code	IP 21
Dimension L x W x H	15.75" x 8.07" x 9.84" (400 x 205 x 250 mm) without handle
Weight	30.87 lbs (14 kg)
Suitable guns	PAH-I
Order No	92-10-1504B (230 V) 92-12-1504B (115 V) 92-13-1504B (100 V)



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Stud Welding Equipment - Automatic Components

CDMi 2402 TECHNICAL DATA SHEET



CDMi 2402

Stud Welding Unit
for CD stud welding
(capacitor discharge welding)
according to current standards

Inverter-Capacitor Charging Technology

- Maximum welding rates
- Minimum energy consumption
- Minimum weight
- Maximum efficiency

Technical Data	
Automation	Series
Welding range	#4 to 5/16" (7/16" limited), dia. 14 ga to 5/16" (dia. 3/8" limited) M3 to M8 (M10 limited), dia. 2 to 8 mm (dia. 10 mm limited)
Welding material	Mild steel, Stainless steel, Aluminum, Brass
Welding rate	M3 = 40 studs/min. (Charging voltage 60 V) M8 = 21 studs/min. (Charging voltage 170 V) (M10 = 17 studs/min. (Charging voltage 210 V))
Capacitance	99 000 µF/33 000 µF*
Welding time	1 to 3 msec
Energy	2 400 Ws/800 Ws*
Charging voltage	50 to 220 V (steplless voltage regulation)
Primary power	115 V, 50/60 Hz, 10 AT
Power source	Capacitor
Cooling type	F (temperature controlled cooling fan)
IP-Code	IP 21
Dimension L x W x H	22.44" x 11.22" x 11.42" (570 x 285 x 290 mm) without handle
Weight	57.32 lbs (26 kg) * with change over of capacitors
Order No	92-12-22412 (Automation)
General Information	
Application	• Especially suitable for thin sheets (at least 0.5 mm)
Process variants	• Contact welding • Gap welding
Equipment	• Automation (series) • Menu navigation in various languages: German, English, French, Italian, Russian, Portuguese, Spanish and Chinese



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Stud Welding Equipment - Automatic Components

CDMI 2402 TECHNICAL DATA SHEET

Advantages

Features

- Microcontroller – for precise process times, optimal functional reliability and maximum operating convenience
- Function monitoring – automatic function test following power-up; monitoring of all internal system functions
- Display of error codes – on LCD display
- Function control – All functions are visible on the operator panel via LED or display

Structure

- Compact
- Robust – metal housing withstands rough treatment in shop and on site
- Industrial plugs – standardised and sturdy plugs
- Two ground connections – direct coupling of several stud welding machines possible when installed in complex welding systems

Safety

- With integrated mains filter (protection against voltage peaks)
- Optimal for construction sites with large mains voltage fluctuations – use even with critical voltage supply (- 25 % + 20 %)
- Fulfills the requirements according to DIN EN 60974-10: 2008-09 - EMC test
- Fulfills the requirements according to DIN EN 60974-1: 2013-06 - Logged high voltage test
- Logged capacitor forming for quality control of the stud welding capacitors
- Controlled capacitor forming – step-by-step charging of capacitors after long standstill times for longer service life of capacitors
- Retriggering lock-out – prevents welding on a welding element that has already been welded
- Thermal control of inverter-capacitor charging unit and internal temperature of stud welding unit– automatic switch-off in the event of overheating
- Temperature controlled cooling fan – reduces noise and dust in the stud welding unit (greater system reliability)
- Control unit galvanically separated from welding lines – high degree of functional safety
- Optimal cooling air stream – protection of the electronic components against contamination and ideal cooling of the inverter-capacitor charging circuit board for high cycle sequences
- Shock-resistant operation panel – operation panel protected by protruding casing
- Shock-resistant capacitors – capacitors protected by shock proofing elements
- Accessory: Control guard made of acrylic glass (lockable) – prevents damage and unauthorised access

