



# Imperial<sup>®</sup>

DEPENDABLE UNDER PRESSURE<sup>®</sup>

# 2013 CATALOG



## PROFESSIONAL TOOLS FOR HVAC/R SERVICE AND TUBE WORKING



## PROFESSIONAL TOOLS FOR HVAC/R SERVICE AND TUBE WORKING

Imperial® Tools - Excellence and Innovation for Over 100 Years

### ABOUT US



The Imperial® brand was founded over 100 years ago on the south side of Chicago with the formation of the Imperial Brass Manufacturing Company. Quickly establishing a reputation as specialists in brass, Imperial designers developed the non-soldering “flared fitting”, followed by the first patents for flaring tools and tube cutters. Over the years the Imperial name came to stand for excellence and innovation, and the product list grew to include tube fittings, tube working tools, refrigeration and air conditioning service accessories, and associated products in the fluid connector field.

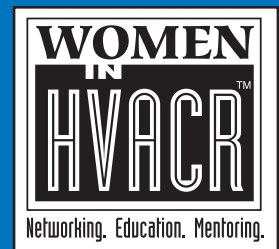
In September of 1996 the Imperial® brand tools and accessories division was sold to Stride Tool Inc. of Ellicottville, New York. Under Stride Tool’s leadership, the Imperial brand has been strengthened and expanded to include not just specialty tools for HVACR service and tube working, but also for electrical, automotive and industrial applications. In 2004 a new facility was completed in northeast Ohio to centralize all manufacturing and administrative operations.

### Thermal Engineering







In 2012 Stride Tool acquired Thermal Engineering Company of Mentor, Ohio and their line of HVACR service tools. The best of the Thermal Engineering offerings are now sold under the Imperial-Thermal name and are included in this catalog.

















*Our goal is simple - to always exceed the expectations of our professional customers.*








## TUBE WORKING TOOLS

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# TUBE WORKING TOOLS





# METAL TUBING

## TC-1550 HI-DUTY® TUBE CUTTER

For 1/8" to 1-1/8" (4 mm to 28 mm) O.D. tubing.

- Lower profile swing radius – 4-1/4" max.
- Retractable rotary style reamer – can be used right- or left-handed, and with a clockwise or counterclockwise motion for better ergonomic control.
- Rollers feature flare cut-off groove to reduce tube loss when damaged flare is removed.
- Lightweight die-cast solid aluminum body – lighter than similar cutters.
- Durable low gloss black wrinkle finish for improved wear resistance.
- Enclosed hardened steel, thrust bearing feed mechanism for smoothest cutting action and trouble-free operation.
- Unique design eliminates spiraling for clean right angle cuts.
- Our high precision machining and construction method permits one-piece screw-type axle for easy access to cutter wheel – no clip to lose or replace.
- Imperial® cutter wheels are made of the highest quality wear and abrasion-resistant chromium steel and precision machined to exacting specifications for accurate cutting and long life. Each tool is supplied with a spare cutter wheel.
- All Imperial tube cutters are 100% factory tested to ensure accurate spiral-free cutting.
- Available in "Try Me" clamshell packaging.



**TC-1550** For 1/8" to 1-1/8" (4 mm to 28 mm) O.D. tubing. Includes (2) S75015 general purpose cutter wheels. Length 5". Wt. 8.0 oz.

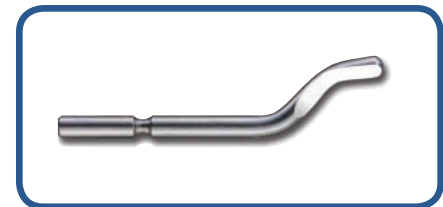
**TC-1560** For 1/8" to 1-1/8" (4 mm to 28 mm) O.D. tubing. Includes (2) S75046 cutter wheels for continuous cutting of stainless steel, monel and other hard temper tubing. Length 5". Wt. 8.0 oz.

**S75015** General purpose cutter wheel.

**S75046** Wheel for continuous cutting of stainless steel, monel and other hard temper tubing.

**S10001087** Deburr replacement blade.

**S10001259** Screw for extra cutter wheel in knob.



S10001087 -Deburr Replacement Blade



TC-1550C

# METAL TUBING

## HI-DUTY® TUBE CUTTERS

For 1/8" to 1-1/8" and 1/4" to 1-5/8" O.D. tubing.

- Enclosed hardened steel, thrust bearing feed mechanism for smoothest cutting action and trouble free operation.
- Unique design eliminates spiraling for clean right angle cuts. Our high precision machining and construction method permits one-piece screw-type axle for easy access to cutter wheel – no clip to lose or replace.
- Rugged aluminum alloy body designed for handling ease. Body is hand buffed and nickel chrome plated to a high-luster finish.
- Foldaway hardened steel reamer with turned cutting edge removes inside burrs cleanly. Filing surface removes outside burrs.
- Rollers feature flare cut-off groove to reduce tube loss when damaged flare is removed.
- Imperial® cutter wheels are made of the highest quality wear and abrasion-resistant chromium steel and precision machined to exacting specifications for accurate cutting and long life. Each tool is supplied with a spare cutter wheel.
- All Imperial tube cutters are 100% factory tested to ensure accurate spiral-free cutting.



TC-1000

**TC-1000** For 1/8" to 1-1/8" (4 mm to 28 mm) O.D. tubing. Includes (2) S75015 general purpose cutter wheels. Length 5". Wt. 8.8 oz.

**TC-1010** For 1/8" to 1-1/8" (4 mm to 28 mm) O.D. tubing. Includes (2) S75046 cutter wheels for continuous cutting of stainless steel, monel and other hard-temper tubing. Length 5". Wt. 8.8 oz.

**TC-1020** Combination tube constrictor & tube cutter. For 1/8" to 1-1/8" (4 mm to 28 mm) O.D. tubing. Includes S76637 constrictor wheel and S75015 general purpose cutter wheel. Length 5-1/2". Wt. 8.8 oz.

**312-FC** For 1/4" to 1-5/8" (7 mm to 41 mm) O.D. tubing. Includes (2) S75015 general purpose cutter wheels. Length 5-1/2". Wt. 10.4 oz.

Conforms to Federal Specification GGG-C-771d, Type II, Class I.

**S75015** General purpose cutter wheel.

**S75046** Wheel for continuous cutting of stainless steel, monel and other hard temper tubing. For cutters TC-1000, TC-1010, TC-1550, TC-1560, 312-FC, 174-F, TC-2050 and TC-3050.

**S16003162** Replacement cutter wheel for soft copper & aluminum tubing is extra sharp to minimize burr buildup.

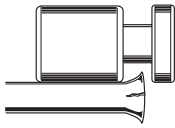
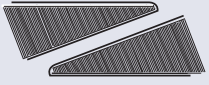
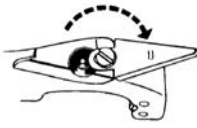
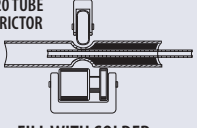
**S76637** Constrictor wheel for producing sweat joints.



TC-1010



312-FC

|   |  |   |   |
|---|--|---|---|
|  <p><b>FLARE CUT-OFF GROOVE</b><br/>Groove in rollers reduces tube loss when cracked flare is removed.</p> |  <p><b>FOLDAWAY REAMER</b><br/>Hardened steel reamer with turned cutting edge removes inside burrs cleanly. Filing surface removes outside burrs.</p> |  <p><b>SPARE CUTTING WHEEL</b><br/>Spare cutter wheel carried under foldaway locking reamer.</p> |  <p><b>TC-1020 TUBE CONSTRICTOR</b></p> <p><b>FILL WITH SOLDER</b><br/>Joint is ready for sweating when constricted tube contacts smaller tube. Can be used for crimping applications.</p> |
|---|--|---|---|

## JUNIOR TUBE CUTTER

For 1/8" to 3/4" (4 mm to 19 mm) O.D. tubing.

**227-FA** Includes S32633 general purpose cutter wheel. Swing radius 2". Length 3-1/2". Wt. 5.0 oz.



227-FA

# METAL TUBING

## "IMP"<sup>®</sup> MINI TUBE CUTTERS

For 1/8" to 5/8", 3/16" to 7/8" and 1/8" to 1-1/8" O.D. tubing.

- Big capacity, small size tube cutters designed for use in tight quarters where other cutters won't fit.
- Enclosed feed screw minimizes contamination assuring continued smooth operation.
- Corrosion-resistant steel rollers positioned at bottom of cutter allow for easier cutter engagement on tubing and smoother cutting action.
- All Imperial<sup>®</sup> tube cutters are 100% factory tested to ensure accurate spiral-free cutting.

**TC-1050** For 1/8" to 5/8" (4 mm to 15 mm) O.D. tubing. Includes (1) S32633 general purpose cutter wheel. Swing radius 1-1/4" (1-3/8" swing radius with 5/8" tube). Length 1-3/4". Wt. 2.5 oz.

**S32633** General purpose cutter wheel for TC-1050.

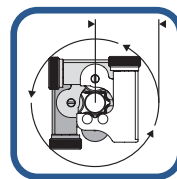
**S26883** Screw for TC-1050 cutter wheel.

**TC-2050** For 3/16" to 7/8" (5 mm to 22 mm) O.D. tubing. Includes (1) S75015 general purpose cutter wheel. Swing radius 1-11/16". Length 2-1/4". Wt. 4.0 oz.

**TC-3050** For 1/8" to 1-1/8" (4 mm to 28 mm) O.D. tubing. Includes (1) S75015 general purpose cutter wheel. Swing radius 2-1/2" (2-1/16" swing radius with 1-1/8" tube). Length 3". Wt. 7.0 oz.

**S75015** General purpose cutter wheel.

**S74762** Screw for TC-3050 cutter wheel.



Swing Radius  
1-1/4"



TC-1050

Our Newest "IMP"<sup>®</sup> tube cutter can cut 1/8" to 1-1/8" O.D. tubing in tight quarters

Taller knob height for easier torque



TC-3050

## RATCHETING TUBE CUTTERS

For 1/8" to 5/8" and 1/8" to 1-1/8" O.D. tubing.

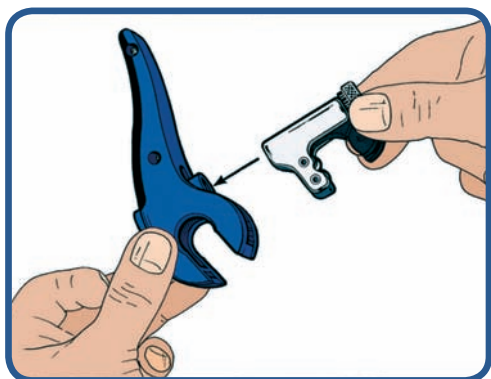
- Easily completes a full revolution, maximizing leverage.
- Cutter can easily be removed from the handle.
- Ergonomic handle with non-slip grip.
- 100% factory tested to ensure accurate spiral-free cutting.
- Six independent drive pawls provide 15° arc-swing.
- Includes (1) general purpose cutter wheel.

**TC-1050RH** For 1/8" to 5/8" (4 mm to 15 mm) O.D. tubing. 2-Pc. set includes TC-1050 "IMP"<sup>®</sup> mini tube cutter and ratcheting handle in clamshell packaging. Length 5". Wt. 6.0 oz.

**TC-1051** Ratcheting handle only. Length 5". Wt. 1.5 oz.

**TC-3050RH** For 1/8" to 1-1/8" (4 mm to 28 mm) O.D. tubing. 3-Pc. set includes TC-3050 "IMP"<sup>®</sup> tube cutter, removable deburr tool and ratcheting handle in clamshell packaging. Length 7". Wt. 11.5 oz.

**TC-3051** Ratcheting handle and deburr tool. Length 7". Wt. 4.0 oz.



Use cutter with or without patented ratcheting handle - snaps into place in seconds

Handle completes revolutions with ease

TC-3050RH includes a removable deburr tool

**PATENTED**

Ergonomic handle with non-slip grip

Ideal for tight spaces

Spiral-free cutting



TC-3050RH

Six independent drive pawls give small, 15° arc-swing



Removable Deburr Tool  
(TC-3050RH and TC-3051)



TC-1050RH



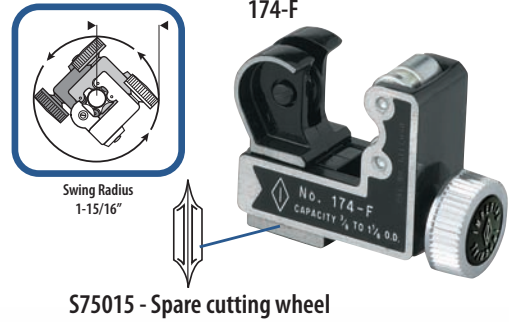
TC-3050RH



# METAL TUBING

## BIG "IMP"® TUBE CUTTER - "Big capacity in small size" For 3/8" to 1-1/8" (10 mm to 28 mm) O.D. tubing.

**174-F** Includes (2) S75015 general purpose cutter wheels. Swing radius 1-15/16" (2-1/4" swing radius with 1-1/8" tube). Length 2-11/16". Wt. 5.0 oz.



## ADJUST-O-MATIC™ TUBE CUTTERS

For 3/8" to 2-5/8" and 2" to 4-1/8" O.D. tubing.

- Ratchet feed mechanism speeds up cutting operation.
- Extra wide rollers with flare cut-off groove stabilize tubing.
- Spare cutting wheel included under handle cap.
- Enclosed screw-type feed mechanism; lightweight aluminum alloy body.

**206-FB** For 3/8" to 2-5/8" (10 mm to 66 mm) O.D. tubing. Includes (2) S74761 general purpose cutter wheels. Length closed 7-3/4". Wt. 2.0 lbs.

**206-FBP** Cuts schedule 40 PVC pipe up to 2". Includes one cutter wheel for PVC S10000770 and one general purpose cutter wheel S74761.

**406-FA** For 2" to 4-1/8" (51 mm to 104 mm) O.D. tubing. Includes (2) S74833 general purpose cutter wheels. Length closed 11-1/4". Wt. 3.5 lbs.

Conforms to Federal Specification GGG-C-771d, Type II, Class I.



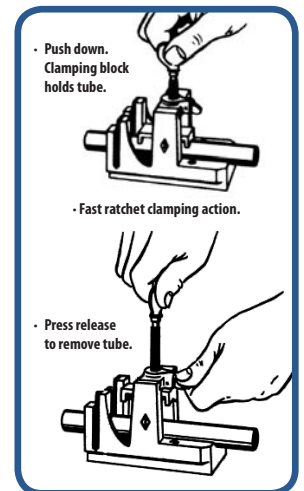
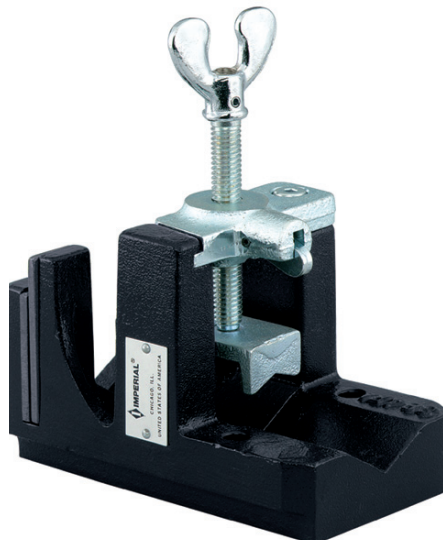
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| <p><b>RATCHET FEED</b><br/>Ratchet release opens cutter instantly to maximum size.</p> | <p><b>RATCHET FEED</b><br/>Push on handle to slide cutter wheel to tubing. Rotate handle for fine adjustment.</p> | <p><b>FLARE CUT-OFF GROOVE</b><br/>Wide flare cut-off groove in rollers to accommodate flares on large size tubing.</p> | <p><b>SPARE CUTTING WHEEL</b><br/>Spare cutter wheel included in handle under snap-off cap.</p> |
|--|---|---|---|

## TUBE SAWING VISE

For 1/8" to 1-1/2" (4 mm to 38 mm) O.D. tubing.

**384-FA** Grips tube or hose securely for perfect right angle cuts. Designed for stainless steel tubing that requires flaring. Excellent for holding stainless steel tubing and wire braided hose when cutting with a hacksaw. Quick clamp adjustment with instant tube release. Replaceable hardened steel hacksaw guides. Fastens on bench or clamp in vise. Size: 5" x 3-1/8" x 5-1/8". Wt. 2.5 lbs.

Conforms to Federal Specification GGG-V-436d.



# PVC, PLASTIC AND NON-METAL REINFORCED TUBING

## PLASTIC TUBE AND HOSE SHEARS

For 1/16" to 13/16" (1 mm to 20 mm) O.D. hose\* or tubing.

**307-FP** **Snimp™** Compact shear for 1/16" to 1/2" (1 mm to 13 mm) O.D. plastic tubing and non-metal reinforced hose. Spring loaded for safety - closes automatically. Includes S8115601 replaceable hardened steel blade. Length 2-7/8". Wt. 1.0 oz. each. Comes in 12-pc. pop-up counter display. 9"D x 12"W x 12"H.



307-FP

**327-FP** For 1/8" to 13/16" (4 mm to 20 mm) O.D. plastic tubing and non-metal reinforced hose. Can be wall- or bench-mounted for production, or carried in a toolbox. Includes S77615 replaceable hardened steel blade. Length 9-3/4". Wt. 1.0 lb.

\* Not for use with metal reinforced hose.



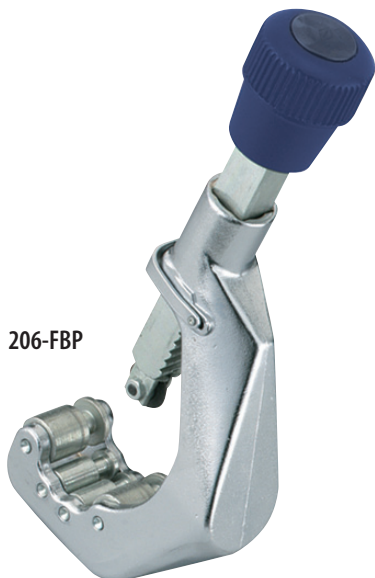
327-FP



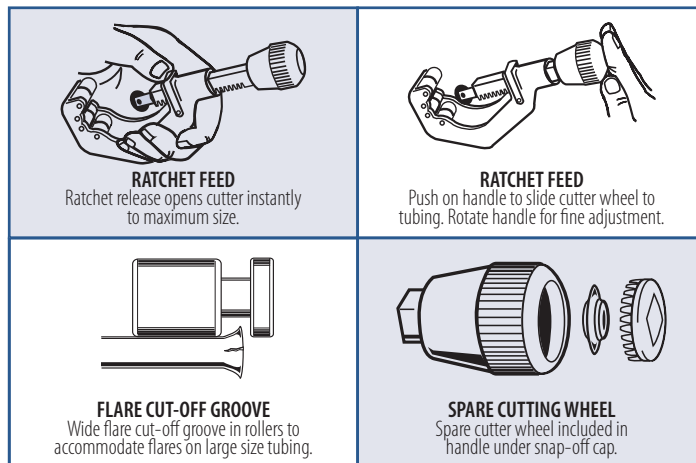
307-FP POP-UP DISPLAY

## ADJUST-O-MATIC™ PVC PIPE CUTTER

**206-FBP** Cuts schedule 40 PVC pipe up to 2". Ratchet feed mechanism speeds up cutting operation. Includes one cutter wheel for PVC S10000770 and one general purpose cutter wheel S74761.



206-FBP



# METAL TUBING

## 144-F IMPERIAL® TUBE CUTTER SERVICE CENTER For 1/8" to 4-1/8" O.D. tubing.

Selling Imperial® replacement cutter wheels, reamer blades and fasteners is easy. Our Service Center organizes a popular selection of replacement parts for Imperial cutters. Display on the counter or bring it with you when making sales calls.

- 15 most common replacement parts stocked in one handy container.
- Includes a visual replacement chart for quick and easy identification.



144-F

### 144-F SERVICE CENTER INCLUDES:

| PART NO.  | QUANTITY | DESCRIPTION                       | CUTTER  |
|-----------|----------|-----------------------------------|---|
| S75015    | 10       | General Purpose Cutter Wheel      | TC-1000, TC-1010, TC-1550, TC-1560, 312-FC, 174-F, TC-2050, TC-3050 |
| S75046    | 5        | Cutter Wheel for Stainless Steel  | TC-1000, TC-1010, TC-1550, TC-1560, 312-FC, 174-F, TC-2050, TC-3050 |
| S32633    | 10       | Cutter Wheel                      | TC-1050, 227-FA   |
| S74761    | 5        | Cutter Wheel                      | 206-FB, 206-FBP   |
| S74762    | 5        | Cutter Wheel Retaining Screw      | TC-1000, TC-1010, TC-1550, TC-1560, 312-FC, 174-F, TC-2050, TC-3050 |
| S74833    | 3        | Cutter Wheel                      | 406-FA  |
| S26883    | 3        | Cutter Wheel Retaining Screw      | TC-1050   |
| S77511    | 3        | Cutter Wheel Retaining Screw      | 206-FB, 206-FBP   |
| S74834    | 3        | Cutter Wheel Retaining Screw      | 406-FA  |
| S76637    | 3        | Constrictor Roller Wheel          | TC-1000, TC-1010, TC-1020, 312-FC                                   |
| S16003162 | 5        | Cutter Wheel for Soft Copper Only | TC-1000, TC-1010, TC-1550, TC-1560, 312-FC, 174-F, TC-2050, TC-3050 |
| S10000770 | 3        | Cutter Wheel for PVC              | 206-FB, 206-FBP   |
| S7931801  | 3        | Reamer Blade                      | TC-1000, TC-1010, 312-FC  |
| S8201501  | 3        | Retaining Screw for Reamer Blade  | TC-1000, TC-1010, 312-FC  |
| S74197    | 3        | Spring Washer for Reamer Blade    | TC-1000, TC-1010, 312-FC  |
| 144-FB    | 1        | Container only                    |   |

### PARTS CONTENTS CHART:

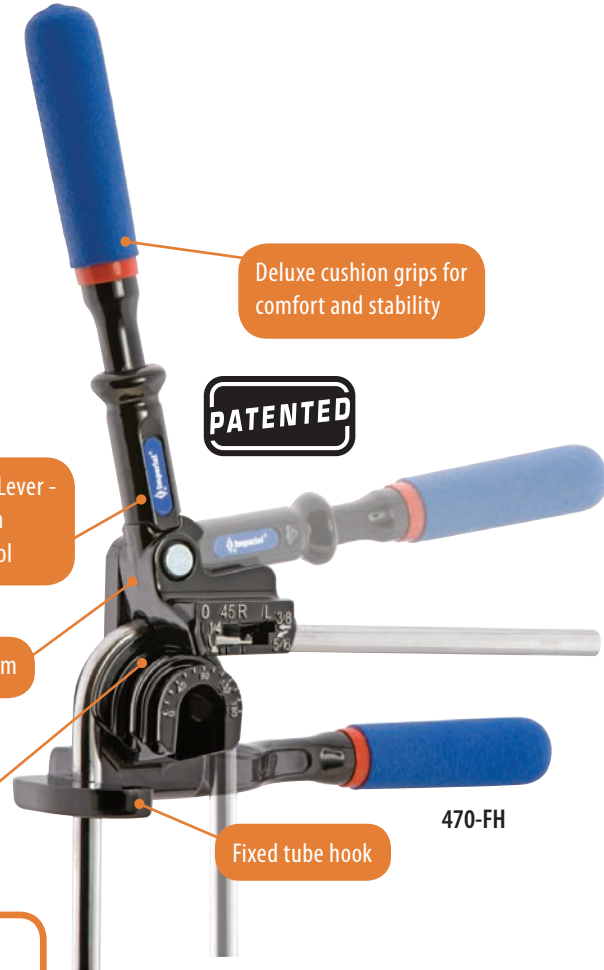
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| <p><b>CUTTER WHEEL</b><br/>Part# S74833<br/>for Cutter # 406-FA</p>   | <p><b>CUTTER WHEEL FOR PVC</b><br/>Part# S10000770<br/>for Cutters # 206-FB, 206-FBP</p>  | <p><b>CUTTER WHEEL</b><br/>Part# S74761<br/>for Cutters # 206-FB, 206-FBP</p>   | <p><b>GENERAL PURPOSE CUTTER WHEEL</b><br/>Part# S75015<br/>for Cutters # TC-1000, TC-1010, TC-1550, TC-1560, 312-FC, 174-F, TC-2050, TC-3050</p> | <p><b>CUTTER WHEEL FOR SOFT COPPER ONLY</b><br/>Part# S16003162<br/>for Cutters # TC-1000, TC-1010, TC-1550, TC-1560, 312-FC, 174-F, TC-2050, TC-3050</p> | <p><b>CONSTRICTOR ROLLER WHEEL</b><br/>Part# S76637<br/>for Cutters # TC-1000, TC-1010, TC-1020, 312-FC</p> |
| <p><b>CUTTER WHEEL FOR STAINLESS STEEL</b><br/>Part# S75046<br/>for Cutters # TC-1000, TC-1010, TC-1550, TC-1560, 312-FC, 174-F, TC-2050, TC-3050</p> | <p><b>CUTTER WHEEL</b><br/>Part# S32633<br/>for Cutters # TC-1050, 227-FA</p>   | <p><b>SPRING WASHER FOR REAMER BLADE</b><br/>Part# S74197<br/>for Cutters # TC-1000, TC-1010, TC-1020, 312-FC</p>     | <p><b>REAMER BLADE</b><br/>Part# S7931801<br/>for Cutters # TC-1000, TC-1010, TC-1020, 312-FC</p>   | <p><b>CUTTER WHEEL RETAINING SCREW</b><br/>Part# S26883<br/>for Cutter # TC-1050</p>  | <p><b>CUTTER WHEEL RETAINING SCREW</b><br/>Part# S74834<br/>for Cutter # 406-FA</p>                         |
| <p><b>CUTTER WHEEL RETAINING SCREW</b><br/>Part# S77511<br/>for Cutters # 206-FB, 206-FBP</p>   | <p><b>CUTTER WHEEL RETAINING SCREW</b><br/>Part# S74762<br/>for Cutters # TC-1000, TC-1010, TC-1550, TC-1560, 312-FC, 174-F, TC-2050, TC-3050</p> | <p><b>RETAINING SCREW FOR REAMER BLADE</b><br/>Part# S8201501<br/>for Cutters # TC-1000, TC-1010, TC-1020, 312-FC</p> |   |   |   |

# TRIPLE HEAD LEVER TYPE

## 470-FH TRIPLE HEAD 180° TUBE BENDER WITH ROTO-LOK™ INDEXING HANDLE

- Bends 3/16", 1/4", 5/16" and 3/8" O.D. tubing.
- Patented, quick-action indexing lever repositions two-stage handle midway through bend when both handles begin to meet. This feature allows easy fabrication of bends up to 180° with reduced effort, better control and no crossing of handles!
- Optimum bending radius – for each tubing size.
- Calibrated markings – for making accurate left-hand, right-hand and offset bends.
- Compact design for working in tight spaces.
- Cushion grips – for comfort and stability.
- Made of lightweight, die-cast aluminum.
- Clamshell packaging available.

| TUBE O.D. (in.) | RADIUS TO CENTER OF TUBE (in.) |
|-----------------|--------------------------------|
| 3/16            | 9/16                           |
| 1/4             | 9/16                           |
| 5/16            | 11/16                          |
| 3/8             | 15/16                          |



# TRIPLE HEAD LEVER TYPE

## 370-FH TRIPLE HEAD 180° TUBE BENDER

- Bends 3/16", 1/4", 3/8" and 1/2" tubing.
- Makes smooth, tight-radius 180° bends.
- Calibrated markings - for making accurate left-hand, right-hand and offset bends.
- Adjustable hook.
- Optimum bending radius - for each tubing size.
- Cushion grips - for extreme comfort.
- Made of lightweight die-cast aluminum.
- Clamshell packaging available.



**PATENTED**

370-FH

### 370-FH

| TUBE O.D. (in.) | RADIUS TO CENTER OF TUBE (in.) |
|-----------------|--------------------------------|
| 3/16            | 11/16                          |
| 1/4             | 11/16                          |
| 3/8             | 1-1/8                          |
| 1/2             | 1-1/2                          |

Bend 3 of the most popular sizes of soft copper, aluminum and thin wall steel tubing with one rugged, precise tool!



Easy 180° bends in one swift motion

## IMP™ TRIPLE HEAD BENDERS

For soft copper, aluminum and thin wall steel tubing.

For 1/8", 3/16", 1/4", 5/16" and 3/8" O.D. tubing.

Makes up to 90° bends.

Calibrated markings for making accurate left-hand, right-hand and offset bends.

90° start requires less effort – making bending fast and easy.

**367-FH** For 1/8", 3/16" and 1/4" (3 mm, 4 mm and 6 mm) O.D. tubing. Wt. 0.5 lbs.

**368-FH** For 3/16", 1/4", 5/16" and 3/8" (6 mm and 8 mm) O.D. tubing. Wt. 1.0 lbs.

### 367-FH

| TUBE O.D. (in.) | RADIUS TO CENTER OF TUBE |      |
|-----------------|--------------------------|------|
|                 | (in.)                    | (mm) |
| 1/8             | 5/8                      | 16   |
| 3/16            | 19/32                    | 15   |
| 1/4             | 9/16                     | 14   |

### 368-FH

| TUBE O.D. (in.) | RADIUS TO CENTER OF TUBE |      |
|-----------------|--------------------------|------|
|                 | (in.)                    | (mm) |
| 3/16            | 1-1/64                   | 26   |
| 1/4             | 1-1/64                   | 26   |
| 5/16            | 1                        | 25   |
| 3/8             | 15/16                    | 24   |



367-FH

368-FH

## SPRING TYPE TUBE BENDERS

For soft copper and aluminum tubing.

For 1/4" to 7/8" O.D. tubing.

Tools allow hand bending of soft tubing to any shape without collapsing walls. Special spring steel, zinc finish. End belled for quick tube removal.

**201-F** Set of 8 benders for 1/4", 5/16", 3/8", 7/16", 1/2", 5/8", 3/4" and 7/8" O.D. tubing.

**101-F** Set of 6 benders for 1/4", 5/16", 3/8", 7/16", 1/2" and 5/8" O.D. tubing.

**163-F** Set of 4 benders for 1/4", 3/8", 1/2" and 5/8" O.D. tubing.

**112-F** Set of 3 benders for 1/4", 5/16" and 3/8" O.D. tubing.



102-F-08

| PART NO. | TUBE O.D. (in.) | LENGTH (in.) | WEIGHT EACH (oz.) |
|----------|-----------------|--------------|-------------------|
| 102-F-04 | 1/4             | 10           | 3                 |
| 102-F-05 | 5/16            | 10           | 3                 |
| 102-F-06 | 3/8             | 10           | 4                 |
| 102-F-07 | 7/16            | 12           | 6.25              |
| 102-F-08 | 1/2             | 12           | 6.5               |
| 102-F-10 | 5/8             | 12           | 8                 |
| 102-F-12 | 3/4             | 12           | 10                |
| 102-F-14 | 7/8             | 12           | 10                |

Each tool bends only one size.

# LEVER TYPE

## 364-FHA LEVER TYPE TUBE BENDERS

For 1/8" to 1" and 6 mm to 12 mm O.D. tubing.

Each tool bends one size. Open-side type which slips over tube at any point. Makes smooth, tight radius bends up to 180° with minimum effort. No scoring or flattening of tubing. Calibrated to show angle of bend. Wide hook grips tubing securely.

| PART NO.    | TUBE O.D. (in.) | RADIUS TO CENTER OF TUBE (in.) |  | WEIGHT EACH (lbs.) |
|-------------|-----------------|--------------------------------|--|--------------------|
|             |                 |                                |  |                    |
| 364-FH-02   | 1/8             | 3/8                            |  | 0.5                |
| 364-FH-03   | 3/16            | 7/16                           |  | 0.5                |
| 364-FHA-04  | 1/4             | 9/16                           |  | 1.0                |
| 364-FHA-05  | 5/16            | 11/16                          |  | 1.0                |
| 364-FHA-06  | 3/8             | 15/16                          |  | 1.75               |
| 364-FHA-07  | 7/16            | 1-1/2                          |  | 3.5                |
| 364-FHA-08  | 1/2             | 1-1/2                          |  | 3.5                |
| 364-FHA-10* | 5/8             | 2-1/4                          |  | 5.5                |
| 364-FHA-12* | 3/4             | 3                              |  | 7.0                |
| 364-FHA-14* | 7/8             | 3                              |  | 10.5               |
| 364-FHA-16* | 1               | 3-1/2                          |  | 10.5               |

Each tool bends only one size.

Conforms to Federal Specification GGG-B-191a Type III, Class 2.

\* For bending annealed copper and aluminum tubing only.

### 364-FHA-14

Features telescopic handles for increased leverage. Expandable style furnished for 7/8" and 1" O.D. tubing.



### 364-FHA-06

Style for 1/4" through 1/2" and 6 mm to 12 mm O.D. tubing.

## METRIC SIZE BENDING TOOLS

| PART NO.      | TUBE O.D. (mm) | RADIUS TO CENTER OF TUBE |          | WEIGHT EACH |        |
|---------------|----------------|--------------------------|----------|-------------|--------|
|               |                | (mm)                     | (inches) | (kg.)       | (lbs.) |
| 364-FHAM-6MM  | 6              | 14.2                     | 9/16     | 0.45        | 1.0    |
| 364-FHAM-8MM  | 8              | 17.5                     | 11/16    | 0.45        | 1.0    |
| 364-FHAM-10MM | 10             | 24.0                     | 15/16    | 0.79        | 1.75   |
| 364-FHAM-12MM | 12             | 38.1                     | 1-1/2    | 1.6         | 3.5    |

Each tool bends only one size.



### 364-FH-02

Style for 1/8" and 3/16" O.D. tubing.



### 364-FHA-10

Style for 5/8" and 3/4" O.D. tubing.

## 364-FHB SWIVEL HANDLE TUBE BENDERS

For 1/4" to 1/2" and 6 mm to 12 mm O.D. tubing.

The 364-FHB series has a swivel handle that can be repositioned midway through a bend when both handles begin to meet. This simple feature allows easy fabrication of bends up to 180° with reduced effort, better control and without the crossing of handles, typical of most other lever type benders.

| PART NO.   | TUBE O.D. (in.) | RADIUS TO CENTER OF TUBE (in.) |  | WEIGHT EACH (lbs.) |
|------------|-----------------|--------------------------------|--|--------------------|
|            |                 |                                |  |                    |
| 364-FHB-04 | 1/4             | 9/16                           |  | 1.0                |
| 364-FHB-05 | 5/16            | 11/16                          |  | 1.0                |
| 364-FHB-06 | 3/8             | 15/16                          |  | 1.75               |
| 364-FHB-07 | 7/16            | 1-1/2                          |  | 3.5                |
| 364-FHB-08 | 1/2             | 1-1/2                          |  | 3.5                |

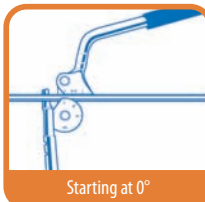
Each tool bends only one size.

Conforms to Federal Specification GGG-B-191a Type III, Class 2.

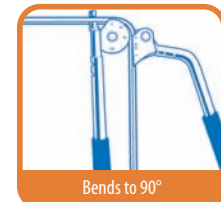


### 364-FHB-06

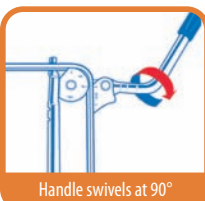
Style for 1/4" through 1/2" and 6 mm to 12 mm O.D. tubing.



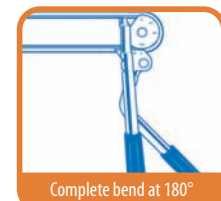
Starting at 0°



Bends to 90°



Handle swivels at 90°



Complete bend at 180°

## METRIC SIZE BENDING TOOLS

| PART NO.      | TUBE O.D. (mm) | RADIUS TO CENTER OF TUBE |          | WEIGHT EACH |        |
|---------------|----------------|--------------------------|----------|-------------|--------|
|               |                | (mm)                     | (inches) | (kg.)       | (lbs.) |
| 364-FHBM-6MM  | 6              | 14.2                     | 9/16     | 0.45        | 1.0    |
| 364-FHBM-8MM  | 8              | 17.5                     | 11/16    | 0.45        | 1.0    |
| 364-FHBM-10MM | 10             | 24.0                     | 15/16    | 0.79        | 1.75   |
| 364-FHBM-12MM | 12             | 38.1                     | 1-1/2    | 1.6         | 3.5    |

Each tool bends only one size.

# HEAVY DUTY LEVER TYPE

## 664-FH HEAVY-DUTY 180° TUBE BENDER WITH ROTO-LOK™ INDEXING HANDLE FOR TIGHT RADIUS BENDS

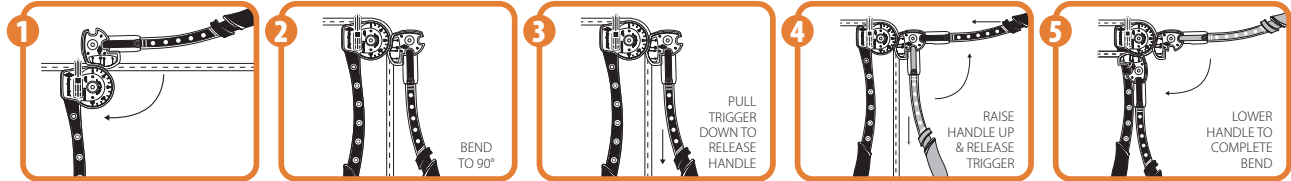
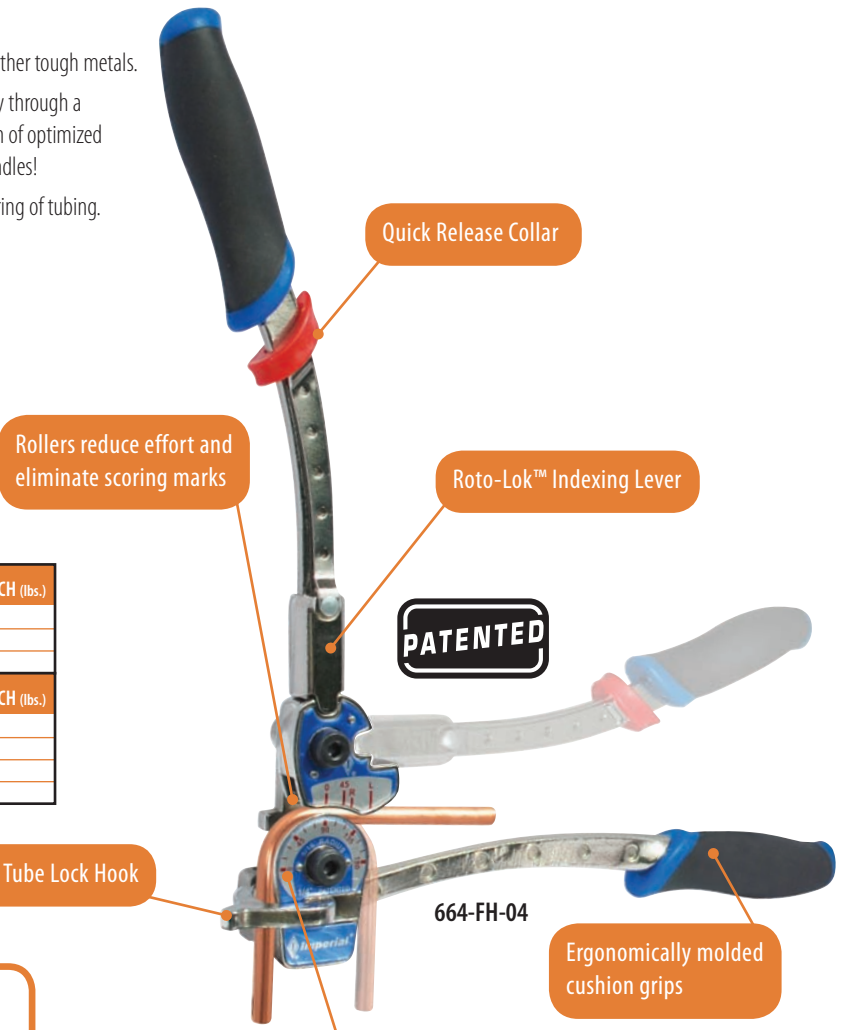
For 1/4" to 1/2" and 6 mm to 12 mm O.D. tubing.

- New design for accurate and tight bends up to 180° in stainless steel and other tough metals.
- Patented, quick action trigger release repositions two-stage handle midway through a bend when both handles begin to meet. This feature allows easy fabrication of optimized bends up to 180° with reduced effort, better control and no crossing of handles!
- Rollers in bending handle reduce friction and bending effort; eliminate scoring of tubing.
- Patented ergonomic grips.
- Durable nickel finish.
- Vise lug for mounting in vise.
- Clamshell packaging available for 1/4" and 3/8" O.D. models.

| PART NO.  | TUBE O.D. (in.) | RADIUS TO CENTER OF TUBE (in.) | WEIGHT EACH (lbs.) |
|-----------|-----------------|--------------------------------|--------------------|
| 664-FH-04 | 1/4             | 9/16                           | 1.2                |
| 664-FH-06 | 3/8             | 15/16                          | 3.7                |
| 664-FH-08 | 1/2             | 1-1/2                          | 7.6                |

| PART NO.    | TUBE O.D. (mm) | RADIUS TO CENTER OF TUBE (mm) | WEIGHT EACH (lbs.) |
|-------------|----------------|-------------------------------|--------------------|
| 664-FH-6MM  | 6              | 15                            | 1.2                |
| 664-FH-8MM  | 8              | 24                            | 3.7                |
| 664-FH-10MM | 10             | 24                            | 3.7                |
| 664-FH-12MM | 12             | 38                            | 7.6                |



# HEAVY DUTY LEVER TYPE

## 564-FH AND 564-FHT LEVER TYPE HEAVY-DUTY TUBE BENDERS For 3/8" and 1/2" O.D. tubing.

These heavy-duty tube benders feature high-strength tool steel construction on all components subjected to stress during the bending process – including forming rollers, form wheel, stop pins, hook and cam adjustment shaft. Unique offset handle design assures maximum power transfer between worker and bender. Bender will not “gyrate” as handles are brought to closed position.

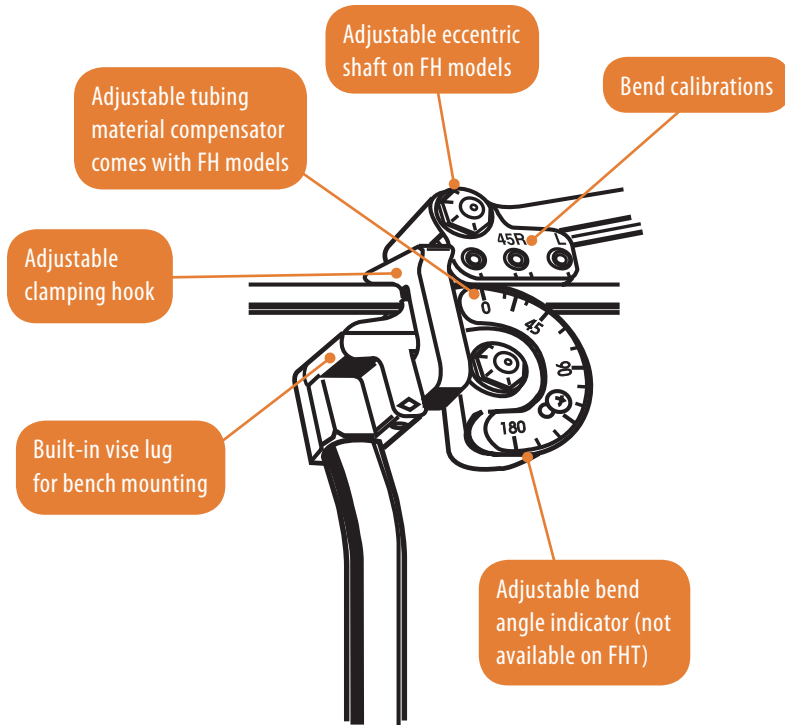
- Meets ANSI B31.1/ASME Sec. 3 Boiler/Power requirements (FH Models only).
- Vise mountable.
- Prevents slippage and flattening.
- Fully adjustable to compensate for variances in tube tolerance.
- Starts with handles at 90° angle.
- Built for rugged day-in and day-out use.
- Precise bends!
- Self-aligning rollers eliminate scoring and reduce bending effort.



564-FH-06

| PART NO.   | TUBE O.D. (in.) | RADIUS TO CENTER OF TUBE (in.) | WEIGHT EACH (lbs.) |
|------------|-----------------|--------------------------------|--------------------|
| 564-FHT-06 | 3/8             | 15/16                          | 5.0                |
| 564-FH-06  | 3/8             | 1-1/8                          | 5.5                |
| 564-FH-08  | 1/2             | 1-1/2                          | 7.0                |

Each tool bends only one size.





# LEVER TYPE KITS

## WIDE RANGE TUBE BENDER KITS

For 1/4" to 7/8" O.D. tubing.

