Imperial®

DEPENDABLE UNDER PRESSURE®

# Professional Tools

## HVACR Service | Tube Working | Specialty Pliers

MADE IN THE U.S.A.

1.888.610.7664 www.calcert.com sales@calcert.com

Imperial®
DEPENDABLE UNDER PRESSURE®

# Professional Tools

HVACR Service | Tube Working | Specialty Pliers

## Imperial is the flagship brand of Stride Tool, LLC headquartered in Glenwillow, Ohio.

Now in our 115th year, Imperial® specialty tools are designed and manufactured to exacting standards, and have earned an international reputation for quality and dependability. Imperial tools are used by professional tecÚicians in a wide range of service and industrial applications, including heating, air conditioning, refrigeration, tube working, electrical and automotive.

**1905** Imperial Brass Manufacturing Company, a pioneer in the manufacturing of brass valves and fittings, is founded in Chicago, Illinois.

**1995** The Milbar Corporation, a Chagrin Falls, Ohio specialty tool manufacturer, is acquired by Stride Tool. Milbar® brand safety wire twisters have been designed and manufactured in northeast Ohio for over 60 years.

**1996** Stride Tool acquires the tool and accessory division of Imperial Eastman (formerly Imperial Brass) located in Niles, Illinois. The Imperial brand name, with its legacy of innovation and excellence, expands to additional product lines under Stride Tool.

**2004** New corporate headquarters and centralized manufacturing facility opens in Glenwillow, Ohio.

**2012** Thermal Engineering Company of Mentor, Ohio, manufacturer of vacuum gauges, compressor tools, oil pumps, vacuum pumps and other HVACR service accessories for over 40 years, is acquired and joins the Imperial line.

**2013** Acquired Lakeland Products, Westlake, Ohio, a recognized leader in the fluid power tube fabricating industry.

**2016** Bright Solutions International of Troy, Michigan, a leading worldwide supplier of professional leak detection products, is acquired by Stride Tool.

**2019** Stride Tool is purchased by DiversiTech Corporation.

RSES® The HVACR Training Authority
HARDI PROUD MEMBER
STAFDA
HTI HAND TOOLS INSTITUTE TRUST AMERICAN HAND TOOLS
AHRI Air-Conditioning, Heating, and Refrigeration Institute

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# 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 grips tubing securely.

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.

**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.

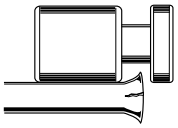
**S16003162** Replacement cutter wheel for soft copper & aluminum tubing is extra sharp to minimize burr buildup.

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

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

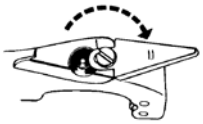
TC-1010

312-FC



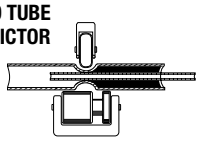
**FLARE CUT-OFF GROOVE**
Groove in rollers reduces tube loss when cracked flare is removed.

**FOLDAWAY REAMER**
Hardened steel reamer with turned cutting edge removes inside burrs cleanly. Filing surface removes outside burrs



**SPARE CUTTING WHEEL**
Spare cutter wheel carried under foldaway locking reamer

**TC-1020 TUBE CONSTRICTOR**



**FILL WITH SOLDER**
Joint is ready for sweating when constricted tube contacts smaller tube. Can be used for crimping applications.

## 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

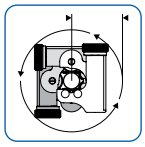
## "IMP"® MINI TUBE CUTTERS

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

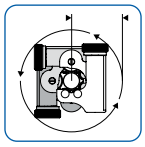
- Big capacity, small size tube cutters designed for use in tight quarters where other cutters won't fit.
- Enclosed feed screw minimizes contamination assuring continued smooth operation.
- Corrosion-resistant steel rollers positioned at bottom of cutter allow for easier cutter engagement on tubing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

**TC-1050**

**TC-2050**



Swing Radius
1-1/4"



Swing Radius
1-11/16"

**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.

**S75015** General purpose cutter wheel.

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

**TC-1050RH**

## RATCHETING TUBE CUTTER

**For 1/8" to 5/8" O.D. tubing.**

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

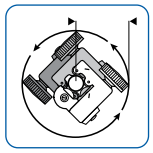
**TC-1050RH** For 1/8" to 5/8" (4 mm to 15 mm) O.D. tubing. 2-Pc. set includes TC-1050 "IMP"® mini tube cutter and ratcheting handle in clamshell packaging. Length 5". Wt. 6.0 oz.

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

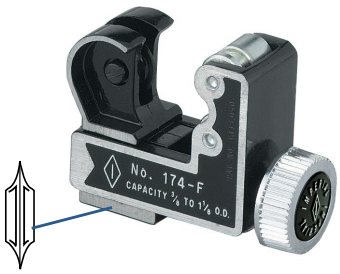
## BIG "IMP"® TUBE CUTTER - "Big capacity in small size"

**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.



Swing Radius
1-15/16"




**S75015 - Spare cutting wheel**

# METAL TUBING

## ADJUST-O-MATIC™ TUBE CUTTERS

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

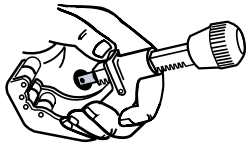
- Ratchet feed mechanism speeds up cutting operation.
- Extra wide rollers with flare cut-off groove stabilize tubing.
- Spare cutting wheel included under handle cap.
- Enclosed screw-type feed mechanism; lightweight aluminum alloy body.

**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.

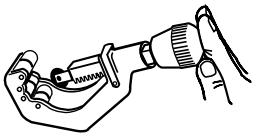
**406-FA** For 2" to 4-1/8" (51 mm to 104 mm) O.D. tubing. Includes (2) S74833 general purpose cutter wheels. Length closed 11-1/4". Wt. 3.5 lbs.

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

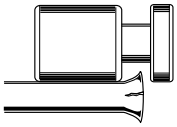
206-FB 406-FA



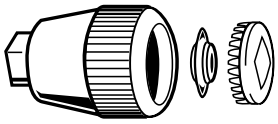
**RATCHET FEED**
Ratchet release opens cutter instantly to maximum size.



**RATCHET FEED**
Push on handle to slide cutter wheel to tubing. Rotate handle for fine adjustment.



**FLARE CUT-OFF GROOVE**
Wide flare cut-off groove in rollers to accommodate flares on large size tubing.



**SPARE CUTTING WHEEL**
Spare cutter wheel included in handle under snap-off cap.

# 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.

**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.

307-FP Pop-up Display

307-FP

327-FP

# TUBE BENDERS

## SPRING TYPE TUBE BENDERS

**For 1/4" to 7/8" O.D. soft copper and aluminum 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.

# MICRO TUBE BENDER

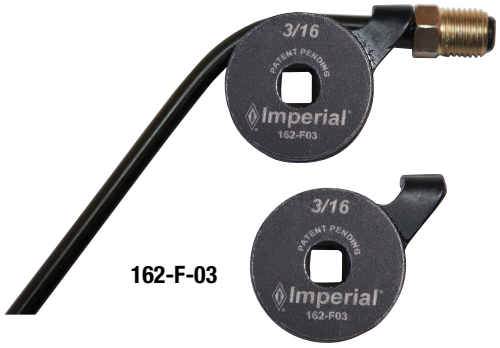
## MICRO BENDER

**For 3/16" and 1/4" O.D. Soft Copper and Aluminum Tubing**

- Low profile for tight access, inline bends
- Handle-free
- Use 1/4" ratchet to drive
- Patent pending

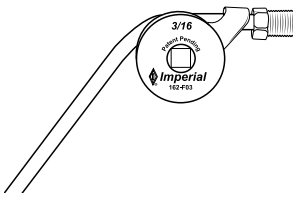
**162-F** Micro bender for 3/16" and 1/4" O.D. soft copper and aluminum tubing.

| PART NO. | TUBE O.D. (in.) | DIMENSIONS (in.) | WEIGHT EACH (lbs.) |
|---|---|---|---|
| 162-F-03 | 3/16 | 1.25 x 1.4 x 0.56 | 0.12 |
| 162-F-04 | 1/4 | 1.5" x 1.6 x 0.57" | 0.17 |

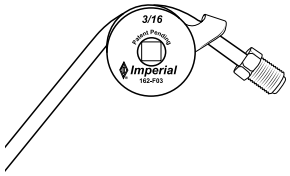



162-F-03

162-F-04




Use 1/4" ratchet to drive



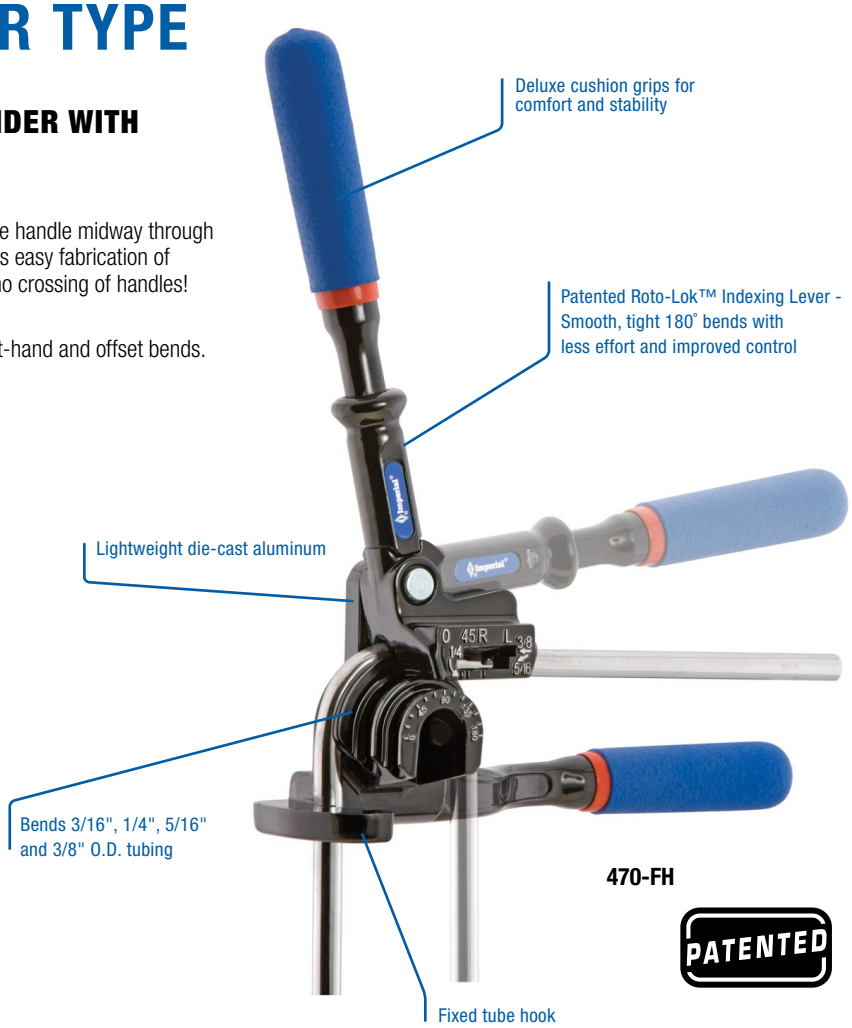

For bends greater than 45° you may need to reposition bender as shown.

# 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.

| 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 |

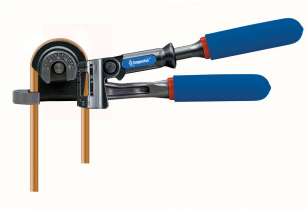



470-FH

PATENTED

Bend to 90°

Move handle to start second bend



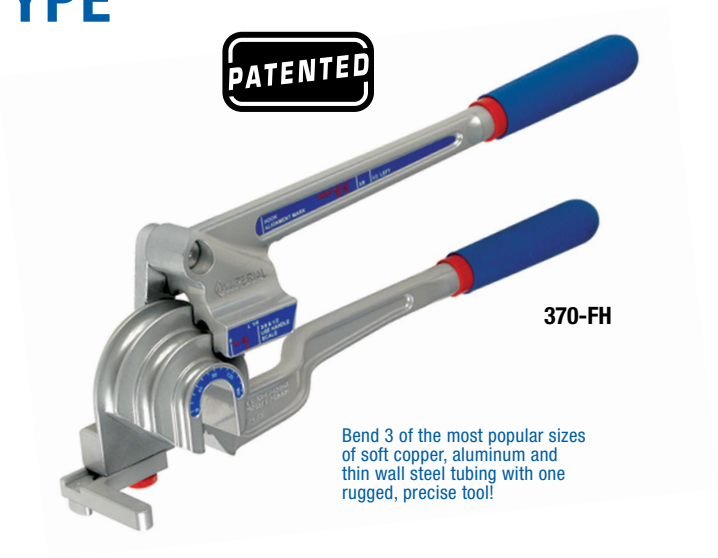
Lower handle to complete bend

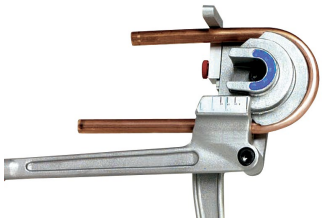
# TRIPLE HEAD LEVER TYPE

## 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.

| 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 |



Easy 180° bends in one swift motion

## IMP™ TRIPLE HEAD BENDERS

- Bends soft copper, aluminum and thin wall steel tubing.
- Bends 1/8", 3/16", 1/4", 5/16", and 3/8" tubing.
- Makes smooth, tight-radius 90° bends.
- Calibrated markings – for making accurate left-hand, right-hand and offset bends.
- 90° start requires less effort – making bending fast and easy.
- Made of lightweight die-cast aluminum

**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

368-FH

**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 |

# LEVER TYPE

## 364-FHA LEVER TYPE TUBE BENDERS

**For 1/8" to 3/4" 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-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 |

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.

### METRIC SIZE BENDING TOOLS

| PART NO. | TUBE O.D. (mm) | RADIUS TO CENTER OF TUBE (mm) | (in.) | WEIGHT EACH (kg.) | (lbs.) |
|---|---|---|---|---|---|
| 364-FHAM-6MM | 6 | 14.2 | 9/16 | 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-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.

### METRIC SIZE BENDING TOOLS

| PART NO. | TUBE O.D. (mm) | RADIUS TO CENTER OF TUBE (mm) | (in.) | WEIGHT EACH (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-12MM | 12 | 38.1 | 1-1/2 | 1.6 | 3.5 |

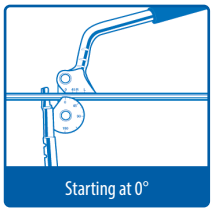
Each tool bends only one size.

**364-FHA-06**
Style for 1/4" through 1/2" and 6 mm to 12 mm O.D. tubing.

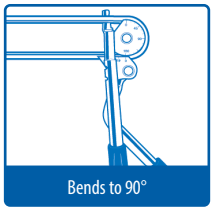
**364-FH-02**
Style for 1/8" and 3/16" O.D. tubing.

**364-FHA-10**
Style for 5/8" and 3/4" O.D. tubing.

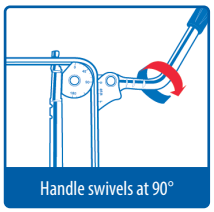
**364-FHB-06**
Style for 1/4" through 1/2" and 6 mm to 12 mm O.D. tubing.



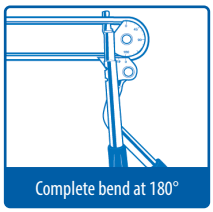
Starting at 0°



Bends to 90°



Handle swivels at 90°



Complete bend at 180°

# HEAVY DUTY LEVER TYPE

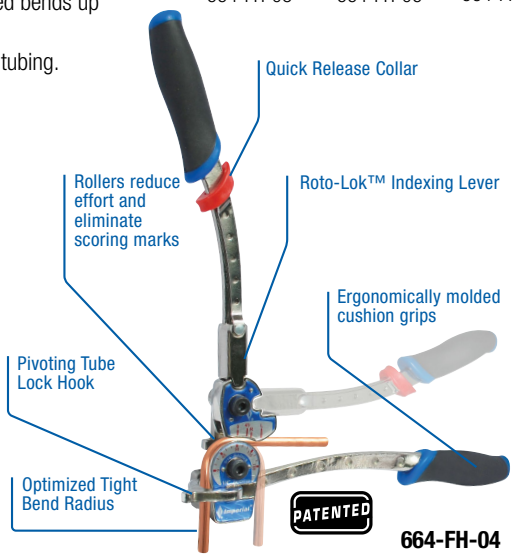
664-FH-08 664-FH-06 664-FH-04

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

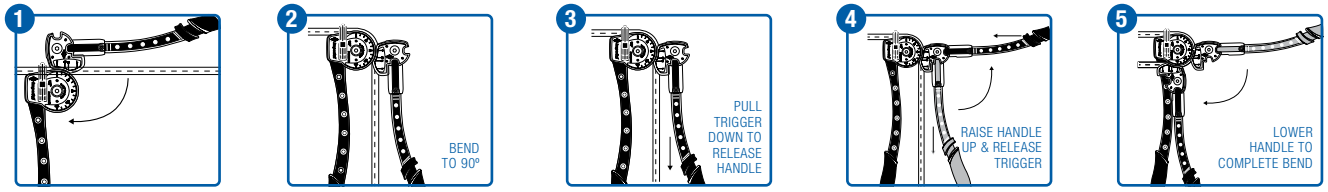
**For 1/4" to 1/2" and 6 mm to 12 mm O.D. tubing.**

- 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 180º 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.

| 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 |




664-FH-04

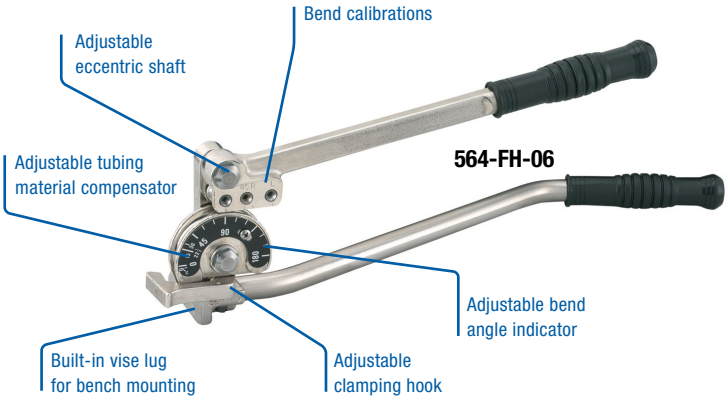



## 564-FH LEVER TYPE HEAVY-DUTY TUBE BENDER

**For 3/8" and 1/2" O.D. tubing.**

This heavy-duty tube bender features 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.
- 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-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.

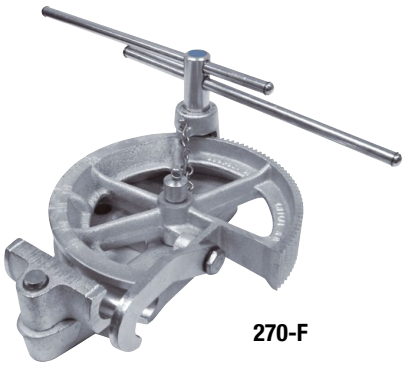
For aircraft grade stainless steel (MIL-T-6845) and all other metal tubing of bending temper.

# GEAR TYPE

## 270-F GEAR TYPE TUBE BENDER

**For 3/4" 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 clamped in vise or bolted to bench.



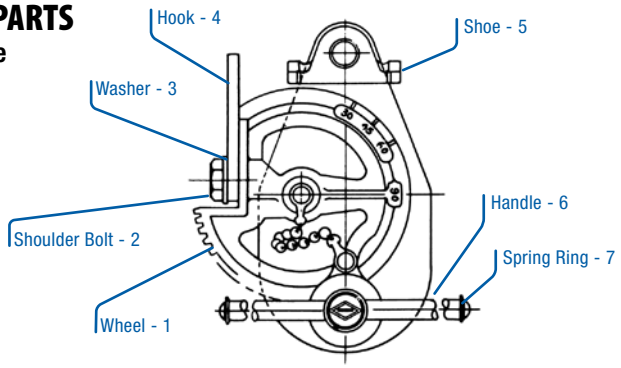
270-F

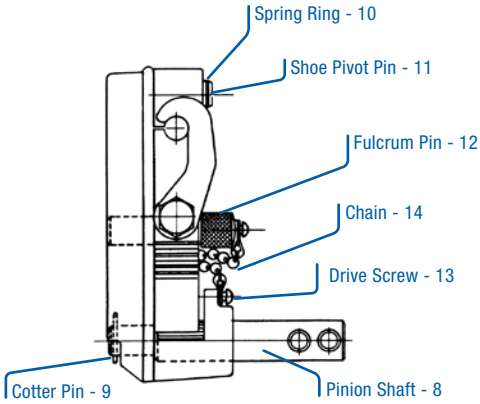
| PART NO. | TUBE O.D. (in.) | RADIUS TO CENTER OF TUBE (in.) | MIN. RETURN FROM CENTER TO CENTER OF TUBE (in.) | WEIGHT EACH (lbs.) | WALL THICKNESS (in.) |
|---|---|---|---|---|---|
| 270-F-12 | 3/4 | 4 | 9-1/2 | 15 | .042 to .083 |
| 270-F-14 | 7/8 | 4 | 9-1/2 | 14.75 | .042 to .083 |
| 270-F-16 | 1 | 4 | 9-1/2 | 14.75 | .065 to .095* |
| 270-F-18 | 1-1/8 | 4 | 9-1/2 | 14.75 | .065 to .095* |

Each tool bends only one size.
* 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**



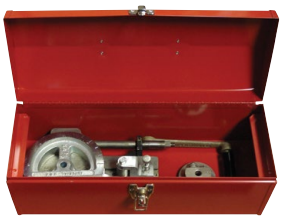




| TUBE BENDER | SIZE (in.) | PART NO. 1 | PART NO. 2 | PART NO. 3 | PART NO. 4 | PART NO. 5 | PART NO. 6 | PART NO. 7 | PART NO. 8 | PART NO. 9 | PART NO. 10 | PART NO. 11 | PART NO. 12 | PART NO. 13 | PART NO. 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 270-F-12 | 3/4 | S62305 | S62294 | S62298 | S62307 | S62306 | S62292 | S62297 | S62291 | S62255 | S62296 | S62295 | S62835 | S62836 | S62837 |
| 270-F-14 | 7/8 | S62302 | S62294 | S62298 | S62304 | S62303 | S62292 | S62297 | S62291 | S62255 | S62296 | S62295 | S62835 | S62836 | S62837 |
| 270-F-16 | 1 | S62299 | S62294 | S62298 | S62301 | S62300 | S62292 | S62297 | S62291 | S62255 | S62296 | S62295 | S62835 | S62836 | S62837 |
| 270-F-18 | 1-1/8 | S62287 | S62294 | S62298 | S62290 | S62289 | S62292 | S62297 | S62291 | S62255 | S62296 | S62295 | S62835 | S62836 | S62837 |

## WORM GEAR TUBE BENDER

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

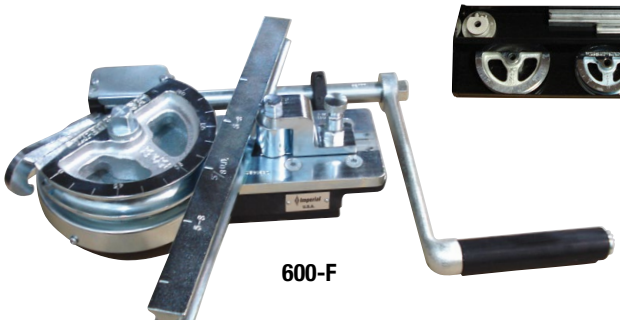
**600-F** Precision tool for highest quality work. 50-to-1 gear ratio and crank with revolving hand grip keeps effort at a minimum. Follow bar eliminates drawing action and keeps tube in virtually perfect round. Adjustable pressure roller positions quickly in index holes. Enclosed gears. Includes metal 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.



### 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.

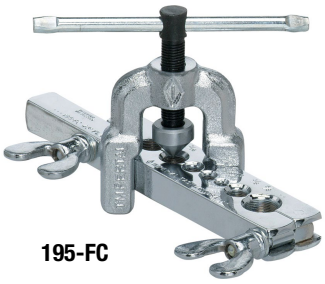


600-F

# 45° FLARING TOOLS

## 45° FLARING TOOL

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



195-FC

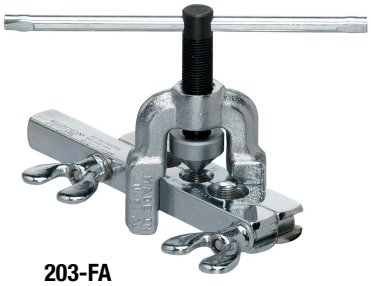
**195-FC** Flares 7 sizes of tubing. Rugged forged steel slip-on yoke and hardened flaring bar. Positive clamping action of bars prevents tube slippage. Self-centering yoke with swivel-type, hardened steel, chrome finished flaring cone forms better flares with less effort. Design of yoke permits flaring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

| 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 |

## 45° LARGE SIZE FLARING TOOL

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.



203-FA

**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.

| 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 |

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.

## 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. 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.

| 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 |

300-FB

# 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.**

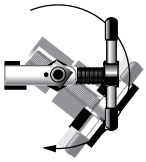
**500-FC** Faceted, hardened steel, chrome finished cone rolls out perfect 45° flares above die block, and automatically burnishes flare face reducing the need for deburring. Original wall thickness is maintained at base of flare. Slip-on yoke permits use in tight quarters, where there is little space 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

WORKS WITH R-410A

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.

# 45° ROL-AIR™ FLARING TOOLS

## "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.**

WORKS WITH R-410A

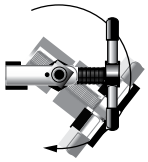
525-F

**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.

| 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 |

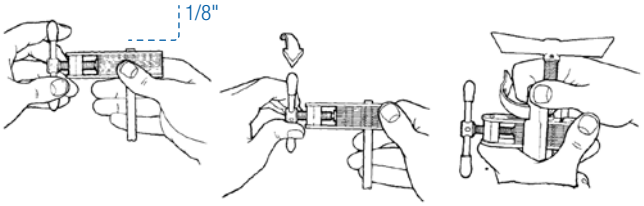
| Outside Tube Diameter (mm) | 4.75 | 6 | 8 | 10 | 12 | 15 | 16 |
|---|---|---|---|---|---|---|---|
| Wall Thickness (mm) | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |

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.

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

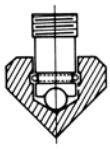
## 45° DOUBLE FLARING TOOL

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

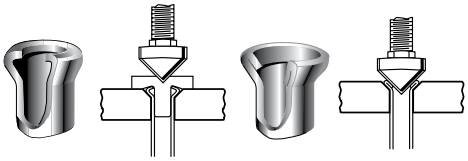
**93-FB** Recommended for Bundy and other annealed soft steel tubing (wall thickness to .035"). Also makes single or double flares in soft copper or aluminum tubing. Small, lightweight, easy to handle. Steel yoke; swivel-type hardened steel, chrome finished flaring cone. Bar provides positive grip of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

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

93-FB



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



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

# 37° FLARING TOOLS

437-FB

## 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. 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 |

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.

## 37° ROL-AIR™ FLARING TOOL

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

507-FB

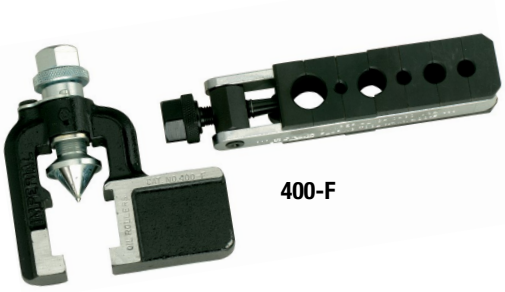
**507-FB** For use with soft copper, aluminum and brass tubing. Faceted, hardened steel chrome finished cone rolls out perfect 37° flares above die block - then automatically burnishes flare face. Original wall thickness is maintained at base of flare. Slip-on yoke permits use in tight quarters where 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 | .049 |

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

## 37° ROL-AIR™ FLARING TOOLS

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


400-F

**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.

| 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 |

402-FA

Feed release and burnishing mechanism. Flare control gauge.