Welding

- Graphic display – clear operator guidance via large LCD display
- Setting of charging voltage in V and charging energy in Ws – when changing the charging voltage, the charging energy is automatically adjusted
- Process sequence control – detection and evaluation of influencing variables of the welding process via the process control (CP); after every welding, a comparison of the reference CP value and the actual values is performed; display of the actual and target value; welding stop when limit values are exceeded can be activated; limit values can be selected in steps; manual entry of CP value possible
- 15 programs can be stored – in every program, the parameters (charging voltage, capacity, CP settings and automatic settings) can be selected digitally via a superior control system and specific to the application
- Remote control of the stud welding machines via standardised RS232 interface possible – the stud welding machines can be controlled directly via the PC or CNC welding systems
- Library function – library with stored welding parameters for different diameter and material combinations for a quick start of the welding process
- User-specific settings– weld counter (display of previously executed welds); menu navigation in various languages; units (metric, imperial); date; time; setting of the transmission rate of the interfaces

(continued on next page)



Stud Welding Equipment - Automatic Components

CDMI 2402 TECHNICAL DATA SHEET

Advantages

Welding

Gun / welding head test – functionality check of the welding guns or the welding heads with a lifting test (check of the lifting function of the gap welding guns and bolt welding heads without contact with the workpiece); functionality check of the welding guns or the welding heads by recording the movement time of the solenoid from triggering to the contact with the workpiece

- Reading out of CP values via standardised RS232 interface – for the output of data such as the date, time and welding parameters of each weld with the superior control system; welding parameters of every weld are logged
- Powerful – built-in power reserves
- Inverter-capacitor charging technology – makes high cycle rates possible
- Trouble-free changing of welding voltage polarity possible by reconnecting welding current and ground cables
- Use of special capacitors (developed for stud welding)
- Capacitance switching – 33 000 μF or 99 000 μF

Suitable stud welding guns/heads

- C 08
- CA 08
- PAH-I
- KAH 412
- KAH 412 LA

Issue 06/14

(Technical data may change)



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Stud Welding Equipment - Automatic Components

CDMi 3202 TECHNICAL DATA SHEET



CDMi 3202

Stud Welding Unit
for CD stud welding
(capacitor discharge welding)
according to current standards

Inverter-Capacitor Charging Technology

- Maximum welding rates
- Minimum energy consumption
- Minimum weight
- Maximum efficiency

Technical Data	
Automation	Series
Welding range	#4 to 7/16", dia. 14 ga to 3/8" M3 to M10, dia. 2 to 10 mm
Welding material	Mild steel, Stainless steel, Aluminum, Brass
Welding rate	M3 = 43 studs/min. (Charging voltage 50 V) M8 = 25 studs/min. (Charging voltage 140 V) (M10 = 18 studs/min. (Charging voltage 200 V))
Capacitance	132 000 µF/66 000 µF*
Welding time	1 to 3 msec
Energy	3 200 Ws/1 600 Ws*
Charging voltage	50 to 220 V (stepless voltage regulation)
Primary power	115 V, 50/60 Hz, 10 AT
Power source	Capacitor
Cooling type	F (temperature controlled cooling fan)
IP-Code	IP 21
Dimension L x W x H	22.44" x 11.22" x 11.42" (570 x 285 x 290 mm) without handle
Weight	59.53 lbs (27 kg) * with change over of capacitors
Order No	92-12-23212 (Automation)
General Information	
Application	• Especially suitable for thin sheets (at least 0.5 mm)
Process variants	• Contact welding • Gap welding
Equipment	• Automation (series) • Menu navigation in various languages: German, English, French, Italian, Russian, Portuguese, Spanish and Chinese



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Stud Welding Equipment - Automatic Components

CDMI 3202 TECHNICAL DATA SHEET

Advantages

Features

- Microcontroller – for precise process times, optimal functional reliability and maximum operating convenience
- Function monitoring – automatic function test following power-up; monitoring of all internal system functions
- Display of error codes – on LCD display
- Function control – All functions are visible on the operator panel via LED or display

Structure

- Compact
- Robust – metal housing withstands rough treatment in shop and on site
- Industrial plugs – standardised and sturdy plugs
- Two ground connections – direct coupling of several stud welding machines possible when installed in complex welding systems