Each tool quickly adapts to all sizes in its range by changing forming wheel and block. Telescopic handles reposition during bend for best leverage. Calibrations show precise bend angle. One-piece benders furnished for 1/4" and 5/16" O.D. sizes. Includes metal tool case with space for other tools needed on the job.

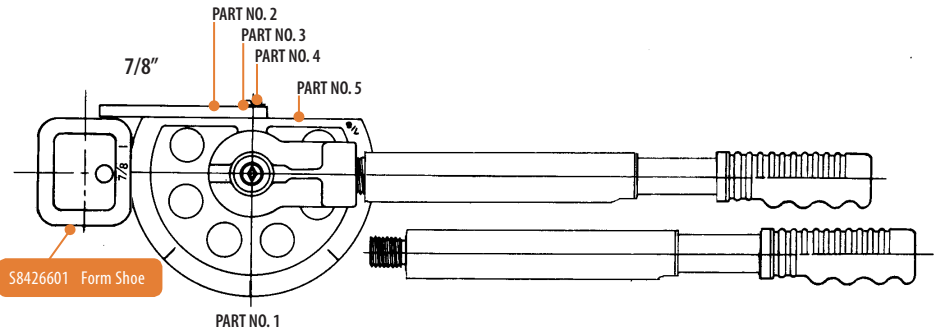
Conforms to Federal Specification GGG-B-191a Type III, Class 1.



All wide range benders furnished in tool case with space for other tools.

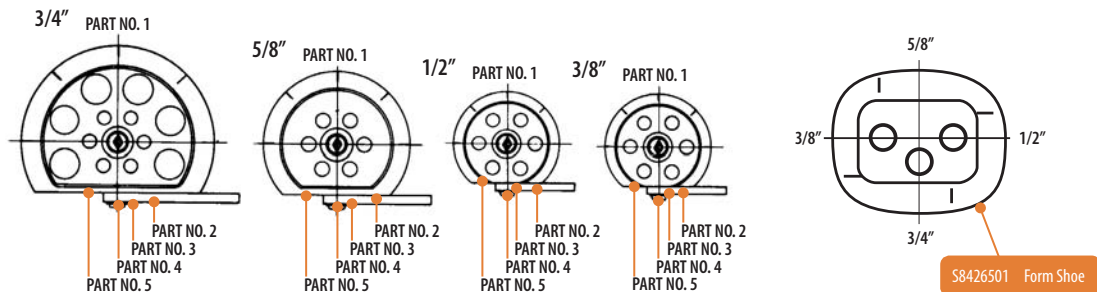
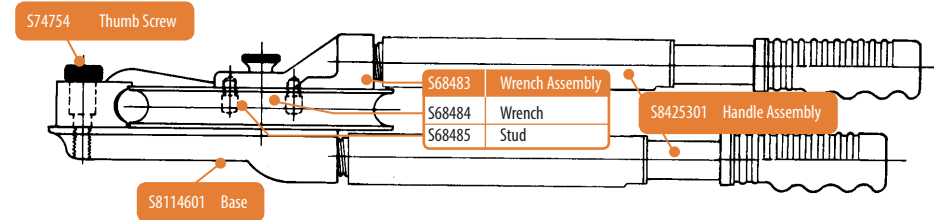
### 260-FHA for 7 sizes. Wt. 23 lbs.

| TUBE O.D. (in.) | RADIUS TO CENTER OF TUBE (in.) |
|-----------------|--------------------------------|
| 1/4             | 9/16                           |
| 5/16            | 11/16                          |
| 3/8*            | 1-5/8                          |
| 1/2*            | 1-5/8                          |
| 5/8*            | 2-1/4                          |
| 3/4*            | 3                              |
| 7/8*            | 3                              |



### 350-FHA for 6 sizes. Wt. 20 lbs.

| TUBE O.D. (in.) | RADIUS TO CENTER OF TUBE (in.) |
|-----------------|--------------------------------|
| 1/4             | 9/16                           |
| 5/16            | 11/16                          |
| 3/8*            | 1-5/8                          |
| 1/2*            | 1-5/8                          |
| 5/8*            | 2-1/4                          |
| 3/4*            | 3                              |



### 360-FHA for 4 sizes. Wt. 20 lbs.

| TUBE O.D. (in.) | RADIUS TO CENTER OF TUBE (in.) |
|-----------------|--------------------------------|
| 3/8*            | 1-5/8                          |
| 1/2*            | 1-5/8                          |
| 5/8*            | 2-1/4                          |
| 3/4*            | 3                              |

| Size (in.) | PART NO. 1 (Wheel Assembly) | PART NO. 2 (Hook) | PART NO. 3 (Spring Washer) | PART NO. 4 (Hook Screw) | PART NO. 5 (Form Wheel) |
|------------|-----------------------------|-------------------|----------------------------|-------------------------|-------------------------|
| 3/8        | S68478                      | S68480            | S68481                     | S66914                  | S68479                  |
| 1/2        | S68492                      | S62156            | S68481                     | S66914                  | S68493                  |
| 5/8        | S68496                      | S8058801          | S68481                     | S66914                  | S68497                  |
| 3/4        | S8487001                    | S8058901          | S68481                     | S66914                  | S8442401                |
| 7/8        | S8485201                    | S68502            | S68481                     | S66914                  | S8422701                |

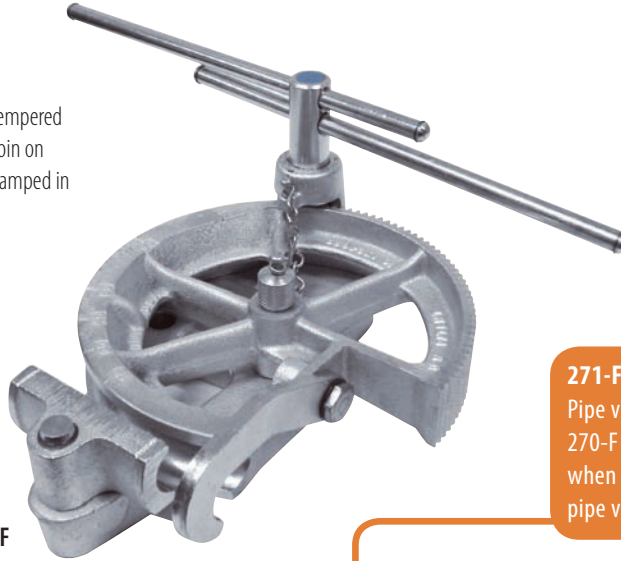
\* Recommended for bending annealed copper and aluminum tubing only.

# GEAR TYPE

## 270-F GEAR TYPE TUBE BENDER

For 3/8" to 1-1/8" O.D. tubing.

For all bending work. Spur-gear type with 10-to-1 ratio for easy bending of tempered tubing. Floating shoe aligns tube perfectly on calibrated forming wheel. Pull-pin on wheel speeds repositioning for bends over 90°. Portable. Can be hand held, clamped in vise or bolted to bench. Adapts to pipe vise with handle 271-F.



270-F

### 271-F

Pipe vise extension (fits all 270-F Benders). For use when clamping bender in pipe vise.



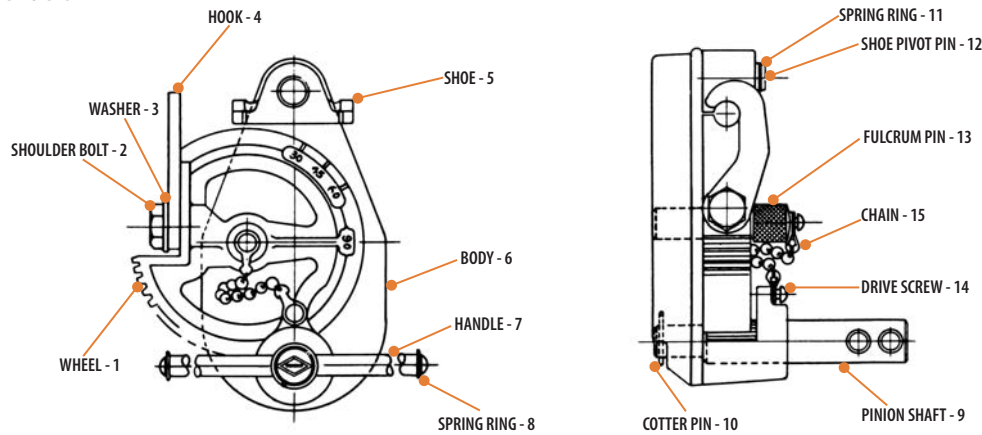
Each tool bends only one size.

| PART NO. | TUBE O.D. (in.) | RADIUS FROM CTR. TO CENTER OF TUBE (in.) | MIN. RETURN FROM CENTER TO CENTER OF TUBE (in.) | WEIGHT EACH (lbs.) | WALL THICKNESS (in.) |
|----------|-----------------|--|---|--------------------|----------------------|
| 270-F-06 | 3/8             | 1-3/4                                    | 4-1/2   | 3                  | .030 to .060         |
| 270-F-08 | 1/2             | 2-1/2                                    | 6   | 4.75               | .035 to .065         |
| 270-F-10 | 5/8             | 3  | 7-1/2   | 8.5                | .040 to .072         |
| 270-F-12 | 3/4             | 4  | 9-1/2   | 15                 | .042 to .083         |
| 270-F-14 | 7/8             | 4  | 9-1/2   | 14.75              | .045 to .083         |
| 270-F-16 | 1               | 4  | 9-1/2   | 14.75              | .065 to .095*        |
| 270-F-18 | 1-1/8           | 4  | 9-1/2   | 14.25              | .065 to .095*        |
| 271-F    |                 |  |   | 1.75               |                      |

\* Not recommended for Type L Hard and Type M copper tubing with wall thickness over .065".

## REPLACEMENT PARTS

For 270-F Gear Type Tube Benders



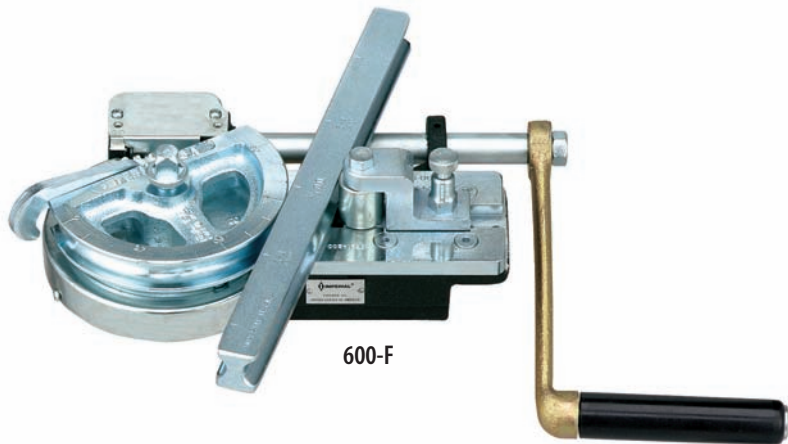
| TUBE BENDER | Size (in.) | PART NO. 1 | PART NO. 2 | PART NO. 3 | PART NO. 4 | PART NO. 5 | PART NO. 6 | PART NO. 7 | PART NO. 8 | PART NO. 9 | PART NO. 10 | PART NO. 11 | PART NO. 12 | PART NO. 13 | PART NO. 14 | PART NO. 15 |
|-------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|-------------|-------------|-------------|-------------|-------------|-------------|
| 270-F-06    | 3/8        | S62244     | S62245     | S62246     | S62247     | S62250     | S62251     | S62252     | S62253     | S62254     | S62255      | S62257      | S62258      | S62838      | S62836      | S62839      |
| 270-F-08    | 1/2        | S62261     | S62264     | S62246     | S62263     | S62262     | S62260     | S62269     | S62253     | S62268     | S62255      | S62266      | S62265      | S62840      | S62836      | S62839      |
| 270-F-10    | 5/8        | S62275     | S62280     | S62279     | S62278     | S62277     | S62276     | S62284     | S62285     | S62283     | S62255      | S62281      | S62282      | S62841      | S62836      | S62842      |
| 270-F-12    | 3/4        | S62305     | S62294     | S62298     | S62307     | S62306     | S62288     | S62292     | S62297     | S62291     | S62255      | S62296      | S62295      | S62835      | S62836      | S62837      |
| 270-F-14    | 7/8        | S62302     | S62294     | S62298     | S62304     | S62303     | S62288     | S62292     | S62297     | S62291     | S62255      | S62296      | S62295      | S62835      | S62836      | S62837      |
| 270-F-16    | 1          | S62299     | S62294     | S62298     | S62301     | S62300     | S62288     | S62292     | S62297     | S62291     | S62255      | S62296      | S62295      | S62835      | S62836      | S62837      |
| 270-F-18    | 1-1/8      | S62287     | S62294     | S62298     | S62290     | S62289     | S62288     | S62292     | S62297     | S62291     | S62255      | S62296      | S62295      | S62835      | S62869      | S62837      |

# GEAR TYPE

## WORM GEAR TUBE BENDER

For 1/4", 5/16", 3/8", 1/2", 5/8" and 3/4" O.D. tubing.

**600-F** Precision tool for highest quality work. 50-to-1 gear ratio and crank with revolving hand grip keeps effort at a minimum. Follow bar eliminates drawing action and keeps tube in virtually perfect round. Adjustable pressure roller positions quickly in index holes. Enclosed gears. Includes metal tool case. Can be clamped in vise or bolted to bench or tripod. Size of kit: 14" x 9" x 6". Wt. 35.0 lbs.



600-F



Tube Wall Thickness and Bend Radius

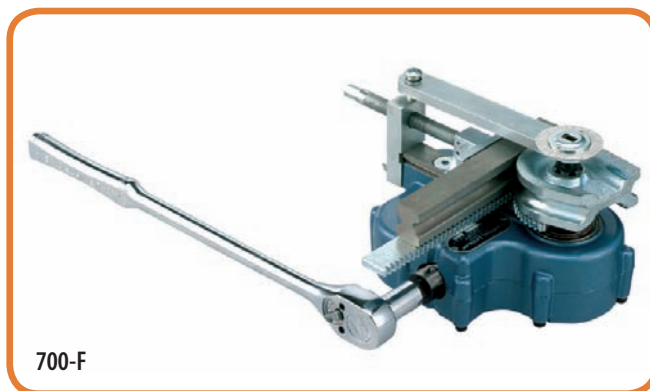
| TUBE O.D. (in.) | WALL THICKNESS (in.) | RADIUS TO CENTER OF TUBE (in.) |
|-----------------|----------------------|--------------------------------|
| 1/4             | .016 to .049         | 3/4                            |
| 5/16            | .020 to .065         | 1                              |
| 3/8             | .028 to .083         | 1-1/4                          |
| 1/2             | .035 to .083         | 2                              |
| 5/8             | .042 to .083         | 2-1/2                          |
| 3/4             | .049 to .083         | 3                              |

Conforms to Federal Specification GGG-B-191b, Type I, Class 2.  
Meets ANSI Specification (B31.1) and ASME Section III Nuclear Code.

## PRECISION GEAR TUBE BENDER

For 1/4", 5/16", 3/8", 1/2", 5/8" and 3/4" O.D. tubing.

**700-F** Makes bends up to 180° in stainless steel tubing conforming to Specification MIL-T-6845. Precision construction maintains original diameter of tube within 5% at cross section of bend. Also bends copper, aluminum and other types of tubing. Includes metal tool case. Size of kit 16" x 7" x 6-1/2". Wt. 32.0 lbs.



700-F

Tube Wall Thickness and Bend Radius

| TUBE O.D. (in.) | * WALL THICKNESS (in.) | RADIUS TO CENTER OF TUBE (in.) |
|-----------------|------------------------|--------------------------------|
| 1/4             | .016 to .049           | 9/16                           |
| 5/16            | .020 to .065           | 11/16                          |
| 3/8             | .028 to .083           | 15/16                          |
| 1/2             | .035 to .083           | 1-1/4                          |
| 5/8             | .042 to .083           | 1-1/2                          |
| 3/4             | .049 to .083           | 1-3/4                          |

\* In some cases these wall thicknesses can be exceeded for copper and aluminum tubing. Consult factory.

Conforms to Federal Specification GGG-B-191a, and Interim Amendment No. 2, Type I, Class 1.



Calibration dial indicates angle of bend.

# 45° FLARING TOOLS

## 45° FLARING TOOLS

For 3/16", 1/4", 5/16", 3/8", 7/16", 1/2" and 5/8" O.D. tubing.

**195-FC** Flares 7 sizes of tubing. Rugged forged steel slip-on yoke and hardened flaring bar. Positive clamping action of bars prevents tube slippage. Self-centering yoke with swivel-type, hardened steel, chrome finished flaring cone forms better flares with less effort. Design of yoke permits flaring where there is little space between nut and tube end. Satin finish nickel chrome plated. Wt. 2.0 lbs.

**296-FC** Flares 7 sizes of tubing. Economical, fast-operating tool. Quick slip-on yoke. Easy operating swivel-type, hardened steel, chrome finished cone assures smooth flares. Chrome and black finish. Wt. 1.75 lbs.

195-FC, 296-FC

|                       |       |      |      |      |      |      |      |      |
|-----------------------|-------|------|------|------|------|------|------|------|
| Outside Tube Diameter | (in.) | 3/16 | 1/4  | 5/16 | 3/8  | 7/16 | 1/2  | 5/8  |
| Wall Thickness        | (in.) | .028 | .035 | .035 | .035 | .035 | .035 | .035 |

395-FAM

|                       |      |     |     |     |     |     |     |     |
|-----------------------|------|-----|-----|-----|-----|-----|-----|-----|
| Outside Tube Diameter | (mm) | 4   | 6   | 8   | 10  | 12  | 15  | 16  |
| Wall Thickness        | (mm) | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |

## 45° LARGE SIZE FLARING TOOLS

Flares larger tube sizes. Quick slip-on yoke with hardened steel, chrome finished swivel flaring cone reduces effort. Positive clamping action of flaring bar eliminates tube movement. Nickel chrome finish.

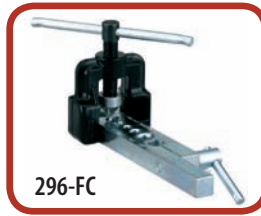
Conforms to Federal Specification GGG-F-451a Type 1, Class 2, Style A.

**103-FS** For sizes 3/4", 7/8" and 1" O.D. tubing. Wt. 3.75 lbs.

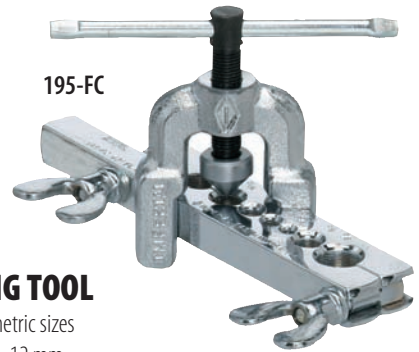
**203-FA** For sizes 5/8", 3/4", 7/8" and 1-1/8" O.D. tubing. Wt. 3.75 lbs.

**375-FS** For sizes 1/8", 3/16", 1/4", 5/16", 3/8", 7/16", 1/2", 5/8" and 3/4" O.D. tubing. Includes tool case. Wt. 3.75 lbs.

**376-FS** For sizes 1/2", 5/8", and 3/4" O.D. tubing. Wt. 2.0 lbs.



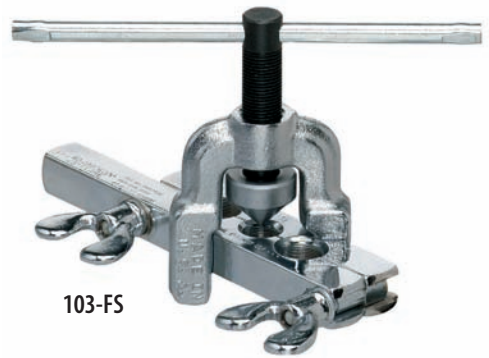
296-FC



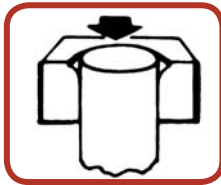
195-FC

## 45° METRIC SIZE FLARING TOOL

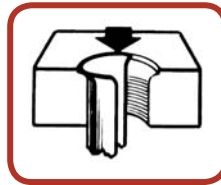
**395-FAM** Same as 195-FC except for metric sizes 4 mm, 6 mm, 8 mm, 10 mm, 12 mm, 15 mm and 16 mm O.D. tubing.



103-FS



**SELF GAUGING-** Just insert tube flush with top of die for accurate flare size.



**FORMS STRONGER FLARES-** Stronger flares assured by smooth, even radius formed at base of every flare by engineered chamfer.

|                       |       |      |      |      |      |      |      |      |      |      |      |      |       |
|-----------------------|-------|------|------|------|------|------|------|------|------|------|------|------|-------|
| Outside Tube Diameter | (in.) | 1/8  | 3/16 | 1/4  | 5/16 | 3/8  | 7/16 | 1/2  | 5/8  | 3/4  | 7/8  | 1    | 1-1/8 |
| Wall Thickness        | (in.) | .025 | .028 | .035 | .035 | .035 | .035 | .035 | .049 | .049 | .049 | .058 | .058  |

## HI-DUTY® 45° FLARING TOOL

For 3/16", 1/4", 5/16", 3/8", 1/2" and 5/8" O.D. tubing.

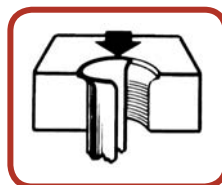
**300-FB** Hardened steel, chrome finished cone makes exceptionally smooth, high strength flares with a radius at base of flare – instead of the sharp angle formed by ordinary tools. Slip-on yoke permits use in tight quarters, allows flaring where there is little space between nut and tube end. New feed screw design provides smoother, easier operation. Positive gripping and self-gauging of tube for exact flare size. Sliding die blocks lock in place by lever clamp action to ensure even dispersal of force around full diameter of tube for superior grip. Wt. 1.6 lbs.



**SELF GAUGING-** Just insert tube flush with top of die for accurate flare size.



|                       |       |      |      |      |      |      |      |
|-----------------------|-------|------|------|------|------|------|------|
| Outside Tube Diameter | (in.) | 3/16 | 1/4  | 5/16 | 3/8  | 1/2  | 5/8  |
| Wall Thickness        | (in.) | .028 | .035 | .035 | .035 | .035 | .035 |



**FORMS STRONGER FLARES-** Stronger flares assured by smooth, even radius formed at base of every flare by engineered chamfer.

# 45° ROL-AIR™ FLARING TOOLS

## 45° ROL-AIR™ FLARING TOOL

Flares and burnishes 3/16", 1/4", 5/16", 3/8", 1/2" and 5/8" O.D. tubing.

**500-FC** Faceted, hardened steel, chrome finished cone rolls out perfect 45° flares above die block, and automatically burnishes flare face reducing the need for deburring. Original wall thickness is maintained at base of flare. Slip-on yoke permits use in tight quarters, where there is little space between nut and tube end. Larger handle, with better leverage, and precision threads on feed screw make flaring effortless. Heat treated dies grip tubing without scoring. Satin chrome and black finish. Wt. 1.5 lbs.

|                       |       |      |      |      |      |      |      |
|-----------------------|-------|------|------|------|------|------|------|
| Outside Tube Diameter | (in.) | 3/16 | 1/4  | 5/16 | 3/8  | 1/2  | 5/8  |
| Wall Thickness        | (in.) | .028 | .035 | .035 | .035 | .035 | .035 |



500-FC

## METRIC SIZE 45° ROL-AIR™ FLARING TOOL

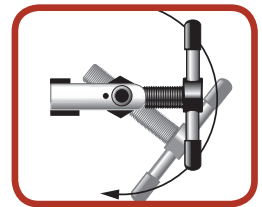
**500-FCM** Same as 500-FC except for metric size tubing 6 mm, 8 mm, 10 mm, 12 mm, 15 mm and 16 mm O.D.

**WORKS WITH R-410A**

|                       |      |     |     |     |     |     |     |
|-----------------------|------|-----|-----|-----|-----|-----|-----|
| Outside Tube Diameter | (mm) | 6   | 8   | 10  | 12  | 15  | 16  |
| Wall Thickness        | (mm) | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |



Flares rolled out above die bar by super-smooth faceted cone. Makes stronger flares.



Unique detention mechanism for rapid engagement and release of die blocks.

## "GRABBER"™ ROL-AIR™ 45° FLARING TOOL

Universal application. Adjustable opening holds all sizes.

Flares and burnishes 3/16" to 5/8" (4.75 mm to 16 mm) O.D. tubing.

**525-F** Unique, self-adjusting, tube holding mechanism permits flaring any size tubing within the range of 3/16" to 5/8" (4.75 mm to 16 mm) O.D. Innovative, single-opening design is more compact and easier to use than conventional multi-opening flaring bars. Faceted, hardened steel, chrome finished cone rolls out and burnishes perfect 45° flare above the tube-holding mechanism reducing need for deburring. Original wall thickness is maintained at base of flare. Slip-on self-centering yoke permits use in tight quarters. Large handle, with better leverage, and precision threads on feed screw make flaring effortless. High quality construction with satin chrome and black finish. Wt. 1.75 lbs.



Flares rolled out above die bar by super-smooth faceted cone. Makes stronger, highly polished flares.

**WORKS WITH R-410A**

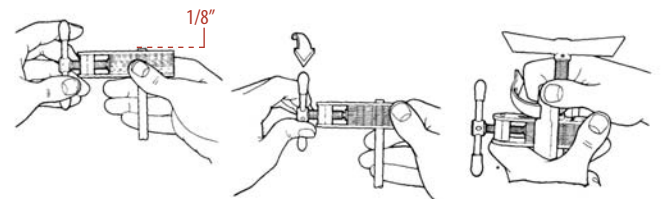


525-F

|                       |       |      |      |      |      |      |      |
|-----------------------|-------|------|------|------|------|------|------|
| Outside Tube Diameter | (in.) | 3/16 | 1/4  | 5/16 | 3/8  | 1/2  | 5/8  |
| Wall Thickness        | (in.) | .028 | .035 | .035 | .035 | .035 | .035 |

|                       |      |      |     |     |     |     |     |     |
|-----------------------|------|------|-----|-----|-----|-----|-----|-----|
| Outside Tube Diameter | (mm) | 4.75 | 6   | 8   | 10  | 12  | 15  | 16  |
| Wall Thickness        | (mm) | 1.0  | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |

- (1) Insert tubing into adjustable opening of tube-holding assembly. Position end of tubing approximately 1/8" above the surface of holder.
- (2) Tighten clamp screw approximately 1/2 to 3/4 of a turn beyond free travel position to secure tubing.
- (3) Be certain flaring cone surface is oiled. Slip yoke over tube-holding assembly centering on tubing. Twist yoke clockwise to lock in position. Turn yoke handle clockwise to flare.



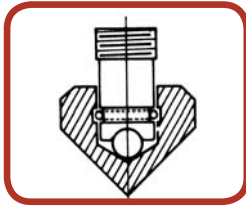
# 45° DOUBLE FLARING TOOLS

## 45° DOUBLE FLARING TOOL

For 3/16", 1/4", 5/16", 3/8" and 1/2" O.D. tubing.

**93-FB** Recommended for Bundy and other annealed soft steel tubing (wall thickness to .035"). Also makes single or double flares in soft copper or aluminum tubing. Small, lightweight, easy to handle. Steel yoke; swivel-type hardened steel, chrome finished flaring cone. Bar provides positive grip of tubing. Includes tool case. Wt. 3.0 lbs.

Conforms to Federal Specification GGG-F-451a, Type 1, Class 2, Style A.



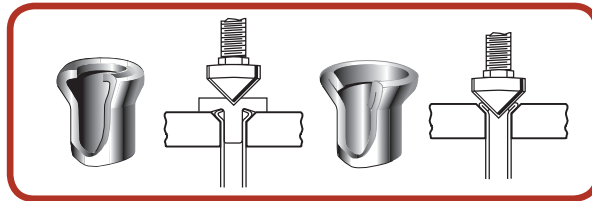
**SWIVEL-TYPE BALL BEARING CONE -**  
Ball thrust bearing in flaring cone minimizes friction, makes operation easier.



93-FB



93-FB

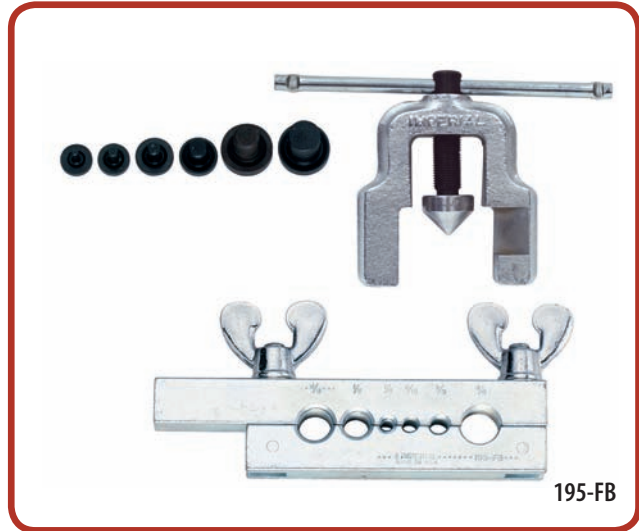


**DOUBLE FLARING ADAPTERS-**  
Screw down flaring cone with proper size adapter in tube. Retract cone, remove adapter, complete flare.

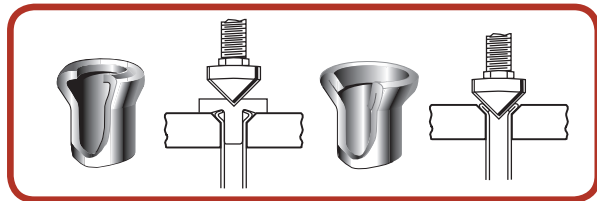
## 45° DOUBLE FLARING TOOL

For 1/4", 5/16", 3/8", 1/2", 5/8" and 3/4" O.D. tubing.

**195-FB** Designed for automotive air-conditioning service. Makes double flares in soft copper or aluminum tubing (wall thickness to .035"). Easy operating, ball bearing swivel-type hardened steel flaring cone with chrome finish. Quick slip-on yoke. Flaring bar offers positive grip of tubing. Also makes single flares. Includes metal tool case. Wt. 5.5 lbs.

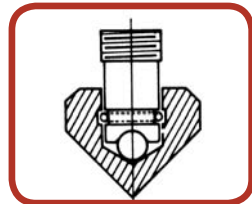


195-FB



**DOUBLE FLARING ADAPTERS-**  
Screw down flaring cone with proper size adapter in tube. Retract cone, remove adapter, complete flare.

**SWIVEL-TYPE BALL BEARING CONE -**  
Ball thrust bearing in flaring cone minimizes friction, makes operation easier.



# 37° FLARING TOOLS

## 37° FLARING TOOL

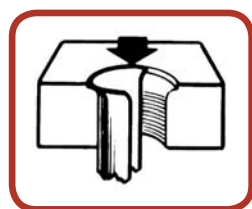
For 3/16", 1/4", 5/16", 3/8", 1/2" and 5/8" O.D. tubing.

**437-FB** For use with soft copper, aluminum and brass tubing. Hardened steel, chrome finished cone makes exceptionally smooth, high-strength flares with a radius at base of flare – instead of the sharp angle formed by ordinary tools. Slip-on yoke permits use in tight quarters, allows flaring where there is little space between nut and tube end. New feed screw design provides smooth, easier operation. Positive gripping and self-gauging of tube for exact flare size. Sliding die blocks lock in place by clamp action. Satin chrome and black finish. Wt. 1.75 lbs.

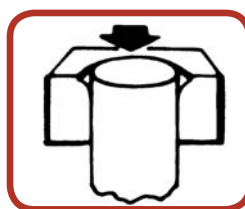
|                       |       |      |      |      |      |      |      |
|-----------------------|-------|------|------|------|------|------|------|
| Outside Tube Diameter | (in.) | 3/16 | 1/4  | 5/16 | 3/8  | 1/2  | 5/8  |
| Wall Thickness        | (in.) | .032 | .032 | .032 | .032 | .035 | .035 |



437-FB



**FORMS STRONGER FLARES-**  
Stronger flares assured by smooth, even radius formed at base of every flare by engineered chamfer.



**SELF GAUGING-** Just insert tube flush with top of die for accurate flare size.

## 37° ROL-AIR™ FLARING TOOL

For 3/16", 1/4", 5/16", 3/8", 1/2" and 5/8" O.D. tubing.

**507-FB** For use with soft copper, aluminum and brass tubing. Faceted, hardened steel chrome finished cone rolls out perfect 37° flares above die block - then automatically burnishes flare face. Original wall thickness is maintained at base of flare. Slip-on yoke permits use in tight quarters where there is little space between nut and tube end. Larger handle, with better leverage, and precision threads on feed screw make flaring effortless. Heat treated dies firmly grip tubing. Satin chrome and black finish. Wt. 1.75 lbs.

|                       |       |      |      |      |      |      |      |
|-----------------------|-------|------|------|------|------|------|------|
| Outside Tube Diameter | (in.) | 3/16 | 1/4  | 5/16 | 3/8  | 1/2  | 5/8  |
| Wall Thickness        | (in.) | .032 | .032 | .032 | .032 | .035 | .035 |



507-FB



Flares rolled out above die bar by super-smooth faceted cone. Makes stronger, highly polished flares.

## METRIC SIZE 37° ROL-AIR™ FLARING TOOL

**507-FBM** Same as 507-FB except for metric sizes  
6 mm, 8 mm, 10 mm, 12 mm, 15 mm and 16 mm O.D. tubing.

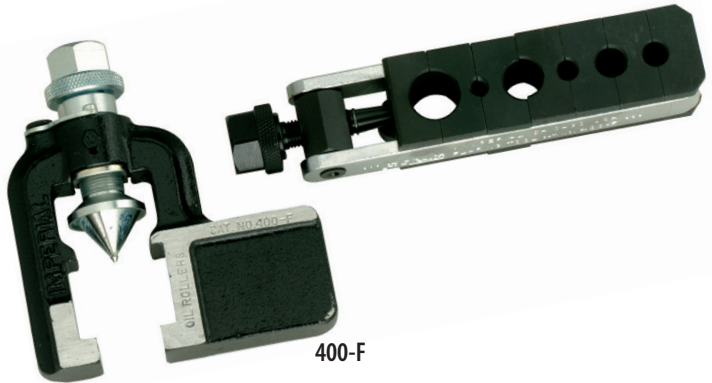
|                       |      |     |     |     |     |     |     |
|-----------------------|------|-----|-----|-----|-----|-----|-----|
| Outside Tube Diameter | (mm) | 6   | 8   | 10  | 12  | 15  | 16  |
| Wall Thickness        | (mm) | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |

# 37° FLARING TOOLS

## 37° ROL-AIR™ FLARING TOOLS

For 3/16", 1/4", 5/16", 3/8", 1/2" and 5/8" O.D. tubing.

- 400-F** Forms 37° flares to government specifications in steel, stainless steel (including MIL-T-6845), titanium and other metal tubing. Positive stop gauge assures correct size of flare. Special burnishing action polishes flare face. Three rollers in flaring cone roll out 37° flare above die block. Roller action cuts effort required; maintains original wall thickness - eliminates stress concentration. Extension on yoke for clamping in vise. Satin chrome and black finish. Includes tool case. Wt. 2.5 lbs.
- 401-FA** Reaming yoke for 1/4" to 5/8" O.D. tubing. Recommended for use with steel and stainless steel tubing for proper flaring. Wt. 0.7 lbs.
- 402-FA** Flaring and reaming kit. Contains No. 400-F Flaring Tool and No. 401-FA Reaming Yoke for 1/4" to 5/8" O.D. tubing. Includes tool case. Wt. 3.2 lbs. Conforms to Federal Specification GGG-F-451a. Type 1, Class 1, Style A.



400-F

|                       |       |      |      |      |      |      |      |
|-----------------------|-------|------|------|------|------|------|------|
| Outside Tube Diameter | (in.) | 3/16 | 1/4  | 5/16 | 3/8  | 1/2  | 5/8  |
| Wall Thickness        | (in.) | .035 | .049 | .049 | .065 | .065 | .065 |



Feed release and burnishing mechanism. Flare control gauge.



3 rollers in flaring cone. Flare formed above die block.

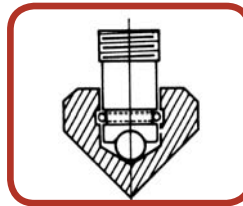


401-FA

Feed screw controls depth of reaming.



402-FA



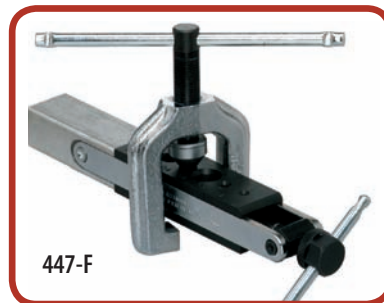
**SWIVEL-TYPE BALL BEARING CONE** - Ball thrust bearing in flaring cone minimizes friction, makes operation easier.

## 37° HEAVY-DUTY FLARING TOOL

For 1/8", 3/16", 1/4", 5/16", 3/8" and 1/2" O.D. tubing.

- 447-F** Forms 37° flares in annealed stainless steel (MIL-T-6345 or AMS5566), cold drawn stainless steel and annealed copper or aluminum tubing. Built to withstand continuous rugged service. Ball thrust bearing mechanism reduces effort required. Hardened tool steel die features non-slip grip of tubing, even after repetitive flaring. Bar has vise extension. Wt. 3.25 lbs.

|                       |       |      |      |      |      |      |      |
|-----------------------|-------|------|------|------|------|------|------|
| Outside Tube Diameter | (in.) | 1/8  | 3/16 | 1/4  | 5/16 | 3/8  | 1/2  |
| Wall Thickness        | (in.) | .032 | .032 | .035 | .049 | .049 | .049 |



447-F



# 37° FLARING TOOLS

## LARGE SIZE 37° ROL-AIR™ FLARING TOOLS

For 3/4", 7/8", 1", 1-1/4", 1-1/2" and 2" O.D. tubing.

Three cylinders in flaring cone roll out 37° flare above die block. Flares soft steel, copper, aluminum and fully annealed stainless steel tubing. Roller action reduces effort required; maintains original wall thickness; eliminates stress concentration. Feed release and burnishing action. Vise clamp extension on yoke. Heat treated dies clamp tubing without marking it. Satin chrome and black finish. Includes metal tool case.

**537-F** Flares and burnishes 3/4", 7/8", 1" and 1-1/4" O.D. tubing.

Wt. 13.0 lbs.

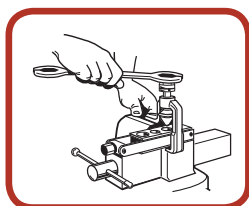
**637-F** Flares and burnishes 1-1/4", 1-1/2" and 2" O.D. tubing.

Wt. 13.0 lbs.

\* Conforms to Federal Specification GGG-F-451a, Type 1, Class 1, Style B.



537-F



Vise clamp extension.



Flares rolled out above die bar.



Feed release and burnishing mechanism.

|                       |       |      |      |      |       |       |      |
|-----------------------|-------|------|------|------|-------|-------|------|
| Outside Tube Diameter | (in.) | 3/4  | 7/8  | 1    | 1-1/4 | 1-1/2 | 2    |
| Wall Thickness        | (in.) | .065 | .065 | .065 | .083  | .083  | .083 |

## 37° PRECISION FLARING TOOL

For 1/8", 3/16", 1/4", 5/16", 3/8", 1/2", 5/8", 3/4", 1", 1-1/4" and 1-1/2" O.D. tubing.

**407-FA** Precision tool flares (37°) 1/8 hard stainless steel and other tubing to extremely close tolerances. Swivel-head clamp locks tubing in smooth-bore die blocks. Lathe-type tube feed. Flares rolled out by ball-bearing mounted concentric flaring cone. Tool must be clamped in vise. Includes metal tool case. Wt. 50.0 lbs.

Facing and deburring attachments not included with 407-FA.

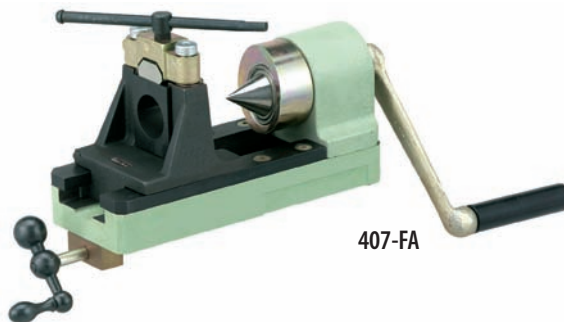
**407-F** Includes the 407-FA, plus these facing and deburring attachments:

S74460 Internal deburring tool for 1/8" to 1/2" O.D. tubing.

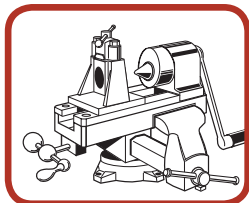
S74455 Internal deburring tool for 5/8" to 1-1/2" O.D. tubing.

S74447 External deburring tool.

S74462 Facing tool.



407-FA



| TUBE O.D. (in.) | * WALL THICKNESS (in.) |
|-----------------|------------------------|
| 1/8             | .020, .028             |
| 3/16            | .010, .028             |
| 1/4             | .016, .028, .035       |
| 5/16            | .035                   |
| 3/8             | .028, .035             |
| 1/2             | .035, .049             |
| 5/8             | .035, .049             |
| 3/4             | .028, .035, .049       |
| 1               | .028, .035             |
| 1-1/4           | .035, .049             |
| 1-1/2           | .035, .049, .065       |

\* In some cases these wall thicknesses can be exceeded when flaring aluminum, copper or soft steel tubing. Consult factory.

# FLARING & SWAGING TOOLS

## 45° & 37° PRODUCTION FLARING AND SWAGING TOOL

For 3/16", 1/4", 5/16", 3/8", 1/2" and 5/8" O.D. tubing.

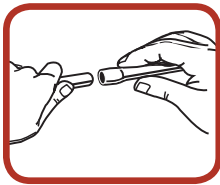
**555-FS** Flares and swages 6 sizes of soft copper, aluminum or brass tubing. Makes both 45° and 37° single flares. Fast cam lever operation. Portable. Can be clamped in vise or bolted to bench. Change sizes quickly. Built in gauge for accurate flare size or swage depth. Unique jaws provide a positive non-slip grip on tubing. Wt. 6.5 lbs.

- Replacement parts:**
- 560-S-03** 3/16" Swaging adapter.
  - 560-S-04** 1/4" Swaging adapter.
  - 560-S-05** 5/16" Swaging adapter.
  - 560-S-06** 3/8" Swaging adapter.
  - 560-S-08** 1/2" Swaging adapter.
  - 560-S-10** 5/8" Swaging adapter.
  - S70348** 45° Flaring cone.
  - S70349** 37° Flaring cone.
  - S8711201** Set of replacement dies.

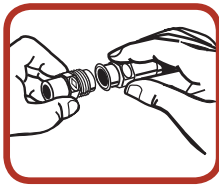


555-FS

|                       |       |      |      |      |      |      |      |
|-----------------------|-------|------|------|------|------|------|------|
| Outside Tube Diameter | (in.) | 3/16 | 1/4  | 5/16 | 3/8  | 1/2  | 5/8  |
| Wall Thickness        | (in.) | .028 | .035 | .035 | .035 | .035 | .035 |



Swages 6 sizes.



Makes 45° & 37° flares.

## METRIC BUBBLE FLARING TOOL

For soft steel or Bundy tubing 4.75 mm (3/16"), 6 mm, 8 mm and 10 mm O.D.

**293-F** Forms international standard bubble flare in one fast operation. Flares metric hydraulic brake lines used on European, Japanese and American automobiles and light trucks. This unique design makes flares on 4 sizes of tubing: 4.75 mm (3/16"), 6 mm, 8 mm and 10 mm O.D. Will flare soft double-wall steel tubing with a wall thickness up to .028". Can also be used with soft copper and aluminum tubing. Includes tool case.

- Replacement parts:**
- S8771801** 4.75 mm (3/16") adapter.
  - S8771701** 6 mm adapter.
  - S8771601** 8 mm adapter.
  - S8771301** 10 mm adapter.
  - S8694401** Wing nut.



293-F



**METRIC BUBBLE FLARING -** Just insert tube flush with top of die for accurate flare. With proper adapter size attached, screw down flaring cone until adapter strikes flaring bar surface. Bubble flare is complete.

# FLARING & SWAGING TOOLS

## FLARING (45°) & SWAGING TOOL

For 1/8" to 3/4" (4 mm to 22 mm) O.D. tubing.

**275-FS** Flares and swages. Converts quickly. Screw-type feed. Ideal for use in close quarters. Two bars included cover 9 sizes. Swivel-type swaging adapters and flaring cone are hardened steel, chrome finished for easy operation. Self-centering, slip-on forged steel yoke. Includes tool case. Wt. 3.5 lbs. Flares 1/8", 3/16", 1/4", 5/16", 3/8", 7/16", 1/2", 5/8" and 3/4" O.D. Includes 5 swage adapters for 7 tube sizes: 3/16", 1/4", 5/16", 3/8", 1/2", 5/8", 3/4" O.D.