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

Feed screw controls depth of reaming.

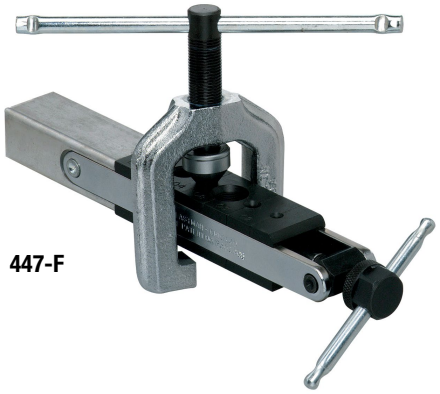
# 37° FLARING TOOLS

## 37° HEAVY-DUTY FLARING TOOL

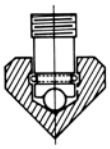
**For 1/8", 3/16", 1/4", 5/16", 3/8" and 1/2" O.D. tubing.**

**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 | 15/16 | 3/8 | 1/2 |
|---|---|---|---|---|---|---|
| Wall Thickness (in.) | .032 | .032 | .035 | .049 | .049 | .049 |



447-F



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

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

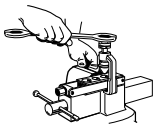
**For 3/4", 7/8", 1" and 1-1/4" O.D. tubing.**

**537-F** 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. Wt. 13.0 lbs.

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

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

537-F



Vise clamp extension.

Flares rolled out above die bar.

Feed release and burnishing mechanism.

# 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.**

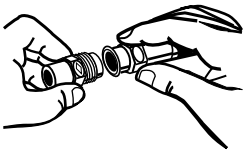
**555-FS** Flares and swages 6 sizes of soft copper, aluminum or brass tubing. Makes both 45° and 37° single flares. Fast cam lever operation. Portable. Can be clamped in vise or bolted to bench. Change sizes quickly. Built in gauge for accurate flare size or swage depth. Unique jaws provide a positive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

**Replacement parts:**

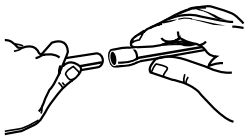
| | | | |
|---|---|---|---|
| **560-S-03** | 3/16" Swaging adapter. | **560-S-10** | 5/8" Swaging adapter. |
| **560-S-04** | 1/4" Swaging adapter. | **S70348** | 45° Flaring cone. |
| **560-S-05** | 5/16" Swaging adapter. | **S70349** | 37° Flaring cone. |
| **560-S-06** | 3/8" Swaging adapter. | **S8711201**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

**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 |



Makes 45° & 37° flares.



Swages 6 sizes.

## 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" 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-05** Adapter 5/16".
**278-FS-08** Adapter 1/2".
**278-FS-10** Adapter 5/8".
**278-FS-12** Adapter 3/4".
**S38600** Flaring Cone.

| 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 |

**275-FS**

## 45° FLARING, DOUBLE FLARING & SWAGING TOOL

**For 1/8" to 3/4" O.D. tubing.**

**275-FSD** Same as 275-FS with the addition of 5 double flaring adapters (3/16", 1/4", 5/16", 3/8", 1/2" O.D.).

## 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

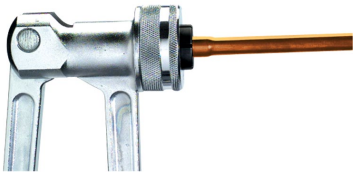
**275-FSCD** Kit contains 275-FS, TC-1000, and double flaring adapters for 3/16", 1/4", 5/16", 3/8" and 1/2" O.D. tubing. Includes tool case.

# FLARING & SWAGING TOOLS

## 175-EX XPANDR™ 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



| 175-EX KIT INCLUDES | |
|---|---|
| 175EXP<br>175EXC | XpandR™ Pliers<br>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.

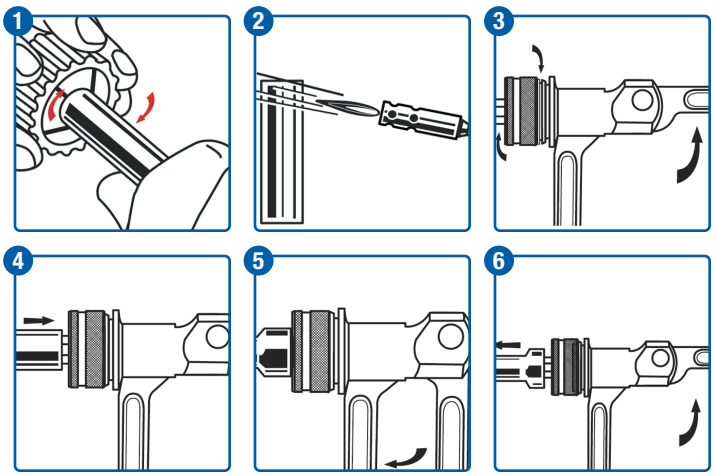
| ADDITIONAL HEAD SIZES AVAILABLE | |
|---|---|
| 175EX16 | 1" head |
| 175EX18 | 1-1/8" head |
| 175EX22 | 1-3/8" head |
| 175EX26 | 1-5/8" head |

### 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.

### 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.



# 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.

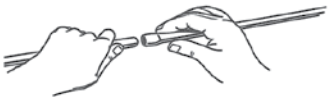
**195-SA** Vise-mountable flaring bar and 4 swaging punches for 1/4", 3/8", 1/2" and 5/8" O.D. tubing. Includes tool case. Wt. 2.0 lbs.

**S75531** Flaring bar only. Wt. 1.0 lb.

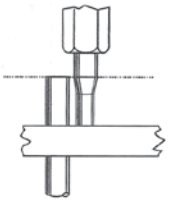
94-SSP

193-S

195-SA



Enlarge end of tube, insert another tube, solder like a sweat fitting.



Tube height gauged by placing tubing even with bevel on swaging punch.

### 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-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 |

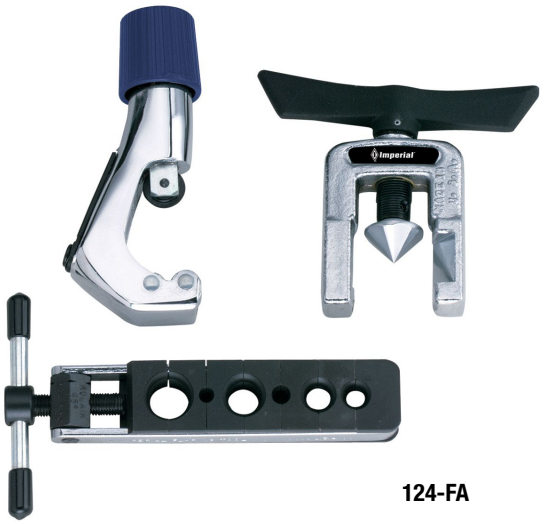
95-S

# 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 |




124-FA

120-F

1226-FA

# 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 | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | COPPER | | | | | | | | | | | | | | |
| | | | | | TYPE K | | | TYPE L | | | | | | | | | | |
| TOOL | PART NO. | PAGE NO. | SIZE RANGE TUBE O.D. (in.) | ANNEALED GENERAL PURPOSE | SOFT | BENDING TEMPER (HARD) | HARD | SOFT | BENDING TEMPER (HARD) | HARD | TYPE M | 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 | 2 | 1/8 - 1-1/8 | • | • | • | • | • | • | • | • | • | • | • | • | (1) | (1) | (1) |
| Metal Tubing | TC-1050 | 3 | 1/8 - 5/8 | • | • | • | • | • | • | • | • | • | • | • | • | | | |
| | TC-2050 | 3 | 3/16 - 7/8 | • | • | • | • | • | • | • | • | • | • | • | • | (1) | (1) | (1) |
| | 174-F | 3 | 3/8 - 1-1/8 | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| | 206-FB | 4 | 3/8 - 2-5/8 | • | • | • | • | • | • | • | • | • | • | • | • | | | |
| | 227-FA | 2 | 1/8 - 3/4 | • | • | • | • | • | • | • | • | • | • | • | • | (1) | (1) | (1) |
| | 312-FC | 2 | 1/4 - 1-5/8 | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| | 406-FA | 4 | 2 - 4-1/8 | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| Thermoplastic Rubber Hose | 307-FP | 4 | 1/16 - 1/2 (4) | | | | | | | | | | | | | | | |
| | 327-FP | 4 | 1/8 - 13/16 (4) | | | | | | | | | | | | | | | |
| Bending Tools | 101-F | 5 | 1/4 - 5/8 | • | • | • | | • | • | | | • | • | | | | | |
| | 102-F | 5 | 1/4 - 7/8 | • | • | • | | • | • | | | • | • | | | | | |
| | 112-F | 5 | 1/4 - 3/8 | • | • | • | | • | • | | | • | • | | | | | |
| | 162-F | 5 | 3/16 - 1/4 | • | • | | | | | | | • | | | | | | |
| | 163-F | 5 | 1/4 - 5/8 | • | • | • | | • | • | | | • | • | | | | | |
| | 201-F | 5 | 1/4 - 7/8 | • | • | • | | • | • | | | • | • | | | | | |
| | 270-F | 10 | 3/4 - 1-1/8 | • | • | • | • | • | • | • | | • | • | • | • | • | • | • |
| | 364-FH | 8 | 1/8 - 3/16 | • | • | | | • | | | | • | • | • | • | • | | |
| | 364-FHA | 8 | 1/4 - 3/4 (3) | • | • | | | • | | | | • | • | • | • | • | | |
| | 364-FHAM | 8 | 6 - 12 mm | • | • | | | • | | | | • | • | • | • | • | | |
| | 364-FHB | 8 | 1/4 - 1/2 | • | • | | | • | | | | • | • | • | • | • | | |
| | 364-FHBM | 8 | 6 - 12 mm | • | • | | | • | | | | • | • | • | • | • | | |
| | 367-FH | 7 | 1/8, 3/16, 1/4 | • | • | | | • | | | | • | • | • | • | | | |
| | 368-FH | 7 | 3/16, 1/4, 5/16, 3/8 | • | • | | | • | | | | • | • | • | • | | | |
| | 370-FH | 7 | 3/16, 1/4, 3/8, 1/2 | • | • | | | • | | | | • | • | • | | | | |
| | 470-FH | 6 | 3/16, 1/4, 5/16, 3/8 | • | • | | | • | | | | • | • | • | | | | |
| | 564-FH | 9 | 3/8, 1/2 | • | • | • | | • | • | • | | • | • | • | • | • | • | • |
| | 600-F | 10 | 1/4 - 3/4 | • | • | | | • | | | | • | • | • | • | • | • | • |
| | 664-FH | 9 | 1/4, 3/8, 1/2 | • | • | | | • | | | | • | • | • | • | • | • | • |
| | 664-FH (Metric) | 9 | 6 - 12 mm | • | • | | | • | | | | • | • | • | • | • | • | • |
| 37˚ Flaring Tool | 400-F | 13 | 3/16 - 5/8 | • | • | • | | • | • | | (2) | • | • | • | • | • | • | • |
| | 437-FB | 13 | 3/16 - 5/8 | • | • | • | | • | • | | (2) | • | • | | | | | |
| | 447-F | 14 | 1/8 - 1/2 | • | • | • | | • | • | | (2) | • | • | • | • | • | • | • |
| | 507-FB | 13 | 3/16 - 5/8 | • | • | • | | • | • | | (2) | • | • | | | | | |
| | 555-FS | 15 | 3/16 - 5/8 | • | • | • | | • | • | | (2) | • | • | | | | | |
| | 537-F | 14 | 3/4 - 1-1/4 | • | • | • | | • | • | | (2) | • | • | • | • | • | • | • |
| | 2000-FS | 20 | 1/8 - 3/4 | • | • | • | | • | • | | (2) | • | • | • | • | • | • | • |
| 45˚ Flaring Tool | 195-FC | 11 | 3/16 - 5/8 | • | • | • | | • | • | | (2) | • | • | | | | | |
| | 203-FA | 11 | 5/8 - 1-1/8 | • | • | • | | • | • | | (2) | • | • | | | | | |
| | 275-FS | 16 | 1/8 - 3/4 | • | • | • | | • | • | | (2) | • | • | | | | | |
| | 300-FB | 11 | 3/16 - 5/8 | • | • | • | | • | • | | (2) | • | • | | | | | |
| | 375-FS | 11 | 1/8 - 3/4 | • | • | • | | • | • | | (2) | • | • | | | | | |
| | 500-FC | 11 | 3/16 - 5/8 | • | • | • | | • | • | | (2) | • | • | | | | | |
| | 525-F | 12 | 3/16 - 5/8<br>4. 75 - 16 mm | • | • | • | | • | • | | (2) | • | • | | | | | |
| | 555-FS | 15 | 3/16 - 5/8 | • | • | • | | • | • | | (2) | • | • | | | | | |
| | 2000-FS | 20 | 1/8 - 3/4 | • | • | • | | • | • | | (2) | • | • | • | • | • | • | • |
| 45˚ Double Flaring Tools | 93-FB | 12 | 3/16 - 1/2 | • | | | | • | | | | • | • | • | • | | | |
| | 2000-FS | 20 | 3/16 - 3/4 | • | | | | • | | | | • | • | • | • | | | |
| Reaming and Deburring Tools | 208-F | 23 | 3/16 - 1-1/2 | • | • | • | • | • | • | • | • | • | • | | | | | |
| | 209-F | 23 | 1/4 - 1-1/2 | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| | 210-F | 23 | | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| Tube Constrictor | TC-1020 | 2 | 1/8 - 1-1/8 | • | • | | | | | | | • | • | | | | | |
| Swaging Tools | 93-S | 18 | 3/16 - 7/8 | • | • | | | • | | | | • | • | | | | | |
| | 94-SSP | 18 | 1/2, 5/8, 7/8 | • | • | | | • | | | | • | • | | | | | |
| | 95-S | 18 | 3/16 - 5/8 | • | • | | | • | | | | • | • | | | | | |
| | 193-S | 18 | 1/4 - 5/8 | • | • | | | • | | | | • | • | | | | | |
| | 195-SA | 18 | 1/4 - 5/8 | • | • | | | • | | | | • | • | | | | | |
| | 275-FS | 16 | 3/16 - 3/4 | • | • | | | • | | | | • | • | | | | | |
| | 555-FS | 15 | 3/16 - 5/8 | • | • | | | • | | | | • | • | | | | | |
| | 2000-FS | 20 | 3/16 - 3/4 | • | • | | | • | | | | • | • | | | | | |
| Metric Bubble Flaring Tool | 293-F | 15 | 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" - 3/4" size should be used only with annealed (softened) non-ferrous tubing.
(4) Not to be used with metal reinforced hose.

# 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.

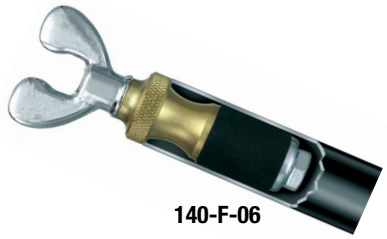
105-FF

## TUBING TEST PLUGS

**For 1/4" to 1-1/8" 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.

| 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-06

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

**124-C** Combination wrench with the four sizes most needed for servicing air-conditioning and refrigeration 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.

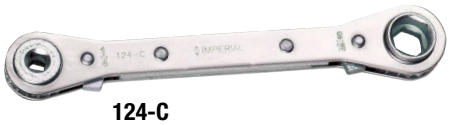
**126-C** Economy compressor access valve wrench. Chrome plated. Has 1/4", 3/8", 3/16" and 5/16" square drive ratchets and is specially designed for use on compressors with access valves in hard to reach places. Reversible ratchets.

Square ratchet drives for use on compressors with access valves in hard to reach places

127-C

Reversible ratchets

127-CO



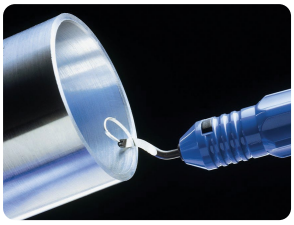
124-C

126-C

# 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

S10001087 -Deburr Replacement Blade

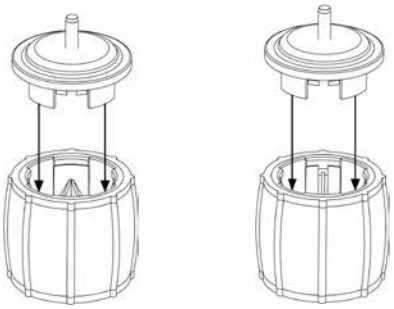
## INNER-OUTER REAMING AND DEBURRING TOOLS

Reams both inside and outside edges of tube at a 60° included angle with hardened cutting blades. Deburrs both clockwise and counterclockwise.

**208-F** For 3/16" to 1-1/2" (5 mm to 38 mm) O.D. copper, aluminum and brass tubing. Three (3) hardened steel cutter blades. Tough die cast body is shaped to fit comfortably in palm. Blue finish. Wt. .63 lbs.

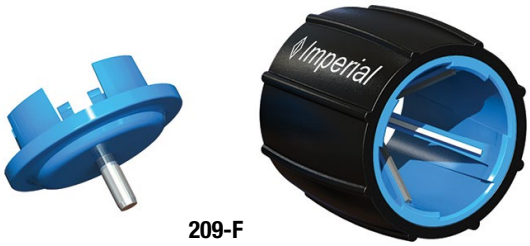
**209-F** Four (4) blade tool with patented drill attachment. For 1/4" to 1-1/2" O.D. aerospace grade stainless steel, hard or soft copper, aluminum, brass and steel tubing. Hardened tool steel cutter blades. Injection molded high-strength glass filled nylon body with rubberized soft outer grip. Wt. .30 lbs.

208-F



Drill attachment snaps into place for inner or outer applications

PATENTED




209-F

# 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" 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.

**195-F 12** (1)

**195-F 22 mm** (2)

### 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 32 | 2 | 14.21 |

(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" 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 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).

Ratcheting of wrench requires only 30° of movement.

### KWIK-TITE® RATCHET WRENCH KITS

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

**195F-5STDM KIT**

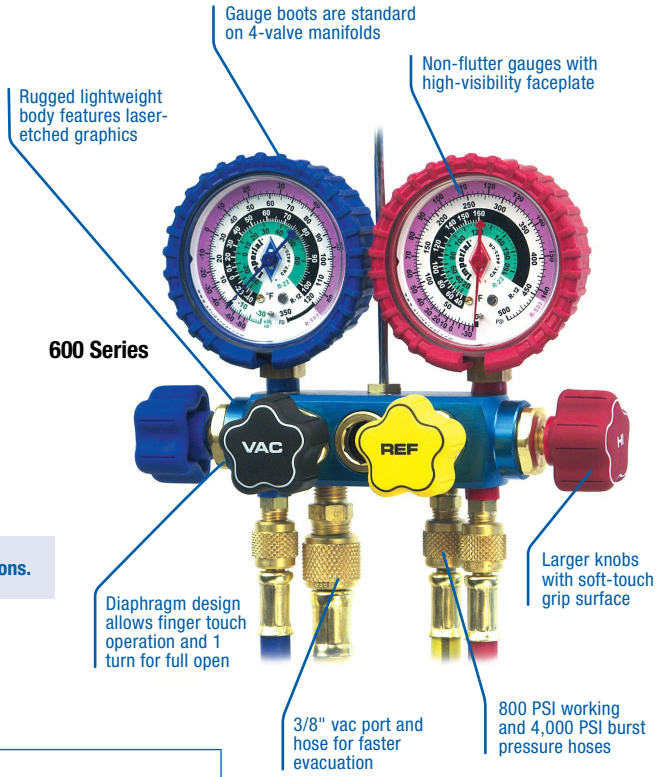
**195F-7STDS KIT**

# SERVICE MANIFOLDS

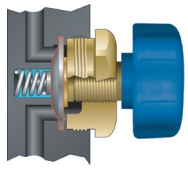
## 600 SERIES 4-VALVE MANIFOLD

- **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**

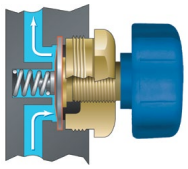
See Manifolds Reference Guide on pages 30-32 for complete list of available configurations.



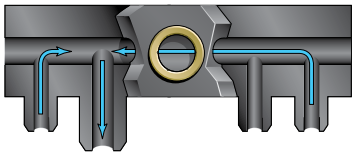

### DIAPHRAGM TYPE SOFT SEAT VALVES



Fingertip pressure to close completely



One turn to full open



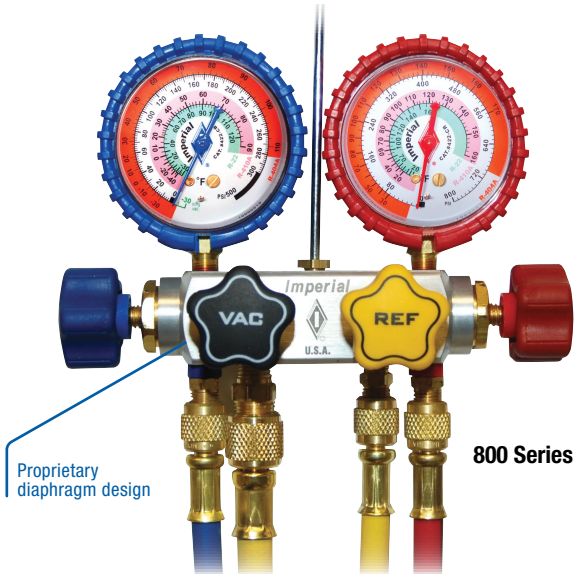
3/8" vacuum port and oversized passages evacuate system 4 times faster than ordinary manifolds

## 800 SERIES DEEP DRAW 4-VALVE MANIFOLD

To keep on air-conditioning system moisture and contaminant-free, today's modern refrigerants, such as R-410A, require the tecÚician to pull a low vacuum and hold it for longer periods of time when performing evacuations. The 800 series manifold, with its proprietary design, is guaranteed to bounce back and maintain its peak efficiency at extreme operating pressures.

**The 800 Series includes all the features (listed above) of the 600 Series plus:**

- **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.

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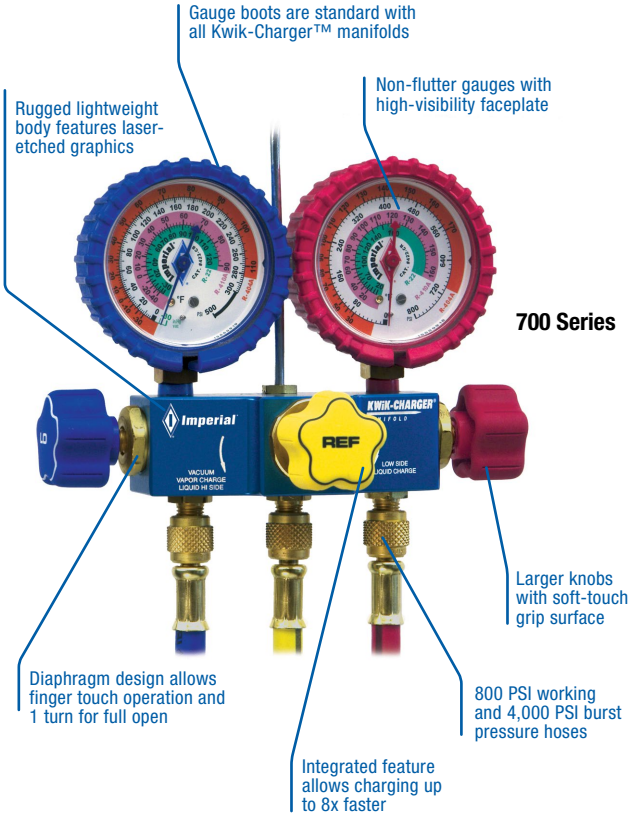
# SERVICE MANIFOLDS

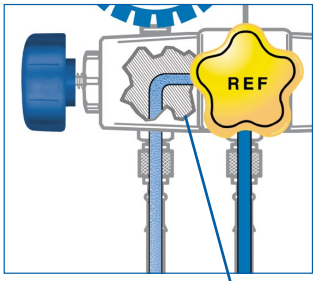
## 700 SERIES KWIK-CHARGER™ MANIFOLD

**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**




See Manifolds Reference Guide on pages 30-32 for complete list of available configurations.