Safety

- With integrated mains filter (protection against voltage peaks)
- Optimal for construction sites with large mains voltage fluctuations – use even with critical voltage supply (- 25 % + 20 %)
- Fulfils the requirements according to DIN EN 60974-10:2008-09 - EMC test
- Fulfils the requirements according to DIN EN 60974-1:2013-06 - Logged high voltage test
- Logged capacitor forming for quality control of the stud welding capacitors
- Controlled capacitor forming – step-by-step charging of capacitors after long standstill times for longer service life of capacitors
- Retriggerring lock-out – prevents welding on a welding element that has already been welded
- Thermal control of inverter-capacitor charging unit and internal temperature of stud welding unit– automatic switch-off in the event of overheating
- Temperature controlled cooling fan – reduces noise and dust in the stud welding unit (greater system reliability)
- Control unit galvanically separated from welding lines – high degree of functional safety
- Optimal cooling air stream – protection of the electronic components against contamination and ideal cooling of the inverter-capacitor charging circuit board for high cycle sequences
- Shock-resistant operation panel – operation panel protected by protruding casing
- Shock-resistant capacitors – capacitors protected by shock proofing elements
- Accessory: Control guard made of acrylic glass (lockable) – prevents damage and unauthorised access

Welding

- Graphic display – clear operator guidance via large LCD display
- Setting of charging voltage in V and charging energy in Ws – when changing the charging voltage, the charging energy is automatically adjusted
- Process sequence control – detection and evaluation of influencing variables of the welding process via the process control (CP); after every welding, a comparison of the reference CP value and the actual values is performed; display of the actual and target value; welding stop when limit values are exceeded can be activated; limit values can be selected in steps; manual entry of CP value possible
- 15 programs can be stored – in every program, the parameters (charging voltage, capacity, CP settings and automatic settings) can be selected digitally via a superior control system and specific to the application
- Remote control of the stud welding machines via standardised RS232 interface possible – the stud welding machines can be controlled directly via the PC or CNC welding systems
- Library function – library with stored welding parameters for different diameter and material combinations for a quick start of the welding process
- User-specific settings– weld counter (display of previously executed welds); menu navigation in various languages; units (metric, imperial); date; time; setting of the transmission rate of the interfaces

(continued on next page)



Stud Welding Equipment - Automatic Components

CDMI 3202 TECHNICAL DATA SHEET

Advantages

Welding

Gun / welding head test – functionality check of the welding guns or the welding heads with a lifting test (check of the lifting function of the gap welding guns and bolt welding heads without contact with the workpiece); functionality check of the welding guns or the welding heads by recording the movement time of the solenoid from triggering to the contact with the workpiece

- Reading out of CP values via standardised RS232 interface – for the output of data such as the date, time and welding parameters of each weld with the superior control system; welding parameters of every weld are logged
- Powerful – built-in power reserves
- Inverter-capacitor charging technology – makes high cycle rates possible
- Trouble-free changing of welding voltage polarity possible by reconnecting welding current and ground cables
- Use of special capacitors (developed for stud welding)
- Capacitance switching – 66 000 μF or 132 000 μF

Suitable stud welding guns/ heads

- C 08
- CA 08
- PAH-I
- KAH 412
- KAH 412 LA

Issue 06/14

(Technical data may change)



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Stud Welding Equipment - Automatic Components

IT 90 STUD WELDING UNIT



IT 90

Stud Welding Unit
for Arc stud welding
according to current standards

Inverter

- Maximum welding quality
- Maximum welding rates
- Minimum energy consumption
- Minimum weight
- Maximum efficiency

