

5TH EDITION

INTRODUCING USA INDUSTRIES' **BEST-IN-CLASS**  
PIPING ISOLATION & TESTING PLUG

**GRIPSAFE<sup>®</sup> ST**

see Section 1 - Page 12

**USA**  
**INDUSTRIES**



SINCE 1982

# PRODUCT CATALOG

Piping Isolation & Testing Products • Tube Plugs • Orifice Plates  
Heat Exchanger Tools & Tooling • Custom Machining



PADDLE BLINDS & SPACERS, BLIND FLANGES, STORAGE • PIPE PLUGS FOR ISOLATION & TESTING • BLEEDER CLEANERS, BLEED RINGS • ENGINEERED, METAL TAPERED & NON-METAL TYPE TUBE PLUGS  
SHOULDER PLUGS & GASKETS • UNIVERSAL, PADDLE & RTJ TYPE ORIFICE PLATES, RESTRICTION ORIFICE UNIONS • HEAT EXCHANGER TOOLS & TOOLING • MUCH MORE!

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# **SNAP IT<sup>®</sup>** **ENGINEERED TUBE PLUGS**

***CUT YOUR DELIVERY TIME FROM WEEKS,  
TO JUST DAYS***



***See How Fast  
We Can Deliver!***



**SNAP IT<sup>™</sup>**  
**JR & SR**  
**ENGINEERED TUBE PLUGS**

***The best solution for permanently sealing leaking tubes in  
heat exchangers, boilers, and condensers!***

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**Easy Hydraulic Installation • ASME PCC-2 Compliant • SR Model Rated Up To 7000 PSIG  
• Lot Tested For MAXIMUM QUALITY • No Tube Sheet Damage or Welding Required**



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## ABOUT US

As an **ISO 9001:2015** certified manufacturer and supplier, we operate facilities in Texas and Louisiana. Our products and services extend to oil and gas refineries, liquefied natural gas (LNG), chemical, petrochemical, pharmaceutical, power generation, pipeline, engineering, procurement, construction (EPC's) and other various industrial process manufacturing facilities globally. We specialize in designing, manufacturing, and supplying critical pipe and tube products that ensure the safety and efficiency of plant Turnarounds, Shutdowns, Maintenance & Repairs, and Capital Projects.

## OUR MISSION

To rapidly deliver essential products & innovative solutions to our customers.

## OUR COMPANY'S CORE VALUES



**TRUST**



**SUPPORT**



**COMMUNICATION**



**COLLABORATION**



**CREATIVE SOLUTIONS**

At USA Industries, we believe an accountable workplace is built upon a foundation of ***trust***. We support one another and value open, honest ***communication***. We meet the needs of each other and our customers through ***collaboration*** and ***creative solutions***. These values are foundational in all of our people and our core processes.

## OUR CUSTOMERS

Our customers include owner-operators, resellers, contractors, and OEMs. We recognize the challenges in maintaining and repairing industrial facilities, and our product specialists and shop staff are available 24/7, 365 days a year to discuss emergency needs and fulfill orders. Understanding the unique requirements of our industrial customers, we also offer custom machining services with quick turnaround times.

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(Patent No. 9,546,889)

**When it comes to isolating or testing piping,  
*Think of USA Industries First!***

We maintain a substantial inventory of blind flanges and isolation and hydrotest thickness paddle blinds, with sizes ranging from 1/2" to 96" and flange ratings spanning 150# to 2500#. Our assortment of pipe plugs includes the exclusive and patented GripSafe®ST models, crafted for high-pressure environments, alongside our standard Double Block & Bleed, Flange Weld Test, Industrial Isolation, Grip Type, plumbers-type Inflatable Balloons, and Wing Nuts. We also manufacture bleed rings, rodout tools, and the cutting-edge EZ Lock Blind Rack® for paddle blind storage solutions.



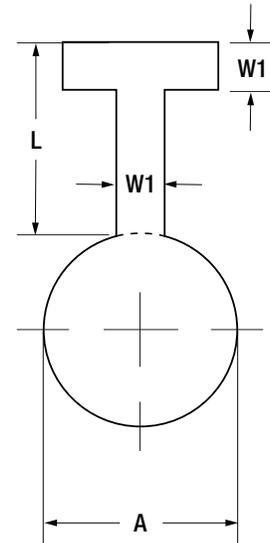
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# PADDLE BLINDS - ISOLATION & HYDROTEST THICKNESSES

See chart on page **PI-7** for our standard thicknesses or specify your own.



- Sizes 1/2" — 96"
- Thickness options: Isolation, Hydro and Custom
- Pressure Rating Class options: 150# — 2500#
- Material options: Stocked in 516 - Gr70 carbon steel & 304/316 stainless steels; can supply any alloy
- Finish options: Mill or Serrated (125-250 RMS)
- Face options: Flat, Raised, RTJ Male or Female (Octagonal or Oval gasket types)
- Handle options: T, 7, Straight
- Meets ASME standards: B16.48 • B16.5 • B16.20 • B16.47 (For larger diameter flanges)
- Products feature easily identifiable coloring, markings, and handles
- Can be made to your customized specifications
- Q/A & Q/C: manufactured under our strict ISO 9001: 2015 Quality Assurance Program

### When Ordering Specify:

- Size
- Flange Rating
- Mill or Serrated Face
- Thickness (Isolation, Hydro or custom)
- Handle Type (Paddle Blinds only)
- Material
- Quantity
- Delivery Date

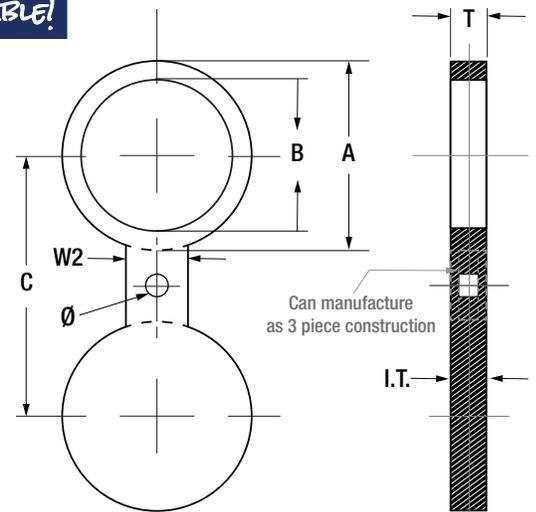
HANDLE COLORS					
150#	RED	300#	BLUE	600#	YELLOW
900#	GREEN	1500#	WHITE	2500#	ORANGE



# SPECTACLE / FIGURE-8 BLINDS



- Sizes 1/2" — 96"
- Pressure Rating Class options: 150# — 2500#
- Material options: Stocked in 516 - Gr70 carbon steel & 304/316 stainless steels; can supply any alloy
- Finish options: Mill or Serrated (125-250 RMS)
- Face options: Flat, Raised, RTJ Male or Female (Octagonal or Oval gasket types)
- Meets ASME standards: B16.48 • B16.5 • B16.20 • B16.47 (For larger diameter flanges)
- Products feature easily identifiable coloring, markings, and handles
- Can be made to your customized specifications
- Q/A & Q/C: manufactured under our strict ISO 9001: 2015 Quality Assurance Program



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# PADDLE BLIND & SPACER DIMENSIONS + THICKNESS CHART

LINE SIZE (in.)	ISO.	150#			300#			600#			900#			1500#			2500#					
		THK	O.D.	I.D.	THK																	
1/2	5/16	1-3/4	5/8	5/16	2	5/8	5/16	2	5/8	5/16	2-3/8	5/8	5/16	2-3/8	5/8	5/16	2-5/8	5/8	5/16	2-5/8	5/8	3/8
3/4	5/16	2-1/8	7/8	5/16	2-1/2	7/8	5/16	2-1/2	7/8	5/16	2-5/8	7/8	5/16	2-5/8	7/8	3/8	2-7/8	7/8	3/8	2-7/8	7/8	3/8
1	5/16	2-1/2	1-1/8	5/16	2-3/4	1-1/8	5/16	2-3/4	1	5/16	3	1	5/16	3	1	3/8	3-1/4	1	3/8	3-1/4	1	3/8
1-1/4	5/16	2-7/8	1-5/8	5/16	3-1/8	1-5/8	5/16	3-1/8	1-3/8	3/8	3-3/8	1-3/8	3/8	3-3/8	1-3/8	3/8	4	1-3/8	1/2	4	1-3/8	1/2
1-1/2	5/16	3-1/4	1-7/8	5/16	3-5/8	1-7/8	5/16	3-5/8	1-5/8	3/8	3-3/4	1-5/8	3/8	3-3/4	1-5/8	1/2	4-1/2	1-5/8	5/8	4-1/2	1-5/8	5/8
2	5/16	4	2-3/8	5/16	4-1/4	2-3/8	3/8	4-1/4	2-1/8	3/8	5-1/2	2-1/8	1/2	5-1/2	2	1/2	5-5/8	2	5/8	5-5/8	2	5/8
2-1/2	5/16	4-3/4	2-7/8	5/16	5	2-7/8	3/8	5	2-5/8	1/2	6-3/8	2-5/8	1/2	6-3/8	2-1/2	5/8	6-1/2	2-3/8	3/4	6-1/2	2-3/8	3/4
3	5/16	5-1/4	3-1/2	5/16	5-3/4	3-1/2	3/8	5-3/4	3-1/4	1/2	6-1/2	3-1/4	5/8	6-3/4	3	3/4	7-5/8	3	7/8	7-5/8	3	7/8
3-1/2	5/16	6-1/4	4	3/8	6-3/8	4	3/8	6-1/4	3-3/4	5/8												
4	5/16	6-3/4	4-1/2	3/8	7	4-1/2	1/2	7-1/2	4-1/4	5/8	8	4-1/4	3/4	8-1/8	4	7/8	9-1/8	4	1-1/8	9-1/8	4	1-1/8
5	5/16	7-5/8	5-1/2	3/8	8-3/8	5-1/2	5/8	9-3/8	5-3/8	3/4	9-5/8	5-1/4	7/8	9-7/8	5	1-1/8	10-7/8	5	1-3/8	10-7/8	5	1-3/8
6	5/16	8-5/8	6-5/8	1/2	9-3/4	6-5/8	5/8	10-3/8	6-3/8	7/8	11-1/4	6-3/8	1	11	6	1-3/8	12-3/8	6	1-5/8	12-3/8	6	1-5/8
8	5/16	10-7/8	8-5/8	1/2	12	8-5/8	7/8	12-1/2	8-3/8	1-1/8	14	8-3/8	1-3/8	13-3/4	8	1-5/8	15-1/8	7-7/8	2-1/8	15-1/8	7-7/8	2-1/8
10	5/16	13-1/4	10-3/4	5/8	14-1/8	10-3/4	1	15-5/8	10-3/8	1-3/8	17	10-3/8	1-5/8	17	10	2	18-5/8	9-3/4	2-5/8	18-5/8	9-3/4	2-5/8
12	5/16	16	12-3/4	3/4	16-1/2	12-3/4	1-1/8	17-7/8	12-3/8	1-5/8	19-1/2	12-3/8	1-7/8	20-3/8	12	2-3/8	21-1/2	11-3/8	3-1/8	21-1/2	11-3/8	3-1/8
14	5/16	17-5/8	14	3/4	19	14	1-1/4	19-1/4	13-5/8	1-3/4	20-3/8	13-5/8	2-1/8	22-5/8	13-1/8	2-5/8						
16	5/16	20-1/8	16	7/8	21-1/8	16	1-1/2	22-1/8	15-5/8	2	22-1/2	15-5/8	2-3/8	25-1/8	15	3						
18	5/16	21-1/2	18	1	23-3/8	18	1-5/8	24	17-5/8	2-1/8	25	17-5/8	2-5/8	27-5/8	16-7/8	3-3/8						
20	5/16	23-3/4	20	1-1/8	25-5/8	20	1-3/4	26-3/4	19-1/2	2-1/2	27-3/8	19-1/2	2-7/8	29-5/8	18-7/8	3-3/4						
22	5/16	25-7/8	22	1-1/4	27-5/8	22	1-7/8	28-3/4	21-1/2	2-3/4												
24	5/16	28-1/8	24	1-1/4	30-3/8	24	2	31	23-1/2	2-7/8	32-7/8	23-1/2	3-1/2	35-3/8	22-5/8	4-3/8						

### MSS SP-44 SERIES "A" SPECS

26	5/16	30-3/8	26	1-5/8	32-3/4	26	2-1/2	34	26	3-1/2	34-5/8	26	4-3/8
28	5/16	32-5/8	28	1-3/4	35-1/4	28	2-3/4	35-7/8	28	3-3/4	37-1/8	28	4-5/8
30	5/16	34-5/8	30	1-7/8	37-3/8	30	2-7/8	38-1/8	30	4-1/8	39-5/8	30	5
32	5/16	36-7/8	32	2	39-1/2	32	3-1/8	40-1/8	32	4-3/8	42-1/8	32	5-3/8
34	5/16	38-7/8	34	2-1/8	41-1/2	34	3-1/4	42-1/8	34	4-5/8	44-5/8	34	5-5/8
36	5/16	41-1/8	36	2-1/4	43-7/8	36	3-1/2	44-3/8	36	4-7/8	47-1/8	36	6
38	5/16	43-5/8	38	2-3/8	41-3/8	38	3-5/8	43-3/8	38	5-1/8	47-1/8	38	6-1/4
40	5/16	45-5/8	40	2-1/2	43-3/4	40	3-7/8	45-3/8	40	5-3/8	49-1/8	40	6-5/8
42	5/16	47-7/8	42	2-5/8	45-3/4	42	4	47-7/8	42	5-5/8	51-1/8	42	7
44	5/16	50-1/8	44	2-3/4	47-7/8	44	4-1/4	49-7/8	44	6	53-3/4	44	7-1/4
46	5/16	52-1/8	46	2-7/8	50	46	4-1/2	52-1/8	46	6-1/4	56-3/8	46	7-5/8
48	5/16	54-3/8	48	3	52	48	4-5/8	54-5/8	48	6-1/2	58-3/8	48	8
50	5/16	56-3/8	50	3-1/8	54-1/8	50	4-7/8	56-7/8	50	6-3/4			
52	5/16	58-5/8	52	3-1/4	56-1/8	52	5	58-7/8	52	7			
54	5/16	60-7/8	54	3-1/4	58-5/8	54	5-1/4	61-1/8	54	7-1/4			
56	5/16	63-1/8	56	3-3/8	60-5/8	56	5-3/8	63-3/8	56	7-1/2			
58	5/16	65-3/8	58	3-1/2	62-5/8	58	5-5/8	65-3/8	58	7-7/8			
60	5/16	67-3/8	60	3-5/8	64-5/8	60	5-3/4	68-1/8	60	8-1/8			

### API-605 SERIES "B" SPECS

26	5/16	28-7/16	26	1-5/8	30-1/4	26	2-1/2	30	26	3-1/2	32-7/8	26	4-3/8
28	5/16	30-7/16	28	1-3/4	32-3/8	28	2-3/4	32-1/8	28	3-3/4	35-3/8	28	4-5/8
30	5/16	32-7/16	30	1-7/8	34-3/4	30	2-7/8	34-1/2	30	4-1/8	37-5/8	30	5
32	5/16	34-9/16	32	2	36-7/8	32	3-1/8	36-5/8	32	4-3/8	39-7/8	32	5-3/8
34	5/16	36-11/16	34	2-1/8	39	34	3-1/4	39-1/8	34	4-5/8	42-1/8	34	5-5/8
36	5/16	38-3/4	36	2-1/4	41-1/8	36	3-1/2	41-1/8	36	4-7/8	44-1/8	36	6
38	5/16	41	38	2-3/8	43-1/8	38	3-5/8						
40	5/16	43	40	2-1/2	45-1/8	40	3-7/8						
42	5/16	45	42	2-5/8	47-1/8	42	4						
44	5/16	47	44	2-3/4	49-1/8	44	4-1/4						
46	5/16	49-5/16	46	2-7/8	51-3/4	46	4-1/2						
48	5/16	51-5/16	48	3	53-3/4	48	4-5/8						
50	5/16	53-5/16	50	3-1/8	55-3/4	50	4-7/8						
52	5/16	55-5/16	52	3-1/4	57-3/4	52	5						
54	5/16	57-1/2	54	3-1/4	60-1/8	54	5-1/4						
56	5/16	59-1/2	56	3-3/8	62-5/8	56	5-3/8						
58	5/16	62-1/16	58	3-1/2	65-1/16	58	5-5/8						
60	5/16	64-1/16	60	3-5/8	67-1/16	60	5-3/4						

### METHODOLOGY

Line sizes up to 96" are available. Standard Isolation thickness is 5/16" (+/-1/16). Any thickness rating or alloy is available upon request.

Sizes and thicknesses meet the following specifications ASME 16.48, ASME 16.5, ASME B16.47

Blank thicknesses over 24 NPS were calculated using the equation for blanks in ASME B31.3 as follows:

$$T = d \sqrt{(3P) / (16SE)}$$

d = I.D. of ring gasket (in.)  
 T = Blank Thickness (in.)  
 S = 23,300psi  
 E = 1.00  
 P = Design Gauge Pressure psi.

S (Basic Allowable Stress) and E (Quality Factor) values were determined from tables A1 and A1-A from B31.3 for 516-Gr 70 material with the temperature range of -20 to 100° Fahrenheit. This calculation does not take into consideration any required corrosion allowance if needed.



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Special Handle  
Designating Vent



**SAVE MONEY!**  
SALES & RENTALS AVAILABLE!

## EZ VENT® SLIP BLINDS

- The EZ Vent slip blind is used to block one side of your flange while allowing access to vent the other side
- Excellent for use when there is not a valve on your piping at that location
- The vent is commonly used to verify there is zero energy in the line; vent off any pressure that has leaked by upstream valve; as an entry point for hydrotesting
  - Sizes: 1/2" to 96"
  - Available as a spectacle or paddle blind
  - Can be rated (with additional thickness for vent)
  - Port options: NPT or SW
  - Multiple ports can be added; venting one or both sides
  - Stocked metals: 516 - Gr70 carbon steel and 304/316 stainless steels; can supply any alloy
  - Finish options: Mill or Serrated (125 / 250 RMS)
  - Face options: Flat or RTJ Male or Female with Oval or Octagonal gasket types
  - Each EZ Vent blind is stamped with the line size and flange rating; carbon steel has color coded handles for easy rating identification
  - Can be made to your customized specifications

SW/NPT NPS (in.)	Recommended Min. Blind Thickness For SW (in)	Recommended Min. Blind Thickness For NPT (in)
1/8	3/4	1/2
1/4	7/8	3/4
3/8	1	7/8
1/2	1-1/4	1
3/4	1-1/2	1-1/4
1	1-3/4	1-1/2
1-1/4	2-3/16	1-3/4
1-1/2	2-7/16	2
2	3	2-1/2

### When Ordering Specify:

- Size
- Flange Rating
- Thickness (Isolation, Hydro or custom)
- Mill or Serrated Finish
- # of Ports
- Location of NPT or SW ports
- Material
- Quantity
- Delivery Date

Machine Finish may require increased thickness.

## EZ PURGE® SLIP BLINDS



Special Handle  
Designating  
Purge  
Blind

**SALES & RENTALS AVAILABLE!**

In line purging applications, the traditional method typically involves using a slip blind along with multiple spacers placed between the blind and the gapped flange. While this approach can create a purging area, it presents several potential issues that could lead to unsafe practices or equipment damage.

USA Industries' **EZ Purge** blinds are designed to resolve these challenges. Our purge blinds are

- Sizes: 1/2" - 96"
- Flange Rating Classes: 150#, 300#, 600#, 900#, 1500#, 2500#
- Standard blind is 1/2" thick with a 1/4" deep channel, available in widths of 3/4", 1", or 1 1/2", depending on the size of the blind
- Stocked metals: 516 - Gr70 carbon steel and 304/316 stainless steels; can supply any alloy
- Carbon steel blinds are painted black with a color coded handle to easily identify flange rating, and labeled with size and rating for quick identification
- Can be made in RTJ
- Q/A & Q/C — manufactured under our ISO 9001: 2015 Quality Assurance Program

clearly identifiable and can be customized to meet any specific requirements. The standard model features a 1/2" thick isolation slip blind with a 1/4" deep channel, with custom thicknesses available upon request.

The gasket area is approximately 50% of the purge area, ensuring proper distribution of sealing force. We also offer custom configurations to accommodate your unique purge flow needs.

### When Ordering Specify:

- Size
- Flange Rating
- Mill or Serrated Face
- Material
- Quantity
- Delivery Date

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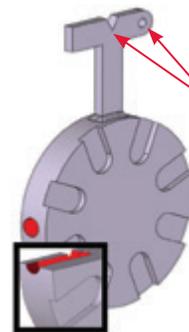
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## EZ VENT-PURGE BLIND®

**Our EZ Vent-Purge Blind combines the benefits of BOTH the EZ Purge® and EZ Vent® slip blinds as shown on page PI-8.**

- Sizes: 1/2" - 96"
- Flange Pressure Rating Classes: 150#, 300#, 600#, 900#, 1500#, 2500#
- Standard blind is 1/2" thick with a 1/4" deep channel, available in widths of 3/4", 1", or 1 1/2", depending on the size of the blind
- Stocked metals: 516 - Gr70 carbon steel and 304/316 stainless steels; can supply any alloy
- Carbon steel blinds are painted black with a color coded handle to easily identify flange rating, and stamped with size and rating
- Can be made in RTJ
- Q/A & Q/C — manufactured under our ISO 9001: 2015 Quality Assurance Program



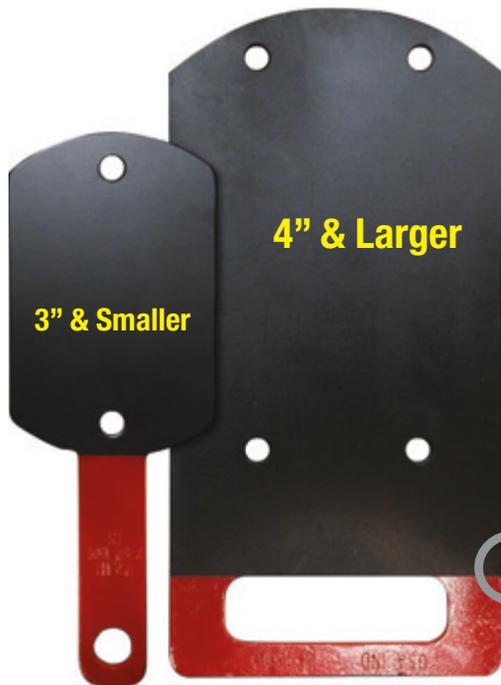
Special Handle Designating  
EZ Vent-Purge Slip Blind



### When Ordering Specify:

- Size
- Flange Rating
- Thickness (Isolation, Hydro or custom)
- Mill or Serrated Face
- # of Ports
- NPT or SW Port(s) Location(s)
- Material
- Quantity
- Delivery Date

## EZ GUILLOTINE™ SLIP BLINDS



**Guillotine Blinds** are used to provide an isolation source on the flare header side of a PSV prior to removal of the PSV for repair.

A blind flange is then placed over and bolted using remaining bolt holes to ensure pressure holding capabilities.

Available in Carbon Steel and Stainless Steel or other alloys to meet your specifications

HANDLE COLORS					
150#	RED	300#	BLUE	600#	YELLOW
900#	GREEN	1500#	WHITE	2500#	ORANGE



### When Ordering Specify:

- Size
- Flange Rating
- Thickness
- Color coded handle\*
- Material
- Quantity
- Delivery Date

IN-STOCK ITEMS  
SHIP SAME DAY

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# GRIPSAFE<sup>®</sup> ST

The most significant innovation in pipe isolation and testing technology in over 65 years!



**APPLICATIONS INCLUDE:**

- Pipe Testing • Flange Weld Testing • Pipe Spool Testing • Line Purging • Isolation
- Positive Isolation Monitoring • Pre/Post Weld Operations

[www.USAIindustries.com/GripSafe-BIC](http://www.USAIindustries.com/GripSafe-BIC) • (888) 985-1136 • [sales@USAIindustries.com](mailto:sales@USAIindustries.com)



## SNAP IT<sup>®</sup> ENGINEERED TUBE PLUGS

**CUT YOUR DELIVERY TIME FROM WEEKS, TO JUST DAYS**



**THE BEST SOLUTION FOR PERMANENTLY SEALING LEAKING TUBES IN HEAT EXCHANGERS, BOILERS, AND CONDENSERS!**



**SNAP IT<sup>™</sup>**  
JR & SR  
ENGINEERED TUBE PLUGS

888-985-1136 | [sales@USAIindustries.com](mailto:sales@USAIindustries.com)

EASY HYDRAULIC INSTALLATION • ASME PCC-2 COMPLIANT • SR MODEL RATED UP TO 7000 PSIG • NO TUBE SHEET DAMAGE OR WELDING REQUIRED

INTRODUCING

# GRIPSAFE<sup>®</sup> ST

For over sixty years, industries have relied on conventional isolation and testing plug technology despite known incidents of ejections and plug movements. USA Industries now introduces its GripSafe ST line, revolutionizing plug technology with cutting-edge advancements. The GripSafe ST plugs boast a patented independent wedge gripping system, ensuring unparalleled holding strength while minimizing risks to personnel and equipment. This innovative redesign of traditional plug designs positions the GripSafe ST line as the global standard for safety, reliability, and technological sophistication.



**SUPER OR**  
**TECHNOLOGY**

## GRIPSAFE<sup>®</sup> ST INNOVATION



Manufactured Exclusively by USA Industries an ISO 9001:2015 Certified Company

For the latest patent and trademark information, go to:  
<https://www.USAIindustries.com/gripsafe-patents-trademarks>  
or scan QR code to the right with your mobile phone



### WARNING:

**A SPECIAL WORD OF CAUTION:** Pressure testing can be an extremely hazardous operation and safety precautions should be strictly adhered to.

All connections, valves, flanges and other fittings should be checked for suitability to test pressure. Verify the line ID & Plug Range match. Most importantly — Never stand or pass in front of any test plug or other enclosure while test is in progress. If plug discharges during a test, serious injury or death could occur.

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# GRIPSAFE<sup>®</sup> ST FAMILY OF ISOLATION & TEST PLUGS

## KEY FEATURES & BENEFITS

### 1 WORLD'S MOST ADVANCED ENGINEERED PIPE PLUG



#### ■ Patented Technology Supercedes Old Fashioned Design Used For The Past 65+ Years\*

- US & International Patents - 14
- US & International Trademarks - 7
- Other US and Foreign Patents Pending

#### ■ 7 Years of Research & Development With In-House Engineering

- Over 4000 Load & Pressure Tests
- 67 Years of Professional Industrial Design Team Engineering Experience

#### ■ Proven Field Success Since 2017

#### ■ Confident GripSafe ST Will Be the New Industry Standard

\*Patent No. 2,855,003 - October 7, 1958; Ellis B. Thaxton

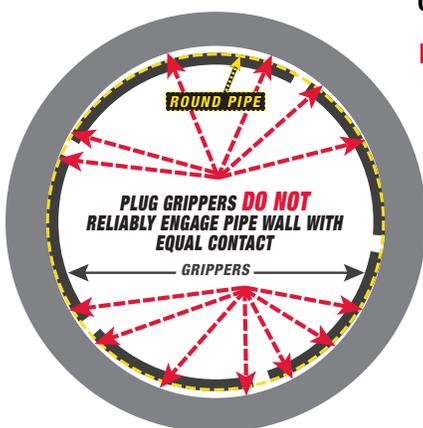
#### ■ Design Validation Testing

- 2017 - present
- 80 unique test plans conducted on various stocked sizes and schedules, equating to 1000's of repeatable tests



### 2 INDEPENDENTLY ACTUATING WEDGE SYSTEM

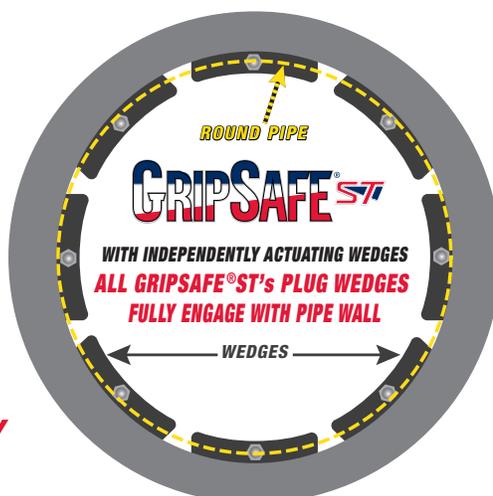
#### Competitive Products



#### ■ Equal Loading Across All Wedges Ensures Optimal Surface Contact & Holding Capabilities

#### ■ Overcomes Ovality (out-of-round pipe)

- Wedges self adjust to find pipe wall



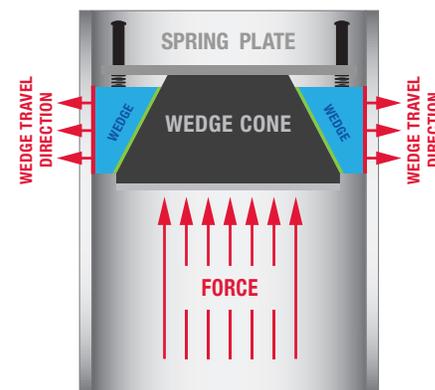
#### ■ Superior Self Gripping

- As force increases, the wedge's hold becomes stronger against the pipe wall

#### ■ No Damaging Pressure Points

- Force is distributed across entire wedge surface

#### ■ Automatic Gripping Upon Insertion On 2-Out-Of-3 Plug Models



**SUPERIOR  
TECHNOLOGY**

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SHIP SAME DAY**

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### 3 GRIPPING WEDGES



GripSafe ST uses a specially designed wedge system that grips the pipe, and leaves virtually no scarring on the surface.



GripSafe ST

Competitive products that use serrated jaw-like grippers must bite into the pipe wall in order to hold the load. Feasibly, this degrades the pipe's integrity. Additional costs and time to rework, or to add temporary piping to compensate for damages during testing results.



Competitor A



Competitor B

■ **Secure Gripping With Proprietary Gritlock® Technology**

- Thousands of microscopic points of surface contact
- Highly dense and durable material
- At most, micro indentations are left behind
- Perform thousands of full hydro test cycles without diminished performance

■ **Leaves Pipe With Virtually No Surface Damage**

■ **Non-Contaminating Coating**

- Wedges are compatible with any alloy piping\*

\*\*After use in carbon steel pipe, eliminate the chance for carbon remnants being passed on in passivated/clean stainless steel pipe by simply changing wedges or by using another GSST plug not previously introduced to carbon steel pipe.

#### COMPETITIVE WEDGE TESTING

TEST SPECS: SCH 80 PLUGS, ASTM A106 GRADE B STEEL PIPE, PRESSURIZED TO 3,246PSI (FULL HYDROTEST PRESSURE)

### 4 TRI-PLY® SEALS

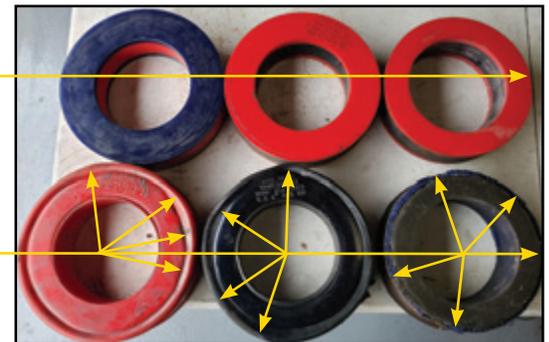


■ **Patented Proprietary Seal Technology**

- Reduces seal creep
- Less torque required to seal
- Proprietary urethane blend maximizes sealing ability
- Wider seal area over competitive designs
- Expansion range up to 3/8" for greater sealing capacity
- Longer seal life

#### TRI-PLY VS. TRADITIONAL URETHANE SEAL TESTS

• *Tri-Ply seals maintain their shape* when pushed beyond testing limits



• *Traditional urethane seals deform and flatten out* when pushed beyond testing limits. The flattening point is when seal expansion seizes, leaving the plug at higher risk for ejection at high pressures

### 5 ALUMINUM & STAINLESS STEEL BODY MATERIALS

■ **Less Weight (10" and larger plugs)**

- On average GripSafe ST plugs weigh less than competitive products. Significant weight differences exist as plug sizes increase, reaching upwards of **50% weight reductions**.



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# DOUBLE BLOCK AND BLEED (DBB) 3/4" TO 36"\*



## GRIPSAFE<sup>®</sup> ST

### SAFETY & RELIABILITY

**Instant Security.** With its exclusive patented design, GripSafe ST features an advanced self-gripping technology that mitigates the chance of plug ejection immediately upon insertion into the pipe, even before nuts are tightened.

**Superior Self-Gripping Performance.** The innovative system distributes equal loading across the gripping wedges ensuring maximum surface contact and holding capabilities. As pressure increases behind the plug, the wedges grip tighter. Even in pipe diameters that are asymmetrical, each wedge independently adapts to variances within the pipe. Coupled with its automatic gripping feature upon installation, GripSafe ST takes "self-gripping" to a new level.

**Lightweight Advantage.** GripSafe ST plugs weigh less on average than competitive products. Significant weight differences exist as plug sizes increase, reaching upwards of 50% weight reductions in larger sizes without sacrificing holding capabilities.

**Leaves Virtually No Surface Damage.** Unlike competitive products which rely on serrated jaws to bite into the pipe for holding purposes, GripSafe ST uses a specially designed wedge system that grips the pipe, while leaving virtually no surface scarring. GripSafe ST eliminates the need for a segment of sacrificial pipe, or the cleanup necessary to remove surface deformations other tools create.

**Non-Contaminating Solution.** GripSafe ST plugs utilize a proprietary texture on the gripping wedges that can be used on any metal type with no carbon contamination. Therefore, in contrast with other plugs, GripSafe ST requires no alternate parts for use in stainless and other alloy pipes where cross contamination is a concern.