- Replacement parts:** **278-FS-03X04X06** Adapter 3/16", 1/4", 3/8". **278-FS-10** Adapter 5/8".  
**278-FS-05** Adapter 5/16". **278-FS-12** Adapter 3/4".  
**278-FS-08** Adapter 1/2". **S38600** Flaring Cone.



275-FS

**275-FSM** Metric flaring and swaging tool. Same as 275-FS except for metric sizes 4 mm, 6 mm, 8 mm, 10 mm, 12 mm, 14 mm, 15 mm, 16 mm, 18 mm and 22 mm O.D. tubing. Includes tool case. Wt. 3.5 lbs.

- Replacement parts:** **278-FSM-4-6-10** Adapter 4 mm, 6 mm, 10 mm. **278-FSM-15** Adapter 15 mm.  
**278-FSM-8** Adapter 8 mm. **278-FSM-16** Adapter 16 mm.  
**278-FSM-12** Adapter 12 mm. **278-FSM-18** Adapter 18 mm.  
**278-FSM-14** Adapter 14 mm. **278-FSM-22** Adapter 22 mm.  
**S38600** Flaring Cone.



275-FS

|                       |       |      |      |      |      |      |      |      |      |      |
|-----------------------|-------|------|------|------|------|------|------|------|------|------|
| Outside Tube Diameter | (in.) | 1/8  | 3/16 | 1/4  | 5/16 | 3/8  | 7/16 | 1/2  | 5/8  | 3/4  |
| Wall Thickness        | (in.) | .020 | .028 | .035 | .035 | .035 | .035 | .035 | .035 | .035 |

|                       |      |     |     |     |     |     |     |     |     |     |     |
|-----------------------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Outside Tube Diameter | (mm) | 4   | 6   | 8   | 10  | 12  | 14  | 15  | 16  | 18  | 22  |
| Wall Thickness        | (mm) | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |

## 45° FLARING, SWAGING AND CUTTING KIT

For soft copper, aluminum, steel, stainless steel and brass tubing.

**275-FSC** Kit contains a TC-1000 tube cutter for 1/8" to 1-1/8" O.D. tubing and 275-FS 45° flaring and swaging tool. Includes tool case. Wt. 3.0 lbs.

**Flares:** 1/8", 3/16", 1/4", 5/16", 3/8", 7/16", 1/2", 5/8" and 3/4" O.D. tubing.

**Swages:** 3/16", 1/4", 5/16", 3/8", 1/2", 5/8" and 3/4" O.D. tubing.



275-FSC

## 45° DOUBLE FLARING, SWAGING AND CUTTING KIT

**275-FSCD** Kit contains 275-FS, TC-1000, and double flaring adapters for 3/16", 1/4", 5/16", 3/8" and 1/2" O.D. tubing. Includes tool case.

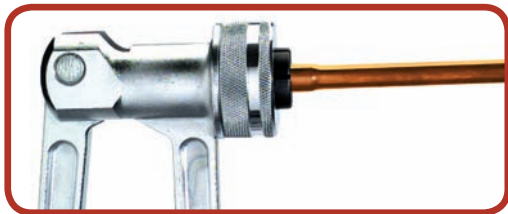
# FLARING & SWAGING TOOLS

## 175-EXXPANDR™ SWAGING/EXPANDING KIT

- Easily expands tube for braze or soldered joints in seconds.
- Floating jaw head design is self-centering for fast, accurate alignment.
- Re-rounds deformed tube ends.
- Accurate joints in seconds without using fittings.
- For soft copper and soft thin wall steel and stainless steel tubing.
- Save 60-70% of time over conventional swaging tools.
- Reduces soldering by 50% over standard fittings.
- Meets ARI tube insertion recommendations.
- Long life with high alloy hardened steel jaw segments.
- XpandR™ Tool comes with non-slip, ergonomically designed grips.
- Includes 5 heads: 3/8", 1/2", 5/8", 3/4" and 7/8".
- Includes metal tool case.

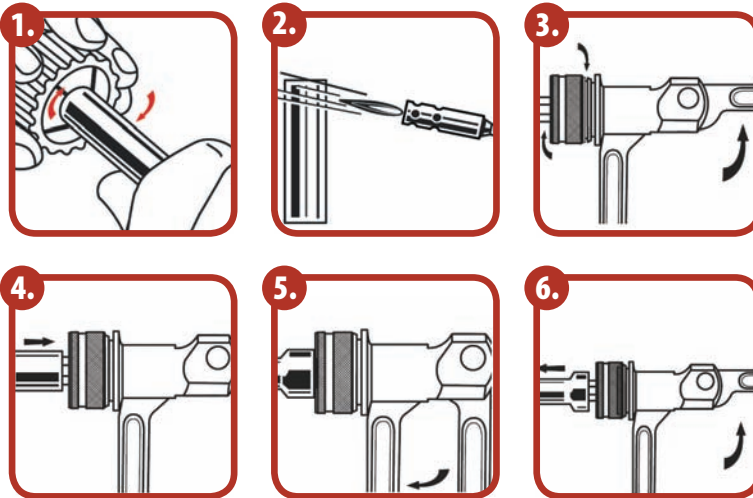


175-EX



### SIX EASY STEPS:

1. Deburr inside of tube.
2. To create perfectly centered capillary sockets for soldering or brazing, you must use soft copper or fully anneal end of tube to be expanded.
3. Pull XpandR™ handle up to 90-degree position. Maintain this position as you screw the appropriate size head over the center-punch and tighten.
4. Insert the end of the tube over the XpandR™ head completely.
5. Pull the lever completely down.
6. Return the lever to the 90-degree position. Remove expanded tube.



### TO RE-ROUND SLIGHTLY DEFORMED TUBE ENDS:

1. Insert deformed tube end to the first groove of head.
2. Pull the lever completely down.
3. Return the lever to the 90-degree position. Remove expanded tube.

#### 175-EX KIT INCLUDES

|         |                |
|---------|----------------|
| 175EXP  | XpandR™ Pliers |
| 175EXC  | XpandR™ Case   |
| 175EX06 | 3/8" head      |
| 175EX08 | 1/2" head      |
| 175EX10 | 5/8" head      |
| 175EX12 | 3/4" head      |
| 175EX14 | 7/8" head      |

You may order kit items separately. Kit wt. 20 lbs.

#### ADDITIONAL HEAD SIZES AVAILABLE:

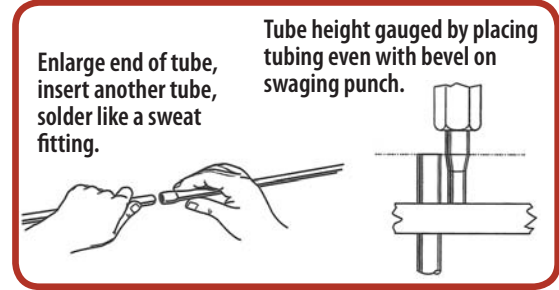
|         |             |
|---------|-------------|
| 175EX16 | 1" head     |
| 175EX18 | 1-1/8" head |
| 175EX22 | 1-3/8" head |
| 175EX26 | 1-5/8" head |

# SWAGING TOOLS

## PUNCH TYPE SWAGING TOOLS

Use these tools for making tubing connections without fittings. Enlarge end of tube, insert another tube of original O.D. size and solder together like a sweat fitting.

- 94-SSP** 3-in-1 swaging tool for 1/2", 5/8" and 7/8" tubing. Wt. 1.0 lbs.
- 95-S** 6-in-1 swaging tool for 3/16", 1/4", 5/16", 3/8", 1/2" and 5/8" O.D. tubing. Hi-alloy steel, heat-treated for rugged use. Hex design for ease of extraction. Precision machined surface for ease of forming.
- 193-S** Vinyl case contains 4 swaging punches for 1/4", 3/8", 1/2" and 5/8" O.D. tubing. Wt. 1.0 lbs.
- 195-SA** Vise-mountable flaring bar and 4 swaging punches for 1/4", 3/8", 1/2" and 5/8" O.D. tubing. Includes metal tool case. Wt. 2.0 lbs.
- S75531** Flaring bar only. Wt. 1.0 lb.



95-S

95-S 6 IN 1 SWAGING TOOL

| Outside Tube Diameter (in.) | 3/16 | 1/4  | 5/16 | 3/8  | 1/2  | 5/8  |
|-----------------------------|------|------|------|------|------|------|
| Wall Thickness (in.)        | .028 | .035 | .035 | .035 | .035 | .035 |

## INDIVIDUAL SWAGING TOOLS

| PART NO. | TUBE O.D. (in.) | WALL THICKNESS (in.) | WEIGHT (lbs.) |
|----------|-----------------|----------------------|---------------|
| 93-S-03  | 3/16            | .028                 | .20           |
| 93-S-04  | 1/4             | .035                 | .20           |
| 93-S-05  | 5/16            | .035                 | .25           |
| 93-S-06  | 3/8             | .035                 | .25           |
| 93-S-08  | 1/2             | .035                 | .50           |
| 93-S-10  | 5/8             | .035                 | .50           |
| 93-S-12  | 3/4             | .035                 | .75           |
| 93-S-14  | 7/8             | .045                 | 1.0           |

## 45° SWAGING TOOL

For 1/2", 5/8" and 7/8" O.D. tubing.

- 194-S** Screw-type flaring and swaging tool. Far easier to work with in close quarters than punch type tools. Perfect swaging alignment of tube every time. Hardened steel chrome finished adapters change quickly. Includes tool case. Wt. 2.0 lbs.

**Replacement parts:** 278-FS-08 Adapter 1/2"  
 278-FS-10 Adapter 5/8"  
 278-FS-14 Adapter 7/8"



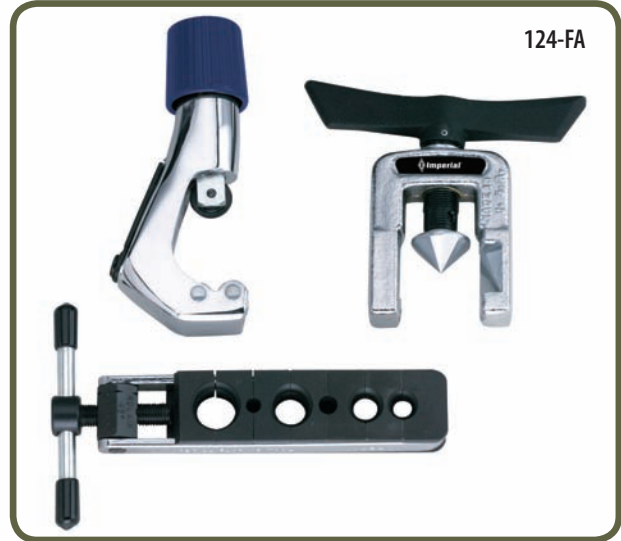
194-S

# TUBE WORKING KITS

## CUTTING AND FLARING KITS

Each kit contains a TC-1000 tube cutter for 1/8" to 1-1/8" O.D. tubing and a 45° or 37° flaring tool. Includes tool case.

| PART NO. | TUBE CUTTER | FLARING TOOL          | RANGE OF FLARING TOOL (in.)                         | WEIGHT (lbs.) |
|----------|-------------|-----------------------|---|---------------|
| 120-F    | TC-1000     | 375-FS (45°)          | 1/8, 3/16, 1/4, 5/16, 3/8, 7/16, 1/2, 5/8, 3/4 O.D. | 2.75          |
| 122-FA   | TC-1000     | 437-FB (37°)          | 3/16, 1/4, 5/16, 3/8, 1/2, 5/8 O.D.                 | 2.75          |
| 123-FA   | TC-1000     | 300-FB (45°)          | 3/16, 1/4, 5/16, 3/8, 1/2, 5/8 O.D.                 | 2.75          |
| 124-FA   | TC-1000     | 500-FC (45° Rol-Air™) | 3/16, 1/4, 5/16, 3/8, 1/2, 5/8 O.D.                 | 2.75          |
| 1226-FA  | TC-1000     | 195-FC (45°)          | 3/16, 1/4, 5/16, 3/8, 7/16, 1/2, 5/8 O.D.           | 3.0           |



120-F



**INSTRUCTIONS FOR USING No. 120-F KIT**

**Tube Cutter**  
The No. 120-F Tube Cutter is used for cutting soft copper, aluminum and brass tubing.

Place tubing (45° angle) against anvil. Turn from Working Handle (1) clockwise until cutting wheel (2) opens radial groove (3) around tube and all end of mandrel, back wheel (4) is in line with groove. Rotate mandrel (5) clockwise until tube is cut completely through. To remove flap, turn end of cutting wheel (2) in opposite direction, and operate as above.

The above machine, in its operating position, also makes an inner and outer groove (6) along diameter (7) and (8) of tube. Turn part forward by turning handle.

**EXTRA PARTS**  
No. 120-F Tube Cutter  
No. 120-F Mandrel  
No. 120-F Wheel  
No. 120-F Back Wheel  
No. 120-F Spring  
No. 120-F Anvil

**Flaring Tool with Slip-on Flare**  
The No. 120-F Flaring Tool is used for flaring soft copper, aluminum and brass tubing.

- After selecting the correct size of the mandrel to use, insert the mandrel into the tubing to be flared. Insert the wing nuts which will permit expansion of the mandrel in the tube.
- Insert the tube into the die of the corresponding size in the set. Insert the mandrel into the tube. The die should be used so that the mandrel is in the tube and the tube is in the die.
- Tighten wing nuts. It is a good practice to turn the wing nuts clockwise until the tube is set up at a 45° angle. After that, turn the wing nuts until the tube is set up at a 37° angle. The mandrel should be turned until it is in the tube.
- After the mandrel is set up, turn the mandrel until the edge of the mandrel is in the tube. The mandrel should be turned until it is in the tube. The mandrel should be turned until it is in the tube.

**EXTRA PARTS**  
No. 120-F Flaring Tool  
No. 120-F Mandrel  
No. 120-F Wheel  
No. 120-F Back Wheel  
No. 120-F Spring  
No. 120-F Anvil

# TUBE WORKING KITS

## 45° FLARING, SWAGING AND CUTTING KIT

For soft copper, aluminum, steel, stainless steel and brass tubing.

**275-FSC** Kit contains a TC-1000 tube cutter for 1/8" to 1-1/8" O.D. tubing and 275-FS 45° flaring and swaging tool. Includes tool case. Wt. 3.0 lbs.

**Flares:** 1/8", 3/16", 1/4", 5/16", 3/8", 7/16", 1/2", 5/8" and 3/4" O.D. tubing.

**Swages:** 3/16", 1/4", 5/16", 3/8", 1/2", 5/8" and 3/4" O.D. tubing.



275-FSC

## 45° DOUBLE FLARING, SWAGING AND CUTTING KIT

**275-FSCD** Kit contains 275-FS, TC-1000, and double flaring adapters for 3/16", 1/4", 5/16", 3/8" and 1/2" O.D. tubing. Includes tool case.

## FLAREPRO™ FOUR-IN-ONE FLARING & SWAGING KIT

For copper, aluminum, steel, stainless steel and other metal tubing.

**2000-FS** Individual size jaw sets are used for positive clamping compactness and operating convenience.

Socket head screws are provided for clamping the jaws to the yoke and feeding the tube forming components. The screws are hand turned for all free travel movement when advancing or retracting.

A hex socket and 3/8" square drive ratchet are furnished for easy operation of the threaded members under load. Tube forming components (flaring cones, double flaring adapters and swaging adapters) are retained on the feed screw by a ball detent mechanism and can be snapped on and off for quick change as required.

The tool is designed to permit hand-held or vise-mounted operation. Includes tool case. Wt. 7.0 lbs.

**Flaring - 37° and 45°:** Flares soft copper, brass, aluminum, steel and stainless steel in nine tube sizes: 1/8", 3/16", 1/4", 5/16", 3/8", 7/16", 1/2", 5/8" and 3/4" O.D. tubing.

**Double Flaring - 45° Only:** Double flares soft copper, aluminum and steel (Bundy or G.M. to .035 wall) in seven tube sizes: 3/16", 1/4", 5/16", 3/8", 1/2", 5/8" and 3/4" O.D. tubing.

**Swaging:** Swages soft copper, aluminum and brass in seven tube sizes: 3/16", 1/4", 5/16", 3/8", 1/2", 5/8" and 3/4" O.D. tubing.



2000-FS

### Flaring

|                             |      |      |      |      |      |      |      |      |      |
|-----------------------------|------|------|------|------|------|------|------|------|------|
| Outside Tube Diameter (in.) | 1/8  | 3/16 | 1/4  | 5/16 | 3/8  | 7/16 | 1/2  | 5/8  | 3/4  |
| Wall Thickness (in.)        | .020 | .028 | .035 | .035 | .035 | .035 | .035 | .049 | .049 |

### Swaging

|                             |      |      |      |      |      |      |      |
|-----------------------------|------|------|------|------|------|------|------|
| Outside Tube Diameter (in.) | 3/16 | 1/4  | 5/16 | 3/8  | 1/2  | 5/8  | 3/4  |
| Wall Thickness (in.)        | .028 | .035 | .035 | .035 | .035 | .035 | .035 |

# TUBING TOOL SELECTOR

| TUBING TOOL SELECTOR        |                |          |                               | TUBE MATERIAL                  |        |                                  |      |      |                                  |      |        |
|-----------------------------|----------------|----------|-------------------------------|--------------------------------|--------|----------------------------------|------|------|----------------------------------|------|--------|
| TOOL                        | PART NO.       | PAGE NO. | SIZE RANGE<br>TUBE O.D. (in.) | ANNEALED<br>GENERAL<br>PURPOSE | COPPER |                                  |      |      |                                  |      | TYPE M |
|                             |                |          |                               |                                | SOFT   | TYPE K<br>BENDING<br>TEMPER-HARD | HARD | SOFT | TYPE L<br>BENDING<br>TEMPER-HARD | HARD |        |
| Tube Cutters                | TC-1000        | 4        | 1/8 - 1-1/8                   | ●                              | ●      | ●                                | ●    | ●    | ●                                | ●    | ●      |
| Metal Tubing                | TC-1050        | 5        | 1/8 - 5/8                     | ●                              | ●      | ●                                | ●    | ●    | ●                                | ●    | ●      |
|                             | TC-1550        | 3        | 1/8 - 1-1/8                   | ●                              | ●      | ●                                | ●    | ●    | ●                                | ●    | ●      |
|                             | TC-2050        | 5        | 3/16 - 7/8                    | ●                              | ●      | ●                                | ●    | ●    | ●                                | ●    | ●      |
|                             | TC-3050        | 5        | 1/8 - 1-1/8                   | ●                              | ●      | ●                                | ●    | ●    | ●                                | ●    | ●      |
|                             | 174-F          | 6        | 3/8 - 1-1/8                   | ●                              | ●      | ●                                | ●    | ●    | ●                                | ●    | ●      |
|                             | 206-FB         | 6        | 3/8 - 2-5/8                   | ●                              | ●      | ●                                | ●    | ●    | ●                                | ●    | ●      |
|                             | 227-FA         | 4        | 1/8 - 3/4                     | ●                              | ●      | ●                                | ●    | ●    | ●                                | ●    | ●      |
|                             | 312-FC         | 4        | 1/4 - 1-5/8                   | ●                              | ●      | ●                                | ●    | ●    | ●                                | ●    | ●      |
|                             | 406-FA         | 6        | 2 - 4-1/8                     | ●                              | ●      | ●                                | ●    | ●    | ●                                | ●    | ●      |
| Tube Cutters                | 206-FBP        | 6        | 3/8 - 2-5/8                   | ●(5)                           | ●(5)   | ●(5)                             | ●(5) | ●(5) | ●(5)                             | ●(5) | ●(5)   |
| Thermoplastic               | 307-FP         | 7        | 1/16 - 1/2 (4)                |                                |        |                                  |      |      |                                  |      |        |
| Rubber Hose                 | 327-FP         | 7        | 1/8 - 13/16 (4)               |                                |        |                                  |      |      |                                  |      |        |
| Saw Vise                    | 384-FA         | 6        | 1/8 - 1-1/2                   | ●                              | ●      | ●                                | ●    | ●    | ●                                | ●    | ●      |
| Bending Tools               | 101-F          | 10       | 1/4 - 5/8                     | ●                              | ●      | ●                                | ●    | ●    | ●                                | ●    | ●      |
|                             | 102-F          | 10       | 1/4 - 7/8                     | ●                              | ●      | ●                                | ●    | ●    | ●                                | ●    | ●      |
|                             | 112-F          | 10       | 1/4 - 3/8                     | ●                              | ●      | ●                                | ●    | ●    | ●                                | ●    | ●      |
|                             | 163-F          | 10       | 1/4 - 5/8                     | ●                              | ●      | ●                                | ●    | ●    | ●                                | ●    | ●      |
|                             | 201-F          | 10       | 1/4 - 7/8                     | ●                              | ●      | ●                                | ●    | ●    | ●                                | ●    | ●      |
|                             | 260-FHA        | 14       | 1/4 - 7/8                     | ●                              | ●      | ●                                | ●    | ●    | ●                                | ●    | ●      |
|                             | 270-F          | 15       | 3/8 - 1-1/8                   | ●                              | ●      | ●                                | ●    | ●    | ●                                | ●    | ●      |
|                             | 350-FHA        | 14       | 1/4 - 3/4                     | ●                              | ●      | ●                                | ●    | ●    | ●                                | ●    | ●      |
|                             | 360-FHA        | 14       | 3/8 - 3/4                     | ●                              | ●      | ●                                | ●    | ●    | ●                                | ●    | ●      |
|                             | 364-FH         | 11       | 1/8 - 3/16                    | ●                              | ●      | ●                                | ●    | ●    | ●                                | ●    | ●      |
|                             | 364-FHA        | 11       | 1/4 - 1 (3)                   | ●                              | ●      | ●                                | ●    | ●    | ●                                | ●    | ●      |
|                             | 364-FHAM       | 11       | 6 - 12 mm                     | ●                              | ●      | ●                                | ●    | ●    | ●                                | ●    | ●      |
|                             | 364-FHB        | 11       | 1/4 - 1/2                     | ●                              | ●      | ●                                | ●    | ●    | ●                                | ●    | ●      |
|                             | 364-FHBM       | 11       | 6 - 12 mm                     | ●                              | ●      | ●                                | ●    | ●    | ●                                | ●    | ●      |
|                             | 367-FH         | 10       | 1/8, 3/16, 1/4                | ●                              | ●      | ●                                | ●    | ●    | ●                                | ●    | ●      |
|                             | 368-FH         | 10       | 3/16, 1/4, 5/16, 3/8          | ●                              | ●      | ●                                | ●    | ●    | ●                                | ●    | ●      |
|                             | 370-FH         | 10       | 3/16, 1/4, 3/8, 1/2           | ●                              | ●      | ●                                | ●    | ●    | ●                                | ●    | ●      |
|                             | 470-FH         | 9        | 3/16, 1/4, 5/16, 3/8          | ●                              | ●      | ●                                | ●    | ●    | ●                                | ●    | ●      |
|                             | 564-FH         | 13       | 3/8, 1/2                      | ●                              | ●      | ●                                | ●    | ●    | ●                                | ●    | ●      |
|                             | 600-F          | 16       | 1/4 - 3/4                     | ●                              | ●      | ●                                | ●    | ●    | ●                                | ●    | ●      |
|                             | 664-FH         | 12       | 1/4, 3/8, 1/2                 | ●                              | ●      | ●                                | ●    | ●    | ●                                | ●    | ●      |
|                             | 664-FH(Metric) | 12       | 6 - 12 mm                     | ●                              | ●      | ●                                | ●    | ●    | ●                                | ●    | ●      |
| 37° Flaring Tool            | 700-F          | 16       | 1/4 - 3/4                     | ●                              | ●      | ●                                | ●    | ●    | ●                                | ●    | ●      |
|                             | 400-F          | 21       | 3/16 - 5/8                    | ●                              | ●      | ●                                | ●    | ●    | ●                                | ●    | (2)    |
|                             | 407-FA         | 22       | 1/8 - 1-1/2                   | ●                              | ●      | ●                                | ●    | ●    | ●                                | ●    | (2)    |
|                             | 437-FB         | 20       | 3/16 - 5/8                    | ●                              | ●      | ●                                | ●    | ●    | ●                                | ●    | (2)    |
|                             | 447-F          | 21       | 1/8 - 1/2                     | ●                              | ●      | ●                                | ●    | ●    | ●                                | ●    | (2)    |
|                             | 507-FB         | 20       | 3/16 - 5/8                    | ●                              | ●      | ●                                | ●    | ●    | ●                                | ●    | (2)    |
|                             | 507-FBM        | 20       | 6 - 16 mm                     | ●                              | ●      | ●                                | ●    | ●    | ●                                | ●    | (2)    |
|                             | 555-FS         | 23       | 3/16 - 5/8                    | ●                              | ●      | ●                                | ●    | ●    | ●                                | ●    | (2)    |
|                             | 537-F          | 22       | 3/4 - 1-1/4                   | ●                              | ●      | ●                                | ●    | ●    | ●                                | ●    | (2)    |
|                             | 637-F          | 22       | 1-1/4 - 2                     | ●                              | ●      | ●                                | ●    | ●    | ●                                | ●    | (2)    |
|                             | 2000-FS        | 28       | 1/8 - 3/4                     | ●                              | ●      | ●                                | ●    | ●    | ●                                | ●    | (2)    |
| 45° Flaring Tool            | 103-FS         | 17       | 3/4 - 1                       | ●                              | ●      | ●                                | ●    | ●    | ●                                | ●    | (2)    |
|                             | 195-FC         | 17       | 3/16 - 5/8                    | ●                              | ●      | ●                                | ●    | ●    | ●                                | ●    | (2)    |
|                             | 203-FA         | 17       | 5/8 - 1-1/8                   | ●                              | ●      | ●                                | ●    | ●    | ●                                | ●    | (2)    |
|                             | 275-FS         | 24       | 1/8 - 3/4                     | ●                              | ●      | ●                                | ●    | ●    | ●                                | ●    | (2)    |
|                             | 275-FSM        | 24       | 4 - 22 mm                     | ●                              | ●      | ●                                | ●    | ●    | ●                                | ●    | (2)    |
|                             | 296-FC         | 17       | 3/16 - 5/8                    | ●                              | ●      | ●                                | ●    | ●    | ●                                | ●    | (2)    |
|                             | 300-FB         | 17       | 3/16 - 5/8                    | ●                              | ●      | ●                                | ●    | ●    | ●                                | ●    | (2)    |
|                             | 375-FS         | 17       | 1/8 - 3/4                     | ●                              | ●      | ●                                | ●    | ●    | ●                                | ●    | (2)    |
|                             | 376-FS         | 17       | 1/2 - 3/4                     | ●                              | ●      | ●                                | ●    | ●    | ●                                | ●    | (2)    |
|                             | 395-FAM        | 17       | 4 - 16 mm                     | ●                              | ●      | ●                                | ●    | ●    | ●                                | ●    | (2)    |
|                             | 500-FC         | 18       | 3/16 - 5/8                    | ●                              | ●      | ●                                | ●    | ●    | ●                                | ●    | (2)    |
|                             | 500-FCM        | 18       | 6 - 16 mm                     | ●                              | ●      | ●                                | ●    | ●    | ●                                | ●    | (2)    |
|                             | 525-F          | 18       | 3/16 - 5/8                    | ●                              | ●      | ●                                | ●    | ●    | ●                                | ●    | (2)    |
|                             |                |          | 4.75 - 16 mm                  | ●                              | ●      | ●                                | ●    | ●    | ●                                | ●    | (2)    |
|                             | 555-FS         | 23       | 3/16 - 5/8                    | ●                              | ●      | ●                                | ●    | ●    | ●                                | ●    | (2)    |
|                             | 2000-FS        | 28       | 1/8 - 3/4                     | ●                              | ●      | ●                                | ●    | ●    | ●                                | ●    | (2)    |
| 45° Double Flaring Tools    | 93-FB          | 19       | 3/16 - 1/2                    | ●                              | ●      | ●                                | ●    | ●    | ●                                | ●    | (2)    |
|                             | 195-FB         | 19       | 1/4 - 3/4                     | ●                              | ●      | ●                                | ●    | ●    | ●                                | ●    | (2)    |
|                             | 2000-FS        | 28       | 3/16 - 3/4                    | ●                              | ●      | ●                                | ●    | ●    | ●                                | ●    | (2)    |
| Reaming and Deburring Tools | 208-F          | 32       | 3/16 - 1-1/2                  | ●                              | ●      | ●                                | ●    | ●    | ●                                | ●    | ●      |
|                             | 208-FSS        | 32       | 3/16 - 1-1/2                  | ●                              | ●      | ●                                | ●    | ●    | ●                                | ●    | ●      |
|                             | 210-F          | 32       |                               | ●                              | ●      | ●                                | ●    | ●    | ●                                | ●    | ●      |
| Tube Constrictor            | TC-1020        | 4        | 1/8 - 1-1/8                   | ●                              | ●      | ●                                | ●    | ●    | ●                                | ●    | ●      |
| Swaging Tools               | 93-S           | 26       | 3/16 - 7/8                    | ●                              | ●      | ●                                | ●    | ●    | ●                                | ●    | ●      |
|                             | 94-SSP         | 26       | 1/2, 5/8, 7/8                 | ●                              | ●      | ●                                | ●    | ●    | ●                                | ●    | ●      |
|                             | 95-S           | 26       | 3/16 - 5/8                    | ●                              | ●      | ●                                | ●    | ●    | ●                                | ●    | ●      |
|                             | 193-S          | 26       | 1/4 - 5/8                     | ●                              | ●      | ●                                | ●    | ●    | ●                                | ●    | ●      |
|                             | 194-S          | 26       | 1/2 - 7/8                     | ●                              | ●      | ●                                | ●    | ●    | ●                                | ●    | ●      |
|                             | 195-SA         | 26       | 1/4 - 5/8                     | ●                              | ●      | ●                                | ●    | ●    | ●                                | ●    | ●      |
|                             | 275-FS         | 24       | 3/16 - 3/4                    | ●                              | ●      | ●                                | ●    | ●    | ●                                | ●    | ●      |
|                             | 555-FS         | 23       | 3/16 - 5/8                    | ●                              | ●      | ●                                | ●    | ●    | ●                                | ●    | ●      |
|                             | 2000-FS        | 28       | 3/16 - 3/4                    | ●                              | ●      | ●                                | ●    | ●    | ●                                | ●    | ●      |
| Metric Bubble Flaring Tool  | 293-F          | 23       | 4.75 - 10 mm                  | ●                              | ●      | ●                                | ●    | ●    | ●                                | ●    | ●      |

(1) Heavy duty cutting wheel No. 575046 is recommended for continuous service with steel, stainless steel, monel, titanium and hard temper copper tubing.  
 (2) Type M tubing should be torch annealed before flaring.  
 (3) No. 364-FHA, 5/8" - 1" size should be used only with annealed (softened) non-ferrous tubing.  
 (4) Not to be used with metal reinforced hose.  
 (5) When cutting metallic tubing you must switch to standard wheel furnished.



# TUBING TOOL SELECTOR

| TUBING TOOL SELECTOR        |                |          |                            | TUBE MATERIAL            |                       |                       |                            |                                 |                            |          |
|-----------------------------|----------------|----------|----------------------------|--------------------------|-----------------------|-----------------------|----------------------------|---------------------------------|----------------------------|----------|
| TOOL                        | PART NO.       | PAGE NO. | SIZE RANGE TUBE O.D. (in.) | ANNEALED ALUMINUM (SOFT) | ANNEALED BRASS (SOFT) | SAE 1020 STEEL (SOFT) | BRAZED-BUNDY WELD GM STEEL | STAINLESS STEEL ANNEALED (SOFT) | STAINLESS STEEL (1/8 HARD) | TITANIUM |
| Tube Cutters                | TC-1000        | 4        | 1/8 - 1-1/8                | ●                        | ●                     | ●                     | ●                          | (1)                             | (1)                        | (1)      |
| Metal Tubing                | TC-1050        | 5        | 1/8 - 5/8                  | ●                        | ●                     | ●                     | ●                          |                                 |                            |          |
|                             | TC-1550        | 3        | 1/8 - 1-1/8                | ●                        | ●                     | ●                     | ●                          | (1)                             | (1)                        | (1)      |
|                             | TC-2050        | 5        | 3/16 - 7/8                 | ●                        | ●                     | ●                     | ●                          | (1)                             | (1)                        | (1)      |
|                             | TC-3050        | 5        | 1/8 - 1-1/8                | ●                        | ●                     | ●                     | ●                          | (1)                             | (1)                        | (1)      |
|                             | 174-F          | 6        | 3/8 - 1-1/8                | ●                        | ●                     | ●                     | ●                          | ●                               | ●                          | ●        |
|                             | 206-FB         | 6        | 3/8 - 2-5/8                | ●                        | ●                     | ●                     | ●                          | ●                               | ●                          | ●        |
|                             | 227-FA         | 4        | 1/8 - 3/4                  | ●                        | ●                     | ●                     | ●                          | (1)                             | (1)                        | (1)      |
|                             | 312-FC         | 4        | 1/4 - 1-5/8                | ●                        | ●                     | ●                     | ●                          | ●                               | ●                          | ●        |
|                             | 406-FA         | 6        | 2 - 4-1/8                  | ●                        | ●                     | ●                     | ●                          | ●                               | ●                          | ●        |
| Tube Cutters                | 206-FBP        | 6        | 3/8 - 2-5/8                | ●(5)                     | ●(5)                  | ●(5)                  | ●(5)                       | ●(5)                            | ●(5)                       | ●(5)     |
| Thermoplastic               | 307-FP         | 7        | 1/16 - 1/2 (4)             |                          |                       |                       |                            |                                 |                            |          |
| Rubber Hose                 | 327-FP         | 7        | 1/8 - 13/16 (4)            |                          |                       |                       |                            |                                 |                            |          |
| Saw Vise                    | 384-FA         | 6        | 1/8 - 1-1/2                | ●                        | ●                     | ●                     | ●                          | ●                               | ●                          | ●        |
| Bending Tools               | 101-F          | 10       | 1/4 - 5/8                  | ●                        | ●                     |                       |                            |                                 |                            |          |
|                             | 102-F          | 10       | 1/4 - 7/8                  | ●                        | ●                     |                       |                            |                                 |                            |          |
|                             | 112-F          | 10       | 1/4 - 3/8                  | ●                        | ●                     |                       |                            |                                 |                            |          |
|                             | 163-F          | 10       | 1/4 - 5/8                  | ●                        | ●                     |                       |                            |                                 |                            |          |
|                             | 201-F          | 10       | 1/4 - 7/8                  | ●                        | ●                     |                       |                            |                                 |                            |          |
|                             | 260-FHA        | 14       | 1/4 - 7/8                  | ●                        | ●                     | ●                     | ●                          |                                 |                            |          |
|                             | 270-F          | 15       | 3/8 - 1-1/8                | ●                        | ●                     | ●                     | ●                          | ●                               | ●                          | ●        |
|                             | 350-FHA        | 14       | 1/4 - 3/4                  | ●                        | ●                     | ●                     | ●                          |                                 |                            |          |
|                             | 360-FHA        | 14       | 3/8 - 3/4                  | ●                        | ●                     | ●                     | ●                          |                                 |                            |          |
|                             | 364-FH         | 11       | 1/8 - 3/16                 | ●                        | ●                     | ●                     | ●                          | ●                               |                            |          |
|                             | 364-FHA        | 11       | 1/4 - 1 (3)                | ●                        | ●                     | ●                     | ●                          | ●                               |                            |          |
|                             | 364-FHAM       | 11       | 6 - 12 mm                  | ●                        | ●                     | ●                     | ●                          | ●                               |                            |          |
|                             | 364-FHB        | 11       | 1/4 - 1/2                  | ●                        | ●                     | ●                     | ●                          | ●                               |                            |          |
|                             | 364-FHBM       | 11       | 6 - 12 mm                  | ●                        | ●                     | ●                     | ●                          | ●                               |                            |          |
|                             | 367-FH         | 10       | 1/8, 3/16, 1/4             | ●                        | ●                     | ●                     | ●                          |                                 |                            |          |
|                             | 368-FH         | 10       | 3/16, 1/4, 5/16, 3/8       | ●                        | ●                     | ●                     | ●                          |                                 |                            |          |
|                             | 370-FH         | 10       | 3/16, 1/4, 3/8, 1/2        | ●                        | ●                     | ●                     | ●                          |                                 |                            |          |
|                             | 470-FH         | 9        | 3/16, 1/4, 5/16, 3/8       | ●                        | ●                     | ●                     | ●                          |                                 |                            |          |
|                             | 564-FH         | 13       | 3/8, 1/2                   | ●                        | ●                     | ●                     | ●                          | ●                               | ●                          | ●        |
|                             | 600-F          | 16       | 1/4 - 3/4                  | ●                        | ●                     | ●                     | ●                          | ●                               | ●                          | ●        |
|                             | 664-FH         | 12       | 1/4, 3/8, 1/2              | ●                        | ●                     | ●                     | ●                          | ●                               | ●                          | ●        |
|                             | 664-FH(Metric) | 12       | 6 - 12 mm                  | ●                        | ●                     | ●                     | ●                          | ●                               | ●                          | ●        |
|                             | 700-F          | 16       | 1/4 - 3/4                  | ●                        | ●                     | ●                     | ●                          | ●                               | ●                          | ●        |
| 37° Flaring Tool            | 400-F          | 21       | 3/16 - 5/8                 | ●                        | ●                     | ●                     | ●                          | ●                               | ●                          | ●        |
|                             | 407-FA         | 22       | 1/8 - 1-1/2                | ●                        | ●                     | ●                     | ●                          | ●                               | ●                          | ●        |
|                             | 437-FB         | 20       | 3/16 - 5/8                 | ●                        | ●                     | ●                     | ●                          | ●                               | ●                          | ●        |
|                             | 447-F          | 21       | 1/8 - 1/2                  | ●                        | ●                     | ●                     | ●                          | ●                               | ●                          | ●        |
|                             | 507-FB         | 20       | 3/16 - 5/8                 | ●                        | ●                     | ●                     | ●                          | ●                               | ●                          | ●        |
|                             | 507-FBM        | 20       | 6 - 16 mm                  | ●                        | ●                     | ●                     | ●                          | ●                               | ●                          | ●        |
|                             | 555-FS         | 23       | 3/16 - 5/8                 | ●                        | ●                     | ●                     | ●                          | ●                               | ●                          | ●        |
|                             | 537-F          | 22       | 3/4 - 1-1/4                | ●                        | ●                     | ●                     | ●                          | ●                               | ●                          | ●        |
|                             | 637-F          | 22       | 1-1/4 - 2                  | ●                        | ●                     | ●                     | ●                          | ●                               | ●                          | ●        |
|                             | 2000-FS        | 28       | 1/8 - 3/4                  | ●                        | ●                     | ●                     | ●                          | ●                               | ●                          | ●        |
| 45° Flaring Tool            | 103-FS         | 17       | 3/4 - 1                    | ●                        | ●                     |                       |                            |                                 |                            |          |
|                             | 195-FC         | 17       | 3/16 - 5/8                 | ●                        | ●                     |                       |                            |                                 |                            |          |
|                             | 203-FA         | 17       | 5/8 - 1-1/8                | ●                        | ●                     |                       |                            |                                 |                            |          |
|                             | 275-FS         | 24       | 1/8 - 3/4                  | ●                        | ●                     |                       |                            |                                 |                            |          |
|                             | 275-FSM        | 24       | 4 - 22 mm                  | ●                        | ●                     |                       |                            |                                 |                            |          |
|                             | 296-FC         | 17       | 3/16 - 5/8                 | ●                        | ●                     |                       |                            |                                 |                            |          |
|                             | 300-FB         | 17       | 3/16 - 5/8                 | ●                        | ●                     |                       |                            |                                 |                            |          |
|                             | 375-FS         | 17       | 1/8 - 3/4                  | ●                        | ●                     |                       |                            |                                 |                            |          |
|                             | 376-FS         | 17       | 1/2 - 3/4                  | ●                        | ●                     |                       |                            |                                 |                            |          |
|                             | 395-FAM        | 17       | 4 - 16 mm                  | ●                        | ●                     |                       |                            |                                 |                            |          |
|                             | 500-FC         | 18       | 3/16 - 5/8                 | ●                        | ●                     |                       |                            |                                 |                            |          |
|                             | 500-FCM        | 18       | 6 - 16 mm                  | ●                        | ●                     |                       |                            |                                 |                            |          |
|                             | 525-F          | 18       | 3/16 - 5/8<br>4.75 - 16 mm | ●                        | ●                     |                       |                            |                                 |                            |          |
|                             | 555-F          | 23       | 3/16 - 5/8                 | ●                        | ●                     |                       |                            |                                 |                            |          |
|                             | 2000-FS        | 28       | 1/8 - 3/4                  | ●                        | ●                     | ●                     | ●                          | ●                               | ●                          | ●        |
| 45° Double Flaring Tools    | 93-FB          | 19       | 3/16 - 1/2                 | ●                        | ●                     | ●                     | ●                          |                                 |                            |          |
|                             | 195-FB         | 19       | 1/4 - 3/4                  | ●                        | ●                     | ●                     | ●                          |                                 |                            |          |
|                             | 2000-FS        | 28       | 3/16 - 3/4                 | ●                        | ●                     | ●                     | ●                          |                                 |                            |          |
| Reaming and Deburring Tools | 208-F          | 32       | 3/16 - 1-1/2               | ●                        | ●                     | ●                     | ●                          | ●                               | ●                          | ●        |
|                             | 208-FSS        | 32       | 3/16 - 1-1/2               | ●                        | ●                     | ●                     | ●                          | ●                               | ●                          | ●        |
|                             | 210-F          | 32       |                            | ●                        | ●                     | ●                     | ●                          | ●                               | ●                          | ●        |
| Tube Constrictor            | TC-1020        | 4        | 1/8 - 1-1/8                | ●                        | ●                     |                       |                            |                                 |                            |          |
| Swaging Tools               | 93-S           | 26       | 3/16 - 7/8                 | ●                        | ●                     |                       |                            |                                 |                            |          |
|                             | 94-SSP         | 26       | 1/2, 5/8, 7/8              | ●                        | ●                     |                       |                            |                                 |                            |          |
|                             | 95-S           | 26       | 3/16 - 5/8                 | ●                        | ●                     |                       |                            |                                 |                            |          |
|                             | 193-S          | 26       | 1/4 - 5/8                  | ●                        | ●                     |                       |                            |                                 |                            |          |
|                             | 194-S          | 26       | 1/2 - 7/8                  | ●                        | ●                     |                       |                            |                                 |                            |          |
|                             | 195-SA         | 26       | 1/4 - 5/8                  | ●                        | ●                     |                       |                            |                                 |                            |          |
|                             | 275-FS         | 24       | 3/16 - 3/4                 | ●                        | ●                     |                       |                            |                                 |                            |          |
|                             | 555-FS         | 23       | 3/16 - 5/8                 | ●                        | ●                     |                       |                            |                                 |                            |          |
|                             | 2000-FS        | 28       | 3/16 - 3/4                 | ●                        | ●                     |                       |                            |                                 |                            |          |
| Metric Bubble Flaring Tool  | 293-F          | 23       | 4.75 - 10 mm               | ●                        | ●                     | ●                     | ●                          |                                 |                            |          |

(1) Heavy duty cutting wheel No. S75046 is recommended for continuous service with steel, stainless steel, monel, titanium and hard temper copper tubing.  
 (2) Type M tubing should be torch annealed before flaring.  
 (3) No. 364-FHA, 5/8" - 1" size should be used only with annealed (softened) non-ferrous tubing.  
 (4) Not to be used with metal reinforced hose.  
 (5) When cutting metallic tubing you must switch to standard wheel furnished.

# TESTING AND SERVICE TOOLS

## PINCH-OFF TOOL

For 1/4" to 1/2" O.D. tubing.

Temporarily closes soft copper, aluminum or steel tubing so no liquid or gas passes sealed part. Lets you disconnect line while making repairs without loss of liquid or gas. Forming holes for 1/4", 5/16", 3/8" and 1/2" O.D. tubing.

**105-FF** Pinch-Off Tool for 1/4", 5/16", 3/8" and 1/2" O.D. tubing. Wt. .75 lbs.



105-FF

## TUBING TEST PLUGS

For 1/4" to 1-5/8" O.D. tubing.

For temporary shut-off of tubing without pinching it off or installing a valve. Especially handy for plumbing, heating, refrigeration and instrumentation when troubleshooting for leaks. Lightweight, fast acting, dependable. Insert plug in tube end and tighten wing nut. Expander seals tube and holds pressures to 100 PSI.