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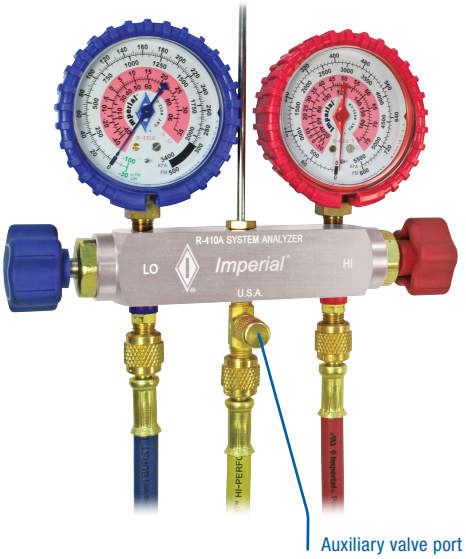
# SERVICE MANIFOLDS

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

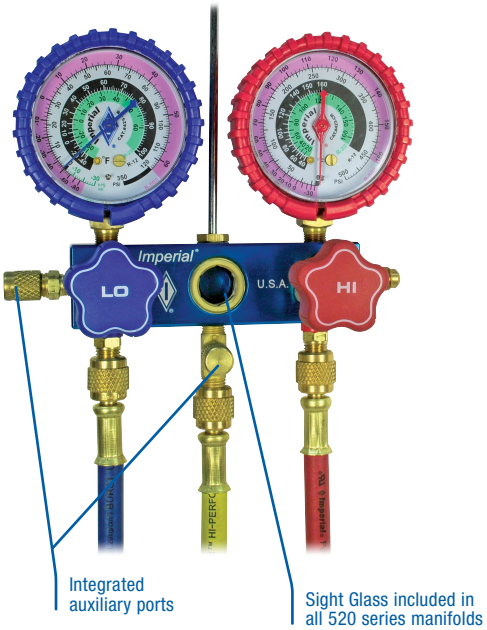
- **Auxiliary Valve Port** – Allows multiple hookups for vacuum gauge, vacuum pump, recovery unit and add-ons.
- **Dual O-Ring Seal** – For high-pressure valve use. Electroless nickel plate stem to reduce wear and gauling.
- **Precision Gauges & Protective Boots** – Unique design with easy to read color-coded 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**

**See Manifolds Reference Guide on pages 30-32 for complete list of available configurations.**




## 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**



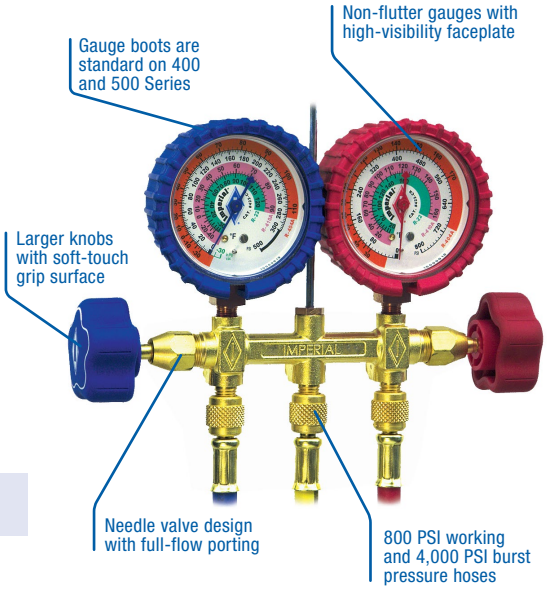

Recognized Component. is a registered trademark of Underwriters Laboratories LLC

# SERVICE MANIFOLDS

## 400 SERIES DELUXE 2-VALVE BRASS MANIFOLD

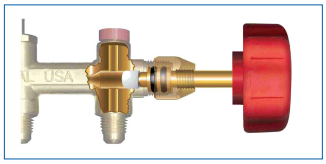
- **Dual O-Ring Valves** – Precision engineered with dynamic full-flow design for faster trouble-free evacuation and charging.
- **Precision Gauges & Protective Boots** – Unique design with easy to read color-coded scales provides superior resistance to shock, vibration and pulsation for superior performance 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**

**See Manifolds Reference Guide on pages 30-32 for complete list of available configurations.**

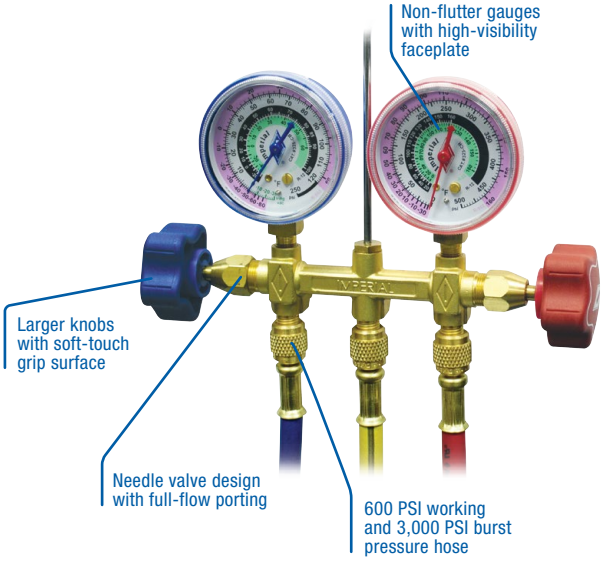


## 300 SERIES ECONOMY BRASS MANIFOLDS

- **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**



Side view cutaway dual o-ring valve with full flow porting



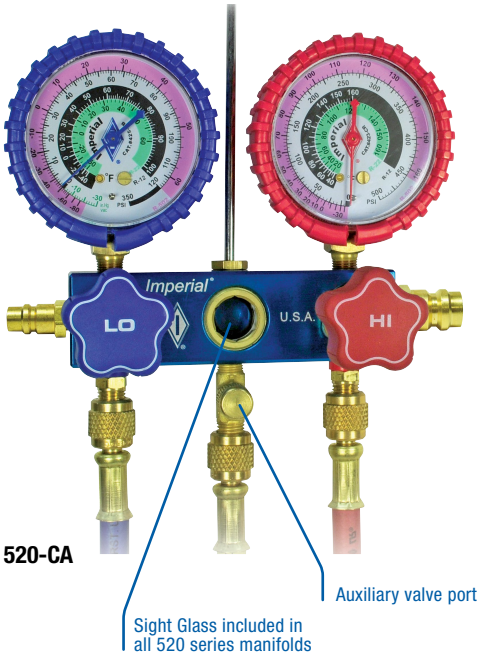

Recognized Component. is a registered trademark of Underwriters Laboratories LLC

# 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**

**See Manifolds Reference Guide on pages 30-32 for complete list of available configurations.**




## 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.

# SERVICE MANIFOLDS REFERENCE GUIDE

| PART NO. | REFRIGERANT | GAUGE CALIBRATION** | | | | | TEMP | | CHARGING LINES (BV = Low Loss Ball Valve Shut-off) | MANIFOLD PORT CONNECTIONS |
|---|---|---|---|---|---|---|---|---|---|---|
| | | PSI | BAR | Kg/cm² | kPa | MPa | °F | °C | | |
| **800 SERIES DEEP DRAW 4-VALVE MANIFOLD** | | | | | | | | | | |
| **R-12, R-22, R-502** | | | | | | | | | | |
| 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 |
| 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-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 |
| 842-C* | R-410A | • | | | • | | • | | 3-60" w/BV, 1-60" 3/8" VAC Line | 1/4" & 3/8" SAE |
| 870-CSC (w/Sight Glass & 80mm Gauges) | R-410A | • | | | | | • | | | 1/4" & 3/8" SAE |
| 871-CSC (w/Sight Glass & 80mm Gauges) | R-410A | • | | | | | • | | 4-60" (3/8" VAC) | 1/4" & 3/8" SAE |
| 872-CSC (w/Sight Glass & 80mm Gauges) | R-410A | • | | | | | • | | 3-60" w/BV, 1-60" 3/8" VAC Line | 1/4" & 3/8" SAE |
| **R-22, R-134a, R-404A** | | | | | | | | | | |
| 843-CS (w/Sight Glass) | R-22, R-134a, R-404A | • | | | | | • | | 4-60" (3/8" VAC) | 1/4" & 3/8" SAE |
| 860-CSC (w/Sight Glass & 80mm Gauges) | R-22, R-134a, R-404A | • | | | | | • | | | 1/4" & 3/8" SAE |
| 864-CSC (w/Sight Glass & 80mm Gauges) | R-22, R-134a, R-404A | • | | | | | • | | 4-60" (3/8" VAC) | 1/4" & 3/8" SAE |
| 880-CKPSC (w/Sight Glass) | R-22, R-134a, R-404A | • | | | • | | | • | | 1/4" & 3/8" SAE |
| **R-410A, R-22, R-404A** | | | | | | | | | | |
| 835-CSC (w/Sight Glass & 80mm Gauges) | R-410A, R-22, R-404A | • | | | | | • | | | 1/4" & 3/8" SAE |
| 836-CSC (w/Sight Glass & 80mm Gauges) | R-410A, R-22, R-404A | • | | | | | • | | 4-60" (3/8" VAC) | 1/4" & 3/8" SAE |
| 837-CSC (w/Sight Glass & 80mm Gauges) | R-410A, R-22, R-404A | • | | | | | • | | 3-60" w/BV, 1-60" 3/8" VAC Line | 1/4" & 3/8" SAE |
| 844-CC † | 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 |
| 846-CS* (w/Sight Glass) | 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 |
| **R-410A, R-22, R-407C** | | | | | | | | | | |
| 862-CSC (w/Sight Glass & 80mm Gauges) | R-410A, R-22, R-407C | • | | | | | • | | 3-60" w/BV, 1-60" 3/8" VAC Line | 1/4" & 3/8" SAE |
| 865-CSC (w/Sight Glass & 80mm Gauges) | R-410A, R-22, R-407C | • | | | | | • | | | 1/4" & 3/8" SAE |
| 866-CSC (w/Sight Glass & 80mm Gauges) | R-410A, R-22, R-407C | • | | | | | • | | 4-60" (3/8" VAC) | 1/4" & 3/8" SAE |
| **700 SERIES KWIK-CHARGER™ MANIFOLD** | | | | | | | | | | |
| **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/BV | 1/4" SAE |
| **R-22, R-407C, R-410A** | | | | | | | | | | |
| 726-CC † | R-22, R-407C, R-410A | • | | | | | | • | 5-36" (B, R, Y 1/4" x 1/4"; B, R 1/4" x 5/16") | 1/4" SAE |
| **R-404A, R-407C, R-134a** | | | | | | | | | | |
| 740-CBC † | R-404A, R-407C, R-134a | • | • | | | | | • | | 1/4" SAE |
| 741-CBC † | R-404A, R-407C, R-134a | • | • | | | | | • | 3-60" | 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/BV | 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 |
| **600 SERIES 4-VALVE MANIFOLD** | | | | | | | | | | |
| **R-12, R- 22, R-502** | | | | | | | | | | |
| 620-CC † | 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-CKP | 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 (BV = Low Loss Ball Valve Shut-off) | MANIFOLD PORT CONNECTIONS |
|---|---|---|---|---|---|---|---|---|---|---|
| | | PSI | BAR | Kg/cm² | kPa | MPa | °F | °C | | |
| **600 SERIES 4-VALVE MANIFOLD (CONT.)** | | | | | | | | | | |
| **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 |
| 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-22, R-407C, R-410A** | | | | | | | | | | |
| 626-CSC † | R-22, R-407C, R-410A | • | | | | | | • | 6-36" (B, R, Y 1/4" x 1/4"; B, R 1/4" x 5/16"; 3/8" VAC) | 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-CC † | R-410A | • | | | • | | • | • | 4-60" (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 |
| **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 |
| **520 SERIES 2-VALVE 4- OR 5-PORT MANIFOLD** | | | | | | | | | | |
| **R-134a, R-12** | | | | | | | | | | |
| 520-CA* (w/Sight Glass) | R-134a, R-12 | • | | | | | • | | | 1/4" SAE |
| **R-12, R-22, R-502** | | | | | | | | | | |
| 520-C* (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-22, R-407C, R-410A** | | | | | | | | | | |
| 566-CC † | R-22, R-407C, R-410A | • | | | | | | • | 5-36" (B, R, Y 1/4" x 1/4"; B, R 1/4" x 5/16") | 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** | | | | | | | | | | |
| 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 |
| **510 SERIES 2-VALVE 4-PORT MANIFOLD** | | | | | | | | | | |
| **R-32, R-410A** | | | | | | | | | | |
| 516-CC | R-32, R-410A | • | | | • | | | • | 3-36" (5/16" x 5/16") | 5/16" SAE |
| **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-CC † | 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 (BV = Low Loss Ball Valve Shut-off) | MANIFOLD PORT CONNECTIONS |
|---|---|---|---|---|---|---|---|---|---|---|
| | | PSI | BAR | Kg/cm² | kPa | MPa | °F | °C | | |
| **400 & 500 SERIES DELUXE 2-VALVE BRASS MANIFOLD** | | | | | | | | | | |
| **R-410A** | | | | | | | | | | |
| 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-CC † | 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" w/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 |
| **R-410A, R-22, R-404A** | | | | | | | | | | |
| 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 |
| **R-134a** | | | | | | | | | | |
| 435-CKP | R-134a | • | | | • | | • | • | | 1/4" SAE |
| 436-CKP* | R-134a | • | | | • | | • | • | 3-36" | 1/4" SAE |
| **R-22, R-134a, R-404A** | | | | | | | | | | |
| 443-C | R-22, R-134a, R-404A | • | | | | | • | | 3-60" | 1/4" SAE |
| **R-404A, R-507, R-134a** | | | | | | | | | | |
| 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 |
| **R-12, R-22, R-502** | | | | | | | | | | |
| 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 |
| **R-22, R-134a, R-404A** | | | | | | | | | | |
| 481-CKPC † | R-22, R-134a, R-404A | • | | | • | | | • | | 1/4" SAE |
| 482-CKP* | R-22, R-134a, R-404A | • | | | • | | | • | 3-36" | 1/4" SAE |
| **R-32, R-410A** | | | | | | | | | | |
| 453-C | R-32, R-410A | • | | | • | | | • | 3-60"(B, R 1/4" x 5/16"; Y 1/4" x 1/4") | 1/4" SAE |
| **300 SERIES ECONOMY 2-VALVE BRASS MANIFOLD** | | | | | | | | | | |
| **R-134a** | | | | | | | | | | |
| 335-CKP* | R-134a | • | | | • | | • | • | | 1/4" SAE |
| 336-CKP* | R-134a | • | | | • | | • | • | 3-36" | 1/4" SAE |
| **R-12, R-22, R-502** | | | | | | | | | | |
| 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 |
| **R-22, R-134a, R-404A** | | | | | | | | | | |
| 398-CKP* | R-22, R-134a, R-404A | • | | | • | | | • | 3-36" | 1/4" SAE |

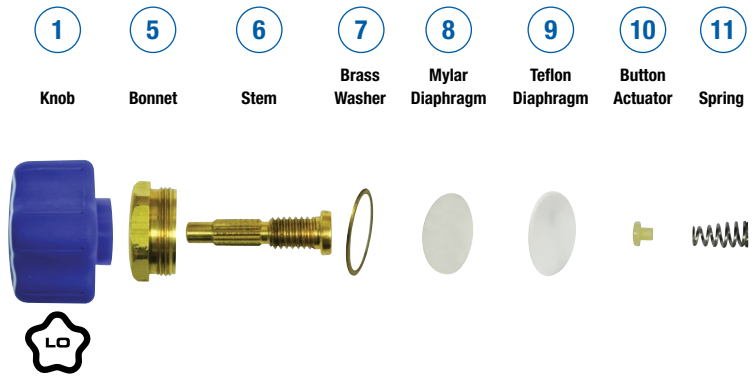
**MANIFOLD ACCESSORIES & SERVICE PARTS (see pages 33-34 for details)**

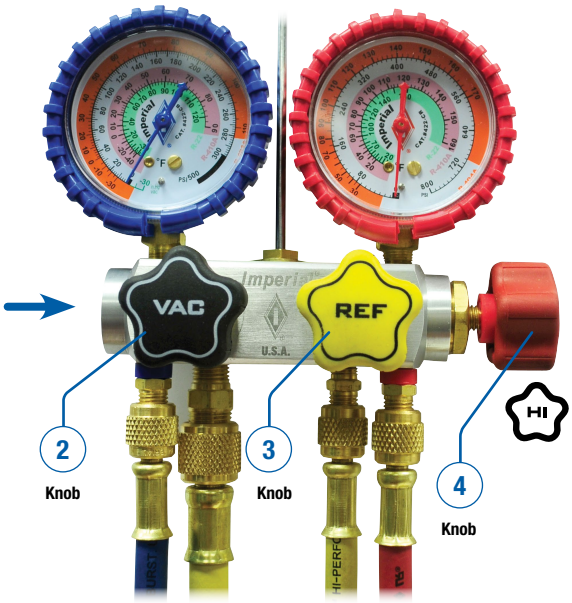
**10SG** Sight Glass Repair Kit
**400-RB** Set: Red & Blue Protective Gauge Boots
**405-RH** High Side Repair Kit w/soft touch knob for 300 & 400 Series "Imperial USA" brass manifold
**405-RL** Low Side Repair Kit w/soft touch knob for 300 & 400 Series "Imperial USA" brass manifold
**500-RH** High Side 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-RK** Replacement VAC & REF Knobs w/stems for all 600 Series manifolds
**602-RK** 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



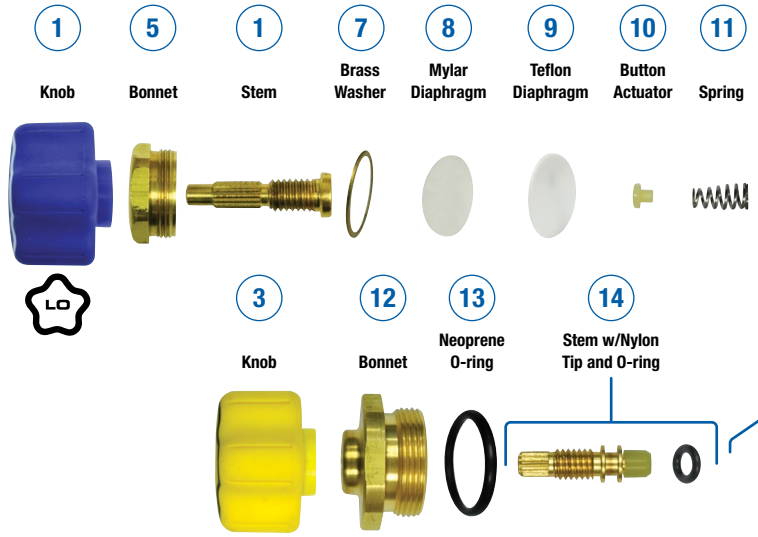



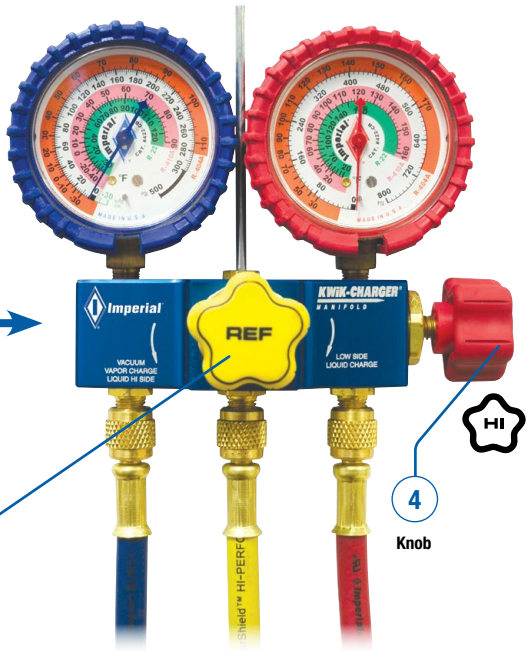

### MANIFOLD REPAIR KITS AND REPLACEMENT PARTS LIST

| PART NO. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 600-R | | | | | | | 2 | 2 | 2 | 2 | 2 | | | |
| 601-RK | | 1 | 1 | | | 2 | | | | | | | | |
| 602-RK | 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

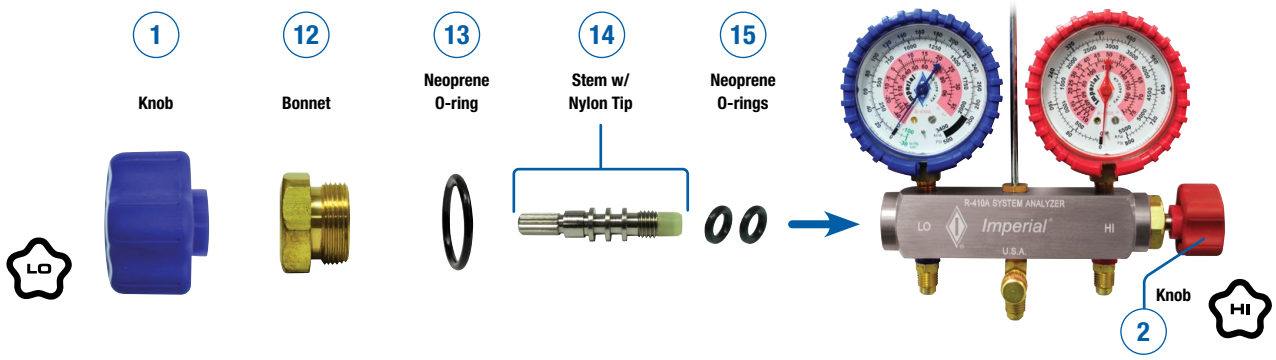


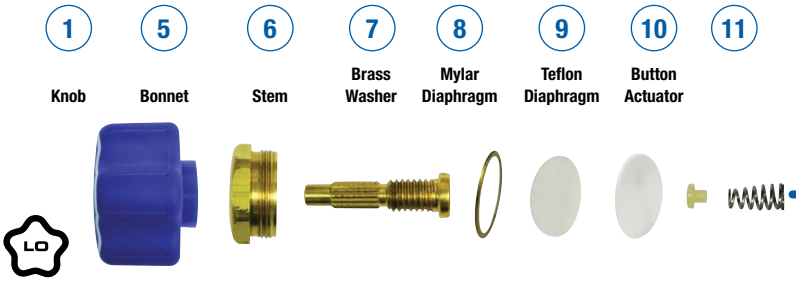



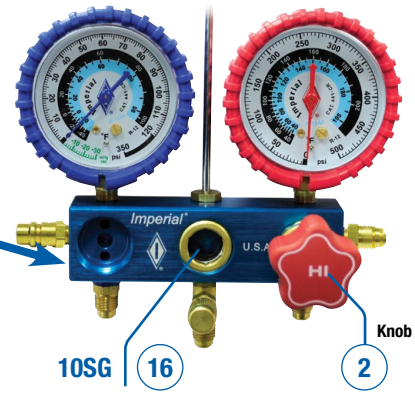

† 700-CV is shipped completely assembled for quick & easy replacement.

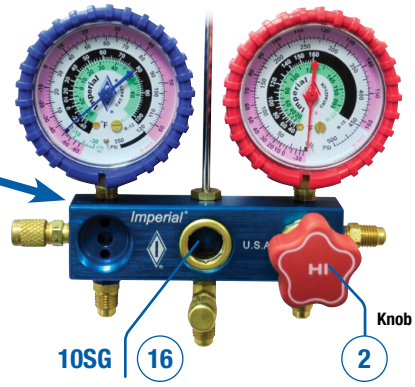
# SERVICE MANIFOLDS PARTS ILLUSTRATIONS

## 510 AND 520 SERIES 2-VALVE MANIFOLD



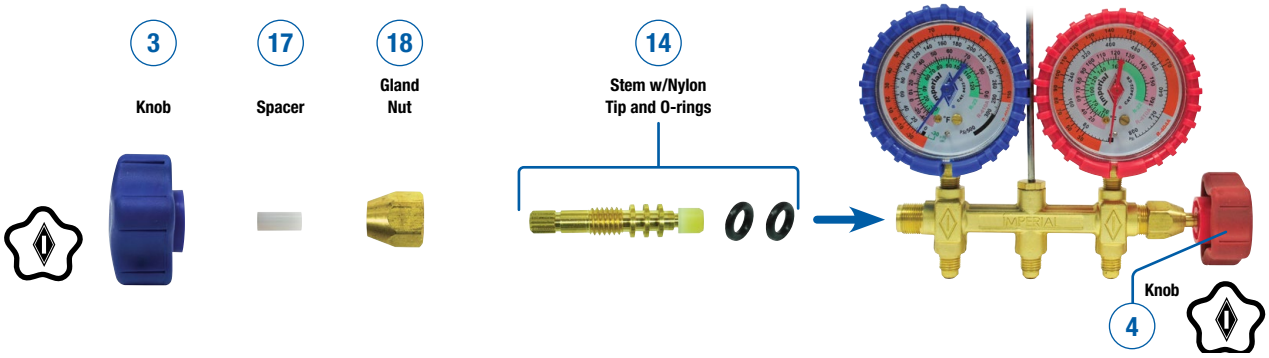




### MANIFOLD REPAIR KITS AND REPLACEMENT PARTS LIST

| 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-RK | 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.

Protective rubber boots for 2-1/2" gauges sold separately.

## 2-1/2" GAUGES

- **1/8" MNPT Connections**
- **3 : 2 : 3% Accuracy**
- **Replacement Screw-on Lens Set** – S8230301
- **Protective Red & Blue Rubber Boot Set** – 400-RB

| PART NO. | DESCRIPTION | GAUGE CALIBRATION | | | | | TEMP | |
|---|---|---|---|---|---|---|---|---|
| | | PSI | BAR | Kg/cm² | kPa | MPa | °F | °C |
| **R-12, R-134a** | | | | | | | | |
| 441-CB | Blue Compound | • | | | | | • | |
| 441-CR | Red Pressure | • | | | | | • | |
| **R-12, R-22, R-502** | | | | | | | | |
| 323-CR | Red Pressure | • | | | | | • | |
| 325-CB | Blue Compound | • | | | | | • | |
| 405-CB | Blue Compound | • | • | | | | | • |
| 405-CR | Red Pressure | • | • | | | | | • |
| 423-CAM | Red Pressure | | | • | | | | • |
| 423-CAPD | Red Pressure | | | | | • | | • |
| 423-CK | 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-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-32, R-410A** | | | | | | | | |
| 453-CB | Blue Compound | • | | | • | | | • |
| 453-CR | Red Pressure | • | | | • | | | • |

| PART NO. | DESCRIPTION | GAUGE CALIBRATION | | | | | TEMP | |
|---|---|---|---|---|---|---|---|---|
| | | PSI | BAR | Kg/cm² | kPa | MPa | °F | °C |
| **R-22, R-407C, R-410A** | | | | | | | | |
| 406-CB | Blue Compound | • | | | | | | • |
| 406-CR | Red Pressure | • | | | | | | • |
| 428-CKP | Blue Compound | • | | | • | | | • |
| 429-CKP | Red Pressure | • | | | • | | | • |
| **R-22, R-134a, R-404A** | | | | | | | | |
| 420-BCKP | Blue Compound | • | | | • | | | • |
| 420-RCKP | Red Pressure | • | | | • | | | • |
| 424-CB | Blue Compound | • | | | | | • | |
| 424-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** | | | | | | | | |
| 408-CB | Blue Compound | • | • | | | | | • |
| 408-CR | Red Pressure | • | • | | | | | • |
| 452-CB | Blue Compound | • | | | • | | • | • |
| 452-CR | Red Pressure | • | | | • | | • | • |

## 80MM (3-1/8") Class 1.0 GAUGES

- **1/8" MNPT Connections**
- **1% Accuracy**

| PART NO. | DESCRIPTION | GAUGE CALIBRATION | | | | | TEMP | |
|---|---|---|---|---|---|---|---|---|
| | | PSI | BAR | Kg/cm² | kPa | MPa | °F | °C |
| **R-404A, R-410A, R-22** | | | | | | | | |
| 404-CB | Blue Compound | • | | | | | • | |
| 404-CR | Red Pressure | • | | | | | • | |
| **R-22, R-134a, R-404A** | | | | | | | | |
| 458-CB | Blue Compound | • | | | | | • | |
| 458-CR | Red Pressure | • | | | | | • | |
| **R-407C, R-410A, R-22** | | | | | | | | |
| 459-CB | Blue Compound | • | | | | | • | |
| 459-CR | Red Pressure | • | | | | | • | |
| 464-CB | Blue Compound | • | • | | | | | • |
| 464-CR | Red Pressure | • | • | | | | | • |
| **R-410A** | | | | | | | | |
| 460-CB | Blue Compound | • | | | | | • | |
| 460-CR | Red Pressure | • | | | | | • | |
| 465-CB | Blue Compound | • | • | | | | | • |
| 465-CR | Red Pressure | • | • | | | | | • |

| PART NO. | DESCRIPTION | GAUGE CALIBRATION | | | | | TEMP | |
|---|---|---|---|---|---|---|---|---|
| | | PSI | BAR | Kg/cm² | kPa | MPa | °F | °C |
| **R-32, R-410A** | | | | | | | | |
| 461-CB | Blue Compound | • | • | | | | | • |
| 461-CR | Red Pressure | • | • | | | | | • |
| **R-448A, R-449A, R-452A** | | | | | | | | |
| 462-CB | Blue Compound | • | • | | | | | • |
| 462-CR | Red Pressure | • | • | | | | | • |
| **R-134a, R-404A, R-407C** | | | | | | | | |
| 463-CB | Blue Compound | • | • | | | | | • |
| 463-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**

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

4501

## 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

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

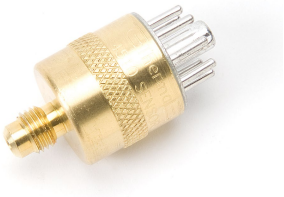
14571

## REPLACEMENT VACUUM SENSORS

**4510**

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

4510

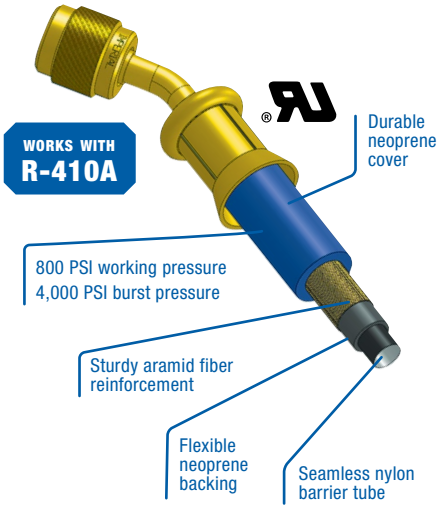


# HI-PERFORMANCE CHARGING HOSE

## POLARSHIELD® CHARGING HOSE

### 950, 900, 850 & 800 SERIES

- **All Imperial® PolarShield® charging hoses are UL recognized** and meet UL-1963, SAE-J2196 and 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.