Technical Data	
Gas/Automation/Process control	Series/Series/Series
Welding range	#4 to 1", dia. 14 ga to 7/8" (M3 to M24, dia. 2 to 22 mm)
Welding material	Mild steel, Stainless steel, Aluminum
Welding rate	Dia. 7/8" = 7 studs/min (dia. 22 mm = 7 studs/min)
Welding current	2,000 A (max.)
Current adjustment range	300 to 2,000 A (stepless)
Welding time	5 to 1,500 msec (stepless)
Primary power	480/460 V, 3 phases, 50/60 Hz, 63 AT (alternative input voltages available)
Connected load	100 KVA (with 400 V mains) 80 kW
Cooling type	F (temperature controlled cooling fan)
IP-Code	IP 21
Dimension L x W x H	25.6" x 22" x 50.8" (650 x 560 x 1,290 mm) without handle
Weight	93-66-12096: 315.26 lbs (143 kg) 93-66-42096: 363.76 lbs (165 kg)
Order No	93-66-12096 (Gas/Automation/Process control/I Gun connection) 93-66-42096 (Gas/Automatic/Process control/4 Gun connections)
General Information	
Application	
• Especially suitable for thicker sheets of about 2 mm or higher	
Process variants	
• Short cycle drawn arc welding	
• Drawn arc welding	
Equipment	
• Welding with ceramic ferrule (series)	
• Welding with shielding gas (series)	
• Automation (series)	
• Process sequence control (series)	



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Stud Welding Equipment - Automatic Components

KAH 412 LA AUTOMATIC STUD WELDING HEAD WITH LENGTH COMPENSATION

KAH 412 LA

Automatic Stud Welding Head with length compensation for CD or Arc stud welding with automatic stud feeding according to current standards

Technical Data	
Welding range	#4 to 5/16", dia. #4 to 5/16" (M3 to M8, dia. 3 to 8 mm); dia. 3/8" to 1/2" (dia. 10 to 12.7 mm) with modification only
Stud length	0.31" to 1.57" (8 to 40 mm) other lengths on request
Stud material	Mild steel, Stainless steel, Aluminum, Brass
Total stroke of piston	0.28"
Spring pressure	Arresting
IP-Code	IP 20
Workplace noise level	> 90 dB (A) may occur during welding
Dimension L x W x H	14.76" x 2.60" x 5.71" (375 x 66 x 145 mm) with chuck and quick change system
Weight	7.50 lbs (3.4 kg)
Order No	94-37-412 (with length compensation)

General Information	
Application	<ul style="list-style-type: none">• Especially suitable for thin sheets (at least 0.5 mm)• Automatic compensation of length tolerance of welding elements and height tolerance of the work piece through integrated length adjustment
Process variants	<ul style="list-style-type: none">• Gap welding• Short cycle drawn arc welding• Drawn arc welding (optional)
Advantages	
Structure	<ul style="list-style-type: none">• Rigid casing made of metal• Torsion-resistant aluminum-casing to accommodate all function elements and accessories• Zero-play ball linear bearing for guiding the welding piston, to ensure maximum precision and reproducibility for welds• Sealed welding piston guidance• Compact dimensions• Integrated lift and spring-loaded adjustment• Stud length is freely adjustable (up to 40 mm; other lengths available on request)• Infinitely adjustable spring-loaded adjustment can be read off the scale directly• Prisma clamping system for fast exchange of the complete stud welding head• Pushbutton detent system to facilitate changing the feeding tube• Mechanical structure tested in production



Stud Welding Equipment - Automatic Components

KAH 412 AUTOMATIC STUD WELDING HEAD WITH DIGITAL DISPLAY

KAH 412

Automatic Stud Welding Head with Digital Display for CD or Arc stud welding with automatic stud feeding according to current standards

Technical Data	
Welding range	#4 to 5/16", dia. #4 to 5/16" (M3 to M8, dia. 3 to 8 mm); dia. 3/8" to 1/2" (dia. 10 to 12.7 mm) with modification only
Stud length	0.31" to 1.57" (8 to 40 mm) other lengths on request
Stud material	Mild steel, Stainless steel, Aluminum, Brass
Stroke	Adjustment range 0.20" (5 mm), arresting
Spring pressure	Arresting
IP-Code	IP 20
Workplace noise level	> 90 dB (A) may occur during welding
Dimension L x W x H	14.76" x 2.60" x 5.71" (375 x 66 x 145 mm) with chuck and quick change system
Weight	7.50 lbs (3.4 kg)
Order No	94-31-412C
General Information	
Application	• Especially suitable for thin sheets (at least 0.5 mm)
Process variants	• Contact welding (optional) • Gap welding • Short cycle drawn arc welding • Drawn arc welding (optional)
Advantages	
Structure	<ul style="list-style-type: none"> • Rigid casing made of metal • Torsion-resistant aluminum-casing to accommodate all function elements and accessories • Zero-play ball linear bearing for guiding the welding piston, to ensure maximum precision and reproducibility for welds • Sealed welding piston guidance • Compact dimensions • Integrated lift and spring-loaded adjustment • Stud length is freely adjustable (up to 40 mm; other lengths available on request) • Digital display (1/100 mm) for the position of the welding piston using integrated measuring system • Direct reading for the adjusted plunge and lift dimension • Infinitely adjustable spring-loaded adjustment can be read off the scale directly • Prisma clamping system for fast exchange of the complete stud welding head • Push button detent system to facilitate changing the feeding tube