**142-F** 3-Pc. test plug kit for 1/2", 5/8" and 7/8" O.D. tubing. Wt. .5 lbs.



140-F-06

142-F

## INDIVIDUAL TEST PLUGS

| PART NO. | TUBE O.D. (in.) | MIN I.D. DIA. (in.) | MAX I.D. DIA. (in.) | WEIGHT EACH (oz.) | REPLACEMENT SLEEVE |
|----------|-----------------|---------------------|---------------------|-------------------|--------------------|
| 140-F-04 | 1/4             | .171                | .190                | .5                | S62641             |
| 140-F-06 | 3/8             | .265                | .315                | .75               | S62648             |
| 140-F-08 | 1/2             | .390                | .436                | 1.0               | S62655             |
| 140-F-10 | 5/8             | .515                | .545                | 1.5               | S62661             |
| 140-F-12 | 3/4             | .640                | .745                | 2.0               | S62666             |
| 140-F-14 | 7/8             | .734                | .995                | 3.0               | S66434             |
| 140-F-18 | 1-1/8           | .984                | 1.245               | 4.0               | S66435             |
| 140-F-22 | 1-3/8           | 1.218               | 1.270               | 4.0               | S71174             |
| 140-F-26 | 1-5/8           | 1.453               | 1.505               | 5.0               | S71177             |

## 45° REFACING TOOL

For 1/4", 5/16", 3/8" and 1/2" SAE 45° flare fittings.

Makes nicked or marred seats on brass and other nonferrous fittings and valves as good as new. Precision feed. Replaceable cutter.

**345-FA** With cutter and adapters for 1/4", 5/16", 3/8", 1/2" and 5/8" fittings. Includes metal tool case. Wt. 2.0 lbs.

- Replacement Parts:**
- 346-F-04** Adapter 1/4"
  - 346-F-05** Adapter 5/16"
  - 346-F-06** Adapter 3/8"
  - 346-F-08** Adapter 1/2"
  - 346-F-10** Adapter 5/8"
  - S63412** Cutter

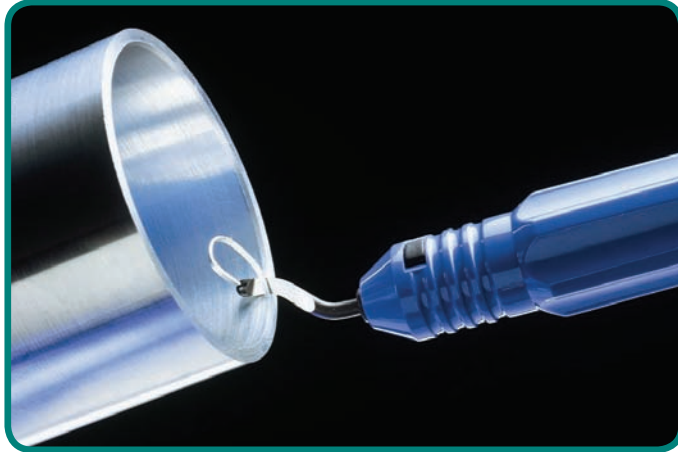


345-FA

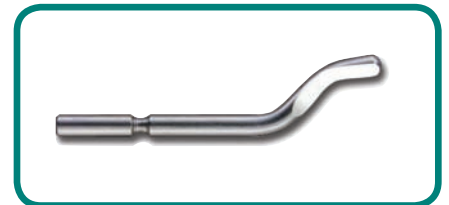
# TUBE DEBURRING

## DEBURRING TOOL

**210-F** The rotary style blade is perfect for removing burrs from holes and edges. Large ergonomic handle reduces user fatigue. Ships complete with two heavy duty blades - extra blade stores inside the handle. For copper, steel, aluminum, zinc, cast iron, brass and plastic tubing. Length 5-3/4". Wt. 1.5 oz.



210-F



510001087 -Deburr Replacement Blade

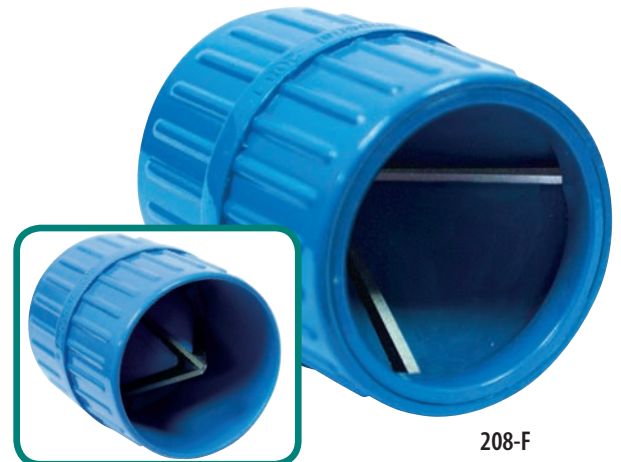
## INNER-OUTER REAMING AND DEBURRING TOOLS

For 3/16" to 1-1/2" (5 mm to 38 mm) O.D. tubing.

Reams both inside and outside edges of tube at a 60° included angle with 3 hardened cutting blades. Tough die cast body. Deburrs both clockwise and counterclockwise. Fluted body is shaped to fit comfortably in palm.

**208-F** Reamer for copper, aluminum and brass tubing. Hardened steel cutter blades. Blue finish. Wt. .63 lbs.

**208-FSS** Reamer for aircraft grade stainless steel tubing, hard or soft copper, aluminum, brass and steel tubing. Tungsten hardened tool steel cutter blades. Black finish. Wt. .63 lbs.



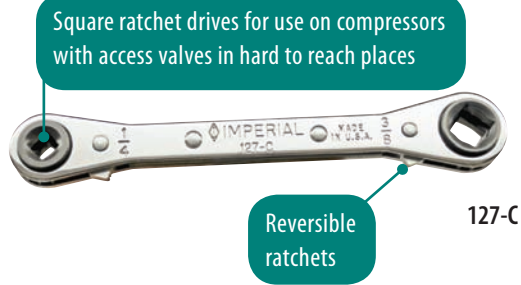
208-F

# WRENCHES

## WRENCHES

### For Refrigeration and Air Conditioning Service.

**127-C** Compressor access valve wrench. Chrome plated. Has 1/4", 3/8", 3/16" and 5/16" square drive ratchets and is specially designed for use on compressors with access valves in hard to reach places. Reversible ratchets.



127-C

**127-CO** Same as 127-C except with unique 25° offset that provides additional convenience in hard to reach places.



127-CO

**124-C** Combination wrench with the four sizes most needed for servicing air-conditioning and refrigerator equipment:

- 9/16" hex for dust cap on access valves and plug oil check on compressor.
- 1/2" hex for compressor mounting bolts.
- 1/4" square for valve stem and service valves and old style compressor valves.
- 3/16" square for valve refrigerant charging tanks.



124-C

**125-C** Rugged, steel forged wrench with four sizes covering almost any application. Ratchet has 1/4" square drive on one end; other end has 3/16" and 5/16" square openings, plus 9/16" hex opening.



125-C

**126-C** Economy compressor access valve wrench. Chrome plated. Has 1/4", 3/8", 3/16" and 5/16" square drive ratchets and is specially designed for use on compressors with access valves in hard to reach places. Reversible ratchets.



126-C

# IMPERIAL® TOOL BAG

## 15-POCKET PROFESSIONAL TOOL BAG

### TB-52 Tool Bag

- 8"W x 16"L x 11"D.
- Double layered ballistic nylon.
- Wide opening mouth.
- Padded handles and 48" shoulder strap.
- Designed to hold tools.
- Tools not included!



TB-52

# RATCHET WRENCHES

## 195-F KWIK-TITE® RATCHET WRENCHES

For 5/16" to 2-1/4" and 7 mm to 32 mm hex sizes.

The Kwik-Tite ratchet wrench speeds installation of tube fittings and valves, hex nuts, bolts and fasteners. This unique wrench, with its open jaw design, makes it easy to slip onto fittings and fasteners, even in tight quarters. Flips quickly into tightening position with a sure grip on all hex surfaces.

12-point contact distributes torque pressures evenly on the flats of the hex, not at the corners. Eliminates warping and distorting of fittings and fasteners. Because of the Kwik-Tite ratchet action, tightening jobs are easier and faster.

Kwik-Tite wrenches are constructed for rugged use. Jaws are hardened steel. Handles are made of heavy gauge alloy steel, with a black oxide finish.



Ratcheting of wrench requires only 30° of movement.



**SAE**

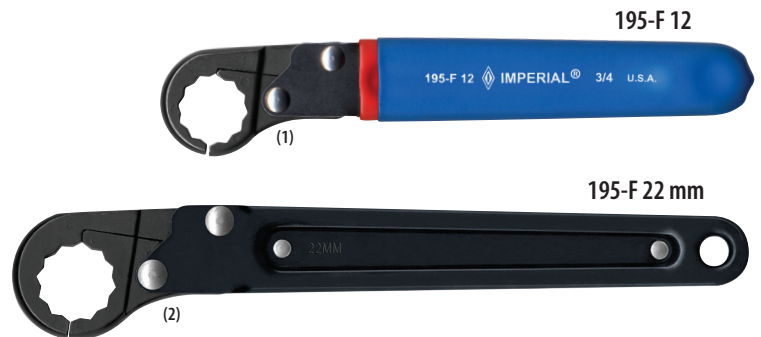
| PART NO. | HEX SIZE (in.) | OVERALL LENGTH (in.) |
|----------|----------------|----------------------|
| 195-F 05 | 5/16           | 5-1/2                |
| 195-F 06 | 3/8            | 5-1/2                |
| 195-F 07 | 7/16           | 5-3/8                |
| 195-F 08 | 1/2            | 5-1/2                |
| 195-F 09 | 9/16           | 7-1/4                |
| 195-F 10 | 5/8            | 7-5/32               |
| 195-F 11 | 11/16          | 7-1/4                |
| 195-F 12 | 3/4            | 7-5/16               |
| 195-F 13 | 13/16          | 9-1/8                |
| 195-F 14 | 7/8            | 9-3/32               |
| 195-F 15 | 15/16          | 9-1/4                |
| 195-F 16 | 1              | 9-9/32               |
| 195-F 17 | 1-1/16         | 13.59                |
| 195-F 18 | 1-1/8          | 13.59                |
| 195-F 19 | 1-3/16         | 13.59                |
| 195-F 20 | 1-1/4          | 13.59                |
| 195-F 22 | 1-3/8          | 13.84                |
| 195-F 24 | 1-1/2          | 13.84                |
| 195-F 26 | 1-5/8          | 13.84                |
| 195-F 28 | 1-3/4          | 14.21                |
| 195-F 30 | 1-7/8          | 14.21                |
| 195-F 32 | 2              | 14.21                |
| 195-F 34 | 2-1/8          | 14.53                |
| 195-F 36 | 2-1/4          | 14.53                |

- (1) 5/16" - 3/4" sizes have two-tone grips as shown.
- (2) 13/16" - 1" sizes do not have grips.
- (3) 1-1/16" - 2-1/4" sizes have foam grips (not shown).

**METRIC**

| PART NO.    | HEX SIZE (mm) | OVERALL LENGTH (mm) | OVERALL LENGTH (in.) |
|-------------|---------------|---------------------|----------------------|
| 195-F 07 mm | 7             | 140.72              | 5.54                 |
| 195-F 08 mm | 8             | 140.72              | 5.54                 |
| 195-F 09 mm | 9             | 140.72              | 5.54                 |
| 195-F 10 mm | 10            | 140.72              | 5.54                 |
| 195-F 11 mm | 11            | 140.72              | 5.54                 |
| 195-F 12 mm | 12            | 140.72              | 5.54                 |
| 195-F 13 mm | 13            | 140.72              | 5.54                 |
| 195-F 14 mm | 14            | 187.45              | 7.38                 |
| 195-F 15 mm | 15            | 187.45              | 7.38                 |
| 195-F 16 mm | 16            | 187.45              | 7.38                 |
| 195-F 17 mm | 17            | 187.45              | 7.38                 |
| 195-F 18 mm | 18            | 187.45              | 7.38                 |
| 195-F 19 mm | 19            | 187.45              | 7.38                 |
| 195-F 21 mm | 21            | 237.50              | 9.35                 |
| 195-F 22 mm | 22            | 237.50              | 9.35                 |
| 195-F 23 mm | 23            | 237.50              | 9.35                 |
| 195-F 24 mm | 24            | 237.50              | 9.35                 |
| 195-F 27 mm | 27            | 345.19              | 13.59                |
| 195-F 30 mm | 30            | 345.19              | 13.59                |
| 195-F 32 mm | 32            | 345.19              | 13.59                |

- (1) 7 mm - 19 mm sizes have two-tone grips as shown.
- (2) 21 mm - 24 mm sizes do not have grips.
- (3) 27 mm - 32 mm sizes have foam grips (not shown).



**KWIK-TITE® RATCHET WRENCH KITS**

| PART NO.     | DESCRIPTION   | WEIGHT (lbs.) |
|--------------|---|---------------|
| 195-4STD KIT | 4-Pc. SAE kit for refrigeration in pouch. Contains 5/8", 13/16", 15/16", and 1-1/16" wrenches. (Not shown). | 2.3           |
| 195-5STD KIT | 5-Pc. metric kit in pouch. Contains 10 mm, 11 mm, 12 mm, 13 mm and 14 mm wrenches.                          | 2             |
| 195-7STD KIT | 7-Pc. SAE kit in pouch. Contains 3/8", 7/16", 1/2", 9/16", 5/8", 11/16" and 3/4" wrenches.                  | 2.5           |

# REFRIGERATION AND AIR-CONDITIONING PRODUCTS

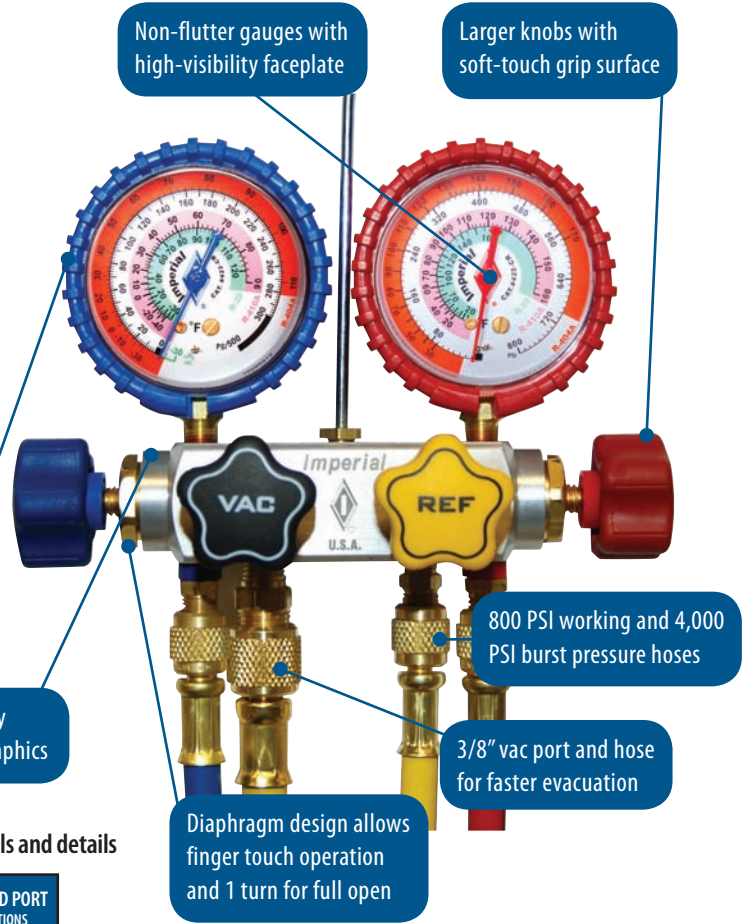




# SERVICE MANIFOLDS

## 800 SERIES DEEP DRAW 4-VALVE MANIFOLD

- **4-Valve Efficiency** - Vacuum, low side, high side, and refrigerant lines are individually connected and controlled. No need to switch charging lines.
- **4 Times Faster Evacuation** - 3/8" vacuum port and oversize internal passages evacuate systems four times faster than ordinary manifolds. 3/8" port has greater area than combined inlets of high and low side lines.
- **Unique Deep Draw Vacuum Valve Design** - Proven diaphragm-type, soft-seat valves require only fingertip pressure to close completely. One turn to full open/close. Superior for deep vacuum service.
- **Precision Gauges & Protective Boots** - Unique design with easy to read color-coded scales provides superior resistance to shock, vibration and pulsation for superior performance and extended gauge life.
- **PolarShield® Hi-Performance Hoses** - 800 PSI working pressure, 4,000 PSI burst pressure (not all models include hose).
- **Ergonomic Handles** - Durable, soft-touch non-slip surface, even with oily fingers.
- **Swivel Hanger**

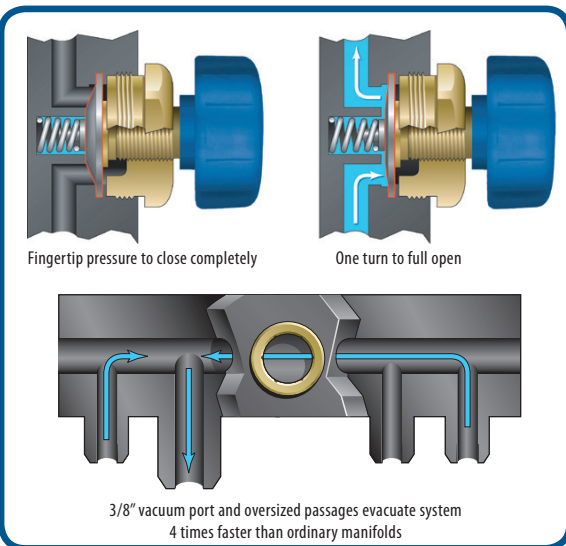


800 SERIES DEEP DRAW 4-VALVE MANIFOLD - See page 44 for additional models and details

| PART NO.                  | REFRIGERANT           | CHARGING LINES  | MANIFOLD PORT CONNECTIONS |
|---------------------------|-----------------------|---|---------------------------|
| 820-C*                    | R-12, R-22, R-502     |   | 1/4" & 3/8" SAE           |
| 820-CS* (w/Sight Glass)   | R-12, R-22, R-502     |   | 1/4" & 3/8" SAE           |
| 821-C*                    | R-12, R-22, R-502     | 4-60" (3/8" VAC)  | 1/4" & 3/8" SAE           |
| 821-CS* (w/Sight Glass)   | R-12, R-22, R-502     | 4-60" (3/8" VAC)  | 1/4" & 3/8" SAE           |
| 822-C (w/Carrying Case)   | R-12, R-22, R-502     | 4-60" (3/8" VAC)  | 1/4" & 3/8" SAE           |
| 829-C*                    | R-12, R-22, R-502     | 3-60" w/Low Loss Shut-Off Couplers, 1-60" 3/8" VAC Line       | 1/4" & 3/8" SAE           |
| 830-CKP*                  | R-134a                |   | 1/4" & 3/8" SAE           |
| 830-CKPS* (w/Sight Glass) | R-134a                |   | 1/4" & 3/8" SAE           |
| 831-CKP*                  | R-134a                | 4-60" (3/8" VAC)  | 1/4" & 3/8" SAE           |
| 831-CKPS* (w/Sight Glass) | R-134a                | 4-60" (3/8" VAC)  | 1/4" & 3/8" SAE           |
| 840-C*                    | R-410A                |   | 1/4" & 3/8" SAE           |
| 841-C*                    | R-410A                | 4-60" (3/8" VAC)  | 1/4" & 3/8" SAE           |
| 841-CM                    | R-410A                | 4-60" (B, R: 1/4" x 5/16" SAE, Y: 1/4" x 1/4"; 3/8" VAC Line) | 1/4" & 3/8" SAE           |
| 842-C*                    | R-410A                | 3-60" w/Low Loss Ball Valve Shut-Off, 1-60" 3/8" VAC Line     | 1/4" & 3/8" SAE           |
| 844-C*                    | R-410A, R-22, R-404A  | 4-60" (3/8" VAC)  | 1/4" & 3/8" SAE           |
| 844-CS* (w/Sight Glass)   | R-410A, R-22, R-404A  | 4-60" (3/8" VAC)  | 1/4" & 3/8" SAE           |
| 845-C*                    | R-410A, R-22, R-404A  |   | 1/4" & 3/8" SAE           |
| 846-C*                    | R-410A, R-22, R-404A  | 3-60" w/Low Loss Ball Valve Shut-Off, 1-60" 3/8" VAC Line     | 1/4" & 3/8" SAE           |
| 850-C*                    | R-404A, R-507, R-134a |   | 1/4" & 3/8" SAE           |
| 851-C*                    | R-404A, R-507, R-134a | 4-60" (3/8" VAC)  | 1/4" & 3/8" SAE           |
| 852-C*                    | R-404A, R-507, R-134a | 3-60" w/Low Loss Shut-Off Couplers, 1-60" 3/8" VAC Line       | 1/4" & 3/8" SAE           |
| 853-C (w/Carrying Case)   | R-404A, R-507, R-134a | 4-60" (3/8" VAC)  | 1/4" & 3/8" SAE           |

\* Add "C" suffix for clamshell packaging

### DIAPHRAGM TYPE SOFT SEAT VALVES



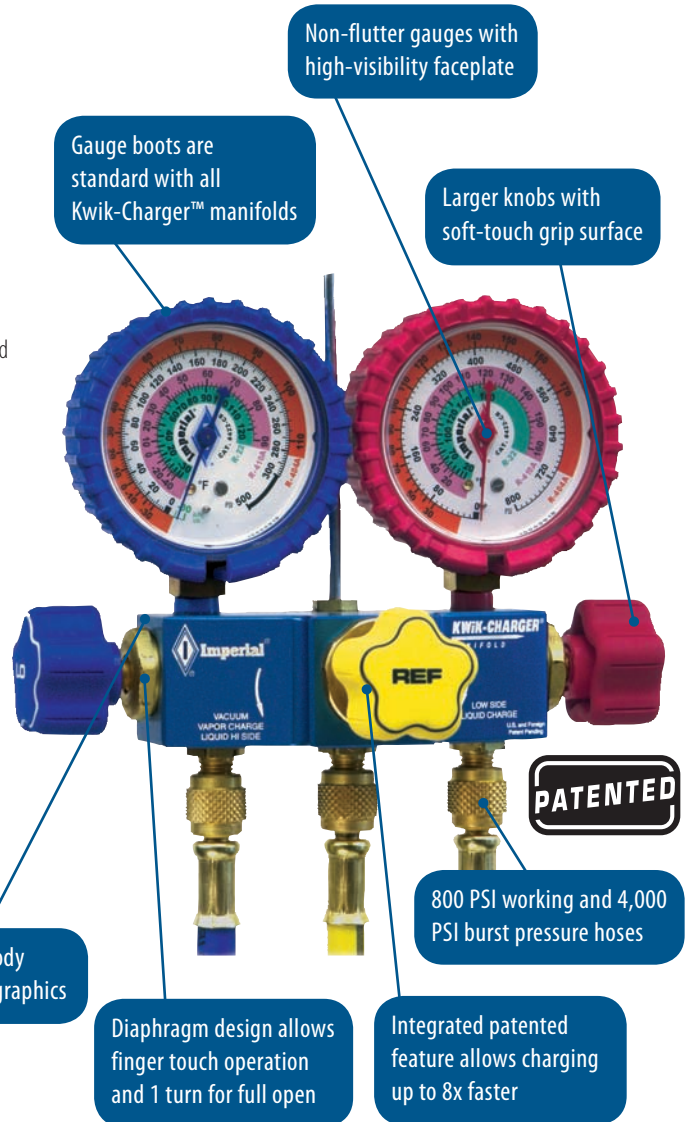


# SERVICE MANIFOLDS

## 700 SERIES KWIK-CHARGER™ MANIFOLD

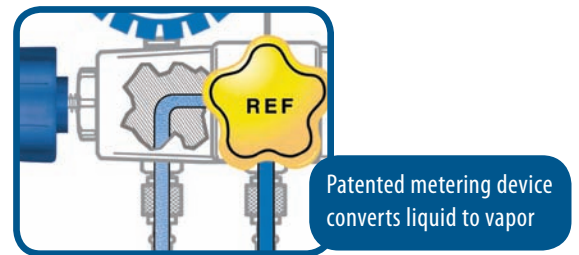
Charging the system is faster and easier than ever using Imperial® manifolds with built-in liquid low side charger.

- **Dual Action Valve** - Operates as a conventional manifold, or engage the special control valve and the manifold accepts liquid refrigerant from cylinder and discharges into the low side of the system. Charging rate is up to eight times faster than vapor charging.
- **Safe** - Internal metering element reduces liquid flow to a level below capacity of the compressor. Assures a safe, fast charge without endangering the compressor.
- **All-In-One** - No connecting or disconnecting special adapters for charging new blended refrigerants.
- **No Pressure Drop-In Cylinder** - No need to heat refrigerant cylinder.
- **Works With All Refrigerants** - CFC, HFC, HCFC, Zeotropic and Azeotropic.
- **Filters In All Manifold Port Fittings** - To keep out particulate material that may be present during recovery or reclaim or in recovered refrigerant. Filters are easily serviceable.
- **Deep Vacuum Valve Design** - Proven diaphragm-type, soft-seat valves require only fingertip pressure to close completely. One turn to full open/close. Superior for deep vacuum service.
- **Precision Gauges & Protective Boots** - Unique gauges provide superior resistance to shock, vibration & pulsation for accurate performance and extended gauge life.
- **PolarShield® Hi-Performance Hoses**  - 800 PSI working pressure, 4,000 PSI burst pressure (not all models include hose).
- **Ergonomic Handles** - Durable, soft-touch non-slip surface, even with oily fingers.
- **Swivel Hanger**



### 700 SERIES KWIK-CHARGER™ MANIFOLD - See page 44 for details

| PART NO. | REFRIGERANT            | CHARGING LINES                       | MANIFOLD PORT CONNECTIONS |
|----------|------------------------|--------------------------------------|---------------------------|
| 715-CC   | R-410A, R-22, R-404A   |                                      | 1/4" SAE                  |
| 717-CC   | R-410A, R-22, R-404A   | 3-60"                                | 1/4" SAE                  |
| 718-CC   | R-410A, R-22, R-404A   | 3-60" w/Low Loss Ball Valve Shut-Off | 1/4" SAE                  |
| 720-CC   | R-12, R-22, R-502      |                                      | 1/4" SAE                  |
| 721-CC   | R-12, R-22, R-502      | 3-60"                                | 1/4" SAE                  |
| 725-CC   | R-12, R-22, R-502      | 3-60" w/Low Loss Shut-Off Couplers   | 1/4" SAE                  |
| 740-CBC  | R-404A, R-407C, R-134a |                                      | 1/4" SAE                  |
| 745-CBC  | R-410A                 |                                      | 1/4" SAE                  |
| 745-CKPC | R-410A                 | 3-60" (1/4" x 5/16")                 | 1/4" SAE                  |
| 750-CC   | R-404A, R-507, R-134a  |                                      | 1/4" SAE                  |
| 751-CC   | R-404A, R-507, R-134a  | 3-60"                                | 1/4" SAE                  |
| 755-CC   | R-404A, R-507, R-134a  | 3-60" w/Low Loss Shut-Off Couplers   | 1/4" SAE                  |
| 762-CKPC | R-404A, R-507, R-22    | 3-60"                                | 1/4" SAE                  |

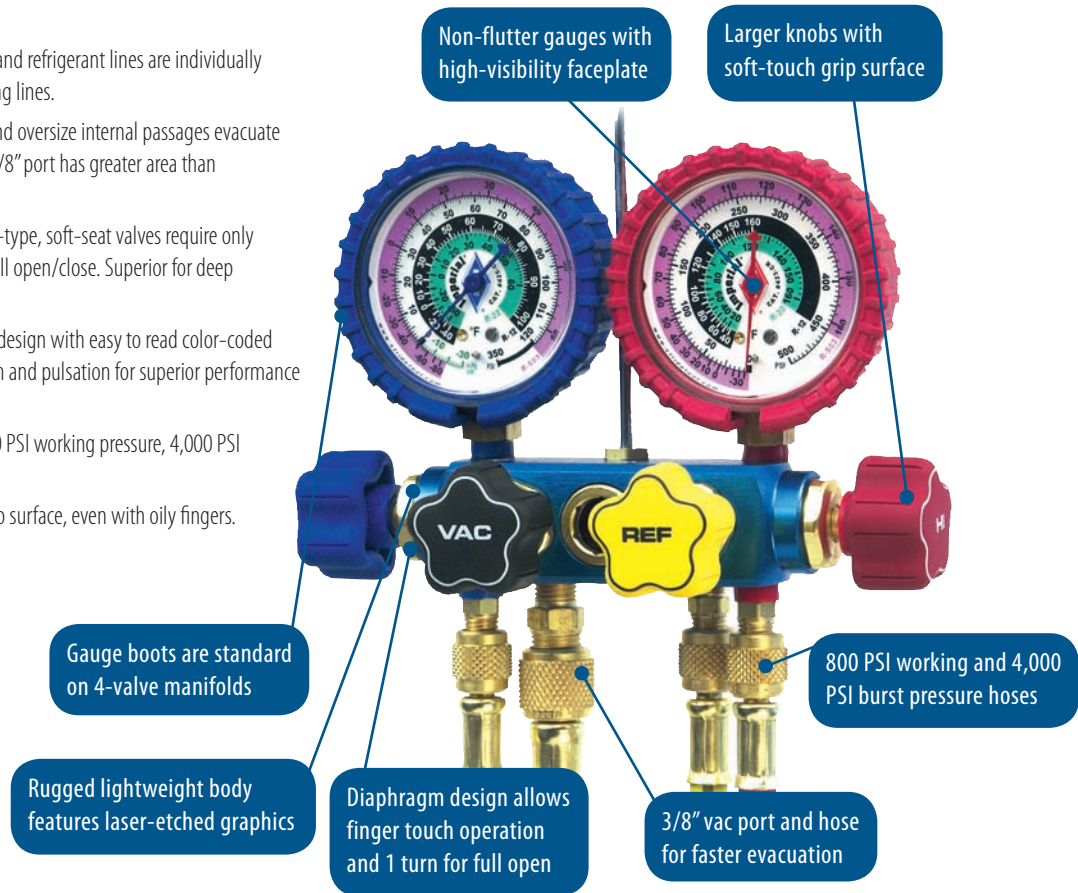


All Kwik-Charger™ manifolds are in clamshell packaging

# SERVICE MANIFOLDS

## 600 SERIES 4-VALVE MANIFOLD

- **4-Valve Efficiency** - Vacuum, low side, high side, and refrigerant lines are individually connected and controlled. No need to switch charging lines.
- **4 Times Faster Evacuation** - 3/8" vacuum port and oversize internal passages evacuate systems four times faster than ordinary manifolds. 3/8" port has greater area than combined inlets of high and low side lines.
- **Deep Vacuum Valve Design** - Proven diaphragm-type, soft-seat valves require only fingertip pressure to close completely. One turn to full open/close. Superior for deep vacuum service.
- **Precision Gauges & Protective Boots** - Unique design with easy to read color-coded scales provides superior resistance to shock, vibration and pulsation for superior performance and extended gauge life.
- **PolarShield® Hi-Performance Hoses** - 800 PSI working pressure, 4,000 PSI burst pressure (not all models include hose).
- **Ergonomic Handles** - Durable, soft-touch non-slip surface, even with oily fingers.
- **Swivel Hanger**

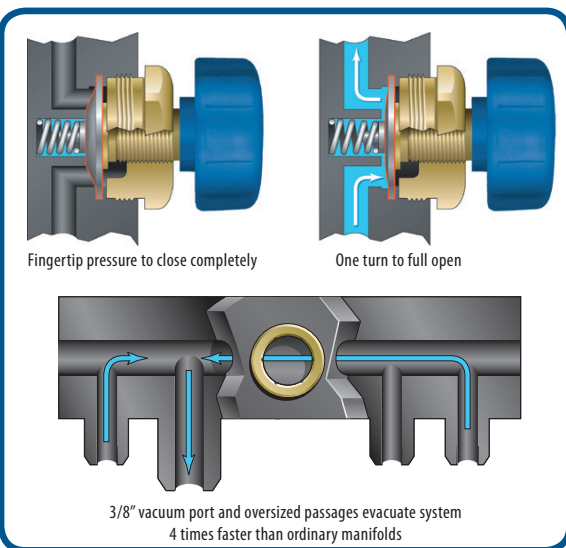


600 SERIES 4-VALVE MANIFOLD - See page 44-45 for additional models and details

| PART NO.                  | REFRIGERANT           | CHARGING LINES  | MANIFOLD PORT CONNECTIONS |
|---------------------------|-----------------------|---|---------------------------|
| 620-C*                    | R-12, R-22, R-502     |   | 1/4" & 3/8" SAE           |
| 620-CS* (w/Sight Glass)   | R-12, R-22, R-502     |   | 1/4" & 3/8" SAE           |
| 621-C*                    | R-12, R-22, R-502     | 4-60" (3/8" VAC)  | 1/4" & 3/8" SAE           |
| 621-CS* (w/Sight Glass)   | R-12, R-22, R-502     | 4-60" (3/8" VAC)  | 1/4" & 3/8" SAE           |
| 622-C (w/Carrying Case)   | R-12, R-22, R-502     | 4-60" (3/8" VAC)  | 1/4" & 3/8" SAE           |
| 629-C*                    | R-12, R-22, R-502     | 3-60" w/Low Loss Shut-Off Couplers, 1-60" 3/8" VAC Line   | 1/4" & 3/8" SAE           |
| 630-CKP*                  | R-134a                |   | 1/4" & 3/8" SAE           |
| 630-CKPS* (w/Sight Glass) | R-134a                |   | 1/4" & 3/8" SAE           |
| 631-CKP*                  | R-134a                | 4-60" (3/8" VAC)  | 1/4" & 3/8" SAE           |
| 631-CKPS* (w/Sight Glass) | R-134a                | 4-60" (3/8" VAC)  | 1/4" & 3/8" SAE           |
| 640-C*                    | R-410A                |   | 1/4" & 3/8" SAE           |
| 641-C*                    | R-410A                | 4-60" (3/8" VAC)  | 1/4" & 3/8" SAE           |
| 642-C*                    | R-410A                | 3-60" w/Low Loss Ball Valve Shut-Off, 1-60" 3/8" VAC Line | 1/4" & 3/8" SAE           |
| 644-C*                    | R-410A, R-22, R-404A  | 4-60" (3/8" VAC)  | 1/4" & 3/8" SAE           |
| 644-CS* (w/Sight Glass)   | R-410A, R-22, R-404A  | 4-60" (3/8" VAC)  | 1/4" & 3/8" SAE           |
| 645-C*                    | R-410A, R-22, R-404A  |   | 1/4" & 3/8" SAE           |
| 646-C*                    | R-410A, R-22, R-404A  | 3-60" w/Low Loss Ball Valve Shut-Off, 1-60" 3/8" VAC Line | 1/4" & 3/8" SAE           |
| 650-C*                    | R-404A, R-507, R-134a |   | 1/4" & 3/8" SAE           |
| 651-C*                    | R-404A, R-507, R-134a | 4-60" (3/8" VAC)  | 1/4" & 3/8" SAE           |
| 652-C*                    | R-404A, R-507, R-134a | 3-60" w/Low Loss Shut-Off Couplers, 1-60" 3/8" VAC Line   | 1/4" & 3/8" SAE           |
| 653-C (w/Carrying Case)   | R-404A, R-507, R-134a | 4-60" (3/8" VAC)  | 1/4" & 3/8" SAE           |


\* Add "C" suffix for clamshell packaging

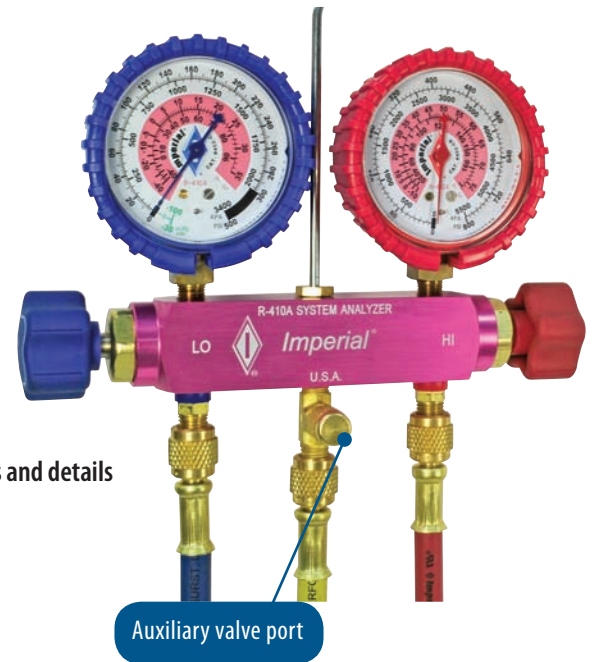
### DIAPHRAGM TYPE SOFT SEAT VALVES



# SERVICE MANIFOLDS

## 510 SERIES 2-VALVE / 4-PORT R-410A MANIFOLDS

- **Auxiliary Valve Port** - Allows multiple hookups for vacuum gauge, vacuum pump, recovery unit and add-ons.
- **Dual O-Ring Seal** - For high-pressure valve use. Electroless nickel plate stem to reduce wear and gauling.
- **Precision Gauges & Protective Boots** - Unique design with easy to read color-coded scales provides superior resistance to shock, vibration & pulsation for superior performance and extended gauge life.
- **PolarShield® Hi-Performance Hoses**  - 800 PSI working pressure, 4,000 PSI burst pressure (not all models include hose).
- **Ergonomic Handles** - Durable, soft-touch non-slip surface, even with oily fingers.
- **Swivel Hanger**




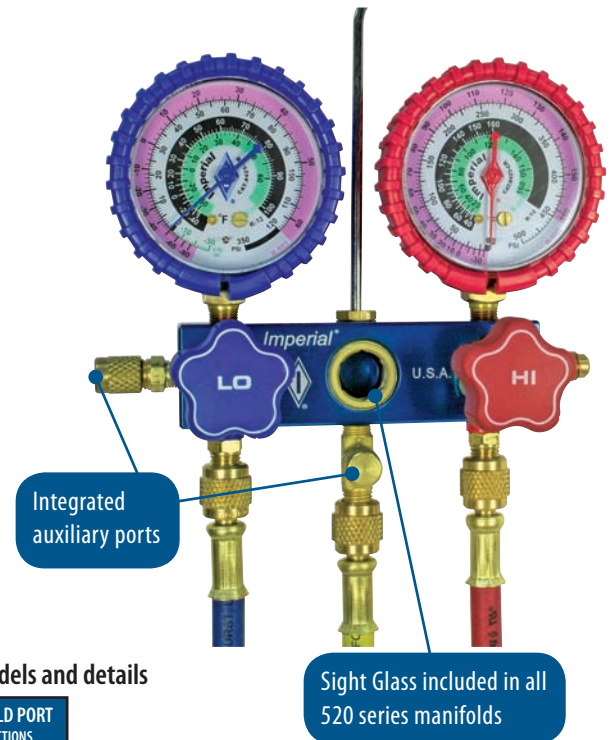
510 SERIES 2-VALVE/4-PORT R-410A MANIFOLDS - See page 45 for additional models and details

| PART NO. | REFRIGERANT | CHARGING LINES                       | MANIFOLD PORT CONNECTIONS |
|----------|-------------|--------------------------------------|---------------------------|
| 510-C*   | R-410A      |                                      | 1/4" SAE                  |
| 510-CM*  | R-410A      |                                      | 1/4" SAE                  |
| 511-C*   | R-410A      | 3-60"                                | 1/4" SAE                  |
| 511-CM*  | R-410A      | 3-60"                                | 1/4" SAE                  |
| 512-C*   | R-410A      | 3-60" w/Low Loss Ball Valve Shut-Off | 1/4" SAE                  |
| 513-C*   | R-410A      |                                      | 5/16" SAE                 |

\* Add "C" suffix for clamshell packaging

## 520 SERIES 2-VALVE / 4- OR 5-PORT MANIFOLDS

- **Two Integrated Auxiliary Ports** - Provide additional hookups for use with a micron (vacuum) gauge, vacuum pump, adding tracer dye, adding oil, purging non-condensables.
- **Deep Vacuum Valve Design** - Proven diaphragm-type, soft-seat valves require only fingertip pressure to close completely. One turn to full open/close. Superior for deep vacuum service.
- **Precision Gauges & Protective Boots** - Unique design with easy to read color-coded scales provides superior resistance to shock, vibration and pulsation for superior performance and extended gauge life.
- **Ergonomic Handles** - Durable, soft-touch non-slip surface, even with oily fingers.
- **PolarShield® Hi-Performance Hoses**  - 800 PSI working pressure, 4,000 PSI burst pressure (not all models include hose).
- **Swivel Hanger**



520-CA and 521-CA Combination R-134a & R-12 manifolds for automotive service. See page 39.