### APPLICATIONS

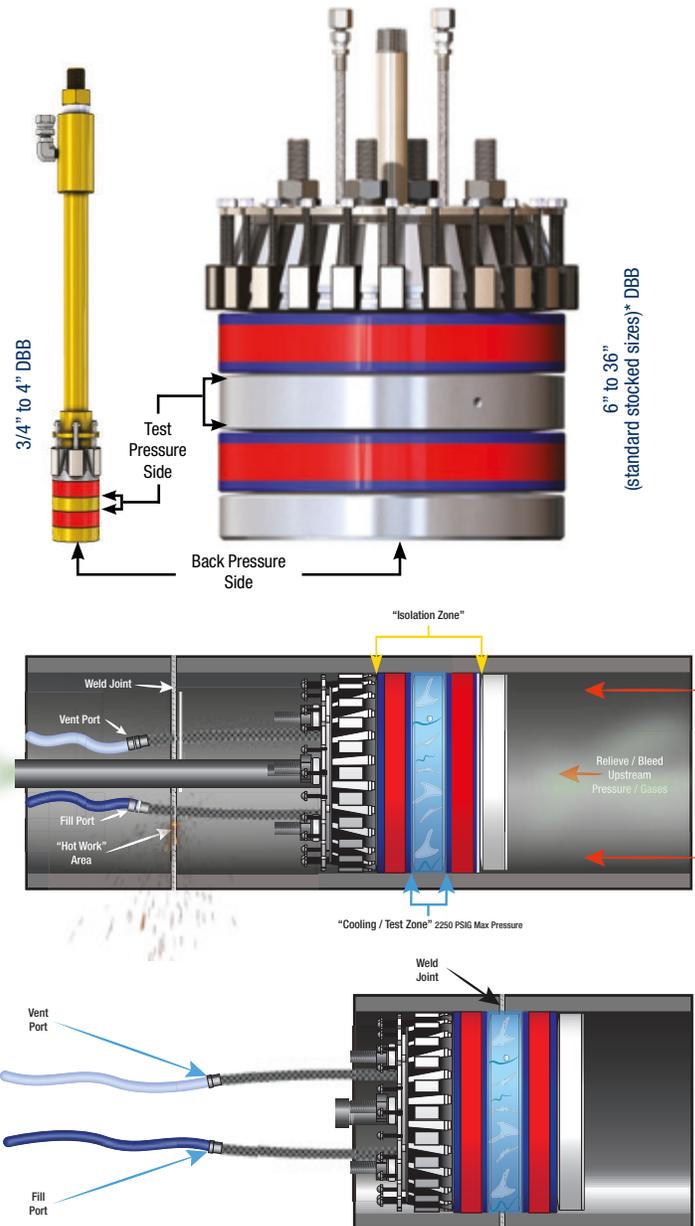
**Flange Weld Testing.** Pressure can be placed between the two seals to test weld-neck flanges by means of hydrostatic pressure, checking for hoop stress failure, weld leaks and/or pinhole leak paths while providing protection from any unexpected pressure discharge.

**Pre/Post Weld Operations.** Dual port design provides enhanced cooling by circulating water between the seals during pre/post weld processes (*on 6"+ models*).

**Isolation.** Increase safety by preventing exposure to hydrocarbon or other process leaks. Mitigate risk of injury to personnel in the event of inadvertent valve openings, valve leaks, or other pressure equipment failures upstream.

**Positive Isolation Monitoring.** Pressure between the two seals verifies seal integrity and ensures the plug's seals are effectively isolating the pipe.

**Line Purging.** Feed inert gases through the vent pipe, into a vessel, for back-purging welds or to remove oxygen for other processes.



**WARNING:**  
(See page PI-12)

\* Larger sizes and custom configurations available upon request

**When Ordering Specify:**

- GripSafe ST Plug Model Required
- Quantity
- Size
- Pipe Schedule
- Delivery Date

Scan QR code to go to GripSafe ST's webpage



**IN-STOCK ITEMS  
SHIP SAME DAY**

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[www.USAIndustries.com](http://www.USAIndustries.com)



# OUTBOARD RETRACTION BLOCKING (ORB) 3/4" TO 36"\*



## SAFETY & RELIABILITY

**Instant Security.** With its exclusive patented design, GripSafe ST features an advanced self-gripping technology that mitigates the chance of plug ejection immediately upon insertion into the pipe, even before nuts are tightened.

**Superior Self Gripping Performance.** The innovative system distributes equal loading across the gripping wedges ensuring maximum surface contact and holding capabilities. As pressure increases behind the plug, the wedges grip tighter. Even in pipe diameters that are asymmetrical, each wedge independently adapts to variances within the pipe. Coupled with its automatic gripping feature upon installation, GripSafe ST takes "self-gripping" to a new level.

**Lightweight Advantage.** GripSafe ST plugs weigh less on average than competitive products. Significant weight differences exist as plug sizes increase, reaching upwards of 50% weight reductions in larger sizes without sacrificing holding capabilities.

**Leaves Virtually No Surface Damage.** Unlike competitive products which rely on serrated jaws to bite into the pipe for holding purposes, GripSafe ST uses a specially designed wedge system that grips the pipe, while leaving virtually no surface scarring. GripSafe ST eliminates the need for a segment of sacrificial pipe, or the cleanup necessary to remove surface deformations other tools create.

**Non-Contaminating Solution.** GripSafe ST plugs utilize a proprietary texture on the gripping wedges that can be used on any metal type with no carbon contamination. Therefore, in contrast with other plugs, GripSafe ST requires no alternate parts for use in stainless and other alloy pipes where cross contamination is a concern.

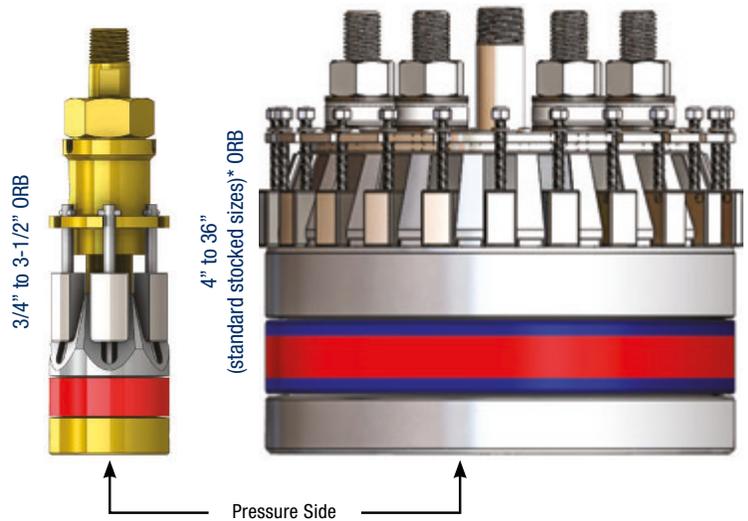
## APPLICATIONS

**Pipe Testing.** Test pipe sections without the need for flanges.

**Pipe Spool Testing.** Perform hydrostatic testing of pipe spools, eliminating the need for end caps and welding.

**Isolation.** Increase safety by preventing exposure to hydrocarbon or other process leaks. Mitigate risk of injury to personnel in the event of inadvertent valve openings, valve leaks, or other pressure equipment failures upstream.

**Line Purging.** Feed inert gases through the vent pipe, into a vessel, for back-purging welds or to remove oxygen for other processes.



Note: For 4" NPS, Pipe Schedules 120, 160, and XX require the smaller plug configuration.

\* Larger sizes and custom configurations available upon request



**WARNING:**  
(See page PI-12)

- When Ordering Specify:**
- GripSafe ST Plug Model Required
  - Size
  - Pipe Schedule
  - Quantity
  - Delivery Date

Scan QR code to go to GripSafe ST's webpage



**IN-STOCK ITEMS  
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# INBOARD INSERTION BLOCKING (IIB) REVERSE PRESSURE 3/4" TO 24"\*



## SAFETY & RELIABILITY

**Unmatched Security.** With its exclusive patented design, GripSafe ST features an advanced self-gripping technology that mitigates the risk of plug movement downstream upon installation.

**Superior Self Gripping Performance.** The innovative system distributes equal loading across the gripping wedges ensuring maximum surface contact and holding capabilities. As pressure increases in front of the plug, the wedges grip tighter. Even in pipe diameters that are asymmetrical, each wedge independently adapts to variances within the pipe. GripSafe ST takes "self-gripping" to a new level.

**Leaves Virtually No Surface Damage.** Unlike competitive products which rely on serrated jaws to bite into the pipe for holding purposes, GripSafe ST uses a specially designed wedge system that grips the pipe, while leaving virtually no surface scarring. GripSafe ST eliminates the need for a segment of sacrificial pipe, or the cleanup necessary to remove surface deformations other tools create.

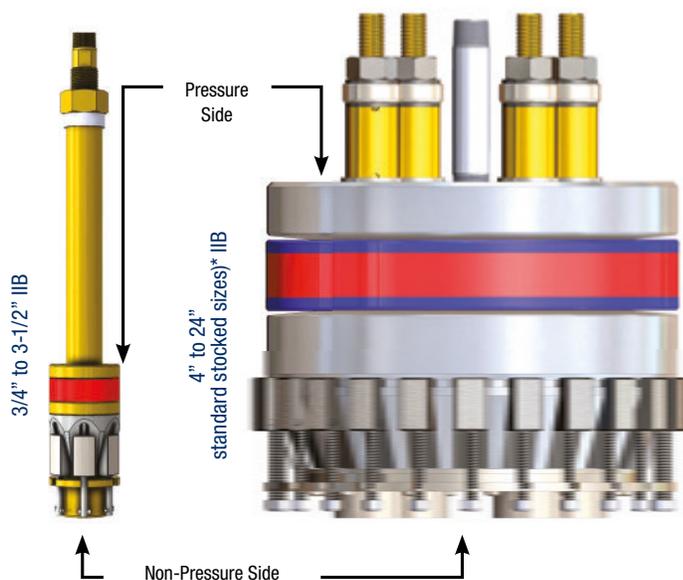
**Non-Contaminating Solution.** GripSafe ST plugs utilize a proprietary texture on the gripping wedges that can be used on any metal type with no carbon contamination. Therefore, in contrast with other plugs, GripSafe ST requires no alternate parts for use in stainless and other alloy pipes where cross contamination is a concern.

**Lightweight Advantage.** GripSafe ST plugs weigh less on average than competitive products. Significant weight differences exist as plug sizes increase, reaching upwards of 50% weight reductions in larger sizes without sacrificing holding capabilities.

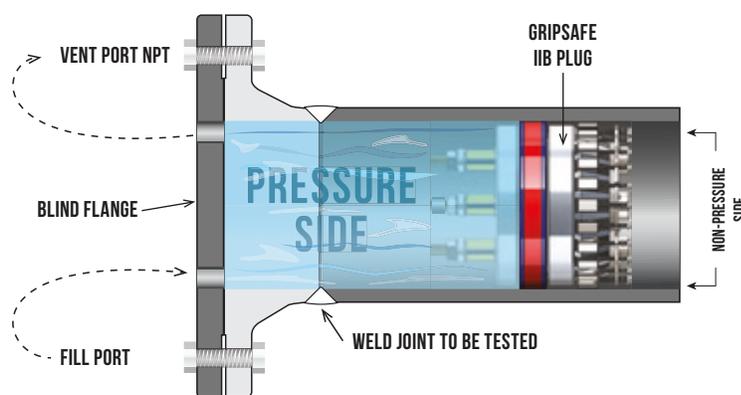
## APPLICATIONS

**Flange Weld Testing.** Used in conjunction with a ported blind flange, GripSafe ST IIB plugs stress the weld joint in longitudinal (axial), circumferential (hoop) and radial pressures identical to the stresses that would be induced when hydro-testing the entire piping system, making them superior to traditional flange test plugs (FTP) which apply hoop and radial stresses only.

**Pressure Vessels.** Block outlet piping in vessels to pressurize for cleaning or testing purposes.



\* Larger sizes and custom configurations available upon request



### When Ordering Specify:

- GripSafe ST Plug Model Required
- Size
- Pipe Schedule
- Quantity
- Delivery Date

Scan QR code to go to GripSafe ST's webpage



**WARNING:**  
(See page PI-12)

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## FLANGE WELD TEST PLUGS



*Clear, Purge, Weld  
and Test With Our Superior  
Flange Weld Test Plugs*

**Waste disposal is reduced to just a few gallons of water at most.**

### LARGEST RENTAL FLEET AVAILABLE



Insert the plug into the pipe to be welded, bolt the flanges together and tighten the large compression nut(s) to expand the seal — ***It's that Simple!***

The flange to pipe weld is ready to be tested. A complete test requires a minimum amount of water — from a few cups to a few gallons, depending on the line size — ***virtually eliminating your hazardous waste disposal costs.***

- Fast, safe and easy installation and testing
- Reduces testing, downtime, and waste disposal costs
- Stocked Line Sizes from 3/4" to 24"
- Flange ratings: 150# - 2500#
- Available in Raised-Face or Ring Type Joint Flanges
- Seals — **NEW CHEMISTRY** — easier to seal against Pitted Pipes — color coded for line schedule
- Seal and compression ring sets are easily changed to accommodate different pipe schedules - segmented compression tube allows adjustment of seal installation depth
- Testing pressures meeting ANSI B16.5 requirements
- Rugged, heavy duty construction
- Q/A & Q/C — manufactured under our strict ISO 9001:2015 Quality Assurance Program



### WARNING:

**A SPECIAL WORD OF CAUTION:** Pressure testing can be an extremely hazardous operation and safety precautions should be strictly adhered to.

All connections, valves, flanges and other fittings should be checked for suitability to test pressure. Verify the line ID & Plug Range match. Most importantly — Never stand or pass in front of any test plug or other enclosure while test is in progress. If plug discharges during a test, serious injury or death could occur.

#### When Ordering Specify:

- Size
- Flange Rating
- Pipe Schedule
- Gasket Type
- Quantity
- Rental or Purchase
- Delivery Date

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## NON-GRIPPING DOUBLE BLOCK AND BLEED

**ONE PLUG,  
TWO FUNCTIONS!**



Line Sizes 4" & Smaller



Line Sizes 6" & Larger

USA Industries' **Non-Gripping Double Block & Bleed** plug will leave no damage to the interior pipe walls, and features two independent sealing areas, ensuring secure isolation of your internal piping for safe maintenance and repairs. A vent between the seals allows for verification of seal integrity and enables pressure testing of welds by positioning them between the two seals. Pressure testing uses less than a gallon of water, enabling the use of a hand pump, thereby reducing fill times, waste and treatment expenses. Additionally, these plugs can be customized with extended reach to accommodate specific piping requirements. The plugs are highly portable and is easy to position.

- Sizes: 3/4" to 24" NPS; larger sizes are available upon request
- Working pressures up to 2,500 PSI (172.4 Bar) between the seals
- Seal material: Urethane
- Lightweight aluminum/steel body construction
- Will reduce time and costs to repair and test welds
- Minimizes purge costs and associated waste
- Safety factor reduces non-destructive evaluation (NDE)
- Monitor the isolation zone and upstream pressure to prevent backpressure during test

**WARNING:**

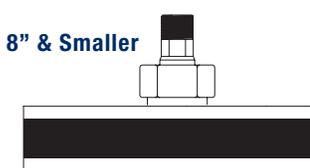
(See page PI-18 for important details)

## HEAVY DUTY INDUSTRIAL ISOLATION PLUGS

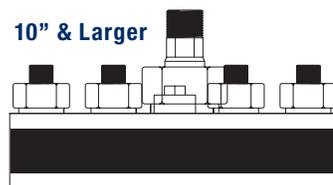
*Provides Rugged, Simple and Safe Isolation*

The **Heavy Duty Industrial Isolation Plugs** are maintenance free. The unique seals are capable of expansions exceeding 1" with minimal torque. To use, simply install into the open end of the pipe or tube and tighten the compression nut(s) to expand the seal element.

- Available in Standard, Extended Insertion, or Double Block configurations
- Heavy-Duty Construction — corrosion resistant finish — stainless steel parts available
- Urethane seals — **New Chemistry** — easier to seal against pitted pipes — color coded for line schedule
- Can be provided for any pipe size
- Manufactured under our strict ISO 9001:2015 Quality Assurance Program



8" & Smaller



10" & Larger



**When Ordering Specify:**

- Size
- Pipe Schedule
- Quantity
- Rental or Purchase
- Delivery Date



Extended Reach

Standard Isolation

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## MEDIUM DUTY INFLATABLE PIPE BALLOON PLUGS



**When Ordering Specify:**

- Size
- Quantity
- Rental or Purchase
- Delivery Date

The **Medium Duty Inflatable Pipe Balloon Plugs**, manufactured in the USA, are designed for high-expansion applications. These plugs effectively isolate piping ranging from 2" to 96" in diameter. Constructed with Nitrile Reinforced Ballistic Nylon, they offer hydrocarbon resistance and can withstand limited backpressure, setting them apart from standard inflatable plugs. Their synthetic materials provide a longer shelf life compared to molded rubber alternatives.

## LOW PRESSURE INFLATABLE PIPE BALLOON PLUGS



**Inflatable Pipe Balloon Plugs** are for isolating piping in sizes 1.5" through 66." Special plugs can be provided with flow-through vents so upstream back pressure can be vented. Plug Includes 2 ft hose and pressure gauge. Custom length hose provided upon request.



**WARNING:**  
(See page PI-18 for important details)

## WING NUT ISOLATION PLUGS



To quickly and easily seal your pipe, tube or hole, USA Industries' Wing Nut Plumber's Type Isolation Plug is just what you're looking for. These plugs use neoprene seals with die cast bodies, and are available in line sizes 2" through 24". This plug is rated to hold back pressure up to 13 PSIG and is available with or without upstream venting capabilities.

**When Ordering Specify:**

- Size
- Pipe Schedule
- Quantity
- Rental or Purchase
- Delivery Date

## "FOREMAN" ISOLATION PLUGS

Single bolt low pressure Isolation Type Plugs — These plugs use Neoprene seals with aluminum die cast bodies and are available in line sizes from 4" through 42". Available with or without upstream venting capabilities.



*We strive to provide our customers with exceptional USA manufacturing quality products, economically that adhere to our ISO 9001:2015 Quality Program.*

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# CUSTOM ENGINEERED ISOLATION PLUG ACCESSORIES

**Custom 34" Non-Gripping DBB**



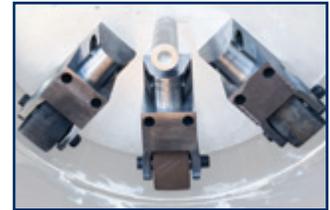
## EZ Turn Hydraulic Actuator Cylinders™

Synchronous hydraulic tightening and loosening of seal expansion nuts, which in turn expands and contracts the plug seals. No manual intervention is required, equaling a dramatic time and labor cost savings to you and your project budget.



## EZ Slide Heavy Duty Mounted Casters™

Casters provide fluid movement of oversized and heavy weighted isolation plug inside the pipe. Consequently, the casters require very little physical exertion to position or reposition pipe plug once seated in the pipe.



## EZ Align Fit-up Clamp™

Clamp latches onto 3rd party device in order to slide the oversized and heavy weighted isolation plug into place over short and long distances.



## Internally Mounted Digital Camera with Lighting

Internally mounted camera allows you perfectly locate weld-seam. There is no more guessing, or requiring you to measure short and long distances in order to seat the plug properly in place before beginning your project operation.



## Ultra-wide Tri-Ply® Seals

The patented multi-durometer Tri-Ply Seal provides a larger surface coverage area over the standard seal, resulting in a greater expansion range, and eliminates seal mushrooming that happens from over torquing the seal expansion nuts.



*We strive to provide our customers with exceptional USA manufacturing quality products, economically that adhere to our ISO 9001:2015 Quality Program.*



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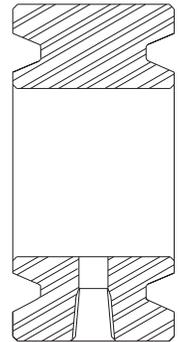
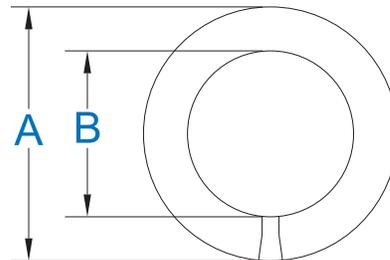


## BLEED RINGS | DRIP RINGS | VENT RINGS



- Standard Sizes: 1/2" to 14" (custom sizes available)
- Customizable! Material, size, tap connections and sizes, gasket types, # of ports
- Meets ASME/ANSI standards for: B16.5 and B16.20 for raised face and ring type joint (RTJ) dimensions and tolerances
- Standard materials: Carbon Steel (516-Gr70 & A105/LF-2) and Stainless Steel (304 & 316)
- Choose between 1/2" or 3/4" threaded (NPT) or socket-weld (SW) connections as well as raised-face (125-250 RMS) or ring type joint (RTJ) configurations (male or female)
  - Standard Ring Joints (RJ) feature female oval ring grooves (male joints are available upon request)
  - Carbon steel plate products receive one coat of black lacquer as standard, unless alternative specifications are provided

### RTJ Bleed Rings Available



#### When Ordering Specify:

- Size
- Flange Rating
- Material
- Gasket Surface Type
- Number, Size, & Type of Bleed Holes - Threaded or Socket-Weld
- Quantity
- Delivery Date

LINE SIZE	"A" CHART DIMENSIONS FOR RAISED FACE RINGS - ALL MEASUREMENTS IN INCHES					"B"	STD THICKNESS
	150#	300#	600#	900#	1500#		
1.00	2.50	2.75	2.75	3.00	3.00	1.32	1-1/2
1.50	3.25	3.625	3.625	3.75	3.75	1.90	
2.00	4.00	4.25	4.25	5.50	5.50	2.375	
2.50	4.75	5.00	5.00	6.375	6.375	2.875	
3.00	5.25	5.75	5.75	6.50	6.75	3.50	
4.00	6.75	7.00	7.50	8.00	8.125	4.50	
6.00	8.625	9.75	10.375	11.25	11.00	6.625	
8.00	10.875	12.00	12.50	14.00	13.75	8.625	
10.00	13.25	14.125	15.625	17.00	17.00	10.75	
12.00	16.00	16.50	17.75	19.375	20.25	12.75	
14.00	17.625	19.00	19.125	20.25	22.50	14.00	
16.00	20.125	21.125	22.00	22.375	25.00	16.00	
18.00	21.50	23.375	23.875	24.875	27.50	18.00	
20.00	23.75	25.625	26.625	27.25	29.50	20.00	
24.00	28.125	30.375	30.875	32.75	35.25	24.00	

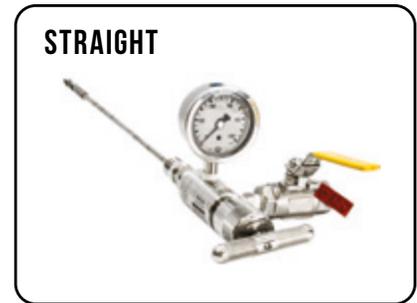
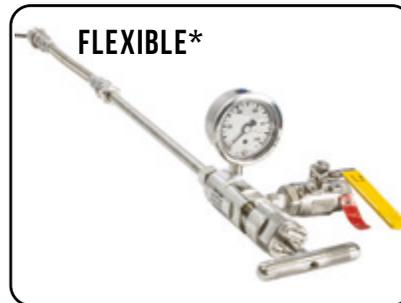
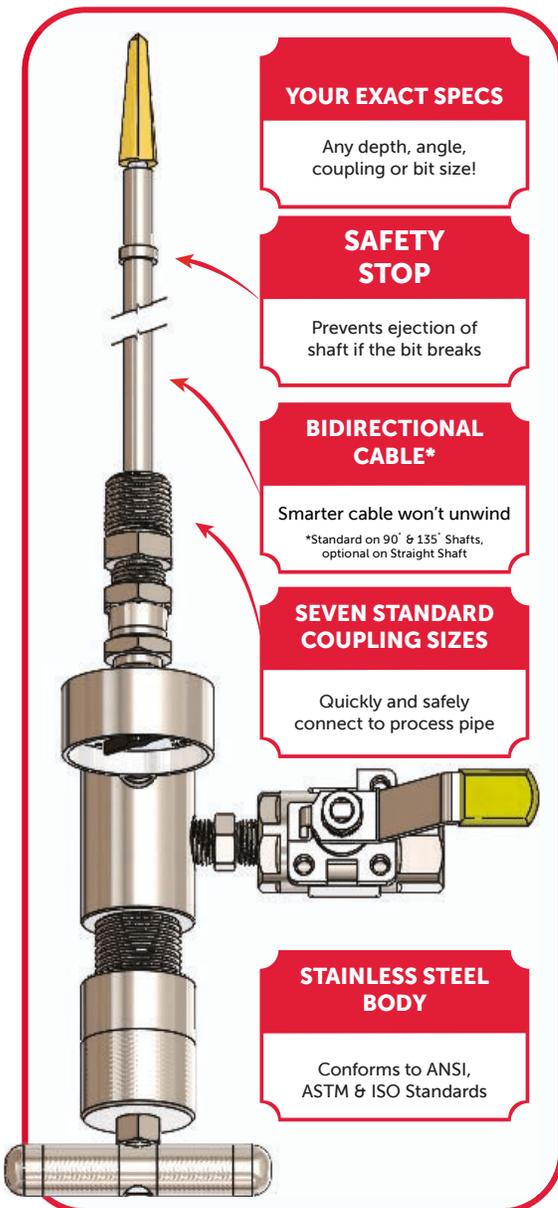
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# BLEEDER CLEANER

Available in Four Shaft Types



**\* USA Industries' Bleeder Cleaners are the only ones on the market with a bi-directional cable that will not unwind if turned counter-clockwise.**

Bleeder Cleaners (aka rod-out device, orifice tap cleaner or tap reamer) allow clogged bleed, drain, vent and instrument tap valves to be cleaned during normal operations **SAFELY** and **EFFICIENTLY** while completely containing the product. Properly using our tool eliminates the possibility of dangerous product releases which can result in your personnel and others being exposed to unsafe and hazardous conditions. Our Bleeder Cleaners are rated up to 1,000° F and 1,000 PSIG and are available in four model types. If required, can be made to hold higher pressure.

**Simple to use:** 1. Screw the end connector onto the item needing cleaning. 2. Close the bleed valve. 3. Open the process valve. 4. Insert the shaft while rotating the handle. 5. After the line has been fully cleared, back out the shaft. 6. Close the process valve. 7. Open the bleed valve and disconnect the tool... **SAFELY CLEANED LINE!**

- When Ordering Specify:**
- Length of Shaft (standard length is 14")
  - Shaft Type (Straight , 90, 135 or Flexible shaft)
  - Drill Bit Size
  - Coupling Size
  - Quantity
  - Delivery Date

## Available Bit Types



All components supplied conform to ANSI, ASME, ASTM Standards for Dimensions. Manufactured under our ISO 9001:2015 Quality Assurance Program.

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Pipe Size	OD	ID	Schedules	Wall	Est Wt LBS per Ft
1/8"	.405	.307	10, 10S	.049	.1863
		.269	40, STD, 40S	.068	.2447
		.215	80, XS, 80S	.095	.3145
1/4"	.540	.410	10, 10S	.065	.3297
		.364	40, STD, 40S	.088	.4248
		.302	80, XS, 80S	.119	.5351
3/8"	.675	.545	10, 10S	.065	.4235
		.493	40, STD, 40S	.091	.5676
		.423	80, XS, 80S	.126	.7388
1/2"	.840	.674	10, 10S	.083	.6710
		.622	40, STD, 40S	.109	.8510
		.546	80, XS, 80S	.147	1.088
		.466	160	.187	1.304
		.252	XX	.294	1.714
3/4"	1.050	.884	10, 10S	.083	.8572
		.824	40, STD, 40S	.113	1.131
		.742	80, XS, 80S	.154	1.474
		.614	160	.218	1.937
		.434	XX	.308	2.441
1"	1.315	1.097	10, 10S	.109	1.404
		1.049	40, STD, 40S	.133	1.679
		.957	80, XS, 80S	.179	2.172
		.815	160	.250	2.844
		.599	XX	.358	3.659
1 1/4"	1.660	1.442	10, 10S	.109	1.806
		1.380	40, STD, 40S	.140	2.273
		1.278	80, XS, 80S	.191	2.997
		1.160	160	.250	3.765
		.896	XX	.382	5.214
1 1/2"	1.900	1.682	10, 10S	.109	2.085
		1.610	40, STD, 40S	.145	2.718
		1.500	80, XS, 80S	.200	3.631
		1.337	160	.281	4.859
		1.100	XX	.400	6.408
2"	2.375	2.157	10, 10S	.109	2.638
		2.067	40, STD, 40S	.154	3.853
		1.939	80, XS, 80S	.218	5.022
		1.689	160	.344	7.462
		1.503	XX	.436	9.029
2 1/2"	2.875	2.635	10, 10S	.120	3.531
		2.469	40, STD, 40S	.203	5.793
		2.323	80, XS, 80S	.276	7.651
		2.125	160	.375	10.01
		1.771	XX	.552	13.70
3"	3.500	3.260	10, 10S	.120	4.332
		3.068	40, STD, 40S	.216	7.576
		2.900	80, XS, 80S	.300	10.25
		2.624	160	.438	14.32
		2.300	XX	.600	18.58
3 1/2"	4.000	3.760	10, 10S	.120	4.937
		3.548	40, STD, 40S	.226	9.109
		3.364	80, XS, 80S	.318	12.51
		2.728	XX	.636	22.85
		4"	4.500	4.260	10, 10S
4.026	40, STD, 40S			.237	10.790
3.826	80, XS, 80S			.337	14.98
3.624	120			.438	19
3.438	160			.531	22.51
3.152	XX			.674	27.54

Pipe Size	OD	ID	Schedules	Wall	Est Wt LBS per Ft
4 1/2"	5.000	4.506	STD, 40S	.247	12.54
		4.290	XS, 80S	.355	17.61
5"	5.563	5.295	10, 10S	.134	7.770
		5.047	40, STD, 40S	.258	14.62
		4.813	80, XS, 80S	.375	20.78
		4.563	120	.500	27.04
		4.313	160	.625	32.96
		4.063	XX	.750	38.55
		6.357	10, 10S	.134	9.290
6"	6.625	6.065	40, STD, 40S	.280	18.97
		5.761	80, XS, 80S	.432	28.57
		5.501	120	.562	35.39
		5.189	160	.719	43.35
		4.897	XX	.864	53.16
		8.329	10, 10S	.148	13.40
		8.125	20	.250	22.36
8"	8.625	8.071	30	.277	24.70
		7.981	40, STD, 40S	.322	28.55
		7.813	60	.406	35.64
		7.625	80, XS, 80S	.500	43.39
		7.439	100	.594	50.95
		7.189	120	.719	61.71
		7.001	140	.812	67.76
		6.813	160	.906	74.79
		6.875	XX	.875	72.42
		10.420	10, 10S	.165	18.65
		10.250	20	.250	28.04
10.136	30	.307	34.24		
10.020	40, STD, 40S	.365	40.48		
9.750	60, XS, 80S	.500	54.74		
9.564	80	.594	64.43		
9.314	100	.719	77.03		
9.064	120	.844	82.29		
8.750	140, XX	1.000	104.1		
8.500	160	1.125	115.6		
10"	10.750	12.390	10, 10S	.180	24.16
		12.250	20	.250	33.38
		12.090	30	.330	43.77
		12.000	STD, 40S	.375	49.56
		11.938	40	.406	53.52
		11.750	XS, 80S	.500	65.42
		11.626	60	.562	73.15
		11.376	80	.688	88.63
		11.064	100	.844	107.9
		10.750	120, XX	1.000	125.5
		10.500	140	1.125	136.7
		10.126	160	1.312	150.3
		13.624	10S	.188	27.73
		13.500	10	.250	36.71
		13.375	20	.312	45.61
13.250	30, STD, 40S	.375	54.57		
13.124	40	.438	63.44		
13.000	XS, 80S	.500	72.09		
12.814	60	.594	85.05		
12.500	80	.750	106.1		
12.124	100	.938	130.9		
11.814	120	1.09	150.8		
11.500	140	1.250	170.2		
11.188	160	1.406	189.1		

Pipe Size	OD	ID	Schedules	Wall	Est Wt LBS per Ft
16"	16.000	15.624	10S	.188	31.75
		15.500	10	.250	42.05
		15.375	20	.312	52.27
		15.250	30, STD, 40S	.375	62.58
		15.000	40, XS, 80S	.500	82.77
		14.688	60	.656	107.5
		14.314	80	.844	136.6
		13.938	100	1.031	164.8
		13.564	120	1.22	192.4
		13.124	140	1.438	223.6
		12.814	160	1.594	245.3
		17.624	10S	.188	35.76
		17.500	10	.250	47.99
		17.375	20	.312	58.94
		17.250	STD, 40S	.375	70.59
18"	18.000	17.124	30	.438	82.15
		17.000	XS, 80S	.500	93.45
		16.876	40	.562	104.7
		16.500	60	.750	138.2
		16.126	80	.938	170.9
		15.688	100	1.156	208.00
		15.250	120	1.38	244.10
		14.876	140	1.562	274.20
		14.438	160	1.781	308.5
		19.564	10S	.218	48.05
		19.500	10	.250	52.73
		19.250	20, STD, 40S	.375	78.6
		19.000	30, XS, 80S	.500	104.10
		18.812	40	.594	123.10
		18.376	60	.812	155.40
17.938	80	1.031	208.90		
17.438	100	1.281	256.10		
17.000	120	1.500	296.40		
16.500	140	1.750	341.10		
16.064	160	1.969	379.20		
20"	20.000	23.500	10, 10S	.250	63.41
		23.250	20, STD, 40S	.375	96.42
		23.000	XS, 80S	.500	125.50
		22.876	30	.562	140.70
		22.626	40	.688	171.30
		22.064	60	.969	238.40
		21.564	80	1.219	296.80
		20.938	100	1.531	357.40
		20.376	120	1.812	429.40
		19.876	140	2.062	483.10
		19.314	160	2.344	542.10
		29.376	10, 10S	.312	98.93
		29.250	STD, 40S	.375	118.65
		29.000	20, XS, 80S	.500	157.53
		28.750	30	.625	196.06
35.376	10	.312	118.92		
35.250	STD, 40S	.375	142.68		
35.000	XS, 80S	.500	189.57		
34.750	30	.625	235.13		
47.250	STD, 40S	.375	190.74		
47.000	XS, 80S	.500	253.65		

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# PADDLE BLIND & BLIND FLANGE RACK STORAGE REVOLUTIONS!

USA INDUSTRIES PIPE SCHEDULE CHART



*Our patented, groundbreaking designs deliver unparalleled worker safety, asset protection, security, organization, and inventory management.*

**800-456-8721 | [sales@USAIndustries.com](mailto:sales@USAIndustries.com)**

RENT OR BUY FROM THE INDUSTRY LEADER IN PADDLE BLIND AND  
BLIND FLANGE RACK STORAGE SOLUTIONS!

## EZ LOCK BLIND RACK®

*Patented EZ Lock Blind Rack<sup>[1]</sup> for Storage of Paddle / Hydrotest Blinds*



**(Patent No. 9,546,889)**

January 17, 2017



***Blinds are secured by our patented, and innovative Indexing Retainers.***

[1] Tracy Sue and Casey Sue, "Lock rack for hydro, isolation or test blinds..."