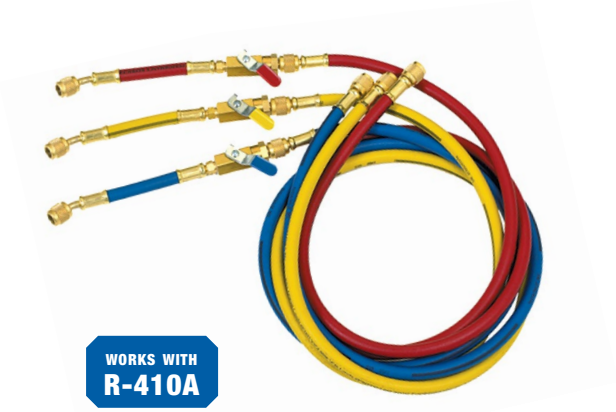



## 950 SERIES POLARSHIELD® HOSES with low loss ball valve shut-off and 1/4" FFL* connections

**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




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

## 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

## 850 SERIES POLARSHIELD® HOSES

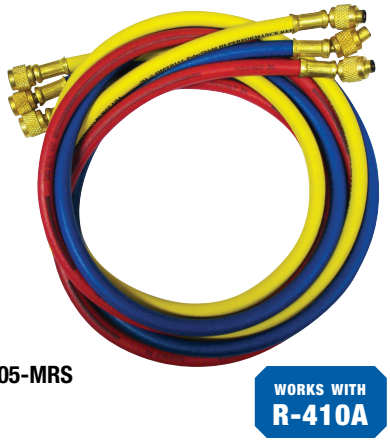
**850 SERIES POLARSHIELD® HOSES FOR R-410A SYSTEMS with 5/16" access fittings (1/4" x 5/16" hose connections)**

| 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" fittings***

| 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




805-MRS

Recognized Component. is a registered trademark of Underwriters Laboratories LLC

# 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:**

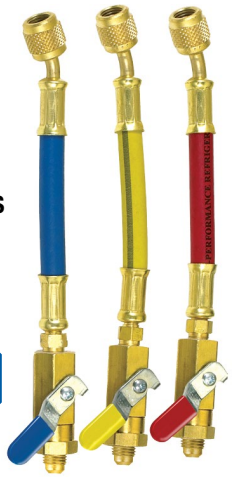
**S7958301** 1/4" Hose Seal Gasket.
**S7958302** 3/8" Hose Seal Gasket.
**S8921626** Brass Core Depressor.
**S10000265** 1/2" ACME & 5/16" Hose Seal Gasket.

## 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 PolarShield® 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 PolarShield® 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

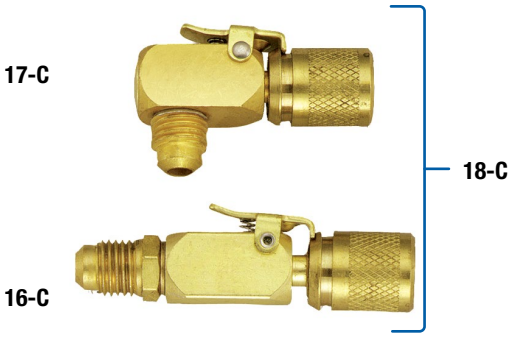
Recognized Component. is a registered trademark of Underwriters Laboratories LLC

# 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.

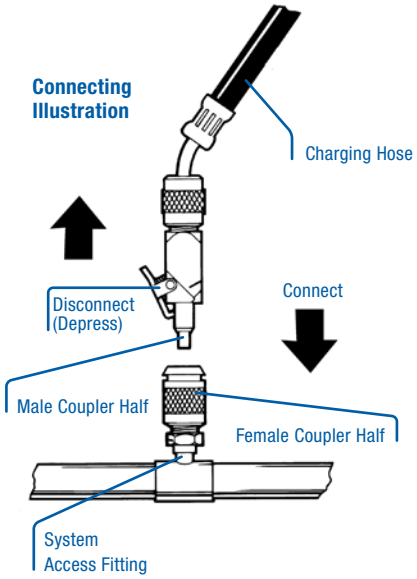



WORKS WITH
R-410A

### 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. |




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

# 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.

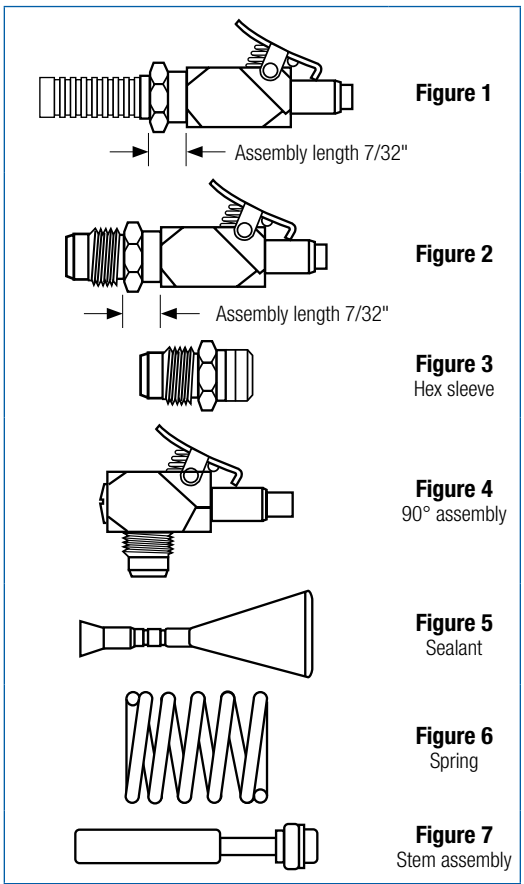



**Figure 1**

**Figure 2**

**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

### 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)

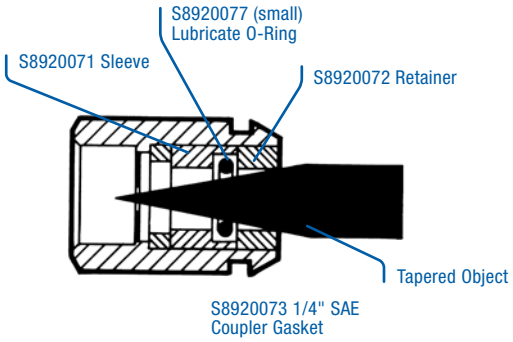
**REPAIR INSTRUCTIONS**

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.

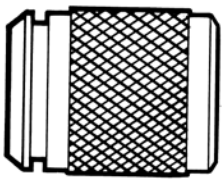
**REPLACEMENT PARTS**

| PART NO. | DESCRIPTION | USED ON |
|---|---|---|
| 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 |
| 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 | |

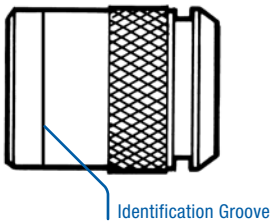
**STANDARD FEMALE COUPLER**



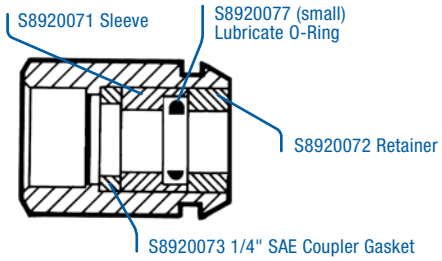

**S8920074 1/4"
Female Coupler**



**S5951125 Female
Coupler (accessory side)**



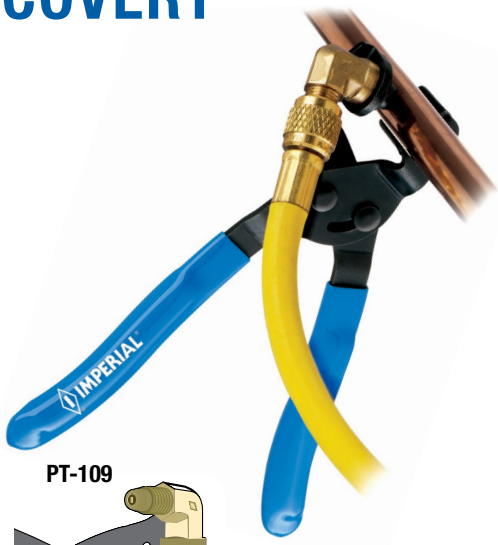

**ACCESSORY SIDE FEMALE COUPLER
for non-core valve applications**



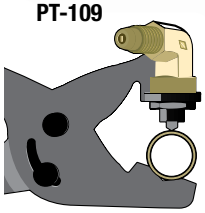
# REFRIGERANT CHARGING & RECOVERY

## KWIK-VISE™

### Refrigerant Recovery Tool




PT-109



**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.

## 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.

535-C

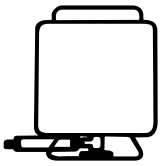
WORKS WITH R-410A

**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.

**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.

WORKS WITH R-410A

7701

# PIERCING VALVES

## 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 l/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.

541-C

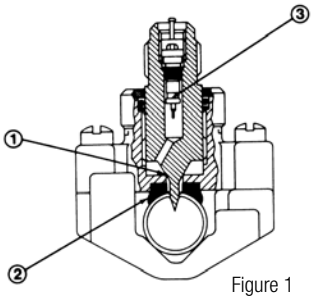
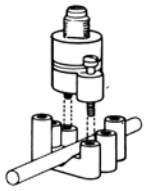
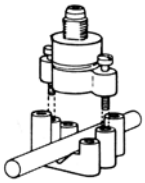



Figure 1

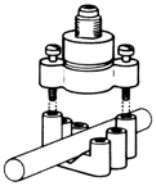
**FITS THREE SIZES**



3/16"



1/4"



5/16"

# ACCESS VALVES & ADAPTERS

## ACCESS FITTINGS/SWIVEL ADAPTERS

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

9-C

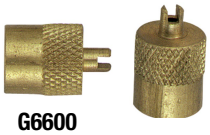
## ACCESS VALVES

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

**G6400** Replacement Valve Cores

**G6600** Wrench Caps

G6400



G6600

## VALVE CORE DEPRESSOR

**For 1/4" male flares.**

**7025** FOR 1/4" MALE FLARES

7025

## R-410A BRASS ADAPTER

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

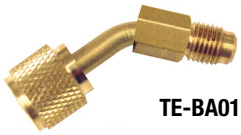
| PART NO. | MALE | FEMALE | OTHER | APPLICATION |
|---|---|---|---|---|
| TE-BA01 | 1/4" SAE | 5/16" SAE | W/ core and depressor | R-410A International |

TE-BA01

## 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 |



TE-BA0145

# CALCULATORS

## 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

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

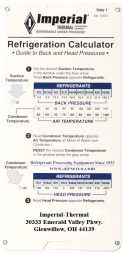
5175

## REFRIGERATION CALCULATOR

**5300**

The calculator graphically shows vital refrigeration data and provides service information not available in any other form. A time-saving and easy-to-use calculator to supply tecÚical 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

# 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 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 |

# 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

# 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).

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

4900

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

# OIL PUMPS & ADAPTERS KITS

1702, 1703, 1751

## 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. The piston type high pressure pump is designed to operate at pressures to 250 PSI. 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.

**1702** Charge-Oil Pump

**1703** Charge-Oil Pump for 5 Gallon Can

## CHANGE-OIL PUMP

### 1751

1751 Change-Oil Pump is a companion to the 1702 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.

1833

Pictured with optional digital vacuum gauge.

## 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.

1834

## 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 OIL

### 5000

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 has 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 containers (4 per case).

| PART NO. | CASE SIZE | GRAVITY, API | VISCOSITY | FLASH POINT | PRESSURE, MICRONS, HG, MAX |
|---|---|---|---|---|---|
| 5000 | (4) Gallon Containers | 29.2 | SUS AT 100°F, 335 | 450°F | 5 |

## LIQUI-VAC

### 4036 & 4036-Q

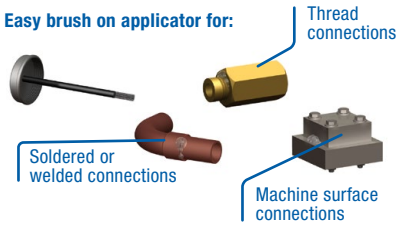
A real time-saver in servicing cooling systems, Liqui-Vac is the only liquid sealant with the capacity of sealing high vacuum connections. It will positively seal high vacuum leaks around threads, through flared connections, face joints, wherever metal joins metal. Liqui-Vac sets up quickly, but remains 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.

**Features**

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

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

**4036-Q** 1 qt. can with brush-in-cap



# 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 below).
- 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 below).
- 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.

**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. (2250 G) | 1 oz. (25 G) |
| U7006* | 80 oz. (2250 G) | 1 oz. (25 G) |
| U7009 | 160 oz. (4500 G) | 2 oz. (50 G) |
| U7010* | 160 oz. (4500 G) | 2 oz. (50 G) |

*Carrying case included.

**CHARG-CHECK shown with optional carrying case**

## GASKET SETS AND REPAIR KITS

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

**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

## CARRYING CASES FOR THE CHARG-CHECK SERIES

An ideal way to protect the Charg-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. | CAPACITY | GRADUATION |
|---|---|---|
| 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 |

**Thread heater assembly into the bottom of the cylinder to increase the speed of the charge.**

## CHARG-CHECK HEATER ASSEMBLIES

**7020** 120 Volt heater assembly.

**7024** 240 Volt heater assembly.

# HERMETI-CHECK

Imperial® THERMAL ENGINEERING COMPANY DEPENDABLE UNDER PRESSURE®

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, 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.

| PART NO. | WEIGHT | POWER | DIMENSIONS |
|---|---|---|---|
| 2001 | 3 LBS | 110, 220, OR 277 VAC 50/60 HZ | 12-1/8" x 8" x 3-3/8" |

# ACCESSORIES

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

2601

## 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.

2605

## 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.

## 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 and 2605.

GL-1000

## 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 tecÚician 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).

# LEAK DETECTION

## GAS LEAK DETECTORS

Imperial leak detectors feature long life heated sensor tecÚology, designed for high sensitivity. The digital leak size indicator takes the guesswork out of whether or not to repair a small leak. Digital display is independent from the audio alarm and sensitivity level, allowing the precise pinpointing of the leak source. All models use standard alkaline batteries- rechargeable batteries not required.

- Long life sensor
- CE certified
- Automatic calibration
- Rugged high impact ABS plastic housing
- 3 sensitivity levels
- Comfortable grip
- Low battery indicator
- Includes carrying case
- Audio mute function

LD-900

## LD-900 REFRIGERANT GAS LEAK DETECTOR

Detects all HCFC, HFC, HFO, blends and HC refrigerants, including R-134a, R-32, and the new HFO refrigerant R-1234yf that is replacing R-134a. Includes (4) AA batteries and sensor maintenance kit.

## LD-910 COMBUSTIBLE GAS LEAK DETECTOR

High sensitivity to all combustible gases including Methane (natural gas), Propane, Butane, Ethane, Acetylene, Methanol, Acetone and gasoline. MSHA certified as Intrinsically Safe. Inspect furnaces, gas appliances and gas lines fast and safely. Also use to find leaks in fuel and exhaust systems, verify integrity of fuel storage containers. Includes (4) AA batteries and test vial.

## LD-920 NITROGEN/HYDROGEN TRACER GAS LEAK DETECTOR

This instrument will detect Nitrogen/Hydrogen tracer gas leak rates less than 5ppm. The tracer gas mixture complies with Article 6, Paragraph 3 of EU Directive 2006/40/Eu. Includes (4) AA batteries and sensor maintenance kit.

LD-910

LD-920

| | LD-900 REFRIGERANT GAS | LD-910 COMBUSTIBLE GAS | LD-920 $N_2$ / $H_2$ TRACER GAS |
|---|---|---|---|
| Sensitivity | 0.05 oz/yr R-134a<br>0.015 oz/yr R-1234YF | 5 ppm Methane | < 5 ppm |
| Sensor Life | > 300 hours | > 300 hours | > 300 hours |
| Response Time | instantaneous | instantaneous | instantaneous |
| Power Supply | 4 AA Alkaline batteries | 4 AA Alkaline batteries | 4 AA Alkaline batteries |
| Battery Life | 4-6 hours continuous | 20 hours continuous | 8 hours continuous |
| Warm up time | < 20 seconds | < 10 seconds | < 20 seconds |
| Probe Length | 17" | 17" | 17" (43.8 cm) |
| Numerical Display | 7 segment digital display (1 to 9) | 7 segment digital display (1 to 9) | 7 segment digital display (1 to 9) |
| Weight | 1.5 lbs. | 1.25 lbs. | 1.25 lbs. (0.57 kg) |
| Certifications | CE<br>SAE J2791 (R-134a)<br>SAE J2913 (R-1234YF)<br>ASHRAE 173 2012<br>EN 14624-2012 | CE<br>MSHA Intrinsic Safety | CE<br>EMC Directive 2014/30/EU |
| Warranty | 2 years including sensor | 2 years including sensor | 2 years including sensor |

# LEAK DETECTION

## FLUORESCENT DYE INJECTION KIT FOR ALL A/C & R SYSTEMS

### LD100F

One squeeze of the trigger injects a pre-measured amount of dye.

**Features**

- Exact measure - no over injection.
- No wasted dye.
- Quick - takes second to complete.
- Check for leaks immediately.
- Inject with ease, even with system pressures up to 450 PSI
- Contains 8 times more dye than the most popular competitor's kit.
- Super-concentrated dye - use less per application.

LD100F

**Includes**

- Star-Brite™ BSL415 lamp.
- Maxi-Brite™ fluorescence-enhancing UV safety glasses
- Eco-Brite™ universal dye (8 oz. bottle)
- Kit case

**LD100F** A/C Detective® Kit. Weighs 4.5 lbs

## 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.

**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 x $10^{-5}$ std. cc of air per sec.
- Temperature Range: +35°F to +160°F.

**4014** 4 OZ

**4014-8OZ** 8 OZ

**4014-G** Gallon

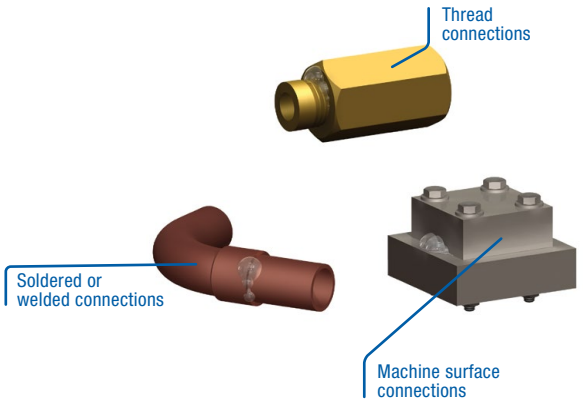
**Specifications No. 4015 Formula 372G**

- Application: Refrigerants, low temp.
- Sensitivity: 1 x $10^{-4}$ std. cc of air per sec.
- Temperature Range: -35°F to +180°F.

**4015** 4 OZ

**4015-8OZ** 8 OZ

**4015-G** Gallon



# FLUORESCENT DYES

## Eco-Brite™ Universal A/C Dye

The most environmentally friendly dye on the market.

- Solvent Free!
- Hybrid and Electric Vehicle Safe.
- SAE J2297/J2911 Certified and OEM Approved.
- Dye Installed service stickers included.

**140100** Eco-Brite™ Universal A/C Dye 8 oz. Cartridge Replacement cartridge for the Pro-Shot™ Injection System.

- Services 64 vehicles
- 64 Dye Installed service stickers.

**140100**

## Eco-Brite™ Easy-Fill Refills

**770440** Eco-Brite™ Easy-Fill 12 Refills.

**770450** Eco-Brite™ Easy-Fill: 32 Refills.
- Services 32 vehicles
- 32 Dye Installed service stickers.

**770460** Eco-Brite™ Easy-Fill 64 Refills.
- Services 64 vehicles
- 64 Dye Installed service stickers.

**B704008Y** Eco-Brite™ Universal A/C Dye 8 oz. Round Bottle. Replacement bottle for A/C Detective Injectors or can be used as a refill for in-line style injectors.
- Services 64 vehicles
- 64 Dye Installed service stickers.

**B704008BY** Eco-Brite™ Universal A/C Dye 8 oz. Self-Measuring Bottle.
- Services 64 vehicles
- 64 Dye Installed service stickers.

**B704012Y** Eco-Brite™ Universal A/C Dye 1/4 oz. Bottles (12)
- Services 12 vehicles
- 12 Dye Installed service stickers.

**B704206Y** Eco-Brite™ Universal A/C Dye 1 oz. Bottles (6)
- Services 24 vehicles
- 24 Dye Installed service stickers.

**770440**

**B704008Y**

## CLEANERS & FLUSHES

**700015** Dye-Out™ Dye Cleaner. Quickly remove dye with this effective and safe water based cleaner. 8 oz. spray bottle.

**B33801** A/C System Flush, Non-ozone depleting. 1 gal., carton of 6.

**B33832** A/C System Flush, Non-ozone depleting. 1 qt. (32 oz.) bottle, carton of 6.

**B704008BY**

# FLUORESCENT DYES

## STAY-BRITE® 4-IN-1 Multi-Purpose Dye

For leak detection use in Engine Oil, ATF, Power Steering Fluid, Gasoline, Diesel Fuel and Hydraulic Oil.

- Super-Concentrated.
- OEM Approved.
- Works best with BSL365 UV Lamp.

**B715006** STAY-BRITE® 4-IN-1 Multi-Purpose Dye 1/4 oz. Bottles (6)
• Services 6 vehicles.

**B715008** STAY-BRITE® 4-IN-1 Multi-Purpose Dye 8 oz. Self-Measuring Bottle.
• Services 32 vehicles.

B715006

B715008

## STAY-BRITE® Universal Coolant Dye

For leak detection use in all automotive coolants.

- Will not discolor.
- Super-Concentrated.
- OEM Approved.
- Works best with BSL415 or BSL365 UV Lamp.

**B720006** STAY-BRITE® Universal Coolant Dye 1/4 oz. Bottles (6).
• Services 6 vehicles.

**B720008** STAY-BRITE® Universal Coolant Dye 8 oz. Self-Measuring Bottle.
• Services 32 vehicles

B720006

B720008

## LAMPS & ACCESSORIES

High-tech LED lamps with advanced optics - the best lights for leak detection in the industry.

- OEM approved.
- Models for all quality leak detection dyes.
- Batteries and fluorescence-enhancing UV safety goggles included with all lamps.

**BSL365** Star-Brite™ leak detection single LED lamp- low wavelength output provides a brighter fluoresce for 4-in-1 leak detection dye. Anodized aluminum body.

**BSL415** Star-Brite™ Super Bright LED lamp. Recommended for use with A/C and Universal Coolant leak detection dyes.

**BSL840** Supra-LED platinum edition lamp- 8 LEDs. Uses patented tecÚology to fluoresce even the smallest leaks. Metal body.

**BSL845** Star-Brite™ single LED lamp. 80,000 hour LED life. Anodized aluminum body.

**BSL754** Maxi-Brite™ fluorescence-enhancing UV safety glasses.

BSL415

BSL754

# INJECTION SYSTEMS

## A/C DETECTIVE®

### 117000

Fluorescent dye injection for the professional.

SAE J-2297 Certified for R-1234yf & R-134a

117000

**Features**

- Precise application.
- Quick - takes seconds.
- Check for leaks almost immediately.
- Inject with ease, even with system pressures up to 450 PSI.
- Industry's brightest universal dye.

**Includes**

- Gun.
- Eco-Brite™ Universal A/C dye 8 oz. bottle.
- R-134a hose & coupling.
- Purge fitting.

## PRO-SHOT CARTRIDGE INJECTION SYSTEM

### 140211

The most precise and accurate injection system on the market. Pre-measures and injects 1/8 oz. of dye with each stroke, eliminating waste yet providing sufficient quantity for a majority of passenger vehicles. Ideal for injecting into closed, filled A/C systems up to 250 PSI. The injector is made of robust die cast alloy and can also be fitted with a low side snap coupler for use on R-1234yf A/C systems. Services 64 vehicles.

SAE J-2297/J2911 Certified for R-1234yf & R-134a

140211

**Features**

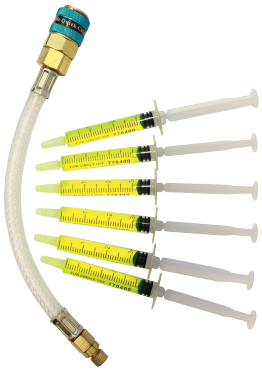
- Hybrid and Electric Vehicle Safe.
- SAE J2297/J2911Certified.
- OEM Approved.

**Includes**

- Eco-Brite™ Universal A/C Dye 8 oz. Cartridge.
- R-134a Coupler with Purge Fitting.
- R-12 Injector Hose (optional R-1234yf coupler available).
- 64 Dye Installed service stickers.

## ECO-BRITE™ EASY-FILL CONVERTER PACKS

The most cost-effective A/C Dye Injector, the clear injector hose allows you to see the dye entering the system.



270430

**Features**

- Hybrid and Electric Vehicle Safe.
- SAE J2297/J2911 Certified.
- OEM Approved.

**Includes**

- Easy-Fill Injector for R-134a Systems.
- Eco-Brite™ Universal A/C Dye Refills.
- Dye Installed service stickers.

| | |
|---|---|
| **270430** | 6 refills |
| **270432** | 12 refills |
| **270435** | 64 refills |

# LEAK DETECTION KITS WITH LAMPS

## PRO-SHOT™ KIT

The most precise and accurate injection system on the market!

**Features**

- Pre-measured application.
- 64 Applications from every cartridge.
- All-metal construction.
- Totally clean – no leaks.
- Uses 8 oz. cartridges (64 applications).
- Purge fitting.
- Long hose for easy access.
- SAE Certified.
- OEM Approved.

**140845**

**Includes**

- 8 oz. cartridge of Eco-Brite Universal A/C Dye.
- Star-Brite LED Leak Detection Lamp Model BSL845.
- Maxi-Brite UV fluorescence enhancing glasses.
- Dye-Out cleaner, 2 oz.
- R-134a Adapters.
- R-12 Injector hose.
- Purge fitting.

**140845** Pro-Shot Injection System. Services 64 vehicles.

SAE J-2297 Certified for R-1234yf & R-134a

## EASY-FILL™

The world's most economical A/C fluorescent leak detection dye injector.

**Features**

- Metered application.
- Easy - No training needed.
- Quick - takes seconds for the complete process.
- Clean - no pouring, no spills.
- Visible - clear hose.
- OEM approved.
- No dye loss – ever.

**270461**

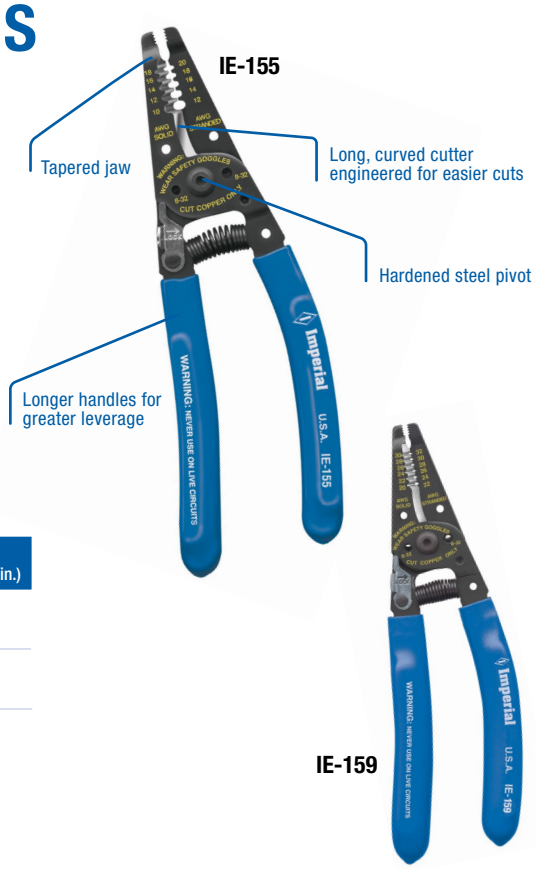
**Includes**

- 14-pack A/C universal system dye.
- Star-Brite Leak Detection Lamp Model BSL 840.
- Maxi-Brite UV fluorescence enhancing glasses
- Universal Coolant Dye 1/4 oz. bottle.
- Heavy duty case
- Dye-Out cleaner, 2 oz.
- 14 under hood labels
- 4-IN-1 Multi-Purpose Dye 1/4 oz.