520 SERIES 2-VALVE/ 4- OR 5-PORT MANIFOLDS - See page 45 for additional models and details

| PART NO.                 | # OF PORTS | REFRIGERANT       | CHARGING LINES                | MANIFOLD PORT CONNECTIONS |
|--------------------------|------------|-------------------|-------------------------------|---------------------------|
| 520-C* (w/Sight Glass)   | 5          | R-12, R-22, R-502 |                               | 1/4" SAE                  |
| 520-CA* (w/Sight Glass)  | 4          | R-134a, R-12      |                               | 1/4" SAE                  |
| 520-CAM* (w/Sight Glass) | 4          | R-134a, R-12      |                               | 1/4" SAE                  |
| 521-C* (w/Sight Glass)   | 5          | R-12, R-22, R-502 | 3-60"                         | 1/4" SAE                  |
| 521-CA* (w/Sight Glass)  | 4          | R-134a, R-12      | 3-60" w/Auto Service Couplers | 1/4" SAE                  |
| 521-CAM* (w/Sight Glass) | 4          | R-134a, R-12      | 3-60" w/Auto Service Couplers | 1/4" SAE                  |

\* Add "C" suffix for clamshell packaging

# SERVICE MANIFOLDS

## 400 SERIES DELUXE 2-VALVE BRASS MANIFOLD

- **Dual O-Ring Valves** - Precision engineered with dynamic full-flow design for faster trouble-free evacuation and charging.
- **Precision Gauges & Protective Boots** - Unique design with easy to read color-coded scales provides superior resistance to shock, vibration and pulsation for superior performance and extended gauge life.
- **Soft-Seat Valves** - Seat tightly with fingertip pressure.
- **PolarShield® Hi-Performance Hoses** - 800 PSI working pressure, 4,000 PSI burst pressure (not all models include hose).
- **Ergonomic Handles** - Durable, soft-touch non-slip surface, even with oily fingers.
- **Swivel Hanger**

Non-flutter gauges with high-visibility faceplate

Gauge boots are standard on 400 and 500 Series

Larger knobs with soft-touch grip surface

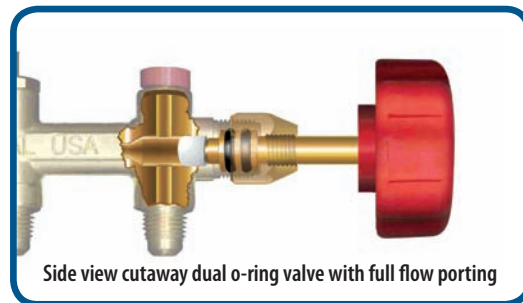
Needle valve design with full-flow porting

800 PSI working and 4,000 PSI burst pressure hoses



400 SERIES DELUXE 2-VALVE BRASS MANIFOLD - See page 46 for additional models and details

| PART NO.          | REFRIGERANT           | CHARGING LINES                       | MANIFOLD PORT CONNECTIONS |
|-------------------|-----------------------|--------------------------------------|---------------------------|
| 415-C*            | R-410A                |                                      | 1/4" SAE                  |
| 416-C*            | R-410A                | 3-36"                                | 1/4" SAE                  |
| 417-C*            | R-410A                | 3-60"                                | 1/4" SAE                  |
| 418-C*            | R-410A                | 3-60" w/Low Loss Ball Valve Shut-Off | 1/4" SAE                  |
| 420-C*            | R-410A, R-22, R-404A  |                                      | 1/4" SAE                  |
| 421-C*            | R-410A, R-22, R-404A  | 3-60"                                | 1/4" SAE                  |
| 422-C*            | R-410A, R-22, R-404A  | 3-60" w/Low Loss Ball Valve Shut-Off | 1/4" SAE                  |
| 435-CKP*          | R-134a                |                                      | 1/4" SAE                  |
| 436-CKP*          | R-134a                | 3-36"                                | 1/4" SAE                  |
| 450-C*            | R-404A, R-507, R-134a |                                      | 1/4" SAE                  |
| 451-C*            | R-404A, R-507, R-134a | 3-36"                                | 1/4" SAE                  |
| 452-C*            | R-404A, R-507, R-134a | 3-60"                                | 1/4" SAE                  |
| 481-CKPC          | R-22, R-134a, R-404A  |                                      | 1/4" SAE                  |
| 482-CKP*          | R-22, R-134a, R-404A  | 3-36"                                | 1/4" SAE                  |
| 494-C (body only) |                       |                                      | 1/4" SAE                  |
| 495-C*            | R-12, R-22, R-502     |                                      | 1/4" SAE                  |
| 496-C*            | R-12, R-22, R-502     | 3-36"                                | 1/4" SAE                  |
| 498-C*            | R-12, R-22, R-502     | 2-36", 1-60"                         | 1/4" SAE                  |
| 500-C*            | R-12, R-22, R-502     | 3-60"                                | 1/4" SAE                  |
| 505-C*            | R-12, R-22, R-502     | 3-60" w/Low Loss Shut-Off Couplers   | 1/4" SAE                  |

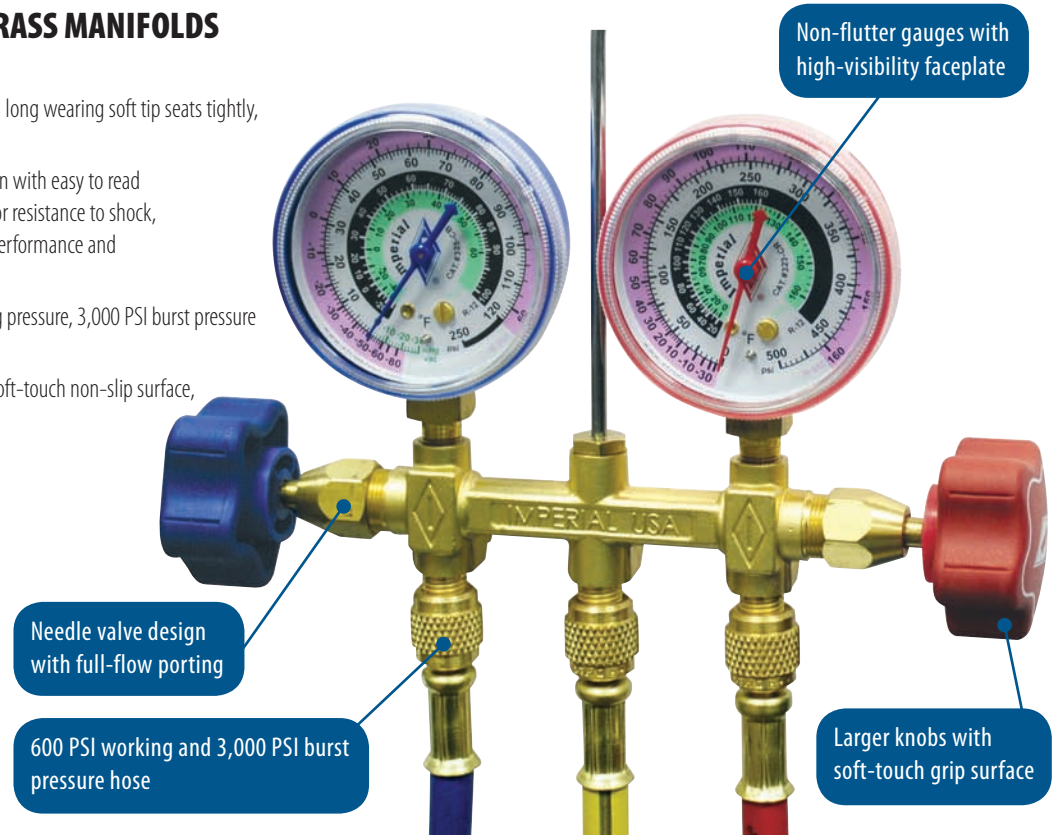


\* Add "C" suffix for clamshell packaging

# SERVICE MANIFOLDS

## 300 SERIES ECONOMY BRASS MANIFOLDS

- **Soft Seat Valve** - Brass stem with long wearing soft tip seats tightly, with fingertip pressure.
- **Precision Gauges** - Unique design with easy to read color-coded scales provides superior resistance to shock, vibration & pulsation for superior performance and extended gauge life.
- **Premium Hose** - 600 PSI working pressure, 3,000 PSI burst pressure (not all models include hose).
- **Ergonomic Handles** - Durable, soft-touch non-slip surface, even with oily fingers.
- **Dual O-Ring Seal Valves**
- **Swivel Hanger**



300 SERIES ECONOMY BRASS MANIFOLD - See page 46 for additional models and details

| PART NO. | REFRIGERANT          | CHARGING LINES | MANIFOLD PORT CONNECTIONS |
|----------|----------------------|----------------|---------------------------|
| 335-CKP* | R-134a               |                | 1/4" SAE                  |
| 336-CKP* | R-134a               | 3-36"          | 1/4" SAE                  |
| 395-C*   | R-12, R-22, R-502    |                | 1/4" SAE                  |
| 395-CD*  | R-12, R-22, R-502    |                | 1/4" SAE                  |
| 395-CKP* | R-12, R-22, R-502    |                | 1/4" SAE                  |
| 396-C*   | R-12, R-22, R-502    | 3-36"          | 1/4" SAE                  |
| 396-CD*  | R-12, R-22, R-502    | 3-36"          | 1/4" SAE                  |
| 396-CKP* | R-12, R-22, R-502    | 3-36"          | 1/4" SAE                  |
| 397-CD   | R-12, R-22, R-502    | 3-72"          | 1/4" SAE                  |
| 398-CC   | R-12, R-22, R-502    | 3-60"          | 1/4" SAE                  |
| 398-CD   | R-12, R-22, R-502    | 3-60"          | 1/4" SAE                  |
| 398-CKP* | R-22, R-134a, R-404A | 3-36"          | 1/4" SAE                  |

\* Add "C" suffix for clamshell packaging



## SINGLE GAUGE CHARGING AND TESTING UNIT

A compact, single gauge unit which will perform a variety of charging and testing operations. Body is forged brass, with 1/4" SAE port flare connections.

- **Soft-Seat Valve** – Brass stem with long wearing soft tip seats tightly, with fingertip pressure.
- **Ergonomic Handle** - Durable, soft-touch non-slip surface, even with oily fingers.
- **Swivel Hanger**


**466-C** Charging and Testing Unit with 425-CB, 2-1/2" compound gauge. 0-30" vacuum, 0-120 lbs. pressure.

**401-C** Charging and Testing Unit without gauge.



# AUTOMOTIVE SERVICE MANIFOLDS & ACCESSORIES

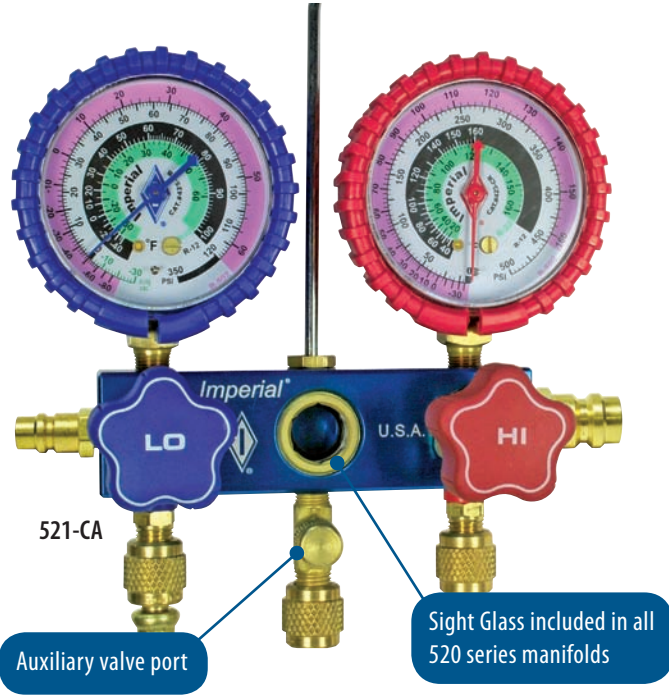
## 520 SERIES 2-VALVE 4-PORT SERVICE MANIFOLDS

- **Deep Vacuum Valve Design** - Proven diaphragm-type, soft-seat valves require only fingertip pressure to close completely. One turn to full open/close. Superior for deep vacuum service.
- **Precision Gauges & Protective Boots** - Unique design with easy to read color-coded scales provides superior resistance to shock, vibration and pulsation for superior performance and extended gauge life.
- **PolarShield® Hi-Performance Hoses**  - 800 PSI working pressure, 4,000 PSI burst pressure (not all models include hose).
- **Ergonomic Handles** - Durable, soft-touch non-slip surface, even with oily fingers.
- **Swivel Hanger**

520 SERIES 2-VALVE 4-PORT MANIFOLD - See page 45 for details

| PART NO.                 | REFRIGERANT  | CHARGING LINES                       | MANIFOLD PORT CONNECTIONS |
|--------------------------|--------------|--------------------------------------|---------------------------|
| 520-CA* (w/Sight Glass)  | R-134a, R-12 |                                      | 1/4" SAE                  |
| 520-CAM* (w/Sight Glass) | R-134a, R-12 |                                      | 1/4" SAE                  |
| 521-CA* (w/Sight Glass)  | R-134a, R-12 | 3-60" w/R-134a Auto Service Couplers | 1/4" SAE                  |
| 521-CAM* (w/Sight Glass) | R-134a, R-12 | 3-60" w/R-134a Auto Service Couplers | 1/4" SAE                  |

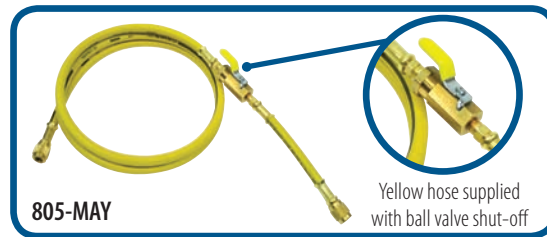
\* Add "C" suffix for clamshell packaging



## AUTOMOTIVE R-134a HOSE FOR USE WITH CONVENTIONAL MANIFOLDS EQUIPPED WITH 1/4" SAE PORTS

Red and blue hose supplied with 1/4" SAE FFL x 14 mm male connections. Yellow hose supplied with 1/4" SAE FFL x 1/2" ACME female with ball valve (BV) shut-off.

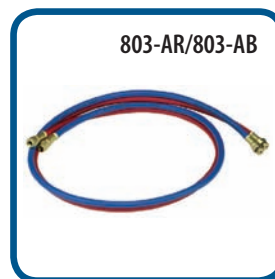
| LENGTH   | BLUE    | YELLOW W/BV | RED     | SET OF THREE (B,Y,R) |
|----------|---------|-------------|---------|----------------------|
| 3' (36") | 803-MAB | 803-MAY     | 803-MAR | 803-MAS              |
| 5' (60") | 805-MAB | 805-MAY     | 805-MAR | 805-MAS              |
| 6' (72") | 806-MAB | 806-MAY     | 806-MAR | 806-MAS              |



## AUTOMOTIVE R-134a HOSE FOR USE WITH MANIFOLDS EQUIPPED WITH 1/2" ACME PORTS

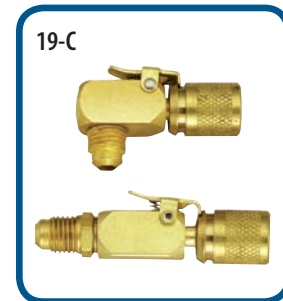
Red and blue hose supplied with 1/2" ACME female x 14 mm male connections. Yellow hose supplied with 1/2" ACME x 1/2" ACME female with ball valve (BV) shut-off.

| LENGTH   | BLUE   | YELLOW W/BV | RED    | SET OF THREE (B,Y,R) |
|----------|--------|-------------|--------|----------------------|
| 3' (36") | 803-AB | 803-AY      | 803-AR | 803-AS               |
| 6' (72") | 806-AB | 806-AY      | 806-AR | 806-AS               |



## AUTOMOTIVE KWIK-COUPLER™ ADAPTER FOR R-12

**19-C** (Set) Includes special female coupler for use on 3/16" automotive high side access valves, 1/4" low side coupler, straight and 90° male couplers.

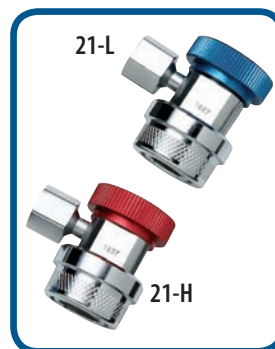


## PREMIUM R-134a HI-FLOW AUTO SERVICE COUPLERS

14 mm thread connection. Quick connect/disconnect valve actuation eliminates venting. Color-coded knobs for high/low connections.

- Integral safety sleeve prevents accidental refrigerant venting under all operating conditions.
- Provides maximum flow without damaging service port.
- Meets current SAE-J639 specifications.

- 21-L** Low side service coupler.
- 21-H** High side service coupler.



**20-A** High side adapter. Converts 3/16" system access valve to 1/4" access valve for use with standard 1/4" charging hose.



# SERVICE MANIFOLDS REFERENCE GUIDE

| PART NO.                                     | REFRIGERANT            | GAUGE CALIBRATION** |     |                    |     |     | TEMP |    | CHARGING LINES<br>(BV = Low Loss Ball Valve Shut-Off) | MANIFOLD PORT CONNECTIONS |
|--|------------------------|---------------------|-----|--------------------|-----|-----|------|----|---|---------------------------|
|  |                        | PSI                 | BAR | Kg/cm <sup>2</sup> | kPa | MPa | °F   | °C |   |                           |
| <b>800 SERIES DEEP DRAW 4-VALVE MANIFOLD</b> |                        |                     |     |                    |     |     |      |    |   |                           |
| R-12, R-22, R-502                            |                        |                     |     |                    |     |     |      |    |   |                           |
| 820-C*                                       | R-12, R-22, R-502      | ●                   |     |                    |     |     | ●    |    |   | 1/4" & 3/8" SAE           |
| 820-CB                                       | R-12, R-22, R-502      | ●                   | ●   |                    |     |     |      | ●  |   | 1/4" & 3/8" SAE           |
| 820-CK*                                      | R-12, R-22, R-502      |                     |     |                    | ●   |     |      | ●  |   | 1/4" & 3/8" SAE           |
| 820-CKP*                                     | R-12, R-22, R-502      | ●                   |     |                    |     | ●   |      | ●  |   | 1/4" & 3/8" SAE           |
| 820-CM*                                      | R-12, R-22, R-502      |                     |     | ●                  |     |     |      | ●  |   | 1/4" & 3/8" SAE           |
| 820-CS* (w/Sight Glass)                      | R-12, R-22, R-502      | ●                   |     |                    |     |     | ●    |    |   | 1/4" & 3/8" SAE           |
| 821-C*                                       | R-12, R-22, R-502      | ●                   |     |                    |     |     | ●    |    | 4-60" (3/8" VAC)                                      | 1/4" & 3/8" SAE           |
| 821-C-6                                      | R-12, R-22, R-502      | ●                   |     |                    |     |     | ●    |    | 4-72" (3/8" VAC)                                      | 1/4" & 3/8" SAE           |
| 821-CD*                                      | R-12, R-22, R-502      | ●                   |     | ●                  |     |     | ●    |    | 4-60" (3/8" VAC)                                      | 1/4" & 3/8" SAE           |
| 821-CK*                                      | R-12, R-22, R-502      |                     |     |                    | ●   |     |      | ●  | 4-60" (3/8" VAC)                                      | 1/4" & 3/8" SAE           |
| 821-CKP*                                     | R-12, R-22, R-502      | ●                   |     |                    | ●   |     |      | ●  | 4-60" (3/8" VAC)                                      | 1/4" & 3/8" SAE           |
| 821-CM*                                      | R-12, R-22, R-502      |                     |     | ●                  |     |     |      | ●  | 4-60" (3/8" VAC)                                      | 1/4" & 3/8" SAE           |
| 821-CS* (w/Sight Glass)                      | R-12, R-22, R-502      | ●                   |     |                    |     |     | ●    |    | 4-60" (3/8" VAC)                                      | 1/4" & 3/8" SAE           |
| 822-C (w/Carrying Case)                      | R-12, R-22, R-502      | ●                   |     |                    |     |     | ●    |    | 4-60" (3/8" VAC)                                      | 1/4" & 3/8" SAE           |
| 822-CKP (w/Carrying Case)                    | R-12, R-22, R-502      | ●                   |     |                    | ●   |     |      | ●  | 4-60" (3/8" VAC)                                      | 1/4" & 3/8" SAE           |
| 829-C*                                       | R-12, R-22, R-502      | ●                   |     |                    |     |     | ●    |    | 3-60" w/Low Loss Fittings, 1-60" 3/8" VAC Line        | 1/4" & 3/8" SAE           |
| R-134a                                       |                        |                     |     |                    |     |     |      |    |   |                           |
| 830-CKP*                                     | R-134a                 | ●                   |     |                    | ●   |     | ●    | ●  |   | 1/4" & 3/8" SAE           |
| 830-CKPS* (w/Sight Glass)                    | R-134a                 | ●                   |     |                    | ●   |     | ●    | ●  |   | 1/4" & 3/8" SAE           |
| 831-CKP*                                     | R-134a                 | ●                   |     |                    | ●   |     | ●    | ●  | 4-60" (3/8" VAC)                                      | 1/4" & 3/8" SAE           |
| 831-CKPS* (w/Sight Glass)                    | R-134a                 | ●                   |     |                    | ●   |     | ●    | ●  | 4-60" (3/8" VAC)                                      | 1/4" & 3/8" SAE           |
| R-410A                                       |                        |                     |     |                    |     |     |      |    |   |                           |
| 840-C*                                       | R-410A                 | ●                   |     |                    | ●   |     | ●    | ●  |   | 1/4" & 3/8" SAE           |
| 840-CB                                       | R-410A                 | ●                   | ●   |                    |     |     |      | ●  |   | 1/4" & 3/8" SAE           |
| 840-CKPSC † (w/Sight Glass)                  | R-410A                 | ●                   |     |                    | ●   |     | ●    | ●  |   | 5/16" & 3/8" SAE          |
| 841-C*                                       | R-410A                 | ●                   |     |                    | ●   |     | ●    | ●  | 4-60" (3/8" VAC)                                      | 1/4" & 3/8" SAE           |
| 841-CKPSC † (w/Sight Glass)                  | R-410A                 | ●                   |     |                    | ●   |     | ●    | ●  | 4-60" (B, R, Y 5/16"; 3/8" VAC)                       | 5/16" & 3/8" SAE          |
| 841-CM                                       | R-410A                 | ●                   |     |                    | ●   |     | ●    | ●  | 4-60" (B, R 1/4" x 5/16"; Y 1/4" x 1/4"; 3/8" VAC)    | 1/4" & 3/8" SAE           |
| 842-C*                                       | R-410A                 | ●                   |     |                    | ●   |     | ●    | ●  | 3-60" w/BV, 1-60" 3/8" VAC Line                       | 1/4" & 3/8" SAE           |
| R-410A, R-22, R-404A                         |                        |                     |     |                    |     |     |      |    |   |                           |
| 844-C*                                       | R-410A, R-22, R-404A   | ●                   |     |                    |     |     | ●    |    | 4-60" (3/8" VAC)                                      | 1/4" & 3/8" SAE           |
| 844-CS* (w/Sight Glass)                      | R-410A, R-22, R-404A   | ●                   |     |                    |     |     | ●    |    | 4-60" (3/8" VAC)                                      | 1/4" & 3/8" SAE           |
| 845-C*                                       | R-410A, R-22, R-404A   | ●                   |     |                    |     |     | ●    |    |   | 1/4" & 3/8" SAE           |
| 846-C*                                       | R-410A, R-22, R-404A   | ●                   |     |                    |     |     | ●    |    | 3-60" w/BV, 1-60" 3/8" VAC Line                       | 1/4" & 3/8" SAE           |
| R-404A, R-507, R-134a                        |                        |                     |     |                    |     |     |      |    |   |                           |
| 850-C*                                       | R-404A, R-507, R-134a  | ●                   |     |                    |     |     | ●    |    |   | 1/4" & 3/8" SAE           |
| 851-C*                                       | R-404A, R-507, R-134a  | ●                   |     |                    |     |     | ●    |    | 4-60" (3/8" VAC)                                      | 1/4" & 3/8" SAE           |
| 852-C*                                       | R-404A, R-507, R-134a  | ●                   |     |                    |     |     | ●    |    | 3-60" w/Low Loss Fittings, 1-60" 3/8" VAC Line        | 1/4" & 3/8" SAE           |
| 853-C (w/Carrying Case)                      | R-404A, R-507, R-134a  | ●                   |     |                    |     |     | ●    |    | 4-60" (3/8" VAC)                                      | 1/4" & 3/8" SAE           |
| <b>700 SERIES KWIK-CHARGER™ MANIFOLD</b>     |                        |                     |     |                    |     |     |      |    |   |                           |
| R-410A, R-22, R-404A                         |                        |                     |     |                    |     |     |      |    |   |                           |
| 715-CC †                                     | R-410A, R-22, R-404A   | ●                   |     |                    |     |     | ●    |    |   | 1/4" SAE                  |
| 717-CC †                                     | R-410A, R-22, R-404A   | ●                   |     |                    |     |     | ●    |    | 3-60"   | 1/4" SAE                  |
| 718-CC †                                     | R-410A, R-22, R-404A   | ●                   |     |                    |     |     | ●    |    | 3-60" w/BV  | 1/4" SAE                  |
| R-12, R-22, R-502                            |                        |                     |     |                    |     |     |      |    |   |                           |
| 720-CC †                                     | R-12, R-22, R-502      | ●                   |     |                    |     |     | ●    |    |   | 1/4" SAE                  |
| 721-CC †                                     | R-12, R-22, R-502      | ●                   |     |                    |     |     | ●    |    | 3-60"   | 1/4" SAE                  |
| 725-CC †                                     | R-12, R-22, R-502      | ●                   |     |                    |     |     | ●    |    | 3-60" w/Low Loss Fittings                             | 1/4" SAE                  |
| R-404A, R-407C, R-134a                       |                        |                     |     |                    |     |     |      |    |   |                           |
| 740-CBC †                                    | R-404A, R-407C, R-134a | ●                   | ●   |                    |     |     |      | ●  |   | 1/4" SAE                  |
| R-404A, R-507, R-134a                        |                        |                     |     |                    |     |     |      |    |   |                           |
| 750-CC †                                     | R-404A, R-507, R-134a  | ●                   |     |                    |     |     | ●    |    |   | 1/4" SAE                  |
| 751-CC †                                     | R-404A, R-507, R-134a  | ●                   |     |                    |     |     | ●    |    | 3-60"   | 1/4" SAE                  |
| 755-CC †                                     | R-404A, R-507, R-134a  | ●                   |     |                    |     |     | ●    |    | 3-60" w/Low Loss Fittings                             | 1/4" SAE                  |
| R-410A                                       |                        |                     |     |                    |     |     |      |    |   |                           |
| 745-CBC †                                    | R-410A                 | ●                   | ●   |                    |     |     |      | ●  |   | 1/4" SAE                  |
| 745-CKPC †                                   | R-410A                 | ●                   |     |                    | ●   |     | ●    | ●  | 3-60" (1/4" x 5/16")                                  | 1/4" SAE                  |
| R-22, R-404A, R-507                          |                        |                     |     |                    |     |     |      |    |   |                           |
| 762-CKPC †                                   | R-22, R-404A, R-507    | ●                   |     |                    | ●   |     | ●    |    | 3-60"   | 1/4" SAE                  |
| <b>600 SERIES 4-VALVE MANIFOLD</b>           |                        |                     |     |                    |     |     |      |    |   |                           |
| R-12, R-22, R-502                            |                        |                     |     |                    |     |     |      |    |   |                           |
| 620-C*                                       | R-12, R-22, R-502      | ●                   |     |                    |     |     | ●    |    |   | 1/4" & 3/8" SAE           |
| 620-CB                                       | R-12, R-22, R-502      | ●                   | ●   |                    |     |     |      | ●  |   | 1/4" & 3/8" SAE           |
| 620-CK*                                      | R-12, R-22, R-502      |                     |     |                    | ●   |     |      | ●  |   | 1/4" & 3/8" SAE           |
| 620-CKP*                                     | R-12, R-22, R-502      | ●                   |     |                    |     | ●   |      | ●  |   | 1/4" & 3/8" SAE           |
| 620-CM*                                      | R-12, R-22, R-502      |                     |     | ●                  |     |     |      | ●  |   | 1/4" & 3/8" SAE           |
| 620-CS* (w/Sight Glass)                      | R-12, R-22, R-502      | ●                   |     |                    |     |     | ●    |    |   | 1/4" & 3/8" SAE           |
| 621-C*                                       | R-12, R-22, R-502      | ●                   |     |                    |     |     | ●    |    | 4-60" (3/8" VAC)                                      | 1/4" & 3/8" SAE           |
| 621-C-6                                      | R-12, R-22, R-502      | ●                   |     |                    |     |     | ●    |    | 4-72" (3/8" VAC)                                      | 1/4" & 3/8" SAE           |

\* Add "C" suffix for clamshell packaging. † Clamshell packaging only. \*\* All gauges available with MPa, kPa, Bar, etc.

# SERVICE MANIFOLDS REFERENCE GUIDE

| PART NO.  | REFRIGERANT            | GAUGE CALIBRATION** |     |                    |     |     | TEMP |    | CHARGING LINES<br>(BV = Low Loss Ball Valve Shut-Off) | MANIFOLD PORT<br>CONNECTIONS |
|---|------------------------|---------------------|-----|--------------------|-----|-----|------|----|---|------------------------------|
|   |                        | PSI                 | BAR | Kg/cm <sup>2</sup> | kPa | MPa | °F   | °C |   |                              |
| <b>600 SERIES 4-VALVE MANIFOLD (CONT.)</b>      |                        |                     |     |                    |     |     |      |    |   |                              |
| R-12, R-22, R-502                               |                        |                     |     |                    |     |     |      |    |   |                              |
| 621-CD*   | R-12, R-22, R-502      | ●                   |     | ●                  |     |     | ●    |    | 4-60" (3/8" VAC)                                      | 1/4" & 3/8" SAE              |
| 621-CK*   | R-12, R-22, R-502      |                     |     |                    | ●   |     | ●    |    | 4-60" (3/8" VAC)                                      | 1/4" & 3/8" SAE              |
| 621-CKP*  | R-12, R-22, R-502      | ●                   |     |                    | ●   |     | ●    |    | 4-60" (3/8" VAC)                                      | 1/4" & 3/8" SAE              |
| 621-CM*   | R-12, R-22, R-502      |                     |     | ●                  |     |     | ●    |    | 4-60" (3/8" VAC)                                      | 1/4" & 3/8" SAE              |
| 621-CS* (w/Sight Glass)                         | R-12, R-22, R-502      | ●                   |     |                    |     |     | ●    |    | 4-60" (3/8" VAC)                                      | 1/4" & 3/8" SAE              |
| 622-C (w/Carrying Case)                         | R-12, R-22, R-502      | ●                   |     |                    |     |     | ●    |    | 4-60" (3/8" VAC)                                      | 1/4" & 3/8" SAE              |
| 622-CKP (w/Carrying Case)                       | R-12, R-22, R-502      | ●                   |     |                    | ●   |     | ●    |    | 4-60" (3/8" VAC)                                      | 1/4" & 3/8" SAE              |
| 629-C*  | R-12, R-22, R-502      | ●                   |     |                    |     |     | ●    |    | 3-60" w/Low Loss Fittings, 1-60" 3/8" VAC Line        | 1/4" & 3/8" SAE              |
| R-134a  |                        |                     |     |                    |     |     |      |    |   |                              |
| 630-CKP*  | R-134a                 | ●                   |     |                    | ●   |     | ●    |    |   | 1/4" & 3/8" SAE              |
| 630-CKPS* (w/Sight Glass)                       | R-134a                 | ●                   |     |                    | ●   |     | ●    |    |   | 1/4" & 3/8" SAE              |
| 631-CKP*  | R-134a                 | ●                   |     |                    | ●   |     | ●    |    | 4-60" (3/8" VAC)                                      | 1/4" & 3/8" SAE              |
| 631-CKP-6                                       | R-134a                 | ●                   |     |                    | ●   |     | ●    |    | 4-72" (3/8" VAC)                                      | 1/4" & 3/8" SAE              |
| 631-CKPS* (w/Sight Glass)                       | R-134a                 | ●                   |     |                    | ●   |     | ●    |    | 4-60" (3/8" VAC)                                      | 1/4" & 3/8" SAE              |
| R-410A  |                        |                     |     |                    |     |     |      |    |   |                              |
| 640-C*  | R-410A                 | ●                   |     |                    | ●   |     | ●    | ●  |   | 1/4" & 3/8" SAE              |
| 640-CB  | R-410A                 | ●                   | ●   |                    |     |     | ●    | ●  |   | 1/4" & 3/8" SAE              |
| 641-C*  | R-410A                 | ●                   |     |                    | ●   |     | ●    | ●  | 4-60" (3/8" VAC)                                      | 1/4" & 3/8" SAE              |
| 641-CM  | R-410A                 | ●                   |     |                    | ●   |     | ●    | ●  | 4-60" (B, R 1/4" x 5/16"; Y 1/4" x 1/4"; 3/8" VAC)    | 1/4" & 3/8" SAE              |
| 642-C*  | R-410A                 | ●                   |     |                    | ●   |     | ●    | ●  | 3-60" w/BV, 1-60" 3/8" VAC Line                       | 1/4" & 3/8" SAE              |
| R-410A, R-22, R-404A                            |                        |                     |     |                    |     |     |      |    |   |                              |
| 644-C*  | R-410A, R-22, R-404A   | ●                   |     |                    |     |     | ●    |    | 4-60" (3/8" VAC)                                      | 1/4" & 3/8" SAE              |
| 644-CS* (w/Sight Glass)                         | R-410A, R-22, R-404A   | ●                   |     |                    |     |     | ●    |    | 4-60" (3/8" VAC)                                      | 1/4" & 3/8" SAE              |
| 645-C*  | R-410A, R-22, R-404A   | ●                   |     |                    |     |     | ●    |    |   | 1/4" & 3/8" SAE              |
| 646-C*  | R-410A, R-22, R-404A   | ●                   |     |                    |     |     | ●    |    | 3-60" w/BV, 1-60" 3/8" VAC Line                       | 1/4" & 3/8" SAE              |
| R-404A, R-407C, R-134a                          |                        |                     |     |                    |     |     |      |    |   |                              |
| 660-CB  | R-404A, R-407C, R-134a | ●                   | ●   |                    |     |     |      | ●  |   | 1/4" & 3/8" SAE              |
| R-404A, R-507, R-134a                           |                        |                     |     |                    |     |     |      |    |   |                              |
| 650-C*  | R-404A, R-507, R-134a  | ●                   |     |                    |     |     | ●    |    |   | 1/4" & 3/8" SAE              |
| 651-C*  | R-404A, R-507, R-134a  | ●                   |     |                    |     |     | ●    |    | 4-60" (3/8" VAC)                                      | 1/4" & 3/8" SAE              |
| 651-CKPSC † (w/Sight Glass)                     | R-404A, R-507, R-134a  |                     |     | ●                  | ●   |     |      | ●  | 4-60" (3/8" VAC)                                      | 1/4" & 3/8" SAE              |
| 652-C*  | R-404A, R-507, R-134a  | ●                   |     |                    |     |     | ●    |    | 3-60" w/Low Loss Fittings, 1-60" 3/8" VAC Line        | 1/4" & 3/8" SAE              |
| 653-C (w/Carrying Case)                         | R-404A, R-507, R-134a  | ●                   |     |                    |     |     | ●    |    | 4-60" (3/8" VAC)                                      | 1/4" & 3/8" SAE              |
| R-22, R-134a, R-404A                            |                        |                     |     |                    |     |     |      |    |   |                              |
| 680-CKPSC † (w/Sight Glass)                     | R-22, R-134a, R-404A   | ●                   |     |                    | ●   |     |      | ●  |   | 1/4" & 3/8" SAE              |
| 681-CKPSC † (w/Sight Glass)                     | R-22, R-134a, R-404A   | ●                   |     |                    | ●   |     |      | ●  | 4-60" (3/8" VAC)                                      | 1/4" & 3/8" SAE              |
| <b>520 SERIES 2-VALVE 4- OR 5-PORT MANIFOLD</b> |                        |                     |     |                    |     |     |      |    |   |                              |
| R-134a, R-12                                    |                        |                     |     |                    |     |     |      |    |   |                              |
| 520-CA* (w/Sight Glass)                         | R-134a, R-12           | ●                   |     |                    |     |     | ●    |    |   | 1/4" SAE                     |
| 520-CAM* (w/Sight Glass)                        | R-134a, R-12           |                     |     | ●                  | ●   |     |      | ●  |   | 1/4" SAE                     |
| 521-CA* (w/Sight Glass)                         | R-134a, R-12           | ●                   |     |                    |     |     | ●    |    | 3-60" w/Service Couplers                              | 1/4" SAE                     |
| 521-CAM* (w/Sight Glass)                        | R-134a, R-12           |                     |     | ●                  | ●   |     |      | ●  | 3-60" w/Service Couplers                              | 1/4" SAE                     |
| R-12, R-22, R-502                               |                        |                     |     |                    |     |     |      |    |   |                              |
| 520-C* (w/Sight Glass)                          | R-12, R-22, R-502      | ●                   |     |                    |     |     | ●    |    |   | 1/4" SAE                     |
| 520-CB (w/Sight Glass)                          | R-12, R-22, R-502      | ●                   | ●   |                    |     |     | ●    | ●  |   | 1/4" SAE                     |
| 521-C* (w/Sight Glass)                          | R-12, R-22, R-502      | ●                   |     |                    | ●   |     | ●    |    | 3-60"   | 1/4" SAE                     |
| 523-C (w/Sight Glass)                           | R-12, R-22, R-502      | ●                   |     |                    |     |     | ●    |    | 3-36"   | 1/4" SAE                     |
| R-404A, R-407C, R-134a                          |                        |                     |     |                    |     |     |      |    |   |                              |
| 560-CB (w/Sight Glass)                          | R-404A, R-407C, R-134a | ●                   | ●   |                    |     |     |      | ●  |   | 1/4" SAE                     |
| R-404A, R-507, R-134a                           |                        |                     |     |                    |     |     |      |    |   |                              |
| 525-CKPC † (w/Sight Glass)                      | R-404A, R-507, R-134a  |                     |     | ●                  | ●   |     |      | ●  | 3-36"   | 1/4" SAE                     |
| R-22, R-134a, R-404A                            |                        |                     |     |                    |     |     |      |    |   |                              |
| 526-CAC † (w/Sight Glass)                       | R-22, R-134a, R-404A   | ●                   |     |                    | ●   |     | ●    |    | 3-60" w/Service Couplers                              | 1/4" SAE                     |
| 580-CKPSC † (w/Sight Glass)                     | R-22, R-134a, R-404A   | ●                   |     |                    | ●   |     | ●    |    |   | 1/4" SAE                     |
| 581-CKPSC † (w/Sight Glass)                     | R-22, R-134a, R-404A   | ●                   |     |                    | ●   |     | ●    |    | 3-60"   | 1/4" SAE                     |
| <b>510 SERIES 2-VALVE 4-PORT MANIFOLD</b>       |                        |                     |     |                    |     |     |      |    |   |                              |
| R-410A  |                        |                     |     |                    |     |     |      |    |   |                              |
| 510-C*  | R-410A                 | ●                   |     |                    | ●   |     | ●    | ●  |   | 1/4" SAE                     |
| 510-CM*   | R-410A                 |                     |     |                    |     | ●   | ●    | ●  |   | 1/4" SAE                     |
| 511-C*  | R-410A                 | ●                   |     |                    | ●   |     | ●    | ●  | 3-60"   | 1/4" SAE                     |
| 511-CM*   | R-410A                 |                     |     |                    |     | ●   | ●    | ●  | 3-60"   | 1/4" SAE                     |
| 512-C*  | R-410A                 | ●                   |     |                    | ●   |     | ●    | ●  | 3-60" w/BV  | 1/4" SAE                     |
| 513-C*  | R-410A                 | ●                   |     |                    | ●   |     | ●    | ●  |   | 5/16" SAE                    |
| 514-CC †  | R-410A                 | ●                   |     |                    | ●   |     | ●    | ●  | 3-36" (5/16" x 5/16")                                 | 5/16" SAE                    |
| 515-C*  | R-410A                 | ●                   |     |                    | ●   |     | ●    | ●  | 3-60" (5/16" x 5/16")                                 | 5/16" SAE                    |
| 522-C*  | R-410A                 | ●                   |     |                    | ●   |     | ●    | ●  | 3-60" (B, R 1/4" x 5/16" w/BV; Y 1/4" x 1/4")         | 1/4" SAE                     |
| 540-CB  | R-410A                 | ●                   | ●   |                    |     |     | ●    | ●  |   | 1/4" SAE                     |
| 570-CKPC † (w/Sight Glass)                      | R-410A                 | ●                   |     |                    | ●   |     | ●    | ●  |   | 5/16" SAE                    |
| 572-CKPC † (w/Sight Glass)                      | R-410A                 | ●                   |     |                    | ●   |     | ●    | ●  | 3-60" (5/16" x 5/16")                                 | 5/16" SAE                    |
| R-410A, R-22, R-407C                            |                        |                     |     |                    |     |     |      |    |   |                              |
| 582-CKPC † (w/Sight Glass)                      | R-410A, R-22, R-407C   | ●                   |     |                    | ●   |     | ●    | ●  | 3-36" (1/4" x 5/16")                                  | 1/4" SAE                     |

\* Add "C" suffix for clamshell packaging. † Clamshell packaging only. \*\* All gauges available with MPa, kPa, Bar, etc.



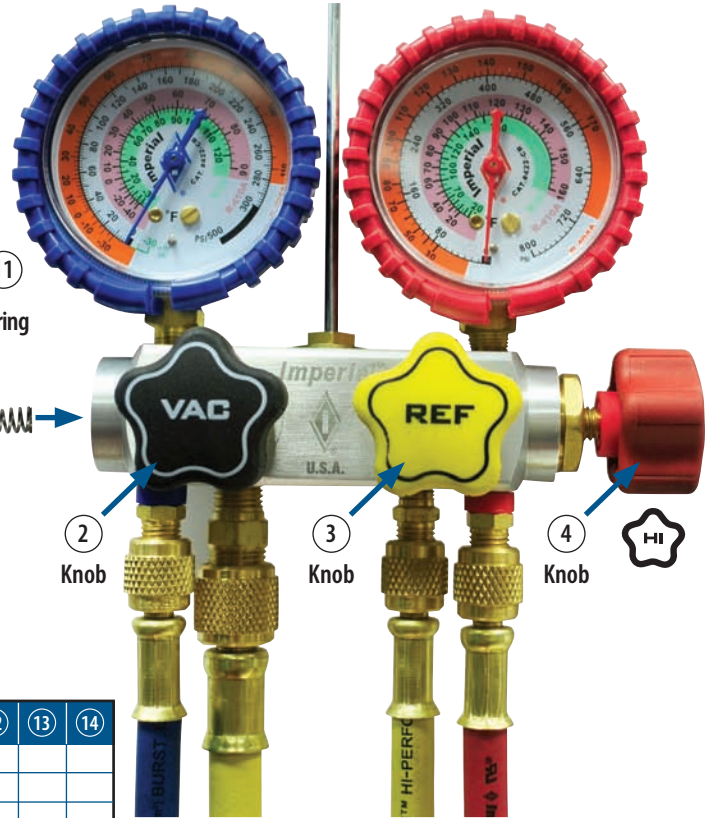
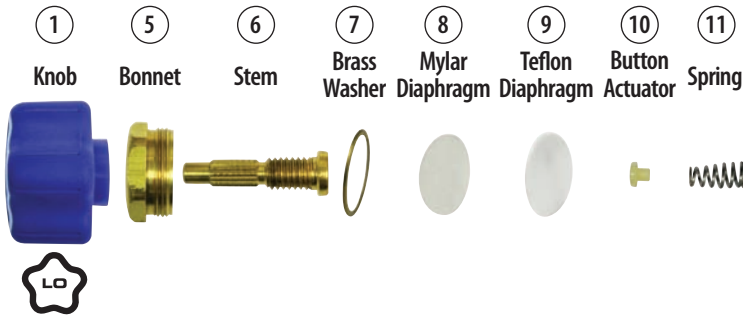
# SERVICE MANIFOLDS REFERENCE GUIDE

| PART NO.  | REFRIGERANT   | GAUGE CALIBRATION** |     |                    |     |     | TEMP |    | CHARGING LINES<br>(BV = Low Loss Ball Valve Shut-Off)      | MANIFOLD PORT<br>CONNECTIONS |
|---|---|---------------------|-----|--------------------|-----|-----|------|----|--|------------------------------|
|   |   | PSI                 | BAR | Kg/cm <sup>2</sup> | kPa | MPa | °F   | °C |  |                              |
| <b>400 &amp; 500 SERIES DELUXE 2-VALVE BRASS MANIFOLD</b>                     |   |                     |     |                    |     |     |      |    |  |                              |
| <b>R-410A</b>   |   |                     |     |                    |     |     |      |    |  |                              |
| 415-C*  | R-410A  | ●                   |     |                    | ●   |     | ●    | ●  |  | 1/4" SAE                     |
| 416-C*  | R-410A  | ●                   |     |                    | ●   |     | ●    | ●  | 3-36"  | 1/4" SAE                     |
| 417-C*  | R-410A  | ●                   |     |                    | ●   |     | ●    | ●  | 3-60"  | 1/4" SAE                     |
| 417-C-6   | R-410A  | ●                   |     |                    | ●   |     | ●    | ●  | 3-72"  | 1/4" SAE                     |
| 418-C*  | R-410A  | ●                   |     |                    | ●   |     | ●    | ●  | 3-60" w/BV   | 1/4" SAE                     |
| 419-C   | R-410A  | ●                   |     |                    | ●   |     | ●    | ●  | 2-36" w/BV (B, R 1/4" x 5/16"); 1-60" / BV (Y 1/4" x 1/4") | 1/4" SAE                     |
| 454-C   | R-410A  | ●                   |     |                    | ●   |     | ●    | ●  | 3-36" (B, R 1/4" x 5/16"; Y 1/4" x 1/4")                   | 1/4" SAE                     |
| 455-C   | R-410A  | ●                   |     |                    | ●   |     | ●    | ●  | 3-36" w/BV (B, R 1/4" x 5/16"; Y 1/4" x 1/4")              | 1/4" SAE                     |
| 456-C   | R-410A  | ●                   |     |                    | ●   |     | ●    | ●  | 3-60" (B, R 1/4" x 5/16"; Y 1/4" x 1/4")                   | 1/4" SAE                     |
| <b>R-410A, R-22, R-404A</b>   |   |                     |     |                    |     |     |      |    |  |                              |
| 420-C*  | R-410A, R-22, R-404A  | ●                   |     |                    |     |     | ●    |    |  | 1/4" SAE                     |
| 421-C*  | R-410A, R-22, R-404A  | ●                   |     |                    |     |     | ●    |    | 3-60"  | 1/4" SAE                     |
| 421-CM  | R-410A, R-22, R-404A  | ●                   |     |                    |     |     | ●    |    | 3-60" (B, R 1/4" x 5/16"; Y 1/4" x 1/4")                   | 1/4" SAE                     |
| 422-C*  | R-410A, R-22, R-404A  | ●                   |     |                    |     |     | ●    |    | 3-60" w/BV   | 1/4" SAE                     |
| <b>R-134a</b>   |   |                     |     |                    |     |     |      |    |  |                              |
| 435-CKP*  | R-134a  | ●                   |     |                    | ●   |     | ●    | ●  |  | 1/4" SAE                     |
| 436-CKP*  | R-134a  | ●                   |     |                    | ●   |     | ●    | ●  | 3-36"  | 1/4" SAE                     |
| 439-CA*   | R-134a, R-12  | ●                   |     |                    |     |     | ●    |    | 3-60" (Y w/BV) & Service Couplers                          | 1/4" SAE                     |
| <b>R-404A, R-507, 134a</b>  |   |                     |     |                    |     |     |      |    |  |                              |
| 450-C*  | R-404A, R-507, R-134a   | ●                   |     |                    |     |     | ●    |    |  | 1/4" SAE                     |
| 450-CM  | R-404A, R-507, R-134a   |                     |     | ●                  | ●   |     |      | ●  |  | 1/4" SAE                     |
| 451-C*  | R-404A, R-507, R-134a   | ●                   |     |                    |     |     | ●    |    | 3-36"  | 1/4" SAE                     |
| 451-CM*   | R-404A, R-507, R-134a   |                     |     | ●                  | ●   |     |      | ●  | 3-36"  | 1/4" SAE                     |
| 452-C*  | R-404A, R-507, R-134a   | ●                   |     |                    |     |     | ●    |    | 3-60"  | 1/4" SAE                     |
| 452-C-6   | R-404A, R-507, R-134a   | ●                   |     |                    |     |     | ●    |    | 3-72"  | 1/4" SAE                     |
| <b>R-12, R-22, R-502</b>  |   |                     |     |                    |     |     |      |    |  |                              |
| 494-C   | Manifold body only  |                     |     |                    |     |     |      |    |  | 1/4" SAE                     |
| 495-C*  | R-12, R-22, R-502   | ●                   |     |                    |     |     | ●    |    |  | 1/4" SAE                     |
| 495-CB  | R-12, R-22, R-502   | ●                   | ●   |                    |     |     |      | ●  |  | 1/4" SAE                     |
| 495-CD*   | R-12, R-22, R-502   | ●                   |     | ●                  |     |     | ●    |    |  | 1/4" SAE                     |
| 495-CKP*  | R-12, R-22, R-502   | ●                   |     |                    | ●   |     | ●    | ●  |  | 1/4" SAE                     |
| 496-C*  | R-12, R-22, R-502   | ●                   |     |                    |     |     | ●    |    | 3-36"  | 1/4" SAE                     |
| 496-CD*   | R-12, R-22, R-502   | ●                   |     | ●                  |     |     | ●    |    | 3-36"  | 1/4" SAE                     |
| 496-CKP*  | R-12, R-22, R-502   | ●                   |     |                    | ●   |     | ●    | ●  | 3-36"  | 1/4" SAE                     |
| 498-C*  | R-12, R-22, R-502   | ●                   |     |                    |     |     | ●    |    | 2-36" (B, R), 1-60" (Y)                                    | 1/4" SAE                     |
| 500-C*  | R-12, R-22, R-502   | ●                   |     |                    |     |     | ●    |    | 3-60"  | 1/4" SAE                     |
| 500-CD*   | R-12, R-22, R-502   | ●                   |     | ●                  |     |     | ●    |    | 3-60"  | 1/4" SAE                     |
| 500-CD-6  | R-12, R-22, R-502   | ●                   |     | ●                  |     |     | ●    |    | 3-72"  | 1/4" SAE                     |
| 505-C*  | R-12, R-22, R-502   | ●                   |     |                    |     |     | ●    |    | 3-60" w/Low Loss Fittings                                  | 1/4" SAE                     |
| <b>R-22, R-134a, R-404A</b>   |   |                     |     |                    |     |     |      |    |  |                              |
| 481-CKPC †  | R-22, R-134a, R-404A  | ●                   |     |                    | ●   |     |      | ●  |  | 1/4" SAE                     |
| 482-CKP*  | R-22, R-134a, R-404A  | ●                   |     |                    | ●   |     |      | ●  | 3-36"  | 1/4" SAE                     |
| <b>300 SERIES ECONOMY 2-VALVE BRASS MANIFOLD</b>                              |   |                     |     |                    |     |     |      |    |  |                              |
| <b>R-134a</b>   |   |                     |     |                    |     |     |      |    |  |                              |
| 335-CKP*  | R-134a  | ●                   |     |                    | ●   |     | ●    | ●  |  | 1/4" SAE                     |
| 336-CKP*  | R-134a  | ●                   |     |                    | ●   |     | ●    | ●  | 3-36"  | 1/4" SAE                     |
| <b>R-12, R-22, R-502</b>  |   |                     |     |                    |     |     |      |    |  |                              |
| 395-C*  | R-12, R-22, R-502   | ●                   |     |                    |     |     | ●    |    |  | 1/4" SAE                     |
| 395-CD*   | R-12, R-22, R-502   | ●                   |     | ●                  |     |     | ●    |    |  | 1/4" SAE                     |
| 395-CKP*  | R-12, R-22, R-502   | ●                   |     |                    | ●   |     |      | ●  |  | 1/4" SAE                     |
| 396-C*  | R-12, R-22, R-502   | ●                   |     |                    |     |     | ●    |    | 3-36"  | 1/4" SAE                     |
| 396-CD*   | R-12, R-22, R-502   | ●                   |     | ●                  |     |     | ●    |    | 3-36"  | 1/4" SAE                     |
| 396-CKP*  | R-12, R-22, R-502   | ●                   |     |                    | ●   |     |      | ●  | 3-36"  | 1/4" SAE                     |
| 397-CD  | R-12, R-22, R-502   | ●                   |     | ●                  |     |     | ●    |    | 3-72"  | 1/4" SAE                     |
| 398-CC †  | R-12, R-22, R-502   | ●                   |     |                    |     |     | ●    |    | 3-60"  | 1/4" SAE                     |
| 398-CD  | R-12, R-22, R-502   | ●                   |     | ●                  |     |     | ●    |    | 3-60"  | 1/4" SAE                     |
| <b>R-22, R-134a, R-404A</b>   |   |                     |     |                    |     |     |      |    |  |                              |
| 398-CKP*  | R-22, R-134a, R-404A  | ●                   |     |                    | ●   |     |      | ●  | 3-36"  | 1/4" SAE                     |
| <b>MANIFOLD ACCESSORIES &amp; SERVICE PARTS (see pages 47-48 for details)</b> |   |                     |     |                    |     |     |      |    |  |                              |
| 10SG  | Sight Glass Repair Kit  |                     |     |                    |     |     |      |    |  |                              |
| 400-RB  | Set: Red & Blue Protective Gauge Boots  |                     |     |                    |     |     |      |    |  |                              |
| 405-RH  | High Side Repair Kit w/soft touch knob for 300 & 400 Series "Imperial USA" brass manifold |                     |     |                    |     |     |      |    |  |                              |
| 405-RL  | Low Side Repair Kit w/soft touch knob for 300 & 400 Series "Imperial USA" brass manifold  |                     |     |                    |     |     |      |    |  |                              |
| 500-RH  | High Side Repair Kit for 510 & 511 Series R-410A manifold                                 |                     |     |                    |     |     |      |    |  |                              |
| 500-RL  | Low Side Repair Kit for 510 & 511 Series R-410A manifold                                  |                     |     |                    |     |     |      |    |  |                              |
| 600-R   | Diaphragm Replacement Seal Kit for all 600 Series manifolds                               |                     |     |                    |     |     |      |    |  |                              |
| 601-R   | Replacement VAC & REF Knobs w/stems for all 600 Series manifolds                          |                     |     |                    |     |     |      |    |  |                              |
| 602-R   | Replacement HI & LO Knobs w/stems for all 600 Series manifolds                            |                     |     |                    |     |     |      |    |  |                              |
| 700-CV  | Control Valve Repair Kit for 700 Series manifold  |                     |     |                    |     |     |      |    |  |                              |
| 800-R   | Repair Kit for 800 Series manifold  |                     |     |                    |     |     |      |    |  |                              |

\* Add "C" suffix for clamshell packaging. † Clamshell packaging only. \*\* All gauges available with MPa, kPa, Bar, etc.