- Weight accommodation: 12,000 lbs.
  - Storage capacity: up to 884 blinds\*
  - Accommodates "7" or "T" handles
  - Holds blinds up to 24-1/4" OD
  - Lockable lid security to reduce theft and blind loss
  - Patented Indexing Retainers for safety and blind security
  - Easily accessed from both sides of the unit
  - Overhead heavy lift crane lugs
  - Bottom accessible forklift cavities
  - Order fully stocked and receive discount
- \* = 884 blinds is dependent on blind sizes & thicknesses



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## EZ LOCK BLIND FLANGE RACK®

*Patented EZ Lock Blind Flange Rack<sup>[1]</sup> for Storage of Blind Flanges*



**SALES & RENTALS AVAILABLE!**

- |  |   |
|--|---|
| Max Weight Accommodation: <b>4,500 lbs</b> | Locking Security Collar Retainers: <b>Yes</b>   |
| Storage Capacity: <b>220 Blinds*</b>       | Bottom Accessible Forklift Cavities: <b>Yes</b> |
| Max Blind Size OD: <b>25"</b>              | Overhead Heavy Lifting Crane Lugs: <b>Yes</b>   |
| Lockable Lid: <b>Yes</b>                   | Rental Available: <b>Yes</b>                    |

**Adjustable Sliding Pins to Accomodate Multiple Blind Flange Sizes**



**Locking Safety Collars to Hold Blind Flanges in Place**



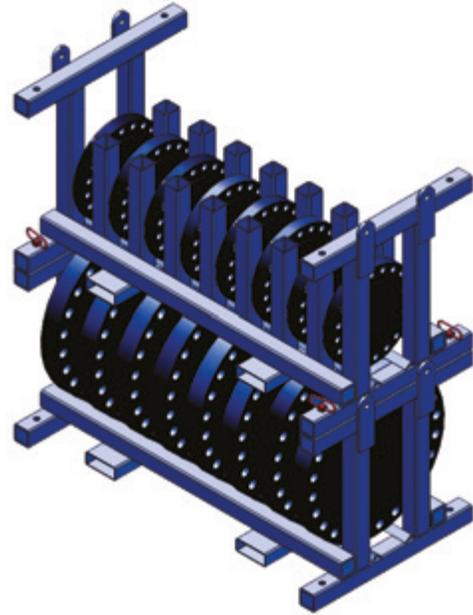
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## EZ STORE BLIND FLANGE RACKS™

*Horizontal & Vertical Stacking Blind Flange Racks for Storage of Blind Flanges*



### STACKABLE HORIZONTAL RACK(S)

Top Rack Max Weight Accommodation: 3,000 lbs

Bottom Rack Max Weight Accommodation: 10,000 lbs

Storage Capacity: 8 Blinds

Max Blind Size OD: 39" (35" at Fork Tubes)

Stackable Racks: Yes

Bottom Accessible Forklift Cavities: Yes

Overhead Heavy Lifting Crane Lugs: Yes

Rental Available: Yes

**SALES &  
RENTALS  
AVAILABLE!**

### VERTICAL STACKING RACK for Oversized Blind Flanges

Max Weight Accommodation: 20,000 lbs

Storage Capacity: 8 Blinds\*

Max Blind Size OD: 60"

- dependent on blind flange sizes

**SALES &  
RENTALS  
AVAILABLE!**



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# EZ STORE INVENTORY CONTAINERS

*Modular Inventory Containers offers convenience, security, and flexibility, making it an invaluable asset on location:*

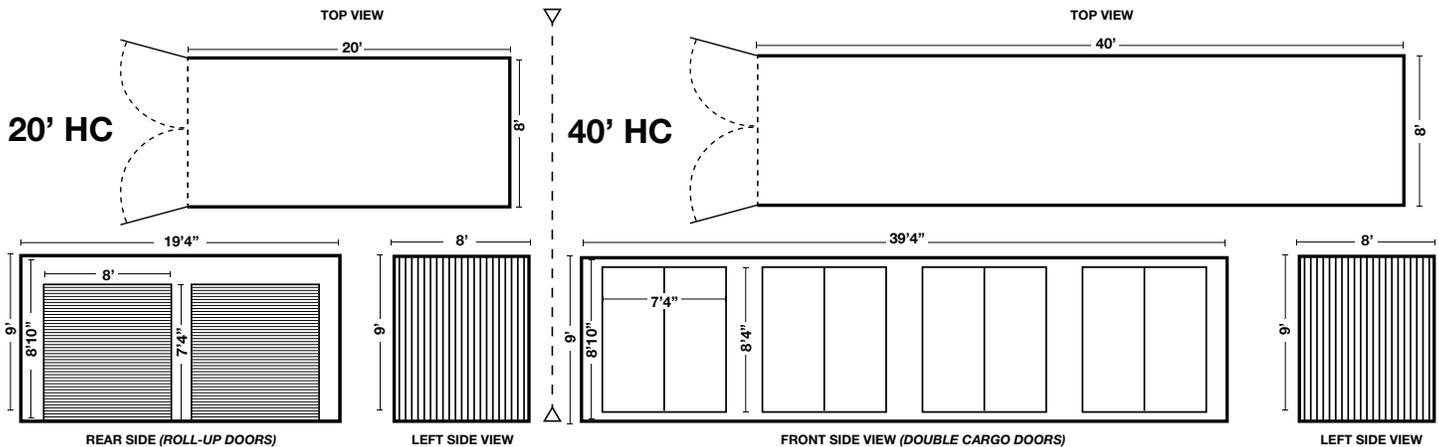


20' HC	EXTERIOR			INTERIOR		
	L	W	H	L	W	H
	20'	8'	9'	19'4"	7'8"	8'10"

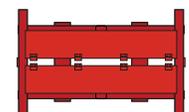
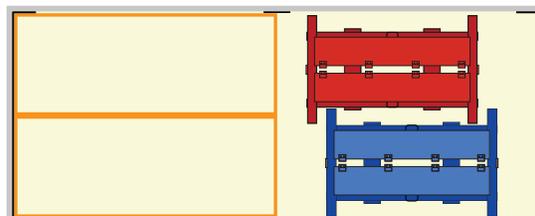
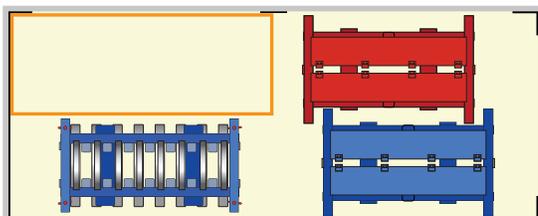
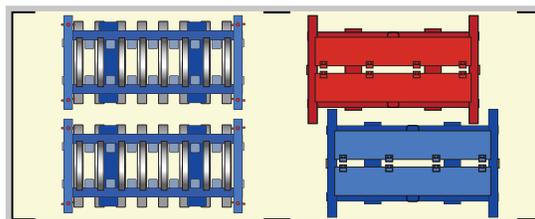
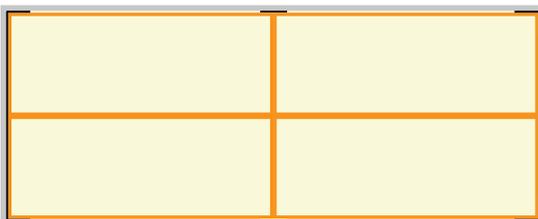
  

40' HC	EXTERIOR			INTERIOR		
	L	W	H	L	W	H
	40'	8'	9'	39'4"	7'8"	8'10"

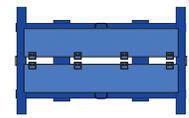
DOUBLE CARGO DOOR SIZING		ROLL-UP DOOR SIZING	
W	H	W	H
7'4"	8'4"	8'	7'4"



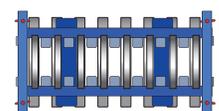
## MODULAR LAYOUT POSSIBILITIES



EZ Lock Blind Rack®



EZ Lock Blind Flange Rack®



EZ Store Horizontal Stacking Blind Flange Rack



Industrial Pallet Racks (2 Tiers)

## ON-SITE & REMOTE MANAGED INVENTORY SERVICES

USA Industries offers customized onsite and remote **Inventory Management Services** that enhance operations, cut costs, and allow businesses to focus on building, repairing, and maintaining their facilities.

Partnering with USA Industries for third-party inventory management allows you to streamline operations, focus on project goals, and enhance overall value. Our expertise ensures your project runs efficiently.



### Onsite Managed Inventory Service Cost Savings

#### Boosting Operational Efficiency

Our managed service ensures real-time inventory tracking, optimized stock levels, and enhanced accuracy, preventing stockouts and overstocking for seamless operations and reliable product availability.

#### Cost Savings and Flexibility

Outsourcing inventory management to USA Industries cuts warehousing, staffing, and technology costs while offering a scalable, cost-effective solution tailored to your needs.

#### Focus on Core Business Functions

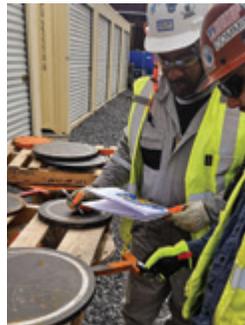
Outsource inventory management to USA Industries, freeing your team to focus on facility maintenance during turnarounds, shutdowns, repairs, and construction.

#### Scalability for Future Growth

As your business grows, USA Industries ensures seamless inventory scaling, handling increased volumes for smooth transitions and sustained progress without in-house management challenges.



### We Track Your Assets to Prevent Costly Losses!



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## ORIFICE PLATES

*We specialize in Orifice Plates*  
**ANY SIZE - ANY MATERIAL - ANY THICKNESS**

USA Industries manufactures each plate to meet or exceed *A.G.A., I.S.A., A.N.S.I., A.S.M.E.* and *A.P.I.* standards and recommendations.

Stocked plates include 304 & 316 stainless steel in 1/8" and 1/4" thicknesses. Other materials and / or thicknesses are available upon request.

We typically bore plates to the customer's supplied sizing calculation, however, for an additional fee we can provide sizing calculation services to you.

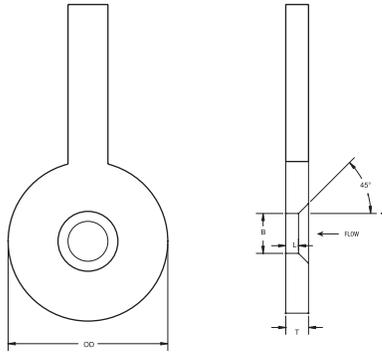
- **Series 500 Universal Plates** - for orifice fittings
- **Series 520 Paddle Plates** - for raised face flanges
- **Series 560 & 590 Plates** - Ring Type Joint Plates with male or female gasket area
- We also provide **Orifice Flanges** in both carbon and stainless steel, as well as orifice plate holder assemblies
- **Restriction Orifice Unions** from 1/4" to 2" in socket-weld or female NPT threads



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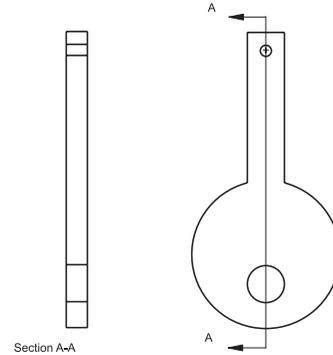
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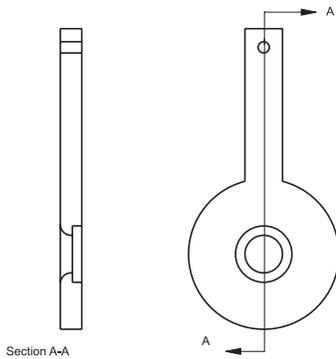
## \*Concentric Bore

Used primarily for clean liquids, gases, or vapors that are relatively non-viscous. When necessary, a bevel is machined at a 45 degree angle to attain the proper edge thickness. Accuracy range at +.6% for beta ratio between 0.2 to 0.75.



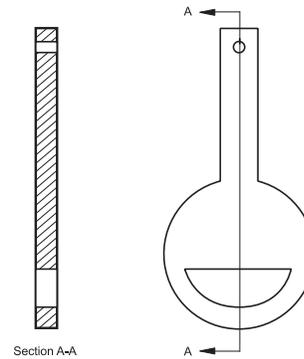
## Eccentric Bore

Primarily used for measurement of entrained solids or slurries of vapors and gases where condensation is present. The eccentric bore is offset to where the bore edge is inscribed in a circle that is 98% of line I.D. Accuracy range at +1.5% to +2% for beta ratio between 0.3 to 0.75.



## Quadrant Bore

This type of orifice bore is used primarily in the measurement of high viscosity flow, such as heavy crude, syrups, and slurries. The radius on the inlet side is equal to the plate thickness. The quadrant is always recommended where the Reynolds number factor is less than 100,000. Accuracy range is +2% for beta ratio between 0.24 to 0.6.



## Segmental Bore

The segmental bore is located in the same way that the eccentric bore is. These bores are used primarily for slurries or extremely dirty gases where the flow may contain impurities heavier than fluid. Accuracy range at +2% for beta ratio between 0.35 to 0.75.

*\*Plate Bevel determined per Instrument Engineers Handbook, Edition 3: Bela Lipták. All plates thicker than 1/8" should be beveled 45 degrees on the downstream side to a 1/8" edge thickness. Any orifice bore less than 1" to be beveled to 1/16" if plate thickness is 1/8".*

### Orifice Plate Installation

1. Install orifice plate and new gaskets between flanges.
2. Release the flanges by turning the two jack bolts counterclockwise.
3. Replace studs and tighten to spec.

### Orifice Plate Removal

1. Loosen all studs and remove the top half of the studs.
2. Spread flanges apart by turning the jack bolts clockwise.
3. Remove orifice plate for inspection or replacement.

### When Installing Orifice Plates

1. Orifice Bore must be centered within 3% of inside pipe diameter.

**Note: Writing on the Orifice Plate  
ALWAYS faces upstream**

2. Inside diameter of gaskets must not protrude beyond inside surface of pipe.\*
3. Tighten flange bolts evenly to prevent plate buckling.

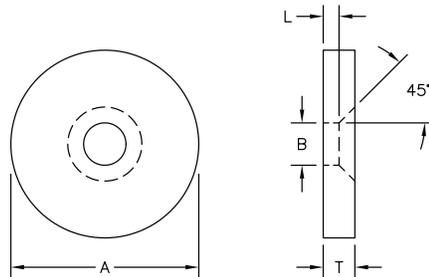
\*Gaskets should be replaced at each orifice plate inspection.

## SERIES 500 UNIVERSAL ORIFICE PLATES

Universal Orifice Plates are Manufactured for use in ALL standard orifice fitting assemblies or Ring Type Joint plate holders. Each plate is carefully manufactured to meet or exceed standards set by *A.G.A., I.S.A., A.N.S.I, A.S.M.E. & A.P.I.* recommendations. Stocked in 304 & 316 stainless steel and available in any material requested, such as monel, hastelloy, copper-nickel, etc. Coatings can also be provided.



Nominal Pipe Size (in.)	"A" (in.)	"L" (in.)	"T" (in.)
1	1.312	0.02	0.125
1.5	2	0.03	0.125
2	2.437	0.03	0.125
2.5	2.812	0.03	0.125
3	3.437	0.03	0.125
4	4.406	0.06	0.125
5	6	0.06	0.125
6	6.437	0.06	0.125
8	8.437	0.125	0.25
10	10.687	0.125	0.25
12	12.593	0.25	0.25
14	14	0.25	0.25
16	16	0.25	0.375
18	18	0.25	0.375
20	20	0.375	0.375
24	24	0.375	0.375



**Notes:**  
**Dimension "A" does not include seal ring.**  
**L = Thickness for Restriction Applications**

We offer Hycar® and Teflon® seal rings / o-rings that fit our universal orifice plates. Request with your next order to have them shipped together.

### When Ordering Specify:

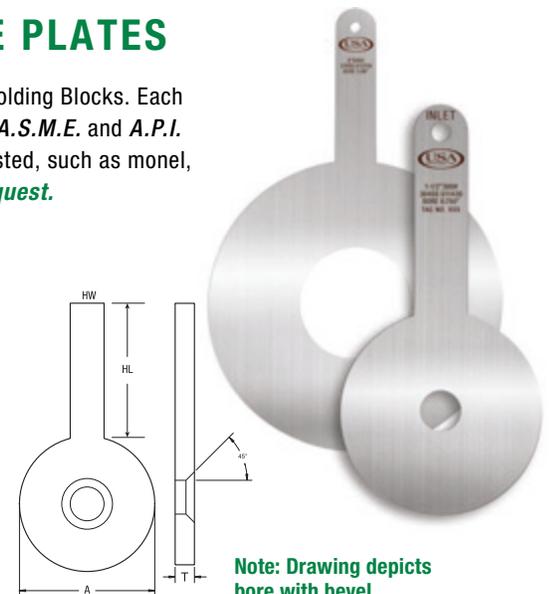
- Line Size
- Plate Thickness
- Bore Size
- Bevel / No Bevel
- Material
- Quantity
- Delivery Date

Hycar® is a registered Trademark of Lubrizol Advanced Materials. Teflon® is a registered Trademark of DuPont.

## SERIES 520 PADDLE-TYPE PLATES

Paddle-Type orifice plates are manufactured for use with Raised Face Orifice Flanges and Holding Blocks. Each plate is carefully manufactured to meet or exceed standards set by *A.G.A., I.S.A., A.N.S.I., A.S.M.E. and A.P.I.* recommendations. Stocked in 304 & 316 stainless steel and available in any material requested, such as monel, hastelloy, copper-nickel, etc. Coatings can also be provided. **Vent or drain available on request.**

Size (in.)	Flange Rating A (all dimensions are in inches. Add'l. sizes available)								HL (in.)	HW (in.)	T (in.)
	150#	300#	400#	600#	900#	1500#	2500#				
0.5	1.875	2.125	2.125	2.125	2.5	2.5	2.75	4	1	.125	
0.75	2.25	2.625	2.625	2.625	2.75	2.75	3				
1	2.625	2.875	2.875	2.875	3.125	3.125	3.375				
1.25	3	3.25	3.25	3.25	3.5	3.5	4.125				
1.5	3.375	3.75	3.75	3.75	3.875	3.875	4.625				
2	4.125	4.375	4.375	4.375	5.625	5.625	5.75				
2.5	4.875	5.125	5.125	5.125	6.5	6.5	6.625				
3	5.375	5.875	5.875	5.875	6.625	6.875	7.75				
4	6.875	7.125	7	7.625	8.125	8.25	9.25				
5	7.75	8.5	8.375	9.5	9.75	10	11				
6	8.75	9.875	9.75	10.5	11.375	11.125	12.125				
8	11	12.125	12	12.625	14.125	13.875	15.25				
10	13.375	14.25	14.125	15.75	17.125	17.125	18.75				
12	16.125	16.625	16.5	18	19.625	20.5	21.625				
14	17.75	19.125	19	19.375	20.5	22.75	-				
16	20.25	21.25	21.125	22.25	22.625	25.25	-				
18	21.5	23.375	23.25	24	25	27.625	-				
20	23.75	25.625	25.375	26.75	27.375	29.625	-				
22	26	27.75	27.5	28.875	-	-	-				
24	28.125	30.735	30.125	31	32.875	35.5	-				
30	34.625	37.375	37.25	38.125	-	-	-				
36	41.125	43.875	43.875	44.375	-	-	-				
								6	1.5	.375	
										.5	



**Note: Drawing depicts bore with bevel.**

### When Ordering Specify:

- Line Size
- Plate Thickness
- Bore Size
- Bevel / No Bevel
- Material
- Quantity
- Delivery Date

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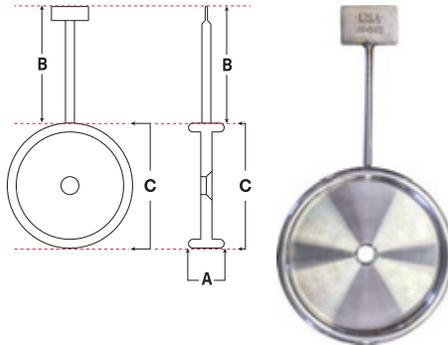
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## RING TYPE JOINT PLATES

Choose from Either Style of Plate to Suit your Particular Needs.

### SERIES 560

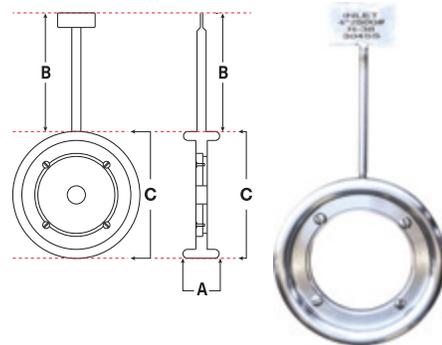


Series 560 plates are of a one-piece construction. Manufactured in any material requested such as 304 or 316 SS, monel, hastelloy, copper-nickel, etc.

**When Ordering Specify:**

- Line Size
- Plate Thickness
- Flange Rating
- Material
- Quantity
- Delivery Date

### SERIES 590



Series 590 plates are manufactured with hold-down screws and use Universal plates for the orifice bore. The 590 Series should be used where frequent replacement or sizing changes are expected. Manufactured in any material requested such as 304 or 316 SS, monel, hastelloy, copper-nickel, etc.

**When Ordering Specify:**

- Line Size
- Flange Rating
- API Rating
- Material
- Quantity
- Delivery Date

**If Needed:**

- Series 500 plate thickness
- Bore Size
- Quantity

Note: 560 Plate Holders 2" - 8" have a standard plate thickness of 1/4"

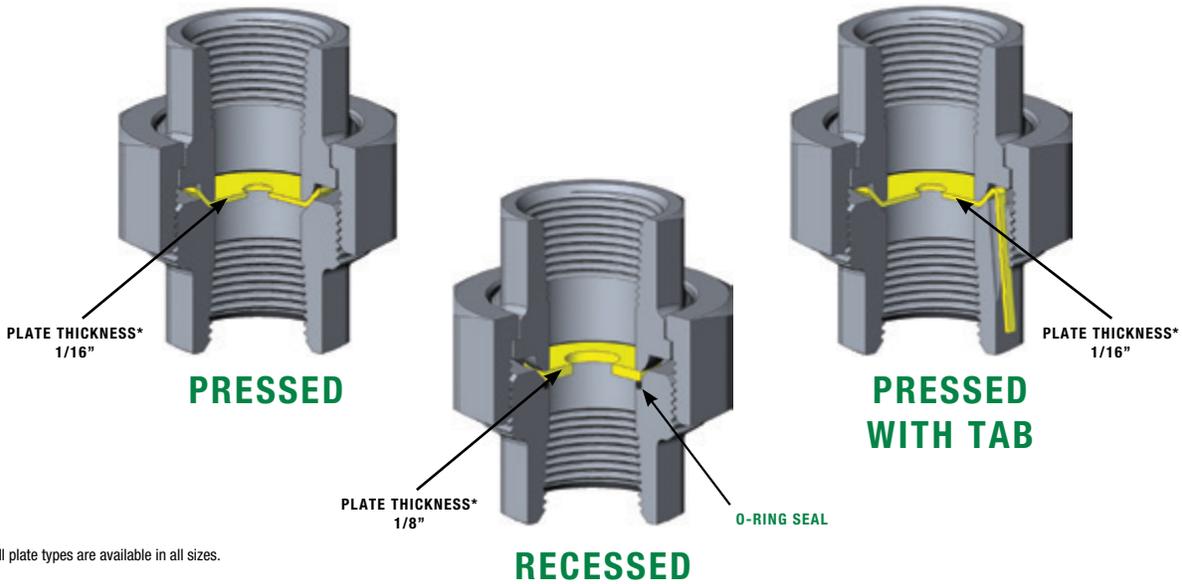
Line Size (in.)	FLANGE RATING															
	300# - 600#			900#			1500#			2500#						
	RING SIZE	A	B	RING SIZE	A	B	RING SIZE	A	B	RING SIZE	A	B				
1/2	R-11	29/32	4-1/4	R-12	1	4-1/4	R-12	1	6-1/2	R-13	1	6-1/2				
3/4	R-13	1		R-14			R-14			R-16			R-16	R-18		
1	R-16			R-20			R-20			R-23			R-23	R-26	R-26	
1-1/2	R-20			R-24			R-24			R-27			R-27	R-28	R-28	
2	R-23	1-1/16	5-1/4	R-31	1-1/16	5-1/4	R-35	1-1/16	6-1/2	R-32	1-1/16	6-1/2				
2-1/2	R-26			R-37			R-37			R-39			R-39	R-38	R-38	
3	R-31		6-1/4	R-41		1-1/16	5-1/4			R-44	1-1/16		6-1/2	R-42	1-3/16	7-1/2
3-1/2	R-34			R-45						R-45				R-46		
4	R-37	6-1/2	6-1/2	R-49	1-1/16	6-1/2	R-50	1-1/16	6-1/2	R-51	1-9/16	8-1/2				
5	R-41			R-53			R-53			R-54			R-54	R-55	R-55	
6	R-45	1-3/16	7-1/2	R-57	1-3/16	7-1/2	R-58	1-3/16	7-1/2	R-60	2-1/8	9-1/2				
8	R-49			R-62			R-62			R-63			R-63	-	-	
10	R-53			R-66			R-66			R-67			R-67	-	-	
12	R-57			R-70			R-70			R-71			R-71	-	-	
14	R-61	1-1/4	1-9/16	R-74	1-9/16	9-1/2	R-75	2-1/8	10-1/2	R-75	2-1/8	10-1/2				
16	R-65			R-77			R-77			R-79			R-79	-	-	
18	R-69	1-7/16	1-7/16	R-78	1-7/16	9-1/2	R-79	2-5/16	11-1/2	R-79	2-5/16	11-1/2				
20	R-73			R-78			R-78			R-79			R-79	-	-	
24	R-77															

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## RESTRICTION ORIFICE UNIONS



\* Not all plate types are available in all sizes.

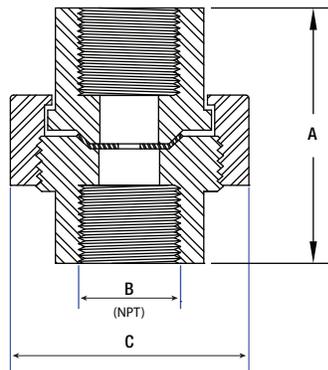


Carbon & stainless steel bodies stocked in pressure ratings of 3,000 psig. Available in line sizes from 1/4" through 2" in both female NPT and Socket-Weld connections. Other sizes and materials available.

Orifices bored to your specifications. All plates are stainless steel and can be ordered separately.

- Available with or without tabbed plate
- Female NPT or Socket-weld Connections
- From 1/4" through 2"
- All recessed plates sealed with a Rubber O-Ring
- Pressed plates are metal to metal sealing

Line Size (in.)	A OAL (in.)	B NPT or SW (in.)	C Hex Size (in.)
1/4	1-3/4	1/4	1-3/8
3/8	1-7/8	3/8	1-5/8
1/2	2	1/2	1-3/4
3/4	2-1/4	3/4	2-3/16
1	2-9/16	1	2-9/16
1-1/4	2-7/8	1-1/4	3-1/6
1-1/2	3-1/8	1-1/2	3-7/16
2	3-1/2	2	4



### When Ordering Specify:

- Line Size
- NPT Thread Size OR Socket Weld Connection
- Plate Type - Recessed (1), Pressed (2), or Pressed with Tab (3)
- Material
- Orifice Bore
- Quantity
- Delivery Date

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# HTX TOOLS & TOOLING



## EXPANDERS, CUTTERS & PUNCTURING TOOLS:

### TUBE INSTALLATION EQUIPMENT:



*Model 850  
Roll Motor*

Quickly cut several tubes with USA Industries' One-Rev Cutter, internal tube push cutter and boiler tube cutters. We only sell the highest quality products, suited for your toughest tube-cutting applications.

We're your one-stop-shop for heat exchanger tools. With USA Industries, you'll get the job done with top quality tools at competitive prices. Grooving tools, expanders, guides, brushes, roll motors, flares & more.



### TUBE REMOVAL EQUIPMENT:



*Captain America Tube Puller*

Do you need pullers, collapsing or knockout tools? We carry a variety of products that cater to your project needs. Ask us about the Jenny, Spear Tube, Hollow Core and Collet pullers, plus more.

### TUBE TESTING EQUIPMENT:



*VLD  
Leak Detector*

Quick and painless leak detection guns utilizing vacuum and pressure technology to create a quick seal for testing pressure. Shorten your test cycle with these near instant leak testing tools, saving you time and money.

### TUBE CLEANING EQUIPMENT:



*CG625/1250  
Tube Cleaning Gun*

Compact, powerful, reliable and easily maneuverable units used to clean straight and curved tubes in heat exchangers, condensers and boilers. Devices available as electric and pneumatic.

Founded in Houston, TX in 1982, USA Industries is a leading manufacturer of heat exchanger tools and equipment in the Southern United States. Our inventory covers everything needed to build, repair, replace, test, clean, or plug heat exchangers, condensers, boilers, and air-cooled exchangers.

We back our products with exceptional service — stocked items ship within 2 hours of a phone call, and because most of our customers run 24/7, so do we. For cost-sensitive jobs, our extensive rental fleet offers a practical alternative to purchasing. Look for the Rental Available symbol throughout the catalog or contact our Rental Department directly.

**This section includes:**

**EXPANDERS**

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**INSTALLATION TOOLS**

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**ROLL MOTORS**

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**TESTING EQUIPMENT**

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**TUBE PULLERS**

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**TUBE CUTTERS**

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**COLLAPSING/ KNOCKOUT TOOLS**

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**CLEANING EQUIPMENT**

Pages HE-62 — HE-66



**TUBE & HEADER PLUGS**

SECTION 5



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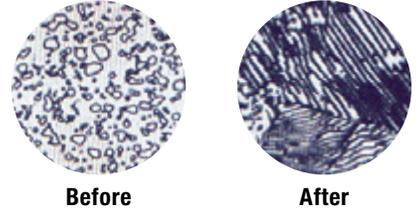


## HEAT EXCHANGER, CONDENSER AND BOILER TOOLS

Whether rolling ¼” copper tube or 5” boiler tubes, we have a complete line to suit every application.

We’ve recently made significant improvements to the design and performance of our tube expanders. Our Mandrels and Roll Sets are machined from top-quality tool steel and put through both heat treatment and cryogenic processing — a combination that dramatically extends tool life, reduces wear, and delivers exceptional value at a competitive price.

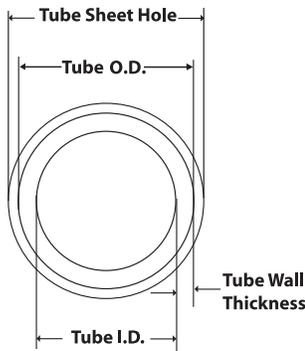
The result is a tougher, longer-lasting tool you can count on.



## HEAT EXCHANGER, CONDENSER AND BOILER EXPANDERS

### TUBE EXPANDERS - *Tube Expanding Basics*

Tube expanding compresses the tube OD against a tube sheet or boiler drum, reducing the tube wall by a specified percentage to create an effective seal.



TUBE WALL REDUCTION SETUP GUIDE	
Step 1	Measure Tube Sheet Hole
Step 2	Measure Tube OD
Step 3	Calculate Clearance (A-B)
Step 4	Measure Tube ID
Step 5	Calculate Total Tube Wall Thickness (B-D)
Step 6	Calculate 70% Wall Reduction (.07 X E)
Step 7	Calculate Finished Rolled Tube ID (C+D+F)

*Note Example is for a 7% tube reduction*

### Wall Reduction by Material

Material	Wall Reduction	Notes
Carbon Steel	4-5%	Heavy lube; max 150 Brinell
Copper & Cupro Nickel	8-10%	Abrasive; use plenty of lube
Stainless Steel & Titanium	7-8%	Serrated hole; complete in one pass
Admiralty Brass	7-8%	Well lubricated; never exceed 15%
3003/4004 Aluminum	5% max	Do not exceed
6061-T Aluminum	10-12%	

### Care & Maintenance

USA Industries expanders are crafted from heat-treated alloy tool steel built for demanding conditions. After every few tubes, clean in solvent, re-oil, and rotate between two or more expanders. Replace worn or chipped parts immediately. Store clean with rust preventive coating or submerged in lightweight oil.

### WHY TUBES LEAK

- **Under-rolling** — tube doesn't fully seat. When in doubt, under-roll rather than over-roll.
- **Over-rolling** — distorts ligaments, weakens adjacent tubes, causes premature leaks.
- **Poor prep** — ream and burnish holes .006”–.010” over tube OD (5/8” = .006”, 3/4” = .008”, 1” = .010”). Keep grooves clean when re-tubing.

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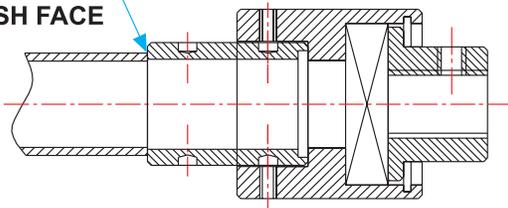
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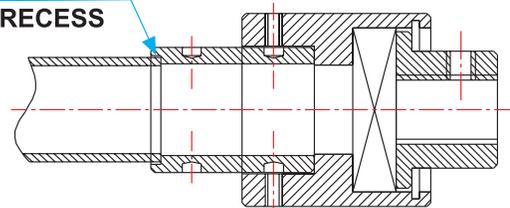
# HEAT EXCHANGER, CONDENSER AND BOILER EXPANDERS

**Reversible Thrust Collar Assembly Provided Standard and in All Tube Expanders**

**COLLAR WITH FLUSH FACE**



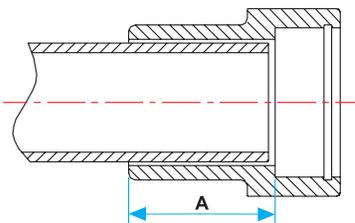
**COLLAR WITH FIX RECESS**



Nose portion can be 'reversed' to expand tubes flush with tube sheet and also tubes that are projecting 1/8" from tube sheet. This collar is supplied standard on all tube expanders.

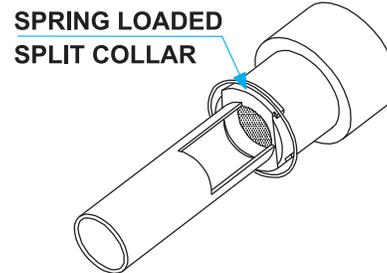
## Thin Wall Thrust Collars

**FULL RECESS THRUST COLLAR**



Used when tubes project varying distances from the tube sheet.