Stud Welding Equipment - Automatic Components

PAH-1 STUD WELDING GUN



PAH-1

Stud Welding Gun
for CD or Arc stud welding with automatic
stud feeding according to current standards

Technical Data	
Welding range	#4 to 5/16", dia. #4 to 5/16" (M3 to M8, dia. 3 to 8 mm)
Stud length	0.31" to 1.18" (8 to 30 mm)
Stud material	Mild steel, Stainless steel, Aluminum, Brass
Stroke	Adjustment range 0.20" (5 mm)
Welding cable	9.84' (3 m)
IP-Code	IP 20
Workplace noise level	> 90 dB (A) may occur during welding
Dimension L x W x H	11.61" x 2.36" x 6.70" (295 x 60 x 170 mm) without cable
Weight	3.09 lbs (1.4 kg) without cable
Order No	94-20-025
General Information	
Application	• Especially suitable for thin sheets (at least 0.5 mm)
Process variants	• Contact welding (optional) • Gap welding • Short cycle drawn arc welding
Advantages	
Structure	• Rigid casing made of impact-resistant plastic • Slide bearing for guiding the welding piston • Sealed welding piston guidance • Ergonomic design • Adjustable lift • Stud length convertible (up to 30 mm) • Mechanical structure tested in production • Electronically controlled



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Stud Welding Equipment - Automatic Components

VBZ-3 FULLY AUTOMATIC STUD FEEDER



VBZ-3

Fully Automatic Stud Feeder for welding elements with flange according to current standards

Technical Data	
Stud diameter	#4 to 5/16", dia. #4 to 5/16" (M3 to M8, dia. 3 to 8 mm) other diameter on request
Stud length	0.31" to 1.97" (8 to 50 mm)
Feed speed	Up to 30 studs/min (depending on welding element and feeding tube)
Air pressure connection	6 bar/800 liter/min
Electrical supply	115V, 60 Hz, 1.8 A (alternative input voltages available)
IP-Code	IP 20
Dimension L x W x H	18.50" x 12.20" x 11.02" (470 x 310 x 280 mm)
Weight	52.91 lbs (24 kg)
Order No	94-66-103B (for dia. 3 mm) 94-66-104B (for dia. 4 mm) 94-66-105B (for dia. 5 mm) 94-66-106B (for dia. 6 mm) 94-66-171B (for dia. 7,1 mm) 94-66-108B (for dia. 8 mm) 94-66-153B (for X-mas tree stud dia. 5) 94-66-163B (for X-mas tree stud dia. 6)
General Information	
Application	<ul style="list-style-type: none"> Feeding unit VBZ-3 for quick, fully automatic feeding for welding elements with flange according to current standards Fully automatically feeding of welding elements from dia. 3 to dia. 8 mm (with flange); (other dia. on request) Length from 8 to 50 mm (no rebuilding)
Options	<ul style="list-style-type: none"> Additional regulation of exhaust air by a throttle is possible; this allows ideal adjustment of air flow required for various sizes of welding elements Special feeding units on request
Advantages	
Features	<ul style="list-style-type: none"> Feeding bowl with special coating, to reduce abrasion and noise Exhaust air is pulse controlled, no permanent air consumption



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Stud Welding Equipment - Automatic Components