**270461** Eco-Brite Easy-Fill Complete Kit

# UPFRONT STRIPPERS/CUTTERS

Cutters, strippers and crimpers are designed to the demanding specifications of the professional. Made from high carbon, heat treated steel, each tool is manufactured to produce clean, exacting results. Also, each tool is MADE IN U.S.A.




## SUPER STRIPPER

- Pliers nose for working small nuts and pulling wire.
- Precision-ground stripping stations for both solid and stranded wire.
- Long, curved cutter requires less force to cut.
- Holes in jaw for looping wire.
- Lock to protect cutting and stripping edges when stored.
- Return spring and opening stop to prevent spring from becoming disengaged.
- Longer handles for greater leverage, cuts 6-32 / 8-32 screws.
- Ergonomic handle design.

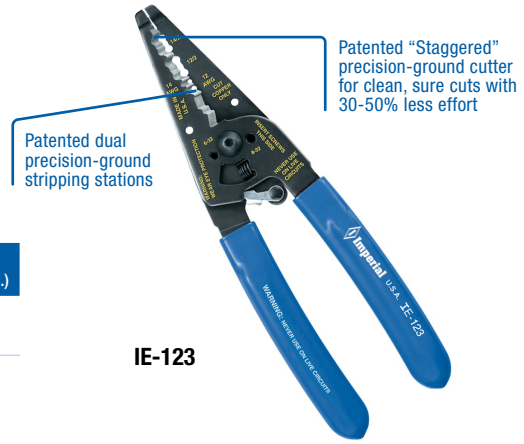
| PART NO. | DESCRIPTION | STRIPPER SIZE (AWG) | CUTTER TYPE | SCREW CUTTER | NOM. LENGTH (in.) |
|---|---|---|---|---|---|
| IE-155 | Ergonomic Super Stripper/Cutter | 10-18 Solid<br>12-20 Stranded | Curved-long | 6-32 / 8-32 | 7-1/4 |
| IE-159 | Ergonomic Super Stripper/Cutter | 20-30 Solid | Curved-long | 6-32 / 8-32 | 7-1/4 |

**Conforms to ASME Standard B107.500-2010**

## 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.

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




PATENTED

# UPFRONT STRIPPERS/CUTTERS

## HEAVY-DUTY UPFRONT STRIPPERS & CUTTERS

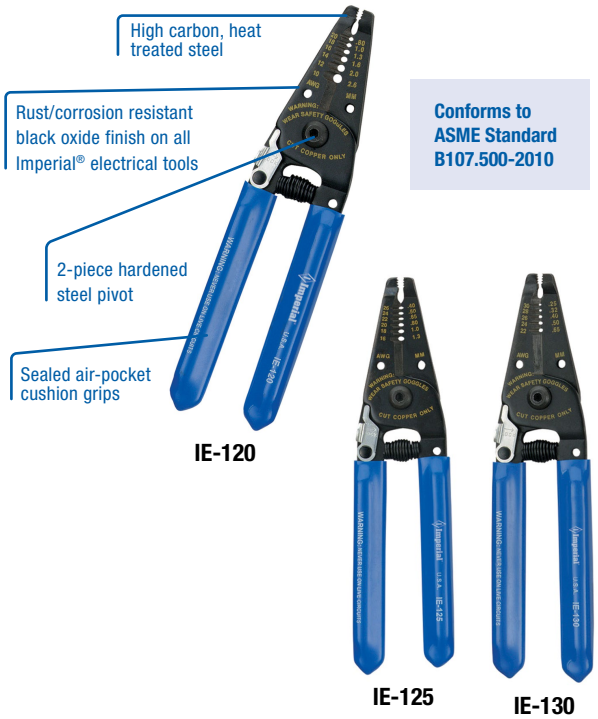
- Serrated pliers nose for pulling and working wire, small nuts, etc.
- AWG and metric wire sizes are embossed in steel and pad printed for high visibility.
- 2-piece hardened steel pivot for lifetime service.
- Lock to protect cutting and stripping edges when stored.
- Spring return to help speed work.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

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

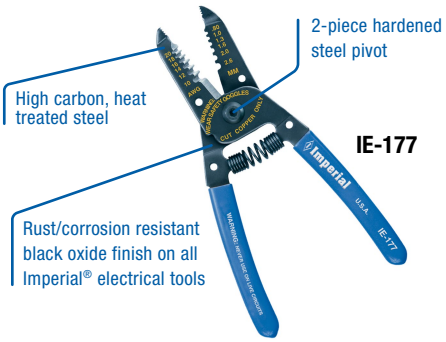



**Conforms to ASME Standard B107.500-2010**

## STANDARD DUTY

- Precision-ground stripping stations.
- Serrated pliers nose for pulling and working wire.
- Scissors-action cutter.
- Holes in jaw for looping wire.
- Return spring.
- Cushion grips.

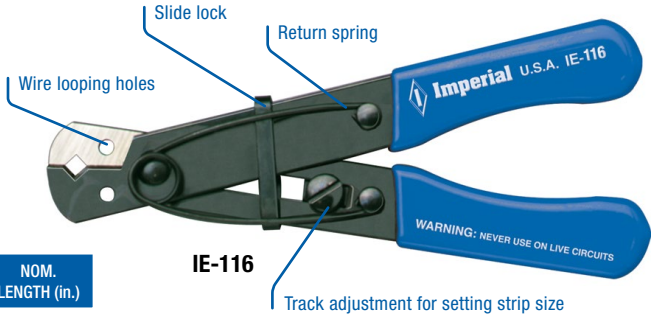
| PART NO. | DESCRIPTION | STRIPPER SIZE (AWG) | CUTTER TYPE | NOM. LENGTH (in.) |
|---|---|---|---|---|
| IE-122 | Stripper/Cutter w/ Spring Return | 8-16 Stranded, 1.3-3.3 mm | Scissors | 6 |
| IE-177 | Stripper/Cutter w/Spring Return | 10-20, 0.8-2.6 mm | Scissors | 6 |
| IE-178 | Stripper/Cutter w/Spring Return | 16-26 Stranded, 0.4-1.3 mm | Scissors | 6 |
| IE-180 | Stripper/Cutter w/Spring Return | 22-30, 0.25-0.65 mm | Scissors | 6 |
| IE-182 | Stripper/Cutter w/Spring Return and Lock | 10-20 Stranded, 0.8-2.6 mm | Scissors | 6 |



# 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-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 |

**Conforms to ASME Standard B107.500-2010**

IE-115

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

**E-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 mm² 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-164

IE-163

IE-165

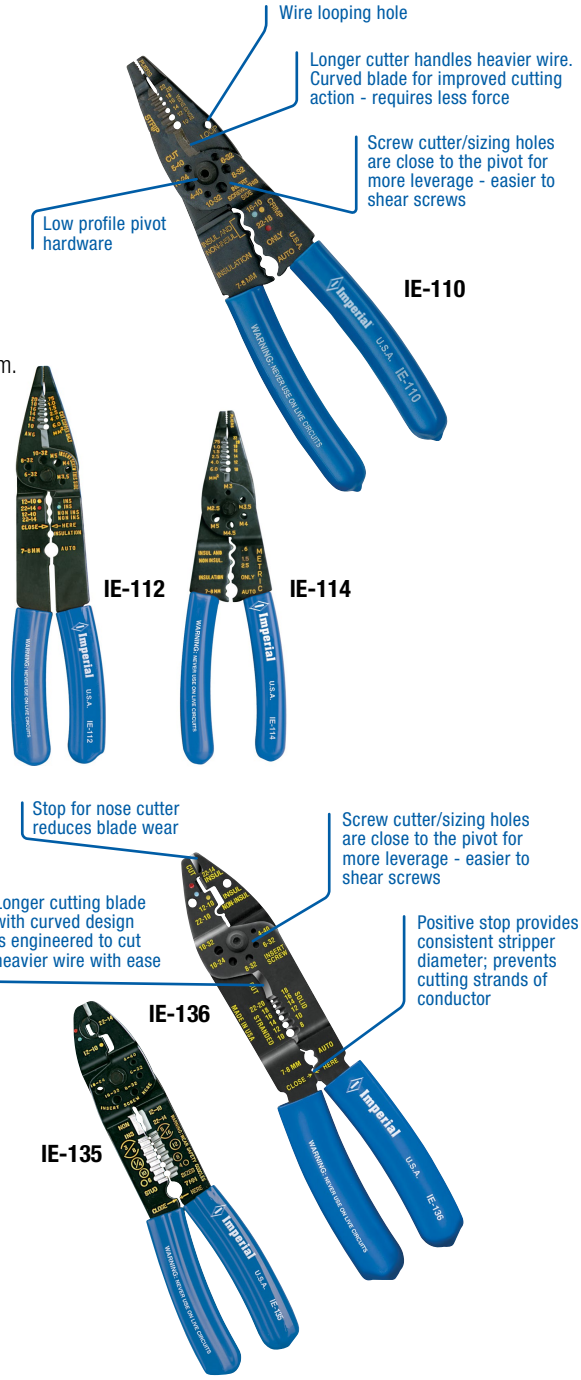
| PART NO. | DESCRIPTION | STRIPPER SIZE (AWG) | CRIMPER (AWG) | CUTTER TYPE | NOM. LENGTH (in.) |
|---|---|---|---|---|---|
| IE-162 | 3 Pc. Kit-1 Each in Pouch | 8-18 Solid<br>10-22 Stranded<br>0.34 - 6.0 mm² | 10-22 | Scissors | |
| IE-163 | Mini Cutter | | | Scissors | 5-1/2 |
| IE-164 | Mini Stripper | 8-18 Solid<br>10-22 Stranded<br>0.34 - 6.0 mm² | | | 5-1/2 |
| IE-165 | Mini Crimper | | 10-22 | | 5-1/2 |

IE-162

# COMBINATION TOOLS

- (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.

**Conforms to ASME Standard B107.500-2010**




## 5-IN-1 COMBINATION TOOL

- 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.
- Serrated pliers nose for pulling and looping wire.
- Air-pocket cushion grips.
- Available in AWG, metric or combination AWG/metric models.

| | |
|---|---|
| **IE-110** | AWG |
| **IE-112** | Combination Metric/AWG. |
| **IE-114** | Metric version. |

## UPFRONT CUTTER/CRIMPER/STRIPPER

**IE-135**
- Anvil-type wire cutter at nose of pliers.
- Insulated and non-insulated crimp stations.
- Screw sizing and cutting stations.

**IE-136**
- Upfront cutter, stripper, cripmper
- Curved cutter reduces force required to cut; longer blade length capable of cutting NM-B cable in a single stroke.
- 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.

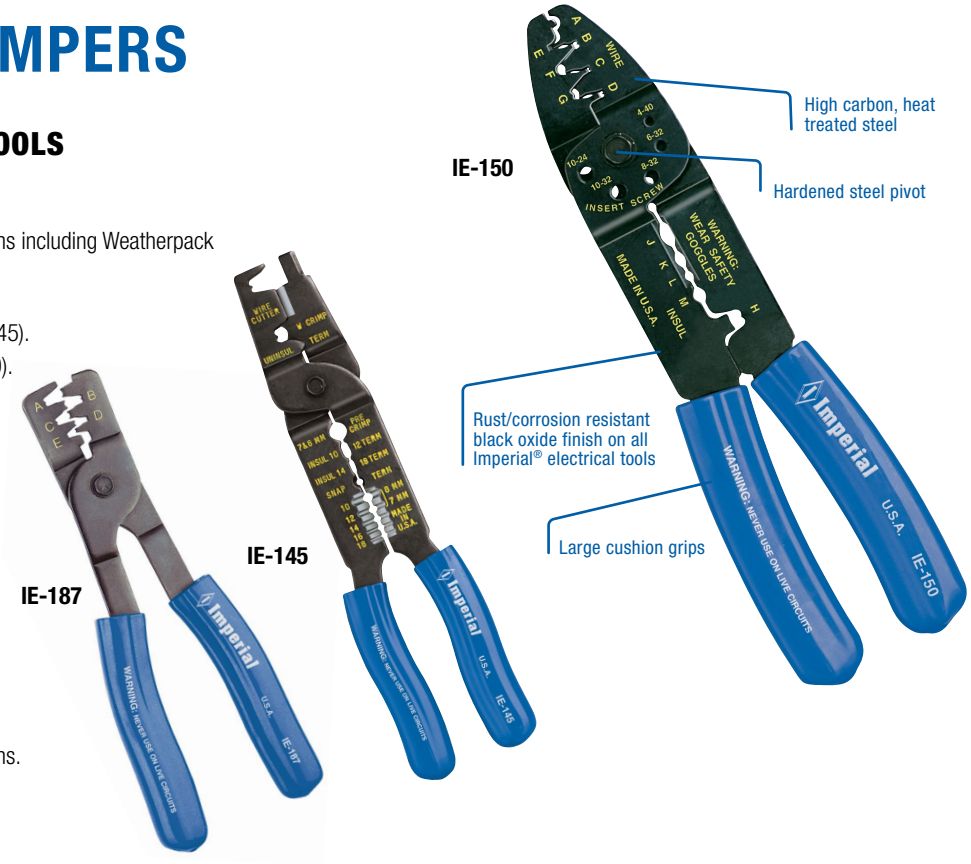
| PART NO. | DESCRIPTION | STRIPPER SIZE (AWG) | CUTTER TYPE | CRIMPS INSULATED (AWG) | CRIMPS NON-INSULATED (AWG) | SCREW CUTTER | NOM. LENGTH (in.) |
|---|---|---|---|---|---|---|---|
| IE-110 | Super 5-in-1 Combination | 10-22 | Curved-long | 10-22 | 10-22<br>7-8 mm Auto | 4-40 / 5-40 / 6-32<br>8-32 10-32 / 10-24 | 8-1/4 |
| IE-112 | Combination Metric/AWG | 10-20, 0.75-6.0 mm² | 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 mm², 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 |
| IE-135 | Crimper/Cutter with 6 Strip Stations | 10-22 | Anvil | 10-22 | 10-22,<br>7-8 mm Auto | 4-40 / 6-32 / 8-32<br>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,<br>7-8 mm Auto | 4-40 / 6-32 / 8-32<br>10-32 / 10-24 | 8-1/2 |

# UPFRONT CRIMPERS

## AUTOMOTIVE SPECIALTY TOOLS

### IE-145, IE-150, IE-187

- Insulated and non-insulated crimp stations including Weatherpack Terminals (IE-150, IE-187).
- Anvil-type cutter (IE-145).
- Precision-ground stripping stations (IE-145).
- Screw sizing and cutting stations (IE-150).
- Highly visible, easy-to-read graphics.
- Cushion grips.




## MULTI-PURPOSE TOOLS

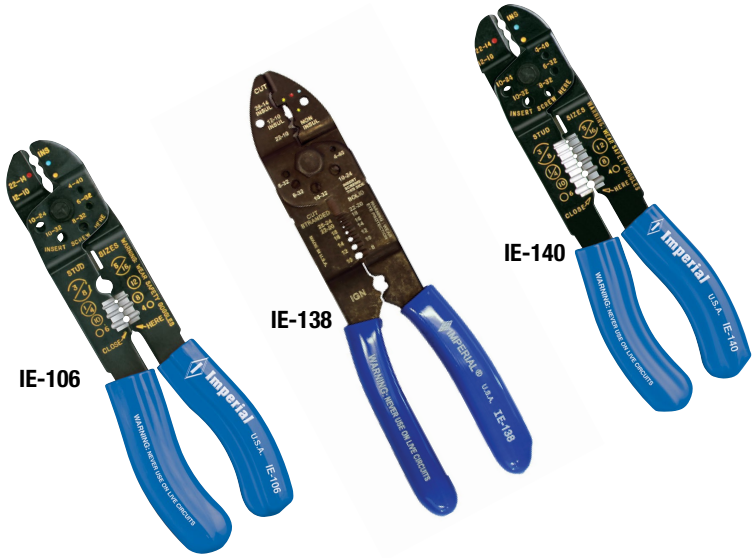
### IE-106, IE-140

- Insulated and non-insulated crimp stations.
- Screw sizing and cutting stations.
- Anvil-type cutter.
- Precision-ground stripping stations.
- Highly visible, easy-to-read graphics.
- Cushion grip

### IE-138

- Crimps insulated and non-insulated terminals
- 2 precision ground wire cutters
- Precision ground scissors-type wire stripper for 22-8 solid wire and 26-10 stranded wire
- Cuts and rethreads 5 common sizes of bolts
- Crimps 7-8mm spark plug wire terminals
- Made from heat treated tool steel
- Machined nut and bolt for precise pivoting -adjust tension by loosening or tightening the nut
- 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-106 | Crimper/Cutter, 7-8 mm 3 Strip Stations | 12-16 | Anvil | 10-22 | 7-8 mm Auto | 4-40 / 6-32 / 8-32 / 10-32 / 10-24 | 7- 3/4 |
| IE-138 | Automotive Crimper/ Stripper, 2 Cutters | 8-22 Solid, 10-26 Stranded | Anvil | 10-26 | 10-22<br>7-8 mm Auto | 4-40 /6-32 / 8-32 / 10-32 / 10-24 | 8-1/2 |
| IE-140 | Crimper/Cutter, 6 Strip Stations NSN 5120-00-278-2423 | 10-22 | Anvil | 10-22 | | 4-40 / 6-32 / 8-32 / 10-32 / 10-24 | 7-3/4 |
| IE-145 | Ignition Crimping Tool | 10-18 | Anvil | 10-18 | 7-8 mm Auto, “W” & “F” crimp terminals | | 9-3/4 |
| IE-150 | Open & Closed Barrel Flag Terminal Crimper | | | Open barrel Closed barrel 10-22 AWG | Open barrel Closed barrel Flag terminals | 4-40 / 6-32 / 8-32 / 10-32 / 10-24 | 8-1/2 |
| IE-187 | 5-Station Micro Terminal Crimper | | | | Open barrel & Weatherpack Terminals 14-24 AWG | | 8 |

# ELECTRICAL TOOLS REFERENCE GUIDE

| PART NO. | DESCRIPTION | STRIPS (AWG) | CRIMPS | | SCREW CUTTER | CUTTER | LOCK | SPRING RETURN | WIRE LOOPING | MILBAR® REF# |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | INSULATED (AWG) | NON-INSULATED (AWG) | | | | | | |
| IE-106 | Upfront Crimper/Cutter, 7-8 mm, 3 Strip Stations | 12-16 | 10-22 | 7-8 mm Auto | (b) | • | | | | 19E |
| IE-110 | Upfront Stripper/Cutter/Crimper, 5-in-1 Combo | 10-22 | 10-22 | 10-22<br>7-8 mm Auto | (c) | • | | | • | 46E |
| IE-112 | Combination AWG/Metric Tool | 10-20<br>0.75-6.0 mm² | 10-22 | 10-22<br>7-8 mm Auto | (d) | • | | | | 2E |
| IE-114 | Upfront Stripper/Cutter/Crimper, Metric | 0.75-6.0 mm²<br>10-22 | 1.5-6.0 mm<br>10-22 | 1.5-6.0 mm<br>10-22<br>7-8 mm Auto | (e) | • | | | | 21E |
| IE-115 | "V" Stripper, with Slide Adjuster | 10-20 Adjustable | | | | • | | | • | 100E |
| IE-116 | "V" Stripper; Slide Adjuster, Slide Lock, Spring | 10-20 Adjustable | | | | • | • | • | • | 101E |
| IE-120 | HD Stripper/Cutter | 10-20<br>0.8-2.6 mm | | | | • | • | • | • | 31E |
| IE-122 | Stripper/Cutter, Standard Duty | 8-16 Stranded<br>1.3-3.3 mm | | | | • | | • | • | 3E |
| IE-123 | NM-B Cable, Dual | 12-2, 14-2 NM-B<br>12-14 AWG | | | (a) | • | • | • | • | 77E |
| IE-125 | HD Stripper/Cutter | 16-26 Stranded<br>0.4-1.3 mm | | | | • | • | • | • | 32E |
| IE-130 | HD Stripper/Cutter | 22-30<br>0.25-0.65 mm | | | | • | • | • | • | 33E |
| IE-135 | Upfront Crimper/Cutter, 6 Strip Stations | 10-22 | 10-22 | 10-22<br>7-8 mm Auto | (b) | • | | | | 18E |
| IE-136 | Upfront Crimper/Cutter/Stripper | 8-18 Solid<br>10-22 Stranded | 10-22 | 10-22<br>7-8 mm Auto | (b) | • | | | • | 52E |
| IE-138 | Automotive Crimper/Stripper | 8-22 Solid<br>10-26 Stranded | 10-26 | 10-22<br>7-8 mm Auto | (b) | • | | | • | 27E |
| IE-140 | Upfront Crimper/Cutter, NSN 5120-00-278-2423 | 10-22 | 10-22 | | (b) | • | | | | 22E |
| IE-145 | Ignition Crimping Tool | 10-18 | 10-18 | 7-8 mm Auto<br>"W", "F" terminals | | • | | | | 23E |
| IE-150 | Open & Closed Barrel Crimper | | Open barrel<br>Closed barrel<br>10-22 | Open barrel<br>Closed barrel<br>Flag terminals | (b) | | | | | 25E |
| IE-155 | Super Stripper, Ergonomic Handles | 10-18 Solid<br>12-20 Stranded | | | (a) | • | • | • | • | 56EB |
| IE-159 | Super Stripper, Ergonomic Handles | 20-30 Solid<br>22-32 Stranded | | | (a) | • | • | • | • | 66EB |
| IE-162 | 3-Piece Mini Electrical Tools Kit, in Pouch | 8-18 Solid<br>10-22 Stranded<br>0.34-6.0 mm² | 10-22 | 10-22 | | • | | | | 700E |
| IE-163 | Mini Cutter | | | | | • | | | | 701E |
| IE-164 | Mini Stripper | 8-18 Solid<br>10-22 Stranded<br>0.34-6.0 mm² | | | | | | | | 702E |
| IE-165 | Mini Crimper | | 10-22 | 10-22 | | | | | | 703E |
| IE-177 | Stripper/Cutter, Standard Duty | 10-20<br>0.8-2.6 mm | | | | • | | • | • | 5E |
| IE-178 | Stripper/Cutter, Standard Duty | 16-26 Stranded<br>0.4-1.3 mm | | | | • | | • | • | 6E |
| IE-180 | Stripper/Cutter, Standard Duty | 22-30<br>0.25-0.65 mm | | | | • | | • | • | 7E |
| IE-182 | Stripper/Cutter, Standard Duty w/Lock and Spring | 10-20 Stranded<br>0.8-2.6 mm | | | | • | • | • | • | 15E |
| IE-187 | 5 Station Micro Terminal Crimper | | | Open barrel<br>Weatherpack<br>14-24 | | | | | | 91E |

**SCREW CUTTER**

(a) 6-32 / 8-32
(b) 4-40 / 6-32 / 8-32 / 10-32 / 10-24
(c) 4-40 / 5-40 / 6-32 / 8-32 / 10-32 / 10-24
(d) 6-32 / 8-32 / 10-32 / 3.5 mm/4.0 mm/5.0 mm
(e) 2.5 mm/3.0 mm/3.5 mm/4.0 mm/4.5 mm/5.0 mm

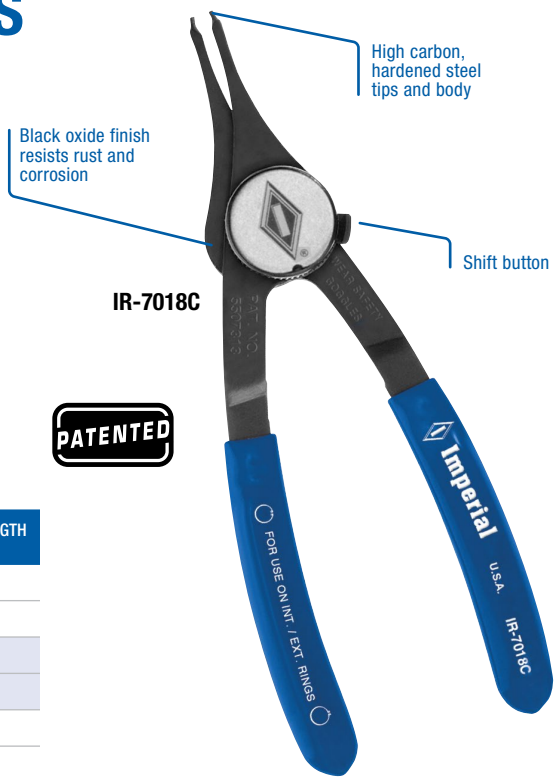
# CAM-LOCK™ CONVERTIBLES

## FIXED TIP CONVERTIBLE PLIERS

### FOR 1/4" TO 2" RINGS

- Unique patented design allows for quick changeover from internal to external use.
- No screws to tighten or come loose.
- For 1/4" to 2" internal and external rings.
- 18° and 90° offsets; 0.038", 0.047" and 0.070" tip diameters.
- Sealed air-pocket cushion grips.

**Conforms to ASME Standard B107.500-2010**



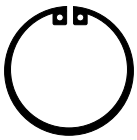

**For shaft/bore diameter and ring series reference, see page 71**

| PART NO. | DESCRIPTION | TIP DIA. (in.) | TIP ANGLE | TYPE | | NOM. LENGTH (in.) |
|---|---|---|---|---|---|---|
| | | | | Int. (Housing) | Ext. (Shaft) | |
| IR-3818C | Cam-Lock Convertible | .038 | 18° | • | • | 6 |
| IR-3890C | Cam-Lock Convertible | .038 | 90° | • | • | 6 |
| IR-4718C | Cam-Lock Convertible | .047 | 18° | • | • | 6 |
| IR-4790C | Cam-Lock Convertible | .047 | 90° | • | • | 6 |
| IR-7018C | Cam-Lock Convertible | .070 | 18° | • | • | 7-1/4 |
| IR-7090C | Cam-Lock Convertible | .070 | 90° | • | • | 7-1/4 |
| IR-4CK | 4-pc. Kit: (.038, .070 tips) w/storage tray | | | | | |
| IR-6CK | 6-pc. Kit: (one of each) w/storage case | | | | | |
| IR-6CKCASE | Replacement case for IR-6CK | | | | | |

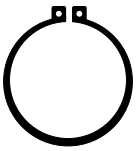
IR-4CK

**QUICKLY CHANGES FROM EXTERNAL TO INTERNAL**

1. Compress handles slightly.
2. Depress shift button.
3. Turn knob.



Internal (Housing)
3/8 in. – 2 in.
(10 mm – 50 mm)



External (Shaft)
1/4 in. – 2 in.
(6.5 mm – 50 mm)

Internal

External

IR-6CK

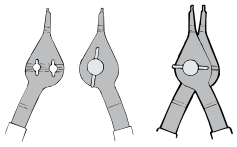
# QTR-TURN® CONVERTIBLES

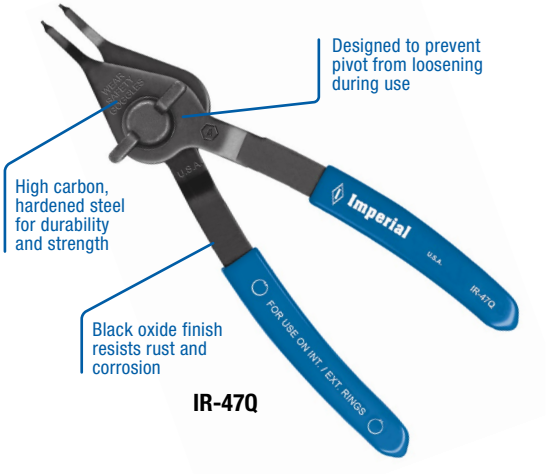
## FIXED TIP CONVERTIBLE PLIERS

### FOR 1/4" TO 3-1/2" RINGS

- Quickly and easily converts from internal (rings in a housing or bore) to external applications (rings on a shaft).
- Pivot will not loosen while using tool.
- Unique design provides stability.
- Low profile "T-Knob" for working in tight spaces.
- Available in 12 sizes: 4 tip diameters with straight, 45˚ or 90˚ offsets.
- Sealed air-pocket cushion grips for comfort.