**SPRING LOADED SPLIT COLLAR**



Has an expandable front nose that expands along with the rolls and eliminates the tube from being sucked into the collar.

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For customers with uncommon specifications, USA Industries produces customized plugs to fit their exact material and precise size requirements.

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**JR & SR**  
ENGINEERED TUBE PLUGS

**HIGH PRESSURE RATINGS:**

Suitable for medium to high-pressure applications — ratings up to 7,000 PSID

**COMMON & EXOTIC ALLOYS:**

Available in a wide range of materials including stainless steel, carbon steel, brass, titanium and more.

**SECURE LEAK-TIGHT SEAL:**

Designed with external serrated rings for a helium leak-tight seal, maintaining integrity under extreme thermal and pressure variations.

**CONTROLLED HYDRAULIC INSTALLATION:**

Hydraulic installation simplifies setup and improves safety with reduced operator fatigue.

**ASME PCC-2 COMPLIANCE:**

Fully compliant with ASME PCC-2 standards for proven reliability and industry best practices.



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## TUBE EXPANDER INDEX

### Condenser and Heat Exchanger Expanders



**800-3 Series**  
HE-42 - HE-43



**800-5 Series**  
HE-44 - HE-45



**1200-3 Series**  
HE-46 - HE-47



**1200-5 Series**  
HE-48



**8012 Series**  
HE-49 - HE-50

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## "800" SERIES 3-ROLL TUBE EXPANDER



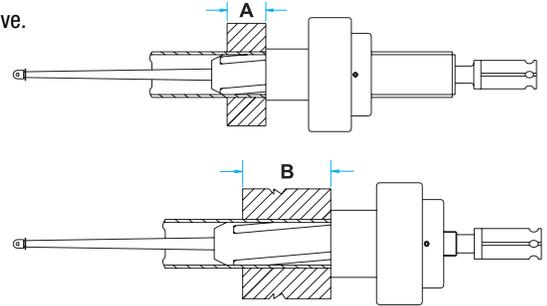
### Features

The **800 Series 3-Roll Expander** is the most popular and economical choice for heat exchangers and condensers worldwide. Covers tube sizes 1/2" 14 gauge to 1-1/2" 20 gauge, with roll sets of 1-1/2" or 2-1/4" and adjustable roll depths from 1/2" to 2-1/4".

Models 797–856 use a 3/8" square mandrel drive. Models 857–900 use a 1/2" square mandrel drive.

Tube I.D. Sizes	
.334" - 1.43" (8.4mm - 36.3mm)	

Roller Length	Roll Depth	
	min "A"	max "B"
1-1/2" (38.1mm)	1/2" (12.7mm)	1-1/2" (38.1mm)
2-1/4" (57.1mm)	1/4" (31.7mm)	2-1/4" (57.1mm)



Tube O.D.	BWG	Tube I.D.		Expander with 1-1/2" (38.1mm) Long Rollers			Expander with 2-1/4" (57.1mm) Long Rollers			Minimum I.D. Tool Enters		Maximum Expansion of Tool	
		(in)	(mm)	Complete Tool	Mandrel	Roll Set	Complete Tool	Mandrel	Roll Set	(in)	(mm)	(in)	(mm)
1/2" 12.70mm	14	.334	8.4	797	M-797	R-797	-	-	-	.324	8.2	.374	9.5
	15	.356	9.0	799	M-799	R-1	-	-	-	.348	8.8	.398	10.1
	16	.370	9.4	801	M-1	R-1	-	-	-	.360	9.1	.410	10.4
	17	.384	9.7	803	M-1	R-2	-	-	-	.374	9.5	.424	10.7
	18	.402	10.2	805	M-2	R-3	-	-	-	.392	9.9	.447	11.3
5/8" 15.88mm	20	.430	10.9	805 S	M-3	R-3	-	-	-	.406	10.3	.461	11.7
	12	.407	10.3	805	M-2	R-3	-	-	-	.392	9.9	.447	11.3
	13	.435	11.0	807	M-3	R-4	-	-	-	.425	10.8	.480	12.1
	14	.459	11.6	809	M-4	R-4	810	M-4	R-4-A	.449	11.4	.509	12.9
	15	.481	12.2	811	M-5	R-5	812	M-5	R-5-A	.471	11.9	.536	13.6
	16	.495	12.5	813	M-5	R-6	814	M-5	R-6-A	.485	12.3	.550	13.9
	17	.509	12.9	815	M-6	R-6	816	M-6	R-6-A	.499	12.6	.564	14.3
	18	.527	13.3	817	M-7	R-7	818	M-7	R-7-A	.517	13.1	.572	14.5
	19	.541	13.7	819	M-6	R-7	820	M-6	R-7-A	.522	13.2	.582	14.7
	20	.555	14.1	819 S	M-8	R-7	820 S	M-8	R-7-A	.536	13.6	.596	15.1
3/4" 19.05mm	21	.561	14.2	819 S	M-8	R-7	820 S	M-8	R-7-A	.536	13.6	.596	15.1
	22	.569	14.4	819 S	M-8	R-7	820 S	M-8	R-7-A	.536	13.6	.596	15.1
	10	.482	12.2	811	M-5	R-5	812	M-5	R-5-A	.471	11.9	.536	13.6
	11	.510	12.9	815	M-6	R-6	816	M-6	R-6-A	.499	12.6	.564	14.3
	12	.532	13.5	819	M-6	R-7	820	M-6	R-7-A	.522	13.2	.582	14.7
	13	.560	14.2	821	M-8	R-8	822	M-8	R-8-A	.550	13.9	.615	15.6
	14	.584	14.8	823	M-8	R-9	824	M-8	R-9-A	.574	14.5	.639	16.2
	15	.606	15.3	825	M-8	R-10	826	M-8	R-10-A	.596	15.1	.661	16.7
	16	.620	15.7	827	M-9	R-10	828	M-9	R-10-A	.605	15.3	.685	17.4
	17	.634	16.1	829	M-9	R-11	830	M-9	R-11-A	.619	15.7	.699	17.7
	18	.652	16.5	829	M-9	R-11	830	M-9	R-11-A	.619	15.7	.699	17.7
	19	.666	16.9	831	M-9	R-12	832	M-9	R-12-A	.642	16.3	.722	18.3
7/8" 22.22mm	20	.680	17.2	831	M-9	R-12	832	M-9	R-12-A	.642	16.3	.722	18.3
	21	.686	17.4	831	M-9	R-12	832	M-9	R-12-A	.642	16.3	.722	18.3
	22	.694	17.6	831	M-9	R-12	832	M-9	R-12-A	.642	16.3	.722	18.3
	10	.607	15.4	825	M-8	R-10	826	M-8	R-10-A	.596	15.1	.661	16.7
	11	.635	16.1	829	M-9	R-11	830	M-9	R-11-A	.619	15.7	.699	17.7
	12	.657	16.6	831	M-9	R-12	832	M-9	R-12-A	.642	16.3	.722	18.3
	13	.685	17.4	833	M-10	R-13	834	M-10	R-13-A	.670	17.0	.750	19.0
	14	.709	18.0	835	M-11	R-14	836	M-11	R-14-A	.685	17.4	.774	19.6
	15	.731	18.5	837	M-11	R-15	838	M-11	R-15-1	.712	18.0	.801	20.3
16	.745	18.9	839	M-12	R-15	840	M-12	R-15-A	.726	18.4	.815	20.7	
17	.759	19.2	843	M-12	R-16	844	M-12	R-16-A	.740	18.8	.829	21.0	
18	.777	19.7	843	M-12	R-16	844	M-12	R-16-A	.740	18.8	.829	21.0	

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## "800" SERIES 3-ROLL TUBE EXPANDER

Tube O.D. (in) (mm)	BWG	Tube I.D.		Expander with 1-1/2" (38.1mm) Long Rollers			Expander with 2-1/4" (57.1mm) Long Rollers			Minimum I.D. Tool Enters		Maximum Expansion of Tool	
		(in)	(mm)	Complete Tool	Mandrel	Roll Set	Complete Tool	Mandrel	Roll Set	(in)	(mm)	(in)	(mm)
1" 25.40mm	8	.670	17.0	841	M-9	R-13	842	M-9	R-13-A	.655	16.6	.735	18.6
	9	.704	17.8	835	M-11	R-14	836	M-11	R-14-A	.685	17.4	.774	19.6
	10	.732	18.5	837	M-11	R-15	838	M-11	R-15-A	.712	18.0	.801	20.3
	11	.760	19.3	843	M-12	R-16	844	M-12	R-16-A	.740	18.8	.829	21.1
	12	.782	19.8	845	M-12	R-17	846	M-12	R-17-A	.763	19.3	.852	21.6
	13	.810	20.5	847	M-12	R-18	848	M-12	R-18-A	.791	20.0	.880	22.3
	14	.834	21.1	849	M-13	R-18	850	M-13	R-18-A	.810	20.5	.909	23.1
	15	.856	21.7	851	M-13	R-19	852	M-13	R-19-A	.837	21.2	.936	23.7
	16	.870	22.1	851	M-13	R-19	852	M-13	R-19-A	.837	21.2	.936	23.7
	17	.884	22.4	855	M-13	R-21	856	M-13	R-21-A	.865	21.9	.964	24.4
	18	.902	22.9	855	M-13	R-21	856	M-13	R-21-A	.865	21.9	.964	24.4
19	.916	23.2	855	M-13	R-21	856	M-13	R-21-A	.865	21.9	.964	24.4	
20	.930	23.6	855	M-13	R-21	856	M-13	R-21-A	.865	21.9	.964	24.4	
1-1/8" 28.58mm	8	.795	20.1	853	M-13	R-20	854	M-13	R-20-A	.776	19.7	.875	22.2
	9	.829	21.0	849	M-13	R-18	850	M-13	R-18-A	.810	20.5	.909	23.1
	10	.857	21.7	851	M-13	R-19	852	M-13	R-19-A	.837	21.2	.936	23.7
	11	.885	22.4	855	M-13	R-21	856	M-13	R-21-A	.865	21.9	.964	24.4
	12	.907	23.0	857	M-14	R-21	858	M-14	R-21-A	.883	22.4	.982	24.9
	13	.935	23.7	859	M-14	R-22	860	M-14	R-22-A	.916	23.2	1.015	25.7
	14	.959	24.3	861	M-15	R-23	862	M-15	R-23-A	.935	23.7	1.044	26.5
	15	.981	24.9	863	M-15	R-24	864	M-15	R-24-A	.962	24.4	1.071	27.2
	16	.995	25.2	863	M-15	R-24	864	M-15	R-24-A	.962	24.4	1.071	27.2
	17	1.010	25.6	867	M-16	R-26	868	M-16	R-26-A	.990	25.1	1.009	27.9
	18	1.027	26.0	867	M-16	R-26	868	M-16	R-26-A	.990	25.1	1.009	27.9
1-1/4" 31.75mm	8	.920	23.3	865	M-15	R-25	866	M-15	R-25-A	.901	22.8	1.010	25.6
	9	.954	24.2	861	M-15	R-23	862	M-15	R-23-A	.935	23.7	1.044	26.5
	10	.982	24.9	863	M-15	R-24	864	M-15	R-24-A	.962	24.4	1.071	27.2
	11	1.010	25.6	867	M-16	R-26	868	M-16	R-26-A	.990	25.1	1.099	27.9
	12	1.032	26.2	869	M-16	R-27	870	M-16	R-27-A	1.013	25.7	1.122	28.5
	13	1.060	26.9	871	M-17	R-28	872	M-17	R-28-A	1.039	26.4	1.150	29.2
	14	1.084	27.5	873	M-17	R-29	874	M-17	R-29-A	1.060	26.9	1.169	29.6
	15	1.106	28.0	875	M-17	R-30	876	M-17	R-30-A	1.087	27.6	1.196	30.3
	16	1.120	28.4	875	M-17	R-30	876	M-17	R-30-A	1.087	27.6	1.196	30.3
	17	1.134	28.8	879	M-18	R-30	880	M-18	R-30-A	1.115	28.3	1.224	31.0
	18	1.152	29.2	879	M-18	R-30	880	M-18	R-30-A	1.115	28.3	1.224	31.0
1-3/8" 34.92mm	8	1.045	26.5	877	M-17	R-31	878	M-17	R-31-A	1.026	26.0	1.135	28.8
	9	1.079	27.4	873	M-17	R-29	874	M-17	R-29-A	1.060	26.9	1.169	29.6
	10	1.107	28.1	875	M-17	R-30	876	M-17	R-30-A	1.087	27.6	1.196	30.3
	11	1.135	28.8	879	M-18	R-30	880	M-18	R-30-A	1.115	28.3	1.224	31.0
	12	1.157	29.3	881	M-18	R-32	882	M-18	R-32-A	1.133	28.7	1.242	31.5
	13	1.185	30.1	883	M-19	R-33	884	M-19	R-33-A	1.160	29.4	1.275	32.3
	14	1.209	30.7	885	M-20	R-34	886	M-20	R-34-A	1.179	29.9	1.294	32.8
	15	1.231	31.2	887	M-20	R-35	888	M-20	R-35-A	1.206	30.6	1.321	33.5
	16	1.245	31.6	887	M-20	R-35	888	M-20	R-35-A	1.206	30.6	1.321	33.5
	17	1.260	32.0	891	M-20	R-36	892	M-20	R-36-A	1.235	31.3	1.350	34.2
	18	1.282	32.5	893	M-20	R-37	894	M-20	R-37-A	1.257	31.9	1.372	34.8
1-1/2" 38.1mm	9	1.204	30.5	885	M-20	R-34	886	M-20	R-34-A	1.177	29.9	1.294	32.8
	10	1.232	31.2	887	M-20	R-35	888	M-20	R-35-A	1.206	30.6	1.321	33.5
	11	1.260	32.0	891	M-20	R-36	892	M-20	R-36-A	1.235	31.3	1.350	34.2
	12	1.282	32.5	893	M-20	R-37	894	M-20	R-37-A	1.257	31.9	1.372	34.8
	13	1.310	33.2	895	M-21	R-37	896	M-21	R-37-A	1.285	32.6	1.400	35.5
	14	1.334	33.8	895	M-21	R-37	896	M-21	R-37-A	1.285	32.6	1.400	35.5
	15	1.356	34.4	897	M-21	R-38	898	M-21	R-38-A	1.331	33.8	1.446	36.7
	16	1.370	34.8	897	M-21	R-38	898	M-21	R-38-A	1.331	33.8	1.446	36.7
	17	1.384	35.1	899	M-22	R-38	900	M-22	R-38-A	1.331	33.8	1.472	37.3
	18	1.402	35.6	899	M-22	R-38	900	M-22	R-38-A	1.331	33.8	1.472	37.3
	19	1.416	35.9	899	M-22	R-38	900	M-22	R-38-A	1.331	33.8	1.472	37.3
20	1.430	36.3	899	M-22	R-38	900	M-22	R-38-A	1.331	33.8	1.472	37.3	

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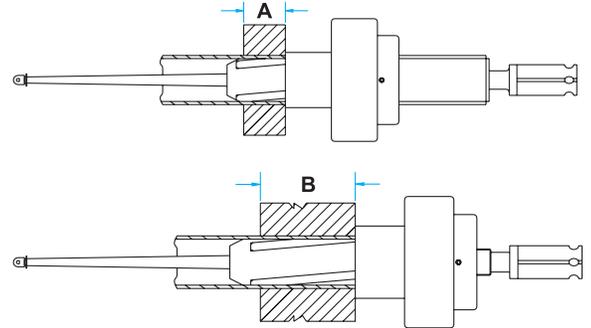


## "800" SERIES 5-ROLL TUBE EXPANDER



### Features

The **800 Series 5-Roll Expander** is designed for thin-wall tubes (19–24 gauge) in titanium, stainless steel, Incoloy, and other exotic metals. Covers tube sizes 5/8" 17 gauge to 1-1/2" 24 gauge, with adjustable roll depths of 1/2"–1-1/2" for 1-1/2" rollers and 1-1/4"–2-1/4" for 2-1/4" rollers. Models 815-5 through 858-5 use a 3/8" square mandrel drive. Models 859-5 through 900-5 use a 1/2" square mandrel drive.



Tube I.D. Sizes
.509" - 1.44" (12.9mm - 37.0mm)

Roller Length	Roll Depth	
	min "A"	max "B"
1-1/2" (38.1mm)	1/2" (12.7mm)	1-1/2" (38.1mm)
2-1/4" (57.1mm)	1/4" (31.7mm)	2-1/4" (57.1mm)

Tube O.D.	BWG	Tube I.D.		Expander with 1-1/2" (38.10mm) Long Rollers			Expander with 2-1/4" (57.15mm) Long Rollers			Minimum I.D. Tool Enters (mm)		Maximum Expansion of Tool	
		(in)	(mm)	Complete Tool	Mandrel	Roll Set	Complete Tool	Mandrel	Roll Set	(in)	(mm)	(in)	(mm)
5/8" 15.88mm	17	.509	12.9	815-5	M-816-5	R-4-5	816-5	M-816-5	R-4-A-5	.499	12.6	.564	14.3
	18	.527	13.3	817-5	M9	R-4-5	-	-	-	.517	13.1	.576	14.6
	19	.541	13.7	819-5	M-820-5	R-4-5	820-5	M-820-5	R-4-A-5	.522	13.2	.582	14.8
	20	.555	14.1	819-5 S	M-820-5 S	R-4-5	820-5 S	M-820-5 S	R-4-A-5	.536	13.6	.596	15.1
	21	.561	14.2	819-5 S	M-820-5 S	R-4-5	820-5 S	M-820-5 S	R-4-A-5	.536	13.6	.596	15.1
	22	.569	14.4	819-5 S	M-820-5 S	R-4-5	820-5 S	M-820-5 S	R-4-A-5	.536	13.6	.596	15.1
3/4" 19.65mm	13	.560	14.2	821-5	M-822-5	R-5-5	822-5	M-822-5	R-5-A-5	.550	13.9	.615	15.6
	14	.584	14.8	823-5	M-824-5	R-6-5	824-5	M-824-5	R-6-A-5	.574	14.5	.629	15.9
	15	.606	15.3	825-5	M-826-5	R-7-5	826-5	M-826-5	R-7-A-5	.590	14.9	.661	16.8
	16	.620	15.7	827-5	M-13	R-7-5	828-5	M-13	R-7-A-5	.605	15.3	.680	17.2
	17	.634	16.1	829-5	M-830-5	R-7-5	830-5	M-830-5	R-7-A-5	.619	15.7	.699	17.8
	18	.652	16.5	829-5	M-830-5	R-7-5	830-5	M-830-5	R-7-A-5	.619	15.7	.699	17.8
	19	.666	16.9	831-5	M-13	R-9-5	832-5	M-13	R-9-A-5	.642	16.3	.729	18.5
	20	.680	17.2	831-5	M-13	R-9-5	832-5	M-13	R-9-A-5	.642	16.3	.729	18.5
	21	.686	17.4	831-5	M-13	R-9-5	832-5	M-13	R-9-A-5	.642	16.3	.729	18.5
	22	.694	17.6	831-5	M-13	R-9-5	832-5	M-13	R-9-A-5	.642	16.3	.729	18.5
	23	.700	17.8	833-5	M-14-3/8	R-9-5	834-5	M-14-3/8	R-9-A-5	.670	17.0	.747	18.9
24	.706	17.9	833-5	M-14-3/8	R-9-5	834-5	M-14-3/8	R-9-A-5	.670	17.0	.747	18.9	
7/8" 22.22mm	13	.685	17.4	833-5	M-14-3/8	R-9-5	834-5	M-14-3/8	R-9-A-5	.670	17.0	.747	18.9
	14	.709	18.0	835-5	M-15-3/8	R-10-5	836-5	M-15-3/8	R-10-A-5	.685	17.4	.750	19.0
	16	.745	18.9	839-5	M-840-5	R-11-5	840-5	M-840-5	R-11-A-5	.726	18.4	.800	20.3
	17	.759	19.2	843-5	M-17-3/8	R-11-5	844-5	M-17-3/8	R-11-A-5	.740	18.8	.824	20.9
	18	.777	19.7	843-5	M-17-3/8	R-11-5	844-5	M-17-3/8	R-11-A-5	.740	18.8	.824	20.9
	19	.791	20.1	845-5	M-18-3/8	R-11-5	846-5	M-18-3/8	R-11-A-5	.763	19.4	.851	21.6
	20	.805	20.4	845-5	M-18-3/8	R-11-5	846-5	M-18-3/8	R-11-A-5	.763	19.4	.851	21.6
	21	.811	20.6	845-5	M-18-3/8	R-11-5	846-5	M-18-3/8	R-11-A-5	.763	19.4	.851	21.6
	22	.819	20.8	845-5	M-18-3/8	R-11-5	846-5	M-18-3/8	R-11-A-5	.763	19.4	.851	21.6
	23	.825	20.9	847-5	M-18-3/8	R-13-5	848-5	M-18-3/8	R-13-A-5	.791	20.1	.880	22.4
	24	.831	21.1	847-5	M-18-3/8	R-13-5	848-5	M-18-3/8	R-13-A-5	.791	20.1	.880	22.4

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## "800" SERIES 5-ROLL TUBE EXPANDER

Tube O.D.	BWG	Tube I.D.		Expander with 1-1/2" (38.10mm) Long Rollers			Expander with 2-1/4" (57.15mm) Long Rollers			Minimum I.D. Tool Enters		Maximum Expansion of Tool	
		(in)	(mm)	Complete Tool	Mandrel	Roll Set	Complete Tool	Mandrel	Roll Set	(in)	(mm)	(in)	(mm)
1" 25.40mm	12	.782	19.8	845-5	M-18-3/8	R-11-5	846-5	M-18-3/8	R-11-A-5	.763	19.3	.852	21.6
	13	.810	20.5	847-5	M-18-3/8	R-13-5	848-5	M-18-3/8	R-13-A-5	.791	20.0	.880	22.4
	14	.834	21.2	849-5	M-850-5	R-12-5	850-5	M-18-3/8	R-12-A-5	.810	20.5	.909	23.2
	15	.856	21.7	851-5	M-852-5	R-13-5	852-5	M-852-5	R-13-A-5	.837	21.2	.936	23.8
	16	.870	22.1	851-5	M-852-5	R-13-5	852-5	M-852-5	R-13-A-5	.837	21.2	.936	23.8
	17	.884	22.4	855-5	M-856-5	R-13-5	856-5	M-856-5	R-13-A-5	.865	21.9	.965	24.5
	18	.902	22.9	855-5	M-856-5	R-13-5	856-5	M-856-5	R-13-A-5	.865	21.9	.965	24.5
	19	.916	23.2	855-5	M-856-5	R-13-5	856-5	M-856-5	R-13-A-5	.865	21.9	.965	24.5
	20	.930	23.6	855-5	M-856-5	R-13-5	856-5	M-856-5	R-13-A-5	.865	21.9	.965	24.5
	21	.936	23.8	857-5	M-21-3/8	R-15-5	858-5	M-21-3/8	R-15-A-5	.883	22.4	.997	25.3
	22	.944	24.0	857-5	M-21-3/8	R-15-5	858-5	M-21-3/8	R-15-A-5	.883	22.4	.997	25.3
	23	.950	24.1	857-5	M-21-3/8	R-15-5	858-5	M-21-3/8	R-15-A-5	.883	22.4	.997	25.3
	24	.956	24.3	857-5	M-21-3/8	R-15-5	858-5	M-21-3/8	R-15-A-5	.883	22.4	.997	25.3
1-1/8" 28.58mm	25	.960	24.4	857-5	M-21-3/8	R-15-5	858-5	M-21-3/8	R-15-A-5	.883	22.4	.997	25.3
	12	.907	23.0	857-5	M-21-3/8	R-15-5	858-5	M-21-3/8	R-15-A-5	.883	22.4	.997	25.3
	13	.935	23.7	859-5	M-860-5	R-16-5	860-5	M-860-5	R-16-A-5	.916	23.2	1.000	25.4
	14	.959	24.3	861-5	M-862-5	R-17-5	862-5	M-862-5	R-17-A-5	.935	23.7	1.039	26.4
1-1/4" 31.75mm	22	1.069	27.2	871-5	M-872-5	R-19-5	872-5	M-872-5	R-19-A-5	1.039	26.4	1.157	29.4
	24	1.081	27.5	871-5	M-872-5	R-19-5	872-5	M-872-5	R-19-A-5	1.039	26.4	1.157	29.4
	15	1.106	28.1	875-5	M-876-5	R-21-5	876-5	M-876-5	R-21-A-5	1.087	27.6	1.196	30.4
	16	1.120	28.4	875-5	M-876-5	R-21-5	876-5	M-876-5	R-21-A-5	1.087	27.6	1.196	30.4
	17	1.134	28.8	879-5	M-880-5	R-21-5	880-5	M-880-5	R-21-A-5	1.115	28.3	1.231	31.3
	18	1.152	29.3	879-5	M-880-5	R-21-5	880-5	M-880-5	R-21-A-5	1.115	28.3	1.231	31.3
	19	1.166	29.6	879-5	M-880-5	R-21-5	880-5	M-880-5	R-21-A-5	1.115	28.3	1.231	31.3
	20	1.180	30.0	879-5	M-880-5	R-21-5	880-5	M-880-5	R-21-A-5	1.115	28.3	1.231	31.3
	21	1.186	30.1	879-5	M-880-5	R-21-5	880-5	M-880-5	R-21-A-5	1.115	28.3	1.231	31.3
1-3/8" 34.92mm	22	1.194	30.3	879-5	M-880-5	R-21-5	880-5	M-880-5	R-21-A-5	1.115	28.3	1.231	31.3
	23	1.200	30.5	881-5	M-882-5	R-21-5	882-5	M-882-5	R-21-A-5	1.133	28.8	1.242	31.5
	24	1.206	30.6	881-5	M-882-5	R-21-5	882-5	M-882-5	R-21-A-5	1.133	28.8	1.242	31.5
	12	1.154	29.3	881-5	M-882-5	R-21-5	880-5	M-880-5	R-21-A-5	1.133	28.8	1.242	31.5
	14	1.209	30.7	885-5	M-882-5	R-23-5	886-5	M-882-5	R-23-A-5	1.179	29.9	1.296	32.9
1-1/2" 38.10mm	20	1.305	33.2	893-5	M-894-5	R-26-5	894-5	M-894-5	R-26-A-5	1.257	31.9	1.385	35.2
	22	1.319	33.5	895-5	M-896-5	R-26-5	896-5	M-896-5	R-26-A-5	1.285	32.6	1.417	36.0
	24	1.331	33.8	895-5	M-896-5	R-26-5	896-5	M-896-5	R-26-A-5	1.285	32.6	1.417	36.0
	17	1.384	35.1	899-5	M-900-5	R-29-5	900-5	M-900-5	R-29-A-5	1.331	33.8	1.489	37.8
	18	1.402	35.6	899-5	M-900-5	R-29-5	900-5	M-900-5	R-29-A-5	1.331	33.8	1.489	37.8
	19	1.416	36.0	899-5	M-900-5	R-29-5	900-5	M-900-5	R-29-A-5	1.331	33.8	1.489	37.8
	20	1.430	36.3	899-5	M-900-5	R-29-5	900-5	M-900-5	R-29-A-5	1.331	33.8	1.489	37.8
	21	1.436	36.5	899-5	M-900-5	R-29-5	900-5	M-900-5	R-29-A-5	1.331	33.8	1.489	37.8
22	1.444	36.7	899-5	M-900-5	R-29-5	900-5	M-900-5	R-29-A-5	1.331	33.8	1.489	37.8	
23	1.450	36.8	899-5	M-900-5	R-29-5	900-5	M-900-5	R-29-A-5	1.331	33.8	1.489	37.8	
24	1.456	37.0	899-5	M-900-5	R-29-5	900-5	M-900-5	R-29-A-5	1.331	33.8	1.489	37.8	

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## "1200" SERIES 3-ROLL TUBE EXPANDER

### Features

The 1200 Series 3-Roll Expander is the most versatile option for thick tubesheets, available in four standard reach lengths — and custom lengths up to 60" or longer on request.

Covers tube sizes 1/2" 14 gauge to 1-1/2" 20 gauge, with 1-1/2" or 2-1/4" roll sets.

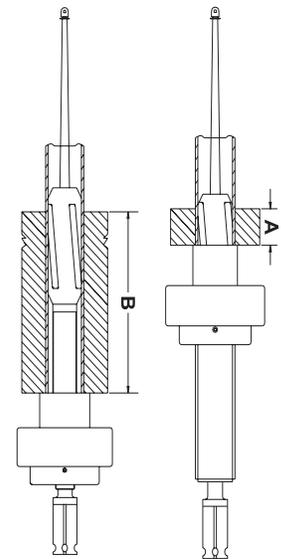
Adjustable Roll Depths		
Reach	1-1/2" Rollers	2-1/4" Rollers
STD	1-1/2" to 6"	2-1/4" to 6-3/4"
A	1-1/2" to 8"	2-1/4" to 8-3/4"
B	1-1/2" to 10"	2-1/4" to 10-3/4"
C	1-1/2" to 12"	2-1/4" to 12-3/4"

Models 1197–1256 use a 3/8" square mandrel drive. Models 1257–1300 use a 1/2" square mandrel drive.

Tube I.D. Sizes
.334" - 1.43" (8.4mm - 36.3mm)

Roller Length		Roll Depth	
		min "A"	max "B"
1-1/2" (38.1mm)	STD Reach	1-1/2" (38.1mm)	6" (152.4mm)
	A Reach	1-1/2" (38.1mm)	8" (203.2mm)
	B Reach	1-1/2" (38.1mm)	10" (253.8mm)
	C Reach	1-1/2" (38.1mm)	12" (304.6mm)
2-1/4" (57.1mm)	STD Reach	2-1/4" (57.1mm)	6-3/4" (171.4mm)
	A Reach	2-1/4" (57.1mm)	8-3/4" (221.1mm)
	B Reach	2-1/4" (57.1mm)	10-3/4" (272.8mm)
	C Reach	2-1/4" (57.1mm)	12-3/4" (323.6mm)

Tube O.D.	BWG	Tube I.D.		Expander with 1-1/2" (38.1mm) Long Rollers			Expander with 2-1/4" (57.1mm) Long Rollers			Minimum I.D. Tool Enters		Maximum Expansion of Tool	
		(in)	(mm)	Complete Tool	Mandrel	Roll Set	Complete Tool	Mandrel	Roll Set	(in)	(mm)	(in)	(mm)
1/2" 12.70mm	14	.334	8.4	1197	M-1197	R-797	-	-	-	.324	8.2	.374	9.5
	15	.356	9.0	1199	M-1199	R-1	-	-	-	.348	8.8	.398	10.1
	16	.370	9.4	1201	M-51	R-1	-	-	-	.360	9.1	.410	10.4
	17	.384	9.7	1203	M-51	R-2	-	-	-	.374	9.5	.424	10.7
	18	.402	10.2	1205	M-52	R-3	-	-	-	.392	9.9	.447	11.3
5/8" 15.88mm	20	.430	10.9	1205 S	M-53	R-3	-	-	-	.406	10.3	.461	11.7
	12	.407	10.3	1205	M-52	R-3	-	-	-	.392	9.9	.447	11.3
	13	.435	11.0	1207	M-53	R-4	-	-	-	.425	10.8	.480	12.1
	14	.459	11.6	1209	M-54	R-4	1210	M-54	R-4-A	.449	11.4	.509	12.9
	15	.481	12.2	1211	M-55	R-5	1212	M-55	R-5-A	.471	11.9	.536	13.6
	16	.495	12.5	1213	M-55	R-6	1214	M-55	R-6-A	.485	12.3	.550	13.9
	17	.509	12.9	1215	M-56	R-6	1216	M-56	R-6-A	.499	12.6	.564	14.3
	18	.527	13.3	1217	M-57	R-7	1218	M-57	R-7-A	.517	13.1	.572	14.5
	19	.541	13.7	1219	M-56	R-7	1220	M-56	R-7-A	.522	13.2	.582	14.7
	20	.555	14.1	1219 S	M-58	R-7	1220 S	M-58	R-7-A	.536	13.6	.596	15.1
3/4" 19.05mm	21	.561	14.2	1219 S	M-58	R-7	1220 S	M-58	R-7-A	.536	13.6	.596	15.1
	22	.569	14.4	1219 S	M-58	R-7	1220 S	M-58	R-7-A	.536	13.6	.596	15.1
	10	.482	12.2	1211	M-55	R-5	1212	M-55	R-5-A	.471	11.9	.536	13.6
	11	.510	12.9	1215	M-56	R-6	1216	M-56	R-6-A	.499	12.6	.564	14.3
	12	.532	13.5	1219	M-56	R-7	1220	M-56	R-7-A	.522	13.2	.582	14.7
	13	.560	14.2	1221	M-58	R-8	1222	M-58	R-8-A	.550	13.9	.615	15.6
	14	.584	14.8	1223	M-58	R-9	1224	M-58	R-9-A	.574	14.5	.639	16.2
	15	.606	15.3	1225	M-58	R-10	1226	M-58	R-10-A	.596	15.1	.661	16.7
	16	.620	15.7	1227	M-59	R-10	1228	M-59	R-10-A	.605	15.3	.685	17.4
	17	.634	16.1	1229	M-59	R-11	1230	M-59	R-11-A	.619	15.7	.699	17.7
7/8" 22.22mm	18	.652	16.5	1229	M-59	R-11	1230	M-59	R-11-A	.619	15.7	.699	17.7
	19	.666	16.9	1231	M-59	R-12	1232	M-59	R-12-A	.642	16.3	.722	18.3
	20	.680	17.2	1231	M-59	R-12	1232	M-59	R-12-A	.642	16.3	.722	18.3
	21	.686	17.4	1231	M-59	R-12	1232	M-59	R-12-A	.642	16.3	.722	18.3
	22	.694	17.6	1231	M-59	R-12	1232	M-59	R-12-A	.642	16.3	.722	18.3
	10	.607	15.4	1225	M-58	R-10	1226	M-58	R-10-A	.596	15.1	.661	16.7
	11	.635	16.1	1229	M-59	R-11	1230	M-59	R-11-A	.619	15.7	.699	17.7
	12	.657	16.6	1231	M-59	R-12	1232	M-59	R-12-A	.642	16.3	.722	18.3
	13	.685	17.4	1233	M-60	R-13	1234	M-60	R-13-A	.670	17.0	.750	19.0
	14	.709	18.0	1235	M-61	R-14	1236	M-61	R-14-A	.685	17.4	.774	19.6
7/8" 22.22mm	15	.731	18.5	1237	M-61	R-15	1238	M-61	R-15-A	.712	18.0	.801	20.3
	16	.745	18.9	1239	M-62	R-15	1240	M-62	R-15-A	.726	18.4	.815	20.7
	17	.759	19.2	1243	M-62	R-16	1244	M-62	R-16-A	.740	18.8	.829	21.0
	18	.777	19.7	1243	M-62	R-16	1244	M-62	R-16-A	.740	18.8	.829	21.0