# SERVICE MANIFOLDS PARTS ILLUSTRATIONS

## 800 AND 600 SERIES 4-VALVE MANIFOLD

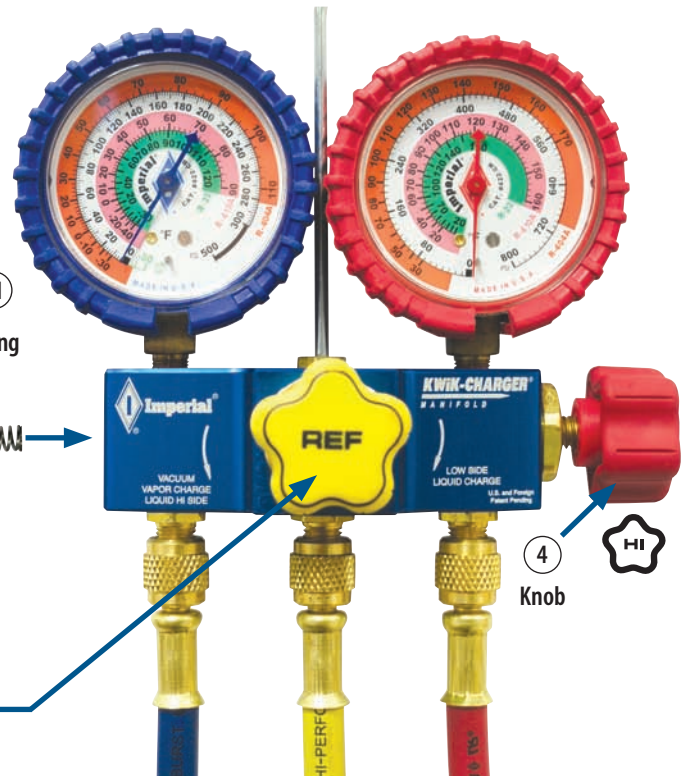
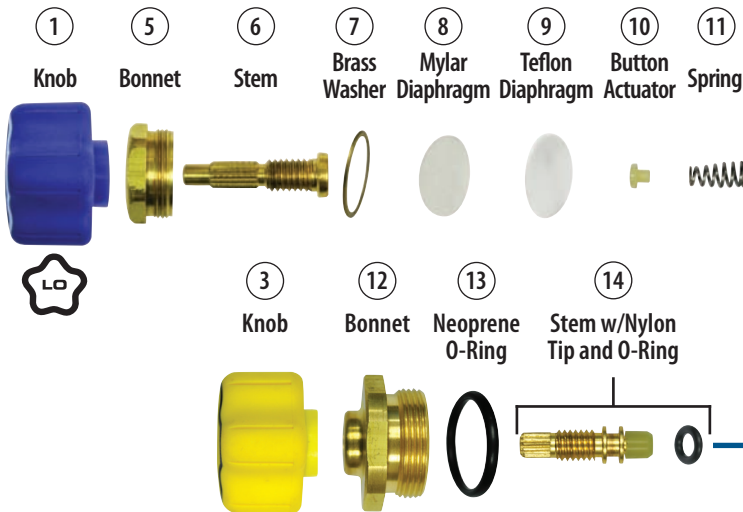


### MANIFOLD REPAIR KITS AND REPLACEMENT PARTS LIST

| PART NO. | ① | ② | ③ | ④ | ⑤ | ⑥ | ⑦  | ⑧  | ⑨  | ⑩  | ⑪  | ⑫ | ⑬ | ⑭ |
|----------|---|---|---|---|---|---|----|----|----|----|----|---|---|---|
| 600-R    |   |   |   |   |   |   | 2  | 2  | 2  | 2  | 2  |   |   |   |
| 601-R    |   | 1 | 1 |   |   | 2 |    |    |    |    |    |   |   |   |
| 602-R    | 1 |   |   | 1 | 2 |   |    |    |    |    |    |   |   |   |
| 700-CV † |   |   | 1 |   |   |   |    |    |    |    |    | 1 | 1 | 1 |
| 800-R*   | 1 | 1 | 1 | 1 |   | 4 | 4  | 4  | 4  | 4  | 4  |   |   |   |
| S64104   |   |   |   |   |   |   |    |    | 10 |    |    |   |   |   |
| S64108   |   |   |   |   |   |   | 10 |    |    |    |    |   |   |   |
| S64870   |   |   |   |   |   |   |    |    |    | 10 | 10 |   |   |   |
| S69021   |   |   |   |   |   |   |    | 10 |    |    |    |   |   |   |
| S76548   |   |   |   |   | 2 |   |    |    |    |    |    |   |   |   |

\* 800-R repair kit also contains (4) pcs Stainless Steel Washer (Not Shown).  
 † 700-CV is shipped completely assembled for quick & easy replacement.

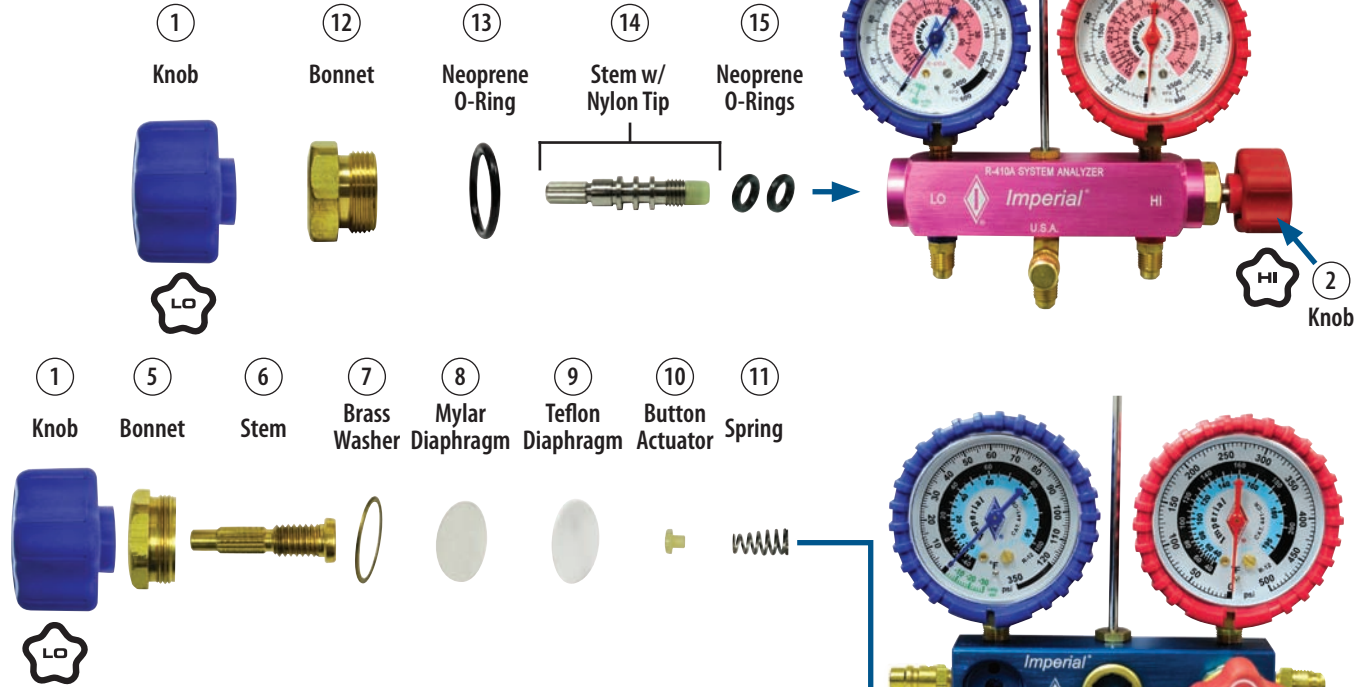
## 700 SERIES KWIK-CHARGER™ MANIFOLD



† 700-CV is shipped completely assembled for quick & easy replacement.

# SERVICE MANIFOLDS

## 510 AND 520 SERIES 2-VALVE MANIFOLD

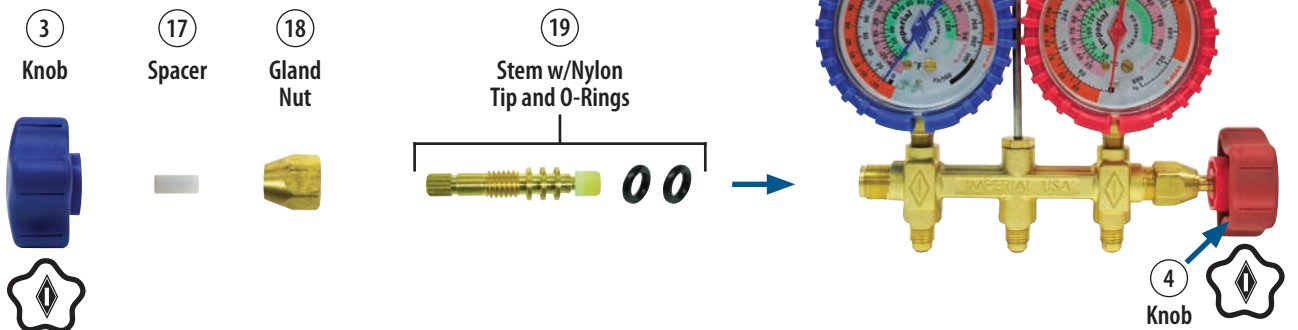


### MANIFOLD REPAIR KITS AND REPLACEMENT PARTS LIST

| PART NO. | 1 | 2 | 3 | 4 | 5 | 6 | 7  | 8  | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 |
|----------|---|---|---|---|---|---|----|----|---|----|----|----|----|----|----|----|----|----|----|
| 10SG     |   |   |   |   |   |   |    |    |   |    |    |    |    |    |    | 1  |    |    |    |
| 405-RH * |   |   |   | 1 |   |   |    |    |   |    |    |    |    |    |    |    | 1  | 1  | 1  |
| 405-RL * |   |   | 1 |   |   |   |    |    |   |    |    |    |    |    |    |    | 1  | 1  | 1  |
| 500-RH * |   | 1 |   |   |   |   |    |    |   |    |    | 1  | 1  | 1  | 2  |    |    |    |    |
| 500-RL * | 1 |   |   |   |   |   |    |    |   |    |    | 1  | 1  | 1  | 2  |    |    |    |    |
| 600-R    |   |   |   |   |   |   | 2  | 2  | 2 | 2  | 2  |    |    |    |    |    |    |    |    |
| 602-R    | 1 | 1 |   |   | 2 |   |    |    |   |    |    |    |    |    |    |    |    |    |    |
| S64104   |   |   |   |   |   |   |    |    |   | 10 |    |    |    |    |    |    |    |    |    |
| S64108   |   |   |   |   |   |   | 10 |    |   |    |    |    |    |    |    |    |    |    |    |
| S64870   |   |   |   |   |   |   |    |    |   |    | 10 | 10 |    |    |    |    |    |    |    |
| S69021   |   |   |   |   |   |   |    | 10 |   |    |    |    |    |    |    |    |    |    |    |
| S76548   |   |   |   |   | 2 |   |    |    |   |    |    |    |    |    |    |    |    |    |    |

\* These kits are shipped completely assembled for quick & easy replacement.

## 400 AND 300 SERIES 2-VALVE BRASS MANIFOLD



# PRECISION REFRIGERANT GAUGES

WITH HI-VISIBILITY COLOR-CODED REFRIGERANT SCALES

- **Superior Shock Resistance** - Our unique design isolates the movement from the socket, reducing the effects of shock.
- **Superior Vibration Resistance** - Our enhanced vibration dampening design cushions the movement for flutter-free performance and extended gauge service life.
- **Superior Pulsation Resistance** - After 10 million cycles, these gauges show three times less wear than conventional gauges. The result is a longer lasting, more reliable gauge.
- **Replacement Screw-on Lens Set**- S8230301
- **Protective Red & Blue Rubber Boot Set** - 400-RB



Protective rubber boots for gauges sold separately.

| PART NO.             | DESCRIPTION   | GAUGE CALIBRATION |     |                    |     |     | TEMP |    |
|----------------------|---------------|-------------------|-----|--------------------|-----|-----|------|----|
|                      |               | PSI               | BAR | Kg/cm <sup>2</sup> | kPa | MPa | °F   | °C |
| R-12, R-134a         |               |                   |     |                    |     |     |      |    |
| 441-CB               | Blue Compound | ●                 |     |                    |     |     | ●    |    |
| 441-CBM              | Blue Compound |                   |     | ●                  | ●   |     |      | ●  |
| 441-CR               | Red Pressure  | ●                 |     |                    |     |     | ●    |    |
| 441-CRM              | Red Pressure  |                   |     | ●                  | ●   |     |      | ●  |
| R-12, R-22, R-502    |               |                   |     |                    |     |     |      |    |
| 405-CB               | Blue Compound | ●                 | ●   |                    |     |     |      | ●  |
| 405-CR               | Red Pressure  | ●                 | ●   |                    |     |     |      | ●  |
| 423-CAM              | Red Pressure  |                   |     | ●                  |     |     |      | ●  |
| 423-CAPD             | Red Pressure  |                   |     |                    |     | ●   |      | ●  |
| 423-CK               | Red Pressure  |                   |     |                    | ●   |     |      | ●  |
| 423-CKB              | Red Pressure  |                   | ●   |                    | ●   |     |      | ●  |
| 423-CKP              | Red Pressure  | ●                 |     |                    | ●   |     |      | ●  |
| 423-CR               | Red Pressure  | ●                 |     |                    |     |     | ●    |    |
| 425-CAM              | Blue Compound |                   |     | ●                  |     |     |      | ●  |
| 425-CAPD             | Blue Compound |                   |     |                    |     | ●   |      | ●  |
| 425-CB               | Blue Compound | ●                 |     |                    |     |     | ●    |    |
| 425-CK               | Blue Compound |                   |     |                    | ●   |     |      | ●  |
| 425-CKB              | Blue Compound |                   | ●   |                    | ●   |     |      | ●  |
| 425-CKP              | Blue Compound | ●                 |     |                    | ●   |     |      | ●  |
| 431-CM               | Red Pressure  | ●                 |     | ●                  |     |     | ●    |    |
| 432-CM               | Blue Compound | ●                 |     | ●                  |     |     | ●    |    |
| R-22, R-404A, R-410A |               |                   |     |                    |     |     |      |    |
| 422-CB               | Blue Compound | ●                 |     |                    |     |     | ●    |    |
| 422-CR               | Red Pressure  | ●                 |     |                    |     |     | ●    |    |
| R-22, R-407C, R-410A |               |                   |     |                    |     |     |      |    |
| 428-CKP              | Blue Compound | ●                 |     |                    | ●   |     |      | ●  |
| 429-CKP              | Red Pressure  | ●                 |     |                    | ●   |     |      | ●  |

| PART NO.                     | DESCRIPTION   | GAUGE CALIBRATION |     |                    |     |     | TEMP |    |
|------------------------------|---------------|-------------------|-----|--------------------|-----|-----|------|----|
|                              |               | PSI               | BAR | Kg/cm <sup>2</sup> | kPa | MPa | °F   | °C |
| R-22, R-404A, R-507          |               |                   |     |                    |     |     |      |    |
| 426-CKP                      | Blue Compound | ●                 |     |                    |     | ●   |      | ●  |
| 427-CKP                      | Red Pressure  | ●                 |     |                    |     | ●   |      | ●  |
| R-22, R-134a, R-404A         |               |                   |     |                    |     |     |      |    |
| 420-BCKP                     | Blue Compound | ●                 |     |                    |     | ●   |      | ●  |
| 420-RCKP                     | Red Pressure  | ●                 |     |                    |     | ●   |      | ●  |
| R-22, R-134a, R-404A, R-407C |               |                   |     |                    |     |     |      |    |
| 352-CB                       | Blue Compound |                   | ●   |                    |     |     |      | ●  |
| 352-CR                       | Red Pressure  |                   | ●   |                    |     |     |      | ●  |
| R-134a                       |               |                   |     |                    |     |     |      |    |
| 434-BKP                      | Blue Compound | ●                 |     |                    |     | ●   | ●    | ●  |
| 434-RKP                      | Red Pressure  | ●                 |     |                    |     | ●   | ●    | ●  |
| R-134a, R-404A, R-407C       |               |                   |     |                    |     |     |      |    |
| 407-CB                       | Blue Compound | ●                 | ●   |                    |     |     |      | ●  |
| 407-CR                       | Red Pressure  | ●                 | ●   |                    |     |     |      | ●  |
| R-134a, R-404A, R-507        |               |                   |     |                    |     |     |      |    |
| 451-CB                       | Blue Compound | ●                 |     |                    |     |     | ●    |    |
| 451-CBM                      | Blue Compound |                   |     | ●                  | ●   |     |      | ●  |
| 451-CR                       | Red Pressure  | ●                 |     |                    |     |     | ●    |    |
| 451-CRM                      | Red Pressure  |                   |     | ●                  | ●   |     |      | ●  |
| R-410A                       |               |                   |     |                    |     |     |      |    |
| 2423-P                       | Red Pressure  |                   |     | ●                  |     | ●   |      | ●  |
| 2425-CP                      | Blue Compound |                   |     | ●                  |     | ●   |      | ●  |
| 408-CB                       | Blue Compound | ●                 | ●   |                    |     |     |      | ●  |
| 408-CR                       | Red Pressure  | ●                 | ●   |                    |     |     |      | ●  |
| 452-CB                       | Blue Compound | ●                 |     |                    | ●   |     | ●    | ●  |
| 452-CR                       | Red Pressure  | ●                 |     |                    | ●   |     | ●    | ●  |

## VAK-CHECK

For proper evacuation and dehydration of refrigeration and air-conditioning systems, an electronic vacuum gauge is an indispensable companion to a vacuum pump. Significant dehydration does not occur until a vacuum of 1000 microns or greater has been achieved. Use of electronic vacuum gauges is the only way to determine when dehydration is occurring and when it is complete.

Imperial-Thermal Engineering Vak-Checks are precision thermistor vacuum gauges designed especially for refrigeration and air-conditioning service. They automatically compensate for changes in ambient temperature and permit continuous monitoring during evacuation. These instruments are compact, lightweight, easy to use, and read directly in microns on a large easy-to-read meter.

### VAK-CHECK

#### 4501

##### Features

- Atmosphere to 10 microns.
- Ambient temperature compensated.
- Accuracy: 200-1000 microns:  $\pm 5\%$ .
- Comes complete with Model 4510 Sensor.
- Battery powered, no searching for outlets (2 "D" cell batteries not included).



### SUPER VAK-CHECK II

#### 14571

This analog thermistor vacuum gauge allows you to choose between 110AC and battery as your power source with the same features as the Model 4501.

##### Features

- AC/battery operated.
- Range: Atmosphere to 10 microns.
- Ambient temperature compensated.
- Complete with Model 4510 Sensor.
- Accuracy: 200-1000 microns  $\pm 5\%$ .
- Power: 110AC or 2 "D" cell batteries (Batteries not included).



### REPLACEMENT VACUUM SENSORS

#### 4510

##### Features

- Vacuum Sensor for Vak-Check and Super Vak-Check II.
- Models 4501 and 14571 with 0 to 50 calibration scale.



## VAC-SCALE

Saving the service technician time and money, Imperial-Thermal Engineering provides the ability to combine digital hand held vacuum gauge technology with strain gauge technology for refrigerant charging.

### HANDHELD DIGITAL MICRON GAUGE

#### 4775

Imperial-Thermal Engineering is pleased to introduce the 4775 handheld digital micron gauge. Backed by Thermal's 45 years of vacuum technology the 4775 borrows from the old while incorporating advanced new features including (7) units of measure, an LCD backlight, LCD contrast control, and a vacuum minimum/maximum function that stores the last vacuum reading in memory. Lightweight and easy to use, the 4775 will provide the discriminating service technician with a dependable instrument for accurately measuring vacuum in an air-conditioning or refrigeration system.

##### Features

- Ergonomic durable case.
- Auto shutoff.
- LCD backlight and contrast.
- Multiple units of measure.

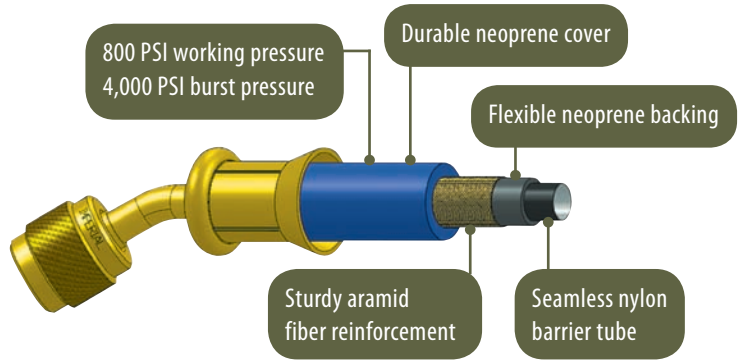


# HI-PERFORMANCE CHARGING HOSE

## PolarShield® CHARGING HOSE 950, 900, 850 & 800 SERIES



- All Imperial® PolarShield® charging hoses are **UL recognized** and meet UL-1963, SAE-J2196 & EPA requirements for strength, pressure and refrigerant permeation.
- **Rugged, Multi-Refrigerant Nylon Barrier Construction** - PolarShield hoses are compatible with all CFC, HFC & HCFC refrigerants (R-410A, R-404A, R-407C, R-134a).
- **High-Pressure** - PolarShield hoses feature 800 PSI working pressure and 4,000 PSI burst pressure with a 5-to-1 safety factor.
- **Selection** - PolarShield hoses are available with a variety of end connections, in yellow, red or blue, individually or in sets of three. Consult factory for lengths and end connections not listed below. (For Automotive R-134a hoses, see page 43.)



### 950 SERIES HOSES WITH LOW LOSS BALL VALVE SHUT-OFF AND 1/4" FFL\* CONNECTIONS

| LENGTH   | BLUE    | YELLOW  | RED     | SET OF THREE (B,Y,R) |
|----------|---------|---------|---------|----------------------|
| 3' (36") | 953-MRB | 953-MRY | 953-MRR | 953-MRS              |
| 5' (60") | 955-MRB | 955-MRY | 955-MRR | 955-MRS              |
| 6' (72") | 956-MRB | 956-MRY | 956-MRR | 956-MRS              |

\*5/16" fittings available-contact factory for part numbers

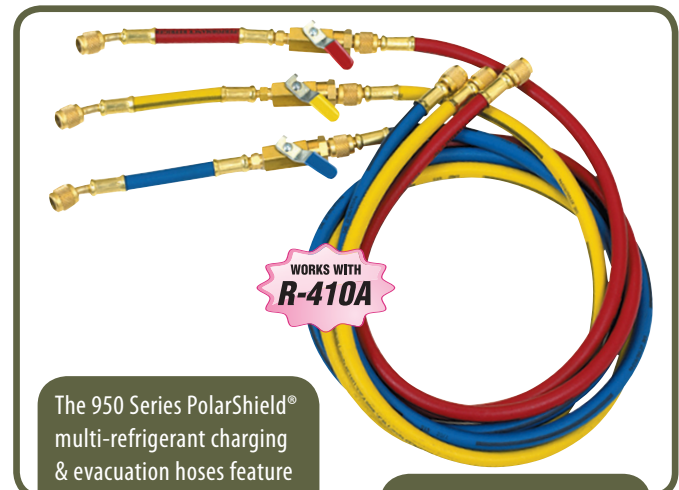
### 900 SERIES PolarShield® HOSES WITH AUTOMATIC SHUT-OFF VALVE

Precision engineered automatic low loss 1/4" FFL\* shut-off valve traps refrigerant within the hose to eliminate venting and finger burn.

#### 900 SERIES HOSES - (1/4" FFL\* CONNECTIONS WITH AUTOMATIC SHUT-OFF ON ONE END)

| LENGTH   | BLUE    | YELLOW  | RED     | SET OF THREE (B,Y,R) |
|----------|---------|---------|---------|----------------------|
| 3' (36") | 903-MRB | 903-MRY | 903-MRR | 903-MRS              |
| 5' (60") | 905-MRB | 905-MRY | 905-MRR | 905-MRS              |
| 6' (72") | 906-MRB | 906-MRY | 906-MRR | 906-MRS              |

\*5/16" fittings available-contact factory for part numbers



The 950 Series PolarShield® multi-refrigerant charging & evacuation hoses feature low loss ball valve shut-off and durable hi-pressure barrier construction.

- UL recognized
- 800 PSI working pressure, 4,000 PSI burst pressure
- Works with all refrigerant gases including R-410A

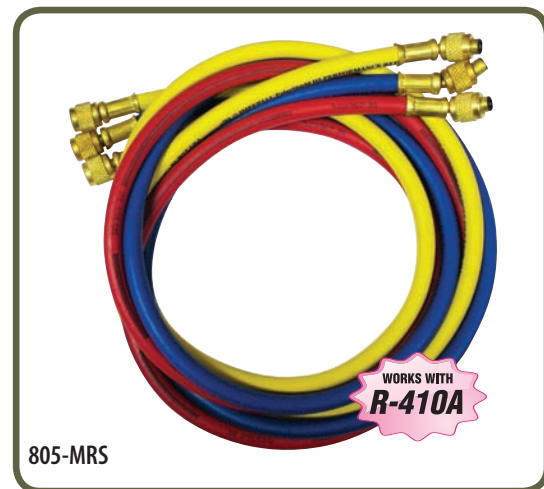
### 850 SERIES PolarShield® HOSES FOR R-410A SYSTEMS WITH 5/16" ACCESS FITTINGS (1/4" x 5/16" hose connections)

| LENGTH   | BLUE    | YELLOW  | RED     | SET OF THREE (B,Y,R) |
|----------|---------|---------|---------|----------------------|
| 3' (36") | 853-MRB | 853-MRY | 853-MRR | 853-MRS              |
| 4' (48") | 854-MRB | 854-MRY | 854-MRR | 854-MRS              |
| 5' (60") | 855-MRB | 855-MRY | 855-MRR | 855-MRS              |
| 6' (72") | 856-MRB | 856-MRY | 856-MRR | 856-MRS              |

### 800 SERIES PolarShield® HOSES - WITH STANDARD 1/4" FITTING\*

| LENGTH     | BLUE    | YELLOW  | RED     | SET OF THREE (B,Y,R) |
|------------|---------|---------|---------|----------------------|
| 3' (36")   | 803-MRB | 803-MRY | 803-MRR | 803-MRS              |
| 4' (48")   | 804-MRB | 804-MRY | 804-MRR | 804-MRS              |
| 5' (60")   | 805-MRB | 805-MRY | 805-MRR | 805-MRS              |
| 6' (72")   | 806-MRB | 806-MRY | 806-MRR | 806-MRS              |
| 8' (96")   | 808-MRB | 808-MRY | 808-MRR | 808-MRS              |
| 12' (144") | 812-MRB | 812-MRY | 812-MRR | 812-MRS              |

\*5/16" fittings available-contact factory for part numbers



# HI-PERFORMANCE CHARGING HOSE

## 3/8" EVACUATION HOSE WITH 3/8" SAE SWIVEL CONNECTION

### For faster evacuation and charging

3/8" hose in four lengths for larger jobs or applications where reduced service time is desired. 3/8" swivel ends. Eight-crimp ferrules. Available in yellow.

| LENGTH   | YELLOW  |
|----------|---------|
| 3' (36") | 536-FTY |
| 4' (48") | 548-FTY |
| 5' (60") | 560-FTY |
| 6' (72") | 572-FTY |

## HOSE REPLACEMENT PARTS

- 57958301** 1/4" Hose Seal Gasket.
- 57958302** 3/8" Hose Seal Gasket.
- 58921626** Brass Core Depressor.
- 510000265** 1/2" ACME & 5/16" Hose Seal Gasket.

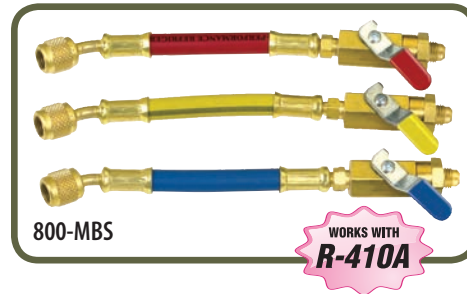
## 6" LOW LOSS BALL VALVE ADAPTER HOSES

### 1/4" SAE 45° female x 1/4" SAE male straight fittings

Connects to any 1/4" SAE charging line. Non-restrictive for maximum flow. UL recognized - environmentally safe.



| LENGTH | BLUE    | YELLOW  | RED     | SET OF THREE (B,Y,R) |
|--------|---------|---------|---------|----------------------|
| 6"     | 800-MBB | 800-MBY | 800-MBR | 800-MBS              |



## 200 SERIES HOSE SETS FOR R-410A

(5/16" x 5/16" hose connections)

| LENGTH   | SET OF THREE (B,Y,R) |
|----------|----------------------|
| 3' (36") | 203-MRS              |
| 5' (60") | 205-MRS              |
| 6' (72") | 206-MRS              |

800 PSI Working Pressure; 4,000 PSI Burst Pressure

## 200 SERIES HOSE SETS FOR R-410A

B, R - 1/4" x 5/16" hose connections  
Y - 1/4" x 1/4" hose connection

| LENGTH   | SET OF THREE (B,Y,R) |
|----------|----------------------|
| 3' (36") | 213-MRS              |
| 4' (48") | 214-MRS              |
| 5' (60") | 215-MRS              |
| 6' (72") | 216-MRS              |

800 PSI Working Pressure; 4,000 PSI Burst Pressure

## 600 SERIES PREMIUM CHARGING HOSE

(1/4" x 1/4" hose connections)

| LENGTH     | SET OF THREE (B,Y,R) |
|------------|----------------------|
| 3' (36")   | 603-MRS              |
| 5' (60")   | 605-MRS              |
| 6' (72")   | 606-MRS              |
| 12' (144") | 612-MRS              |

600 PSI Working Pressure; 3,000 PSI Burst Pressure

# HOSE CONVERSION ADAPTERS

The Imperial-Thermal Engineering conversion adapter consists of a compact ball valve that is ideal for retrofitting standard refrigerant hoses, providing instant refrigerant shut off capabilities. Available in standard 1/4" and 5/16" sizes for R-410A.



| PART NO.  | DESCRIPTION                    |
|-----------|--------------------------------|
| TE-BV01R  | 1/4 SAE X 1/4 F SAE            |
| TE-BV01Y  | 1/4 SAE X 1/4 F SAE            |
| TE-BV01B  | 1/4 SAE X 1/4 F SAE            |
| TE-BV01-3 | 1/4 SAE X 1/4 F SAE, SET OF 3  |
| TE-BV02R  | 1/4 SAE X 5/16 F SAE           |
| TE-BV02Y  | 1/4 SAE X 5/16 F SAE           |
| TE-BV02B  | 1/4 SAE X 5/16 F SAE           |
| TE-BV02-3 | 1/4 SAE X 5/16 F SAE, SET OF 3 |



# KWIK-COUPLER™ ADAPTERS

## HOSE SHUT-OFF ADAPTERS.

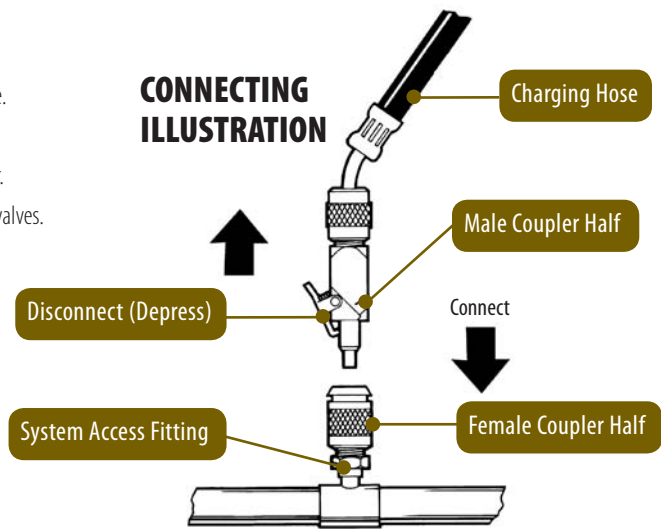
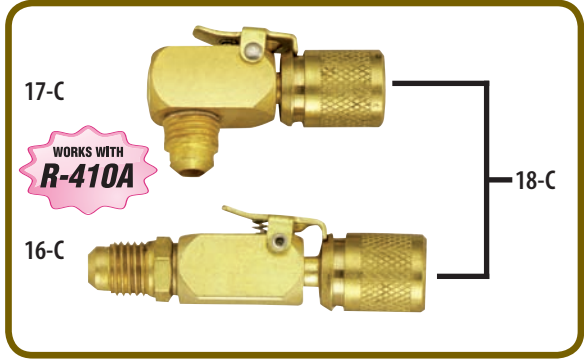
The Kwik-Coupler™ adapter set is intended for use with refrigeration and air-conditioning service hoses when connecting to core valve type access fittings. Conventional threaded connecting is converted to push-pull operation which is faster, easier and positive sealing at all times. Valve cores are depressed automatically without adjustments or loss of refrigerant. Disconnecting is also accomplished without loss of refrigerant.

An automatic shut-off valve retains refrigerant pressure in a disconnected hose. This feature permits transferring high side hose refrigerant through the service manifold into the low side, thereby eliminating waste and hazardous high pressure discharge and atmospheric damage.

### Features

- Automatic full depression of core valves without adjustment, regardless of core position.
- Coupler halves separately connect to access fitting and hose end, then easy push/pull operation automatically opens or closes system without loss of refrigerant.
- Automatic shut-off of hose ends permits discharging high side hose through manifold into low side.
- Eliminates hazardous discharge of refrigerant and oil from system when disconnecting hose.
- Simplifies operation of charging critical amount of refrigerant into small systems.
- Prevents finger burn when disconnecting - especially servicing heat pumps in cold weather.
- Core depressors in hose ends no longer necessary - speeds servicing of systems with hand valves.

- 16-C Straight Coupler (45° Flare) 1/4" female x 1/4" male.
- 17-C 90° Elbow Coupler (45° Flare) 1/4" female x 1/4" male.
- 18-C (Set) includes 16-C and 17-C.
- 26-C Straight Coupler (45° Flare) 5/16" female x 5/16" male.
- 27-C 90° Elbow Coupler (45° Flare) 5/16" female x 5/16" male. 26-C and 27-C. NOT UL APPROVED



**WARNING:** Do not allow any refrigerant cylinder, connected for charging, to be exposed to system high side pressure cylinder - explosion could result!

## AUTOMOTIVE KWIK-COUPLER™ ADAPTER FOR R-12

- 19-C (Set) Same as 18-C except with special female coupler for use on 3/16" high side automotive access valves.
- 20-A High side adapter. Converts 3/16" system access valve to 1/4" access valve for use with standard 1/4" charging hose.



## 23-C & 24-C HI-DUTY® SHUT-OFF COUPLERS

- Coupler captures refrigerant within hose, eliminating refrigerant loss, atmospheric damage and finger burns.
- Connects quickly & easily to any standard 1/4" SAE refrigerant hose.
- Solid brass construction for years of dependable service.
- Innovative modular design permits easy field repairs.

### SHUT-OFF COUPLERS

| PART NO. | DESCRIPTION                         |
|----------|-------------------------------------|
| 23-C     | Straight 1/4" SAE Shut-Off Coupler  |
| 24-C     | 90 Degree 1/4" SAE Shut-Off Coupler |
| 25-K     | Coupler Service Kit                 |



# KWIK-COUPLER™ ADAPTERS

## KWIK-COUPLER™ REPAIR KITS

The Kwik-Coupler™ adapter repair kit is intended for use with Imperial® brand 16-C, 17-C, 18-C and 19-C Kwik-Coupler™ adapters and PolarShield® KC-Series hose. The male repair kit includes a threaded hex sleeve for replacement on straight coupler assemblies.

### KCK-M Male Kwik-Coupler™ Adapter Repair Kit - Repairs 2 Male Couplers

**Includes:** Hex Sleeve (2), Spring (2), Stem Assembly (2) and Sealant

#### REPAIR INSTRUCTIONS

1. Remove threaded sleeve on end of Kwik-Coupler™ adapter. A vise may be necessary to remove old straight sleeve – the 90° has a screwdriver slot on back for removal.
2. Discard old stem and spring.
3. Use a wire brush to clean sealant residue from disassembled parts.
4. Insert new stem and spring.
5. Apply one bead of thread sealant completely around the thread. Do not apply an excessive amount of sealant – this may damage o-ring seal and cause leakage. Assemble to length at right (Fig. 1 & 2). For 90° style, engage threads until the bottom of the slot is even with the back of the coupler (Fig. 4).
6. Allow sealant to cure at least 30 minutes. The Kwik-Coupler™ adapter is now ready to use.

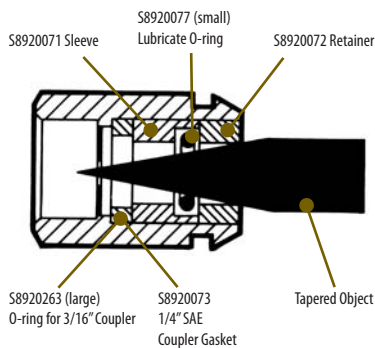
### KCK-F Female Kwik-Coupler™ Adapter Repair Kit - Repairs 5 Standard and 5 Automotive Female Couplers (Not for 26-C and 27-C)

**Includes:** Retainer (2), Gasket (5), O-Ring (10) and O-Ring 3/16" for Automotive (5)

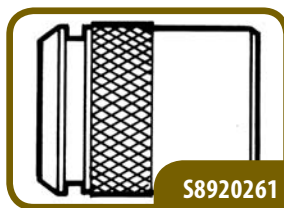
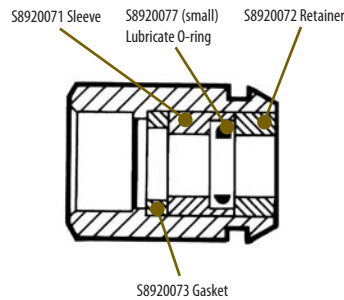
#### REPAIR INSTRUCTIONS

1. Insert tapered object (pen or pencil) and press against threaded retainer. Unscrew and remove retainer, sleeve and rubber seals.
2. Lubricate new seals and reassemble. Tighten retainer to zero clearance plus 1/8" turn. The Kwik-Coupler™ adapter is now ready for use.