PMB-LS2 PNEUMATIC CLAMP



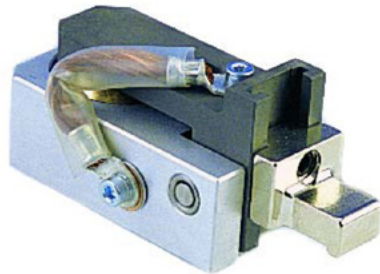
PMB-LS2
Pneumatic Clamp

Technical Data	
Clamping movement	Double action air cylinder through curved sector control
Horizontal clamping way	0.30" (7.5 mm)
Vertical clamping way	0.16" (4 mm)
Max. thickness of work piece	Through elevation adjustment of clamp up to 0.39" (10 mm)
Width of clamp	0.59" (15 mm)
Air pressure connection	Up to 6 bar
Clamp pressure	300 N at 6 bar
Dimension L x W x H	3.54" x 1.97" x 1.97" (90 x 50 x 50 mm)
Weight	1.10 lbs (500 g)
Order No	90-60-120
General Information	
Description	
<ul style="list-style-type: none">• Pneumatic work piece clamps PMB-LS2 guarantees fast and accurate clamping of the work• The patented horizontal and vertical movement of clamp fingers allow work piece loading from top or front• Integrated ground connection to the clamp• Forward- and clamp-movement through curved sector control• Bellows are protecting the motor apparatus of fouling	

Issue 04/08
(Technical data may change)

Stud Welding Equipment - Automatic Components

PMB-S PNEUMATIC CLAMP



PMB-S

Pneumatic Clamp

Technical Data	
Clamping movement	Single action air cylinder
Vertical clamping way	0.16" (4 mm)
Max. thickness of work piece	Through elevation adjustment of clamp up to 0.79" (20 mm)
Width of clamp	0.59" (15 mm)
Air pressure connection	Up to 6 bar
Clamp pressure	300 N at 6 bar
Dimension L x W x H	3.86" x 1.77" x 1.65" (98 x 45 x 42 mm)
Weight	1.01 lbs (460 g)
Order No	90-60-01 I
General Information	
Description	
<ul style="list-style-type: none">• Compact pneumatic clamp with vertical movement• Ground connection to the clamp• In- and output of the work piece only from the front side	



SECTION 14

STUD WELDING EQUIPMENT – CNC AUTO FEED SYSTEMS

FOR INQUIRIES, TO PLACE ORDERS,
SERVICE AND TECHNICAL SUPPORT CONTACT
ANY OF THE FOLLOWING:

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Stud Welding Equipment - CNC Systems

PC-S PRODUCTION CENTER STANDARD MANUAL

PC-S

Production Center Standard Manual

Technical Data	
T-slot work plate	19.69" x 14.76" (500 x 375 mm)
Welding range	#4 to 5/16", dia. #4 to 5/16" (M3 to M8, dia. 3 to 8 mm); dia. 3/8" to 1/2" (dia. 10 to 12.7 mm) only possible with modification
Stud length	0.31" to 1.57" (8 to 40 mm) other dimensions on request
Stud feeding *)	Manual or automatic stud feeding (optional) *) not included in delivery
Positioning (accuracy) of welded studs	± 0.008" (± 0.2 mm)
Working stroke of stud welding head	Z-max. = 4.92" (125 mm), z-adjustable = 0.16" to 1.77" (4 to 45 mm) bottom end stop
Stud welding head *)	KAH 412 alternative: KAH 412 LA (mechanical length compensation - gap), *) not included in delivery
Max. number of stud welding heads	1
Connection	Electrical: 115V, 16 A, 60 Hz Pneumatic: 6 bar min/10 bar max./inner hose dia. 1/4" (dia. 6 mm)
Dimension L x W x H	47.24" x 39.37" x 78.74" (1,200 x 1,000 x 2,000 mm) without cover, 55.12" x 39.37" x 86.61" (1,400 x 1,000 x 2,200 mm) with cover
Weight Approx.	330.69 lbs (150 kg)
Order No	90-70-5028D

General Information	
Application • All variations of stud welding • With manual or automatic stud feeding (30% faster)	
Options • Different stud welding units • Automatic stud feeder VBZ-3 • Work piece fixtures • Machine protection cover • Custom made handling systems • Pneumatic clamp	