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## "1200" SERIES 3-ROLL TUBE EXPANDER

Tube O.D.	BWG	Tube I.D.		Expander with 1-1/2" (38.1mm) Long Rollers			Expander with 2-1/4" (57.1mm) Long Rollers			Minimum I.D. Tool Enters		Maximum Expansion of Tool	
		(in)	(mm)	Complete Tool	Mandrel	Roll Set	Complete Tool	Mandrel	Roll Set	(in)	(mm)	(in)	(mm)
1" 25.40mm	8	.670	17.0	1241	M-59	R-13	1242	M-59	R-13-A	.655	16.6	.735	18.6
	9	.704	17.8	1235	M-61	R-14	1236	M-61	R-14-A	.685	17.4	.774	19.6
	10	.732	18.5	1237	M-61	R-15	1238	M-61	R-15-A	.712	18.0	.801	20.3
	11	.760	19.3	1243	M-62	R-16	1244	M-62	R-16-A	.740	18.8	.829	21.1
	12	.782	19.8	1245	M-62	R-17	1246	M-62	R-17-A	.763	19.3	.852	21.6
	13	.810	20.5	1247	M-62	R-18	1248	M-62	R-18-A	.791	20.0	.880	22.3
	14	.834	21.1	1249	M-63	R-18	1250	M-63	R-18-A	.810	20.5	.909	23.1
	15	.856	21.7	1251	M-63	R-19	1252	M-63	R-19-A	.837	21.2	.936	23.7
	16	.870	22.1	1251	M-63	R-19	1252	M-63	R-19-A	.837	21.2	.936	23.7
	17	.884	22.4	1255	M-63	R-21	1256	M-63	R-21-A	.865	21.9	.964	24.4
	18	.902	22.9	1255	M-63	R-21	1256	M-63	R-21-A	.865	21.9	.964	24.4
1-1/8" 28.58mm	8	.795	20.1	1253	M-63	R-20	1254	M-63	R-20-A	.776	19.7	.875	22.2
	9	.829	21.0	1249	M-63	R-18	1250	M-63	R-18-A	.810	20.5	.909	23.1
	10	.857	21.7	1251	M-63	R-19	1252	M-63	R-19-A	.837	21.2	.936	23.7
	11	.885	22.4	1255	M-63	R-21	1256	M-63	R-21-A	.865	21.9	.964	24.4
	12	.907	23.0	1257	M-64	R-21	1258	M-64	R-21-A	.883	22.4	.982	24.9
	13	.935	23.7	1259	M-64	R-22	1260	M-64	R-22-A	.916	23.2	1.015	25.7
	14	.959	24.3	1261	M-65	R-23	1262	M-65	R-23-A	.935	23.7	1.044	26.5
	15	.981	24.9	1263	M-65	R-24	1264	M-65	R-24-A	.962	24.4	1.071	27.2
	16	.995	25.2	1263	M-65	R-24	1264	M-65	R-24-A	.962	24.4	1.071	27.2
	17	1.010	25.6	1267	M-66	R-26	1268	M-66	R-26-A	.990	25.1	1.009	27.9
	18	1.027	26.0	1267	M-66	R-26	1268	M-66	R-26-A	.990	25.1	1.009	27.9
1-1/4" 31.75mm	8	.920	23.3	1265	M-65	R-25	1266	M-65	R-25-A	.901	22.8	1.010	25.6
	9	.954	24.2	1261	M-65	R-23	1262	M-65	R-23-A	.935	23.7	1.044	26.5
	10	.982	24.9	1263	M-65	R-24	1264	M-65	R-24-A	.962	24.4	1.071	27.2
	11	1.010	25.6	1267	M-66	R-26	1268	M-66	R-26-A	.990	25.1	1.099	27.9
	12	1.032	26.2	1269	M-66	R-27	1270	M-66	R-27-A	1.013	25.7	1.122	28.5
	13	1.060	26.9	1271	M-67	R-28	1272	M-67	R-28-A	1.039	26.4	1.150	29.2
	14	1.084	27.5	1273	M-67	R-29	1274	M-67	R-29-A	1.060	26.9	1.169	29.6
	15	1.106	28.0	1275	M-67	R-30	1276	M-67	R-30-A	1.087	27.6	1.196	30.3
	16	1.120	28.4	1275	M-67	R-30	1276	M-67	R-30-A	1.087	27.6	1.196	30.3
	17	1.134	28.8	1279	M-68	R-30	1280	M-68	R-30-A	1.115	28.3	1.224	31.0
	18	1.152	29.2	1279	M-68	R-30	1280	M-68	R-30-A	1.115	28.3	1.224	31.0
1-3/8" 34.92mm	8	1.045	26.5	1277	M-67	R-31	1278	M-67	R-31-A	1.026	26.0	1.135	28.8
	9	1.079	27.4	1273	M-67	R-29	1274	M-67	R-29-A	1.060	26.9	1.169	29.6
	10	1.107	28.1	1275	M-67	R-30	1276	M-67	R-30-A	1.087	27.6	1.196	30.3
	11	1.135	28.8	1279	M-68	R-30	1280	M-68	R-30-A	1.115	28.3	1.224	31.0
	12	1.157	29.3	1281	M-68	R-32	1282	M-68	R-32-A	1.133	28.7	1.242	31.5
	13	1.185	30.1	1283	M-69	R-33	1284	M-69	R-33-A	1.160	29.4	1.275	32.3
	14	1.209	30.7	1285	M-70	R-34	1286	M-70	R-34-A	1.179	29.9	1.294	32.8
	15	1.231	31.2	1287	M-70	R-35	1288	M-70	R-35-A	1.206	30.6	1.321	33.5
	16	1.245	31.6	1287	M-70	R-35	1288	M-70	R-35-A	1.206	30.6	1.321	33.5
	17	1.282	32.5	1293	M-70	R-37	1294	M-70	R-37-A	1.257	31.9	1.372	34.8
	18	1.310	33.2	1295	M-71	R-37	1296	M-71	R-37-A	1.285	32.6	1.400	35.5
1-1/2" 38.1mm	8	1.170	29.7	1289	M-69	R-34	1290	M-69	R-34-A	1.145	29.0	1.260	32.0
	9	1.204	30.5	1285	M-70	R-34	1286	M-70	R-34-A	1.177	29.9	1.294	32.8
	10	1.232	31.2	1287	M-70	R-35	1288	M-70	R-35-A	1.206	30.6	1.321	33.5
	11	1.260	32.0	1291	M-70	R-36	1292	M-70	R-36-A	1.235	31.3	1.350	34.2
	12	1.282	32.5	1293	M-70	R-37	1294	M-70	R-37-A	1.257	31.9	1.372	34.8
	13	1.310	33.2	1295	M-71	R-37	1296	M-71	R-37-A	1.285	32.6	1.400	35.5
	14	1.334	33.8	1295	M-71	R-37	1296	M-71	R-37-A	1.285	32.6	1.400	35.5
	15	1.356	34.4	1297	M-71	R-38	1298	M-71	R-38-A	1.331	33.8	1.446	36.7
	16	1.370	34.8	1297	M-71	R-38	1298	M-71	R-38-A	1.331	33.8	1.446	36.7
	17	1.384	35.1	1299	M-72	R-38	1300	M-72	R-38-A	1.331	33.8	1.472	37.3
	18	1.402	35.6	1299	M-72	R-38	1300	M-72	R-38-A	1.331	33.8	1.472	37.3

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# "1200" SERIES 5-ROLL TUBE EXPANDER



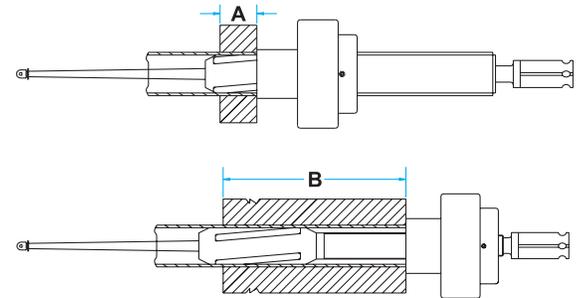
## Features

The 1200 Series 5-Roll Expander is designed for thin-wall tubes in thick tubesheets — titanium, stainless steel, Incoloy, and other exotic metals. The 5-roll design delivers more concentric, even expansion than a conventional 3-roll expander.

Covers tube sizes 3/4" 14 gauge to 1-1/2" 20 gauge, with 1-1/2" or 2-1/4" roll sets.

Tube I.D. Sizes
.584" - 1.43" (14.8mm - 36.3mm)

Adjustable Roll Depths		
Reach	1-1/2" Rollers	2-1/4" Rollers
STD	1-1/2" to 6"	2-1/4" to 6-3/4"
A	1-1/2" to 8"	2-1/4" to 8-3/4"
B	1-1/2" to 10"	2-1/4" to 10-3/4"
C	1-1/2" to 12"	2-1/4" to 12-3/4"



Models 1223-5 through 1258-5 use a 3/8" square mandrel drive. Models 1263-5 through 1300-5 use a 1/2" square mandrel drive.

Tube O.D. (in) (mm)	BWG	Tube I.D.		Expander with 1-1/2" (38.1mm) Long Rollers			Expander with 2-1/4" (57.1mm) Long Rollers			Minimum I.D. Tool Enters		Maximum Expansion of Tool	
		(in)	(mm)	Complete Tool	Mandrel	Roll Set	Complete Tool	Mandrel	Roll Set	(in)	(mm)	(in)	(mm)
3/4" 19.05mm	14	.584	14.8	1223-5	M-1224-5	R-6-5	1224-5	M-1224-5	R-6-A-5	.574	14.5	.639	16.2
	15	.606	15.3	1225-5	M-1226-5	R-7-5	1226-5	M-1226-5	R-7-A-5	.596	15.1	.661	16.7
	16	.620	15.7	1227-5	M-63	R-7-5	1228-5	M-63	R-7-A-5	.605	15.3	.685	17.4
	17	.634	16.1	1229-5	M-1230-5	R-7-5	1230-5	M-1230-5	R-7-A-5	.619	15.7	.699	17.7
	18	.652	16.5	1229-5	M-1230-5	R-7-5	1230-5	M-1230-5	R-7-A-5	.619	15.7	.699	17.7
	19	.666	16.9	1231-5	M-63	R-9-5	1232-5	M-63	R-9-A-5	.642	16.3	.722	18.3
	20	.680	17.2	1231-5	M-63	R-9-5	1232-5	M-63	R-9-A-5	.642	16.3	.722	18.3
	21	.686	17.4	1231-5	M-63	R-9-5	1232-5	M-63	R-9-A-5	.642	16.3	.722	18.3
1" 25.40mm	14	.834	21.1	1249-5	M-1250-5	R-12-5	1250-5	M-1250-5	R-12-A-5	.810	20.5	.909	23.1
	15	.856	21.7	1251-5	M-1251-5	R-13-5	1252-5	M-1251-5	R-13-A-5	.837	21.2	.936	23.7
	16	.870	22.1	1251-5	M-1251-5	R-13-5	1252-5	M-1251-5	R-13-A-5	.837	21.2	.936	23.7
	17	.884	22.4	1255-5	M-1256-5	R-13-5	1256-5	M-1256-5	R-13-A-5	.865	21.9	.964	24.4
	18	.902	22.9	1255-5	M-1256-5	R-13-5	1256-5	M-1256-5	R-13-A-5	.865	21.9	.964	24.4
	19	.916	23.2	1255-5	M-1256-5	R-13-5	1256-5	M-1256-5	R-13-A-5	.865	21.9	.964	24.4
	20	.930	23.6	1255-5	M-1256-5	R-13-5	1256-5	M-1256-5	R-13-A-5	.865	21.9	.964	24.4
	21	.936	23.8	1257-5	M-71-3/8	R-15-5	1258-5	M-71-3/8	R-15-A-5	.833	22.4	.982	24.9
1-1/8" 28.58mm	12	.907	23.0	1257-5	M-71-3/8	R-15-5	1258-5	M-71-3/8	R-15-A-5	.883	22.4	.982	24.9
	15	.981	24.9	1263-5	M-1263-5	R-18-5	-	-	-	.962	24.4	1.071	27.2
	16	.995	25.2	1263-5	M-1263-5	R-18-5	-	-	-	.962	24.4	1.071	27.2
1-1/2" 38.10mm	17	1.384	35.1	1299-5	M-1299-5	R-29-5	M-1300-5	M-1299-5	R-29-A-5	1.331	33.8	1.472	37.3
	18	1.402	35.6	1299-5	M-1299-5	R-29-5	M-1300-5	M-1299-5	R-29-A-5	1.331	33.8	1.472	37.3
	19	1.416	36.0	1299-5	M-1299-5	R-29-5	M-1300-5	M-1299-5	R-29-A-5	1.331	33.8	1.472	37.3
	20	1.430	36.3	1299-5	M-1299-5	R-29-5	M-1300-5	M-1299-5	R-29-A-5	1.331	33.8	1.472	37.3

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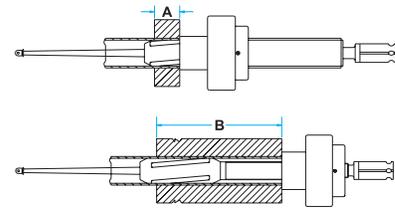
# "8012" SERIES TUBE EXPANDER



## Features

The 8012 Series is built for large-diameter tubes and thick tubesheets — ideal for air heaters, boilers, and refinery tubes, with tubesheet capacity up to 8".

Covers tube sizes 1-3/4" 8 gauge to 5" 16 gauge.



Adjustable Roll Depths		
Reach	1-1/2" to 6"	2-1/4" to 6-3/4"
STD	1-1/2" to 8"	2-1/4" to 8-3/4"
6"	1-1/2" to 10"	2-1/4" to 10-3/4"
8"	1-1/2" to 12"	2-1/4" to 12-3/4"

TUBE I.D. SIZES:	
1.420" - 4.870" (36.1mm - 123.7 mm)	

ROLLER LENGTH:		ROLL DEPTH:	
		MINIMUM	MAXIMUM
2-1/4" (57.1mm)	STD. REACH	1/2" (12.7mm)	4" (101.4mm)
	- 6" REACH	1/2" (12.7mm)	6" (152.4mm)
	- 8" REACH	1/2" (12.7mm)	8" (203.2mm)

\*For Mandrels in 6" & 8" reach - ADD suffix 6 or 8 to Mandrel Model No.

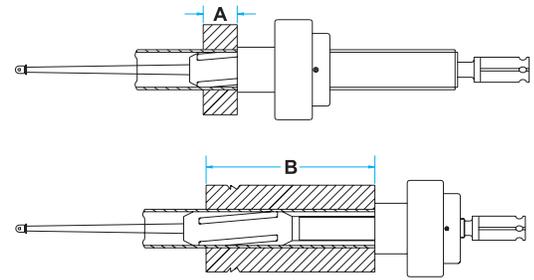
Tube O.D.	BWG	Tube I.D.		Expander with 2 1/4" (57.15 mm) Long Rollers			Minimum I.D.Tool Enters		Maximum Expansion of Tool	
		(in)	(mm)	Complete Tool	Mandrel	Roll Set	(in)	(mm)	(in)	(mm)
1 3/4" (44.45mm)	8	1.420	(36.1)	8012-1.3/4-8	M-90	R-33-A	1.368	(34.7)	1.550	(39.3)
	10	1.482	(37.6)	8012-1.3/4-10	M-90	R-37-A	1.420	(36.0)	1.607	(40.8)
	11	1.510	(38.3)	8012-1.3/4-11	M-90	R-42	1.454	(36.9)	1.635	(41.5)
	12	1.532	(38.9)	8012-1.3/4-12	M-90	R-44	1.482	(37.6)	1.657	(42.0)
	13	1.560	(39.6)	8012-1.3/4-13	M-90	R-46	1.510	(38.3)	1.685	(42.7)
	14	1.584	(40.2)	8012-1.3/4-14	M-90	R-48	1.532	(38.9)	1.709	(43.4)
2" (50.80mm)	7	1.640	(41.6)	8012-2-7	M-91	R-46	1.570	(39.8)	1.770	(45.0)
	8	1.670	(42.4)	8012-2-8	M-91	R-48	1.595	(40.5)	1.795	(45.6)
	10	1.732	(43.9)	8012-2-10	M-91	R-50	1.640	(41.6)	1.857	(47.1)
	11	1.760	(44.7)	8012-2-11	M-91	R-52	1.670	(42.4)	1.885	(47.8)
	12	1.782	(45.2)	8012-2-12	M-91	R-54	1.704	(43.2)	1.907	(48.4)
	13	1.810	(45.9)	8012-2-13-18	M-91	R-56	1.732	(43.9)	1.956	(49.6)
	14	1.834	(46.5)	8012-2-13-18	M-91	R-56	1.732	(43.9)	1.956	(49.6)
	15	1.856	(47.1)	8012-2-13-18	M-91	R-56	1.732	(43.9)	1.956	(49.6)
	16	1.870	(47.4)	8012-2-13-18	M-91	R-56	1.732	(43.9)	1.956	(49.6)
	17	1.884	(47.9)	8012-2-13-18	M-91	R-56	1.732	(43.9)	1.956	(49.6)
2 1/4" (57.15mm)	10	1.982	(50.3)	8012-2.1/4-10	M-92	R-56	1.890	(48.0)	2.107	(53.5)
	11	2.010	(51.0)	8012-2.1/4-11	M-92	R-58	1.920	(48.7)	2.135	(54.2)
	12	2.032	(51.6)	8012-2.1/4-12	M-92	R-60	1.954	(49.6)	2.157	(54.7)
	13	2.060	(52.3)	8012-2.1/4-13-16	M-92	R-62	1.982	(50.3)	2.185	(55.4)
	14	2.084	(52.9)	8012-2.1/4-13-16	M-92	R-62	1.982	(50.3)	2.185	(55.4)
	15	2.106	(53.4)	8012-2.1/4-13-16	M-92	R-62	1.982	(50.3)	2.185	(55.4)
2 1/2" (63.50mm)	16	2.120	(53.8)	8012-2.1/4-13-16	M-92	R-62	1.982	(50.3)	2.185	(55.4)
	7-8	2.146	(54.5)	8012-2.1/2-7-8	M-92	R-45-A	2.050	(52.0)	2.335	(59.3)
	9	2.204	(56.0)	8012-2.1/2-9	M-93	R-46-A	2.106	(53.5)	2.380	(60.4)
	10	2.232	(56.6)	8012-2.1/2-10-12	M-93	R-64	2.140	(54.3)	2.407	(61.1)
	11	2.260	(57.4)	8012-2.1/2-10-12	M-93	R-64	2.140	(54.3)	2.407	(61.1)
	12	2.282	(57.9)	8012-2.1/2-10-12	M-93	R-64	2.140	(54.3)	2.407	(61.1)
	13	2.310	(58.6)	8012-2.1/2-13-18	M-94	R-64	2.232	(56.6)	2.450	(62.2)
	14	2.334	(59.2)	8012-2.1/2-13-18	M-94	R-64	2.232	(56.6)	2.450	(62.2)
	15	2.356	(59.8)	8012-2.1/2-13-18	M-94	R-64	2.232	(56.6)	2.450	(62.2)
	16	2.370	(60.1)	8012-2.1/2-13-18	M-94	R-64	2.232	(56.6)	2.450	(62.2)
2 3/4" (69.85mm)	17	2.384	(60.6)	8012-2.1/2-13-18	M-94	R-64	2.232	(56.6)	2.450	(62.2)
	18	2.402	(61.0)	8012-2.1/2-13-18	M-94	R-64	2.232	(56.6)	2.450	(62.2)
	10	2.482	(63.0)	8012-2.3/4-10-16	M-96	R-66	2.390	(60.7)	2.702	(68.6)
	11	2.510	(63.7)	8012-2.3/4-10-16	M-96	R-66	2.390	(60.7)	2.702	(68.6)
	12	2.532	(64.3)	8012-2.3/4-10-16	M-96	R-66	2.390	(60.7)	2.702	(68.6)
	13	2.560	(65.0)	8012-2.3/4-10-16	M-96	R-66	2.390	(60.7)	2.702	(68.6)
2 3/4" (69.85mm)	14	2.584	(65.6)	8012-2.3/4-10-16	M-96	R-66	2.390	(60.7)	2.702	(68.6)
	15	2.606	(66.1)	8012-2.3/4-10-16	M-96	R-66	2.390	(60.7)	2.702	(68.6)
	16	2.620	(66.5)	8012-2.3/4-10-16	M-96	R-66	2.390	(60.7)	2.702	(68.6)

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# "8012" SERIES TUBE EXPANDER



Note: Model 8012-1.3/4-8 to 8012-2.1/2-13-18 expanders come with 3/4" square mandrel drives. Model 8012-2.3/4-10-16 to 8012-5-10-18 expanders come with 1" square mandrel drives.

Tube O.D.	BWG	Tube I.D.		Expander with 2 1/4" (57.15 mm) Long Rollers			Minimum I.D. Tool Enters		Maximum Expansion of Tool	
		inch	mm	Complete Tool	Mandrel	Roll Set	inch	mm	inch	mm
3" (76.20mm)	8	2.670	(67.8)	8012-3-8-9	M-97	R-67	2.560	(65.0)	2.829	(71.8)
	9	2.704	(68.6)	8012-3-8-9	M-97	R-67	2.560	(65.0)	2.829	(71.8)
	10	2.732	(69.3)	8012-3-10-18	M-96	R-67	2.640	(67.0)	2.952	(74.9)
	11	2.760	(70.1)	8012-3-10-18	M-96	R-67	2.640	(67.0)	2.952	(74.9)
	12	2.782	(70.6)	8012-3-10-18	M-96	R-67	2.640	(67.0)	2.952	(74.9)
	13	2.810	(71.3)	8012-3-10-18	M-96	R-67	2.640	(67.0)	2.952	(74.9)
	14	2.834	(71.9)	8012-3-10-18	M-96	R-67	2.640	(67.0)	2.952	(74.9)
	15	2.856	(72.5)	8012-3-10-18	M-96	R-67	2.640	(67.0)	2.952	(74.9)
	16	2.870	(72.8)	8012-3-10-18	M-96	R-67	2.640	(67.0)	2.952	(74.9)
3 1/2" (88.9mm)	13	3.311	(84.1)	8012-3.1/2-10-18	M-99	R-70	3.190	(81.0)	3.464	(88.0)
	14	3.334	(84.7)	8012-3.1/2-10-18	M-99	R-70	3.190	(81.0)	3.464	(88.0)
	15	3.354	(85.2)	8012-3.1/2-10-18	M-99	R-70	3.190	(81.0)	3.464	(88.0)
	16	3.370	(85.6)	8012-3.1/2-10-18	M-99	R-70	3.190	(81.0)	3.464	(88.0)
	17	3.385	(86.0)	8012-3.1/2-10-18	M-99	R-70	3.190	(81.0)	3.464	(88.0)
4" (101.6mm)	3	3.480	(88.4)	8012-4-3-4	M-100	R-71	3.425	(87.0)	3.780	(96.0)
	4	3.527	(89.6)	8012-4-3-4	M-100	R-71	3.425	(87.0)	3.780	(96.0)
	8	3.670	(93.2)	8012-4-8-9	M-101	R-71	3.582	(91.0)	3.940	(100.0)
	9	3.704	(94.1)	8012-4-8-9	M-101	R-71	3.582	(91.0)	3.940	(100.0)
	10	3.732	(94.8)	8012-4-10-18	M-101	R-72	3.661	(93.0)	3.960	(100.6)
	11	3.760	(95.5)	8012-4-10-18	M-101	R-72	3.661	(93.0)	3.960	(100.6)
	12	3.783	(96.1)	8012-4-10-18	M-101	R-72	3.661	(93.0)	3.960	(100.6)
	13	3.811	(96.8)	8012-4-10-18	M-101	R-72	3.661	(93.0)	3.960	(100.6)
4 1/2" (114.3mm)	14	3.834	(97.4)	8012-4-10-18	M-101	R-72	3.661	(93.0)	3.960	(100.6)
	16	3.870	(98.3)	8012-4-10-18	M-101	R-72	3.661	(93.0)	3.960	(100.6)
	3	3.980	(101.1)	8012-4.1/2-3-4	M-102	R-73	3.940	(100.0)	4.291	(109.0)
	4	4.030	(102.3)	8012-4.1/2-3-4	M-102	R-73	3.940	(100.0)	4.291	(109.0)
	8	4.170	(105.9)	8012-4.1/2-8-9	M-102	R-74	4.020	(102.0)	4.370	(111.0)
	9	4.204	(106.8)	8012-4.1/2-8-9	M-102	R-74	4.020	(102.0)	4.370	(111.0)
5" (127.0mm)	10	4.232	(107.5)	8012-4.1/2-10-18	M-103	R-74	4.100	(104.0)	4.450	(113.0)
	12	4.283	(108.8)	8012-4.1/2-10-18	M-103	R-74	4.100	(104.0)	4.450	(113.0)
	16	4.370	(111.0)	8012-4.1/2-10-18	M-103	R-74	4.100	(104.0)	4.450	(113.0)
	3	4.480	(113.8)	8012-5-3-4	M-105	R-76	4.410	(112.0)	4.763	(121.0)
	4	4.527	(115.0)	8012-5-3-4	M-105	R-76	4.410	(112.0)	4.763	(121.0)
	8	4.670	(118.6)	8012-5-8-9	M-105	R-77	4.566	(116.0)	4.921	(125.0)
	9	4.704	(119.5)	8012-5-8-9	M-105	R-77	4.566	(116.0)	4.921	(125.0)
	10	4.732	(120.2)	8012-5-10-18	M-105	R-78	4.606	(117.0)	4.960	(126.0)
	11	4.763	(121.0)	8012-5-10-18	M-105	R-78	4.606	(117.0)	4.960	(126.0)
	12	4.783	(121.5)	8012-5-10-18	M-105	R-78	4.606	(117.0)	4.960	(126.0)
	14	4.834	(122.8)	8012-5-10-18	M-105	R-78	4.606	(117.0)	4.960	(126.0)
	16	4.870	(123.7)	8012-5-10-18	M-105	R-78	4.606	(117.0)	4.960	(126.0)

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## TUBE END FACERS

Tube O.D. (in.)	(mm)	Tube Thickness BWG	Complete Tool	Spare Tool Bits
3/8	(9.53)	16-22	TEF-375	TEF-375-BIT
1/2	(12.70)	15-20	TEF-500	TEF-500-BIT
5/8	(15.87)	14-18	TEF-625	TEF-625-BIT
3/4	(19.05)	10-18	TEF-750	TEF-750-BIT
7/8	(22.22)	13-18	TEF-875	TEF-875-BIT
1	(25.40)	11-18	TEF-1000	TEF-1000-BIT
1 1/8	(28.57)	11-18	TEF-1125	TEF-1125-BIT
1 1/4	(31.75)	11-18	TEF-1250	TEF-1250-BIT
1 3/8	(34.92)	11-18	TEF-1375	TEF-1375-BIT
1 1/2	(38.10)	11-18	TEF-1500	TEF-1500-BIT
1 5/8	(41.27)	11-18	TEF-1625	TEF-1625-BIT
1 3/4	(44.45)	11-18	TEF-1750	TEF-1750-BIT
1 7/8	(47.62)	11-18	TEF-1875	TEF-1875-BIT
2	(50.80)	11-18	TEF-2000	TEF-2000-BIT
2 1/4	(57.15)	11-18	TEF-2250	TEF-2250-BIT
2 1/2	(63.50)	11-18	TEF-2500	TEF-2500-BIT



Different Pilots for each I.D.

### Features

- Ideal for quick facing of tube ends with the bits easily replaced
- One Tool for each tube OD with pilots provided for the different gauges
- Tool bits coated with Titanium Nitride to give 3 times the life of uncoated HSS bits

*\*Specify gauge on 3/8" End Facers*

*NOTE: Tube End Facers include pilots, except 3/8"*

## TUBE GUIDES

### Features

Tube Guides are designed to protect the tube ends from damage while guiding them thru the tube sheet and baffles. They are lightweight and fit easily into the tube end with a replaceable nylon brush which also cleans the inside of the tube prior to expanding.

- Available for 1/2" thru 3" OD tubes and all Gauges



#### When Ordering Specify:

- Tube O.D.
- Tube Gauge
- Quantity
- Delivery Date



#### When Ordering Specify:

- Tube O.D.
- Brush Material Type
- Quantity
- Delivery Date

## TUBE END FLARING

### Features



- Used to flare tube ends after expanding
- Available for tube sizes from 1/4" - 5" OD

#### When Ordering Specify:

- Tube O.D.
- Shank Type - 01 or 06
- Shank
- Quantity
- Delivery Date

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## TUBE ROLLING SYSTEMS PNEUMATIC ROLL MOTORS



### Model 720 Series



**Features**

Torque controlled expansion

Available in the following sizes:

- 550 RPM - Torque 2 to 75 in-lbs - 1/4" Sq Drive  
Recommended Max Tube Size - 1/2"
- 1,800 RPM - Torque 2 to 27 in-lbs - 1/4" Sq Drive  
Recommended Max Tube Size - 3/8"
- 2,500 RPM - Torque 2 to 75 in-lbs - 1/4" Sq Drive  
Recommended Max Tube Size - 1/4"

### Model 850 Push/Pull Series



**Features**

Torque controlled expansion

Available in the following sizes:

- 1,250 RPM - Torque 9.6 to 126 in-lbs - 3/8" Sq Drive  
Recommended Tube Size - 3/4"
- 600 RPM - Torque 14.4 to 230 in-lbs - 3/8" Sq Drive  
Recommended Tube Size - 1"

### Model 1050 Series



**Features**

Torque controlled expansion

Available in the following sizes:

- 400 RPM - Torque 3.3 to 26.4 ft-lbs - 1/2" Sq Drive  
Recommended Tube Size - 1-1/4"

### Model 1550 Series



**Features**

Torque controlled expansion

Available in the following sizes:

- 900 RPM - Torque 4.7 to 30.7 ft-lbs - 1/2" Sq Drive  
Recommended Tube Size - 1-1/2"
- 250 RPM - Torque 14.3 to 109.9 ft-lbs - 1/2" Sq Drive  
Recommended Tube Size - 2-1/2"

### Right Angle Drive Roll Motor



**Features**

Designed for expanding boiler tubes in steam, mud drums, fire tube & related equipment.

- 190 RPM - Torque 70 to 140 ft-lbs - 5/8" Sq Drive  
Recommended Tube Size - 2-1/2"
- 90 RPM - Torque 150 to 305 ft-lbs - 3/4" Sq Drive  
Recommended Tube Size - 4"

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## ELECTRIC DRIVE ROLL MOTORS

All our Electric Drive Roll Motors are built by "Milwaukee" to provide maximum life and double insulated for safety.



**Model MPB-0**



**Model MPB-1**



**Model MPB-2**



**Model MPB-3**



Supply Voltage Single Phase	Drive Model	Speed I / II	No Load R.P.M.	Expansion Range				Drive Wt. (lbs)
				Steel Tube O.D.		Copper Tube O.D.		
				(in.)	(mm)	(in.)	(mm)	
230 V	MPB-0N	I	2200	1/4" - 3/8"	6 - 10	1/4" - 1/2"	6 - 12	4.5
	MPB-1N	I	1000	3/8" - 5/8"	10 - 16	3/8" - 3/4"	13 - 20	5.5
		II	1900	5/16" - 3/8"	8 - 13	5/16" - 1/2"	8 - 13	
	MPG-2N	I	480	5/8" - 1 3/4"	16 - 45	5/8" - 2"	16 - 50	16.5
		II	1080	5/8" - 1 1/4"	16 - 32	5/8" - 1 1/2"	16 - 38	
	MPG-3N	I	130	1" - 3"	25 - 76	1" - 4"	25 - 102	19
II		430	1" - 2"	25 - 50	1" - 3"	25 - 76		
110 V	MPB-0L	I	2200	1/4" - 3/8"	6 - 10	1/4" - 1/2"	6 - 12	4.5
	MPB-1L	I	1000	3/8" - 5/8"	10 - 16	3/8" - 3/4"	13 - 20	5.5
		II	1900	5/16" - 3/8"	8 - 13	5/16" - 1/2"	8 - 13	
	MPG-2L	I	480	5/8" - 1 3/4"	16 - 45	5/8" - 2"	16 - 50	16.5
		II	1080	5/8" - 1 1/4"	16 - 32	5/8" - 1 1/2"	16 - 38	
	MPG-3L	I	130	1" - 3"	25 - 76	1" - 4"	25 - 102	19
II		430	1" - 2"	25 - 50	1" - 3"	25 - 76		

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## TESTING EQUIPMENT

### VLD 2500 VACUUM LEAK DETECTOR

SALES &  
RENTALS  
AVAILABLE!



The **VLD-2500 Vacuum Leak Detector** sets the industry standard for locating leaking tubes — fast, reliable, and built to last.

**OPERATION IS STRAIGHTFORWARD:** (1) Seal one end of the suspect tube with a rubber plug or the included T-Handle nozzle, (2) Insert the VLD-2500 into the tube, (3) Pull the trigger. Any loss of vacuum indicates a leak. A built-in filter prevents debris from clogging the tool during use.

- Detects leaks in tubes from **3/16" to 3" OD** in seconds
- Optional pads extend range to 6" OD
- Runs on standard plant air at 70–100 psi
- Flexible nozzles seat easily onto tubes
- Kit includes detector gun, two nozzles, T-handle, rubber plugs, and carrying case

#### Spare nozzles work with Gun and T Handle

Spare Nozzles/Disks		
For Tube ID's	Size	
3/16" - 1/8"	1	Nozzle
1 1/8" - 2"	2	
2 - 3"	3	



#### Complete VLD-2500 kit includes:

- Vacuum Leak Detector with carrying case
- Nozzle for 3/16"–1-1/8" ID tubes (other sizes available)
- 12" extension tube
- T-Handle
- Rubber tube plugs (qty 4) — 5/8" 13–24 gauge
- Rubber tube plugs (qty 4) — 3/4" 14–24 gauge
- Rubber tube plugs (qty 4) — 1" 11–24 gauge

VLD-2500 VACUUM LEAK DETECTOR ACCESSORIES		
<p><b>Rubber Plugs</b> used to plug opposite end of tube being tested. See Chart Sec. 5, page TP-81.</p>	<p><b>VLD Nozzles</b> - works with VLD and T-Handle for tube sizes:</p> <ul style="list-style-type: none"> <li>• Nozzle for 3/16" to 1-1/8" ID</li> <li>• Nozzle for 1-1/8" to 2" ID</li> <li>• Nozzle for 2" to 3" ID</li> </ul>	<p><b>T-Handle</b> - for use with Nozzles to plug tube end being tested.</p>
		

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# TLD-2500 USA TUBE LEAK DETECTOR PRESSURE GUNS



## Features

Insert one gun into the front of the tube and the other into the opposite end to pressurize — if pressure holds, the tube is good; if it drops, the tube is leaking.