**Simple to Use**
Convert pliers to internal or external position by rotating "T" knob one-quarter turn; pull handle halves apart and reinstall in other hole. Rotate another quarter turn to lock.



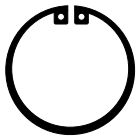



IR-47Q

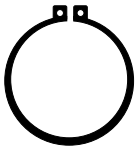
**Conforms to ASME Standard B107.500-2010**

For shaft/bore diameter and ring series reference, see page 71

| PART NO. | DESCRIPTION | TIP DIA. (in.) | TIP ANGLE | TYPE | | NOM. LENGTH (in.) |
|---|---|---|---|---|---|---|
| | | | | Int. (Housing) | Ext. (Shaft) | |
| IR-38Q | Qtr-Turn Convertible | .038 | 0° | • | • | 6 |
| IR-3845Q | Qtr-Turn Convertible | .038 | 45° | • | • | 6 |
| IR-3890Q | Qtr-Turn Convertible | .038 | 90° | • | • | 6 |
| IR-47Q | Qtr-Turn Convertible | .047 | 0° | • | • | 6 |
| IR-4745Q | Qtr-Turn Convertible | .047 | 45° | • | • | 6 |
| IR-4790Q | Qtr-Turn Convertible | .047 | 90° | • | • | 6 |
| IR-70Q | Qtr-Turn Convertible | .070 | 0° | • | • | 7-1/4 |
| IR-7045Q | Qtr-Turn Convertible | .070 | 45° | • | • | 7-1/4 |
| IR-7090Q | Qtr-Turn Convertible | .070 | 90° | • | • | 7-1/4 |
| IR-90Q | Qtr-Turn Convertible | .090 | 0° | • | • | 9-1/4 |
| IR-9045Q | Qtr-Turn Convertible | .090 | 45° | • | • | 9-1/4 |
| IR-9090Q | Qtr-Turn Convertible | .090 | 90° | • | • | 9-1/4 |



Internal (Housing)
3/8 in. – 3 in.
(10 mm – 76 mm)



External (Shaft)
1/4 in. – 3-1/2 in.
(6.5 mm – 89 mm)

Internal

External

## IR-6QK PROFESSIONAL 6-PIECE KIT

### FOR 1/4" TO 2" RINGS

- 0.038", 0.047" and 0.070" tip diameters.
- 0˚ and 90˚ offsets.
- Custom-molded impact-resistant storage case.
- Kit weight 2.25 lbs.

IR-6QK

## IR-12QK PROFESSIONAL 12-PIECE KIT

### FOR 1/4" TO 3-1/2" RINGS

- 0.038", 0.047", 0.070" and 0.090" tip diameters.
- 0˚, 45˚ and 90˚ offsets.
- Custom-molded impact-resistant case has storage space for spare rings.
- Kit weight 5 lbs.

IR-12QK

# STANDARD CONVERTIBLES

## FIXED TIP CONVERTIBLE PLIERS

### FOR 1/4" TO 3-1/2" RINGS

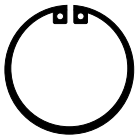
- Simply move screw to other hole and finger-tighten to convert from internal to external (or reverse).
- Available in straight, 45˚ and 90˚ offsets.
- 0.038" to 0.090" tip diameters.
- Cushion grip handles.

**Conforms to ASME Standard B107.500-2010**

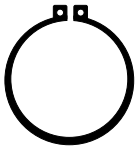
IR-47

**For shaft/bore diameter and ring series reference, see page 71**

| PART NO. | DESCRIPTION | TIP DIA. (in.) | TIP ANGLE | TYPE | | NOM. LENGTH (in.) |
|---|---|---|---|---|---|---|
| | | | | Int. (Housing) | Ext. (Shaft) | |
| IR-38 | Standard Convertible (NSN 5120-00-089-0874) | .038 | 0° | • | • | 6 |
| IR-3845 | Standard Convertible (NSN 5120-00-930-9186) | .038 | 45° | • | • | 6 |
| IR-3890 | Standard Convertible | .038 | 90° | • | • | 6 |
| IR-47 | Standard Convertible | .047 | 0° | • | • | 6 |
| IR-4745 | Standard Convertible | .047 | 45° | • | • | 6 |
| IR-4790 | Standard Convertible | .047 | 90° | • | • | 6 |
| IR-70 | Standard Convertible | .070 | 0° | • | • | 7-1/4 |
| IR-7045 | Standard Convertible | .070 | 45° | • | • | 7-1/4 |
| IR-7090 | Standard Convertible | .070 | 90° | • | • | 7-1/4 |
| IR-90 | Standard Convertible | .090 | 0° | • | • | 9-1/4 |
| IR-9045 | Standard Convertible | .090 | 45° | • | • | 9-1/4 |
| IR-9090 | Standard Convertible | .090 | 90° | • | • | 9-1/4 |



Internal (Housing)
3/8 in. – 3 in.
(10 mm – 76 mm)



External (Shaft)
1/4 in. – 3-1/2 in.
(6.5 mm – 89 mm)

Internal

External

To convert pliers to internal or external position, remove thumbscrew. Pull handle halves apart and reposition screw in other hole, then finger tighten.

## IR-12K PROFESSIONAL 12-PC. KIT

### FOR 1/4" TO 3-1/2" RINGS

- 0˚, 45˚ and 90˚ tip angles.
- 0.038", 0.047", 0.070" and 0.090" tip diameters.
- Impact-resistant case has storage space for spare rings.
- Kit weight 5 lbs.

IR-12K

## 6-PC. KITS

### FOR 1/4" TO 2" RINGS

- 0˚, 45˚ and 90˚ offsets.
- 0.038", 0.047" and 0.070" tip diameters.
- Custom-molded impact-resistant storage case.
- Kit weight 2.25 lbs.

**IR-045K** 6-pc. kit, 0° and 45° tip angles.

**IR-090K** 6-pc. kit, 0° and 90° tip angles.

IR-090K

## 2-PC. MERCHANDISING KITS

### FOR 3/8" TO 2" RINGS

- Straight, 45° or 90° 2-pc. kits in popular tip sizes.
- Hang card with instructions and ring specs.
- Clear plastic storage case.

**IR-47700K** Contains IR-47 (0.047", straight) and IR-70 (0.070", straight)

**IR-477045K** Contains IR-4745 (0.047", 45˚) and IR-7045 (0.070", 45˚)

**IR-477090K** Contains IR-4790 (0.047", 90˚) and IR-7090 (0.070", 90˚)

IR-47700K

# INDUSTRIAL AND UTILITY PLIERS

## INDUSTRIAL FIXED TIP PLIERS WITH SPRING, STOP & GRIPS*

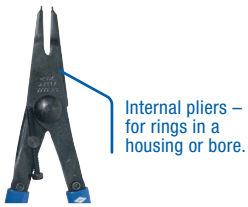
### FOR 1/8" TO 3-1/2" RINGS

**For shaft/bore diameter and ring series reference, see page 72.**

| PART NO. | NSN 5120- | TIP DIA. (in.) | TIP ANGLE | TYPE Int. (Housing) | TYPE Ext. (Shaft) | NOM. LENGTH (in.) |
|---|---|---|---|---|---|---|
| Mini Pliers: | | | | | | |
| IR-230S** | 595-9550 | .023 | 0° | | • | 5-1/4 |
| IR-0015R** | 595-9548 | .023 | 0° | | • | 5-1/4 |
| IR-0018R** | 288-9711 | .023 | 0° | | • | 5-1/4 |
| IR-2124R | 892-4890 | .023 | 45° | | • | 5-1/4 |
| IR-2154R | | .023 | 45° | | • | 5-1/4 |
| IR-2184R | 024-9527 | .023 | 45° | | • | 5-1/4 |
| IR-2129R | | .023 | 90° | | • | 5-1/4 |
| IR-2159R | | .023 | 90° | | • | 5-1/4 |
| IR-2189R | 024-9528 | .023 | 90° | | • | 5-1/4 |
| IR-250H | 596-8665 | .025 | 0° | • | | 5-1/2 |
| IR-2545H | | .025 | 45° | • | | 5-1/2 |
| IR-2590H | 024-9531 | .025 | 90° | • | | 5-1/2 |
| IR-380H | 293-0048 | .038 | 0° | • | | 5-1/2 |
| IR-3845H | | .038 | 45° | • | | 5-1/2 |
| IR-3890H | | .038 | 90° | • | | 5-1/2 |
| IR-380S | 288-9717 | .038 | 0° | | • | 6-1/4 |
| IR-3845S | 288-9716 | .038 | 45° | | • | 6-1/4 |
| IR-3890S | 408-1434 | .038 | 90° | | • | 6-1/4 |
| IR-470H | | .047 | 0° | • | | 5-1/2 |
| IR-4745H | | .047 | 45° | • | | 5-1/2 |
| IR-470S | | .047 | 0° | | • | 5-3/4 |
| IR-4745S | | .047 | 45° | | • | 5-3/4 |
| IR-4790S | | .047 | 90° | | • | 5-3/4 |
| IR-700H | 293-0045 | .070 | 0° | • | | 6-1/2 |
| IR-7045H | 801-0957 | .070 | 45° | • | | 6-1/2 |
| IR-7090H | 595-9532 | .070 | 90° | • | | 6-1/2 |
| IR-700S | 293-0049 | .070 | 0° | | • | 7 |
| IR-7045S | 640-6352 | .070 | 45° | | • | 7 |
| IR-7090S | 024-9529 | .070 | 90° | | • | 7 |
| IR-900H | 293-0046 | .090 | 0° | • | | 9 |
| IR-9045H | 520-9863 | .090 | 45° | • | | 9 |
| IR-9090H | 602-4845 | .090 | 90° | • | | 9 |
| IR-1150S | 293-0047 | .115 | 0° | | • | 9-1/4 |
| IR-11590S | 892-5919 | .115 | 90° | | • | 9-1/4 |

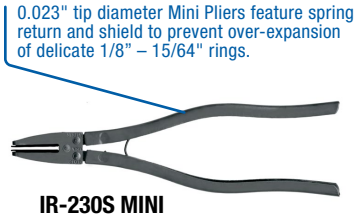
*Minis do not have a stop and grips. Models IR-1150S and IR-11590S are furnished with spring and grip, but no stop.
**Shielded

IR-380S




IR-380H

IR-380S




IR-230S MINI

IR-380HU

## UTILITY FIXED TIP PLIERS WITHOUT SPRING, STOP AND GRIPS

### FOR 1/8" TO 3-1/2" RINGS

**For shaft/bore diameter and ring series reference, see page 72**

| PART NO. | NSN 5120- | TIP DIA. (in.) | TIP ANGLE | TYPE Int. (Housing) | TYPE Ext. (Shaft) | NOM. LENGTH (in.) |
|---|---|---|---|---|---|---|
| IR-250HU | 596-1106 | .025 | 0° | • | | 5-1/2 |
| IR-2545HU | 640-6357 | .025 | 45° | • | | 5-1/2 |
| IR-2590HU | | .025 | 90° | • | | 5-1/2 |
| IR-380HU | 293-2514 | .038 | 0° | • | | 5-1/2 |
| IR-3845HU | 640-6356 | .038 | 45° | • | | 5-1/2 |
| IR-3890HU | | .038 | 90° | • | | 5-1/2 |
| IR-380SU | 292-2513 | .038 | 0° | | • | 6-1/4 |
| IR-3845SU | 640-6353 | .038 | 45° | | • | 6-1/4 |
| IR-3890SU | 752-9755 | .038 | 90° | | • | 6-1/4 |
| IR-470HU | | .047 | 0° | • | | 5-1/2 |
| IR-4745HU | | .047 | 45° | • | | 5-1/2 |
| IR-4790HU | | .047 | 90° | • | | 5-1/2 |

| PART NO. | NSN 5120- | TIP DIA. (in.) | TIP ANGLE | TYPE Int. (Housing) | TYPE Ext. (Shaft) | NOM. LENGTH (in.) |
|---|---|---|---|---|---|---|
| IR-4745SU | | .047 | 45° | | • | 5-3/4 |
| IR-4790SU | | .047 | 90° | | • | 5-3/4 |
| IR-700HU | 596-0711 | .070 | 0° | • | | 6-1/2 |
| IR-7045HU | 640-6355 | .070 | 45° | • | | 6-1/2 |
| IR-7090HU | | .070 | 90° | • | | 6-1/2 |
| IR-700SU | 595-9555 | .070 | 0° | | • | 7 |
| IR-7045SU | 640-6352 | .070 | 45° | | • | 7 |
| IR-7090SU | | .070 | 90° | | • | 7 |
| IR-90HU | 595-0554 | .090 | 0° | • | | 9 |
| IR-9090HU | 793-5052 | .090 | 90° | • | | 9 |
| IR-1150SU | 293-0044 | .115 | 0° | | • | 9-1/4 |
| IR-11545SU | | .115 | 45° | | • | 9-1/4 |

# REPLACEABLE TIP PLIERS

## REPLACEABLE TIP PLIERS WITH SPRINGS AND GRIPS

### FOR 3/8" TO 2" RINGS

- One tool handles different size rings by changing tips.
- Spring return.
- Cushion grips.
- Kits feature internal and external pliers with 8 pairs of tips – 2 tools take the place of 16 different pliers!
- Precision-ground replaceable tips also available separately in 0˚, 45˚ and 90˚ offsets and 4 different tip diameters

## IR-44K SAE KIT

- Two replaceable tip pliers (internal and external) with tip kit IR-8TK (8 pairs).
- Reusable plastic storage case.

## IR-44MK HANG CARD KIT - SAE AND METRIC

- Two replaceable tip pliers (internal and external) with SAE and METRIC size tip kit IR-184TK (8 pairs).
- Hang card with instructions and ring sizes.
- Reusable plastic storage case.

**For replacement tips and tip kits, see page 68**
**For shaft/bore diameter and ring series reference, see page 72**

| PART NO. | DESCRIPTION | TYPE | |
|---|---|---|---|
| | | Int. (Housing) | Ext. (Shaft) |
| IR-44K | SAE Kit includes (1) Internal Pliers, (1) External Pliers & IR-8TK Tip Kit (8 pairs) in reusable plastic storage case | • | • |
| IR-44MK | SAE & METRIC Kit includes (1) Internal Pliers, (1) External Pliers, IR-184TK SAE & METRIC Tip Kit (8 pairs) with hang card instructions in reusable plastic storage case. | • | • |
| IR-44H | Internal Pliers & IR-182TK Tip Kit (4 pairs) | • | |
| IR-44S | External Pliers & IR-182TK Tip Kit (4 pairs) | | • |

**Conforms to ASME Standard B107.500-2010**

IR-44H

## THE PROFESSIONAL'S CHOICE FOR INTERMEDIATE SIZE 1–1/2" TO 4" RINGS

### IR-50K HEAVY DUTY PLIERS SET

- Two replaceable tip pliers (internal and external) with 8 pairs of tips take the place of 16 separate pliers!
- Spring ratchet lock mechanism minimizes fatigue by allowing the ring to be compressed or expanded through gradual moves and then locked at a desired size without continued pressure on the handles. Heavy and large rings are safely and easily controlled.
- Tips mount directly to pliers for maximum stability.
- Spring return.
- Cushion grips.

IR-50K

**For replacement tips and tip kits, see page 68**
**For shaft/bore diameter and ring series reference, see page 72**

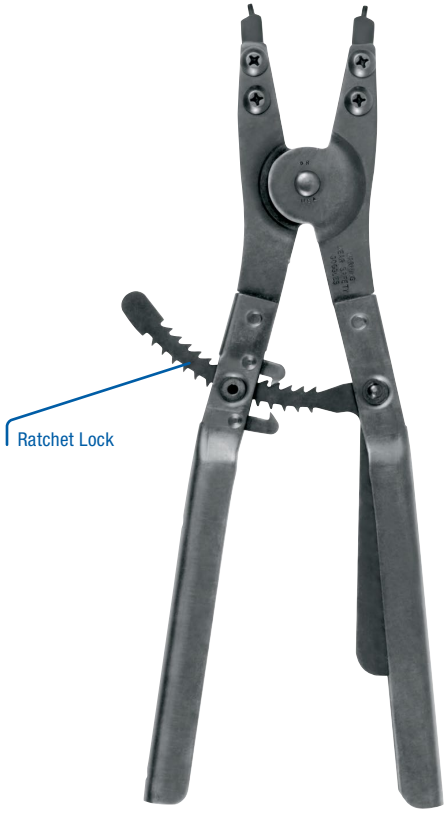
| PART NO. | DESCRIPTION |
|---|---|
| IR-50K | Kit includes (1) IR-50H heavy duty internal pliers, (1) IR-50S heavy duty external pliers and (8) pair tips in custom-molded storage case. |
| IR-50H | Internal pliers only – without tips |
| IR-50S | External pliers only – without tips |

**IR-50H**
(Shown with tips installed)

# LARGE & EXTRA-LARGE RATCHETING PLIERS

## FOR SAFE & EASY CONTROL OF 3" TO 10" RINGS

- Ratchet Lock mechanism for safe and easy control of large, heavy rings.
- Spring return.
- 0˚, 45˚ and 90˚ offsets in .120", .150" and .170" tip diameters.
- Precision-ground tips mount directly to pliers for maximum stability.




### LARGE PLIERS

**For replacement tips, see page 68**

| PART NO. | TIP DIA. (in.) | TIP ANGLE | TYPE | | NOM. LENGTH (in.) |
|---|---|---|---|---|---|
| | | | Int. (Housing) | Ext. (Shaft) | |
| IR-120H | .120 | 0° | • | | 16 |
| IR-12045H | .120 | 45° | • | | 16 |
| IR-12090H | .120 | 90° | • | | 16 |
| IR-120S | .120 | 0° | | • | 16 |
| IR-12045S | .120 | 45° | | • | 16 |
| IR-12090S | .120 | 90° | | • | 16 |

### EXTRA-LARGE PLIERS

**For replacement tips, see page 68**
**For shaft/bore diameter and ring series reference, see page 72**

| PART NO. | TIP DIA. (in.) | TIP ANGLE | TYPE | | NOM. LENGTH (in.) |
|---|---|---|---|---|---|
| | | | Int. (Housing) | Ext. (Shaft) | |
| IR-150H | .150 | 0° | • | | 29 |
| IR-15045H | .150 | 45° | • | | 29 |
| IR-15090H | .150 | 90° | • | | 29 |
| IR-170S | .170 | 0° | | • | 19 |
| IR-17045S | .170 | 45° | | • | 19 |
| IR-17090S | .170 | 90° | | • | 19 |

1. Loosen ring first with punch or similar tool to remove bond from rust and accumulated dirt.
2. Use largest tip pliers that will fit in holes of ring.
3. Push tips as far into ring holes as possible before squeezing handles.
4. Use minimal pressure needed to remove or install ring.
5. Never use your pliers for anything other than installing and removing retaining rings.

IR-120H

IR-120S

IR-150H

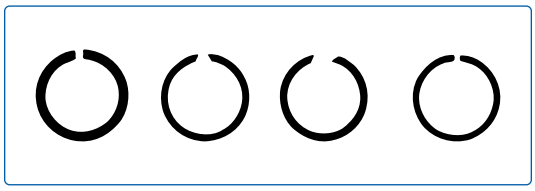
IR-170S

# LOCK RING PLIERS

## FIXED TIP AND REPLACEABLE TIP PLIERS

### FOR EXTERNAL RINGS WITHOUT PICKUP HOLES

- For industrial and power transmission lock ring applications.
- Spring return for ease of operation.
- Cushion grips.

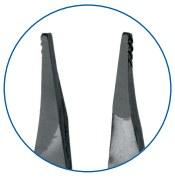


### FIXED TIP LOCK RING PLIERS

| PART NO. | DESCRIPTION | NOM. LENGTH (in.) |
|---|---|---|
| IR-15R | Small, Auto Transmission | 7-1/2 |
| IR-47R | Standard (NSN 5120-00-595-9551) | 8-1/2 |
| IR-48R | Thin Nose | 8-1/2 |
| IR-601R | Auto Transmission | 9-1/2 |
| IR-602R | Heavy Duty | 8-1/2 |

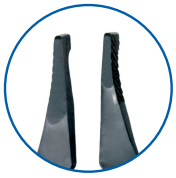
### REPLACEABLE TIP LOCK RING PLIERS

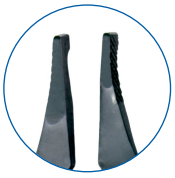
| PART NO. | DESCRIPTION | NOM. LENGTH (in.) |
|---|---|---|
| IR-LRRL | External Pliers with IR-47R style tips, ratchet lock & spring return | 10-1/2 |
| IR-LRS | External Pliers with IR-47R style tips & spring return | 14 |
| IR-LHS | Horseshoe style tips (1 pair) for above pliers | |


IR-48R

IR-601R

IR-602R


IR-LRRL


IR-LRS

# REPLACEABLE TIPS & TIP KITS

## REPLACEABLE TIPS & TIP KITS

- Our proprietary manufacturing process results in a proven method of creating strong, long-lasting replaceable tips for Imperial® pliers.
- Precision-ground and hardened.
- Color-coded by size.
- Kits of common sizes are available.

Straight 0

45°

90°

IR-50H INTERNAL

IR-50S EXTERNAL

### REPLACEABLE TIPS FOR IR-44H AND IR-44S

| PART NO. | DESCRIPTION | TIP DIA. (in.) | COLOR | TIP ANGLE | MILBAR REF # |
|---|---|---|---|---|---|
| IR-380T | 1 Pair | .038 | Black | 0° | 4435R |
| IR-3845T | 1 Pair | .038 | Black | 45° | 4436R |
| IR-3890T | 1 Pair | .038 | Black | 90° | 4437R |
| IR-470T | 1 Pair | .047 | Silver | 0° | 4445R |
| IR-4715T | 1 Pair | .047 | Silver | 15° | 4448R |
| IR-4745T | 1 Pair | .047 | Silver | 45° | 4446R |
| IR-4790T | 1 Pair | .047 | Silver | 90° | 4447R |
| IR-700T | 1 Pair | .070 | Gold | 0° | 4463R |
| IR-8TK | Tip Kit, 8 Pair<br>1 pair each: .038" 0°, 45°, 90°; .047" 0°, 45°, 90°; .070" 0°, 15° | | | | 4496R |
| IR-184TK | Tip Kit, 8 Pair SAE/Metric<br>1 pair each: .038" 0°, 15°, 45°; .047" 0°, 15°, 90°; .070" 15°; .093" 0° | | | | 45R08 |
| IR-182TK | Tip Kit, 4 Pair<br>1 pair each: .038" 90°; .047" 0°, 45°; .070" 0° | | | | 4481R |
| IR-183TK | Tip Kit, 8 Pair<br>2 pairs each: .038" 90°; .047" 0°, 45°; .070" 0° | | | | 4482R |

### REPLACEABLE TIPS FOR IR-50H AND IR-50S

**(Both pliers use same tip)**

| PART NO. | DESCRIPTION | TIP DIA. (in.) | COLOR | TIP ANGLE | MILBAR REF # |
|---|---|---|---|---|---|
| IR-593T | 1 Pair | .093 | Gold | 0° | 5021R |
| IR-9345T | 1 Pair | .093 | Gold | 45° | 5023R |
| IR-9390T | 1 Pair | .093 | Gold | 90° | 5024R |
| IR-1080T | 1 Pair | .108 | Black | 0° | 5005R |
| IR-10815T | 1 Pair | .108 | Black | 15° | 5006R |
| IR-10845T | 1 Pair | .108 | Black | 45° | 5007R |
| IR-10890T | 1 Pair | .108 | Black | 90° | 5008R |
| IR-5120T | 1 Pair | .120 | Silver | 0° | 5009R |
| IR-51215T | 1 Pair | .120 | Silver | 15° | 5011R |
| IR-51245T | 1 Pair | .120 | Silver | 45° | 5012R |
| IR-51290T | 1 Pair | .120 | Silver | 90° | 5013R |
| IR-LHS | 1 Pair Horseshoe Lock Ring w/ screws | | | | 5036R |
| IR-5108TK | Tip Kit, 4 Pair w/ screws 1 pair each:<br>.108" 0°, 15°, 45°, 90° | | | | 5002R |
| IR-5120TK | Tip Kit, 4 Pair w/ screws 1 pair each:<br>.120" 0°, 15°, 45°, 90° | | | | 5003R |
| IR-5004TK | Tip Kit, 4 Pair w/ screws 1 pair each:<br>.108" 15°, 45°; .120" 45°, 90° | | | | 5004R |

### REPLACEABLE TIPS FOR IR-120H, IR-120S, IR-150H AND IR-170S

| PART NO. | DESCRIPTION | TIP DIA. (in.) | TIP ANGLE | MILBAR REF # |
|---|---|---|---|---|
| **FOR MODEL IR-120H AND IR-120S PLIERS (both pliers use same tips)** | | | | |
| IR-120T | 1 Pair w/ screws | .120 | 0° | 7801R |
| IR-124T | 1 Pair w/ screws | .120 | 45° | 7845R |
| IR-129T | 1 Pair w/ screws | .120 | 90° | 7890R |
| **FOR MODEL IR-150H PLIERS** | | | | |
| IR-150T | 1 Pair w/ screws | .150 | 0° | 71001R |
| IR-154T | 1 Pair w/ screws | .150 | 45° | 71451R |
| IR-159T | 1 Pair w/ screws | .150 | 90° | 71901R |
| **FOR MODEL IR-170S PLIERS** | | | | |
| IR-170T | 1 Pair w/ screws | .170 | 0° | 68001R |
| IR-174T | 1 Pair w/ screws | .170 | 45° | 68451R |
| IR-179T | 1 Pair w/ screws | .170 | 90° | 68901R |