Stud Welding Equipment - CNC Systems

CPW SERIES



CNC Production Welder

- Entry-level CNC stud welding machine with 1 welding head
- High speed with highest positioning accuracy by robust machine base frame
- Working with different work piece heights on a working range of 600 x 420 x 120 mm

M3 to M8 (dia. 10/12/12,7 mm only possible with modification)

#4 to 5/16" (dia. 3/8" to 1/2" only possible with modification)

Working range	600 x 420 x 120 mm / 23.6" x 16.5" x 4.7"
T-slot work plate	800 x 490 mm / 31.5" x 19.3"
Welding range	M3 to M8, dia. 3 to 8 mm (dia. 10/12/12,7 mm only possible with modification) #4 to 5/16", dia. #4 to 5/16" (dia. 3/8" to 1/2" only possible with modification)
Stud length	8 to 40 mm / 0.31" to 1.57" (other lengths on request)
Welding capacity	Up to 30 studs/min (depending on configuration)
Traverse speed	25 m/min (X-Y), 20 m/min (Z) / 82'/min X-Y, 65,6'/min Z
Stud feeding	Automatic stud feeding (up to 3 different stud length per welding head)
Positioning accuracy of welded stud	± 0,2 mm / ± 0,008"
Positioning and repeat accuracy	± 0,05 mm / ± 0,002"
Stud welding head	KAH 412 KAH 412 LA (mechanical length compensation - gap)
Max. number of stud welding heads	1
Connections	Electrical: 400V, 16 A, 50 Hz; Pneumatic: 6 bar min./ 10 bar max./ inner hose dia. 6 mm
Motor-driven Z-axis	Z = 0 to 120 mm / 0 to 4.7" (free programmable because of servo drive technology)
Controller	High performance PLC IEC 61131-3
Display	9" Touchscreen
Keyboard	Touch
Dimension LxWxH	1600 x 950 x 1900 mm / 63" x 37.4" x 74.8"
Weight	Approx. 640 kg / 1410,96 lbs
Order No.	According to project



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Stud Welding Equipment - CNC System

MPW 1010/2010 CNC MULTI PRODUCTION WELDER



MPW

CNC Multi Production Welder

Technical Data	
Working range	49.21" x 41.34" (1,250 x 1,050 mm) MPW 1010; 49.21" x 88.58" (1,250 x 2,250 mm) MPW 2010 (maximum working range for up to 3 welding heads)
Welding range	#4 to 5/16", dia. #4 to 5/16" (M3 to M8, dia. 3 to 8 mm); dia. 3/8" to 1/2" (dia. 10 to 12.7 mm) only possible with modification
Stud length	0.31" to 1.57" (8 to 40 mm) other lengths on request
Welding capacity	Up to 40 studs/min (depending on stud welding unit, stud type and positioning of stud)
Traverse speed	196.85'/min (60 m/min)
Stud feeding	Automatic stud feeding (up to 3 different stud length per welding head)
Positioning accuracy of welded stud	± 0.0059" (± 0.15 mm) for steel and ± 0.008" (± 0.2 mm) for aluminum (depending on work piece and stud geometry)
Positioning and repeat accuracy	± 0.002" (± 0.05 mm)
Stud welding head	KAH 412 Optional: KAH 412 LA (mechanical length compensation - gap)
Max. number of stud welding heads	4 (up to 3 stud lengths per welding head possible)
Connections	Electrical: 400 V, 16 A (32 A), 50 Hz Pneumatic: 6 bar min./10 bar max./inner hose dia. 1/4" (dia. 6 mm)
Motor-driven Z-axis	Z = 0 to 4.53" (0 to 115 mm) free programmable because of servo drive technology
Dimension LxWxH	90.55" x 92.52" x 86.61" (2,300 x 2,350 x 2,200 mm) MPW 1010; 137.80" x 92.52" x 86.61" (3,500 x 2,350 x 2,200 mm) MPW 2010
Order No.	According to project
General Information	
Application	<ul style="list-style-type: none"> • Basic milling operations (optional) • Special applications like gluing, foaming etc. (on request)
Process variants	<ul style="list-style-type: none"> • Tip ignition (CD) • Drawn arc welding (Arc) • Short cycle drawn arc welding (SC)



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