- Tests 7–8 tubes per minute
- Covers tube IDs from .310” to 1.2”
- Runs on standard plant air at 70–100 psi
- Silent operation with ergonomic design
- Kit includes pressure & plugging gun, nozzle set, and 3 tube seals of your choice



**Set comprises 2 seals and 2 washers. Additional tube seals purchased separately must be used with proper compression tube / nozzle.**

## TLD-2500 USA TUBE LEAK DETECTOR SPECIFICATIONS & PART NO'S

Part Number	TUBE I.D. RANGE				Seal O.D.		Washer O.D.		Compression Tube/Nozzle
	Begin		End		in	mm	in	mm	
	in	mm	inch	mm					
TLD-C-SK-0300	0.300	(7.62)	0.405	(10.287)	0.295	(7.493)	0.287	(7.290)	1
TLD-C-SK-0375	0.375	(9.525)	0.475	(12.065)	0.354	(8.992)	0.346	(8.788)	
TLD-C-SK-0480	0.480	(12.192)	0.540	(13.716)	0.457	(11.608)	0.449	(11.405)	
TLD-C-SK-0445	0.445	(11.303)	0.515	(13.081)	0.425	(10.795)	0.417	(10.592)	2
TLD-C-SK-0500	0.500	(12.7)	0.570	(14.478)	0.480	(12.192)	0.472	(11.989)	
TLD-C-SK-0563	0.563	(14.3)	0.630	(16.002)	0.543	(13.792)	0.535	(13.589)	
TLD-C-SK-0626	0.626	(15.9)	0.685	(17.399)	0.606	(15.392)	0.598	(15.189)	
TLD-C-SK-0670	0.670	(17.018)	0.735	(18.669)	0.649	(16.485)	0.642	(16.307)	
TLD-C-SK-0728	0.728	(18.491)	0.795	(20.193)	0.708	(17.983)	0.701	(17.805)	
TLD-C-SK-0795	0.795	(20.193)	0.845	(21.463)	0.775	(19.695)	0.768	(19.507)	3
TLD-C-SK-0815	0.815	(20.701)	0.866	(21.996)	0.791	(20.091)	0.783	(19.888)	
TLD-C-SK-0690	0.690	(17.526)	0.755	(19.177)	0.669	(16.993)	0.611	(16.789)	
TLD-C-SK-0752	0.752	(19.101)	0.810	(20.574)	0.732	(18.593)	0.724	(18.390)	
TLD-C-SK-0874	0.874	(22.200)	0.935	(23.749)	0.854	(21.692)	0.846	(21.488)	
TLD-C-SK-0922	0.922	(23.419)	0.980	(24.872)	0.901	(22.885)	0.894	(22.708)	
TLD-C-SK-0937	0.937	(23.8)	1.001	(25.425)	0.917	(23.292)	0.909	(23.089)	
TLD-C-SK-1010	1.010	(25.654)	1.070	(27.178)	0.992	(25.197)	0.984	(24.994)	
TLD-C-SK-1065	1.065	(27.051)	1.120	(28.448)	1.055	(26.797)	1.047	(26.594)	
TLD-C-SK-1100	1.100	(27.94)	1.160	(29.464)	1.082	(27.483)	1.075	(27.305)	
TLD-C-SK-1160	1.160	(29.464)	1.206	(30.632)	1.149	(29.185)	1.142	(29.007)	

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# RHINO JR. HYDRAULIC SPEAR TUBE PULLER CAPTAIN AMERICA PULLER — HTPS 1000

### Features

A fully self-contained, single-operator tube puller built for years of trouble-free service.

- 10 tons of pulling force — removes stubs or entire tubes fast
- Handles 1/4" to 1" OD tubes of all gauges in tubesheets up to 4" thick
- Includes pulling gun and hydraulic pump — runs on 110VAC
- Optional spring balancer for weightless gun support

**RENTALS AVAILABLE!**



### Consumables include the following:



Tube O.D.	BWG	Spears	Spearlock	Nose Piece	Nose Piece Holder	Spearlock Removal Tool	Releasing Tool	Sq. Drive Socket
1/4"	20-21	HTPS-0250-20/21	HTPS-SL-0250	HTPS-NP-0250	HTPS-NPH-0250	HTPS-SRT	HTPS-RT	HTPS-DS
	22-24	HTPS-0250-22/24						
	28-29	HTPS-0250-28/29						
3/8"	20-21	HTPS-0375-20/21	HTPS-SL-0375	HTPS-NP-0375	HTPS-NPH-0375			
	22-23	HTPS-0375-22/24						
1/2"	16-17	HTPS-0500-16/17	HTPS-SL-0500	HTPS-NP-0500	HTPS-NPH-0500			
	18-19	HTPS-0500-18/19						
	20-21	HTPS-0500-20/21						
5/8"	14-15	HTPS-0625-14/15	HTPS-SL-0625	HTPS-NP-0625	HTPS-NPH-0625			
	16-17	HTPS-0625-16/17						
	18-19	HTPS-0625-18/19						
	20-21	HTPS-0625-20/21						
3/4"	12-13	HTPS-0750-12/13	HTPS-SL-0750	HTPS-NP-0750	HTPS-NPH-0750			
	14-15	HTPS-0750-14/15						
	16-17	HTPS-0750-16/17						
	18-19	HTPS-0750-18/19						
1"	20-21	HTPS-0750-20/21	HTPS-SL-1000	HTPS-NP-1000	HTPS-NPH-1000			
	12-13	HTPS-1000-12/13						
	14-15	HTPS-1000-14/15						
	16-17	HTPS-1000-16/17						
	18-19	HTPS-1000-18/19						

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# RHINO JR. PINE JENNY HOLLOW CORE RAM PULLER

## Features

A proven, high-capacity puller built for heavy-duty tube removal.

- 30 tons of pulling force — removes stubs or entire tubes
- 6" pull per stroke; up to 12" without resetting using the Double Horseshoe Adaptor
- Handles tubes 1/2" to 3" OD of all gauges in tubesheets up to 8" thick
- Simple to operate, foolproof construction



### PINE JENNY HOLLOW CORE RAM, STUB TUGGER ACCESSORIES

**SPECIAL NOTE:** These items will REPLACE & INTERCHANGE with the "Stub Tugger" OR "Pine Jenny" Pullers from other companies

## PINE JENNY STYLE TUBE PULLER SPEARS

## Features

- Compatible with other manufacturers same style (Pine Jenny, Hollow Core Ram, etc...)
- Manufactured to enhance performance & increase longevity
- Available for 1/2" thru 3" tubes of all gauges



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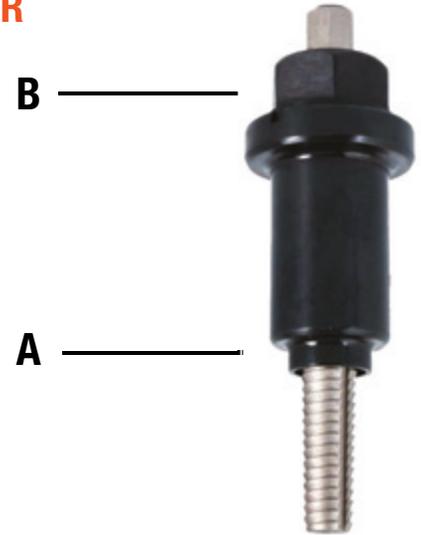
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## RHINO JR. MANUAL TUBE PULLER

### Features

- Used for small, light duty pulling jobs
- Using a wrench screw, screw the spear "A" into the tube then begin pulling by turning nut "B". After tube is free from the tube sheet, remove by unscrewing the spear "A" while holding the tube with channellocks or a pipe wrench.
- Available for 1/4" thru 1 3/8" tubes of all Gauges.



<b>ORDER PART NO.'S BY THE FOLLOWING: EXAMPLE IS FOR 1/2" 16 GAUGE TUBE</b>
For complete tool: MTP-(Tube O.D.)=(Tube Gauge) = MTP-1/2-16
For spare spears: MTPS-(Tube O.D.)=(Tube Gauge) = MTPS-1/2-16

## ONE REV INTERNAL TUBE CUTTER & REPLACEMENT BITS

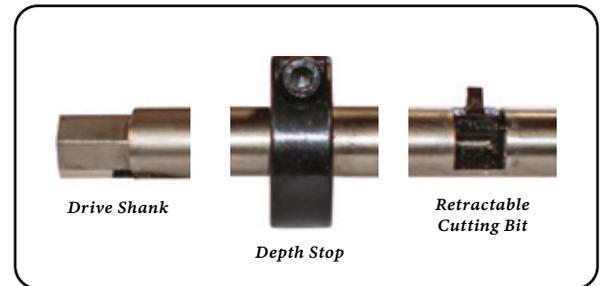


**One Revolution Internal Tube Cutters** are used for the following applications:

1. The "Piercing" of tubes prior to inserting tube plugs
2. The "Complete Cutting" of ferrous or copper tubes on one end prior to tube removal - can include nonferrous light wall tubes. Used with a wrench, simply adjust the depth collar stop so the cutter bit is past the tube sheet, then rotate in a clockwise direction. After the bit starts cutting, make 1/4 revolution to puncture or one full revolution to cut

### PRODUCT FEATURES:

- Available for 1/2" thru 2-1/2" tubes of all gauges
- Standard reach of 10", longer reaches available
- Bits are made from high quality tool steel and hardened to provide the maximum cutting edge retention
- Available for 1/2" thru 2-1/2" tube cutters
- Directly interchangeable with Airetool Bits



Order product number by the following:

For Complete Cutter Tool: OR-T-(Tube O.D.)-(Tube Gauge) = OR-T-1/2"-16  
 For Cutter Bits: OR-C-(Tube O.D.)-BIT = OR-C-1/2"-BIT

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## PUSH CUTTER INTERNAL TUBE CUTTER AND REPLACEMENTS



### Features

The **Push Type Cutter** is used to quickly cut tubes in large numbers, they are especially suited for toughest tube cutting applications such as Stainless Steel, Inconel, Monel, Titanium, etc.

The unit can be used with any drill or one of our driving units with the cutting speed regulated for your particular tube material to maximize the cutters life.

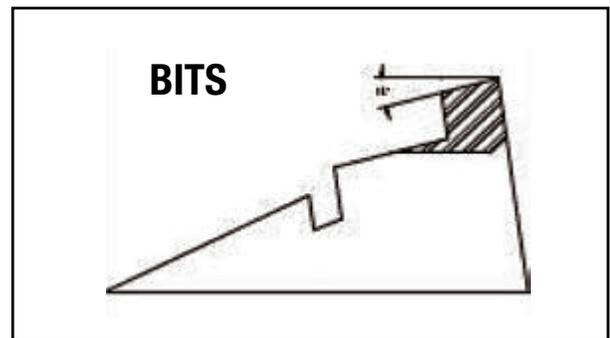
To operate, adjust the collar depth, insert it into the tube, apply power, press inward and the tube will be cut in a few seconds.

- Available for 5/8" thru 1-1/2" tubes of all Gauges
- Bits are easily removed
- Adjustable reaches available: "STD" = 4",  
"A" = 6", "B" = 8", "C" = 10"

Our bits are made from high quality tool steel, hardened, and Titanium Nitrate coated to provide the maximum cutting edge retention.

*Longer reach available upon request.*

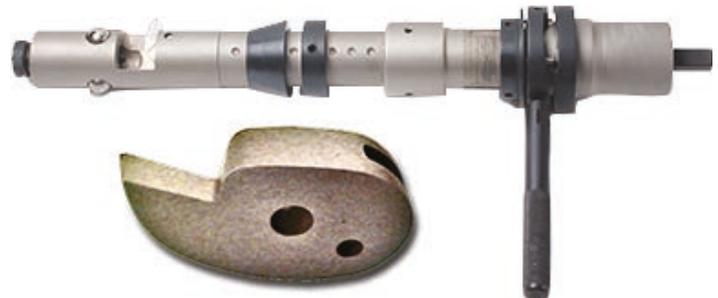
Tube O.D. (in.)	Tube Gauge (BWG)	Tube Cutter Model No. (Std. Reach)	Spare Cutting Bit Model No.
5/8	14 - 22	ATP-625	ATP-625-BIT
3/4	14 - 22	ATP-750	ATP-750-BIT
7/8	14 - 22	ATP-875	ATP-875-BIT
1	12 - 22	ATP-1000	ATP-1000-BIT
1-1/4	12 - 22	ATP-1250	ATP-1250-BIT
1-1/2	12 - 22	ATP-1500	ATP-1500-BIT



## BOILER TUBE CUTTER & REPLACEMENT BITS

### Features

- PR-68 tube cutters are ideal for cutting thick walled boiler tubes of 2" O.D. and higher
- The unit can be operated with any drill
- For Boiler tube sizes 2" thru 4-1/2" all Gauges
- Available in standard reach of 4", Additionally reaches in increments of 4" are available up to 16"



Tube I.D. Range		Part Number (Reach = 4" 8" 12" or 16") BTC-T-04-1.181-1.378	Tool Model Number	Spare Bit Part Number	Spare Bit Model Number	Max. Tube O.D.		Body Diameter		Drive Square Male
in	mm					in	mm	in	mm	
1.181 - 1.378	(30 - 35)	BTC-T-(REACH)-1.181-1.378	0682901	BTC-C-BIT-1	1682901	1.693	-43	1.142	-29	1/2"
1.378 - 1.575	(35 - 40)	BTC-T-(REACH)-1.378-1.575	0683301			1.890	(48)	1.299	(33)	
1.575 - 1.969	(40 - 50)	BTC-T-(REACH)-1.575-1.969	0683801			2.126	(58)	1.496	(38)	
1.969 - 2.362	(50 - 60)	BTC-T-(REACH)-1.969-2.362	0684801	BTC-C-BIT-2	1684801	2.677	(68)	1.890	(48)	3/4"
2.165 - 2.559	(55 - 65)	BTC-T-(REACH)-2.165-2.559	0685301			2.874	(73)	2.087	(53)	
2.559 - 2.953	(65 - 75)	BTC-T-(REACH)-2.559-2.953	0686301			3.268	(83)	2.480	(63)	
2.953 - 3.346	(75 - 85)	BTC-T-(REACH)-2.953-3.346	0687301	BTC-C-BIT-3	1687301	3.661	(93)	2.874	(73)	
3.346 - 3.740	(85 - 95)	BTC-T-(REACH)-3.346-3.740	0688301			4.055	(103)	3.268	(83)	
3.740 - 4.134	(95 - 105)	BTC-T-(REACH)-3.740-4.134	0689301			4.449	(113)	3.661	(93)	

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## COLLAPSING/KNOCKOUT TOOLS CHIPPING HAMMER

### Features

**Chipping Hammer** (15 lb. Gun) for use with Tube Drifts/Collapsing Tools using the 01 or 06 Shank Style.



## JUMBO RIVET BUSTER

### Features

**Jumbo Rivet Buster** (30 lb. Gun) for use with Tube Drifts/ Knockout Punches using the 15 Shank Style.



## COLLAPSING TOOL



ORDER PART NO.'S BY THE FOLLOWING: EXAMPLE IS FOR 3/4" TUBE WITH 06 SHANK		
CT-	(Tube O.D.)	(Shank)
CT-	3/4	06

### Features

Collapsing Tools are designed to collapse tubes for removal from the tube sheet using a Chipping Hammer. Manufactured using the highest quality metal and heat treatment available.

- Available in 01 or 06 type shanks
- Stocked sizes from 3/8" thru 2" tube OD's
- Use Reamers for reducing the tube thickness when collapsing heavy gauge tubes.

#### When Ordering Specify:

- Tube O.D.
- Shank Style — 01 or 06
- Quantity
- Delivery Date

## TUBE DRIFTS / KNOCKOUT PUNCHES



ORDER PART NO.'S BY THE FOLLOWING: EXAMPLE IS FOR 1" / 14 GAUGE TUBE w/15 SHANK			
TD-	(Tube O.D.)	(Tube Gauge)	(Shank)
TD-	1-	14-	15

### Features

Tube Drifts/Knockout Punches are designed to knockout tubes from tube sheets using either a Chipping Hammer or Jumbo Rivet Buster. Our Drifts are manufactured using the highest quality metal and heat treatment available, PERIOD!

- Available in 01 or 06 or 15 Shank tool holders
- Stocked sizes from 1/2" thru 2-1/2" tube OD's and all gauges.

#### When Ordering Specify:

- Tube O.D.
- Shank Style — 01, 06 or 15
- Gauge
- Quantity
- Delivery Date

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**THE BEST SOLUTION FOR PERMANENTLY SEALING LEAKING TUBES IN HEAT EXCHANGERS, BOILERS, AND CONDENSERS!**



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EASY HYDRAULIC INSTALLATION • ASME PCC-2 COMPLIANT • SR MODEL RATED UP TO 7000 PSIG • NO TUBE SHEET DAMAGE OR WELDING REQUIRED

## CLEANING EQUIPMENT

### FSC SERIES PORTABLE ELECTRIC TUBE CLEANERS

Electric Tube Cleaners are compact, powerful, and easy to maneuver — designed to clean straight and curved tubes in heat exchangers, condensers, and boilers. A brush or boring bit attaches to a flexible shaft driven by the motor. Water feeds through the shaft to flush deposits as you work.

#### Features

- Hands-free foot switch control
- Water flow regulated as needed to flush deposits
- Stainless steel cover for harsh environments
- Shafts, bits, and brushes replaced quickly and easily
- Large wheels for easy transport



#### Available Models

**FSC-4** — Most commonly used for chiller tubes up to 5/8" ID (Trane, Carrier, York, and others). 1/2 HP @ 890 RPM.

**FSC-5** — Same as FSC-4 with a more powerful 3/4 HP motor @ 890 RPM for tougher deposits. Includes dual-direction foot switch.

**FSC-4X** — Heavy-duty system for tube IDs 1" and larger. 1 HP @ 1780 RPM.

**FSC-4X-2A** — Maximum duty for the toughest jobs on tubes 1" and larger. 2 HP @ 1780 RPM.



#### ALL CLEANERS CAN BE ORDERED INDIVIDUALLY OR AS A KIT

Each Kit is provided with the following:

- 1 ea - Tube Cleaner
- 1 ea - Foot Control Switch
- 2 ea - Flexible Shafts
- 20 ea - Nylon Brushes of your size choice
- 2 ea - Buffing Tools of your size choice
- 1 ea - Flexible Shaft repair kit

Tube I.D. (in.)	(mm)	Tube Cleaner	Motor Power hp	Motor Speed RPM	Weight (lbs)	Dimension		
						High	Wide	Deep
1/4-1	(6.4-25.4)	FSC-4	1/2	890	62	38"(975mm)	21" (535mm)	18" (457mm)
1/4-1	(6.4-25.4)	FSC-5	3/4	890	66	38"(975mm)	21" (535mm)	18" (457mm)
1 & Up	(25.4 & Up)	FSC-4X	1	1780	70	38"(975mm)	21" (535mm)	18" (457mm)
1 & Up	(25.4 & Up)	FSC-4X-2A	2	1780	84	40"(1015mm)	22" (560mm)	19" (482mm)

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## CLEANING EQUIPMENT ACCESSORIES

Our flexible shafts are built from the highest quality materials available — because they take the most strain in the system, longevity starts here. When ordering, specify tube ID and required length.



**Flexible Shafts  
with Stainless Steel  
Inner Core**

Tube I.D. Range		Flexible Shaft	Flexible Shaft Length		Shaft Core O.D.		Shaft Casing O.D.		Tool End Thread
(in.)	(mm)		(ft.)	(mtrs.)	(in.)	(mm)	(in.)	(mm)	
1/4-3/8	(6.4-9.5)	FS-1	12	(3.7)	1/8	(3.2)	1/4	(6.4)	8 - 32 F
			25	(7.6)					
7/16 - 1/2	(11.1-12.7)	FS-2	12	(3.7)	1/4	(6.4)	3/8	(9.5)	1/4 - 28 F
			17	(5.2)					
			25	(7.6)					
			35	(10.7)					
9/16 - 1	(14.3-25.4)	FS-3	45	(13.7)	5/16	(7.9)	1/2	(12.7)	1/4 - 28 F
			12	(3.7)					
			17	(5.2)					
			25	(7.6)					
			35	(10.7)					
			45	(13.7)					
			60	(18.3)					
			75	(22.9)					

- Tube sizes 1/4" & 3/8" have 8-32 thread female tooling connectors
- Tube sizes 7/16" thru 1" have 1/4"-28 thread female tooling connectors
- Tube Sizes 1" & larger have 1/4"-28 thread female tooling connectors

## BRUSHES

USED WITH EITHER THE FLEX-SHAFT CLEANERS OR THE CG 625/1250



### Nylon Brushes — "N"

Used for removing soft deposits in any tube material, especially useful for final 'finishing' of tubes.



### Spin Grit — "SN"

Used for removing soft and light scale deposits in any tube material. The Nylon Brushes are impregnated with a Silicon Abrasive Grit to clean and polish.



### Stainless Steel Brushes — "SS"

Used for removing soft and light scale deposits in carbon steel, stainless steel, monel, titanium, etc.



### Brass Brushes — "B"

Used for removing soft and light scale deposits in copper, brass, and their alloyed tubes.

### Flue - Carbon Steel & Nylon Brushes

Carbon Steel is recommended for removing soft and light scale deposits in ferrous tubes and Nylon for final polishing. Flue Brushes 4" & Larger sized in increments.



**SPECIAL NOTE: Brushes larger than 1" are provided in 1/4" increments up to 8" OD.**

### SPIN GRIT SIZES

Tube I.D.		Brush Size
(in.)	(mm)	
.250-.375	(6.35-9.525)	0500
.375-.500	(9.525-12.7)	0625
.500-.625	(12.7-15.875)	0750
.625-.812	(15.875-20.624)	1000
.812-1.000	(20.624-25.4)	1125

### NYLON, BRASS, SS SIZES

Tube I.D.		Brush Size
(in.)	(mm)	
.281-.342	(7.137-8.687)	0250
.343-.405	(8.712-10.287)	0312
.406-.436	(10.312-11.074)	0375
.437-.499	(11.099-12.674)	0437
.500-.561	(12.7-14.249)	0500
.562-.624	(14.274-15.849)	0562
.625-.686	(15.875-17.424)	0625
.687-.749	(17.449-19.024)	0687
.750-.811	(19.05-20.599)	0750
.812-.874	(20.624-22.199)	0812
.875-.936	(22.225-23.774)	0875
.937-.999	(23.799-25.374)	0937
1.000-1.061	(25.4-26.949)	1.000

### NOTE:

1" & smaller tube brush sizes should be equal to or 1/16" smaller than Tube I.D.

ORDER PART NO.'S BY THE FOLLOWING: EXAMPLE IS FOR .625 TUBE I.D., NYLON BRUSH

BRU-	(Bristle Type)	(Brush Size)
BRU-	N	0625

Nylon = N    Stainless Steel = SS    Brass = B    Spin Grit = SN

### When ordering, specify:

- Tube ID
- Quantity
- Use <= by 1/16" Increments
- Delivery Date
- Brush type

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## CG625/1250 PNEUMATIC TUBE CLEANING GUN

***Cleans plugged tubes or piping safer, faster and cheaper than any other method.***

The **CG625/1250 Tube Cleaning Gun** turns a special brush or drill coupled to shaft while supplying a stream of water to flush out deposits and increase drilli water flow is adjustable as needed.

Moderately plugged tubes can be cleaned with our Metal or Nylon brushes. tubes are first drilled out using either an Arrow or Carbide tip drill then follow to remove the remaining deposits and “Polish” the tube. The hollow shaft extension tubes can be provided in 2’ length increments up to 8’, extensions are added to provide the total length needed. Adding extensions is fast and easy.

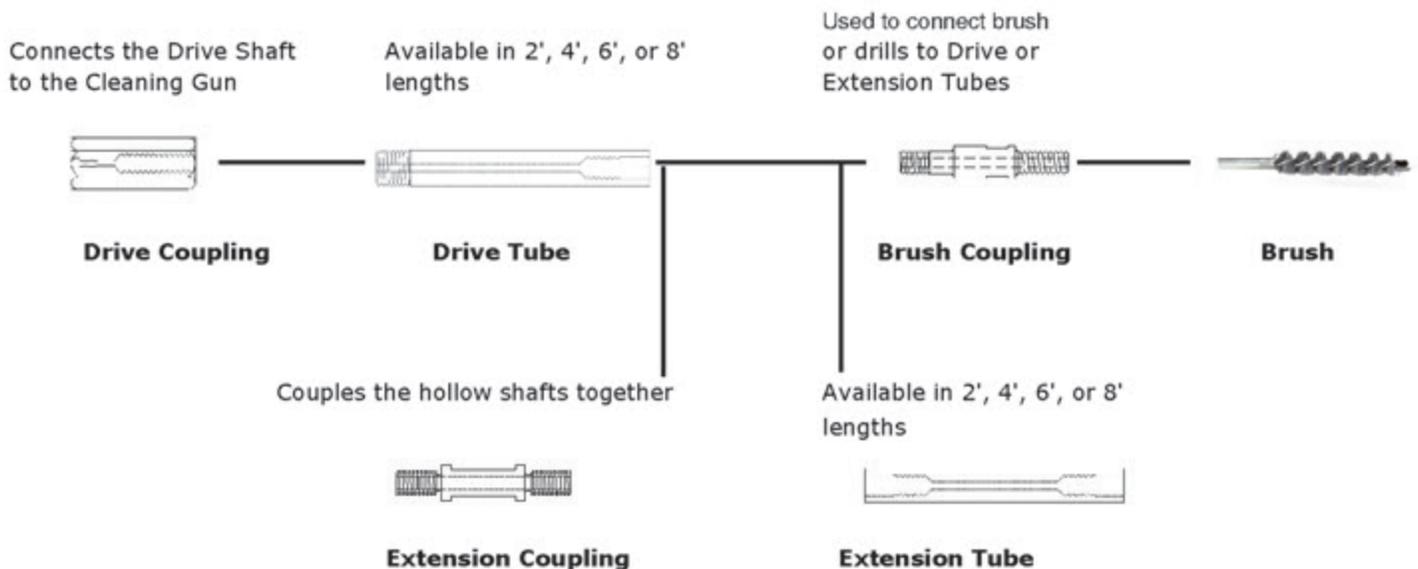


**Each Kit is provided with the following:**

- 1 ea — Cleaning Gun
- 1 ea — Storage Case
- 2 ea — 10’ hoses for air and water connections
- 1 ea — Drive Coupling
- 1 ea — Arrow drill & Brush of your size choice

**When ordering, specify:**

- Tube Size
- Length of Tubing
- Brush or Drill type
- Quantity
- Delivery Date



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## CLEANING GUN TOOLS

Used with either the Flex-Shaft cleaner or the CG 625/1250

- Best suited to remove medium buildup in tubes
- Drills available in 1/16" increments — starting at 1/4" through 1 1/2" Tube I.D.

### ARROW POINT ALLOY META



See *CG625/1250 Accessories chart, page HE-68*

**When ordering, specify:**

- Tube I.D.
- Quantity
- Type of Drill
- Delivery Date

- Best suited to remove Heavy buildup in plugged tubes
- Drills available in 1/16" increments — starting at 1/4" through 1 1/2" Tube I.D.

### CARBIDE TWIST DRILL



See *CG625/1250 Accessories chart, page HE-68*

**When ordering, specify:**

- Tube I.D.
- Quantity
- Type of Drill
- Delivery Date

## BUFFING TOOLS

Used with either the Flex-Shaft cleaners or the CG 625/1250

**Buffing Tools** are used for final polishing or removal of light and soft deposits from ferrous and non-ferrous tubes that have been previously cleaned. Used in straight or very large radius tubes in a clockwise direction only.

Tube I.D.		Buffing Tool	With Drill Tip	Replacement Blades	Adjusting Jig
(in.)	(mm)				
5/16 - 3/8	(7.9 - 9.5)	PTC-203	PTC-203DT	PTC-207	PTC-209
3/8 - 1/2	(9.5 - 12.7)	PTC-204	PTC-204DT	PTC-207	PTC-209
1/2 - 9/16	(12.7 - 14.3)	PTC-205	PTC-205DT	PTC-208A	-
5/8 - 1	(15.9 - 25.4)	PTC-206	PTC-206DT	PTC-208B	-

### Buffing Tool



## TRIANGULAR WIRE SCRAPERS

Used with either the Flex-Shaft cleaners or CG625/1250



Adjustable scrapers for 1" thru 3" ID tubes. Used to remove tough and hard scale deposits.

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## ACCESSORIES FOR CG625/1250

ACCESSORIES FOR CG625/1250							ARROW POINT	CARBIDE	CARBIDE TWIST	
TUBE O.D. (BWG)	TUBE I.D.	DRIVING COUPLING	DRIVING TUBE	TUBE COUPLING	EXTENSION TUBE	BRUSH COUPLING	AP-DRILLS	CB-DRILLS	CTD DRILLS	BRUSHES
1/4" (23-24)	3/8" (14)	.212-.227	DC-187	DT-187	N/A	N/A	N/A	N/A	CTD-187	
3/8" (14-15)		.228-.243	DC-187	DT-187	N/A	N/A	N/A	N/A	CTD-218	
3/8" (15-16)	1/2" (10)	.244-.259	DC-218	DT-218	TC-218	ET-218	N/A	AP-234	CB-234	CTD-234
3/8" (17)	1/2" (11)	.260-.275	DC-218	DT-218	TC-218	ET-218	N/A	AP-250	CB-250	CTD-250
3/8" (18)	1/2" (11)	.275-.290	DC-218	DT-218	TC-218	ET-218	N/A	AP-265	CB-265	CTD-265
3/8" (19)		.291-.301	DC-250	DT-250	TC-250	ET-250	N/A	AP-281	CB-281	CTD-281
3/8" (20-22)	1/2" (13)	.306-.321	DC-250	DT-250	TC-250	ET-250	N/A	AP-296	CB-296	CTD-296
1/2" (14)	5/8" (9)	.322-.337	DC-250	DT-250	TC-250	ET-250	N/A	AP-312	CB-312	CTD-312
1/2" (14)		.338-.353	DC-250	DT-250	TC-250	ET-250	N/A	AP-328	CB-328	CTD-328
1/2" (15-17)	5/8" (10-11)	.359-.389	DC-312	DT-312	TC-312	ET-312	BC-312	AP-343	CB-343	CTD-343
1/2" (18)	5/8" (12)	.390-.420	DC-312	DT-312	TC-312	ET-312	BC-312	AP-375	CB-375	CTD-375
5/8" (13)		.421-.452	DC-375	DT-375	TC-375	ET-375	BC-375	AP-406	CB-407	CTD-406
5/8" (14-15)	3/4" (9-10)	.453-.483	DC-375	DT-375	TC-375	ET-375	BC-375	AP-437	CB-437	CTD-437
5/8" (16-17)	3/4" (11)	.484-.514	DC-437	DT-437	TC-437	ET-437	BC-437	AP-468	CB-468	CTD-437
5/8" (18)	3/4" (12)	.515-.545	DC-437	DT-437	TC-437	ET-437	BC-437	AP-500	CB-500	CTD-500
3/4" (13)		.546-.577	DC-437	DT-437	TC-437	ET-437	BC-437	AP-531	CB-531	CTD-531
3/4" (14-15)		.578-.608	DC-437	DT-437	TC-437	ET-437	BC-437	AP-562	CB-562	CTD-562
3/4" (14-15)		.578-.608	DC-500	DT-500	TC-500	ET-500	BC-500	AP-562	CB-562	CTD-562
3/4" (16-17)	7/8" (11)	.609-.639	DC-500	DT-500	TC-500	ET-500	BC-500	AP-593	CB-593	CTD-593
3/4" (18)	7/8" (12)	.640-.675	DC-500	DT-500	TC-500	ET-500	BC-500	AP-625	CB-625	CTD-625
7/8" (13)		.676-.706	DC-500	DT-500	TC-500	ET-500	BC-500	AP-656	CB-656	CTD-656
7/8" (14-15)	1" (9)	.707-.737	DC-500	DT-500	TC-500	ET-500	BC-500	AP-687	CB-687	CTD-687
7/8" (16-17)	1" (10-11)	.738-.769	DC-562	DT-562	TC-562	ET-562	BC-562	AP-718	CB-718	CTD-718
7/8" (18)	1" (12)	.770-.800	DC-562	DT-562	TC-562	ET-562	BC-562	AP-750	CB-750	CTD-750
1" (13)	1 1/4" (5)	.801-.831	DC-562	DT-562	TC-562	ET-562	BC-562	AP-781	CB-781	CTD-781
1" (14-15)	1 1/4" (6)	.832-.862	DC-625	DT-625	TC-625	ET-625	BC-625	AP-812	CB-812	CTD-812
1" (16-17)		.863-.894	DC-625	DT-625	TC-625	ET-625	BC-625	AP-843	CB-843	CTD-843
1" (18)	1 1/4" (7-8)	.895-.925	DC-625	DT-625	TC-625	ET-625	BC-625	AP-875	CB-875	CTD-875
1 1/2" (2)		.926-.956	DC-625	DT-625	TC-625	ET-625	BC-625	AP-906	CB-906	CTD-906
1 1/4" (9-10)		.957-.987	DC-625	DT-625	TC-625	ET-625	BC-625	AP-937	CB-937	CTD-937
1 1/4" (11)	1 1/2" (3)	.988-1.024	DC-625	DT-625	TC-625	ET-625	BC-625	AP-968	CB-968	CTD-968
1 1/4" (12)	1 1/2" (4)	1.025-1.055	DC-625	DT-625	TC-625	ET-625	BC-625	AP-1000	CB-1000	CTD-1000
1 1/4" (13)	1 1/2" (5)	1.025-1.086	DC-750	DT-750	TC-750	ET-750	BC-750	AP-1031	CB-1031	CTD-1031
1 1/4" (14-15)	1 1/2" (6)	1.087-1.117	DC-750	DT-750	TC-750	ET-750	BC-750	AP-1062	CB-1062	CTD-1062
1 1/4" (16-17)	1 1/2" (7)	1.118-.1149	DC-750	DT-750	TC-750	ET-750	BC-750	AP-1093	CB-1093	CTD-1093
1 1/4" (18)	1 1/2" (8)	1.150-1.180	DC-750	DT-750	TC-750	ET-750	BC-750	AP-1125	CB-1125	CTD-1125
1 1/2" (9)	1 3/4" (2)	1.181-1.211	DC-750	DT-750	TC-750	ET-750	BC-750	AP-1156	CB-1156	CTD-1156
1 1/2" (10)	1 3/4" (3)	1.212-1.242	DC-750	DT-750	TC-750	ET-750	BC-750	AP-1187	CB-1187	CTD-1187
1 1/2" (11)		1.243-1.280	DC-750	DT-750	TC-750	ET-750	BC-750	AP-1218	CB-1218	CTD-1218
1 1/2" (12)	1 3/4" (4)	1.281-1.311	DC-750	DT-750	TC-750	ET-750	BC-750	AP-1250	CB-1250	CTD-1250
1 1/2" (13-14)	1 3/4" (5)	1.312-1.342	DC-750	DT-750	TC-750	ET-750	BC-750	AP-1281	CB-1281	CTD-1281
1 1/2" (15-16)	1 3/4" (6)	1.343-1.374	DC-750	DT-750	TC-750	ET-750	BC-750	AP-1312	CB-1312	CTD-1312
1 1/2" (17-18)	1 3/4" (7)	1.375-1.405	DC-750	DT-750	TC-750	ET-750	BC-750	AP-1343	CB-1343	CTD-1343
1 3/4" (8)	2" (1)	1.406-1.436	DC-750	DT-750	TC-750	ET-750	BC-750	AP-1375	CB-1375	CTD-1375
1 3/4" (9)	2" (2)	1.437-1.467	DC-750	DT-750	TC-750	ET-750	BC-750	AP-1406	CB-1406	CTD-1406
1 3/4" (10)	2" (3)	1.468-1.499	DC-750	DT-750	TC-750	ET-750	BC-750	AP-1437	CB-1437	CTD-1437
1 3/4" (11)	2" (4)	1.500-1.530	DC-750	DT-750	TC-750	ET-750	BC-750	AP-1468	CB-1468	CTD-1468
1 3/4" (12)		1.531-1.561	DC-750	DT-750	TC-750	ET-750	BC-750	AP-1500		CTD-1500
1 3/4" (13)	2" (5)	1.562-1.592	DC-1000	DT-1000	TC-1000	ET-1000	BC-1000	AP-1531		
1 3/4" (14-15)	2" (6)	1.562-1.592		DT-1000	TC-1000	ET-1000	BC-1000	AP-1562		
1 3/4" (16-17)	2" (7)	1.625-1.655		DT-1000	TC-1000	ET-1000	BC-1000	AP-1593		
1 3/4" (18-19)	2" (8)	1.656-1.686		DT-1000	TC-1000	ET-1000	BC-1000	AP-1625		
1 3/4" (20-21)	2" (9)	1.687-1.717		DT-1000	TC-1000	ET-1000	BC-1000	AP-1656		
2" (10)		1.718-1.749		DT-1000	TC-1000	ET-1000	BC-1000	AP-1687		
2" (11)	2 1/4" (3)	1.750-1.780		DT-1000	TC-1000	ET-1000	BC-1000	AP-1718		
2" (12)	2 1/4" (4)	1.781-1.811		DT-1000	TC-1000	ET-1000	BC-1000	AP-1750		
2" (13-14)	2 1/4" (5)	1.812-1.842		DT-1000	TC-1000	ET-1000	BC-1000	AP-1781		
2" (15-16)	2 1/4" (6)	1.843-1.874		DT-1000	TC-1000	ET-1000	BC-1000	AP-1812		
2" (17-18)	2 1/4" (7)	1.875-1.905		DT-1000	TC-1000	ET-1000	BC-1000	AP-1843		
2" (19-20)	2 1/4" (8)	1.906-1.936		DT-1000	TC-1000	ET-1000	BC-1000	AP-1875		
2" (21-22)	2 1/4" (9)	1.937-1.967		DT-1000	TC-1000	ET-1000	BC-1000	AP-1906		

SEE BRUSH SECTION HT-65

Note: Larger sizes available, consult factory

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**(PATENT NO. 9,546,889)**

**EZ Lock Blind Rack®**



**EZ Lock Blind Flange Rack®**



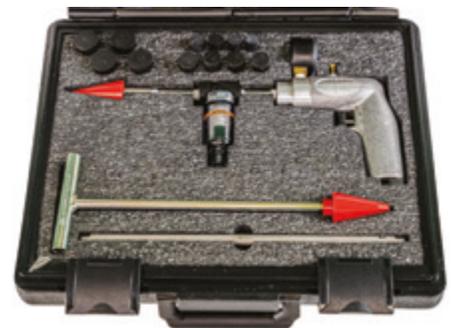
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# *THE SAFER, FASTER & SMARTER CHOICE!*



# **SNAP IT™**

**JR & SR**  
**ENGINEERED TUBE PLUGS**

Meets ASME PCC-2 2018 standards  
For use in heat exchanger, boiler and condenser tubes.