IR-120H INTERNAL

IR-120S EXTERNAL

IR-150H INTERNAL

IR-170S EXTERNAL

# RETAINING RING PLIERS REFERENCE GUIDE

| PART NO. | DESCRIPTION | TIP DIA. (in.) | TIP ANGLE | RING TYPE | | TIP STYLE | | GRIPS | SPRING | STOP | RATCHET LOCK | MILBAR® REF# |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Int. (Housing) | Ext. (Shaft) | FIXED | REPLACE. | | | | | |
| **CONVERTIBLE PLIERS** | | | | | | | | | | | | |
| IR-3818C | CAM-LOCK™ Convertible | .038 | 18° | • | • | • | | • | • | | | 120418R |
| IR-3890C | CAM-LOCK™ Convertible | .038 | 90° | • | • | • | | • | • | | | 120490R |
| IR-4718C | CAM-LOCK™ Convertible | .047 | 18° | • | • | • | | • | • | | | 320418R |
| IR-4790C | CAM-LOCK™ Convertible | .047 | 90° | • | • | • | | • | • | | | 320490R |
| IR-7018C | CAM-LOCK™ Convertible | .070 | 18° | • | • | • | | • | • | | | 340418R |
| IR-7090C | CAM-LOCK™ Convertible | .070 | 90° | • | • | • | | • | • | | | 340490R |
| IR-4CK | 4-pc. CAM-LOCK™ Kit w/Storage Tray | .038, .070 | 18°, 90° | • | • | • | | • | • | | | 4304R |
| IR-6CK | 6-pc. CAM-LOCK™ Kit w/Storage Case | .038, .047, .070 | 18°, 90° | • | • | • | | • | • | | | 4306R |
| IR-38Q | Qtr-Turn® Convertible | .038 | 0° | • | • | • | | • | | | | 1202R |
| IR-3845Q | Qtr-Turn® Convertible | .038 | 45° | • | • | • | | • | | | | 120245R |
| IR-3890Q | Qtr-Turn® Convertible | .038 | 90° | • | • | • | | • | | | | 120290R |
| IR-47Q | Qtr-Turn® Convertible | .047 | 0° | • | • | • | | • | | | | 3202R |
| IR-4745Q | Qtr-Turn® Convertible | .047 | 45° | • | • | • | | • | | | | 320245R |
| IR-4790Q | Qtr-Turn® Convertible | .047 | 90° | • | • | • | | • | | | | 320290R |
| IR-70Q | Qtr-Turn® Convertible | .070 | 0° | • | • | • | | • | | | | 3402R |
| IR-7045Q | Qtr-Turn® Convertible | .070 | 45° | • | • | • | | • | | | | 340245R |
| IR-7090Q | Qtr-Turn® Convertible | .070 | 90° | • | • | • | | • | | | | 340290R |
| IR-90Q | Qtr-Turn® Convertible | .090 | 0° | • | • | • | | • | | | | 5602R |
| IR-9045Q | Qtr-Turn® Convertible | .090 | 45° | • | • | • | | • | | | | 560245R |
| IR-9090Q | Qtr-Turn® Convertible | .090 | 90° | • | • | • | | • | | | | 560290R |
| IR-12QK | Qtr-Turn® 12-Pc. Kit (1 ea size) w/Storage Case. | 038, .047, .070, .090 | 0°, 45°, 90° | • | • | • | | • | | | | 1225R |
| IR-6QK | Qtr-Turn® 6-Pc. Kit w/Storage Case | .038, .047,.070 | 0°, 90° | • | • | • | | • | | | | 625R |
| IR-38 | Standard Convertible (NSN 5120-00-089-0874) | .038 | 0° | • | • | • | | • | | | | 12R |
| IR-3845 | Standard Convertible (NSN 5120-00-930-9186) | .038 | 45° | • | • | • | | • | | | | 1245R |
| IR-3890 | Standard Convertible | .038 | 90° | • | • | • | | • | | | | 1290R |
| IR-47 | Standard Convertible | .047 | 0° | • | • | • | | • | | | | 32R |
| IR-4745 | Standard Convertible | .047 | 45° | • | • | • | | • | | | | 3245R |
| IR-4790 | Standard Convertible | .047 | 90° | • | • | • | | • | | | | 3290R |
| IR-70 | Standard Convertible | .070 | 0° | • | • | • | | • | | | | 34R |
| IR-7045 | Standard Convertible | .070 | 45° | • | • | • | | • | | | | 3445R |
| IR-7090 | Standard Convertible | .070 | 90° | • | • | • | | • | | | | 3490R |
| IR-90 | Standard Convertible | .090 | 0° | • | • | • | | • | | | | 56R |
| IR-9045 | Standard Convertible | .090 | 45° | • | • | • | | • | | | | 5645R |
| IR-9090 | Standard Convertible | .090 | 90° | • | • | • | | • | | | | 5690R |
| IR-12K | 12-Pc. Professional Std. Convt. Kit w/Storage Case | .038,.047,.070,.090 | 0°, 45°, 90° | • | • | • | | • | | | | 43R |
| IR-045K | 6-Pc. Std. Convt. Kit w/Custom Molded Storage Case | .038, .047, .070 | 0°, 45° | • | • | • | | • | | | | 4645R |
| IR-090K | 6-Pc. Std. Convt. Kit w/Custom Molded Storage Case | .038, .047, .070 | 0°, 90° | • | • | • | | • | | | | 4690R |
| IR-47700K | 2-Pc. Std. Convt. Kit in Plastic Case | .047, .070 | 0° | • | • | • | | • | | | | 42R |
| IR-477045K | 2-Pc. Std. Convt. Kit in Plastic Case | .047, .070 | 45° | • | • | • | | • | | | | 4245R |
| IR-477090K | 2-Pc. Std. Convt. Kit in Plastic Case | .047, .070 | 90° | • | • | • | | • | | | | 4290R |
| IR-6CKCASE | Custom Molded Storage Case for 6-Pc. CAM-LOCK™ Kit | | | | | | | | | | | 4601R |
| IR-12KCASE | Custom Molded Storage Case for 12-Pc. Standard Kit | | | | | | | | | | | 4301R |
| IR-12QKCASE | Custom Molded Storage Case for 12-Pc. Qtr-Turn® Kit | | | | | | | | | | | 4301R |
| IR-6QKCASE | Custom Molded Storage Case for 6-Pc. Qtr-Turn® Kit | | | | | | | | | | | 4601R |
| IR-6KCASE | Custom Molded Storage Case for 6-Pc. Standard Kit | | | | | | | | | | | 4601R |
| **REPLACEABLE TIP PLIERS** | | | | | | | | | | | | |
| IR-120S | Large, Ratchet Lock | .120 | 0° | | • | | • | | • | | • | 8R |
| IR-120H | Large, Ratchet Lock | .120 | 0° | • | | | • | | • | | • | 7R |
| IR-12045S | Large, Ratchet Lock | .120 | 45° | | • | | • | | • | | • | 845R |
| IR-12045H | Large, Ratchet Lock | .120 | 45° | • | | | • | | • | | • | 745R |
| IR-12090S | Large, Ratchet Lock | .120 | 90° | | • | | • | | • | | • | 890R |
| IR-12090H | Large, Ratchet Lock | .120 | 90° | • | | | • | | • | | • | 790R |
| IR-150H | Extra Large, Ratchet Lock | .150 | 0° | • | | | • | | • | | • | 71R |
| IR-15045H | Extra Large, Ratchet Lock | .150 | 45° | • | | | • | | • | | • | 7145R |
| IR-15090H | Extra Large, Ratchet Lock | .150 | 90° | • | | | • | | • | | • | 7190R |
| IR-170S | Extra Large, Ratchet Lock | .170 | 0° | | • | | • | | • | | • | 68R |
| IR-17045S | Extra Large, Ratchet Lock | .170 | 45° | | • | | • | | • | | • | 6845R |
| IR-17090S | Extra Large, Ratchet Lock | .170 | 90° | | • | | • | | • | | • | 6890R |
| IR-44S | External Pliers, Replaceable Tip | .038, .047, .070 | 0° , 45° , 90° | | • | • | • | • | • | | | 4460R |
| IR-44H | Internal Pliers, Replaceable Tip | .038, .047, .070 | 0° , 45° , 90° | • | | | • | • | • | | | 4450R |
| IR-44K | Replaceable Tip Retaining Ring Pliers, Kit (2 pr. pliers, tip kit) | .038, .047, .070 | 0°, 15°, 45°, 90° | • | • | • | • | • | • | | | 4440R |
| IR-44MK | SAE & Metric Kit, Hang Card (2 pr. pliers, tip kit) | .038, .047, .070, .093 | 0°, 15°, 45°, 90° | • | • | • | • | • | • | | | 44R |
| IR-50S | Heavy Duty External Pliers | | | | • | | • | • | • | | • | 28R08 |
| IR-50H | Heavy Duty Internal Pliers | | | • | | | • | • | • | | • | 27R08 |
| IR-50K | Heavy Duty Retaining Ring Pliers (2 pr. pliers, tip kit & storage case) | .108, .120 | 0°, 15°, 45°, 90° | • | • | | • | • | • | | • | 50R |
| **INDUSTRIAL PLIERS** | | | | | | | | | | | | |
| IR-230S | Mini Industrial, Shielded (NSN 5120-00-595-9550) | .023 | 0° | | • | • | | | • | | | 0012R |
| IR-0015R | Mini Industrial, Shielded (NSN 5120-00-595-9548) | .023 | 0° | | • | • | | | • | | | 0015R |
| IR-0018R | Mini Industrial, Shielded (NSN 5120-00-288-9711) | .023 | 0° | | • | • | | | • | | | 0018R |
| IR-2124R | Mini Industrial (NSN 5120-00-892-4890) | .023 | 45° | | • | • | | | • | | | 2124R |
| IR-2154R | Mini Industrial | .023 | 45° | | • | • | | | • | | | 2154R |

# RETAINING RING PLIERS REFERENCE GUIDE

| PART NO. | DESCRIPTION | TIP DIA. (in.) | TIP ANGLE | RING TYPE | | TIP STYLE | | GRIPS | SPRING | STOP | RATCHET LOCK | MILBAR® REF# |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Int. (Housing) | Ext. (Shaft) | FIXED | REPLACE. | | | | | |
| **INDUSTRIAL PLIERS** | | | | | | | | | | | | |
| IR-2184R | Mini Industrial (NSN 5120-00-024-9527) | .023 | 45° | | • | • | | | • | | | 2184R |
| IR-2129R | Mini Industrial | .023 | 90° | | • | • | | | • | | | 2129R |
| IR-2159R | Mini Industrial | .023 | 90° | | • | • | | | • | | | 2159R |
| IR-2189R | Mini Industrial (NSN 5120-00-024-9528) | .023 | 90° | | • | • | | | • | | | 2189R |
| IR-250H | Industrial Pliers (NSN 5120-00-596-8665) | .025 | 0° | • | | • | | • | • | • | | 101R |
| IR-2545H | Industrial Pliers | .025 | 45° | • | | • | | • | • | • | | 10145R |
| IR-2590H | Industrial Pliers (NSN 5120-00-024-9531) | .025 | 90° | • | | • | | • | • | • | | 10190R |
| IR-380S | Industrial Pliers (NSN 5120-00-288-9717) | .038 | 0° | | • | • | | • | • | • | | 2R |
| IR-380H | Industrial Pliers (NSN 5120-00-293-0048) | .038 | 0° | • | | • | | • | • | • | | 1R |
| IR-3845S | Industrial Pliers (NSN 5120-00-288-9716) | .038 | 45° | | • | • | | • | • | • | | 245R |
| IR-3845H | Industrial Pliers | .038 | 45° | • | | • | | • | • | • | | 145R |
| IR-3890S | Industrial Pliers (NSN 5120-00-408-1434) | .038 | 90° | | • | • | | • | • | • | | 290R |
| IR-3890H | Industrial Pliers | .038 | 90° | • | | • | | • | • | • | | 190R |
| IR-470S | Industrial Pliers | .047 | 0° | | • | • | | • | • | • | | 202R |
| IR-470H | Industrial Pliers | .047 | 0° | • | | • | | • | • | • | | 102R |
| IR-4745S | Industrial Pliers | .047 | 45° | | • | • | | • | • | • | | 20245R |
| IR-4745H | Industrial Pliers | .047 | 45° | • | | • | | • | • | • | | 10245R |
| IR-4790S | Industrial Pliers | .047 | 90° | | • | • | | • | • | • | | 20290R |
| IR-700S | Industrial Pliers (NSN 5120-00-293-0049) | .070 | 0° | | • | • | | • | • | • | | 4R |
| IR-700H | Industrial Pliers (NSN 5120-00-293-0045) | .070 | 0° | • | | • | | • | • | • | | 3R |
| IR-7045S | Industrial Pliers (NSN 5120-00-640-6352) | .070 | 45° | | • | • | | • | • | • | | 445R |
| IR-7045H | Industrial Pliers (NSN 5120-00-801-0957) | .070 | 45° | • | | • | | • | • | • | | 345R |
| IR-7090S | Industrial Pliers (NSN 5120-00-024-9529) | .070 | 90° | | • | • | | • | • | • | | 490R |
| IR-7090H | Industrial Pliers (NSN 5120-00-595-9532) | .070 | 90° | • | | • | | • | • | • | | 390R |
| IR-900H | Industrial Pliers (NSN 5120-00-293-0046) | .090 | 0° | • | | • | | • | • | • | | 5R |
| IR-9045H | Industrial Pliers (NSN 5120-00-520-9863) | .090 | 45° | • | | • | | • | • | • | | 545R |
| IR-9090H | Industrial Pliers (NSN 5120-00-602-4845) | .090 | 90° | • | | • | | • | • | • | | 590R |
| IR-1150S | Industrial Pliers (NSN 5120-00-293-0047) | .115 | 0° | | • | • | | • | • | | | 66R |
| IR-11590S | Industrial Pliers (NSN 5120-00-892-5919) | .115 | 90° | | • | • | | • | • | | | 6690R |
| **UTILITY PLIERS** | | | | | | | | | | | | |
| IR-250HU | Utility Pliers (NSN 5120-00-596-1106) | .025 | 0° | • | | • | | | | | | 2101R |
| IR-2545HU | Utility Pliers (NSN 5120-00-640-6357) | .025 | 45° | • | | • | | | | | | 210145R |
| IR-2590HU | Utility Pliers | .025 | 90° | • | | • | | | | | | 210190R |
| IR-380HU | Utility Pliers (NSN 5120-00-293-2514) | .038 | 0° | • | | • | | | | | | 21R |
| IR-380SU | Utility Pliers (NSN 5120-00-292-2513) | .038 | 0° | | • | • | | | | | | 22R |
| IR-3845HU | Utility Pliers (NSN 5120-00-640-6356) | .038 | 45° | • | | • | | | | | | 2145R |
| IR-3845SU | Utility Pliers (NSN 5120-00-640-6353) | .038 | 45° | | • | • | | | | | | 2245R |
| IR-3890HU | Utility Pliers | .038 | 90° | • | | • | | | | | | 2190R |
| IR-3890SU | Utility Pliers (NSN 5120-00-752-9755) | .038 | 90° | | • | • | | | | | | 2290R |
| IR-470HU | Utility Pliers | .047 | 0° | • | | • | | | | | | 2102R |
| IR-4745HU | Utility Pliers | .047 | 45° | • | | • | | | | | | 210245R |
| IR-4745SU | Utility Pliers | .047 | 45° | | • | • | | | | | | 220245R |
| IR-4790HU | Utility Pliers | .047 | 90° | • | | • | | | | | | 210290R |
| IR-4790SU | Utility Pliers | .047 | 90° | | • | • | | | | | | 220290R |
| IR-700HU | Utility Pliers (NSN 5120-00-596-0711) | .070 | 0° | • | | • | | | | | | 23R |
| IR-700SU | Utility Pliers (NSN 5120-00-595-9555) | .070 | 0° | | • | • | | | | | | 24R |
| IR-7045HU | Utility Pliers (NSN 5120-00-640-6355) | .070 | 45° | • | | • | | | | | | 2345R |
| IR-7045SU | Utility Pliers | .070 | 45° | | • | • | | | | | | 2445R |
| IR-7090HU | Utility Pliers | .070 | 90° | • | | • | | | | | | 2390R |
| IR-7090SU | Utility Pliers | .070 | 90° | | • | • | | | | | | 2490R |
| IR-90HU | Utility Pliers (NSN 5120-00-595-0554) | .090 | 0° | • | | • | | | | | | 25R |
| IR-9090HU | Utility Pliers (NSN 5120-00-793-5052) | .090 | 90° | • | | • | | | | | | 2590R |
| IR-1150SU | Utility Pliers (NSN 5120-00-293-0044) | .115 | 0° | | • | • | | | | | | 266R |
| IR-11545SU | Utility Pliers | .115 | 45° | | • | • | | | | | | 26645R |
| **LOCK RING PLIERS** | | | | | | | | | | | | |
| IR-15R | Small, Auto Transmission | | | | • | • | | • | • | | | 15R |
| IR-47R | Standard (NSN 5120-00-595-9551) | | | | • | • | | • | • | | | 47R |
| IR-48R | Thin Nose | | | | • | • | | • | • | | | 48R |
| IR-601R | Auto Transmission | | | | • | • | | • | • | | | 601R |
| IR-602R | Heavy Duty | | | | • | • | | • | • | | | 602R |
| IR-LRRL | Lock Ring Pliers with Ratchet Lock, IR-47R Style Tips | | | | • | | • | • | • | | • | 2836R |
| IR-LRS | Lock Ring Pliers with IR-47R Style Tips | | | | • | | • | • | • | | | 4936R |

# SHAFT/BORE DIAMETER & RING SERIES REFERENCE

| CONVERTIBLE PLIERS | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PLIERS PART NO. / TIP ANGLE | | | TIP SIZE (in.) | SHAFT DIAMETER (in.) | HOUSING/BORE DIAMETER (in.) | RETAINING RING MFG / RING SERIES | | |
| | 0° | 45° | 90° | | | | ROTOR CLIP® | TRUARC® | DASH NO. |
| FIXED TIPS | | | | .038 | .250 to .672 | | SH, BSH | 5100, 5101 | -25 thru -66 |
| | IR-38Q | IR-3845Q | IR-3890Q | | .500 to .781 | | SHI | 5108 | -50 thru -78 |
| | IR-3818C | | IR-3890C | | .125 to .250 | | SHF | 5555 | -12 thru -25 |
| | IR-38 | IR-3845 | IR-3890 | | | .375 to .562 | HO, BHO | N5000, N5001 | -37 thru -56 |
| | | | | | | .750 to 1 | HOI | 5008 | -75 thru -100 |
| | | | | .047 | .687 to .875 | | SH, BSH | 5100, 5101 | -68 thru -87 |
| | IR-47Q | IR-4745Q | IR-4790Q | | .812 to 1 | | SHI | 5108 | -81 thru -100 |
| | IR-4718C | | IR-4790C | | .312, .375 | | SHF | 5555 | -31, -37 |
| | IR-47 | IR-4745 | IR-4790 | | | .625 to 1.023 | HO, BHO | N5000, N5001 | -62 thru -102 |
| | | | | | | 1 to 1.023 | VHO | N5002 | -100 thru -102 |
| | | | | | | 1.062 to 1.375 | HOI | 5008 | -106 thru -137 |
| | | | | .047 | .938 to 1.438 | | SH, BSH | 5100, 5101 | -93 thru -143 |
| | IR-47Q | IR-4745Q | IR-4790Q | | 1 to 1.438 | | VSH | 5102 | -100 thru -143 |
| | IR-4718C | | IR-4790C | | 1.062 to 2 | | SHI | 5108 | -106 thru -200 |
| | IR-47 | IR-4745 | IR-4790 | | .438 to .750 | | SHF | 5555 | -43 thru -75 |
| | | | | | | 1.062 to 1.75 | HO, BHO, VHO | N5000, N5001, N5002 | -106 thru -175 |
| | | | | | | 1.438 to 2 | HOI | 5008 | -143 thru -200 |
| | | | | .090 | 1.5 to 3.5 | | SH, VSH | 5100, 5102 | -150 thru -350 |
| | IR-90Q | IR-9045Q | IR-9090Q | | 1.5 to 1.75 | | BSH | 5101 | -150 thru -175 |
| | IR-90 | IR-9045 | IR-9090 | | 2.156 to 3.25 | | SHI | 5108 | -215 thru -325 |
| | | | | | | 1.812 to 3 | HO, VHO | N5000, N5002 | -181 thru -300 |
| | | | | | | 2.062 to 3 | HOI | 5008 | -206 thru -300 |

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# SHAFT/BORE DIAMETER & RING SERIES REFERENCE

| | PLIERS PART NO. / TIP ANGLE | | | TIP SIZE (in.) | SHAFT DIAMETER (in.) | HOUSING/BORE DIAMETER (in.) | RETAINING RING MFG / RING SERIES | | |
|---|---|---|---|---|---|---|---|---|---|
| | 0° | 45° | 90° | | | | ROTOR CLIP® | TRUARC® | DASH NO. |
| **FIXED TIP PLIERS** | | | | | | | | | |
| **MINI** | IR-230S | IR-2124R | IR-2129R | | .125 | | | | -12 |
| | IR-0015R | IR-2154R | IR-2159R | .023 | .156 | | SH, BSH, VSH | 5100, 5101, 5102 | -15 |
| | IR-0018R | IR-2184R | IR-2189R | | .188 to .236 | | | | -18 thru -31 |
| **INDUSTRIAL** | R-250H | IR-2545H | IR-2590H | .025 | | .250 to .312 | HO, BHO, VHO | N5000, N5001, N5002 | -25 thru -31 |
| | IR-380H | IR-3845H | IR-3890H | .038 | | .375 to 1.023 | HO, BHO, VHO | N5000, N5001, N5002 | -37 thru -102 |
| | | | | | | .750 to 1.375 | HOI | 5008 | -75 thru -137 |
| | IR-380S | IR-3845S | IR-3890S | .038 | .250 to .875 | | SH, BSH, VSH | 5100, 5101, 5102 | -25 thru -87 |
| | | | | | .500 to1.0 | | SHI | 5108 | -50 thru -100 |
| | | | | | .125 to .250 | | SHF | 5555 | -12 thru -25 |
| | IR-470H | IR-4745H | | .047 | | .625 - 1.023 | HO, BHO | N5000, N5001 | -62 thru -102 |
| | | | | | | 1 - 1.023 | VHO | N5002 | -100 thru -102 |
| | | | | | | 1.062 - 1.375 | HOI | 5008 | -106 thru -137 |
| | IR-470S | IR-4745S | IR-4790S | .047 | .687 - .875 | | SH, BSH | 5100, 5101 | -68 thru -87 |
| | | | | | .812 - 1 | | SHI | 5108 | -81 thru 100 |
| | | | | | | | SHF | 5555 | -.31, -.37 |
| | IR-700H | IR-7045H | IR-7090H | .070 | | 1.062 to 1.750 | HO, BHO, VHO | N5000, N5001, N5002 | -106 thru -175 |
| | | | | | | 1.437 to 2.000 | HOI | 5008 | -143 thru -200 |
| | IR-700S | IR-7045S | IR-7090S | .070 | .938 to 1.438 | | SH, BSH, VSH | 5100, 5101, 5102 | -93 thru -143 |
| | | | | | 1.062 to 2.000 | | SHI | 5108 | -106 thru -200 |
| | | | | | .312 to .625 | | SHF | 5555 | -31 thru -62 |
| | IR-900H | IR-9045H | IR-9090H | .090 | | 1.812 to 3.500 | HO, VHO | N5000, N5002 | -181 thru -350 |
| | | | | | | 2 to 3 | HOI | 5008 | -200 thru -300 |
| | IR-1150S | | IR-11590S | .115 | 1.500 to 3.500 | | SH, BSH, VSH | 5100, 5101, 5102 | -150 thru -350 |
| | | | | | 2.125 to 3.25 | | SHI | 5108 | -215 thru -325 |
| | | | | | .750 | | SHF | 5555 | -75 |
| **UTILITY** | IR-250HU | IR-2545HU | IR-2590HU | .025 | | .250 to .312 | HO, BHO, VHO | N5000, N5001, N5002 | -25 thru -31 |
| | IR-380HU | IR-3845HU | IR-3890HU | .038 | | .375 to 1.023 | HO, BHO, VHO | N5000, N5001, N5002 | -37 thru -102 |
| | | | | | | .750 to 1.375 | HOI | 5008 | -75 thru -137 |
| | IR-380SU | IR-3845SU | IR-3890SU | .038 | .250 to .875 | | SH, BSH, VSH | 5100, 5101, 5102 | -25 thru -87 |
| | | | | | .500 to 1.0 | | SHI | 5108 | -50 thru -100 |
| | | | | | .125 to .250 | | SHF | 5555 | -12 thru -25 |
| | IR-470HU | IR-4745HU | IR-4790HU | .047 | | .625 - 1.023 | HO, BHO | N5000, N5001 | -62 thru -102 |
| | | | | | | 1 - 1.023 | VHO | N5002 | -100 thru -102 |
| | | | | | | 1.062 - 1.375 | HOI | 5008 | -106 thru -137 |
| | | IR-4745SU | IR-4790SU | .047 | .687 - .875 | | SH, BSH | 5100, 5101 | -68 thru -87 |
| | | | | | .812 - 1 | | SHI | 5108 | -81 thru 100 |
| | | | | | .312, .375 | | SHF | 5555 | -.31, -.37 |
| | IR-700HU | IR-7045HU | IR-7090HU | .070 | | 1.062 to 1.750 | HO, BHO, VHO | N5000, N5001, N5002 | -106 thru -175 |
| | | | | | | 1.437 to 2.000 | HOI | 5008 | -143 thru -200 |
| | IR-700SU | IR-7045SU | IR-7090SU | .070 | .938 to 1.438 | | SH, BSH, VSH | 5100, 5101, 5102 | -93 thru -143 |
| | | | | | 1.062 to 2.000 | | SHI | 5108 | -106 thru -200 |
| | | | | | .312 to .625 | | SHF | 5555 | -37 thru -62 |
| | IR-90HU | | IR-9090HU | .090 | | 1.812 to 3.500 | HO, VHO | N5000, N5002 | -181 thru -350 |
| | | | | | | 2 to 3 | HOI | 5008 | -200 thru -300 |
| | IR-1150SU | IR-11545SU | | .115 | 1.500 to 3.500 | | SH, BSH, VSH | 5100, 5101, 5102 | -150 thru -350 |
| | | | | | 2.125 to 3.25 | | SHI | 5108 | -215 thru -325 |
| | | | | | .750 | | SHF | 5555 | -75 |
| **REPLACEABLE TIP PLIERS** | | | | | | | | | |
| **SMALL** IR-44K KIT | | IR-44H | | | | .375 to 1.750 | HO, BHO, VHO | N5000, N5001, N5002 | -37 thru -175 |
| | | | | | | .750 to 2 | HOI | 5008 | -75 thru -200 |
| | | IR-44S | | | .250 to 1.438 | | SH, BSH, VSH | 5100, 5101, 5102 | -25 thru -143 |
| | | | | | .500 to 2 | | SHI | 5108 | -50 thru -200 |
| **HEAVY DUTY** IR-50K KIT | | IR-50H | | .108 | | 2.438 to 3.125 | HO, VHO | N5000, N5002 | -244 thru -312 |
| | | | | | | 2.625 to 3 | HOI | 5008 | -262 thru -300 |
| | | | | .120 | | 3.156 to 4.250 | HO, VHO | N5000, N5002 | -315 thru -425 |
| | | | | | | 3.156 to 4 | HOI | 5008 | -315 thru -400 |
| | | IR-50S | | .108 | | | SH | 5100 | -150 thru -350 |
| | | | | | 1.500 to 3.500 | | BSH | 5101 | -150 thru -175 |
| | | | | | 2.125 to 3.500 | | SHI | 5108 | -215 thru -350 |
| | | | | .120 | 1.562 to 3.750 | | SH | 5100 | -156 thru -375 |
| | | | | | 3.500 to 3.939 | | SHI | 5108 | -350 thru -393 |
| **LARGE** | IR-120H | IR-12045H | IR-12090H | .120 | | 3.062 to 6 | HO | N5000 | -306 thru -600 |
| | | | | | | 3.156 to 4 | HOI | 5008 | -315 thru -400 |
| | IR-120S | IR-12045S | IR-12090S | .120 | 3.543 to 6.500 | | SH | 5100 | -354 thru -650 |
| | | | | | 3.500 to 4 | | SHI | 5108 | -350 thru -400 |
| **EXTRA LARGE** | IR-150H | IR-15045H | IR-15090H | .150 | | 6.250 to 10 | HO, VHO | N5000, N5002 | -625 thru -1000 |
| | IR-170S | IR-17045S | IR-17090S | .170 | 6.750 to 9.500 | | SH, VSH | 5100, 5102 | -675 thru -950 |

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# MILBAR® WIRE TWISTERS

The world's leading brand of Wire Twister Tools and Kits, Milbar® Wire Twisters are designed for the professional mechanic. Milbar forgings are made from high carbon alloy steel and are controlled throughout the manufacturing process to exacting engineering specifications. Each tool passes a series of rigorous quality assurance tests which ensure function and reliability under the most demanding environments.