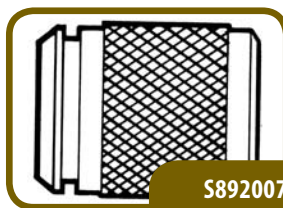
#### Standard Female Coupler



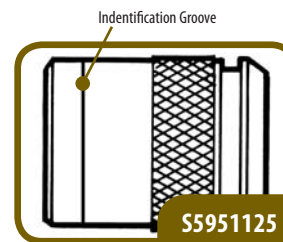
#### Accessory Side Female Coupler for non-core valve applications



**S8920261** Female Coupler (3/16" high side automotive)



**S8920074** 1/4" Female Coupler



**S5951125** Female Coupler (accessory side)

**Figure 1**  
← Assembly length 7/32"

**Figure 2**  
← Assembly length 7/32"

**Figure 3**  
Hex sleeve

**Figure 4**  
90° assembly

**Figure 5**  
Sealant

**Figure 6**  
Spring

**Figure 7**  
Stem assembly

**KCK-M Male Kwik-Coupler™ Adapter Repair Kit**

## KWIK-COUPLER™ ADAPTER REPLACEMENT PARTS

| PART NO. | DESCRIPTION  | USED ON                |
|----------|--|------------------------|
| S8920069 | Male Coupler 1/4"-Straight                         | 16-C, 17-C, 18-C, 19-C |
| S8920071 | Female Coupler 1/4" & 3/16"-Sleeve                 | 16-C, 17-C, 18-C, 19-C |
| S8920072 | Female Coupler 1/4" & 3/16"-Retainer               | 16-C, 17-C, 18-C, 19-C |
| S8920073 | Female Coupler 1/4"-Gasket                         | 16-C, 17-C, 18-C, 19-C |
| S8920074 | Female Coupler 1/4"-Low Side                       | 16-C, 17-C, 18-C, 19-C |
| S8920077 | Female Coupler 1/4", 3/16" & 5/16"-O-Ring          | 16-C, 17-C, 18-C, 19-C |
| S8920082 | Male Coupler 1/4"-90°                              | 16-C, 17-C, 18-C, 19-C |
| S8920261 | Female Coupler 3/16"-High Side                     | 19-C                   |
| S8920263 | Female Coupler 3/16"-O-Ring                        | 19-C                   |
| S5951125 | Female Coupler 1/4"-for Non-Core Valve Application | 16-C, 17-C, 18-C, 19-C |
| KCK-F    | Repair Kit For All Female Couplers                 |                        |
| KCK-M    | Repair Kit For All Male Couplers                   |                        |

# REFRIGERANT CHARGING & RECOVERY

## KWIK-VISE™

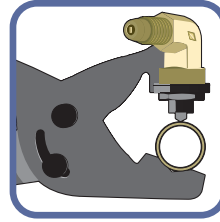
### Refrigerant Recovery Tool

- PT-109** Line piercing/refrigerant recovery tool pierces, seals and locks on to copper lines in one swift motion.
- Self-adjusting! No need to adjust the tool for different sizes of tubing. The tension system automatically locks pliers on copper tubing 1/4" to 1/2" (6 mm–12 mm) O.D.
- To use, simply position the PT-109 on the tubing to be pierced. Close the pliers quickly and firmly. The pliers will automatically adjust and lock into a tightly sealed, secure position.

#### Features

- Replaceable hardened, stainless steel pierce and brass valve assembly (S16002045).
- Capacity: 1/4" thru 1/2" O.D. refrigerant copper tubing.
- Durable: made with high-carbon, heat treated steel jaws.
- Works with all refrigerants CFC, HFC, HCFC and Zeotropic, Azeotropic.
- 90° elbow valve eliminates tangling and interference problems.

**S16002045** Replacement pierce and brass valve assembly.



PT-109



## KWIK CHARGE®

### Liquid Low Side Charger

#### Provides fast, safe charge - essential for today's blended refrigerants!

The Kwik Charge® charging unit accepts liquid refrigerant from the cylinder and discharges into low side of the system. Charging rate is up to eight times faster than vapor charging. In addition, liquid charging is required when using R-410A and other blended refrigerants. Attach the Kwik Charge device to the low side of the charging manifold. Charging hose is connected from Kwik Charge device outlet to low side of refrigeration system. Internal metering element reduces liquid flow to a level below capacity of compressor. This assures a safe, fast charge without endangering the compressor. A built-in ball check valve automatically opens when drawing a vacuum to assure rapid, unrestricted evacuation. Can be used with all fluorinated hydrocarbon refrigerant systems.

#### Features

- Up to 8 times faster than vapor charging.
- No need to heat refrigerant cylinder.
- Built-in check valve opens for drawing unrestricted vacuum.
- No pressure drop in cylinder.
- One charger services all units 1/2 ton or larger.

**535-C** Kwik Charge® charging unit 1/4" female SAE flare inlet, 1/4" male SAE flare outlet.

**545-C** Kwik Charge® charging unit 5/16" female SAE flare inlet, 5/16" male SAE flare outlet.

WORKS WITH  
**R-410A**

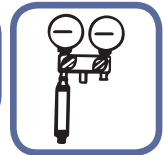


535-C

#### CONNECTION TO MANIFOLDS

(connect all hoses as usual)

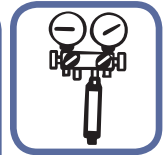
**2-Valve** Connect Kwik Charge® charger to low side fitting. Arrow downward.



Can be connected to refrigerant cylinder rather than manifold.



**4-Valve** Unscrew end fitting & reverse, then connect to refrigerant fitting as shown (flow arrow on body points upward).



# REFRIGERANT CHARGING & RECOVERY

## VIZI-VAPR CHARGER 7701



Many problems can arise from improper charging of any type of refrigeration system. Vizi-Vapr makes it possible to correctly charge a system every time. Liquid refrigerant being charged is transformed into a saturated vapor through a small orifice which thereafter can be viewed to ensure the system gets charged properly.

The Vizi-Vapr eliminates the problem of slow vapor charging by removing the refrigerant from the cylinder as a liquid and injecting it into the system as a saturated vapor. Since the liquid refrigerant is removed from the cylinder by its own pressure, no heat is removed from it and the cylinder does not get cold. Refrigerant blends must be removed from their containers as liquid. Using the Vizi-Vapr, the blend can be charged into the system as a saturated vapor without any composition change. Vizi-Vapr is adjustable from 1/8hp up to 50hp. The operation is completely visible so there is little danger of liquid entering the system.



## VIZI-VAPR REPAIR KIT 7701RK

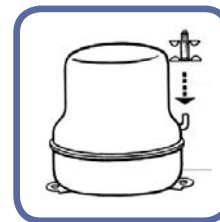
Complete set of gaskets, "O" rings, and back-up rings required for repairing the 7701 Vizi-Vapr.

## PROCESS TUBE ADAPTER FOR CHARGING & TESTING

Offers a convenient method of making a service connection to a hermetic unit. Also ideal for providing a connection in testing coils and tubing installations. Handles pressure to 100 PSI. To connect to a hermetic system, pinch-off tube is cut off and adapter is slipped over cut end of tube and tightened. Synthetic rubber seal of adapter grips and seals outside of tube. This gives a 1/4" SAE male flare connection to the system for evacuating, charging or testing. After system is recharged, tube is pinched off next to adapter. Adapter is then removed and tube is cut off and sealed with solder. Adapter can be reused repeatedly.

| PART NO. | TUBE O.D. (in.) | SAE FLARE END (in.) |
|----------|-----------------|---------------------|
| 241-F-03 | 3/16            | 1/4                 |
| 241-F-04 | 1/4             | 1/4                 |

Pinch-off tube on hermetic compressor is cut off and 241-F is placed on tube. Charging line is connected to flare end of 241-F.



# PIERCING VALVES & ADAPTERS

## 3-IN-1 PIERCING VALVE

Fast, easy, secure installation. Provides access to line at any point for charging, testing or evacuation. Two valves cover 3/16" to 5/8" O.D. tubing. Has depressor valve and needle valve shut-off.

Valve clamps on tubing line with two captive slotted-head screws: positive built-in mechanical stop for each tube size eliminates tightening guesswork. To pierce tube, thread down the combination 1/4" flare port, stem and needle using knob furnished or a suitable wrench, back off stem and connect depressor-type hose for testing or charging. After service is completed valve is closed and left on line for future service. Dust cap provided.

Three-point sealing [in Fig. 1: (1) needle-type valve, (2) gasket and (3) check valve] prevents leakage. Neoprene seal withstands temperatures near 300°F.

**541-C** Fits 3/16", 1/4" and 5/16" O.D. tubing.

**542-C** Fits 3/8", 1/2" and 5/8" O.D. tubing.

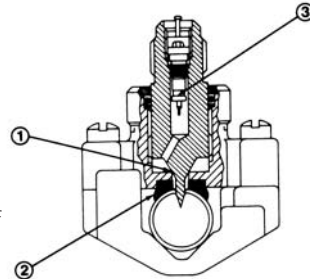
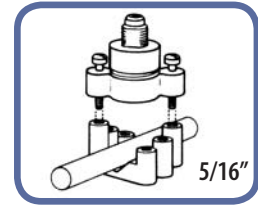
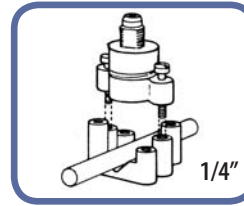
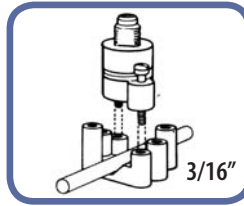


Fig. 1

541-C



### FITS THREE SIZES



## ACCESS FITTINGS/SWIVEL ADAPTERS

**9-C** Straight adapter, 1/8" female pipe by 1/4" SAE female swivel connection.

**10-C** 90° swivel adapter, 1/4" SAE male flare by 1/4" SAE female flare swivel connection with core depressor.



9-C



10-C

## ACCESS VALVES

These valves are designed to facilitate charging and testing of refrigeration systems. Furnished with flare cap on valve end.



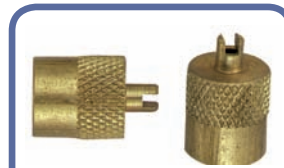
### Half Union Access Valves

| PART NO. | TUBE O.D. (in.) | PIPE THREAD (in.) |
|----------|-----------------|-------------------|
| GU1-4A   | 1/4             | 1/8               |
| GU1-4B   | 1/4             | 1/4               |



### Replacement Valve Cores

PART NO. G6400



### Wrench Caps

PART NO. G6600



### Flare Caps

| PART NO.  | FOR FLARE SIZE |
|-----------|----------------|
| 640-FC-04 | 1/4"           |
| 640-FC-06 | 3/8"           |

# PIERCING VALVES & ADAPTERS

## CORE REMOVAL TOOL

This core removal tool is about the size of a pen. Store extra cores within the body of this handy tool.



| PART NO. | DESCRIPTION              |
|----------|--------------------------|
| TE-CRT01 | FOR 1/4" VALVE CORE TOOL |
| TE-CRT02 | VALVE CORE REMOVAL TOOL  |



## VALVE CORE DEPRESSOR

For 1/4" male flares.



| PART NO. | DESCRIPTION          |
|----------|----------------------|
| 7025     | FOR 1/4" MALE FLARES |

## ANTI-BLOWBACK BRASS HOSE ADAPTER

Convert standard 1/4" hose to anti-blowback functionality.



| PART NO.  | MALE     | FEMALE   | OTHER                 |
|-----------|----------|----------|-----------------------|
| TE-BARL14 | 1/4" SAE | 1/4" SAE | W/ CORE AND DEPRESSOR |

## R-410A BRASS ADAPTER

Convert new R-410A system ports with 5/16" SAE connections to 1/4" SAE.



| PART NO. | MALE     | FEMALE    | OTHER                 | APPLICATION          |
|----------|----------|-----------|-----------------------|----------------------|
| TE-BA01  | 1/4" SAE | 5/16" SAE | W/ CORE AND DEPRESSOR | R-410A INTERNATIONAL |

## R-410A 45° BRASS ADAPTER

Convert new R-410A system ports with 5/16" SAE connections to 1/4" SAE at 45°.



| PART NO.  | MALE     | FEMALE    | OTHER                 | APPLICATION          |
|-----------|----------|-----------|-----------------------|----------------------|
| TE-BA0145 | 1/4" SAE | 5/16" SAE | W/ CORE AND DEPRESSOR | R-410A INTERNATIONAL |

## ADDITIONAL END FITTING OPTIONS

Imperial-Thermal Engineering understands that no two jobs are alike. In keeping with our commitment to serve the HVAC/R professional we offer a multitude of end fitting options custom tailored for your application. Listed below is a sample of the end fittings available in any combination. Please call customer service for your inquiries, (888) 467-8665.

- |                         |                  |                      |                                     |
|-------------------------|------------------|----------------------|-------------------------------------|
| 1/4 Anti-blow back      | 1/2 Acme FFL 90° | 1/4 FFL 90°          | 1/4 Hex Nut                         |
| 1/2 Acme Anti-blow back | 1/2 Acme 14mm    | 1/2 Acme Hex Nut     | 1/4 Hex Nut 45°                     |
| 1/2 Acme FFL            | 1/4 FFL          | 1/2 Acme Hex Nut 45° | 1/4 Hex Nut 90°                     |
| 1/2 Acme FFL 45°        | 1/4 FFL 45°      | 1/2 Acme Hex Nut 90° | In-line filter element (10 microns) |

# CAP-CHECK

The Cap-Check is a Imperial-Thermal Engineering innovation that has made cap tube cleaning possible and practical. It is designed to pump a high rate of oil into the cap tube to build up pressures needed to open any plugged cap tube, and will clean partially plugged cap tubes when used with the Imperial-Thermal Engineering Chaser Kit.

## CAP-CHECK

1003

Cap-Check is a portable, self contained hydraulic power unit with auxiliary equipment especially adapted to cleaning refrigeration capillary tubes. A 0-5000 PSI gauge shows pressure build-up if cap tube is restricted and also shows when chaser has passed through the tube. A trigger operated gauge shutoff is provided so the gauge will not be damaged if pressures greater than 5000 PSI are desired. A 30" high pressure hydraulic hose with a 1/4" SAE male flare outlet connects the cap tube to the Cap-Check for simple handling. An adapter is supplied to connect the cap tube directly to the hose outlet without a flared fitting.



1003

## CAP-CHECK CHASER KIT

1101

Chaser Kit is the only means available to clean partially plugged cap tubes. It must be used with the Imperial-Thermal Engineering Cap-Check since no other cap tube cleaning tool provides a rate of oil flow large enough to remove partial restrictions even from the smallest cap tubes. The Chaser Kit consists of 10 spools of lead alloy wire which can be used as a chaser for the 10 most popular sizes of cap tubes (.028, .031, .036, .039, .042, .046, .050, .055, .064, .070). In addition to the wire, a cap tube gauge, a set of sizing tools, and a combination file/reamer are all included in a durable metal case.



1101

## CAP-CHECK OUTFIT

5101

Cap-Check Outfit includes both the Cap-Check and Chaser Kit in one compact case along with an extended base that holds the Cap-Check. The Cap-Check can be operated with one hand, allowing high pressures to be easily pumped. Carrying case has clips to hold Cap-Check, Chaser Kit, hose, handle, and extended base.



5101

# CAP-CHECK ACCESSORIES

A capillary tube is the most likely place a blockage in a system can occur and can cause a system to operate very inefficiently. Therefore it is essential to have the proper tools on hand to fix this very common problem. Below are accessories that we recommend for the Cap-Check and your service arsenal.

| PART NO. | NAME                           | DESCRIPTION   |
|----------|--------------------------------|---|
| 1003RK   | Cap-Check Repair Kit           | Complete set of gaskets, "O" rings, springs and balls for Part No. 1003 Cap-Check, with instructions  |
| 1011     | 0-5000 PSI Gauge               | High pressure gauge for Part No. 1003 Cap-Check with a pressure range from 0-5000 PSI   |
| 1012     | 30" Hydraulic Hose Replacement | 30" high pressure hydraulic hose with a 1/4" SAE male flare outlet  |
| 1102     | Cap-Gauge                      | Pocket knife type cap tube gauge with 10 stainless steel gauges to measure the most popular sizes of cap tubes (.028", .031", .036", .039", .042", .046", .050", .055", .064", .070") |
| 1201     | Carrying Case                  | Heavy duty case provides maximum protection from wear and tear when not in use  |
| 1301     | Extended Base                  | Extension for the base of the Cap-Check providing better accessibility in certain situations  |

## CAPILLARY TUBING

Imperial-Thermal Engineering quality capillary tubing - available in 100ft. coils.

| PART NO.  | SIZE              |
|-----------|-------------------|
| CT-31-100 | .031" ID X 100 FT |
| CT-36-100 | .036" ID X 100 FT |
| CT-42-100 | .042" ID X 100 FT |
| CT-49-100 | .049" ID X 100 FT |
| CT-54-100 | .054" ID X 100 FT |
| CT-59-100 | .059" ID X 100 FT |
| CT-64-100 | .064" ID X 100 FT |
| CT-70-100 | .070" ID X 100 FT |

# SYSTEM TESTER

Make on-the-spot readings with our easy-to-use HandyStat. Very useful for troubleshooting a system!

## HANDYSTAT HS-1

Save the steps, time and money to make system tests with a single tool.

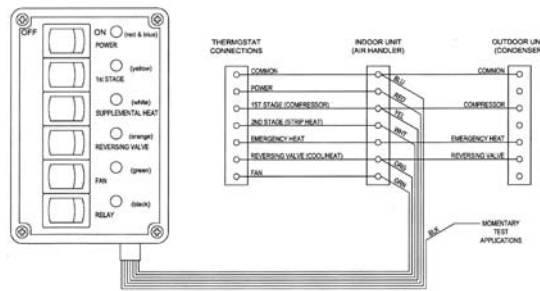
### Features

- Check out thermostat and control wiring output.
- Operate individual system components for test purposes: Compressor, Fan, Heaters, Reversing Valves.
- Convenient momentary switch for quick ON-OFF activation.
- Connects to the control wiring at the point of service.
- Great on roof top units and light commercial applications.

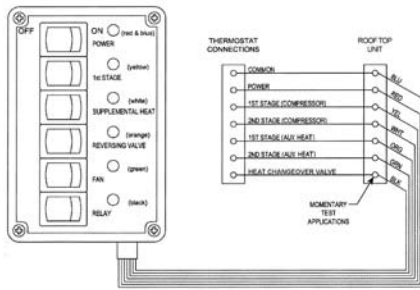
WARRANTY: 12 MONTHS FROM DATE OF PURCHASE



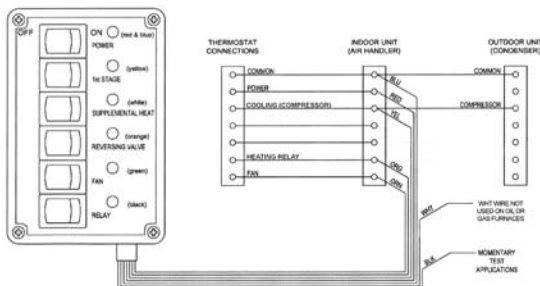
### WIRING CONNECTIONS FOR USE ON RESIDENTIAL HEAT PUMP SYSTEMS



### WIRING CONNECTIONS FOR USE ON LIGHT COMMERCIAL HEAT PUMP SYSTEMS



### WIRING CONNECTIONS FOR USE ON OIL OR GAS FURNACES WITH AIR CONDITIONING SYSTEMS



# CALCULATORS

Reference points on a variety of topics and scales to make even the most technically demanding jobs a breeze.

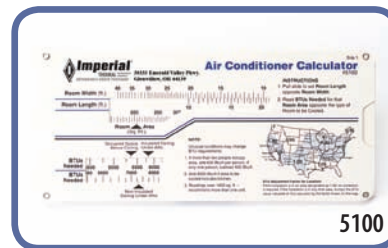
## ROOM AIR CONDITIONER CALCULATOR

5100

Used to determine size of air conditioner unit with allowances for:

- Exposed and unexposed walls.
- Exposed and unexposed windows.
- Roof and ceiling insulation.
- Heat gain from number of people.
- Location.

This calculator selects amount of capacity needed in a cooling load of 5000-24000 BTUs per hour, and indicates the size of unit required in BTU ratings. The calculator not only simplifies the job of specifying window air conditioners, but also eliminates misapplication and paper work. An ideal service and sales tool for the estimator and service engineer, the calculator is imprinted with full directions.



5100

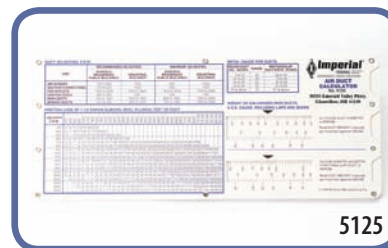
## AIR DUCT CALCULATOR

5125

This ingenious, pocket-size Air Duct Calculator uses only three slides to give all of the information needed when figuring the sizes of air ducts. Convenient tables printed on the back of the calculator supply additional data in a handy, easy-to-use form. The few words of instruction needed to understand and use the different slides are printed on the calculator face, where they cannot be lost or mislaid.

Used to determine:

- Size of air ducts by the equal pressure loss method.
- Size of round ducts vs. rectangular ducts.
- Weight per foot of round ducts by U.S.S. gauge.
- Weight per foot of rectangular ducts by U.S.S. gauge.
- Recommended duct velocities.
- Friction loss of 1-1/2 radius elbows.
- Gauge of metal for size of ducts.

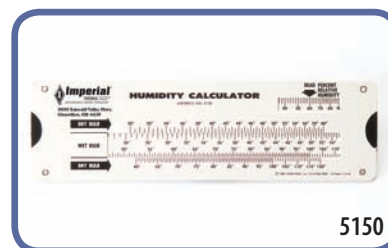


5125

## HUMIDITY CALCULATOR

5150

Designed for determining the percent of relative humidity when using any standard sling psychrometer, this calculator eliminates the use of psychrometric charts from 60° to 100°F. The reverse side of the calculator has a chart of recommended humidities according to industry application and temperature.



5150

## TROUBLESHOOTING CALCULATOR

5175

This calculator simplifies the job of diagnosing cooling system troubles. Ideally suited to the needs of the expert as well as the needs of the trainee, it provides immediate reference, from COMPLAINT to POSSIBLE CAUSE to REPAIR.

### Features

- 19 major 'Complaint' sections.
- 32-part 'Trouble Shooting' Index.
- 127 'Possible Cause' items.
- All items keyed to 'Repair' window.



5175



# CALCULATORS

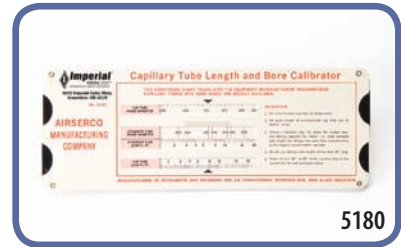
On-the-fly calculations can be made very easily to help troubleshoot a system, saving you valuable time!

## CAPILLARY TUBE AND TROUBLESHOOTING CALCULATOR

5180

### TWO SLIDE CHARTS IN ONE

This is a dual-purpose slide chart. One side is a new, scientific approach for selecting readily available standard capillary tubing sizes to replace the hard-to-get sizes that original manufacturers often recommend. The other side is a troubleshooting calculator that simplifies the job of diagnosing cooling system trouble where the capillary tube is suspect.



5180

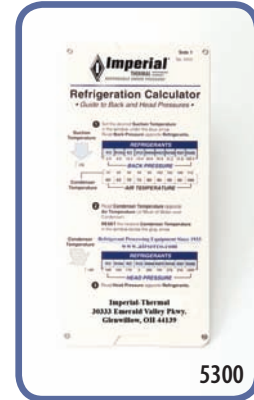
## REFRIGERATION CALCULATOR

5300

A time-saving and easy-to-use calculator to supply technical refrigeration data:

- Hermetic terminal colors.
- Thermostatic control settings.
- Pressure control settings.
- Head and back pressures.
- Hermetic motor diagrams.
- Temperature pressure chart.

The calculator graphically shows vital refrigeration data and provides service information not available in any other form.



5300

# BOOKS

## REVIEW OF VACUUM FOR SERVICE ENGINEERS

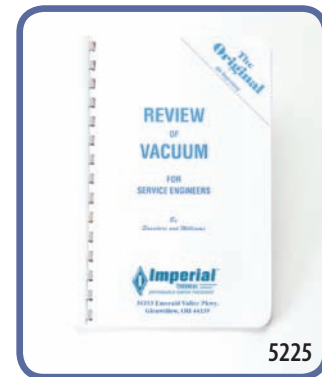
5225

The story of how vacuum is used as a tool to dehydrate and degas a refrigeration system. This text is the only publication that clearly and non-technically explains vacuum fundamentals for the service man or engineer.

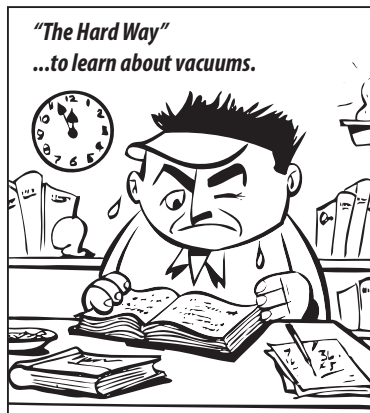
Illustrated with charts, photographs, and diagrams, this authoritative handbook describes and explores vacuum terms, properties, uses, activities, advantages, limitations, and techniques.

### Features

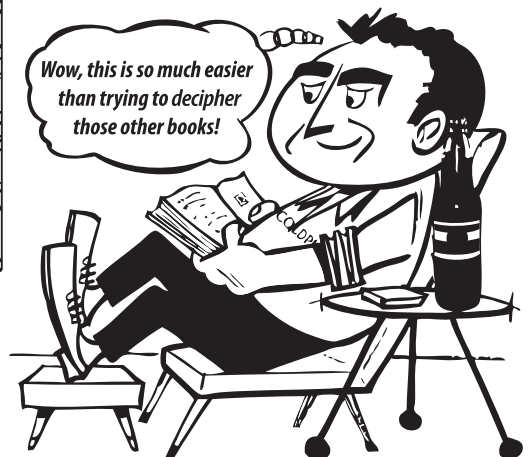
- Covers key service-related topics.
- Vital for processing engineer, serviceman.
- What vacuum means.
- How a pump works.
- Sizing high vacuum pumps and lines.
- Vacuum gauges procedure for dehydration, degassing, leak detection.



5225



### "The Easy Way"



Take "The Easy Way" with  
 "Review of Vacuum for Service Engineers"  
 by  
 Saunders & Williams

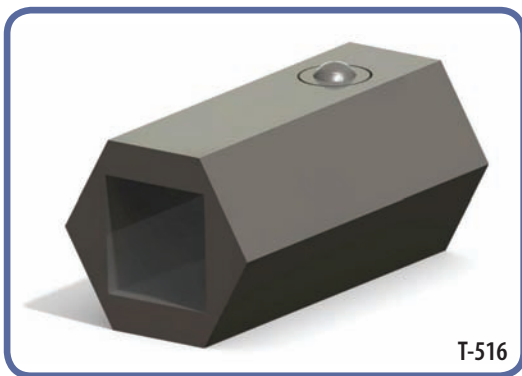
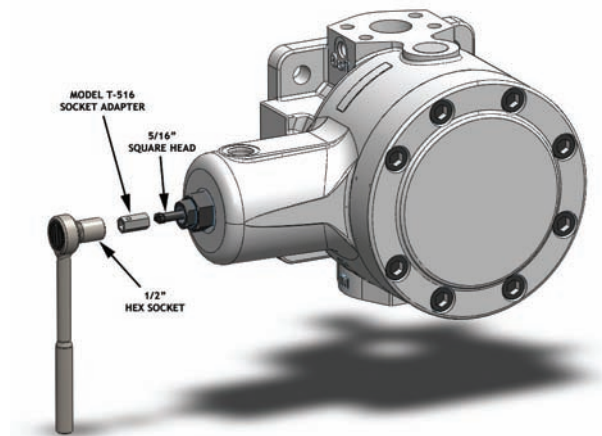
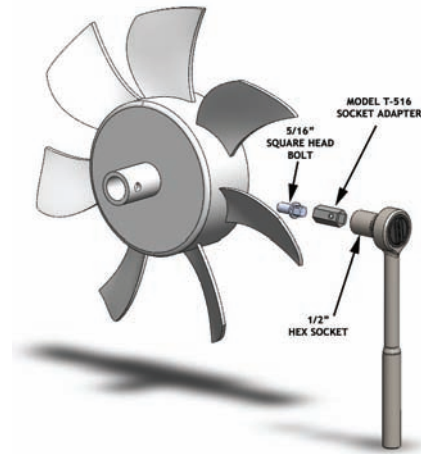
# SQUARE HEAD BOLT SOCKET ADAPTER

## THE SQUARE WONDER™ SQUARE HEAD BOLT SOCKET ADAPTER T-516

This incredible tool fits into 1/2" hex sockets and enables the technician to easily remove 5/16" square head locking bolts. It allows easy access to places where valve wrenches will not work or when more leverage is required.

### COMMON APPLICATIONS INCLUDE:

- Refrigeration & A/C service valves.
- Condenser fan blades with bottom side and right side up hubs.
- Small and large concave blower wheels.
- Beam clamps for hanging all-thread rods (used in electrical, plumbing and A/C applications).
- Square head lag screws.
- Pipe plugs, pump heads for gauge ports, water and pneumatic plugs, gas furnace manifold plugs.
- Adjustment screws for pressure switches.
- Great for Carrier, York, Addison, Rheem, Aeon, Bard, Trane and many more.



T-516

# HEATERS

Quick and easy process of pressurizing a refrigerant supply cylinder to move any refrigerant to another vessel.

## CYLINDER HEATER 3054

A quick, convenient, easy-to-use means to pressurize refrigerant supply cylinders to move any refrigerant to another vessel or charging dispenser, the 3054 Cylinder Heater is designed to fit 30lb. and 50lb. containers. It also can be used on 125lb. cylinders and fits the refrigerant cylinders in many recovery units. The device consists of a 6" x 28" flexible silicone rubber heating element with extra-long Velcro straps, built-in molded thermostat, and power cord. The heater draws 200 watts at 120 VAC and has a 135° preset thermostat.

### 3054-230V

230 Volt model available for European market.



3054

# CHARGING SCALES

## CHARGING SCALE

### 4900

The 4900 refrigerant charge scale is the ideal choice for field service work. With a high resolution LCD screen that reads in both lbs. and kg., this scale comes packaged in a convenient carrying case and is powered by (1) 9 volt battery (included).

#### Features

- Battery operated (9V) for ease of portability.
- 220lbs. (100kg.) capacity.
- High resolution LCD screen with backlight capability.
- Automatically powers off.
- 5g, 0.25oz. resolution.
- Readout in lbs. or kg.
- Zero/Tare capable.
- Weight 6.5lbs.
- Extra sturdy aluminum bound case.



Convenient solution for refrigerant charging. Easy to use, even easier to carry around.

## OIL PUMPS & ACCESSORIES

# OIL PUMPS & ADAPTERS KITS

Precisely and exactly the right amount of oil in the cleanest and most efficient manner. Allow for all popular sizes of oil cans and bottles to fit with our oil pumps.

## CHARGE-OIL PUMP

It charges without pumping the compressor down thus reducing charging time by over 70%. Also avoids the embarrassment of spilling oil on the customer's premises. Provides the professional touch since oil can be accurately measured into the compressor without having to pour it from the can. Fits all popular brands of refrigeration oil.

Complete Adapter Kit supplied to accommodate most containers. The Charge-Oil Pump cap seals the can so pump need not be removed until can is empty. Thermal Charge-Oil Pump is a piston type high pressure pump designed to operate at pressures to 250 PSI. It pumps one quart in 20 full strokes of the piston. Pump is connected to compressor by refrigerant charging line or copper tubing from 1/4" male fitting.

Suitable for use with alkybenzene and POE oils.



| PART NO. | DESCRIPTION                                       |
|----------|---|
| 1702     | Imperial-Thermal Charge-Oil Pump                  |
| 1703     | Imperial-Thermal Charge-Oil Pump for 5 Gallon Can |

## CHANGE-OIL PUMP

### 1751

1751 Change-Oil Pump is a companion to the famous Imperial-Thermal Engineering 1700 Charge-Oil Pump. It has been designed for use in pumping oil from refrigeration compressors, marine engines, and other equipment where it is impossible to drain oil in the conventional manner. Removing oil from refrigeration compressors before dehydrating with vacuum is a necessity. Suction tube is 5/16" OD semi-rigid plastic, 15" long. Suction tubes up to 60" long can be used if necessary. Will not pump under pressure. Pumping capacity about 10 strokes per quart.

| ADAPTERS & REPAIR KITS |                        |   |
|------------------------|------------------------|---|
| PART NO.               | NAME                   | DESCRIPTION   |
| 1705                   | 1702 & 1703 Repair Kit | Complete set of gaskets, bearings, rings, springs and washers for the repair of Imperial-Thermal oil pumps  |
| 1751RK                 | 1751 Repair Kit        | Complete set of gaskets, bearings, rings, springs and washers for the repair of Imperial-Thermal oil pumps  |
| 1768                   | Adapter Kit            | Adapter kit for all popular cans and bottles of refrigerant oil. Kit contains 5 rings and one spacer to accommodate most oil containers   |
| 1770                   | Adapter Kit            | Suction adapter for aluminum Charge-Oil Pump. Converts part no. 1702 Charge-Oil Pump into suction pump for refrigeration, marine and other similar applications where it is impossible to draw oil in the normal manner |

# VACUUM PUMP ACCESSORIES

These vacuum accessories will help you make easy vacuum connections in many types of systems.

## MINI-VAC 1833

Mini-Vac is a compact High Vacuum Manifold which provides a 3/8" flare yoke and an electronic vacuum gauge sensor port (sensor not included). Features a 3/8" packless diaphragm valve to isolate the vacuum pump from the system. The Mini-Vac mounts on the pump with a 3/8" quick coupler.



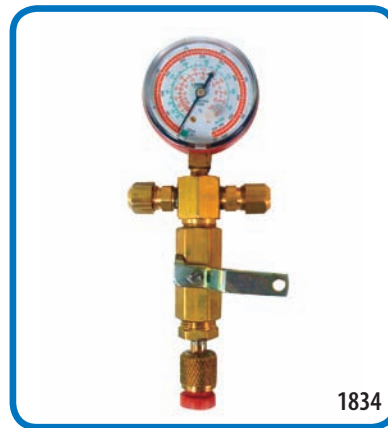
Pictured with optional digital vacuum gauge.

## MANIFOLD GASKET SET 1843

Gasket set for Part No. 1833 Mini-Vac.

## MINI-VAC MANIFOLD AND 0-30" VACUUM GAUGE COMBO 1834

Combination of Part No. 1833 Mini-Vac Manifold and 0-30" mechanical vacuum gauge which attaches to the sensor port.



## VACUUM TEE 1832

Vacuum Tee for evacuating from two ports with one vacuum source. (2) 3/8" MFL x 3/8" quick coupler. Includes (2) 3/8" x 1/4" x 6' (72") high vacuum hoses.



## 3/8" EVACUATION HOSE WITH 3/8" SAE SWIVEL CONNECTION

### For faster evacuation and charging

3/8" hose in four lengths for larger jobs or applications where reduced service time is desired. 3/8" swivel ends. Eight-crimp ferrules. Available in yellow.

| LENGTH   | YELLOW  |
|----------|---------|
| 3' (36") | 536-FTY |
| 4' (48") | 548-FTY |
| 5' (60") | 560-FTY |
| 6' (72") | 572-FTY |

# VACUUM PUMP ACCESSORIES

High quality vacuum pump oil and sealants help maintain your vacuum pumps and prolong their life.

## VACUUM PUMP OIL

### 1810 & 1813

Imperial-Thermal Engineering Vacuum Pump Oil keeps any high vacuum pump at maximum performance. No pump can deliver a lower pressure than its sealing oil's vapor pressure. This oil must have the viscosity to lubricate and seal clearances in the pump's moving parts at the extreme temperatures developed during continuous use.

- Premium quality mineral oil formulated to tolerate exposure to vacuums of 5 microns.
- Resists the formation of deposits and maintains its original lubricating properties over a long life.
- Offers very high vacuums, excellent lubrication, and long oil life.
- Available in 1 gallon plastic containers, 4 per case, or 1qt. bottles, 6 per case.



| PART NO. | CASE SIZE             | GRAVITY, API | VISCOSITY         | FLASH POINT | PRESSURE, MICRONS, HG, MAX |
|----------|-----------------------|--------------|-------------------|-------------|----------------------------|
| 1810     | (4) Gallon Containers | 29.2         | SUS at 100°F, 335 | 450°F       | 5                          |
| 1813     | (6) Quart Containers  | 29.2         | SUS AT 100°F, 335 | 450°F       | 5                          |

## LIQUI-VAC

### 4036 & 4036-Q

#### Features

- Sets up quickly.
- Seals to 1 micron.
- Remains flexible.
- Ready to use.

A real time-saver in servicing cooling systems, Liqui-Vac is the only liquid sealant with the capacity of sealing high vacuum connections. It will positively seal high vacuum leaks around threads, through flared connections, face joints, wherever metal joins metal. Liqui-Vac sets up quickly, but remains flexible for easy disconnection. Liqui-Vac is resistant to most solvents, can seal to 1 micron, and withstands temperatures from -100°F to +325°F.

**4036** 4 oz. brush-in-cap can (Sold 12 per case)

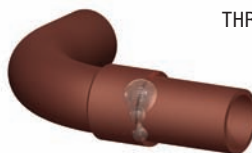
**4036-Q** 1 qt. can



EASY BRUSH ON APPLICATOR FOR:



THREAD CONNECTIONS



SOLDERED OR WELDED CONNECTIONS



MACHINE SURFACE CONNECTIONS

# CHARG-CHECK

Accurately charge your refrigeration system with Charg-Check, available in a number of sizes to suit your needs.

## CHARG-CHECK

### Features

- Comes in three sizes to suit any application, 1lb. (16oz.), 5lb. (80oz.), and 10lb. (160oz.) sizes cover the field from light domestic to heavy commercial.
- Allows you to measure out precise quantities of refrigerant.
- Helps speed up the charging process by letting you charge with heat. All cylinders except the 16oz. model will hold a Model 7020 Heater Assembly (See page 68).
- Allows you to carry small quantities of refrigerant to the job, yet buy refrigerant in large quantities and keep the drum back at your shop.
- Is available in a steel carrying case to completely protect them from tough use. Cylinder need not be removed from the case as all connections and valves are accessible from front. Case forms a stand to set on the floor or bench. Case sold separately (See page 68).
- Easily used in the field. They hang onto system being charged by means of a top-mounted bail.
- Can be calibrated for ambient temperature variations by means of temperature correction chart on the side of the scale. This is required only if better than 2% accuracy is needed.
- Safety relief valve for protection.
- Plastic liquid level indicators.



Shown with optional carrying case

### R-12, R-22, R-502 MODELS

| PART NO. | CAPACITY | GRADUATION |
|----------|----------|------------|
| 7001     | 16 oz.   | 1/2 oz.    |
| 7002*    | 16 oz.   | 1/2 oz.    |
| 7005     | 80 oz.   | 1 oz.      |
| 7006*    | 80 oz.   | 1 oz.      |
| 7009     | 160 oz.  | 2 oz.      |
| 7010     | 160 oz.  | 2 oz.      |

\*CARRYING CASE INCLUDED

### HFC-134A MODELS WITH 1/4" SAE FITTINGS

| PART NO. | CAPACITY        | GRADUATION    |
|----------|-----------------|---------------|
| U7001    | 16 oz. (450 G)  | 1/8 oz. (5 G) |
| U7002*   | 16 oz. (450 G)  | 1/8 oz. (5 G) |
| U7005    | 80 oz. (450 G)  | 1 oz. (25 G)  |
| U7006*   | 80 oz. (450 G)  | 1 oz. (25 G)  |
| U7009    | 160 oz. (900 G) | 2 oz. (50 G)  |
| U7010    | 160 oz. (900 G) | 2 oz. (50 G)  |

\*CARRYING CASE INCLUDED

## GASKET SETS AND REPAIR KITS

Charg-Check Repair kits contain a complete gasket set and replacement gauge.

| PART NO. | DESCRIPTION                          |
|----------|--------------------------------------|
| 7001GS   | Gasket set for 16 oz. CHARG-CHECK    |
| 7001RK   | Repair kit for 16 oz. CHARG-CHECK    |
| 7003GS   | Gasket set for 2-1/2 lb. CHARG-CHECK |
| 7003RK   | Repair kit for 2-1/2 lb. CHARG-CHECK |
| 7005GS   | Gasket set for 5 lb. CHARG-CHECK     |
| 7005RK   | Repair kit for 5 lb. CHARG-CHECK     |
| 7009GS   | Gasket set for 10 lb. CHARG-CHECK    |
| 7009RK   | Repair kit for 10 lb. CHARG-CHECK    |

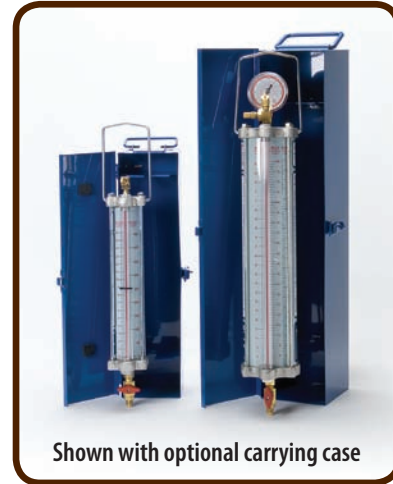
# CHARG-CHECK ACCESSORIES

Optional accessories for the Charge-Check Series charging cylinders

## CARRYING CASES FOR THE CHARG-CHECK SERIES

An ideal way to protect the Charge-Check cylinder from various damage including a broken sight glass. The carrying cases are constructed of 20 gauge steel and supplied with a durable powder coat finish.

| PART NO. | DIMENSIONS                 | USED WITH    |
|----------|----------------------------|--------------|
| 7007     | 4.25"W x 16.75"H x 3.625"D | 7001 / U7001 |
| 7008     | 4.75"W x 23.5"H x 5"D      | 7005 / U7005 |
| 7013     | 6"W x 25"H x 7"D           | 7009 / U7009 |



## CHARG-CHECK HEATER ASSEMBLIES

### 7020 & 7024

**7020** The 120 Volt heater assembly is threaded into the bottom of the cylinder to increase the speed of the charge.

**7024** The 240 Volt heater assembly is threaded into the bottom of the cylinder to increase the speed of the charge.



# HERMETI-CHECK

Hermetic compressors are permanently sealed which means there is little you can do to fix one that is broken on the inside. However with the following tools brought to you by Imperial-Thermal Engineering, you can test the compressor for any electrical problems it may have which can help determine the appropriate actions to take.

## HERMETI-CHECK 2001

Hermeti-Check tests all single phase compressors up to 5 HP, 110, 220 or 277 volts.

### Features

- Tied-up compressors may be freed by reversing motor rotations.
- Tests windings for opens, continuity, and grounds.
- Tests start and run capacitors and system relays by substitution.
- Measures running amps, 0-10, 50A range.
- Measures start and run volts, 0-150, 600V AC ranges.
- Compressors are tested in the manner in which they were designed to operate: split-phase, capacitor start, or PSC.
- Has provisions for connecting external run capacitor. (1) 30A breaker protected to allow high starting current with adequate overload protection.
- Complete with 220V adapter cord and capacitor leads.

| WEIGHT | POWER                         | DIMENSIONS            |
|--------|-------------------------------|-----------------------|
| 3 LBS  | 110, 220, OR 277 VAC 50/60 HZ | 12-1/8" x 8" x 3-3/8" |

## PROFESSIONAL SERIES DIGITAL HERMETIC ANALYZER 12501A

### Features

- Easy to read digital LCD display.
- Tests and runs 110, 220 or 277 volt 50/60 Hz single phase compressors up to 5 HP.
- Tied-up compressors may be freed by reversing motor rotation.
- Tests windings for opens, continuity, and grounds.
- Checks capacitors for leaks, opens, and shorts.
- Measures capacitor values, 0-200, 0-2000 MFD ranges.
- Automatic capacitor discharge.
- Measures compressor amps, 0-30A.
- Measures start and run volts, 0-600VAC.
- Measures winding resistance, 0-2000 ohm.
- 500V megger for testing compressor windings for grounds.
- Compressors are tested in the manner in which they were designed to operate: split-phase, capacitor start, or PSC.
- Multiple internal starting capacitors: 100, 200 and 400 MFD values.
- Has provisions for connecting external run capacitor.
- 30A breaker protected.
- Complete with 220V adapter leads and capacitor leads.

### Upgraded Features

- Combined run and start information onto single screen.
- Each screen describes what it is measuring.
- New safety features prevent switching from high voltage to low voltage measurement until charge has dissipated.
- Compressor cannot be started unless selector switch is in a run mode.

| WEIGHT  | POWER                         | DIMENSIONS             |
|---------|-------------------------------|------------------------|
| 9.5 LBS | 110, 220, OR 277 VAC 50/60 HZ | 15-1/2" x 13-3/8" x 6" |

# Annie®



2001

**Remember  
the  
Annie®  
Back by  
Popular Demand**

# Annie®



12501A



# ACCESSORIES

A compressor may just have a bad electrical part. These accessories will help determine exactly what is going on.

## QUIK-START 2601

Quik-Start starts all single phase compressors up to 5 HP 110, 200, 277V AC. A trouble-shooting aid for determining whether fault lies with compressor or component parts. Fusetron protects against shorts and overloads, but allows high starting load. Capacitor leads provide means of starting split phase, capacitor start, or permanent split capacitor compressors.



2601

## TEST LEAD KIT 2605

Test Lead Kit consists of 4 leads 30" long with insulated test clips in each end for temporarily connecting relays, capacitors, etc., into a system for test purposes and has a 6ft. heavy duty power cord with a male plug on one end and insulated test clips on the other. Also has a 12" power cord with a female socket on one end and insulated clips on the other.