## TUBE PLUGS

*“Plugs from the Tube Plug Pros”*

We offer an extensive range of tube plugs, including our premium **Snap It® Engineered Tube Plugs** designed for superior performance with pressure ratings of up to 7,000 psid and through-the-tube plugging capabilities. Additionally, our metal tapered plugs are available in over 20 stocked metals. Explore our selection of cork, wood, fiber, rubber tapered, and expandable rubber plugs in stock, or let us custom manufacture plugs to match your material and size requirements precisely.

<b>Snap It Jr.</b>		<b>TP-70</b>	<b>Shoulder / Header</b>		<b>TP-80</b>
<b>Snap It Sr.</b>		<b>TP-73</b>	<b>EZ Torque® Gasket</b>		<b>TP-81</b>
<b>Metal Tapered</b>		<b>TP-76</b>	<b>Low &amp; High Pressure Expandable Rubber</b>		<b>TP-82</b>
<b>Two-Piece</b>		<b>TP-77</b>	<b>Threaded Tapered</b>		<b>TP-83</b>
<b>Non-Metal Tapered</b>		<b>TP-78</b>	<b>Zinc Anode</b>		<b>TP-83</b>
<b>Cork</b>		<b>TP-78</b>			
<b>Rubber Tapered</b>		<b>TP-79</b>	<b>Boiler &amp; Condenser Tube Size Charts</b>		<b>TP-84</b>

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ENGINEERED TUBE PLUGS

## The Fastest, Safest, Most Cost-Effective Way to Plug Tubes

*“Consistent, Controlled Installation” & “Through-The-Tube Plugging”*

Brush the tube end, insert the plug, and snap it in place — the entire procedure takes less than one minute per tube. Rated at 1,000 psid holding pressure. When installed properly, these plugs remove all the guess work related to installation.

***No welding. No tube sheet damage. No leaks. No worry.***



**Environmentally Superior**  
Due to **POSITIVE SEALING\***  
with Superior Design!



SAFETY	TIME & COST SAVINGS
<ul style="list-style-type: none"> <li>• Blowout pressures exceeding 15,000 PSID (plug size dependent)</li> <li>• No welding - eliminates sparks &amp; open flames</li> <li>• Plug design minimizes projectile risk during removal</li> <li>• Leak free helium seal to <math>1 \times 10^{-9}</math> c/sec</li> </ul>	<ul style="list-style-type: none"> <li>• No need to remove head cover for through-the-tube plugging</li> <li>• Less than a minute installation time results in 80% labor cost savings while reducing downtime</li> <li>• Eliminates tube sheet and ligament damage from welding and over-driving</li> <li>• Significantly reduces reloading times when plugging tubular reactors</li> </ul>

- < 1 MIN**  
per tube installation
- up to 1,000 PSID**  
rated holding pressure
- > 15,000 PSID**  
blowout pressure
- 80%+**  
labor cost savings

RECOMMENDED INSTALLATION STEPS			
<i>Pierce tube with USAI's One-Rev Cutter</i>	<i>Brush tube ID to remove scale, pitting &amp; ovality</i>	<i>Snap plug into place</i>	<b>Done!</b>

### ADDITIONAL CAPABILITIES

- Ideal for Fin-Fan® headers, heat exchangers, boilers, condensers, and tube reactors
- Each plug fits multiple tube sizes — available in numerous materials
- Near & far-end plugging capabilities
- All tooling fully compatible with competitor systems

Fin-Fan® is a registered trademark of Hudson Products Corporation

View our video online.



**WARNING:**  
Never stand in front of an installed plug under pressure. Plugs ejected under pressure can cause serious bodily injury.

## SNAP IT® JR continued

Plug #	Plug Range - Tube ID IN. (mm)	Pin Length IN. (mm)	Brush Kit	Positioner	Pull Rod	Channel Head Pull Rod
JR - 471 - "<>"	0.472 - 0.515 (11.99 - 13.08)	1.63 (41.4)	JRA - 471 - "[ ]"	PP-471	I	CHPRA - "{ }" - I
JR - 491 - "<>"	0.492 - 0.540 (12.50 - 13.72)	1.67 (42.4)	JRA - 491 - "[ ]"	PP-491		
JR - 512 - "<>"	0.513 - 0.562 (13.03 - 14.27)	1.59 (40.3)	JRA - 512 - "[ ]"	PP-512		
JR - 524 - "<>"	0.525 - 0.585 (13.34 - 14.86)	1.28 (32.5)	JRA - 524 - "[ ]"	PP-524		
JR - 555 - "<>"	0.556 - 0.616 (14.12 - 15.65)	1.40 (35.6)	JRA - 555 - "[ ]"	PP-555		
JR - 584 - "<>"	0.585 - 0.649 (14.86 - 16.48)	1.32 (35.5)	JRA - 584 - "[ ]"	PP-584	II	CHPRA - "{ }" - II
JR - 621 - "<>"	0.622 - 0.689 (15.80 - 17.50)	1.57 (39.9)	JRA - 621 - "[ ]"	PP-621		
JR - 649 - "<>"	0.650 - 0.713 (16.51 - 18.11)	1.32 (35.5)	JRA - 649 - "[ ]"	PP-649		
JR - 670 - "<>"	0.671 - 0.740 (17.04 - 18.80)	1.66 (42.2)	JRA - 670 - "[ ]"	PP-670		
JR - 712 - "<>"	0.713 - 0.777 (18.11 - 19.74)	1.32 (35.5)	JRA - 712 - "[ ]"	PP-712		
JR - 735 - "<>"	0.736 - 0.810 (18.69 - 20.57)	1.68 (42.7)	JRA - 735 - "[ ]"	PP-735		
JR - 774 - "<>"	0.775 - 0.838 (19.69 - 21.29)	1.32 (35.5)	JRA - 774 - "[ ]"	PP-774	III	CHPRA - "{ }" - III
JR - 804 - "<>"	0.805 - 0.890 (20.45 - 22.61)	1.7 (43.2)	JRA - 804 - "[ ]"	PP-804		
JR - 837 - "<>"	0.838 - 0.902 (21.29 - 22.91)	1.32 (35.5)	JRA - 837 - "[ ]"	PP-837		
JR - 853 - "<>"	0.854 - 0.949 (21.69 - 24.10)	1.72 (43.7)	JRA - 853 - "[ ]"	PP-853		
JR - 899 - "<>"	0.900 - 0.963 (22.86 - 24.46)	1.32 (35.5)	JRA - 899 - "[ ]"	PP-899		
JR - 919 - "<>"	0.920 - 1.019 (23.37 - 25.88)	1.76 (44.7)	JRA - 919 - "[ ]"	PP-919		
JR - 962 - "<>"	0.963 - 1.027 (24.46 - 26.09)	1.32 (35.5)	JRA - 962 - "[ ]"	PP-962		
JR - 979 - "<>"	0.980 - 1.079 (24.89 - 27.41)	1.82 (46.2)	JRA - 979 - "[ ]"	PP-979		
JR - 1024 - "<>"	1.025 - 1.088 (26.04 - 27.64)	1.32 (35.5)	JRA - 1024 - "[ ]"	PP-1024		
JR - 1054 - "<>"	1.055 - 1.156 (26.80 - 29.31)	1.90 (48.3)	JRA - 1054 - "[ ]"	PP-1054		
JR - 1087 - "<>"	1.088 - 1.152 (27.65 - 29.26)	1.32 (35.5)	JRA - 1087 - "[ ]"	PP-1087		
JR - 1103 - "<>"	1.104 - 1.203 (28.04 - 30.56)	1.90 (48.3)	JRA - 1103 - "[ ]"	PP-1103		
JR - 1149 - "<>"	1.150 - 1.213 (29.21 - 30.81)	1.32 (35.5)	JRA - 1149 - "[ ]"	PP-1149		
JR - 1171 - "<>"	1.172 - 1.270 (29.77 - 32.26)	2.00 (50.8)	JRA - 1171 - "[ ]"	PP-1171		
JR - 1212 - "<>"	1.213 - 1.336 (30.81 - 33.93)	2.00 (50.8)	JRA - 1212 - "[ ]"	PP-1212		

"<>"

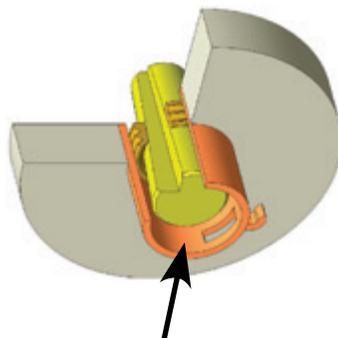
Substitute the suffix "<>" with the following material code: **C** - carbon steel, **S** - 316 stainless steel, **B** - brass, **Y** - Cr/Moly, **M** - monel, **K** - 90/10 CuNi, **J** - 70/30 CuNi. Other materials available.

"[ ]"

For brass, copper, or copper-nickel tubes add the suffix - **LD** to the Brush Kit Tube Preparation Brushes

"{ }"

Channel Head Pull Rod Assemblies are available in 2', 4', or 6' lengths. Insert the appropriate # for the length required.



Vent tube using our One Rev tool (see page HE-58)

### WHEN ORDERING, SPECIFY:

- Tube ID or OD and bwg/wall thickness
- Material
- Maximum temperature and pressure
- The type of tube or tube sheet joint (rolled, welded, etc.)
- # of Brush Kits required
- If Pull Rod, Channel Head Pull Rod or Plug Positioner is needed
- Quantity
- Delivery Date

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## SNAP IT® JR PLUG ROLLED TUBE SIZING CHART

	TUBE GAUGE		TUBE O.D. (in.)					
	BWG	WALL THICKNESS	5/8	3/4	7/8	1	1-1/4	1-1/2
ROLLED I.D.	8	-	-	-	.578	.703	.953	1.203
NEAR END	8	-	-	-	555- "<>"	670- "<>"	919- "<>"	1171- "<>"
FAR END	8	-	-	-	524- "<>"	649- "<>"	899- "<>"	1171- "<>"
ROLLED I.D.	9	0.148	-	.484	.609	.734	.984	1.234
NEAR END	9	0.148	-	471- "<>"	584- "<>"	712- "<>"	979- "<>"	1212- "<>"
FAR END	9	0.148	-	471- "<>"	555- "<>"	670- "<>"	919- "<>"	1171- "<>"
ROLLED I.D.	10	0.134	-	.509	.634	.759	1.009	1.259
NEAR END	10	0.134	-	491- "<>"	621- "<>"	735- "<>"	979- "<>"	1212- "<>"
FAR END	10	0.134	-	471- "<>"	584- "<>"	712- "<>"	962- "<>"	1171- "<>"
ROLLED I.D.	11	0.12	-	.534	.659	.784	1.034	1.284
NEAR END	11	0.12	-	524- "<>"	649- "<>"	774- "<>"	1024- "<>"	1212- "<>"
FAR END	11	0.12	-	491- "<>"	621- "<>"	735- "<>"	979- "<>"	1212- "<>"
ROLLED I.D.	12	0.109	-	.554	.679	.804	1.054	1.304
NEAR END	12	0.109	-	524- "<>"	670- "<>"	774- "<>"	1024- "<>"	1212- "<>"
FAR END	12	0.109	-	512- "<>"	621- "<>"	735- "<>"	979- "<>"	1212- "<>"
ROLLED I.D.	13	0.095	-	.579	.704	.829	1.079	1.329
NEAR END	13	0.095	-	555- "<>"	670- "<>"	804- "<>"	1054- "<>"	1212- "<>"
FAR END	13	0.095	-	524- "<>"	649- "<>"	774- "<>"	1024- "<>"	1212- "<>"
ROLLED I.D.	14	0.083	.476	.601	.726	.851	1.101	
NEAR END	14	0.083	471- "<>"	584- "<>"	712- "<>"	837- "<>"	1087- "<>"	
FAR END	14	0.083	-	555- "<>"	670- "<>"	804- "<>"	1054- "<>"	
ROLLED I.D.	15	0.072	.495	.620	.745	.870	1.120	
NEAR END	15	0.072	491- "<>"	584- "<>"	735- "<>"	853- "<>"	1103- "<>"	
FAR END	15	0.072	471- "<>"	584- "<>"	712- "<>"	837- "<>"	1054- "<>"	
ROLLED I.D.	16	0.065	.508	.633	.758	.883	1.133	
NEAR END	16	0.065	491- "<>"	621- "<>"	735- "<>"	853- "<>"	1103- "<>"	
FAR END	16	0.065	471- "<>"	584- "<>"	712- "<>"	837- "<>"	1054- "<>"	
ROLLED I.D.	17	0.058	.521	.646	.771	.896	1.146	
NEAR END	17	0.058	512- "<>"	621- "<>"	735- "<>"	853- "<>"	1103- "<>"	
FAR END	17	0.058	491- "<>"	584- "<>"	735- "<>"	853- "<>"	1103- "<>"	
ROLLED I.D.	18	0.049	.537	.662	.770	.912	1.162	
NEAR END	18	0.049	524- "<>"	649- "<>"	774- "<>"	899- "<>"	1149- "<>"	
FAR END	18	0.049	491- "<>"	621- "<>"	735- "<>"	853- "<>"	1103- "<>"	
ROLLED I.D.	19	0.042	.549	.674	.799	.924	1.174	
NEAR END	19	0.042	524- "<>"	649- "<>"	774- "<>"	899- "<>"	1149- "<>"	
FAR END	19	0.042	512- "<>"	621- "<>"	735- "<>"	853- "<>"	1149- "<>"	
ROLLED I.D.	20	0.035	.562	.687	.812	.937	1.187	
NEAR END	20	0.035	524- "<>"	649- "<>"	774- "<>"	899- "<>"	1149- "<>"	
FAR END	20	0.035	524- "<>"	649- "<>"	774- "<>"	853- "<>"	1149- "<>"	
ROLLED I.D.	21	0.032	.567	.692	.817	.942	1.192	
NEAR END	21	0.032	555- "<>"	670- "<>"	804- "<>"	919- "<>"	1171- "<>"	
FAR END	21	0.032	524- "<>"	649- "<>"	774- "<>"	853- "<>"	1149- "<>"	
ROLLED I.D.	22	0.028	.575	.700	.825	.950	1.200	
NEAR END	22	0.028	555- "<>"	670- "<>"	804- "<>"	919- "<>"	1171- "<>"	
FAR END	22	0.028	524- "<>"	649- "<>"	774- "<>"	919- "<>"	1171- "<>"	
ROLLED I.D.	23	0.025	.580	.705	.830	.955	1.205	
NEAR END	23	0.025	555- "<>"	670- "<>"	804- "<>"	919- "<>"	1171- "<>"	
FAR END	23	0.025	555- "<>"	670- "<>"	804- "<>"	919- "<>"	1171- "<>"	
ROLLED I.D.	24	0.022	.585	.710	.835	.960	1.210	
NEAR END	24	0.022	555- "<>"	670- "<>"	804- "<>"	919- "<>"	1171- "<>"	
FAR END	24	0.022	555- "<>"	670- "<>"	804- "<>"	899- "<>"	1171- "<>"	

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All tube inner diameters listed are based upon a 10% wall reduction

**NOTES:**

- 1) Tube ID's often vary between inlet & outlet due to corrosion and/or erosion, this chart used as Reference only.
- 2) Tube Preparation Brushes are required for use with all Jr Plugs.

**Substitute the suffix "<>" with the following material code:**

- |                  |                 |                |
|------------------|-----------------|----------------|
| C = Carbon Steel | K = 90/10 CuNi  | N = Nickel 200 |
| B = Brass        | Y = Chrome/Moly | T = Titanium   |
| S = 316 SS       | M = Monel       | H = Hastelloy  |
| J = 70/30 CuNi   | I = Inconel     | Z = Zirconium  |

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# The Fastest, Safest, Most Cost-Effective Way to Plug Tubes

**“Consistent, Controlled Installation” For Critical Pressure Applications**

Brush the tube end, insert the plug, and snap it in place — the entire procedure takes less than one minute per tube. Rated at 1,000 psid holding pressure. When installed properly, these plugs remove all the guess work related to installation.

**No welding. No tube sheet damage. No leaks. No worry.**

SAFETY	TIME & COST SAVINGS
<ul style="list-style-type: none"> <li>Blowout pressures exceeding 28,000 PSID (plug size dependent)</li> <li>No welding - eliminates sparks &amp; open flames</li> <li>Plug design minimizes projectile risk during removal</li> <li>Leak free helium seal to <math>1 \times 10^{-9}</math> c/sec</li> </ul>	<ul style="list-style-type: none"> <li>No need to remove head cover for through-the-tube plugging</li> <li>Less than a minute installation time results in 80% labor cost savings while reducing downtime</li> <li>Eliminates tube sheet and ligament damage from welding and over-driving</li> </ul>

PLUG SIZES			PRESSURE RATING	
0.400	→	0.680	=	7000 PSID
0.700	→	0.960	=	4500 PSID
0.980	→	2.000	=	2000 PSID

## RECOMMENDED INSTALLATION STEPS

<i>Pierce tube with USAI's One-Rev Cutter</i>	<i>Brush tube ID to remove scale, pitting &amp; ovality</i>	<i>Snap plug into place</i>	<i>Done!</i>
---	---	-----------------------------	--------------

## ADDITIONAL CAPABILITIES

- Ideal for Fin-Fan® headers, heat exchangers, boilers, condensers, and tube reactors
- Each plug fits multiple tube sizes — available in numerous materials
- Near & far-end plugging capabilities
- All tooling fully compatible with competitor systems

Fin-Fan® is a registered trademark of Hudson Products Corporation



*Environmentally Superior Due to POSITIVE SEALING\* with Superior Design!*



**< 1 MIN**  
per tube installation

**up to 7,000 PSID**  
rated holding pressure

**> 28,000 PSID**  
blowout pressure

**80%+**  
labor cost savings

View our video online.



**WARNING:**  
Never stand in front of an installed plug under pressure. Plugs ejected under pressure can cause serious bodily injury.

## SNAP IT® SR continued

SR KIT PART NO.	PLUG RANGE - TUBE ID IN. (MM)	BRUSH KIT	POSITIONER	PLUG POSITIONER	PULL ROD ASSEMBLY	CHANNEL HEAD PULL ROD
SR - 400 - "<>"	0.401 - 0.420 (10.16 - 10.68)	SRA - 400 - "[ ]"	PP - 400	PP 400 - 440	I	CHPRA - "{ }" - I
SR - 420 - "<>"	0.421 - 0.440 (10.69 - 11.19)	SRA - 420 - "[ ]"	PP - 420			
SR - 440 - "<>"	0.441 - 0.460 (11.20 - 11.70)	SRA - 440 - "[ ]"	PP - 440			
SR - 460 - "<>"	0.461 - 0.480 (11.71 - 12.21)	SRA - 460 - "[ ]"	PP - 460			
SR - 480 - "<>"	0.481 - 0.500 (12.22 - 12.72)	SRA - 480 - "[ ]"	PP - 480	PP 460 - 500		
SR - 500 - "<>"	0.501 - 0.520 (12.73 - 13.22)	SRA - 500 - "[ ]"	PP - 500			
SR - 520 - "<>"	0.521 - 0.540 (13.23 - 13.73)	SRA - 520 - "[ ]"	PP - 520	PP 520 - 580		
SR - 540 - "<>"	0.541 - 0.560 (13.74 - 14.24)	SRA - 540 - "[ ]"	PP - 540			
SR - 560 - "<>"	0.561 - 0.580 (14.25 - 14.75)	SRA - 560 - "[ ]"	PP - 560			
SR - 580 - "<>"	0.581 - 0.600 (14.76 - 15.26)	SRA - 580 - "[ ]"	PP - 580			
SR - 600 - "<>"	0.601 - 0.620 (15.27 - 15.76)	SRA - 600 - "[ ]"	PP - 600			
SR - 620 - "<>"	0.621 - 0.640 (15.77 - 16.27)	SRA - 620 - "[ ]"	PP - 620		PP 600 - 680	
SR - 640 - "<>"	0.641 - 0.660 (16.28 - 16.78)	SRA - 640 - "[ ]"	PP - 640			
SR - 660 - "<>"	0.661 - 0.680 (16.79 - 17.27)	SRA - 660 - "[ ]"	PP - 660			
SR - 680 - "<>"	0.681 - 0.700 (17.28 - 17.79)	SRA - 680 - "[ ]"	PP - 680			
SR - 700 - "<>"	0.701 - 0.720 (17.80 - 18.30)	SRA - 700 - "[ ]"	PP - 700	PP 700 - 780	II	CHPRA - "{ }" - II
SR - 720 - "<>"	0.721 - 0.740 (18.31 - 18.81)	SRA - 720 - "[ ]"	PP - 720			
SR - 740 - "<>"	0.741 - 0.760 (18.82 - 19.32)	SRA - 740 - "[ ]"	PP - 740			
SR - 760 - "<>"	0.761 - 0.780 (19.33 - 19.83)	SRA - 760 - "[ ]"	PP - 760			
SR - 780 - "<>"	0.781 - 0.800 (19.84 - 20.34)	SRA - 780 - "[ ]"	PP - 780			
SR - 800 - "<>"	0.801 - 0.820 (20.35 - 20.84)	SRA - 800 - "[ ]"	PP - 800			
SR - 820 - "<>"	0.821 - 0.840 (20.85 - 21.35)	SRA - 820 - "[ ]"	PP - 820			
SR - 840 - "<>"	0.841 - 0.860 (21.36 - 21.86)	SRA - 840 - "[ ]"	PP - 840			
SR - 860 - "<>"	0.861 - 0.880 (21.87 - 22.37)	SRA - 860 - "[ ]"	PP - 860			
SR - 880 - "<>"	0.881 - 0.900 (22.38 - 22.87)	SRA - 880 - "[ ]"	PP - 880	PP 880 - 960		
SR - 900 - "<>"	0.901 - 0.920 (22.88 - 23.38)	SRA - 900 - "[ ]"	PP - 900			
SR - 920 - "<>"	0.921 - 0.940 (23.39 - 23.87)	SRA - 920 - "[ ]"	PP - 920			
SR - 940 - "<>"	0.941 - 0.960 (23.88 - 24.40)	SRA - 940 - "[ ]"	PP - 940			
SR - 960 - "<>"	0.961 - 0.980 (24.41 - 24.89)	SRA - 960 - "[ ]"	PP - 960			
SR - 980 - "<>"	0.981 - 1.000 (24.90 - 25.40)	SRA - 980 - "[ ]"	PP - 980		PP 980 - 1060	
SR - 1000 - "<>"	1.001 - 1.020 (25.41 - 25.91)	SRA - 1000 - "[ ]"	PP - 1000			
SR - 1020 - "<>"	1.021 - 1.040 (25.92 - 26.42)	SRA - 1020 - "[ ]"	PP - 1020			
SR - 1040 - "<>"	1.041 - 1.060 (26.43 - 26.92)	SRA - 1040 - "[ ]"	PP - 1040	PP 1080 - 1160		
SR - 1060 - "<>"	1.061 - 1.080 (26.93 - 27.43)	SRA - 1060 - "[ ]"	PP - 1060			
SR - 1080 - "<>"	1.081 - 1.100 (27.44 - 27.94)	SRA - 1080 - "[ ]"	PP - 1080			
SR - 1100 - "<>"	1.101 - 1.120 (27.95 - 28.45)	SRA - 1100 - "[ ]"	PP - 1100			
SR - 1120 - "<>"	1.121 - 1.140 (28.46 - 28.96)	SRA - 1120 - "[ ]"	PP - 1120			
SR - 1140 - "<>"	1.141 - 1.160 (28.97 - 29.46)	SRA - 1140 - "[ ]"	PP - 1140			
SR - 1160 - "<>"	1.161 - 1.180 (29.47 - 29.97)	SRA - 1160 - "[ ]"	PP - 1160			

NOTES: Standard Sr. Kit includes 10 plugs, 1 Brush and 1 "GO/NO GO" gauge; however, plugs and items can be ordered individually. **Consult factory for more information.**

"<>"

Substitute the suffix "<>" with the following material code: **C** - carbon steel, **S** - 316 stainless steel, **B** - brass, **Y** - Cr/Moly, **M** - monel, **K** - 90/10 CuNi, **J** - 70/30 CuNi. Other materials available.

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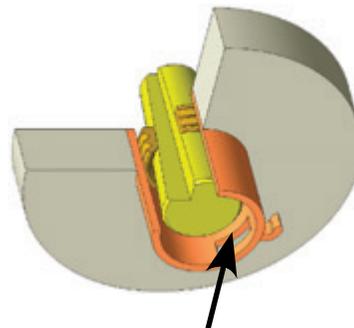
"[ ]"

For brass, copper, or copper-nickel tubes add the suffix - **LD** to the Brush Kit Tube Preparation Brushes

---

"{ }"

Channel Head Pull Rod Assemblies are available in 2', 4', or 6' lengths. Insert the appropriate # for the length required.



**Vent tube using our One Rev tool (see page HE-58)**

**WHEN ORDERING, SPECIFY:**

- Tube ID
- Material
- Maximum temperature and pressure
- The type of tube or tube sheet joint (rolled, welded, etc.)
- If Pull Rod, Channel Head Pull Rod or Plug Positioner is needed
- Quantity
- Delivery Date

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# SNAP IT® JR & SR TOOLS

## TUBE PREPARATION

Use our special **brushes** to properly prep the tube for optimum sealing & holding forces — see Plug Size charts.

- Jr. Brush Kits come with 3 or 4 brushes per kit, dependent on plug size Use the smallest brush in the kit that effectively cleans and preps the tube.
- Sr. brushes are provided for the specific tube size ordered.



## INSTALLATION TOOLS

**Hydraulic Tool** — THE SIMPLEST, SAFEST AND EASIEST WAY TO INSTALL SNAP IT SR. OR JR. PLUGS! The Snap It Installation Kit is compact and lightweight (ram weighs just 7 lbs) yet has plenty of power to easily install all of our plugs. The pump is air driven and requires 80 to 120 lbs. of supply air @ 20 CFM during the few seconds it is operated and comes in a durable storage case on wheels. When ordering the complete kit - it comes with everything needed for installing Jr. or Sr. plugs for near end applications.



Through-the-tube plugging is performed with this tool by adding the appropriate number of extension assemblies with a Channel Head Pull Rod Assembly and following the “through-the-tube” instructions. Peace of mind — when you order this complete kit.

**Pull Rod Assembly** — used with the Hydraulic RAM, this installs the plug(s) in place. Our assemblies are fully interchangeable with competitor systems and have been designed to minimize your costs by utilizing multiple plug positioners with each pull rod size — See Plug Size Chart.



**Channel Head Pull Rod Assemblies & Extension Sets** — Used to operate the system and easily install plugs where Channel Heads are present. Also these are used in conjunction with the extension sets for “through-the-tube” plugging — See Plug Size chart.



## REMOVAL TOOL

**Plug Removal Tool** — designed to easily and quickly remove installed plugs. The Plug Removal Tool removes both the pin and ring in seconds without damage to the tube it was installed in. Simply screw the Spear Stud into the installed pin, dislodge the pin with the slide hammer, screw the spear into the ring, then use the slide hammer to pull out all the pieces.



If required, a new plug can then be reinstalled in the same place!

**NOTE: Contact Factory for Sizing Details.**

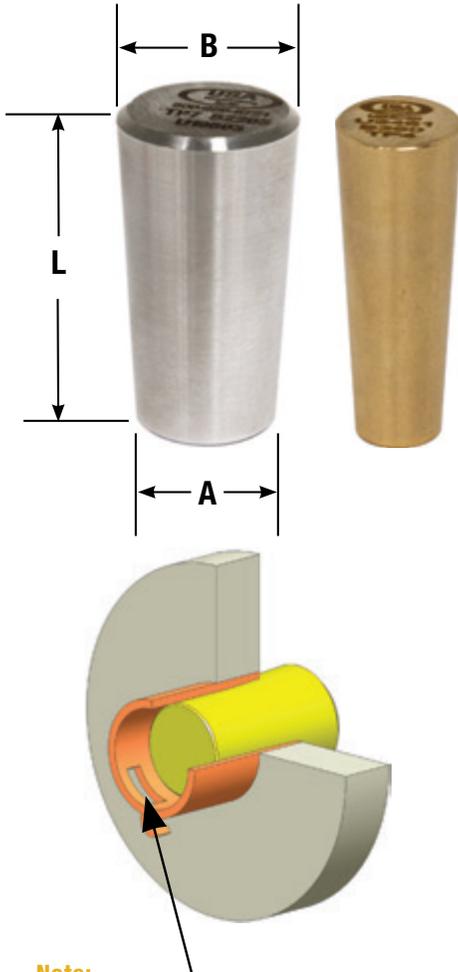
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## METAL TAPERED TUBE PLUGS

*“Any Metal, Any Size” The Mother of All Plugs*



ALUMINUM BRONZE	ALLOY 20	2205 DUPLEX
Carbon Steel: A-36, A-105, LF2, 1018, 1200	Chrome / Moly: F-5, F-9, F-22	Stainless Steel: 204, 316, 321, 416, 17-4
Brass: 360, Naval	Copper-Nickel: 90 / 10, 70 / 30	Monel: 400, 405, 500
Inconel: 600, 625, 800	Hastelloy: B2, C276	Titanium
Special materials available such as: Ferralium, Nitronic, Tantalum, Waspalloy, Zircalloy, Zirconium and many more.		