## TYPES AND STYLES

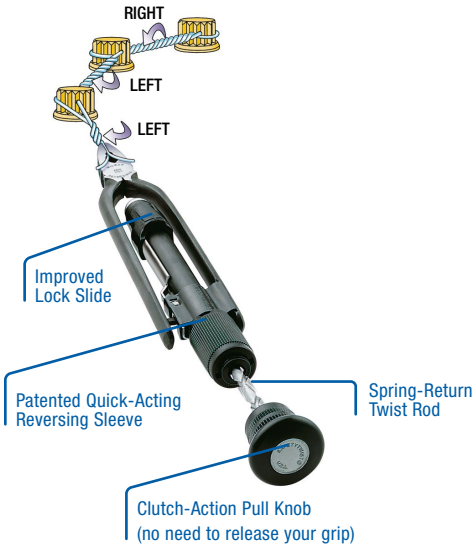
Milbar Wire Twisters come in three nominal sizes: 6", 9" and 12". Some models incorporate a Cushion Throat to catch clipped wire ends, preventing FOD (foreign object damage). The Spring Return feature automatically retracts the twist rod to ease and speed the work. Finally, Milbar Wire Twisters can produce right-hand twists (clockwise action), left-hand twists or both (reversible action).

# REVERSIBLE WIRE TWISTERS

- Reversible action for left and right twists.
- Automatic spring return.
- Faster with better control.
- Selected models available with cushion throat to hold clipped wire – no Foreign Object Damage (FOD).

FOD

PATENTED



### REVERSIBLE

| PART NO. | DESCRIPTION | NOM. SIZE (in.) | RETURN | TWIST | NOSE | JAW |
|---|---|---|---|---|---|---|
| 25W | SafetyTwist® | 6 | Auto | Reversible | Diagonal | Cushion Throat |
| 45W | SafetyTwist® | 6 | Auto | Reversible | Diagonal | Standard |
| 26W | SafetyTwist® | 9 | Auto | Reversible | Diagonal | Cushion Throat |
| 41W | SafetyTwist® | 9 | Auto | Reversible | Diagonal | Standard |
| 42W | SafetyTwist® | 12 | Auto | Reversible | Diagonal | Standard |

**Conforms to ASME Standard B107.500-2010**

# AUTOMATIC RETURN

- Spring return feature automatically retracts the twist rod to ease and speed the work.
- Cushion throat available in 9” model: catches clipped wire ends; prevents FOD.
- Right-hand twist (6", 9”, 12") or left-hand twist (9”, 12").

1W393

11W

Cushioned throat prevents foreign object damage.

3W6

2W393

**Conforms to ASME Standard B107.500-2010**

### AUTO RETURN

| PART NO. | DESCRIPTION | NOM. SIZE (in.) | RETURN | TWIST | NOSE | JAW |
|---|---|---|---|---|---|---|
| 11W | SafetyTwist® | 6 | Auto | Right Hand | Diagonal | Standard |
| 1W393 | SafetyTwist® | 9 | Auto | Right Hand | Diagonal | Standard |
| 3W6 | SafetyTwist® | 9 | Auto | Right Hand | Diagonal | Cushion Throat |
| 5W4 | SafetyTwist® | 9 | Auto | Left Hand | Diagonal | Standard |
| 2W393 | SafetyTwist® | 12 | Auto | Right Hand | Diagonal | Standard |
| 6W4 | SafetyTwist® | 12 | Auto | Left Hand | Diagonal | Standard |

# MANUAL RETURN

- Manual return models combine full performance with economy – for the infrequent user.
- Cushion throat available in 9” model: catches clipped wire ends; prevents FOD.
- Right-hand twist (6", 9”, 12") or left-hand twist (9”, 12")

## 13W SPECIALTY TWISTER

- For difficult access situations (i.e. , deep reach or close quarters).
- Adjustable 13" to 19”.
- Right-hand twist.
- Manual return.

Conforms to ASME Standard B107.500-2010

### MANUAL RETURN

| PART NO. | DESCRIPTION | NOM. SIZE (in.) | RETURN | TWIST | NOSE | JAW |
|---|---|---|---|---|---|---|
| 30W | SafetyTwist® | 6 | Manual | Right Hand | Diagonal | Standard |
| 1W | SafetyTwist® | 9 | Manual | Right Hand | Diagonal | Standard |
| 3W5 | SafetyTwist® | 9 | Manual | Right Hand | Diagonal | Cushion Throat |
| 5W6 | SafetyTwist® | 9 | Manual | Left Hand | Diagonal | Standard |
| 2W | SafetyTwist® | 12 | Manual | Right Hand | Diagonal | Standard |
| 6W6 | SafetyTwist® | 12 | Manual | Left Hand | Diagonal | Standard |
| 13W | Long Reach 13"–19" Adjustable | 19 | Manual | Right Hand | | |

# KITS

**105W** **Professional Safety Wiring Kit.** The most versatile kit available. Contains three different SafetyTwist® Pliers to cover almost any application: 9" Automatic (1W393), 6" Mini (11W) and a 19" Deep Reach Twister (13W). Includes three 1/4 lb. spools of stainless steel safety wire (.020", .032", .041"). Durable plastic storage case. Kit weight 4 lbs. NSN 5180-90-986-8939.

**109W** **Limited Access Safety Wiring Kit.** Contains the 6" Mini (11W) for general purpose wiring and work in close quarters, and the 19" Deep Reach Twister (13W) for special applications. Includes three 1/4 lb. spools of stainless steel safety wire (.020", .032", .041"). Durable plastic storage case. Kit weight 2 lbs. 12 oz. NSN 5180-01-337-9841.

105W

109W

## STAINLESS STEEL SAFETY LOCKWIRE

- All Safety Lockwire is made from Stainless Type 304 Steel
- Conforms to ASTM A580-S30400-Cond.A.
- Conforms to Military Specification NASM20995 (MS20995 C).
- Available in 5 different wire diameters.
- 1 lb. center core dispensers or 1/4 lb. spools.

### SAFETY WIRE

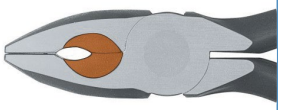
| PART NO. | WIRE DIA (in.) | SIZE | WIRE LENGTH (ft.) |
|---|---|---|---|
| 14WA | .020 | 1/4 lb. Spool | 234 |
| 15WA | .032 | 1/4 lb. Spool | 91 |
| 16WA | .041 | 1/4 lb. Spool | 55 |
| 17WA | .020 | 1 lb. Dispenser | 937 |
| 18WA | .025 | 1 lb. Dispenser | 599 |
| 19WA | .032 | 1 lb. Dispenser | 366 |
| 20WA | .041 | 1 lb. Dispenser | 223 |
| 21WA | .051 | 1 lb. Dispenser | 144 |

**SAFETY WIRE INSTALLATION HIGHLIGHTS, DOUBLE TWIST METHOD**
(AEROSPACE STANDARD AS567)

1. The safety wire is installed so that, if the fastener has any tendency to loosen, it will cause the safety wire to tighten.
2. The maximum span of safety wire (between tension points) shall be 6" (152 mm).
3. The maximum length of safety wire to be used in a single application is 24" (609 mm).
4. The number of twists per inch (1 twist = 1/2 complete turn) depends upon wire diameter: 0.020" to 0.025" dia., 8-14 twists; 0.032" to 0.041" dia., 6-11 twists; 0.051" to 0.060" dia., 4-9 twists.
5. **The wire which is looped around the outside of the fastener must always be routed UNDER the wire protruding from the hole (so that the loop will stay down and not cause slack). This often requires the direction of the wrap and twist of strands to REVERSE from run to run, or run to pigtail**.
6. Pigtail should be no more than 3/4" long and have a minimum of four (4) twists. Ends should be cut and bent toward fastener to prevent snags.

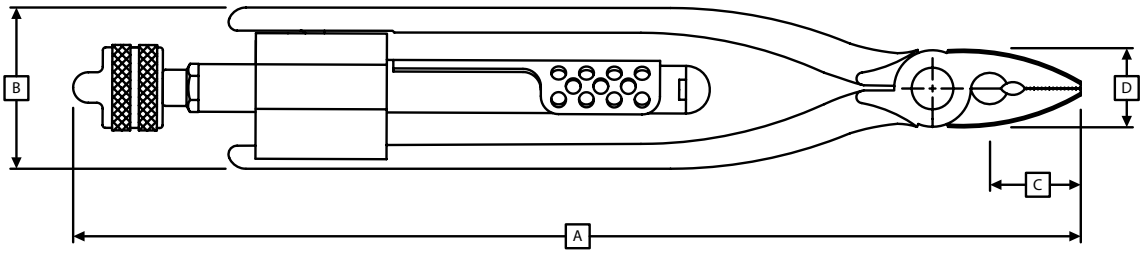
# SPECIFICATIONS

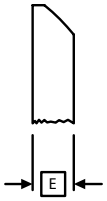
Diagonal



Cushion Throat

Deep Reach




| SIZE (nom.) | PART NO. | WIRE CAPACITY (in. dia.) | SPECIFICATIONS (in.) | | | | | WEIGHT (oz.) |
|---|---|---|---|---|---|---|---|---|
| | | | (A) | (B) | (C) | (D) | (E) | |
| 6" | 25W, 30W, 45W | 0.041 | 8-3/4 | 1-3/8 | 1-1/8 | 5/8 | 3/8 | 9.7 |
| | ALL OTHERS | 0.041 | 8-3/8 | 1-3/8 | 1-1/8 | 5/8 | 3/8 | 8.3 |
| 9" | 26W, 41W | 0.060 | 11 | 1-3/4 | 1-9/16 | 13/16 | 7/16 | 14.0 |
| | ALL OTHERS | 0.060 | 10-1/2 | 1-3/4 | 1-9/16 | 13/16 | 7/16 | 12.9 |
| 12" | 42W | 0.060 | 12-1/4 | 2 | 1-9/16 | 13/16 | 7/16 | 14.6 |
| | ALL OTHERS | 0.060 | 11-7/8 | 2 | 1-9/16 | 13/16 | 7/16 | 14.0 |

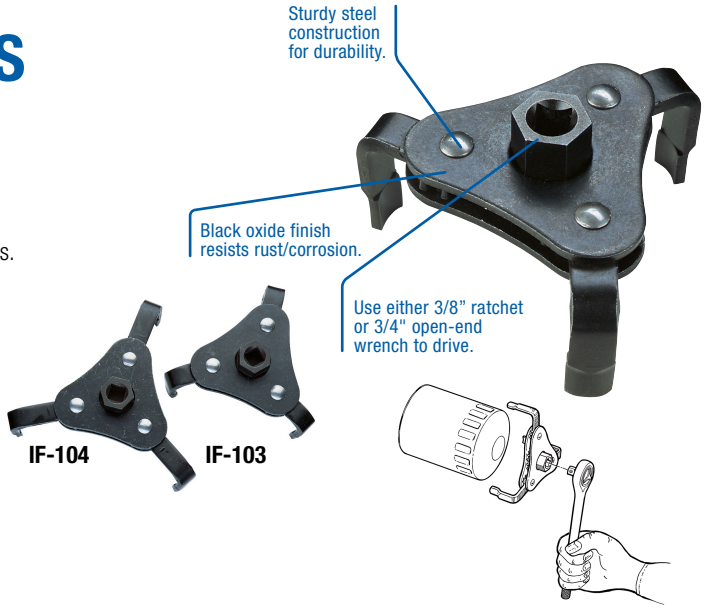
# QUICK REFERENCE GUIDE

| PART NO. | DESCRIPTION | NOMINAL LENGTH (in.) | RETURN | | TWIST | | | NOSE | | JAW | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | AUTO | MANUAL | RIGHT | LEFT | REVERSIBLE | DIAGONAL | TAPERED | STD. | CUSHION THROAT |
| 11W | SafetyTwist® | 6 | • | | • | | | • | | • | |
| 25W | SafetyTwist® | 6 | • | | | | • | • | | | • |
| 30W | SafetyTwist® | 6 | | • | • | | | • | | • | |
| 45W | SafetyTwist® | 6 | • | | | | • | • | | • | |
| 1W | SafetyTwist® | 9 | | • | • | | | • | | • | |
| 1W393 | SafetyTwist® | 9 | • | | • | | | • | | • | |
| 3W5 | SafetyTwist® | 9 | | • | • | | | • | | | • |
| 3W6 | SafetyTwist® | 9 | • | | • | | | • | | | • |
| 41W | SafetyTwist® | 9 | • | | | | • | • | | • | |
| 5W4 | SafetyTwist® | 9 | • | | | • | | • | | • | |
| 5W6 | SafetyTwist® | 9 | | • | | • | | • | | • | |
| 26W | SafetyTwist® | 9 | • | | | | • | • | | | • |
| 2W | SafetyTwist® | 12 | | • | • | | | • | | • | |
| 2W393 | SafetyTwist® | 12 | • | | • | | | • | | • | |
| 42W | SafetyTwist® | 12 | • | | | | • | • | | • | |
| 6W4 | SafetyTwist® | 12 | • | | | • | | • | | • | |
| 6W6 | SafetyTwist® | 12 | | • | | • | | • | | • | |
| 13W | Long Reach | 19 | | • | • | | | | | | |
| 105W | Professional Safety Wiring Kit<br>One each: 11W, 1W393, 13W, 14WA, 15WA, 16WA | | | | | | | | | | |
| 109W | Limited Access Safety Wiring Kit<br>One each: 11W, 13W, 14WA, 15WA, 16WA | | | | | | | | | | |

# OIL FILTER WRENCHES

## ADJUSTABLE OIL FILTER WRENCHES

- Self-adjusting heavy-duty design actually grabs onto the filter and automatically tightens.
- Ideal for removal of most spin-off oil, fuel and fuel-water separators.
- Use either 3/8” ratchet or 3/4" open-end wrench to drive.
- Low profile (2-1/2" high) for easy access in confined areas.
- Withstands over 85 ft.-lbs. of torque to remove stubborn filters.
- Sure-grip three-point contact.
- Smooth-moving sprocket gears eliminate jamming.
- Fits hundreds of filters!




## IF-101 OIL FILTER PLIERS

- Quick fit, easy removal tool for ALL popular filters size 62 to 110 mm.
- Slip joint, solid construction allows fit to a wider filter range.
- Easy access in tight spots.
- For all makes of cars and light trucks.
- Cushion grips for comfort.
- Nom. length 9”.

| | |
|---|---|
| **IF-101** | Oil Filter Pliers 62 mm – 110 mm |
| **IF-103** | Adjustable Oil Filter Wrench 62 mm – 93 mm (2-1/2" – 3-3/4") |
| **IF-104** | Adjustable Oil Filter Wrench 62 mm – 121 mm (2-1/2" – 4-3/4") |

**The quick fit, easy removal tool** for all makes of cars and light trucks.

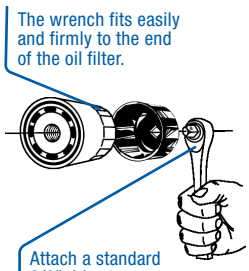
## OIL FILTER CUP WRENCHES

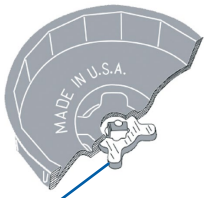
- Glass-reinforced engineered composite material.
- Provides high torque capacity:
  - Handles 140 ft.-lbs. of torque to remove even the most stubborn filters.
  - Competitive plastic cup wrenches don’t even come close to this torque capacity.
- Metal Drive Insert will not deform or break even after years of service.
- Each tool acts like a socket to remove hard-to-reach or stubborn oil filters.
- 100% USA-made.
- Use with 3/8” drive or with extensions to reach difficult filters; protects mechanic from hot oil contact.
- Will not crush filter can or cause oil spillage and cleanup expense.
- Extensive application charts available.
- Special carded packaging allows customers to actually test their oil filter with the packaged wrench without opening cartons or complicated blister packs.

**Handles up to 140 ft.-lbs.** of torque to remove even the most stubborn filters!

| | |
|---|---|
| **IF-6567C** | 65/67 mm, 14 Flute (”B”cup) |
| **IF-7476C** | 74/76 mm, 15 Flute (”I”cup) |
| **IF-7614C** | 76 mm, 14 Flute (”J”cup) |
| **IF-7693C** | 76/80/93 mm, 36 Flute (”Z”cup) |
| **IF-9315C** | 93 mm, 15 Flute (”Q”cup) |
| **IF-5KITC** | 5 - Piece Kit, one each size |

**IF-5KITC**

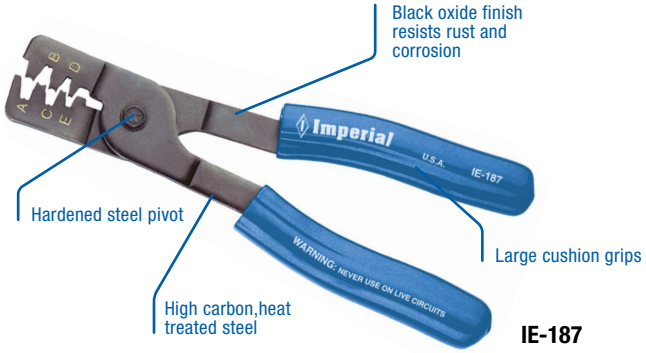


# ENGINE TOOLS

## IE-187 FIVE-STATION MICRO TERMINAL CRIMPER

- Crimps insulated and non-insulated open barrel and Weatherpack terminals. Crimp range - 14 to 24 AWG.
- Compact head allows for one-hand operation underneath dashboard or other confined areas.
- Designed to work with GM Micro Terminals.
- Cushion grips for comfort.

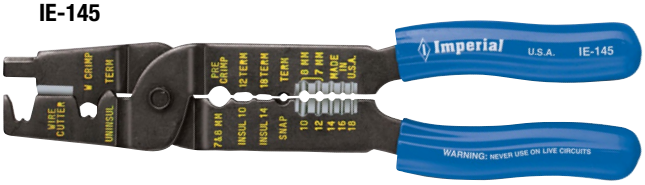



IE-187

## IE-145 IGNITION CRIMPING TOOL

- Crimps insulated 10-18 AWG terminals.
- Crimps non-insulated 7-8 mm Auto, W & F terminals.
- Precision ground stripping stations for 7-8 mm and 10-18 AWG.
- Anvil-type cutter.
- Highly visible, easy-to-read graphics.
- Cushion grips for comfort.

IE-145




## IE-150 OPEN & CLOSED BARREL CRIMPER

- Crimps insulated and non-insulated open & closed barrel and flag terminals. Crimp range - 10-22 AWG.
- Screw sizing and cutting stations.
- Highly visible, easy-to-read graphics.
- Cushion grips for comfort.

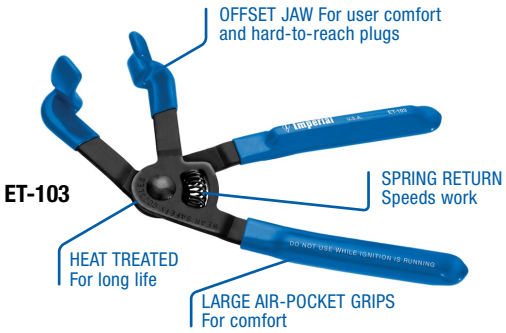
IE-150

## ET-103 SPARK PLUG BOOT PULLER

- Ergonomic design features offset jaw for user comfort; greater access to hard-to-reach plugs.
- Vinyl-coated jaws provide positive gripping and break tight insulators loose with just a twist.
- Spring-return action and air-pocket cushion grips to reduce fatigue.
- Fast, one-hand operation.

| PART NO. | DESCRIPTION | NOM. LENGTH (in.) |
|---|---|---|
| ET-103 | Boot Puller | 7-1/4 |
| IE-145 | Ignition Crimping Tool | 9-3/4 |
| IE-150 | Open & Closed Barrel Crimper | 8-1/2 |
| IE-187 | 5-Station Micro Terminal Crimper | 8 |

ET-103




# BATTERY SERVICE TOOLS

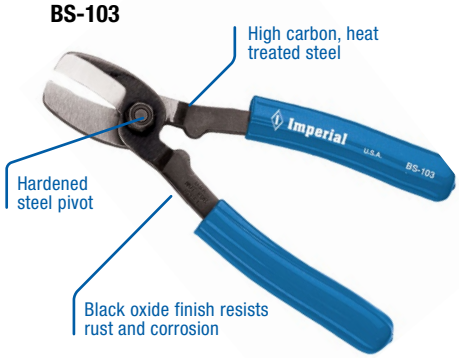
## BS-103 COPPER BATTERY CABLE CUTTER

### NOT FOR USE ON STEEL.

- Power engineered for maximum cutting action with minimum effort.
- Cuts up to 2/0 gauge fine-stranded copper battery cable.
- Precision-ground, scissors-action blades minimize deflection.
- Cushion grips for user comfort.

| PART NO. | DESCRIPTION | NOM. LENGTH (in.) |
|---|---|---|
| BS-103 | Battery Cable Cutter | 7-1/2 |

BS-103



# HOSE TOOLS

## KWIK-VISE™ HOSE PINCH-OFF PLIERS

- Great for radiator and heater hoses, air, water, vacuum and fuel lines.
- Tested to 50,000 cycles without failure for reliable performance.
- Clamping mechanism locks automatically.
- No adjustment needed. Simply squeeze to lock. Pull handles apart to release.
- Cushion grips for comfort and control.

Squeeze to lock in place. Pull handles apart to release.

HP-56 HP-55 HP-54

## GT-116 PUSH LOCK CUTTER/ASSEMBLY TOOL

**For 1/4"–3/4" I.D. fiber-reinforced rubber hose only.**

- 2 tools in 1: everything you need to create a hose assembly.
- Assembles barb-type push-on hose ends.
- Hose cutter provides a clean cut with no frayed ends.
- Portable – can be bench-mounted.
- Length 13-1/2". Wt. 5 lbs.

| PART NO. | DESCRIPTION | NOM. LENGTH (in.) |
|---|---|---|
| HP-54 | Hose Pinch-off Tool 3/4" O.D. Capacity | 5-1/2 |
| HP-55 | Hose Pinch-off Tool 1-1/4" O.D. Capacity | 9-1/4 |
| HP-56 | Hose Pinch-off Tool 2-1/2" O.D. Capacity | 14 |
| GT-116 | Push Lock Cutter/Assembly Tool 1/4" - 3/4" I.D. Capacity | 13-1/2 |

GT-116

# BRAKE SERVICE TOOLS

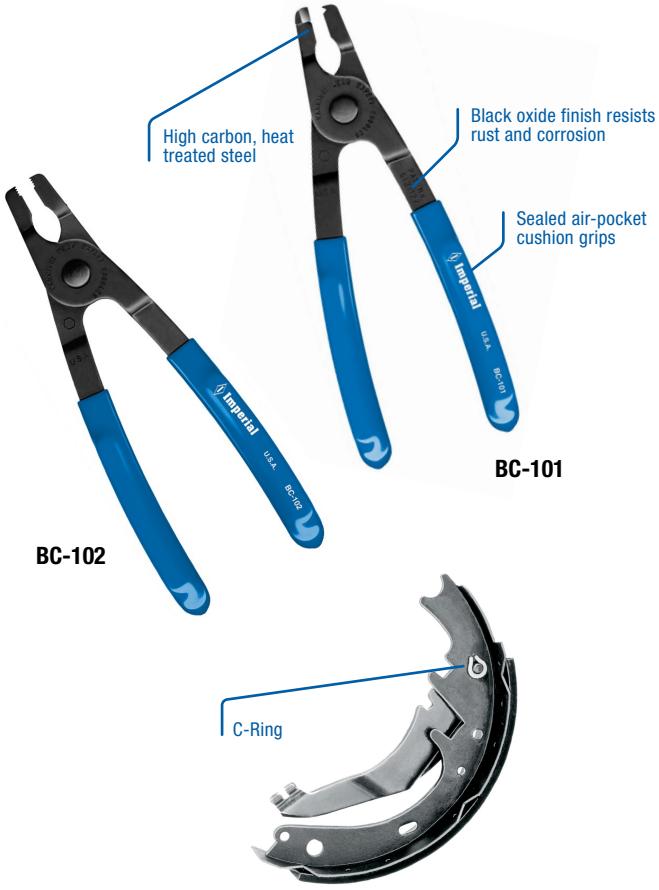
## BRAKE "C" RING PLIERS

- Crimps insulated and non-insulated open barrel and Weatherpack terminals. Crimp range - 14 to 24 AWG.
- Compact head allows for one-hand operation underneath dashboard or other confined areas.
- Designed to work with GM Micro Terminals.
- Cushion grips for comfort.

**BC-101** **Wedge Pliers** spreads the "C" ring which holds the emergency brake actuation lever to the brake shoe.

**BC-102** **Utility Pliers** has a narrow jaw with sharp heat-treated serrations. Provides high leverage for easy "C" ring installation and general purpose work in tight quarters. Both made from high carbon steel and heat treated for long life.

| PART NO. | DESCRIPTION | NOM. LENGTH (in.) |
|---|---|---|
| BC-101 | Wedge Pliers for "C" Rings | 7-3/4 |
| BC-102 | Utility Pliers | 7-1/2 |
| BC-103 | 2 Pc. Kit, 1 Each | 8 |



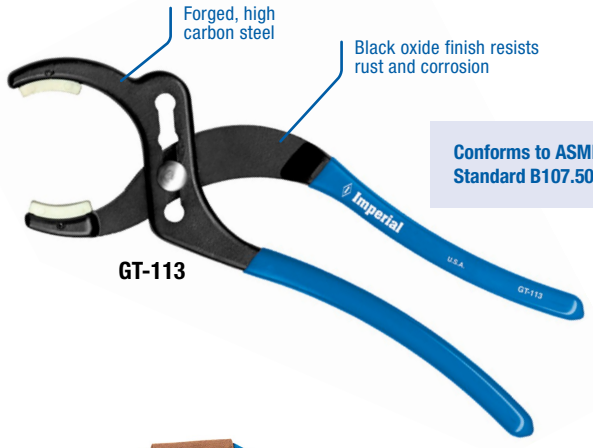

GENERAL | GENERAL TOOLS

# GENERAL TOOLS

## SOFT JAW PLIERS

- Four-position pivot allows full range capacity up to 2-1/2".
- Use on AN electrical connectors, plated pipe and fittings, camera lens… anywhere you do not want to mar or damage surfaces.
- Cushion grips.

| PART NO. | DESCRIPTION | NOM. LENGTH (in.) |
|---|---|---|
| GT-113 | Forged Steel Soft Jaw Pliers – urethane jaw inserts (NSN 5120-00-624-8065) | 10 |
| GT-114 | Replacement Jaw Inserts for GT-113 | |




**Conforms to ASME Standard B107.500-2010**

## 15-POCKET PROFESSIONAL TOOL BAG

### TB-52 Tool Bag

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

# SELLING AIDS

## TOOL CENTER SIGN

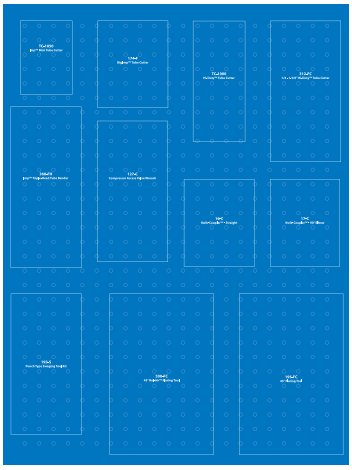
**TH-103** 7-1/2" H x 39" W vinyl.

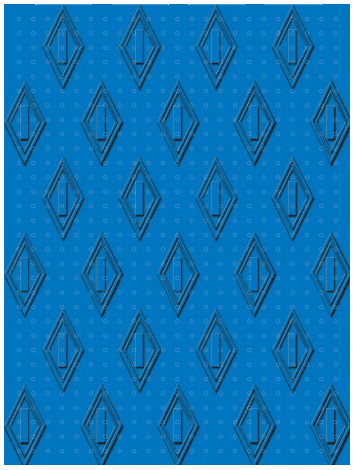
## TOOL CENTER PLANOGRAM KITS

- 6" H x 24" W vinyl header sign.
- 32" H x 24" 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.

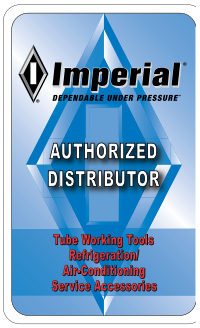




## "AUTHORIZED DISTRIBUTOR" VINYL STATIC LABEL

### 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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