2605

## QUIK-START + TEST LEAD KIT COMBO 2602

Combination of Model 2601 Quik-Start and Model 2605 Test Lead Kit.

## ADAPTER CORD 2136

Provides a 12" 3-wire grounded power cord with standard female plug on one end and insulated clips on the other end. This cord is supplied as standard equipment with Models 2001, 2605, and 12501A.

## COMPRESSOR TERMINAL REPAIR KIT GL-1000

The GL-1000 Gator-Lok is designed to repair burnt terminals on compressors up to 5 tons. Gator-Lok's unique design makes installation a snap and requires no special tools.

Gator-Lok is made from high quality materials. Once installed properly, it provides multiple points of contact on the burnt terminal.

Gator-Lok can be easily installed in minutes, therefore giving the technician the ability to restore power to the unit, and eliminates the need to replace the compressor.

Each Gator-Lok Kit includes a set of three Gator-Loks (1 red, 1 blue and 1 black 10 gauge wire with 30" leads).



GL-1000

# LEAK DETECTION

## REFRIGERANT LEAK DETECTOR HLD-1201

Building on their successful line of leak detection products, Imperial-Thermal Engineering introduces the HLD-1201 refrigerant leak detector. This durable hand held detector has increased sensitivity of up to 3 grams/0.105 ounces per year and a pump for faster response time. Utilizing newly developed semi-conductor gas sensing technology, the HLD-1201 is ideal for diagnosing leaks on air-conditioning and cooling systems utilizing a wide variety of common refrigerants.

### Features

- Heated semiconductor gas sensor.
- High low leak sensitivity selector, 3 levels of sensitivity.
- Bright LED display.
- Ambient concentration reset.
- Includes durable carrying case and reference source.
- Optional DC adapter 3.3V 0.5A.

### Specifications

- Alarm method: Buzzer, Tri-color LED Bar Indicator.
- Power usage: (4) AAA size (6V DC) Alkaline batteries.
- Snake tube length: 15.5" (40cm).
- Dimensions / Weight: 173mm x 66mm x 56mm (400 grams)  
6.8" x 2.6" x 2.2" (14.1 oz).
- Accessories: Alkaline batteries (4 pieces), user manual, leak check bottle, carrying case.
- Battery Life: 7 hours normal usage.
- Auto Power off: 10 minutes.
- Disable Auto Power off: Press and hold (HI) button then power on the meter.



HLD-1201

### LEAK DETECTION SENSITIVITY

| SENSITIVITY            | HI                  | MEDIUM               | LO                  |
|------------------------|---------------------|----------------------|---------------------|
| R-22, R-134a           | 0.105 OZ (3G) /YEAR | 0.529 OZ (15G) /YEAR | 1.05 OZ (30G) /YEAR |
| R-404A, R-407C, R-410A | 0.141 OZ (4G) /YEAR | 0.705 OZ (20G) /YEAR | 1.41 OZ (40G) /YEAR |

## ULTRASONIC LEAK DETECTOR TYPE VPE 9997

The VPE Leak Detector represents state-of-the-art technology for pin-pointing leaks in air conditioning/refrigeration systems. Able to detect both vacuum and pressure leaks, the VPE overcomes the disadvantages inherent in other types of leak detectors. No ultraviolet dyes or tracer gases are necessary, and the VPE can detect any gas, even in a gas-saturated environment. The VPE offers both visual and sound identification via the LED display and the included headset. Lightweight and easy to use, the VPE is a tool every technician should have.

### Features

- Detects any type of refrigerant gas.
- Battery-powered for cordless operation.
- Does not require tracer gases.
- Detects vacuum and pressure leaks.
- Headset and padded carrying case included.
- Adjustable sensitivity.

### Specifications

- Nominal sensitivity: -80db / V / uBar.
- Frequency response: 38 to 42 kHz.
- Display: 10-bar element graph audio output.
- Power: 9V cell.
- Battery life: 15 hrs. continuous.
- Headset: dynamic 32 ohm.
- Size: 4.56" x 2.40" x 0.866".
- Weight: 1/2lb.
- Housing: durable PVC/aluminum.



9997

# LEAK DETECTION

## LEAK-TEC

4014

Leak-Tec is a non-toxic, nonflammable liquid that produces a white foam of live bubbles at the point of leakage. The high viscosity enables the liquid to cling to surfaces long enough to pinpoint leaks as small as .05oz. per year. The liquid spreads quickly and penetrates oil and grease films common on metal surfaces. Used in small amounts, the mass of bubbles will continue to foam as long as pressure is maintained on the equipment being tested. Leak-Tec is stocked in 4oz., 8oz. and 1 gallon containers in two different formulas to fit most applications. Additional formulas and container sizes are also available as special order.

### Features

- Fast- quickly finds and pinpoints the smallest of leaks.
- Safe- does not affect metal or rubber and is nonflammable.
- Economical- a few drops do the job.
- Convenient- unbreakable dispenser bottle.
- Stocked in 4oz. and 8oz. squeeze bottles, and 1 gallon jugs.



### Specifications

No.4014 Formula 372E.

Application: compressed air and stable gases.

Sensitivity:  $1 \times 10^{-5}$  std. cc of air per sec.

Temperature Range: +35°F to +160°F.

| AVAILABLE SIZES |           |
|-----------------|-----------|
| PART NO.        | CONTAINER |
| 4014            | 4 OZ      |
| 4014-8OZ        | 8 OZ      |
| 4014-G          | GALLON    |

### Specifications

No.4015 Formula 372G.

Application: Refrigerants, low temp.

Sensitivity:  $1 \times 10^{-4}$  std. cc of air per sec.

Temperature Range: -35°F to +180°F.

| AVAILABLE SIZES |           |
|-----------------|-----------|
| PART NO.        | CONTAINER |
| 4015            | 4 OZ      |
| 4015-8OZ        | 8 OZ      |
| 4015-G          | GALLON    |

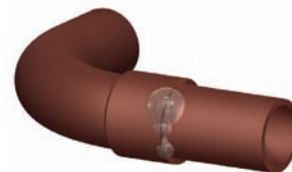
OTHER SIZES AVAILABLE AND SPECIAL FORMULAS AVAILABLE.



**THREAD CONNECTIONS**



**MACHINE SURFACE CONNECTIONS**



**SOLDERED OR WELDED CONNECTIONS**

# ASK FOR OUR VOCATIONAL TRAINING UNITS CATALOG!

PROVIDING DEDICATED AND HIGH QUALITY EDUCATIONAL TOOLS FOR TOMORROW'S HVAC/R INDUSTRY.

## AUTOMOTIVE AIR-CONDITIONING



TU-103

## BASIC REFRIGERATION



TU-100

## TABLETOP HEAT PUMP TRAINER



TU-701

## GAS FIRED HEATING CONTROL BOARD



TU-502

# ASK FOR OUR VOCATIONAL TRAINING UNITS CATALOG!

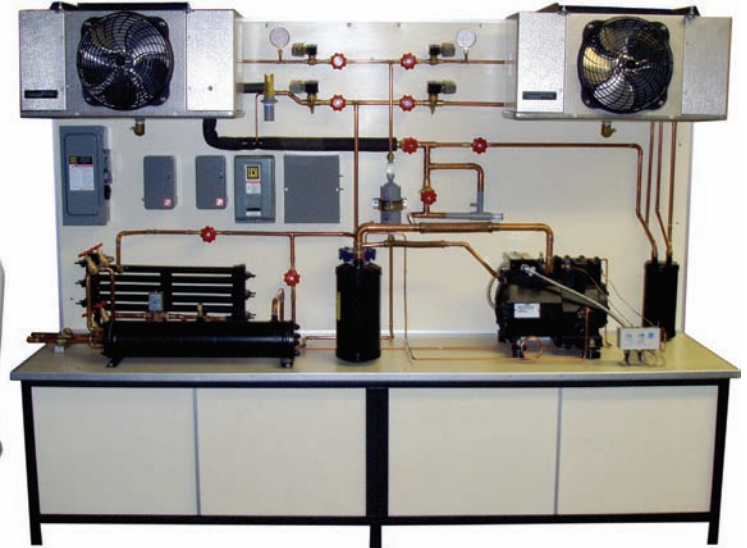
PROVIDING DEDICATED AND HIGH QUALITY EDUCATIONAL TOOLS FOR TOMORROW'S HVAC/R INDUSTRY.

## FUNDAMENTALS OF REFRIGERATION



TU-420

## INDUSTRIAL REFRIGERATION



TU-155

## RESIDENTIAL WIRING DEMONSTRATOR



TUE-200

## RESIDENTIAL AIR-CONDITIONING

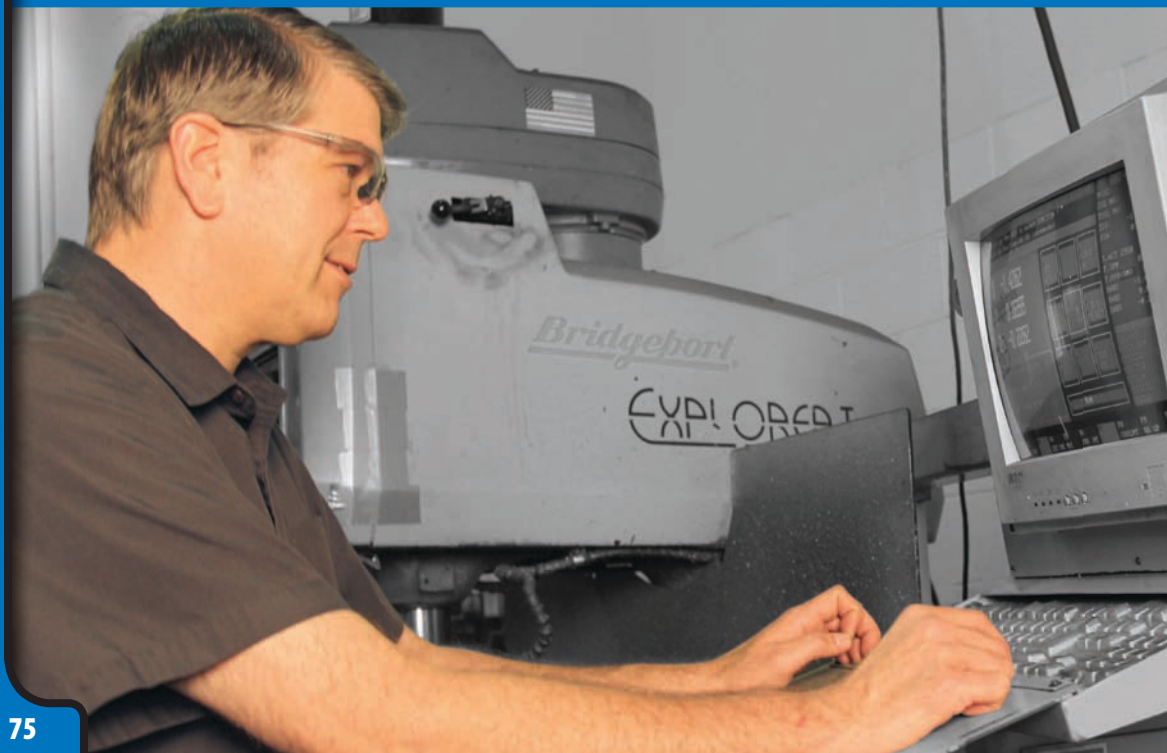


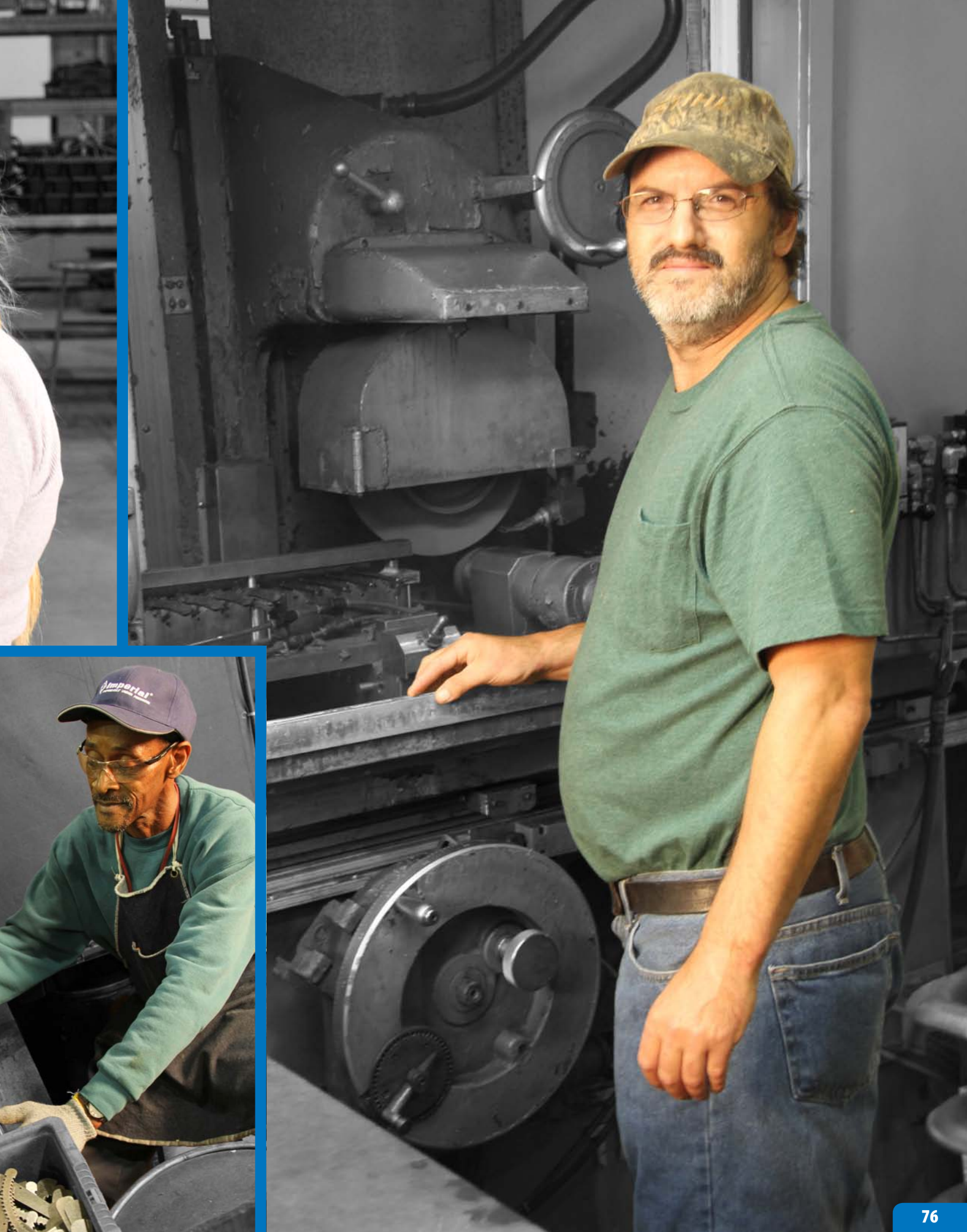
TU-206



TU-206

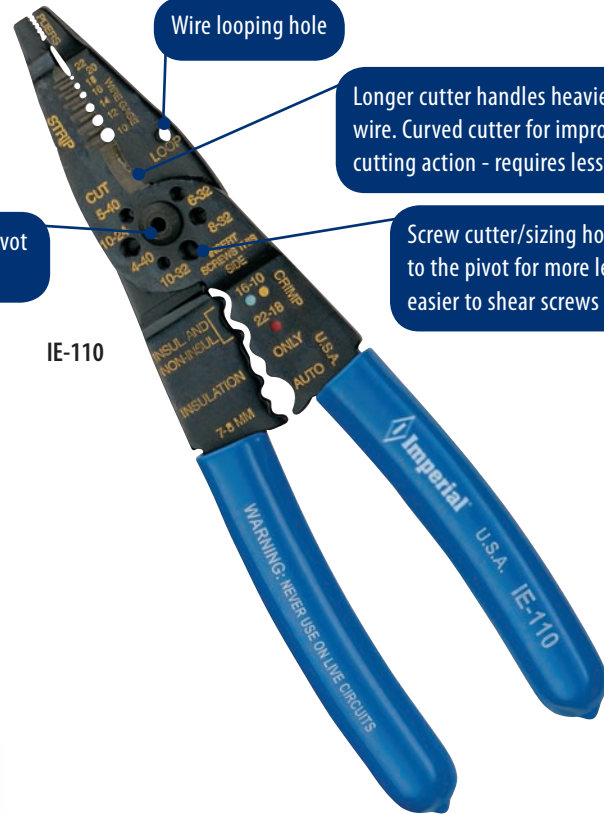
# ELECTRICAL TOOLS AND RETAINING RING PLIERS





# UPFRONT STRIPPERS-COMBINATION TOOLS

- Serrated pliers nose for pulling and looping wire.
- (6) upfront, precision-ground stripping stations for solid and stranded wire.
- Wire cutter.
- (6) screw sizing and cutting stations.
- Wire terminal and 7-8 mm automotive ignition crimp stations.
- Highly visible, easy-to-read graphics.
- Cushion grips.
- Available in AWG, metric or combination AWG/metric models.



IE-110

## 5-IN-1 COMBINATION TOOL

- IE-110**
- Strips: 22/20/18/16/14/12/10 AWG.
  - Crimps insulated and non-insulated: 22-18, 16-10 AWG; non-insulated: Auto 7 & 8 mm.
  - Screw cutter: 4-40 / 5-40 / 6-32 / 8-32 / 10-32 / 10-24.
  - Wire sizes, etc., are embossed in metal and paint-filled.
  - Air-pocket cushion grips.



IE-112



IE-114

Conforms to ASME Standard B107.500-2010

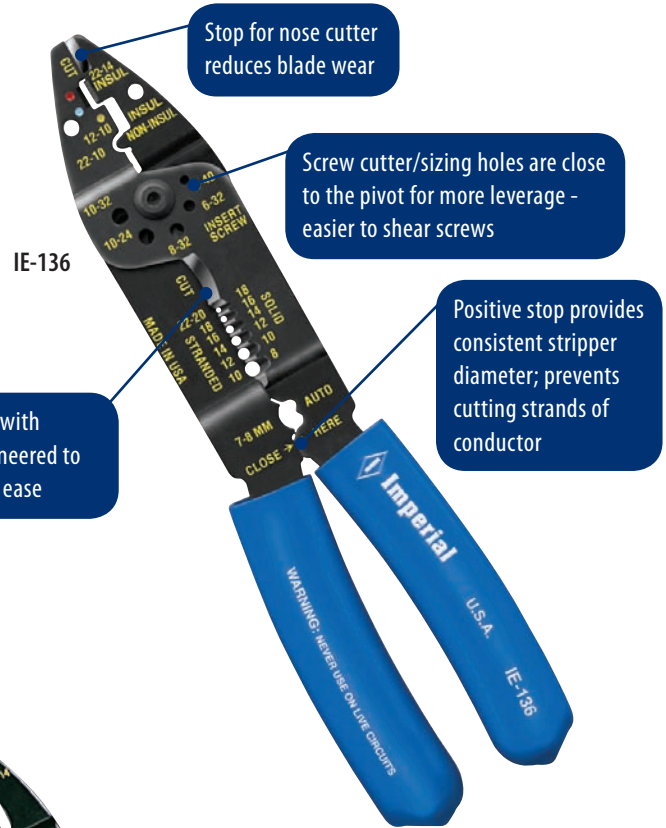
| PART NO. | DESCRIPTION              | STRIPPER SIZE (AWG)              | CUTTER TYPE | CRIMPS INSULATED (AWG) | CRIMPS NON - INSULATED (AWG)     | SCREW CUTTER                               | NOM. LENGTH (in.) |
|----------|--------------------------|----------------------------------|-------------|------------------------|----------------------------------|--|-------------------|
| IE-110   | Super 5-in-1 Combination | 10-22                            | Curved-long | 10-22                  | 10-22<br>7-8 mm Auto             | 4-40 / 5-40 / 6-32<br>8-32 / 10-32 / 10-24 | 8-1/4             |
| IE-112   | Combination Metric/AWG   | 10-20, 0.75-6.0 mm <sup>2</sup>  | Straight    | 10-22                  | 10-22<br>7-8 mm Auto             | 6-32 / 8-32 / 10-32<br>3.5/4.0/5.0 mm      | 9-1/2             |
| IE-114   | Metric                   | 0.75-6.0 mm <sup>2</sup> , 10-22 | Straight    | 1.5-6.0 mm<br>10-22    | 1.5-6.0 mm, 10-22<br>7-8 mm Auto | 2.5/3.0/3.5/4.0/<br>4.5/5.0 mm             | 8-1/4             |



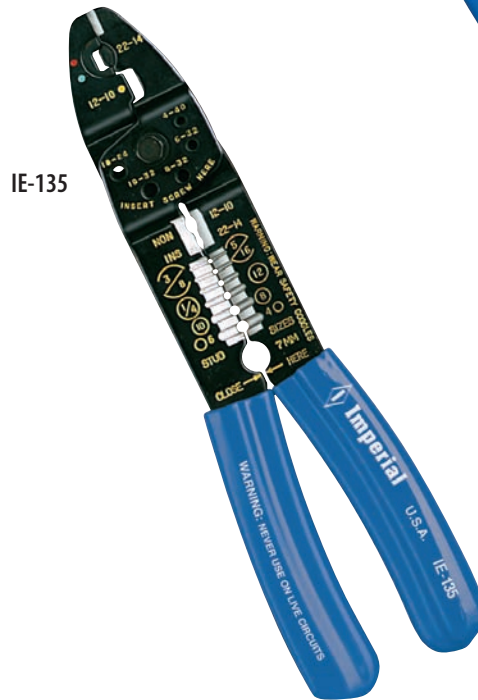
# UPFRONT CUTTERS/CRIMPERS

## UPFRONT CUTTER/CRIMPER/STRIPPER

- IE-136**
- Curved cutter reduces force required to cut; longer blade length capable of cutting NM-B cable in a single stroke.
  - Wire looping holes in jaw.
  - Screw cutter/sizing holes are moved closer to the pivot for more leverage, making it easier to shear screws.
  - Strips: 10-22 AWG.
  - Crimps: insulated 10-22 AWG.
  - Crimps: non-insulated 10-22 AWG, 7-8 mm Auto.
  - Screw cutter: 4-40 / 6-32 / 8-32 / 10-32 / 10-24.
  - Anvil-type wire cutter at nose of pliers.



- IE-135**
- Anvil-type wire cutter at nose of pliers.
  - Insulated and non-insulated crimp stations.
  - Screw sizing and cutting stations.
  - Precision-ground stripping stations.
  - Highly visible, easy-to-read graphics.
  - Cushion grips.



Conforms to ASME Standard B107.500-2010

| PART NO. | DESCRIPTION                          | STRIPPER SIZE (AWG)          | CUTTER TYPE          | CRIMPS INSULATED (AWG) | CRIMPS NON - INSULATED (AWG) | SCREW CUTTER                       | NOM. LENGTH (in.) |
|----------|--------------------------------------|------------------------------|----------------------|------------------------|------------------------------|------------------------------------|-------------------|
| IE-135   | Crimper/Cutter with 6 Strip Stations | 10-22                        | Anvil                | 10-22                  | 10-22, 7-8 mm Auto           | 4-40 / 6-32 / 8-32 / 10-32 / 10-24 | 8-3/4             |
| IE-136   | Upfront Cutter/Crimper Stripper      | 8-18 Solid<br>10-22 Stranded | Anvil<br>Curved-long | 10-22                  | 10-22, 7-8 mm Auto           | 4-40 / 6-32 / 8-32 / 10-32 / 10-24 | 8-1/2             |

# UPFRONT STRIPPERS/CUTTERS

## HEAVY-DUTY UPFRONT STRIPPERS & CUTTERS

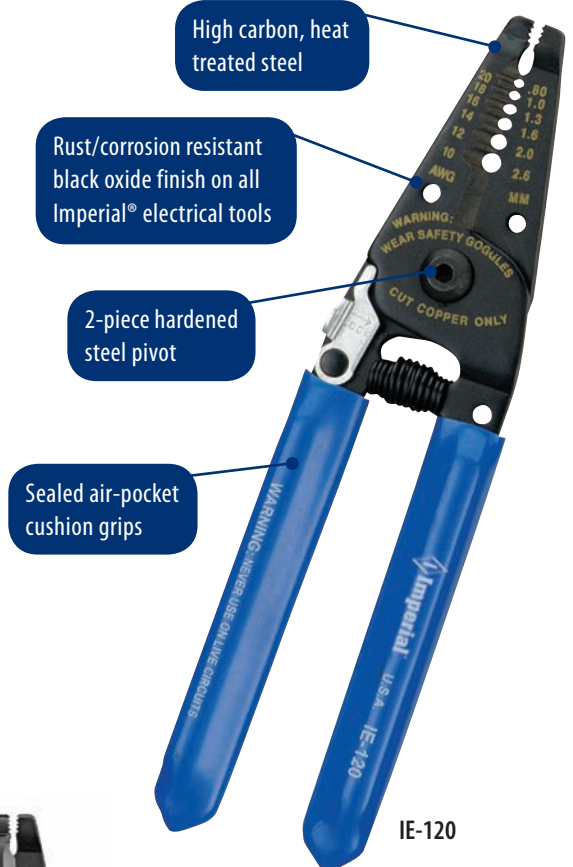
- Serrated pliers nose for pulling and working wire, small nuts, etc.
- AWG and metric wire sizes are embossed in steel and pad printed for high visibility.
- 2-piece hardened steel pivot for lifetime service.
- Lock to protect cutting and stripping edges when stored.
- Spring return to help speed work.
- Large air-pocket cushion grips for greater comfort.

**IE-120** Strips solid wire AWG gauges: 20/18/16/14/12/10 AWG; .8/1.0/1.3/1.6/2.0/2.6 mm.

**IE-125** Strips stranded wire AWG gauges: 26/24/22/20/16 AWG; .40/.50/.65/.80/1.0/1.3 mm.

**IE-130** Strips solid wire AWG gauges: 30/28/26/24/22 AWG; .25/.32/.40/.50/.65 mm.

**IE-132** Cutter for copper wire to 10 AWG and fine stranded cable.



| PART NO. | DESCRIPTION         | STRIPPER SIZE (AWG)          | CUTTER TYPE | NOM. LENGTH (in.) |
|----------|---------------------|------------------------------|-------------|-------------------|
| IE-120   | H-D Stripper/Cutter | 10-20 Solid<br>0.8-2.6 mm    | Scissors    | 6-1/4             |
| IE-125   | H-D Stripper/Cutter | 16-26 Stranded<br>0.4-1.3 mm | Scissors    | 6-1/4             |
| IE-130   | H-D Stripper/Cutter | 22-30 Solid<br>0.25-0.65 mm  | Scissors    | 6-1/4             |
| IE-132   | H-D Cutter          |                              | Scissors    | 6-1/4             |

Conforms to ASME Standard B107.500-2010

# UPFRONT STRIPPERS/CUTTERS

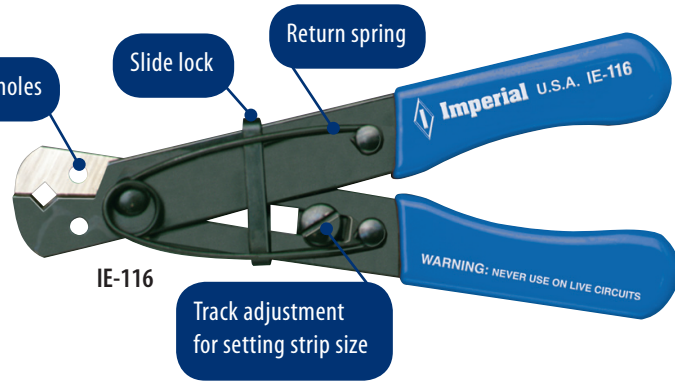
## "V" STRIPPERS

- Strips and cuts solid and stranded wire.
- Adjustable stripping station.
- Scissors-action cutter.
- Holes in jaw for looping wire.
- Cushion grips.
- Available with lock and return spring.



IE-115

Conforms to ASME Standard B107.500-2010



IE-116

| PART NO. | DESCRIPTION   | STRIPPER SIZE (AWG) | CUTTER TYPE | NOM. LENGTH (in.) |
|----------|---|---------------------|-------------|-------------------|
| IE-115   | Economy "V" Stripper<br>• Track adjustment for setting strip size   | 10-20               | Scissors    | 5                 |
| IE-116   | Standard "V" Stripper<br>• Track adjustment for setting strip size<br>• Automatic Return Spring<br>• Slide Lock | 10-20               | Scissors    | 5                 |

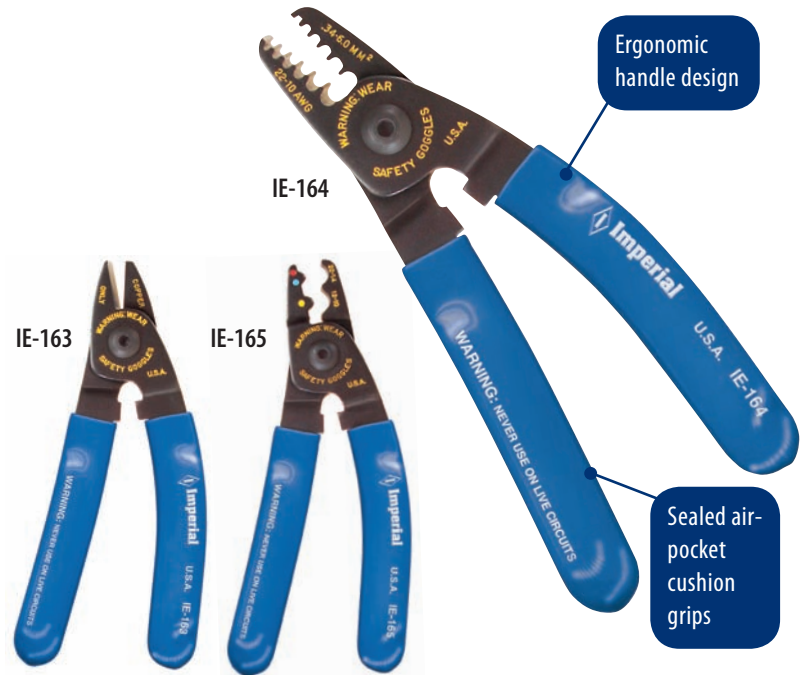
## MINI CUTTER, STRIPPER & CRIMPER FOR WORKING IN TIGHT SPACES

**IE-163 MINI CUTTER.** Hardened, precision-ground cutter for stranded and solid copper or aluminum wire. Ergonomic handles reduce operator fatigue. Sealed air-pocket cushion grips for maximum comfort.

**IE-164 MINI STRIPPER.** Precision-ground stripping stations produce clean, exacting results in tight spaces. Strips 8-18 AWG solid, 10-22 AWG stranded and 0.34 - 6.0 mm<sup>2</sup> wire. Ergonomic handles with sealed air-pocket cushion grips for maximum comfort.

**IE-165 MINI CRIMPER.** Precision-formed crimp pockets are guaranteed to be free of any sharp edges or burrs which could jeopardize a quality installation. Crimps insulated and non-insulated 10-22 AWG. Ergonomic handles with sealed air-pocket cushion grips provide maximum comfort and reduce operator fatigue.

**IE-162 3-PC KIT.** Mini cutter, stripper and crimper in handy, reusable vinyl pouch. Everything you need for easy and stable cutting, stripping and crimping in tight places.



IE-163

IE-165

IE-164

| PART NO. | DESCRIPTION               | STRIPPER SIZE (AWG)  | CRIMPER (AWG) | CUTTER TYPE | NOM. LENGTH (in.) |
|----------|---------------------------|--|---------------|-------------|-------------------|
| IE-162   | 3 Pc. Kit-1 Each in Pouch | 8-18 Solid<br>10-22 Stranded<br>0.34 - 6.0 mm <sup>2</sup> | 10-22         | Scissors    |                   |
| IE-163   | Mini Cutter               |  |               | Scissors    | 5-1/2             |
| IE-164   | Mini Stripper             | 8-18 Solid<br>10-22 Stranded<br>0.34 - 6.0 mm <sup>2</sup> |               |             | 5-1/2             |
| IE-165   | Mini Crimper              |  | 10-22         |             | 5-1/2             |



IE-162

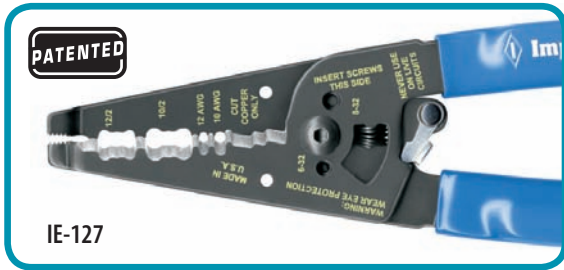
# NM-B CABLE STRIPPERS AND CUTTERS

## IE-123 12-2 / 14-2 DUAL NM-B CABLE STRIPPER

For 12-2 and 14-2 type NM-B cable. Patented precision-ground stripping stations. "Staggered" cutting blade produces a clean, sure cut with 30-50% less effort. Also features serrated pliers nose, wire looping holes, spring return, lock and 6-32 / 8-32 screw cutters. Tool markings have been redesigned to be easier to read and highly visible. Includes air-pocket cushion grips for comfort.



## IE-127 10-2/12-2 DUAL NM-B CABLE STRIPPER



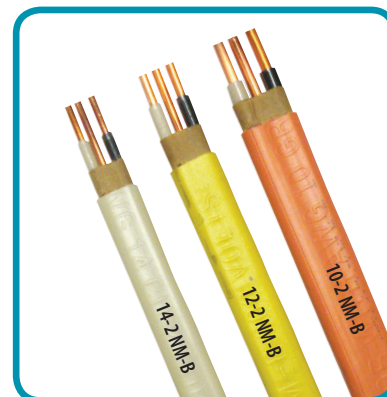
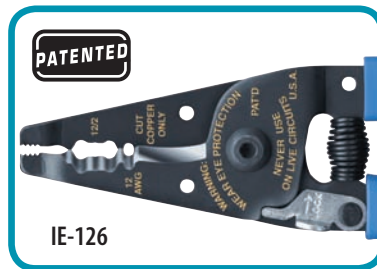
## IE-121 14-2 NM-B CABLE STRIPPER.

## IE-126 12-2 NM-B CABLE STRIPPER.

Cuts cable and removes outer sheath; strips 14 AWG (MODEL IE-121) or 12 AWG (MODEL IE-126) wire. Features pliers nose for pulling and working cable and small nuts. Precision-ground cutter and patented stripping stations, spring return, lock and air-pocket cushion grips for comfort.

## IE-124 10-2 NM-B CABLE STRIPPER.

For 10-2 type NM-B cable. Patented heavy duty stripper/cutter for removing outer jacket and stripping 10 AWG wires. Also features: pliers nose, large staggered cutter, wire looping holes, spring return, lock and 6-32 / 8-32 screw sizing/cutting stations.



| PART NO. | DESCRIPTION     | STRIPPER SIZE (AWG)         | CUTTER TYPE | SCREW CUTTER | NOM. LENGTH (in.) |
|----------|-----------------|-----------------------------|-------------|--------------|-------------------|
| IE-121   | 14-2 NM-B Cable | 14-2 NM-B, 14 AWG           | Curved      |              | 6-1/4             |
| IE-123   | Dual NM-B Cable | 12-2/14-2 NM-B<br>12-14 AWG | Staggered   | 6-32 / 8-32  | 7-3/4             |
| IE-124   | 10-2 NM-B Cable | 10-2 NM-B, 10 AWG           | Staggered   | 6-32 / 8-32  | 7-3/4             |
| IE-126   | 12-2 NM-B Cable | 12-2 NM-B, 12 AWG           | Curved      |              | 6-1/4             |
| IE-127   | Dual NM-B Cable | 10-2/12-2 NM-B<br>10-12 AWG | Staggered   | 6-32 / 8-32  | 7-3/4             |

# UNIVERSAL CONVERTIBLE RETAINING RING PLIERS

## EASY TO CONVERT FROM INTERNAL TO EXTERNAL RINGS – SIMPLY MOVE LEVERS TO SWITCH. NO PINS TO PUSH!

- Patented design allows for quick changeover.
- Replaceable tips held firmly in place by hex-shaped locking guides.
- Tough steel construction for durability and strength.
- Ergonomic anti-slip sealed air-pocket grips for comfort.
- Spring loaded to speed the work.
- Black oxide finish resists rust and corrosion.

### IR-92 FOR 1/8" TO 2" DIA. RINGS

Includes five pairs of color-coded precision-ground tips and hex key wrench in convenient storage pouch:

- (2) 0.038 in. Yellow Tips
- (2) 0.038 in. Yellow 90° Tips
- (2) 0.047 in. Green Tips
- (2) 0.047 in. Green 90° Tips
- (2) 0.070 in. Copper Tips

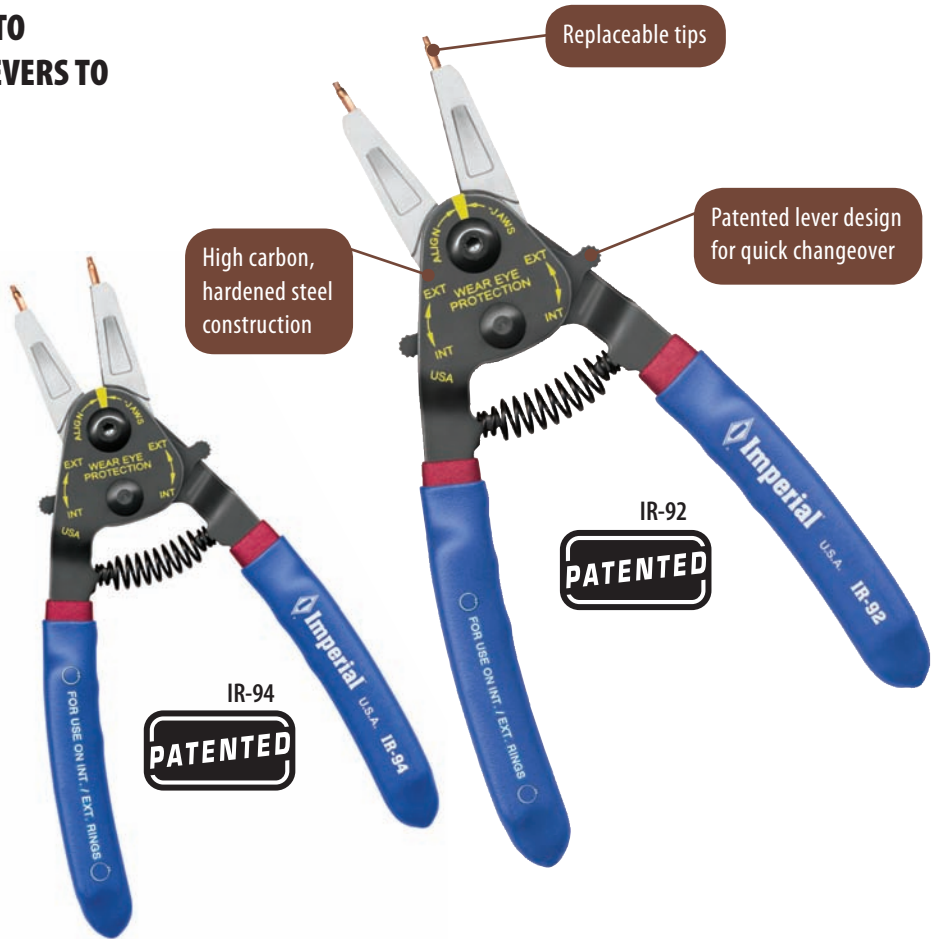
#### IR-92TP REPLACEMENT TIP KIT

### IR-94 FOR 1/8" TO 1" DIA. RINGS

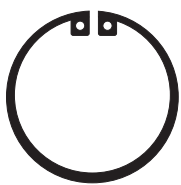
Includes five pairs of color-coded precision-ground tips and hex key wrench in convenient storage pouch:

- (2) 0.024 in. Red Tips
- (2) 0.038 in. Yellow Tips
- (2) 0.038 in. Yellow 90° Tips
- (2) 0.047 in. Green Tips
- (2) 0.047 in. Green 90° Tips

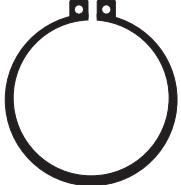
#### IR-94TP REPLACEMENT TIP KIT



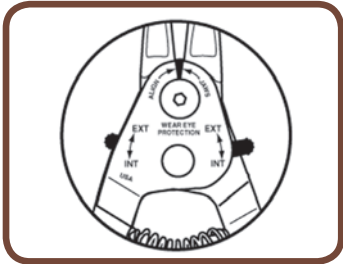
Conforms to ASME Standard B107.500-2010



**Internal (Housing)**  
3/8 in. – 2 in. (10 mm – 48 mm)



**External (Shaft)**  
1/8 in. – 2 in. (7 mm – 48 mm)



### Simple to Use

1. Determine the largest size of tip that will fit the retaining ring holes. Insert tips into pliers and tighten set screws with included 3/16 in. hex key wrench.
2. Convert pliers to internal or external position by gently squeezing grips and aligning edge of jaws with mark on pliers. Push both levers to desired setting. See diagram.
3. Use a punch or similar tool to break any bond created from rust or dirt that has accumulated in the retaining ring groove.
4. Push the tips of the pliers as far as possible into the retaining ring holes before squeezing the handles.
5. Use only as much pressure as needed to remove or install the retaining ring.

# SELLING AIDS

## TOOL CENTER SIGN

**TH-103**  
 • 7-1/2" H x 39" W vinyl.



## TOOL CENTER PLANOGRAM KITS

- 6" H x 24" W vinyl header sign.
- 24" H x 32" W 2-sided vinyl planogram template - front side is pre-printed with a suggested layout of best selling Imperial® HVAC and tube working tools. Use reverse side to create your own Imperial display.
- Hooks and re-order tags included.

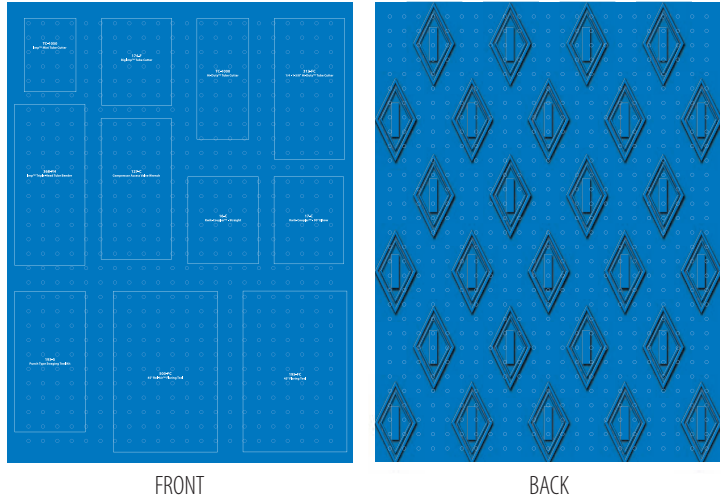
- TM400P** POP kit for pegboard - sheet, header, hooks and re-order tags.
- TM400S** POP kit for slatwall - sheet, header, hooks and re-order tags.
- TM500P** Includes TM400P kit and tools for the planogram layout (see chart below).
- TM500S** Includes TM400S kit and tools for the planogram layout (see chart below).

## TM500P AND TM500S KITS INCLUDE THESE TOOLS:

| PART NO.  | DESCRIPTION                      | QTY |
|-----------|----------------------------------|-----|
| TC-1000SP | Tube Cutter                      | 4   |
| TC-1050SP | Tube Cutter                      | 6   |
| 174-FSP   | Tube Cutter                      | 5   |
| 312-FCSP  | Tube Cutter                      | 4   |
| 195-FCSP  | 45° Flare Tool                   | 3   |
| 500-FCSP  | 45° Rol-Air™ Flare Tool          | 3   |
| 193-SSP   | Swage Punch Tool                 | 4   |
| 368-FH    | Triple Head Bender               | 3   |
| 127-C     | Ratchet Wrench                   | 6   |
| 16-C      | Kwik-Coupler™ Adapter - Straight | 6   |
| 17-C      | Kwik-Coupler™ Adapter - 90°      | 6   |



HEADER 6" H x 24" W



FRONT

BACK

## MANIFOLD, TUBE WORKING & SPECIALTY TOOLS POSTERS

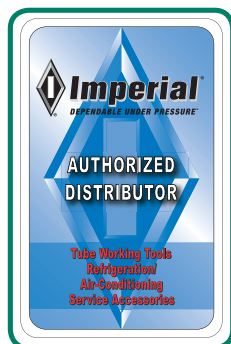
### LT POSTERSET

- Set of (3) posters.
- 23" W x 35-1/2" H.
- Great for stores and tech schools.



## "AUTHORIZED DISTRIBUTOR" VINYL STATIC LABEL

**LTWD1**  
 • 6" W x 9-1/2" H.  
 • Adheres to glass and smooth surfaces.



## BANNER

**LT100BNR**  
 • 2' H x 4' W vinyl with grommets for hanging.



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# NOTES

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