PART NO.	TUBE O.D. (in.)	GAUGE	DIMENSION (in.) + / - .005		
			“A” Small End	“B” Large End	“L” Length
TP - 1 - “<>”	1/4	18 - 24	0.141	0.235	1-1/4
	3/8	12 - 14			
TP - 2 - “<>”	3/8	15 - 24	0.213	0.371	1-3/4
	1/2	13 - 15			
TP - 3 - “<>”	1/2	15 - 24	0.337	0.495	
	5/8	12 - 14			
TP - 4 - “<>”	5/8	14 - 24	0.449	0.625	
	3/4	10 - 14			
TP - 5 - “<>”	3/4	14 - 24	0.564	0.750	
	7/8	10 - 13			
TP - 6 - “<>”	1	8 - 9	0.706	0.875	
	7/8	15 - 24			
TP - 7 - “<>”	1	10 - 15	0.776	0.934	
	1	13 - 18			
TP - 8 - “<>”	1	18 - 24	0.892	1.050	
	1-1/8	13 - 17			
TP - 9 - “<>”	1-1/8	15 - 24	0.949	1.125	2
	1-1/4	10 - 14			
TP - 10 - “<>”	1-1/4	13 - 19	1.010	1.186	
TP - 11 - “<>”	1-1/4	19 - 24	1.147	1.323	
TP - 12 - “<>”	1-1/2	10 - 24	1.200	1.495	
	1-1/2	14 - 24			
TP - 13 - “<>”	1-3/4	6 - 13	1.305	1.600	
	1-3/4	14 - 22			
TP - 14 - “<>”	2	6 - 13	1.575	1.870	3
	2	12 - 22			
TP - 15 - “<>”	2	12 - 22	1.700	1.995	
TP - 16 - “<>”	2-1/4	6 - 13	1.805	2.100	
TP - 17 - “<>”	2-1/2	5 - 18	2.000	2.375	
TP - 18 - “<>”	2-3/4	4 - 10	2.232	2.500	
TP - 19 - “<>”	3	5 - 12	2.524	2.834	
TP - 20 - “<>”	3	10 - 23	2.625	3.000	
	3-1/4	7 - 14			
TP - 21 - “<>”	3-1/4	7 - 14	2.875	3.125	
TP - 22 - “<>”	3-1/4	13 - 23	3.010	3.250	
	3-1/2	7 - 12			
TP - 23 - “<>”	3-1/2	7 - 12	3.125	3.375	
TP - 24 - “<>”	3-1/2	13 - 23	3.260	3.500	
TP - 25 - “<>”	3-3/4	5 - 12	3.274	3.567	
TP - 26 - “<>”	3-3/4	13 - 23	3.510	3.750	
TP - 27 - “<>”	4	5 - 12	3.524	3.817	
TP - 28 - “<>”	4	13 - 23	3.782	4.000	

**Note:**

Always puncture the tube before installing any plug to ensure that pressure cannot build up in the tube and cause the plugs to loosen or blow out.

For puncturing tubes, see our One Rev Cutters on page HE-58.

**WHEN ORDERING, SPECIFY:**

- TP# based on size of your plug (see chart)
- Material of construction
- For custom plugs, provide “A” “B” & “L” dimensions
- Quantity
- Delivery Date

“<>” = replace “<>” with material of construction required - see Chart above.

**WARNING:** Never stand in front of an installed plug under pressure. Plugs ejected under pressure can cause serious bodily injury.

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## METAL TAPERED TWO-PIECE TUBE PLUGS

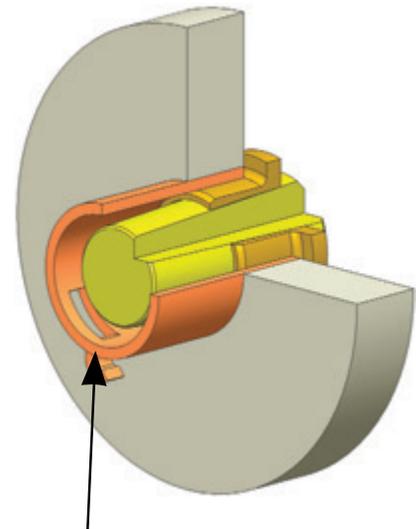


Designed to minimize damage to the tube sheet while sealing off leaky condenser and exchanger tubes - *Installation is Simple!* Insert ring into the tube, insert pin into the ring, hammer until properly sealed. Like the Metal Tapered plugs, these can be removed with a pipe wrench.

**For more consistent & controlled installation, see our “Snap It” line of plugs starting on page TP-72**

- Available in sizes from 3/8” to 2” tubes
- Stocked materials: brass, carbon steel and stainless steel
- Custom sizes and materials available upon request

TUBE O.D. (in.)	TUBE I.D. RANGE	PIN SIZE	RING SIZE
3/8	0.283 - 0.377	TP - 1	TPR - 0375
1/2	0.283 - 0.377	TP - 1	TPR - 0500 - 1
	0.384 - 0.503	TP - 2	TPR - 0500 - 2
5/8	0.384 - 0.503	TP - 2	TPR - 0625 - 2
	0.480 - 0.635	TP - 3	TPR - 0625 - 3
3/4	0.480 - 0.635	TP - 3	TPR - 0750 - 3
	0.616 - 0.759	TP - 4	TPR - 0750 - 4
1	0.616 - 0.759	TP - 4	TPR - 1000 - 4
	0.730 - 0.840	TP - 5	TPR - 1000 - 5
	0.830 - 1.008	TP - 6	TPR - 1000 - 6
1-1/8	0.730 - 0.840	TP - 5	TPR - 1125 - 5
	0.830 - 1.008	TP - 6	TPR - 1125 - 6
	0.930 - 1.130	TP - 7	TPR - 1125 - 7
1-1/4	0.930 - 1.130	TP - 7	TPR - 1250 - 7
	0.992 - 1.261	TP - 8	TPR - 1250 - 8
1-1/2	1.180 - 1.240	TP - 9	TPR - 1500 - 9
	1.242 - 1.342	TP - 10	TPR - 1500 - 10
	1.344 - 1.495	TP - 11	TPR - 1500 - 11
	1.380 - 1.510	TP - 12	TPR - 1500 - 12
2	1.680 - 1.856	TP - 13	TPR - 2000 - 13
	1.742 - 2.020	TP - 14	TPR - 2000 - 14



**Note:**

Always puncture the tube before installing any plug to ensure that pressure cannot build up in the tube and cause the plugs to loosen or blow out.

For puncturing tubes, see our One Rev Cutters on page HE-58.

### LOC-TITE

*Loc-Tite is used to help set and keep plugs in place!*



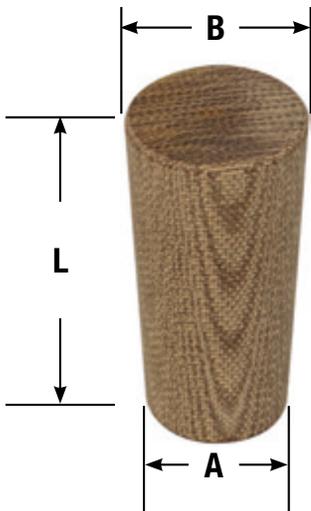
**WHEN ORDERING, SPECIFY:**

- Tube O.D.
- Tube I.D. (tube wall gauge thickness if unable to use a micrometer (mic))
- Material
- Quantity
- Delivery Date

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SHIP SAME DAY**

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## NON-METAL TAPERED TUBE PLUGS

**\*SEE DIMENSIONS ON PAGE TP-76 CHART**  
*(Metal Tapered Tube Plug chart)*

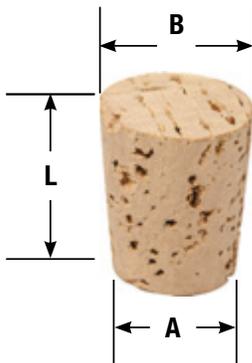
Available in fiber (Phenolic or Micarta) or wood. These plugs are safe, easy to use, corrosion resistant, and easily removed. Slightly hammer the plug into the tube, it will expand by hydrosopic action to make an excellent seal and will not damage the tube sheet.

- Rated up to 230° F
- Order by Tube Size and Gauge
- Use our standard sizes or Yours

### WHEN ORDERING, SPECIFY:

- TP# based on size of your plug (see chart)
- Material of construction
- For custom plugs, provide "A" "B" & "L" dimensions
- Quantity
- Delivery Date

## CORK TUBE PLUGS



### WHEN ORDERING, SPECIFY:

- TP# based on size of your plug (see chart)
- Material of construction
- For custom plugs, provide "A" "B" & "L" dimensions
- Quantity
- Delivery Date

PART NO.	A	B	L
	DIMENSIONS (in.)		
TP - 0000 - C	0.094	0.187	0.500
TP - 000 - C	0.156	0.250	
TP - 00 - C	0.219	0.313	
TP - 0 - C	0.281	0.375	
TP - 1 - C	0.328	0.438	0.625
TP - 2 - C	0.375	0.500	0.688
TP - 3 - C	0.422	0.563	0.750
TP - 4 - C	0.468	0.625	0.813
TP - 5 - C	0.531	0.687	0.875
TP - 6 - C	0.578	0.750	0.938
TP - 7 - C	0.625	0.813	1.00
TP - 8 - C	0.672	0.875	1.063
TP - 9 - C	0.734	0.938	1.125
TP - 10 - C	0.766	1.000	1.250
TP - 11 - C	0.828	1.063	
TP - 12 - C	0.891	1.125	
TP - 13 - C	0.953	1.188	
TP - 14 - C	1.016	1.250	
TP - 15 - C	1.078	1.313	

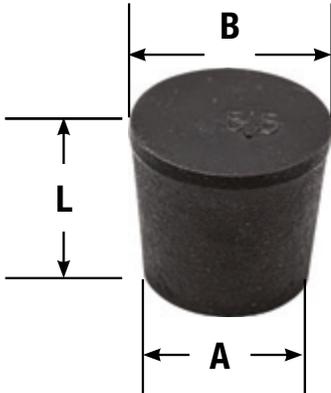
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VISA



## RUBBER TAPERED TUBE PLUGS



Used for low pressure isolation or vacuum testing applications (especially with our Vacuum Leak Detector VLD-2500 - see Section 4, page HE-54). Stocked sizes range from 5/16" tube I.D. through 4-3/4" tube I.D. The plugs are made of neoprene and are reusable.

Temperature range: -25°F to +180°F (-31°C to 82°C).

### WHEN ORDERING, SPECIFY:

- TP# based on size of your plug (see chart)
- Quantity
- Delivery Date

PART NO.	TUBE O.D. (in.)	GAUGE	DIMENSION (in.) + / - .005			DIMENSION (mm.) + / - .127		
			"A" SMALL	"B" LARGE	"L" LENGTH	"A" SMALL	"B" LARGE	"L" LENGTH
TP - 000 - R	1/2	14 - 24	0.313	0.500	0.875	7.950	12.700	22.225
TP - 00 - R	5/8	13 - 24	0.406	0.594	1.000	10.312	15.088	25.400
TP - 0 - R	3/4	11 - 17	0.500	0.656		12.700	16.662	
TP - 1 - R	3/4	14 - 24	0.563	0.750		14.300	19.050	
TP - 2 - R	7/8	11 - 17	0.625	0.781		15.875	19.837	
TP - 3 - R	7/8	15 - 24	0.719	0.938		18.263	23.825	
	1	10 - 19						
TP - 4 - R	1	11 - 24	0.750	1.000		19.050	25.400	
	1-1/8	7 - 14						
TP - 5 - R	1-1/8	13 - 19	0.906	1.063		23.012	27.000	
TP - 5 - 1/2 - R	1-1/8	16 - 24	0.969	1.109		24.613	28.169	
	1-1/4	10 - 13						
TP - 6 - R	1-1/4	13 - 24	1.031	1.250		26.187	31.750	
TP - 6 - 1/2 - R	1-3/8	7 - 16	1.063	1.344		27.000	34.138	
TP - 7 - R	1-3/8	14 - 24	1.188	1.438		30.175	36.525	
TP - 7 - 1/2 - R	1-1/2	7 - 20	1.125	1.500		28.575	38.100	
TP - 8 - R	1-1/2	14 - 24	1.312	1.625		33.325	41.275	
	1-5/8	10 - 20						
TP - 8 - 1/2 - R	1-5/8	16 - 24	1.406	1.688		35.712	42.875	
TP - 9 - R	1-3/4	10 - 20	1.469	1.750		37.313	44.450	
TP - 9 - 1/2 - R	1-3/4	12 - 24	1.500	1.813		38.100	46.050	
TP - 10 - R	2	7 - 15	1.625	1.969	41.275	50.013		
TP - 10 - 1/2 - R	2	12 - 20	1.750	2.078	44.450	52.781		
TP - 11 - R	2	18 - 24	1.875	2.203	47.625	55.956		
	2-1/4	8 - 18						
TP - 11 - 1/2 - R	2-1/2	8 - 14	2.000	2.469	50.800	62.713		
TP - 12 - R	2-1/2	12 - 18	2.125	2.500	53.975	63.500		
TP - 13 - R	2-3/4	6 - 13	2.281	2.688	57.937	68.275		
TP - 13 - 1/2 - R	2-3/4	12 - 18	2.438	2.969	61.925	75.413		
	3	6 - 16						
TP - 14 - R	3	12 - 18	3.000	3.500	76.200	88.900		
TP - 15 - R	3-1/2	13 - 18	3.250	4.000	82.550	101.600		
TP - 16 - R	4	7 - 18	3.500	5.000	88.900	127.000		

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## SHOULDER / HEADER PLUGS

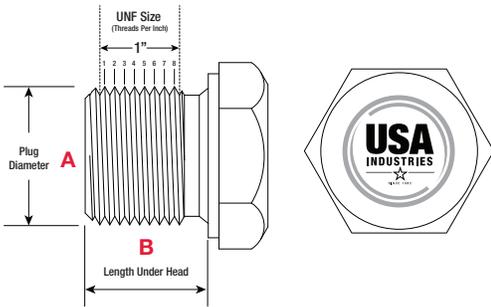


Made for Fin-Fan® header boxes and available in carbon steel (coated or uncoated), stainless steel, brass and other materials.

- Sizes available for 5/8" through 2" tube
- When ordering, specify the plug diameter & length (verify the thread and hex sizes are correct)
- Custom sizes & material available upon request
- Length under head available 3/4" - 3"
- Specify your needs for custom orders



**Environmentally Superior Due to POSITIVE SEALING\* with Superior Design!**



**WHEN ORDERING PLUGS, SPECIFY:**

- Plug Threaded Hole Size (Plug Diameter)
- UNF Size (threads per inch)
- Length under Head
- Material of Construction
- Quantity
- Delivery Date

**WHEN ORDERING GASKETS, SPECIFY:**

- Flat Gasket or EZ Torque
- Plug Threaded Hole Size
- Material of Construction
- Quantity
- Delivery Date

**\* MINIMUM TORQUE VALUES FOR AISI 1008 MATERIAL - CONSULT FACTORY FOR OTHER MATERIAL VALUES**

TYPICAL O.D. (in.)	"A" PLUG DIAMETER (in.)	TYPICAL U.N.F. THREAD	"B" LENGTH UNDER **HEAD	HEX SIZE	FLAT GASKET		EZ TORQUE® GASKET	
					STOCK #	TORQUE FT/LBS	STOCK #	TORQUE FT/LBS
5/8	3/4	16	3/4 - 1-1/2	1	SP - G - 0750 - "<>"	200	SP - G - EZ - 0750 - "<>"	*90 - 130
3/4	7/8	14		1-1/8	SP - G - 0875 - "<>"	265	SP - G - EZ - 0875 - "<>"	*130 - 180
7/8	1	12		1-1/4	SP - G - 1000 - "<>"	300	SP - G - EZ - 1000 - "<>"	*150 - 200
1	1-1/8			1-3/8	SP - G - 1125 - "<>"	395	SP - G - EZ - 1125 - "<>"	*160 - 210
1-1/8	1-1/4			1-1/2	SP - G - 1250 - "<>"	490	SP - G - EZ - 1250 - "<>"	*230 - 310
1-1/4	1-3/8			1-5/8	SP - G - 1375 - "<>"	580	SP - G - EZ - 1375 - "<>"	*290 - 380
1-3/8	1-1/2			1-3/4	SP - G - 1500 - "<>"	690	SP - G - EZ - 1500 - "<>"	*330 - 450
1-1/2	1-5/8			1-7/8	SP - G - 1625 - "<>"	800	SP - G - EZ - 1625 - "<>"	*400 - 530
1-5/8	1-3/4			2	SP - G - 1750 - "<>"	900	SP - G - EZ - 1750 - "<>"	*450 - 600
1-3/4	1-7/8			2-1/8	SP - G - 1875 - "<>"	1000	SP - G - EZ - 1875 - "<>"	*540 - 700
1-7/8	2			2-1/4	SP - G - 2000 - "<>"	1100	SP - G - EZ - 2000 - "<>"	*610 - 810
2	2-1/8			2-3/8	SP - G - 2125 - "<>"	1200	SP - G - EZ - 2125 - "<>"	*680 - 910

\* Torque values based on proper installation. \*\* Typically stocked lengths

**Substitute the suffix "<>" with the following material code:**

- C = Carbon Steel
- B = Brass
- S = 316 SS
- J = 70/30 CuNi
- K = 90/10 CuNi
- Y = Chrome/Moly
- M = Monel
- I = Inconel
- N = Nickel 200
- T = Titanium
- H = Hastelloy
- Z = Zirconium
- \*Other alloys available.

**Note 1:** All values listed in Ft / lbs are recommended minimum torque values

**Note 2:** The Recommended Minimum Torque Values for the Flat Gaskets are based on ideal sealing surface conditions, meeting ASME Specs. Typically encountered surface area imperfections do not affect the values given for EZ Torque® Gaskets.

**Note 3:** The Minimum Recommended Torque Values given for EZ Torque® Gaskets are higher than the Theoretical Torque Values to ensure Thread Locking.

Available Coatings: Cadmium, Electroless Nickel, Galvanized, Nickel, Zinc or Uncoated. Other coatings available.

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**WARNING:** Never stand in front of an installed plug under pressure. Plugs ejected under pressure can cause serious bodily injury.

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## EZ TORQUE® SURE SEAL GASKETS

**ENVIRONMENTALLY SUPERIOR  
-NO LEAKS / POSITIVE SEALING\***



**MACHINED  
METAL CORE  
WITH BONDED  
GRAPHITE FACE.**

USA Industries' EZ Torque Sure Seal Gaskets are designed to provide a positive seal and require less than half the installation torque required for typical soft iron gaskets. Lower torque means no more stripping of threads which prevents the gasket from sealing.

Our innovative design incorporates a graphite outer shell over a special machined metal inner core. The labyrinth design allows the graphite to be compressed and held in place, sealing against imperfections on the surface area. Due to the compressive load stored in the gasket's design, leaks due to typical thermal cycling are eliminated.

The graphite outer shell virtually eliminates the need to remachine the gasket surface areas due to roughness, nicks or scratches typically found in the field.

Nominal Size (in)	EZ Torque Gasket ID (in)	Gasket OD (in)	AISI 1008		304 Stainless		316 Stainless		Nickel 200		Monel 400		2205 Duplex			
			Recommended Torque (lbs-ft)													
			MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX
5/8	0.641	0.875	50	70	50	70	50	70	30	40	40	60	90	130		
3/4	0.766	1.000	90	130	100	140	110	150	60	80	80	110	190	270		
7/8	0.891	1.125	130	180	140	190	150	200	90	120	110	150	260	350		
1	1.016	1.250	150	200	170	230	180	240	110	150	140	190	310	420		
1 1/8	1.141	1.375	160	210	180	240	190	250	110	150	140	190	330	440		
1 1/4	1.266	1.500	230	310	260	350	270	360	160	220	210	280	480	650		
1 3/8	1.391	1.625	290	380	320	420	340	450	200	260	260	340	590	770		
1 1/2	1.516	1.750	330	450	370	500	390	530	230	310	300	410	680	920		
1 5/8	1.641	1.875	400	530	440	580	460	610	280	370	350	460	810	1070		
1 3/4	1.766	2.000	450	600	500	670	530	710	310	420	400	540	930	1250		
1 7/8"	1.891	2.125	540	700	600	780	630	820	370	480	480	620	1110	1440		
2"	2.016	2.250	610	810	680	900	710	940	430	570	540	710	1260	1670		
2 1/8"	2.141	2.375	680	910	750	1000	790	1050	470	630	600	800	1390	1850		

**NOTE:** The minimum recommended torque values given for EZ Torque Gaskets are higher than the theoretical torque values to ensure thread locking.

### BENEFITS

- Low torque design
- Eliminates stripping the threads by over-torquing to seal
- No environmental leaks
- Virtually eliminates field remachining
- Cost effective. Low cost of ownership.
- Saves time. During removal, graphite prevents gasket from seizing to header or plug.
- Graphite eliminates atmospheric corrosion
- Metal core available in any material type - 316SS, Inconel, Hastelloy, Nickel, etc.
- Can be used with existing plugs in the field
- Self-aligning when used with USA Industries, Inc.'s manufactured plugs
- Quick delivery - Available 24/7-365

**See Chart on page TP-80 for  
size and part number**

#### When Ordering Gaskets Specify:

Plug Threaded Hole Size • Material of Construction  
Quantity • Delivery Date

#### Material codes:

C = Carbon	K = 90/10 CuNi	N = Nickel
B = Brass	Y = Chrome/Moly	T = Titanium
S = 316SS	M = Monel	H = Hastelloy
J = 70/30 CuNi	I = Inconel	Z = Zirconium

Other alloys available.

\* Based on proper installation.

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# LOW & HIGH PRESSURE INTERNAL AND FLANGED TUBE PLUGS

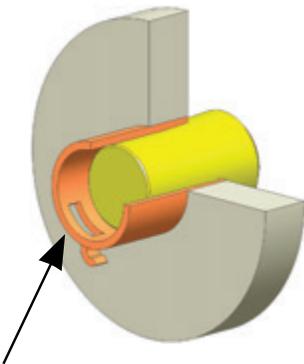
The tube condenser plug that gives you **“Performance Under Pressure”** - up to 100 psi. Standard sizes listed in stock, giving you same day shipping on most plugs. Special sizes and plugs trimmed to your requirements are available upon request. The plugs are inserted into the tubing (if flanged, mate flange up to the tube) finger-tighten and then secure with the appropriate socket wrench unit the proper seal is made.



- Made of neoprene
- Grade K-2247-CF, ASTM-BC 412 45+/-5 Durometer hardness
- Resistant to oil and gasoline
- Temperature range: -45°F to +300°F (-43°C to 149°C)
- Easy to use and reusable
- Rated to 100 psi when installed properly
- Safety lanyards can be installed (at an additional cost) to assure operator’s protection
- Specify hardware: carbon steel, stainless steel, brass

**WHEN ORDERING, SPECIFY:**

- TP# based on size of your plug (see chart)
- Specify Internal or Flanged
- Specify Single or Double Seal
- Hardware (CS, SS, BRASS)
- Quantity
- Delivery Date



**Note:**  
Always puncture the tube before installing any plug to ensure that pressure cannot build up in the tube and cause the plugs to loosen or blow out.

For puncturing tubes, see our One Rev Cutters on page HE-58.

FOR TUBE I.D.'S		PRESSURE RATING			
		120	150	120	150
(in.)	(mm)	INTERNAL SINGLE SEAL	INTERNAL DOUBLE SEAL	FLANGED SINGLE SEAL	FLANGED DOUBLE SEAL
1/2 - 5/8	12 - 16	EP-IS-0.5	EP-ID-0.5	EP-FS-0.5	EP-FD-0.5
5/8 - 3/4	16 - 19	EP-IS-0.625	EP-ID-0.625	EP-FS-0.625	EP-FD-0.625
3/4 - 7/8	19 - 22	EP-IS-0.75	EP-ID-0.75	EP-FS-0.75	EP-FD-0.75
7/8 - 1	22 - 25	EP-IS-0.875	EP-ID-0.875	EP-FS-08.75	EP-FD-0.875
1 - 1-1/8	25 - 29	EP-IS-1.0	EP-ID-1.0	EP-FS-1.0	EP-FD-1.0
1-1/8 - 1-1/4	29 - 32	EP-IS-1.125	EP-ID-1.125	EP-FS-1.125	EP-FD-1.125
1-1/4 - 1-3/8	32 - 35	EP-IS-1.25	EP-ID-1.25	EP-FS-1.25	EP-FD-1.25
1-3/8 - 1-1/2	35 - 38	EP-IS-1.375	EP-ID-1.375	EP-FS-1.375	EP-FD-1.375
1-1/2 - 1-5/8	38 - 41	EP-IS-1.5	EP-ID-1.5	EP-FS-1.5	EP-FD-1.5
1-5/8 - 1-3/4	41 - 45	EP-IS-1.625	EP-ID-1.625	EP-FS-1.625	EP-FD-1.625
1-3/4 - 1-7/8	45 - 48	EP-IS-1.75	EP-ID-1.75	EP-FS-1.750	EP-FD-1.75
1-7/8 - 2	48 - 51	EP-IS-1.875	EP-ID-1.875	EP-FS-1.875	EP-FD-1.875
2 - 2-1/8	51 - 54	EP-IS-2.0	EP-ID-2.0	EP-FS-2.0	EP-FD-2.0
2-1/8 - 2-1/4	54 - 57	EP-IS-2.125	EP-ID-2.125	EP-FS-2.125	EP-FD-2.125
2-1/4 - 2-3/8	57 - 60	EP-IS-2.25	EP-ID-2.25	EP-FS-2.25	EP-FD-2.25

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## THREADED TAPERED TUBE PLUGS

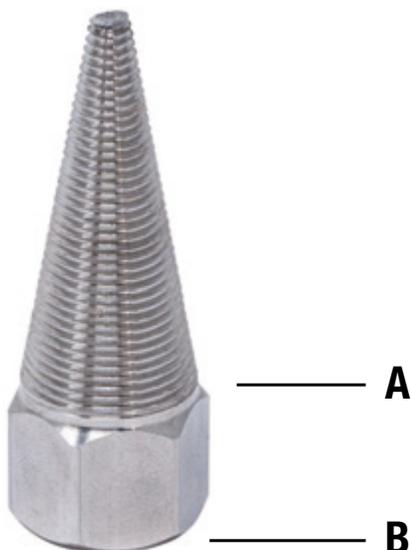
*Plugs Holes Through Sides or Ends of Piping, Tubing, or Vessels*

A fast and simple way to stop leaks in tanks, pipes, etc. Threaded plugs are manufactured using heat treated alloy steel or stainless steel. To install, use a standard Hex wrench or socket.

- Self tapping
- Stocked in: alloy steel and stainless steel

### WHEN ORDERING, SPECIFY:

- TP# Based on size of your plug (see chart)
- Material of Construction
- Quantity
- Delivery Date



FOR HOLE SIZES UP TO	PART NO.	"A" LARGE END	"B" HEX SIZE (in.)
0.350	TTP-0375	.365	3/8
0.450	TTP-0500	.480	1/2
0.580	TTP-0625	.615	5/8
0.710	TTP-0750	.730	3/4
0.835	TTP-0875	.855	7/8
0.950	TTP-1000	.975	1
1.150	TTP-1125	1.100	1-1/8
1.200	TTP-1250	1.220	1-1/4
1.320	TTP-1375	1.345	1-3/8
1.450	TTP-1500	1.470	1-1/2

## ANODE PLUGS - Zinc Corrosion Plugs

USA INDUSTRIES' zinc plugs help protect heat exchangers, pipelines, tanks, pumps and many other pieces of equipment from corrosion. The zinc rod is consumed by any electrolytic action that would otherwise attack and corrode equipment.

NOTE: For sizes larger than 1" NPT use 1" part numbers and install in a reducing bushing.

### WHEN ORDERING, SPECIFY:

- Length of Anode
- Size of plug (see chart)
- Quantity
- Delivery Date



SIZE NPT (in.)	ROD DIAMETER (in.)	ROD LENGTH (in.)	PART NO.
1/4	1/4	1	AP-0250-1
1/4	1/4	2	AP-0250-2
1/4	1/4	3	AP-0250-3
1/4	1/4	6	AP-0250-6
3/8	3/8	2	AP-0375-2
3/8	3/8	3	AP-0375-3
3/8	3/8	6	AP-0375-6
1/2	1/2	3	AP-0500-3
1/2	1/2	6	AP-0500-6
1/2	1/2	8	AP-0500-8
3/4	3/4	4	AP-0750-4
3/4	3/4	6	AP-0750-6
3/4	3/4	8	AP-0750-8
1	1	4	AP-1000-4
1	1	6	AP-1000-6
1	1	10	AP-1000-10
1	1	14	AP-1000-14

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# TUBE SERIES (B.W.G.)

All Dimensions Shown in Inches



TUBE O.D. (in.)	TUBE GAUGE																								TURF ID.	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		24
	WALL THICKNESS (in.)																									
0.380	0.340	0.300	0.284	0.259	0.238	0.220	0.203	0.180	0.165	0.148	0.134	0.120	0.109	0.095	0.083	0.072	0.065	0.058	0.049	0.042	0.035	0.032	0.028	0.025	0.022	
1/4											0.010	0.032	0.060	0.084	0.106	0.120	0.134	0.152	0.166	0.180	0.186	0.194	0.200	0.206		
3/8							0.015	0.045	0.079	0.107	0.135	0.157	0.185	0.209	0.231	0.245	0.259	0.277	0.291	0.305	0.311	0.319	0.325	0.331		
1/2					0.024	0.060	0.094	0.140	0.170	0.204	0.232	0.260	0.282	0.310	0.334	0.356	0.370	0.384	0.402	0.416	0.430	0.436	0.444	0.450	0.456	
5/8		0.025	0.057	0.107	0.149	0.185	0.219	0.265	0.295	0.329	0.357	0.385	0.407	0.435	0.459	0.481	0.495	0.509	0.527	0.541	0.555	0.561	0.569	0.575	0.581	
3/4	0.070	0.150	0.182	0.232	0.274	0.310	0.344	0.390	0.420	0.454	0.482	0.510	0.532	0.560	0.584	0.606	0.620	0.634	0.652	0.666	0.680	0.686	0.694	0.700	0.706	
7/8	0.115	0.195	0.307	0.357	0.399	0.435	0.469	0.515	0.545	0.579	0.607	0.635	0.657	0.685	0.709	0.731	0.745	0.759	0.777	0.791	0.805	0.811	0.819	0.825	0.831	
1	0.240	0.320	0.400	0.432	0.524	0.560	0.594	0.640	0.670	0.704	0.732	0.760	0.782	0.810	0.834	0.856	0.870	0.884	0.902	0.916	0.930	0.936	0.944	0.950	0.956	
1-1/8	0.365	0.445	0.525	0.557	0.607	0.649	0.685	0.719	0.765	0.795	0.829	0.857	0.885	0.907	0.935	0.959	0.981	1.009	1.027	1.041	1.055	1.061	1.069	1.075	1.081	
1-1/4	0.490	0.570	0.650	0.682	0.774	0.810	0.844	0.890	0.920	0.954	0.982	1.010	1.032	1.060	1.084	1.106	1.120	1.134	1.152	1.166	1.180	1.186	1.194	1.200	1.206	
1-1/2	0.740	0.820	0.900	0.932	0.982	1.024	1.060	1.094	1.140	1.170	1.204	1.232	1.260	1.282	1.310	1.334	1.356	1.370	1.384	1.402	1.416	1.430	1.436	1.444	1.450	
1-3/4	0.990	1.070	1.150	1.182	1.232	1.274	1.310	1.344	1.390	1.420	1.454	1.482	1.510	1.532	1.560	1.584	1.606	1.620	1.634	1.652	1.666	1.680	1.686	1.694	1.700	
2	1.240	1.320	1.400	1.432	1.482	1.524	1.560	1.594	1.640	1.670	1.704	1.732	1.760	1.782	1.810	1.834	1.856	1.870	1.884	1.902	1.916	1.930	1.936	1.944	1.950	
2-1/4	1.490	1.570	1.650	1.682	1.732	1.774	1.810	1.844	1.890	1.920	1.954	1.982	2.010	2.032	2.060	2.084	2.106	2.120	2.134	2.152	2.166	2.180	2.186	2.194	2.200	
2-1/2	1.740	1.820	1.900	1.932	1.982	2.024	2.060	2.094	2.140	2.170	2.204	2.232	2.260	2.282	2.310	2.334	2.356	2.370	2.384	2.402	2.416	2.430	2.436	2.444	2.450	
2-3/4	1.990	2.070	2.150	2.182	2.232	2.274	2.310	2.344	2.390	2.420	2.454	2.482	2.510	2.532	2.560	2.584	2.606	2.620	2.634	2.652	2.666	2.680	2.686	2.694	2.700	
3	2.240	2.320	2.400	2.432	2.482	2.524	2.560	2.594	2.640	2.670	2.704	2.732	2.760	2.782	2.810	2.834	2.856	2.870	2.884	2.902	2.916	2.930	2.936	2.944	2.950	
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3-1/2	2.740	2.820	2.900	2.932	2.982	3.024	3.060	3.094	3.140	3.170	3.204	3.232	3.260	3.282	3.310	3.334	3.356	3.370	3.384	3.402	3.416	3.430	3.436	3.444	3.450	
3-3/4	2.990	3.070	3.150	3.182	3.232	3.274	3.310	3.344	3.390	3.420	3.454	3.482	3.510	3.532	3.560	3.584	3.606	3.620	3.634	3.652	3.666	3.680	3.686	3.694	3.700	
4	3.240	3.320	3.400	3.432	3.482	3.524	3.560	3.594	3.640	3.670	3.704	3.732	3.760	3.782	3.810	3.834	3.856	3.870	3.884	3.902	3.916	3.930	3.936	3.944	3.950	
4-1/4	3.490	3.570	3.650	3.682	3.732	3.774	3.810	3.844	3.890	3.920	3.954	3.982	4.010	4.032	4.060	4.084	4.106	4.120	4.134	4.152	4.166	4.180	4.186	4.194	4.200	
4-1/2	3.740	3.820	3.900	3.932	3.982	4.024	4.060	4.094	4.140	4.170	4.204	4.232	4.260	4.282	4.310	4.334	4.356	4.370	4.384	4.402	4.416	4.430	4.436	4.444	4.450	
4-3/4	3.990	4.070	4.150	4.182	4.232	4.274	4.310	4.344	4.390	4.420	4.454	4.482	4.510	4.532	4.560	4.584	4.606	4.620	4.634	4.652	4.666	4.680	4.686	4.694	4.700	
5	4.240	4.320	4.400	4.432	4.482	4.524	4.560	4.594	4.640	4.670	4.704	4.732	4.760	4.782	4.810	4.834	4.856	4.870	4.884	4.902	4.916	4.930	4.936	4.944	4.950	
5-1/4	4.490	4.570	4.650	4.682	4.732	4.774	4.810	4.844	4.890	4.920	4.954	4.982	5.010	5.032	5.060	5.084	5.106	5.120	5.134	5.152	5.166	5.180	5.186	5.194	5.200	

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